AVAYA

Octel® Overture 250

Service Manual for
Aria 1.2 & 2.0

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Notice
Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

Avaya Web Page
The World Wide Web home page for Avaya is http://www.avaya.com

Preventing Toll Fraud
Toll Fraud is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there is a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya Fraud Intervention
If you s*uspect that you are being victimized* by toll fraud and you need technical assistance or support, call the Technical Service Center's Toll Fraud Intervention Hotline at 1.800.643.2353.

Providing Telecommunications Security
Telecommunications security of voice, data, and/or video communications is the prevention of any type of intrusion to, that is, either unauthorized or malicious access to or use of, your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or a person working on your company's behalf. Whereas, a "malicious party" is anyone, including someone who may be otherwise authorized, who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Utilization (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there could be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company, including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

Your Responsibility for Your Company's Telecommunications Security
The final responsibility for securing both this system and its networked equipment rests with you — an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources including but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure your:

- Avaya-provided telecommunications systems and their interfaces
- Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- Any other equipment networked to your Avaya products

Federal Communications Commission Statement
Part 15: Class A Statement. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, could cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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- AUDIX and DEFINITY are registered trademarks of Avaya Inc.
- INTUITY and Octel are trademarks of Avaya Inc.
- Ethernet is a trademark of Xerox Corporation.
- ORACLE is a trademark of the Oracle Corporation.
- UNIX is a trademark of UNIX System Laboratories, Inc.

European Union Declaration of Conformity
The "CE" mark affixed to the equipment means that the equipment conforms to the referenced European Union (EU) Directives listed below:
EMC Directive 89/336/EEC
Low-Voltage Directive 73/23/EEC
For more information on standards compliance, contact your local distributor.

Comments
To comment on this document, send mail to:
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COMPLIANCE STATEMENTS

FCC Part 15 Statement

WARNING: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense. Any changes or modifications to this equipment not expressly approved by Octel Communications Corporation may void compliance with FCC requirements and the user's authority to operate the equipment.

FCC Part 68 Statement

This equipment complies with Part 68 of the FCC rules. On the back of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The O250 when operated with the FLT-8 has an REN of 0.5B.
The O250 when operated with the FLT-M, FLT-A, FLT-N or FLT-R has an REN of 0.0B.

The REN is used to determine the quantity of devices that can be connected to the telephone line. Excessive RENs on the telephone line may result in the device not ringing in response to an incoming call. In most but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs contact the telephone company for the maximum REN in your area.

If this equipment causes harm to the telephone network, the telephone, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with the equipment, please contact:

- **Technical Assistance Center (TAC)**. The TAC supports distributors, GBS customers, and direct field service engineers in the United States of America.

  (408) 922–1822

If the trouble is causing harm to the network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

Repairs should be performed by Octel Communications Corporation or an authorized representative of Octel Communications Corporation or the warranty or service agreement could be void.

This equipment cannot be used on telephone company-provided coin service.

Connection to Party Line Service is subject to state tariffs.

Fax Branding

The **Telephone Consumer Protection Act of 1991** makes it unlawful for any person to use a computer or any other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

In order to program this information into the O250, please refer to the appropriate section of the System Manager Terminal (SMT) Handbook.

Adjuncts – KX and PX Devices

If the O250 – with either the FLT-M, FLT-A, FLT-N or FLT-R integration – is to be used with a leased system, permission of the owner should be requested before its connection. With any of these integrations, the O250 is intended only for connection to a registered PBX and never directly to the network.

Industry Canada:

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations (ICES).

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should insure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs should be performed by Octel Communications Corporation or an authorized representative of Octel Communications Corporation or the warranty or service agreement could be void. In the event that this equipment malfunctions, the telecommunications company may request that the equipment be disconnected.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate. The equipment is installed by trained personnel.

Communication cable provided by the user to connect to the telecommunications network must be not less than 26 AWG copper.

The **Load Number** (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the load numbers of all the devices does not exceed 100.

The load number of this product O250 (FLT-8) is 7.

Industrie Canada:

Cet appareil numérique de la classe A respecte toutes les exigences du Reglement sur le matériel brouilleur du Canada (ICES).

AVIS: L'étiquette de L'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Industrie Canada n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessous n'empechent pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé designé par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de reparations où de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à terre de la source d'énergie électrique, les lignes téléphoniques et les canalisations d'eau métalliques, s'il y en a, sont raccordées ensembles. Cette précaution est particulierement importante dans les régions rurales.

AVERTISSEMENT: L'utilisateur ne doit pas tenter de faire ces raccordements de lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

La câble de télécommunications qui sont fournis par l'utilisateu ne doivent pas être infériers à 26 AWG de cuivre.

L'**Indice de Charge** (IC) assigné à chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut être racordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

L'indice de charge de ce produit O250 (FLT-8) est 7.

BABT Statutory Warning

Notice for Connection to UK Telecommunications Systems

IMPORTANT – PLEASE READ

Approval

This apparatus is APPROVED for connection to telecommunications systems specified in the instructions for use, subject to the conditions set out in them.

This approval for the Octel 250 server is NS/3775/13/T/605161.

This apparatus has been approved for the use of the following facilities:

- ❑ Storage and retrieval of voice messages
- ❑ Storage and retrieval of facsimiles
- ❑ Automatic answering
- ❑ Auto clearing
- ❑ Automatic call initiation
- ❑ Automatic dialling
- ❑ Multiple repeat attempts
- ❑ Multi-frequency signalling
- ❑ PABX Earth Recall
- ❑ PABX Timed Break Recall

Any other usage will invalidate the approval of the apparatus if as a result it ceases to comply with the standards against which approval was granted.

Network Connection

This apparatus is not designed to be connected in parallel with any other apparatus on the same exchange line.

This apparatus should be used only on exclusive line with multi-frequency signalling (tone dialling).

This apparatus should not be connected to a shared service line or a line connected to a 1+1 carrier system.

This apparatus is not suitable as an extension to a payphone.

This apparatus may be connected to the network by means of a plug conforming to BS 6312.

REN

The Ringer Equivalence Number (REN) of an item of telecommunications apparatus is an indication of the number of items of apparatus which may be connected in parallel on a direct exchange line and continue to provide audible ringing.

The maximum REN for a direct exchange line is four.

The REN for each port of the Octel 250 server is four as this apparatus is not designed to be connected in parallel with any other apparatus on the same exchange line.

User Instructions

Please refer to the *System Manager Manual* for instructions on how to use the following features:

- ❑ Storage and retrieval of voice messages.
- ❑ Storage and retrieval of facsimiles.
- ❑ Automatic answering.
- ❑ Auto clearing.
- ❑ Automatic call initiation.
- ❑ Automatic dialling.
- ❑ Multiple repeat attempts.
- ❑ Multi-frequency signalling.
- ❑ PABX Earth Recall.
- ❑ PABX Timed Break Recall.

To comply with BABT approval standards the interval between calls for up to 7 attempts must not be set to less than 3 minutes, and the interval between calls for more than 7 attempts must not be less than 11 minutes.

If the installation or configuration is outside the scope of the System Managers Training this task will be carried out by the Installation and Maintenance Engineer who has further information in his Service Manual and Configuration Notes.

End of BABT warning.

About This Manual

Octel 250 message servers provide telephone answering and voice messaging. This manual provides procedures for service personnel to use when they install, maintain, and troubleshoot Octel 250 message servers at Aria 1.2 or Aria 2.0 software. It also provides descriptions of server components, common status codes, upgrade procedures, and system utilities.

Organization of This Manual

The manual is divided into the following sections and chapters:

- Contents
- **Section I. Server Description**
  - Chapter 1. Server Architecture
  - Chapter 2. Component Descriptions
- **Section II. Installation**
  - Chapter 3. Site Preparation
  - Chapter 4. Server Installation
  - Chapter 5. Startup and Initialization
- **Section III. Troubleshooting**
  - Chapter 6. Troubleshooting Server Startup
  - Chapter 7. Troubleshooting Server Operation
  - Chapter 8. Status Log Interpretation
  - Chapter 9. Alarm Interpretation
- **Section IV. Maintenance**
  - Chapter 10. Routine Maintenance
  - Chapter 11. Repair and Replacement
  - Chapter 12. Server Expansion
  - Chapter 13. Online Upgrade Using Diskettes
  - Chapter 14. Online Upgrade Using Tape

- **Notes**
- **Appendixes**
  - A. System Utilities
  - B. Line Types
- **Glossary**
- **Index**

Differences Between Aria 1.2 and Aria 2.0

This manual supports Octel 250 message servers at Aria 1.2 or Aria 2.0 software. It must *not* be used for servers at software older than Aria 1.2; doing so could result in machine damage and loss of data.

This manual provides information about the capabilities and operation of the server at Aria 2.0. Aria 2.0 primarily introduces capabilities that were not available with Aria 1.2. In most ways, the functions that are available for both Aria 1.2 and Aria 2.0 operate identically. Where the differences might cause you confusion if you are working on a server at Aria 1.2, this manual describes the differences.

In summary, Aria 1.2 and Aria 2.0 differ, as follows:

- Aria 2.0 introduces the local-area-network (LAN) card, digital networking, and Aria domain. Associated system manager terminal (SMT) menu options were added, such as Menu 22 – LAN Interface Management and LAN utilities accessed from Menu 20 – Service Operations. Menu 15.1.3, Node Profile, was revised and has new fields. Refer to the *Aria 2.0 Screen and Prompt Summary*, P/N 101–1607–000, for further information about these menus.
- With Aria 2.0, analog- and digital-networking statistics can be displayed without having the service or engineering bit on. With Aria 1.2, digital networking is not supported, and the engineering bit must be on to display analog-networking statistics.
- With Aria 2.0 but not Aria 1.2, the online System Backup and the offline System Backup and Restore menus have an option to display the tape header. Backup and restore software also reports new error messages that do not exist for Aria 1.2.
- With Aria 2.0 but not Aria 1.2, the optional tape drive, which is installed in drive-bay slot 6, can be enabled and disabled using the Enable Drive and Disable Drive utilities.
- When running the following utilities, servers at Aria 2.0 display phrase versions for phrases, the prompt table, and the in-RAM table, whereas servers at Aria 1.2 do not display the phrase versions for the prompt table and in-RAM table:
  - Set System Boot Area
  - Display Drive Info
  - Make Phrase Areas A and B Redundant
  - Make System Drives Redundant, Make Area A or B Redundant option
  - Copy Software & Phrases

- For Aria 1.2 but not Aria 2.0, during the boot process the combination CPU/file (CCF) card sends a broadcast control-bus message to all cards in the server, directing them to identify themselves; the configuration of fax/line/TIC (FLT) cards that respond is displayed on the SMT.

- For Aria 1.2 but not Aria 2.0, a shutdown initiated from menu 13.1 displays a hex dump on the SMT. Therefore, shutdown is faster for Aria 2.0.

- This manual includes procedures to use diskettes and a PC to perform an online upgrade from Aria 1.2x to Aria 2.0. Refer to the *Aria 1.2 Release Manual* for procedures to upgrade from older software levels to Aria 1.2. A server at software *older* than Aria 1.2 must be upgraded to Aria 1.2 before it can be upgraded to Aria 2.0; it *cannot* be upgraded directly to Aria 2.0.

- If the server is at Aria 2.0, you can use an upgrade tape in the server's tape drive to perform an online upgrade to a newer software level.

Conventions Used in This Manual

In this manual, all prompts that appear on the SMT and all responses and field parameters that you need to enter on the SMT keyboard are shown in ***bold italic***.

The prompts can include ranges of device numbers presented within brackets [ ]; for example, ***Enter position of drive to be replaced [0–5]***. Within a few particular prompts, certain words can vary, depending on circumstances. Those words are presented in this manual in brackets within the bold italic prompt, using the word ***or*** between the alternatives. For example, if the prompt could direct you to replace either the System Drive or the Message Drive now, the prompt would be presented in this manual as ***Replace the [System or Message] Drive now.***

When you respond to prompts or enter field parameters, you usually need to press the ***Enter*** key (or, on some keyboards, the ***Return*** key) after you type the required characters. Some of the procedures in this manual do not specifically direct you to press ***Enter***. If you do not need to press ***Enter***, the SMT or the server takes action immediately after you type the characters.

Many procedures tell you to press ***Ctrl+C*** to exit to a previous SMT screen. This means that you should press the ***Ctrl*** and ***C*** keys on the keyboard simultaneously. The previous edition of this manual used the notation ^***C*** for these keystrokes.

Some utilities are accessed from the ***ENTER BOOT COMMAND:*** prompt by pressing ***Ctrl+D***, then releasing both keys, and pressing another indicated key; only the last keystroke appears on screen. For example, the statement "Press ***Ctrl+D***, then ***U***" in this manual means press the ***Ctrl*** and ***D*** keys, release them, then press the ***U*** key; only ***U*** appears on the SMT. The previous edition of this manual used the notation ^***DU*** for these keystrokes.

Menu numbers and their submenu numbers are often shown together, separated by periods. For example, to access the Node Profile menu, you access Menu 15, then submenu 1, then submenu 3, designated as menu 15.1.3.

Related Documents

Several types of related documents extend and enhance the information in this manual. These documents are described in the following sections.

Service Notes

New information or updates to existing products or information might be required after this edition of the *Octel 250 Service Manual* has been released. This information is provided in the form of service notes. Service notes notify field personnel of new or changed information, including new software maintenance releases, changed status-log entries, and changed service operations.

Service notes are located in Lotus Notes (for Octel employees) and Octel's Web site. If you are an authorized user, you can also use Octel's FaxCall application to obtain service notes as faxes.

Release Manuals

Release manuals describe new service functions and procedures introduced in significant software releases, if a new edition of the service manual is not produced. They also include information that used to be included in a separate service note for that release. Release manuals include information for both the Octel 250 and Octel 350.

This service manual incorporates the service-related information in the *Aria 1.2 Release Manual*, P/N 101–1477–001, and the *Aria 2.0 Release Manual*, P/N 101–1647–000.

Release manuals are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order them from the Octel Company Store by using the part numbers and order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

Installation Instructions

Procedures for converting from one platform to another, such as converting from an Aspen to an Octel 250, are documented in installation instructions. Other installation procedures that are not included in this manual are documented in installation instructions.

Installation instructions are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order them from the Octel Company Store by using the part numbers and order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site. If you are an authorized user, you can also use Octel's FaxCall application to obtain installation instructions as faxes.

Status Log Interpretation Guide

The *Status Log Interpretation Guide, Aria 2.0*, includes a comprehensive list of all status-log entries and describes significant bytes in them; however, it does not provide corrective procedures.

This manual is located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order it from the Octel Company Store by using the part numbers and order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

System Manager Manual

The *Aria 1.0 System Manager Manual* and its addenda for Aria 1.1 and Aria 1.2 describe how to complete all of the system manager menus and applications for a server at Aria 1.2.

The *Aria 2.0 System Manager Manual* describes how to complete all of the system manager menus and applications for a server at Aria 2.0. Addenda to this manual are produced as needed when applications and menu fields are added in new software releases.

System manager manuals and addenda are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order them from the Octel Company Store by using the part numbers and order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

Screen and Prompt Summary

In general, a Screen and Prompt Summary provides information about the differences between two software releases in regard to the SMT screens used by the system manager and the server's voice prompts. The *Aria 2.0 Screen and Prompt Summary*, P/N 101–1607–000, shows the differences between Aria 1.2 and Aria 2.0.

Screen and prompt summaries are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order them from the Octel Company Store by using the part numbers and order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

Peripheral Equipment

The *Peripheral Equipment* manual contains information about installing system manager terminals (SMTs), printers, and modems.

This manual is located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order it from the Octel Company Store by using the part numbers and order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

Online CDR User Reference Guide

The *Online CDR User Reference Guide*, P/N 101–1479–000 for Aria 1.2 and P/N 101–1553–000 for Aria 2.0, describes how to use the Online CDR utility to review CDR (call detail record) events. It also describes all CDR events and how to enable and disable CDR buffer alarms.

These documents are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order it from the Octel Company Store by using the order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

Octel PC/CDR Manual

Octel Call Detail Records™ (Octel PC/CDR™) is an optional data collection and processing application. The *Octel PC/CDR Manual*, P/N 101–1480–000 for Aria 1.2 or P/N 101–1552–000 for Aria 2.0, describes the Octel PC/CDR application, including information about the CDR buffer, CDR events, CDR buffer alarms, and output files.

These documents are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order it from the Octel Company Store by using the order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

DecisionPro Manuals

The Octel DecisionPro Reporting Package™ (DecisionPro™) is an optional Windows-based software package that runs on a PC. The DecisionPro application provides detailed reports about message server activity, including file maintenance and troubleshooting issues.

Refer to the *DecisionPro Operations Manual* (P/N 101–1562–000 for Aria 1.2 or P/N 101–1567–000 for Aria 2.0) for information about using the DecisionPro application. Refer to the *DecisionPro Reports Reference Manual* (P/N 101–1561–000 for Aria 1.2 or P/N 101–1568–000 for Aria 2.0) for information about DecisionPro reports.

These documents are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order them from the Octel Company Store by using the order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site.

Configuration Notes

Configuration notes provide either information needed for integrations between message servers and particular PBXs or information about specific data applications.

These documents are located in Lotus Notes (for Octel employees) and Octel's Web site. You can also order them from the Octel Company Store by using the order forms in the Company Store catalog, located in Lotus Notes (for Octel employees) and Octel's Web site. If you are an authorized user, you can also use Octel's FaxCall application to obtain configuration notes as faxes.

Contents

COMPLIANCE STATEMENTS iii

ABOUT THIS MANUAL ix

DESCRIPTION I

1. SERVER ARCHITECTURE

Basic Functions 1-1

Telephone Answering 1-2

Voice Messaging 1-3

Call Processing 1-3

Hardware Components 1-4

Cabinet Layout 1-6

Logic Cards 1-8

Drive Modules 1-9

Power Supplies 1-9

Software 1-10

Call Flow 1-10

Integration Methods 1-12

Simplified Message Desk Interface (SMDI) 1-13

In-band Integration 1-14

Set-Emulation Integration 1-14

PID Integration 1-14

Types of Software 1-15

Central-Processing (CP) Subsystem 1-16

Key System-Management Applications 1-16

Application Programs 1-18

File-Storage Subsystem 1-20

System-File Subsystem 1-21

Message-File Subsystem 1-21

Software Layers 1-21

Telephone-Interface Subsystem 1-22

TIC Subsystem of FLT Card 1-22

DLC Subsystem of FLT Card 1-22

Octel-Packet-Interface Bus Subsystem 1-23

Key Data Structures 1-24

User Records 1-25

Message-Delivery System (MDS) 1-26

Message Database 1-26

Memory-Resident Tables 1-27

Status Log 1-28

System-Status Table (SST) 1-28

Record 50 1-28

2. COMPONENT DESCRIPTIONS

Logic Cards 2-2

CCF Card 2-3

FLT Cards 2-7

LAN Card 2-11

Power Supplies 2-13

Main Backplane 2-14

Drives and Drive Backplane 2-14
Drive Modules 2-14
Drive Backplane 2-15
Global Message Redundancy 2-15
Tape Drive 2-15
Alarm Panel 2-16
System Manager Terminal 2-18

INSTALLATION II

3. SITE PREPARATION

Site-Entry Clearances 3-2
Space Requirements 3-2
Environmental Requirements 3-4
Air Conditioning 3-4
Electrostatic-Discharge (ESD) Reduction 3-5
Grounding 3-5
Electrical Requirements 3-6
Cabling Requirements 3-6
Combination CPU/File (CCF) Card Connections 3-8
FLT Card Connections 3-10
LAN Card Connections 3-13
External-Alarm Connections 3-14

4. SERVER INSTALLATION

Ensuring Equipment and Personnel Safety 4-2
Electrical Safety 4-2
Equipment-Handling Safety 4-3
Environmental Safety 4-3
Obtaining Required Tools 4-4
Inspecting and Unpacking the Server 4-4

Positioning the Cabinet 4-4
Connecting the Power 4-6
Checking the Logic-Card Configuration 4-6
Connecting Telephone Cables 4-7
Connecting Cables to the CCF Card 4-7
Connecting the Cable to the LAN Card 4-10
Installing the Primary SMT and Printer 4-11
Installing a Modem 4-11
Required Components 4-12
Configuring the Modem 4-12
Configuring the Hayes Modem as a Dumb Modem 4-14
Connecting the Modem to the Server 4-15
Installing the Antitilt Bracket 4-16
Checking the System ID Dip Switch 4-17
Connecting an External Alarm Cable 4-18
Checking Connections 4-19

5. STARTUP AND INITIALIZATION

Initializing the SMT and Printer 5-2
Monitoring Startup Diagnostics 5-2
Starting Up the Server 5-3
Monitoring the CPU Diagnostic Tests 5-3
Checking the System-File Status 5-4
Selecting the Terminal Type and Speed 5-4
Completing the Boot Process 5-5
System-Status Table (SST) 5-6
Card Configuration (Aria 1.2 Only) 5-6

Direct-Memory-Access (DMA) Data Bus 5-6
Operating System 5-6
Completing the First-Time Setup in Menu 0 5-8
Entering Company Information 5-8
Entering Server Information 5-9
Assigning System Manager Information 5-14
Entering Current Date and Time 5-16
Establishing Line Types and Port Assignments 5-17
Assigning Line Types 5-18
Assigning the Number of Digits in a Forwarded Call 5-19
Entering Port Parameters 5-19
Using the Main Menu 5-21
Changing Installation Information 5-22
Establishing Dialing and Serial-Channel Parameters 5-25
Setting Transfer, Outcall, Fax, and Pager Dialing Sequences 5-25
Achieving In-band Integration 5-30
Configuring CPU Serial Channels (Menu 6.3) 5-32
Managing Integration Links (Menu 6.5) 5-34
Configuring the Server for the LAN Interface 5-38
Checking Feature Options and Obtaining Required Information . . . 5-38
Entering LAN Parameters 5-40
Verifying Server Operation 5-43
Testing the Printer 5-43
Testing Server Operation 5-43
Verifying the Boot Routine 5-44
Testing the LAN Card 5-44
Running the Ping Utility 5-46
Running the Echo-Test Utility 5-47
Printing Screens 5-48

Configuring the Server for Digital Networking 5-49
Configuring System Parameters for Digital Networking 5-49
Establishing Node Profiles and Testing Digital Networking 5-50

TROUBLESHOOTING III

6. TROUBLESHOOTING SERVER STARTUP

Preliminary Fault Isolation 6-2
Power-Supply Problems 6-2
Disk-Drive, Cooling-Fan, and Logic-Card Problems 6-2
System Manager Terminal Problems 6-5
Failed CPU Tests 6-5
System-File Status Codes 6-6
Status-Code 03 6-8
Status-Code 20 6-9
Status-Code 22 6-9
SST-Loading Failure 6-9
Card-Configuration-Test Failure (Aria 1.2 Only) 6-10
Data-Bus DMA-Test Failure 6-10
Load-Application-Test Failure 6-10

7. TROUBLESHOOTING SERVER OPERATION

Basic Troubleshooting Guidelines 7-2
Diagnostic Tools 7-5
Remote Access 7-5
Online CDR Utility 7-5
Octel PC/CDR 7-6
DecisionPro 7-7

Message-Waiting Problems 7-7

Delayed Messages 7-8

Subscriber Perceptions of Message Delays and MWI Issues 7-8

Problems With MWI or Actual Delays in Message Delivery 7-9

Problems With Personal Greetings 7-11

Return-To-Operator Problems 7-12

System-Wide Return-to-Operator Problems 7-12

Return-to-Operator Problems on One Extension or Group 7-13

Talk-Off Problems 7-14

Automated-Attendant Mailbox Problems 7-14

Appropriate Greeting Is Not Played 7-15

Greeting Plays After “Please Hold” Prompt 7-15

Greeting Plays Immediately After Caller Enters Extension 7-16

Incorrect Transfer Occurs After “Please Hold” Prompt 7-17

Mailbox Is Not in Service 7-17

Call to Operator Returns to the Server 7-17

Integration Problems 7-17

RS-232 Integration Problems (Message Waiting) 7-17

SMDI Integration Problems 7-18

APID Integration Problems 7-21

Rolm Integration Problems 7-22

AMID Integration Problems 7-22

Ring-No-Answer Problems 7-23

Caused by Server 7-23

Caused by Server 7-23

Caused by a PID or MID Application 7-24

Caused by FLT Cards and Ports 7-24

Problems With Deleting Network Nodes 7-25

Disk-Drive Problems 7-25

Drive Status and Hardware 7-26

CCF Card Status 7-26

Tape-Drive Problems 7-27

Digital-Networking Problems 7-27

Division of Responsibilities for Hardware and Software Maintenance 7-27

Typical Digital-Networking Troubleshooting 7-29

LAN Utilities 7-32

Valid Node Numbers and Message Queues 7-48

Analog-Networking Statistics 7-49

8. STATUS LOG INTERPRETATION

Terminology 8-2

Structure 8-3

The Status Log 8-3

When To Check the Status Log 8-3

How To Display the Status Log 8-4

How To Interpret the Status Log 8-7

Entry Format 8-8

Entry Header 8-9

Input/Output Request Block (IORB) Header 8-10

Control-Bus (CB) Messages 8-11

Common Status-Log Entries 8-14

Status-Code 00 8-14

Status-Code 03 8-15

Status-Code 05 8-16

Status-Code 08 8-16

Status-Code 21 8-16

Status-Code 24 8-17
Status-Codes 50 Through 58 and 5D 8-20
Status-Code 60 8-21
Status-Code 64 8-23
Status-Code 65 8-23
Status-Codes 6C Through 6E 8-25
Status-Codes 70 and 72 8-25
Status-Code 75 8-27
Status-Code 84 8-28
Status-Code 85 8-29
Status-Code 86 8-30
Status-Code 90 8-31
Status-Codes 98 Through 9A 8-31
Status-Code CD 8-32
Status-Code CE 8-33
Status-Code E9 8-34
Status-Code F9 8-36
When a value of 0008 appears in offsets 08 and 09, ... 8-50
Status-Code FA 8-51
Status-Code FB 8-53
Status-Code 141 8-54
When a value of 0008 appears in offsets 08 and 09, ... 8-55
Status-Code 148 8-55
When a value of 0008 appears in offsets 08 and 09, ... 8-55
Status-Code 165 8-56
Status-Codes 1C0 Through 1C2 8-56
Status-Code 1E5 8-57
Status-Code 1E6 8-58
Status-Code 200 8-59
Complete List of Status Codes 8-60

9. ALARM INTERPRETATION

Reviewing the Current Alarm Status (Menu 13.8) 9-1
Printing the Current Alarm Status (Menu 13.8) 9-2
Interpreting the Alarm-Status Menu (Menu 13.8) 9-3
Checking Logic-Card and Disk-Drive Alarm LEDs 9-6
Checking Alarm-Panel LEDs 9-8
Determining and Correcting the Alarm Condition 9-10
Out-of-Service (OOS) Alarms 9-11
Service-Affecting (SA) Alarms 9-13
Non-Service-Affecting (NSA) Alarms 9-16
Using Remote Alarm Relays 9-19

MAINTENANCE IV

10. ROUTINE MAINTENANCE

Reviewing Alarm Status and the Status Log 10-2
Backing Up a System Drive to Another Disk Drive 10-2
Backing Up the Database and Messages to Tape 10-4
Testing Ports 10-7
Port-Testing Administration 10-8
Port/Test Status 10-12
Review Previous Test Results 10-14
Start Port Testing 10-17
Port Traffic Statistics 10-19
Measuring Power and Ground 10-20
Inspecting and Cleaning the Server 10-21
Cleaning the Tape Drive 10-23
Storing and Handling Disk Drives 10-24

11. REPAIR AND REPLACEMENT

Replacing Logic Cards 11-2
Replacing Any Logic Card 11-2
Replacing CCF Cards 11-4
Reverting to the Prior EPROM Firmware on the CCF Card 11-6
Replacing an FLT8, FLT-M, or FLT-A Card 11-6
Replacing a LAN Card 11-9
Reverting to the Prior EPROM Firmware on the LAN Card 11-11
Replacing EPROMs on Logic Cards 11-11
Replacing the Alarm-Panel Logic Board 11-11
Replacing Drive Modules 11-13
Replacing the System Drive in a Single-Drive Server 11-15
Replacing a System Drive in a Two-System-Drive Server 11-19
Replacing a Message Drive in a Non-GMR Server 11-22
Replacing a Message Drive in a GMR Server 11-24
Replacing the Tape Drive 11-26
Replacing the Modem 11-27
Replacing the SMT 11-28
Replacing Cooling Fans 11-29
Removing the Fan Assembly 11-29
Installing the New Fan Assembly 11-31
Replacing Power-Distribution-Tray Components 11-32
Removing the Power-Distribution Tray 11-32
Replacing Power Supplies 11-34
Replacing the Auxiliary Power Board 11-36
Reinserting the Power-Distribution Tray 11-37

Replacing the Main Backplane 11-37
Replacing Fuses 11-38
Replacing the Main Backplane 11-39
Replacing Terminator Boards 11-43
Replacing the Drive Backplane 11-44
Replacing Fuses 11-45
Replacing the Drive Backplane 11-46
Replacing Covers 11-50
Restoring Database and Messages From Tape to a Server 11-51

12. SERVER EXPANSION

Storing and Handling Disk Drives 12-2
Adding a Second System Drive 12-3
Adding Message Drives 12-4
Adding a Message Drive in a Non-GMR Server 12-4
Adding a Message-Drive Pair in a GMR Server 12-5
Upgrading Message Drives to Drives With Higher Capacity 12-6
Upgrading Message Drives in a Non-GMR Server 12-7
Upgrading Message Drives in a GMR Server 12-9
Adding Authorized Message Space 12-10
Adding Ports 12-10
Adding an FLT8 or FLT-M Card 12-11
Adding an FLT-A Card 12-13
Adding an FLT Card in Slot 8, Where a LAN Card Is Installed 12-16
Changing from a Different Type of FLT Card to an FLT-A Card 12-18
Adding Mailboxes 12-21
Expanding CDR Storage Space 12-22
Adding Optional Software Features 12-24

Adding an Expansion Cabinet 12-24

Adding a Language Using a Master Drive 12-29

Adding a Tape Drive 12-31

Required Tools and Equipment 12-32

Preparing for Installation 12-32

Installing the Tape Drive 12-32

Verify the Tape-Drive Installation 12-34

Adding a LAN Card 12-35

Checking Feature Options and Obtaining Required Information 12-36

Entering LAN Parameters 12-37

Installing the LAN Card and Associated Cables 12-40

Reverting to the Prior EPROM Firmware on the LAN Card 12-42

Testing the LAN Card 12-42

Running the Ping Utility 12-44

Running the Echo-Test Utility 12-45

Adding Digital Networking 12-46

Configuring System Parameters for Digital Networking 12-46

Establishing Node Profiles and Testing Digital Networking 12-47

13. ONLINE UPGRADE USING DISKETTES

Make Sure That the Correct Equipment Is Available 13-3

Required Hardware and Firmware 13-3

Required Software 13-4

Have the Engineering Bit Turned On 13-4

Verify the Current and Next Boot Areas 13-4

Connect the PC and the Server 13-5

Connecting the PC Directly to the Server 13-5

Connecting the PC Remotely to the Server 13-6

Install the Online Upgrade Tool on the PC Hard Drive 13-8
Verify the Values in the PC Setup Menu 13-11
Load Software and Phrase Diskettes Onto the PC Hard Drive 13-12
Perform the Automatic Upgrade 13-16
Verify the Upgrade 13-23
Change the Boot Area and Boot the New Software 13-23
Make Software and Phrase Areas Redundant 13-24

14. ONLINE UPGRADE USING TAPE

Verify Hardware and Firmware 14-2
Have the Service Bit Enabled 14-2
Install a Tape Drive, if Necessary 14-2
Verify the Current and Next Boot Areas 14-3
Perform the Upgrade From a Tape 14-3
Verify the Upgrade 14-5
Change the Boot Area and Boot the New Software 14-6
Make Software and Phrase Areas Redundant 14-7
Remove the Tape Drive, If Installed for This Upgrade 14-8

APPENDIXES

A. SYSTEM UTILITIES A-1
Access to the Utilities A-2
Special Error Messages A-8
Menu 20 Drive Copy Utilities A-9
Initialize Drive A-9
Create Backup Drive A-10
Copy Software A-10
Copy Phrases A-12

Copy Software & Phrases A-15
Copy System Data Tables A-18
Copy Messages A-18
Make Drive(s) Redundant A-19
Display Drive Info A-26
Fast Phrase Copy A-27
Menu 20 Drive Replacement Utilities A-27
Menu 20 Drive Install Utilities A-28
Install Drive A-28
De-Install Drive A-28
Enable Drive A-29
Disable Drive A-31
Drive Status A-33
Initialize System A-33
Global Message Redundancy (GMR) Utilities A-34
Menu 20 Phrase Table Utilities A-37
Phrase Table Initialization A-37
Set Phrase Table Version A-38
Set Language Type A-39
Set Digitization Rate A-39
Set In-RAM Phrase Priority A-40
Phrase Delete A-41
Phrase Copy A-42
Reload In-RAM Phrases A-43
Reset Phrase XREF Table A-43
Menu 20 Miscellaneous Utilities A-44
Initialize Drive A-44
Garbage Collect A-44
Set System Boot Area A-46

Enable/Disable Drive Read Only Mode A-47
Configurable Integration Parameters A-49
Visual CIP A-49
Reset CDR Pointers A-49
Message Waiting User Record Conversion A-50
Initialize System A-50
Display Drive Information & G-List A-50
Set Telephone Keypad Type A-51
Menu 20 Drive Verify Utilities A-51
Menu 20 Datafile Utilities A-51
Read Datafile Record A-53
Write Datafile Record A-54
Display Record A-55
Change Record A-55
Expand Datafile Size A-56
Decrease Datafile Size A-57
Patch Software A-58
Get Physical Address A-58
Get Logical Address A-59
Menu 20 Message Utilities A-59
Display Message Blocks A-60
Display Phrase Blocks A-60
Message ID to Physical Address A-61
Menu 20 Display Status Log A-62
Menu 20 SMT Debug Utilities (Reformat Menu) A-62
Validity Check User Records (Reformat Menu Option 0) A-63
Collapse Nodes (Reformat Menu Option 1) A-67
Convert Mailboxes to ACP Integration (Reformat Menu Option 3) A-69
Move Company Records and Attendant Schedules to User Records (Reformat Menu Option 5) A-69

Convert Mailbox Length (Reformat Menu Option 6) A-70
Convert Type 52 Mailbox to Type 0 (Reformat Menu Option 7) . . . A-72
AT&T Inband Message Waiting Utilities (Reformat Menu Option 8) A-72
Check User Records vs. AMT (Reformat Menu Option 10) A-73
Check AMT Addresses vs. Internal Record Numbers (Reformat Menu Option 11) A-74
Patch Up Clobbered User Records (with Bad Lengths) (Reformat Menu Option 12) A-74
Convert ICMB from COS to MB (Reformat Menu Option 13) A-74
Menu 20 Toggle Extended Print A-75
Menu 20 Software/Phrase Upgrade A-75
Menu 20 Port Testing Utilities A-76
Menu 20 Online CDR Utility A-76
Menu 20 LAN Utilities A-77
Menu 20 SCSI Media Applications A-77
Menu 21 – System Backup A-77
Schedule Backup A-78
Display Backup Status A-78
Write/Read Diagnostic A-78
Scan Backup Tape A-79
Review History of Last Event A-80
Display Tape Header A-83
Cancel Current Operation A-84
Disk Utilities (^DD) A-84
Read Disk Record A-86
Read Disk Table A-87
Change Record Buffer A-88
Display Record Buffer A-89
Write Disk Record A-89

Write Disk Table A-90
Clear User Record Buffer A-91
Read Datafile Record A-91
Write Datafile Record A-92
Patch Software A-92
Display CB Packet Trace Table A-92
Compute Check-sum A-92
Change Telephone Keypad Type (^DK) A-93
Display Control Bus Buffer (^DP) A-93
Change Terminal Type (^DR) A-93
System Backup and Restore (^DS) A-94
Backup A-94
Restore A-94
Display Backup/Restore Status A-94
Write/Read Diagnostic A-95
Scan Backup Media A-95
Display Header of Backup Media A-95
Cancel Current Operation A-95
Drive Test (^DT) A-96
Toggle Next Boot Area (^DX) A-97
Change Console/Download Port Speed (^DY) A-97
B. LINE TYPES B-1
GLOSSARY Gl-1
INDEX In-1

Figures

1-1. Octel 250 Architecture 1-5
1-2. Front View of an Octel 250 1-6
1-3. Rear View of an Octel 250 1-7
1-4. Octel 250 Logic-Bay Configuration 1-8
1-5. PBX-to-Octel Server Call Flow 1-11
2-1. Front View of an Octel 250 2-1
2-2. Rear View of an Octel 250 2-2
2-3. Octel 250 Logic-Bay Configuration 2-3
2-4. Front Edge of a CCF Card 2-5
2-5. Front Edge of an FLT Card 2-9
2-6. Front Edge of a LAN Card 2-12
2-7. Alarm-Panel LED Indicators 2-17
3-1. Site-Preparation Task Flow 3-1
3-2. Octel 250 Server Cabinet and Carton Dimensions 3-3
3-3. Required Clearances for the Cabinet 3-4
3-4. Cable Connections on an Octel 250 Server (Front View) 3-7
3-5. Measurements to the CCF Card and LAN Card Connectors 3-8
3-6. Measurements to the FLT Card Connectors 3-11
4-1. Installation Procedures 4-1
4-2. Location of the Wheel Lock Screws on the Octel 250 4-5
4-3. Logic-Bay Slot Assignments 4-6
4-4. TELCO Connector on an FLT Card (Slot 2) 4-8
4-5. X.25, SMT, Asynchronous, and Modem Connectors on the CCF Card . 4-9
4-6. LAN Connector on the LAN Card 4-10
4-7. Hayes Modem Configuration 4-14
4-8. Bocamodem Configuration 4-14
4-9. Dip-Switch Settings for the Hayes Modem 4-15

Figures (continued)

4-10. Modem Tray Location 4-16

4-11. Position of the Antitilt Bracket, Side View 4-17

4-12. Terminator Boards (Rear View) 4-18

4-13. Location for the External Alarm Connector 4-19

5-1. Startup and Initialization Procedures 5-1

5-2. CPU Diagnostic Test Display at Startup 5-3

5-3. Example of IPL1 and PIPL 5-4

5-4. The TERMINAL SELECTION OPTIONS Menu 5-5

5-5. OPERATING SYSTEM SUCCESSFULLY LOADED Screen 5-7

5-6. Initialization Screen 5-7

5-7. First Screen of Menu 0 – First-Time Setup 5-9

5-8. Second Screen of Menu 0 – First-Time Setup (Menu 0.1) 5-10

5-9. Third Screen of Menu 0 – First-Time Setup (Menu 0.2) 5-14

5-10. Fourth Screen of Menu 0 – First-Time Setup (Menu 0.3) 5-16

5-11. Menu 4.1, Port Assignments 5-18

5-12. Example of a Completed Menu 4.1.1 Screen for Ports 1A Through 3H 5-18

5-13. Main Menu (Aria 2.0) 5-21

5-14. Menu 1 – System Parameters 5-22

5-15. Menu 1.1, Installation Information 5-23

5-16. Menu 6 – Dialing and Serial Channel Parameters 5-25

5-17. Menu 6.1, Transfer, Outcall, Fax, and Pager Sequences 5-26

5-18. Menu 6.2, In-band Integrations 5-30

5-19. Example of Menu 6.3, Define CPU Serial Channel 5-32

5-20. Menu 6.5, Integration Link Management 5-35

5-21. Example of a Completed Screen for Menu 6.5.1 5-35

5-22. Menu 22, LAN Interface Management 5-40

5-23. Menu 22.1, IP Address and Net Mask Configuration 5-40

5-24. Menu 22.2, TCP/IP Parameters 5-41

Figures (continued)

5-25. Menu 22.3, SNMP Parameters 5-42
5-26. LAN Utilities Menu 5-46
5-27. Example of Completed Ping Utility Screen 5-46
5-28. Example of Completed Echo-Test Utility Screen 5-47
5-29. Example of Menu 15.1.2, System Parameters for Digital Networking for an Octel 250 5-50
5-30. Example of Menu 15.1.3, Node Profile (Aria 2.0) 5-51
6-1. Test Points on the Alarm Panel 6-3
6-2. Power Connections to the Drive Backplane 6-4
6-3. Example of IPL1 and PIPL 6-6
7-1. Responsibilities in Maintaining Digital Networking 7-28
7-2. LAN Utilities Menu 7-33
7-3. Example of Ping Utility Screen 7-33
7-4. Example of Echo Test Utility 7-35
7-5. Example of Digital-Networking Statistics, First Screen 7-39
7-6. Example of Digital-Networking Statistics, Second Screen 7-41
7-7. Example of Digital-Networking Statistics, Third Screen 7-42
7-8. Example of Digital-Networking Statistics, Fourth Screen 7-44
7-9. Example of Digital-Networking Statistics, Fifth Screen 7-45
7-10. Example of Digital-Networking Statistics, Fifth Screen, for Node 0 (All Nodes) 7-45
7-11. Example of Channel Status Screen 7-47
7-12. Example of Menu 15.1.5, Valid Node Numbers and Message Queues 7-49
7-13. Example of Analog-Networking Statistics, First Screen 7-50
7-14. Example of Analog-Networking Statistics, Second Screen 7-52
8-1. Offset Identification for Status-Code Entries 8-2
8-2. Transposing Bytes 8-3
8-3. Example of Menu 13.2 or Offline Menu 20.9 Status-Log Display (Aria 2.0) 8-5

Figures (continued)

8-4. Example of a Status-Log Entry Showing the Header and Body Elements 8-9
8-5. Standard Fields in the Status-Log Entry Header Line 8-10
8-6. Peripheral Address in the IORB Header 8-11
8-7. Card Locations and Cabinet:Slot Addresses for Octel 250 . . 8-12
8-8. Example of a Control-Bus Message Pair 8-12
8-9. Example of Status-Code 00 8-14
8-10. Example of Status-Code 03 8-15
8-11. Example of Status-Code 05 8-16
8-12. Example of Status-Code 08 8-16
8-13. Example of Status-Code 21 8-16
8-14. Example of Status-Code 24 8-17
8-15. Example of Status-Code 50 8-21
8-16. Example of Status-Code 60 With Subcode 00 8-21
8-17. Example of Status-Code 64 (68h-byte format) 8-23
8-18. Example of Status-Code 65 (68h-byte format) 8-24
8-19. Example of Status-Code 6C 8-25
8-20. Example of Status-Code 72 8-26
8-21. Example of Status-Code 75 8-27
8-22. Example of Status-Code 84 8-29
8-23. Example of Status-Code 85 8-29
8-24. Example of Status-Code 86 8-30
8-25. Example of Status-Code 90 8-31
8-26. Example of Status-Code 98 8-32
8-27. Example of Status-Code CD 8-32
8-28. Example of Status-Code CE 8-33
8-29. Example of Status-Code E9 8-35
8-30. Example of Status-Code F9 With Subcode 65 8-40
8-31. Example of Status-Code F9 With Subcode 08 8-49

Figures (continued)

8-32. Example of Status-Code F9 With Subcode 69 8-50
8-33. Example of Status-Code F9 With Subcode 25 8-51
8-34. Example of Status-Code FA 8-52
8-35. Example of Status-Code FB 8-53
8-36. Example of Status-Code 141 8-55
8-37. Example of Status-Code 148 8-55
8-38. Example of Status-Code 165 8-56
8-39. Example of Status-Code 1C0 8-56
8-40. Example of Status-Code 1E5 8-57
8-41. Example of Status-Code 1E6 8-58
8-42. Example of Status-Code 200 8-59
9-1. Menu 13 – System Maintenance 9-2
9-2. Example of Menu 13.8, Review Current Alarm Status 9-2
9-3. Logic Card Indicators 9-7
9-4. Disk-Drive-Module LEDs. 9-8
9-5. Alarm-Panel LED Indicators 9-9
10-1. Example of Prompts and Responses for the Create Backup Drive Utility 10-3
10-2. Online Menu 21 – System Backup (Aria 2.0) 10-5
10-3. Backup Screen 10-6
10-4. Port Testing Utilities Menu 10-8
10-5. Example of the Port Testing Administration Screen 10-9
10-6. Example of Status-Code 151 10-9
10-7. Example of Status-Code 152 10-9
10-8. Example of the Port Testing Status Screen When Testing Is Not In Process 10-13
10-9. Example of the Port Testing Status Screen When a Test Is In Process 10-13
10-10. Example of the Testing Results Review Screen 10-15
10-11. Example of the Port Testing Status Screen 10-18

Figures (continued)

10-12. Port Traffic Statistics Utility Menu 10-19
10-13. Example of the Port Traffic Statistics Utility Screen 10-20
10-14. Alarm Panel, Showing the Location of V1 and GND Test Points 10-21
10-15. Octel 250 Air Filter 10-22
11-1. Removing a Logic Card 11-3
11-2. Engaging Card Extractors 11-4
11-3. Example of Menu 13.11, Review Card Management 11-7
11-4. Location of Alarm-Panel Logic Board (Front View) 11-13
11-5. Write/Read Diagnostic Screen 11-27
11-6. Fan Power Plugs on the Front of the Power-Distribution Tray 11-30
11-7. Fan Assembly and Grill 11-31
11-8. Power-Cable Cover on the Rear of the Server 11-33
11-9. External Connections to the Power-Distribution Tray 11-34
11-10. Power-Distribution Tray With the Three Power Supplies 11-35
11-11. Auxiliary Power Board in the Power-Distribution Tray 11-36
11-12. Fuses on the Main Backplane (Front View) 11-39
11-13. Power Connections to the Main Backplane 11-40
11-14. Main Backplane (Front View) 11-41
11-15. Bus-Terminator Boards (Rear View) 11-44
11-16. Fuses on the Drive Backplane (Front View) 11-46
11-17. Drive Backplane (Front View) 11-47
11-18. Power Connections to the Drive Backplane 11-48
11-19. Cover Replacement 11-51
11-20. Offline System Backup and Restore Menu (Aria 2.0) 11-53
11-21. Backup Media Contents Display (Aria 2.0) 11-54
12-1. Cumulative Message-Hour Capacities for Octel 250 Non-GMR and GMR Servers as 1 GB, 2 GB, or 4 GB Drives Are Added 12-6
12-2. Example of Menu 12 – Disk Management 12-10
12-3. Example of Menu 13.11, Review Card Management 12-11

Figures (continued)

12-4. Example of Menu 4.2, Port Capacity Information 12-13
12-5. Example of Menu 13.11, Review Card Management 12-14
12-6. Example of Menu 4.2, Port Capacity Information 12-16
12-7. Example of Menu 4.2, Port Capacity Information 12-17
12-8. Example of Menu 13.15 12-21
12-9. Expand Datafile Size Menu 12-23
12-10. Location of the Cabinet-Connection Bracket 12-26
12-11. Rear View of Cabinets After Terminator Board Is Moved 12-27
12-12. Location of Alarm-Panel Logic Board and Switch S3 (Front View) . . . 12-28
12-13. Location of Access Cover and Nuts 12-33
12-14. Tape-Drive Location 12-34
12-15. Scrolling Write/Read Diagnostic Screen 12-35
12-16. Menu 22 – LAN Interface Management 12-38
12-17. Menu 22.1, IP Address and Net Mask Configuration 12-38
12-18. Menu 22.2, TCP/IP Parameters 12-39
12-19. Menu 22.3, SNMP Parameters 12-39
12-20. Example of Menu 13.11, Review Card Management 12-41
12-21. LAN Utilities Menu 12-44
12-22. Example of Completed Ping Utility Screen 12-44
12-23. Example of Completed Echo-Test Utility Screen 12-45
12-24. Example of Menu 15.1.2, System Parameters for Digital Networking for an Octel 250 12-47
12-25. Example of Menu 15.1.3, Node Profile (Aria 2.0) 12-48
13-1. PC-to-Octel 250 Direct Connection 13-5
13-2. PC-to-Octel 250 Remote Connection 13-6
13-3. The PC's ONLINE UPGRADE Installation Program Screen 13-9
13-4. Screen for the End of ONLINE UPGRADE Installation 13-9
13-5. Online Upgrade Main Menu 13-10
13-6. Example of PC Configuration Screen 13-11

Figures (continued)

13-7. Utilities Menu 13-12
13-8. Copy / Delete UPG Menu 13-13
13-9. Screen Prompts for Beginning the File Copy 13-13
13-10. Verification Prompt 13-14
13-11. Example of Status Messages Screen 13-15
13-12. Status Messages Screen With File Copy Complete Message 13-16
13-13. UPG Directories Menu 13-17
13-14. Modem Setup Menu 13-18
13-15. Example of Status Messages Box With Confirmation Prompt 13-19
13-16. Example of Status Messages Box With Begin Automatic Upgrade Prompt 13-20
13-17. Example of Online Upgrade Status Screen Showing Upgrade in Process 13-21
13-18. Example of Online Upgrade Status Screen Showing Upgrade Complete 13-22
A-1. Example of Prompts and Responses for the Initialize Drive Utility A-10
A-2. Example of Prompts and Responses for the Copy Software Utility (Source Software Areas A and B Redundant) A-11
A-3. Example of Prompts and Responses for the Copy Phrases Utility (Source Phrase Areas A and B Redundant) A-13
A-4. Example of Prompts and Responses for the Copy Software & Phrases Utility (Source Areas A and B Redundant, Aria 2.0) A-16
A-5. Redundancy Utilities Menu A-19
A-6. Example of Prompts and Responses for the Offline Make Software Areas A and B Redundant Utility A-20
A-7. Example of Prompts and Responses for the Offline Make Phrase Areas A and B Redundant Utility (Aria 2.0) A-22
A-8. Make System Drives Redundant Menu A-23
A-9. Example of Prompts and Responses for the Make Area A or B Redundant Utility (Aria 2.0) A-24
A-10. Example of Prompts and Responses for the Make Both Areas Redundant Utility A-25

Figures (continued)

A-11. Example of Prompts and Responses for the Display Drive Info Utility (Aria 2.0) A-26
A-12. Prompts and Responses for the De-Install Drive Utility (System Drive in Non-GMR Server) A-29
A-13. Drive Status Utility A-33
A-14. Example of Prompts and Responses for the Initialize System Utility . . A-34
A-15. GMR Utilities Screen A-34
A-16. Disk Management Screen A-35
A-17. Determine GMR Requirement Screen A-35
A-18. Set Mirrored Drive Status Screen A-36
A-19. Example of First Screen of the Garbage Collect First Pass, Showing No Damaged Records A-45
A-20. Example of the Second Screen of the Garbage Collect First Pass . . . A-46
A-21. Example of Set System Boot Area Utility (Aria 2.0) A-47
A-22. Example of the Enable/Disable Drive Read Only Mode Screen for a Non-GMR Server A-48
A-23. Example of the Enable/Disable Drive Read Only Mode Screen for a GMR Server A-48
A-24. Example of Display Drive Information and G-List Screen A-50
A-25. Example of Screen Showing Datafile Types A-53
A-26. Example of Screen Showing Subtypes for Datafile Type 3 . . . . . A-53
A-27. Example of Datafile Record A-55
A-28. Expand Datafile Size Menu A-56
A-29. Decrease Datafile Size Menu A-57
A-30. Example of Physical Address Displayed by Get Physical Address Utility A-58
A-31. Example of the Prompts and Responses for the Get Logical Address Utility A-59
A-32. Example of Prompts and Responses for the Display Message Blocks Utility A-60
A-33. Example of Prompts and Responses for the Display Phrase Blocks Utility A-60

Figures (continued)

A-34. Example of Prompts and Responses for the Message Id to Physical Address Utility A-61
A-35. Reformat Menu (Aria 2.0) A-63
A-36. Example of the Node Collapsing Utility Screen A-69
A-37. MAILBOX LENGTH CONVERSION UTILITY Screen A-72
A-38. Prefix Matrix on the MAILBOX LENGTH CONVERSION UTILITY Screen A-72
A-39. Port Testing Utilities Menu A-77
A-40. Online CDR Utilities Menu A-77
A-41. LAN Utilities Menu A-78
A-42. Online Menu 21 – System Backup (Aria 2.0) A-78
A-43. Online Status Display Screen for Backup A-79
A-44. Write/Read Diagnostic Screen A-80
A-45. Example History of Last Event Screen (Aria 2.0) A-82
A-46. Example Display Tape Header Screen A-84
A-47. Reformat Menu A-86
A-48. DISK TABLE READ OPTIONS: Menu A-88
A-49. Offline System Backup and Restore Menu (Aria 2.0) A-95
A-50. Online Status Display Screen for Backup Operation A-96

Tables

1-1. Octel 250 Server Capacities 1-2

2-1. LEDs on the CCF Card 2-6

2-2. LEDs on the FLT Card 2-10

2-3. LEDs on the LAN Card 2-13

2-4. Alarm Panel LED Descriptions 2-18

3-1. Octel 250 Dimensions and Weight 3-2

3-2. Environmental Requirements 3-5

3-3. Fully-Loaded Octel 250 Electrical Specifications, Per Cabinet 3-6

3-4. SYNC Connector Pin Assignments 3-9

3-5. CONSOLE, ASYNC1, ASYNC2, ASYNC3, and MODEM Connector Pin Assignments 3-9

3-6. FLT8 Ports Assigned to Pin Numbers 3-12

3-7. MONITOR Connector Pin Assignments for All FLT Cards 3-13

3-8. LAN Connector Pin Assignments 3-14

3-9. External-Alarm-Connector Pin Assignments 3-14

4-1. Command Description for Server's Modem 4-13

5-1. Pager-Dialing-Sequence Codes 5-28

5-2. CPU Serial Channels and Physical Connectors 5-32

6-1. System-File Status Format 6-7

6-2. Disk-Drive Status Codes in Offset 00 6-7

6-3. Hexadecimal-to-Binary Conversion, With the Disk Drives Shown in Their Binary Equivalents 6-8

7-1. Problem Indications for the Octel 250 Server 7-2

7-2. Reasons for Talk-off 7-14

7-3. Division of Responsibilities 7-28

7-4. Ping Results Shown on the Ping Utility Screen 7-34

7-5. Echo-Test Errors on the Echo-Test Utility Screen 7-36

7-6. MLT States 7-47

Tables (continued)

7-7. Network States 7-48

8-1. Steps in Status-Log Interpretation 8-7

8-2. Offset 11 Values for Status-Code 00 8-15

8-3. Data Fields in Status-Code 24 8-18

8-4. Subcodes (Offsets 08–09, Transposed) for Status-Code 60 8-22

8-5. Return Codes (Offset 47) for Status-Codes 70 and 72 8-26

8-6. Hexadecimal-to-Binary Conversions 8-34

8-7. Subcodes (Offsets 08–09, Transposed) for Status-Code F9 8-37

8-8. CB Message Types at Offsets 32 and 42 for Status-Code F9 8-41

8-9. Offset 46, When Value of Offset 42 Is 86 in Status-Code F9 8-42

8-10. Offsets 47 and 48–4D, When Value of Offset 46 Is 06 in Status-Code F9 8-42

8-11. Offsets 47 and 48–4B, When Value of Offset 46 Is 07 in Status-Code F9 8-43

8-12. Offsets 47 and 48–4B, When Value of Offset 46 Is 08 in Status-Code F9 8-46

8-13. Subcodes (Offsets 08–09, Transposed) for Status-Code FA 8-52

8-14. Offsets 16–17 for Status-Code FA and FB 8-53

8-15. Subcodes (Offsets 08–09, Transposed) for Status-Code FB 8-54

8-16. High Nibble of Subcode at Offset 08 for Status-Code 1E6 8-58

8-17. Low Nibble of Subcode at Offset 08 for Status-Code 1E6 8-59

8-18. Status Codes in the Status Log 8-60

8-19. Task IDs 8-69

8-20. Line-Task IDs/Logic Cards, Ports, Channels, and Slots 8-70

8-21. Control-Bus (CB) Message Types 8-71

9-1. Alarm-Panel LED Descriptions 9-10

9-2. CCF-Card and Alarm-Panel LEDs for Out-of-Service Conditions 9-11

9-3. CCF-Card and Alarm-Panel LEDs for Service-Affecting Conditions . . . 9-14

9-4. CCF-Card and Alarm-Panel LEDs for Non-Service-Affecting Conditions 9-16

Tables (continued)

10-1. Recommended Frequency of Routine Maintenance 10-1
11-1. Switch Settings for Switch S3 11-13
12-1. Switch Settings for Switch S3 12-29
A-1. System Utilities A-3
A-2. Datafile Types and Subtypes A-52
A-3. Validity-Check Error Codes A-65
A-4. Record File Numbers A-86

I DESCRIPTION

The ***Description*** section consists of the following chapters:

- ❑ Chapter 1. Server Architecture
- ❑ Chapter 2. Component Descriptions

Chapter 1 provides descriptions of major segments of the server architecture, including basic server functions and components; subsystems for the central processor (CP), file systems, telephone interface, and buses; and data structures.

Chapter 2 provides descriptions of the hardware components in the server, including the logic cards, power supplies, main backplane, drives and drive backplane, alarm panel, and SMT.

1 SERVER ARCHITECTURE

The Octel 250 message server uses a multiple-processor distributed architecture. This means that all major subsystems and most logic cards have their own microprocessor. The Octel 250 message server can support up to 945 message hours. A single-cabinet configuration provides 8 to 56 ports; a dual-cabinet configuration provides up to 72 ports. Each Octel 250 can support up to 15,000 mailboxes.

A single-cabinet Octel 250 server includes a combination CPU/file (CCF) card and one to seven fax-capable, 8-port line/telephone interface (FLT) cards (8 to 56 ports). If the server is at Aria 2.0, it can include a local-area-network (LAN) card. If a LAN card is installed in a single-cabinet server, the server can have six FLT cards (48 ports). A second cabinet with one or two additional FLT cards can be added; if a second cabinet is used, the LAN card, if used, is moved to the second cabinet, and the dual-cabinet server can have a total of nine FLT cards (72 ports).

Table 1-1 shows the capacities for the Octel 250 server.

Refer to Chapter 3 for electrical and environmental specifications.

Basic Functions

The server provides voice-processing functions for a private branch exchange (PBX) or Centrex. The server supports two types of users:

- A *caller* is routed to the server when the telephone number the caller dialed is busy or unanswered.
- A *subscriber* is someone who has a mailbox on the server.

Callers and subscribers have access to three basic functions: telephone answering, voice messaging, and call processing. These functions are described in the following sections.

Table 1-1. Octel 250 Server Capacities.

Parameter	Specification
Telephone Circuits	
Maximum number of mailboxes	15,000
Maximum number of ports	
Single cabinet	56
Dual cabinet	72
Number of ports per FLT card	8
Drive Capacity and Maximum Server Message Capacity	
Data capacity per drive	1 GB, 2 GB, or 4 GB
Maximum number of message drives	4
Maximum number of message hours per drive (approximate)	100 message hours for 1-GB drive 215 message hours for 2-GB drive 450 message hours for 4-GB drive
Maximum message-hour capacity of a global-message-redundancy (GMR) server (two 4-GB, mirrored message-drive pairs)	900 message hours
Maximum message-hour capacity of non-GMR server (35 message hours on each system drive plus four 2-GB message drives)	945 message hours

Telephone Answering

If a subscriber's telephone is busy or not answered, the PBX forwards the call to the subscriber's mailbox on the server. The caller can then leave a message for the subscriber.

Although it appears that telephone answering does nothing more than act as a simple telephone-answering machine, it has substantial processing functionality. The server can handle numerous concurrent calls at different stages of completion and can direct messages only to the subscribers for whom they are intended.

There are two forms of telephone answering:

- **Interfaced**. When the PBX is *interfaced* (not integrated) with the server, the PBX and the server do not exchange call identification (ID) or message-waiting information.
  - If the subscriber's telephone is busy or is not answered, the caller hears a generic system-level greeting when forwarded to the server. The caller must use touch-tones to reenter the subscriber's telephone number and to leave a message for the subscriber.
  - Subscribers do not receive any form of message-waiting indication, such as a broken dial tone, a flashing lamp, or a lit LED.

- **Integrated**. The PBX can send call ID and call information to the server, and the server can send message-waiting requests to the PBX. A number of capabilities are available with integrated systems:
  - If the subscriber's telephone is busy or is not answered, the caller is forwarded directly to the subscriber's mailbox to leave a message. The caller does not need a touch-tone telephone to leave a message.
  - Subscribers can be notified, through message-waiting indicators, that they have new messages.
  - The PBX can notify the server of the type of call, so that the server can answer appropriately. For example,
    - A call forwarded to the server is answered with the subscriber's personal greeting.
    - A direct call from the subscriber's telephone to the server is answered with the subscriber's recorded name and the "enter password" prompt.

Voice Messaging

To listen to messages stored in their mailboxes, subscribers dial a system-access or pilot number from a touch-tone telephone and enter personal passwords to access their mailboxes. Subscribers can listen to messages, reply to messages, send copies of messages to other subscribers, and send new messages to other subscribers.

Subscribers can customize their mailboxes in a number of ways: They can record new greetings or names, set up pager-notification schedules, change their passwords, and so on.

The features available to subscribers are controlled according to classes of service and mailbox types. For information about subscriber features, refer to the *System Manager Manual* for the server's level of Aria software.

Call Processing

Call processing allows callers and subscribers to select specific destinations, either telephones or information-providing mailboxes. Callers and subscribers must have touch-tone telephones to use call-processing applications. Call processing applications also can be set up to route callers or subscribers automatically.

Three major methods of call processing are available:

- **Automated attendant**. The automated attendant answers calls to the PBX and routes callers to the desired telephone number. Like an operator, the automated attendant prompts the caller for the called party's telephone number. The caller uses touch-tones to specify the telephone number, and the server transfers the caller to that number. Incoming calls are handled efficiently, and the workload for telephone company operators, attendants, or answering centers is reduced.

- **Enhanced Call Processing (ECP) mailboxes**. Callers hear a menu of up to nine options on a single-digit menu (SDM) and press a touch-tone key to reach their destinations.

- **Information Center mailboxes (ICMBs)**. Callers can listen to recorded announcements stored in ICMBs on the server. If subscribers have the PowerCall Agent feature, they can visit ICMBs from their own mailboxes, hear the announcements, and return to their mailboxes automatically.

Hardware Components

The major hardware components of the Octel 250 server are as follows:

- **Logic cards**. The Octel 250 message server uses a multiple-processor, distributed architecture. This means that each logic card has its own microprocessor. Logic cards include the CCF card, FLT cards, and the optional LAN card. Refer to the "Logic Cards" section, page 1-8, and Chapter 2 for additional information.

- **Drive modules**. A drive module consists of a circuit board and a disk drive, on which data is stored. System drives contain software, the database, and system prompts (phrases). With the optional GMR feature, all messages are duplicated on different message drives; on non-GMR Octel 250s, the system drives also contain digitized voice messages and recorded names and greetings. Message drives contain digitized voice messages and recorded names and greetings. Refer to the "Drive Modules" section, page 1-9, and Chapter 2 for additional information.

- **Power supplies**. Redundant power supplies are located in the power distribution tray, near the bottom of the cabinet. This tray is accessed from the rear of the cabinet. The power supplies draw power from a customer-provided power source, operate at 90 to 265 Vac at 47 to 63 Hz, single phase, and convert the input power to 26–29 Vdc for internal use. Refer to Chapter 2 for additional information.

- **Input/output (I/O) connections**. Telephone connections from the PBX, SMTs, X.25 links, and other connections plug directly into various connectors on the front of the logic cards. The Octel 250 server can use up to four asynchronous ports, which can be divided among SMTs and the integration. Refer to Chapter 2 for additional information.

Figure 1-1 shows the architecture of the server.

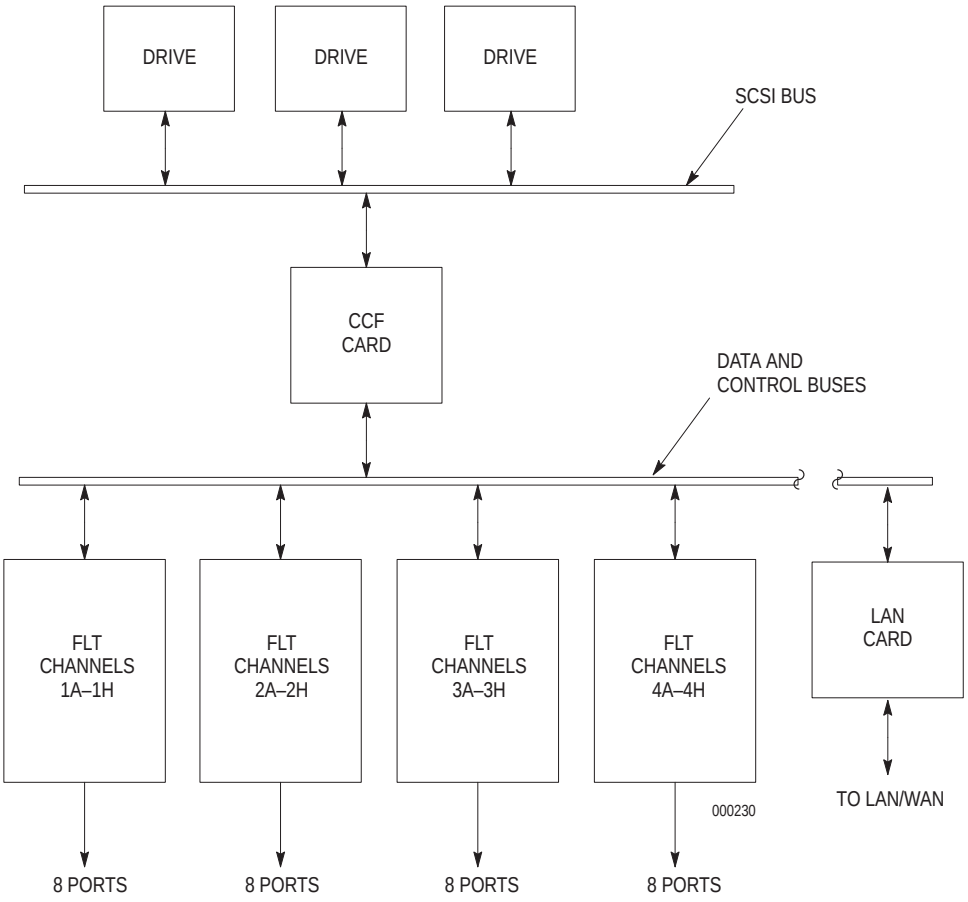


Figure 1-1. Octel 50 Architecture.

Cabinet Layout

Figure 1-2 shows the front view of an Octel 250 cabinet. Figure 1-3 shows the rear view of an Octel 250 cabinet.

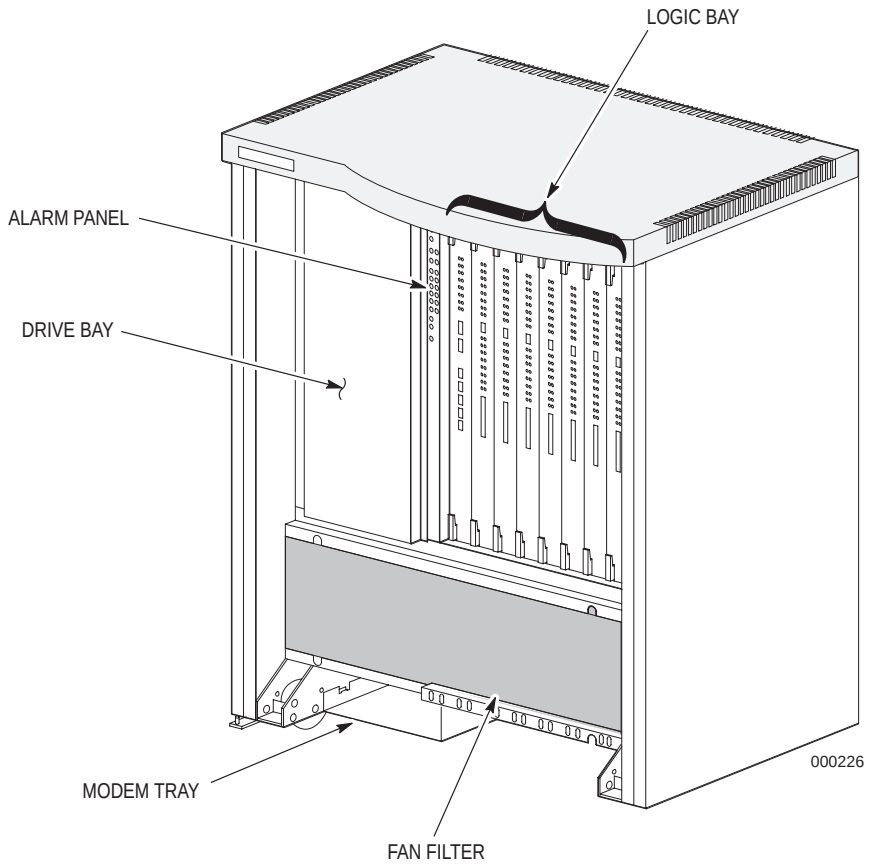


Figure 1-2. Front View of an Octel 250.

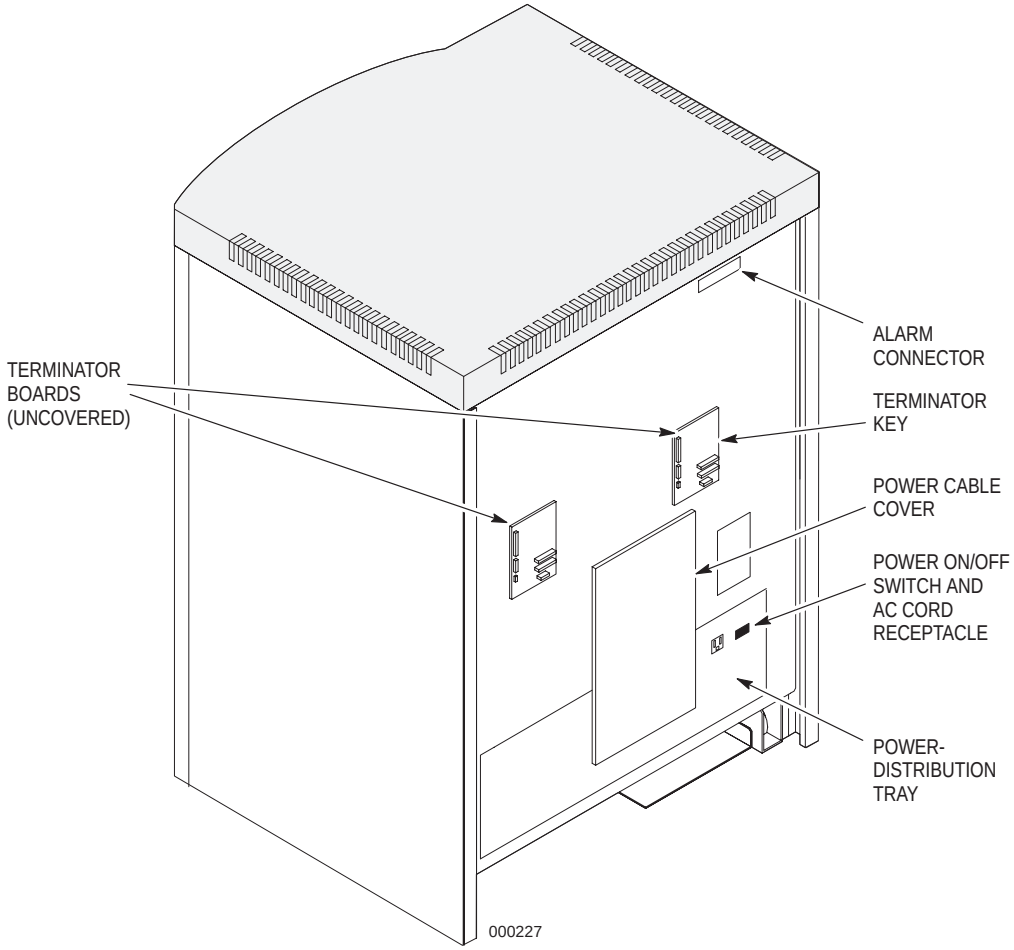


Figure 1-3. Rear View of an Octel 250.

The following sections provide an overview of the logic cards, drive modules, and power supplies.

Logic Cards

The logic cards are located in the logic bay, which can be accessed from the front of the server.

Figure 1-4 shows the location of logic cards in the logic bay.

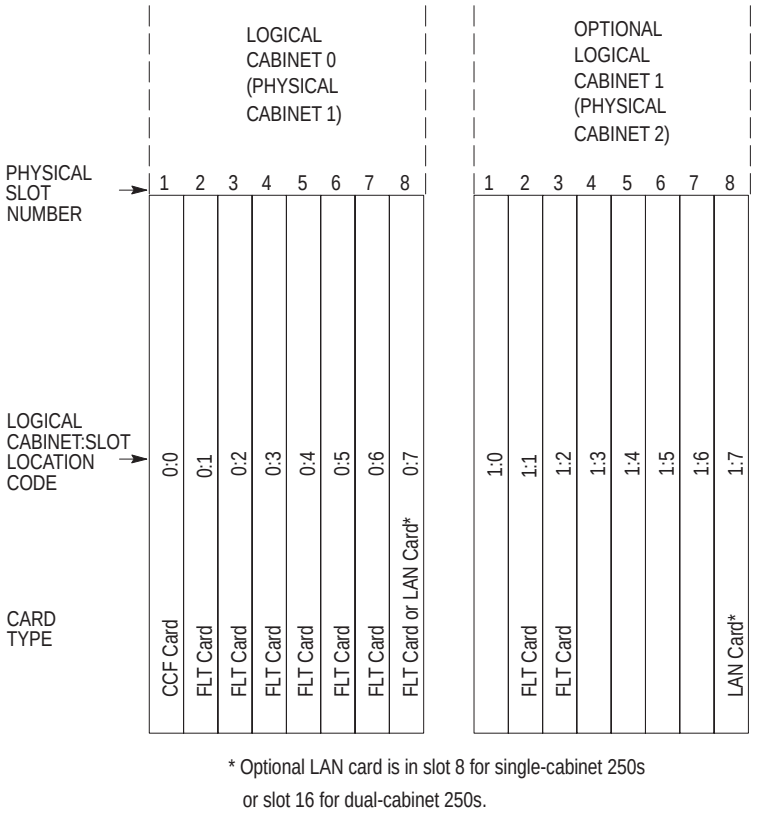


Figure 1-4. Octel 250 Logic-Bay Configuration.

The following types of logic cards are used:

- **CCF card**. The CPU part of the CCF card controls communication with the FLTs; handles high-level, per-call processing; responds to commands from the SMT; and directs almost all data flow. The file system provides access to system software, data structures such as user records, and phrases on system drives; and stores and retrieves messages, names, and greetings on message drives (and system drives for non-GMR servers).

- **FLT cards**. The FLT cards provide connections to PBX lines or trunks and contains telephone interface circuits to provide the interface between the CCF card and the PBX.

- **LAN card** (**optional**). The LAN card can be connected to a data network if the server is at Aria 2.0 or newer software; it allows digital networking of voice and fax messages to other, similarly configured Octel 250s or 350s; and it allows other uses of a LAN.

The main backplane, at the inside back of the logic bay, connects logic cards to the system data and control buses, and distributes power to all cards.

Drive Modules

SCSI disk drives and the optional tape drive are mounted on circuit boards; the assemblies are called drive modules. The drive modules are connected to the drive backplane.

- The server can have one or two system drives, numbered 0 and 1 for the drive-bay slots in which they are installed. They contain the following:
  - Executable system software
  - Associated data; also system and subscriber database
  - Phrases, which are fragments of statements, as short as a single word, that are recorded in professional sound studios, digitally refined, then downloaded onto system drives (Phrases are linked to form prompts that are played to callers and subscribers.)
  - Custom prompts recorded for TransAct and FaxCall applications
  - On a non-GMR server, digitized voice messages, recorded names, and greetings
- Message drives are numbered 2 through 5 for the drive-bay slots in which they are installed. They contain the following:
  - Digitized voice messages
  - Recorded names
  - Greetings
- The tape drive, if used, is installed in drive-bay slot 6.

Power Supplies

Power supplies are located in the power-distribution tray, near the bottom of the cabinet. This tray is accessed from the rear of the cabinet.

The power supplies draw power from a customer-provided power source, operate at 90 to 265 Vac at 47 to 63 Hz, single phase, and convert the input power to 26–29 Vdc for internal use.

The tray contains redundant power supplies. If one of the power supplies fails, the others provide the full power requirements for the server until the faulty power supply is replaced.

Software

The operating software is stored permanently on system drive 0 (and system drive 1, if installed) and is uploaded to the CCF card during the boot process. The hard-disk-based software includes the following major components:

- ❑ Operating system
- ❑ Application code
- ❑ System-management menus
- ❑ Phrase tables and phrases
- ❑ Initial program load (IPL)
- ❑ Site-specific database

The following features are part of the software:

- ❑ System drives have two areas (area A and area B) for storing different versions of software. The contents of areas A and B on a single drive need not be redundant; however, the contents of area A on drive 0 must be the same as the contents of area A on drive 1, and the contents of area B on drive 0 must be the same as the contents of area B on drive 1.
- ❑ Phrases are stored on disk in the same format as messages.
- ❑ Information on the drives is organized into database files, called datafiles. Utilities are available to access these datafiles.
- ❑ Message addresses are stored according to message IDs and scramble codes. Utilities for reading messages are available.

Call Flow

Figure 1-5 shows the normal call flow between the PBX and the server, when the called party is not available and the caller is forwarded to the Octel 250 server.

The call-flow sequence used with the PBX and the Octel 250 server is as follows:

1. When a call is forwarded to the Octel 250, the PBX sends a ring signal to a port on an FLT card.

2. The FLT card detects the ring signal, indicating an incoming call. If the server is integrated with the PBX, the PBX sends calling information to the FLT card.
   - ❑ In an in-band integration, call ID is transmitted through the same telephone line as the forwarded call.
   - ❑ In a Simplified Message Desk Interface (SMDI) integration, call ID is transmitted through an RS-232 data link to the CCF card.
3. The FLT card notifies the CCF card of the incoming call.
4. The CCF card notifies the FLT card to go off-hook and answer the incoming call.
5. If the server is interfaced with the PBX, the server prompts for the subscriber's mailbox number.

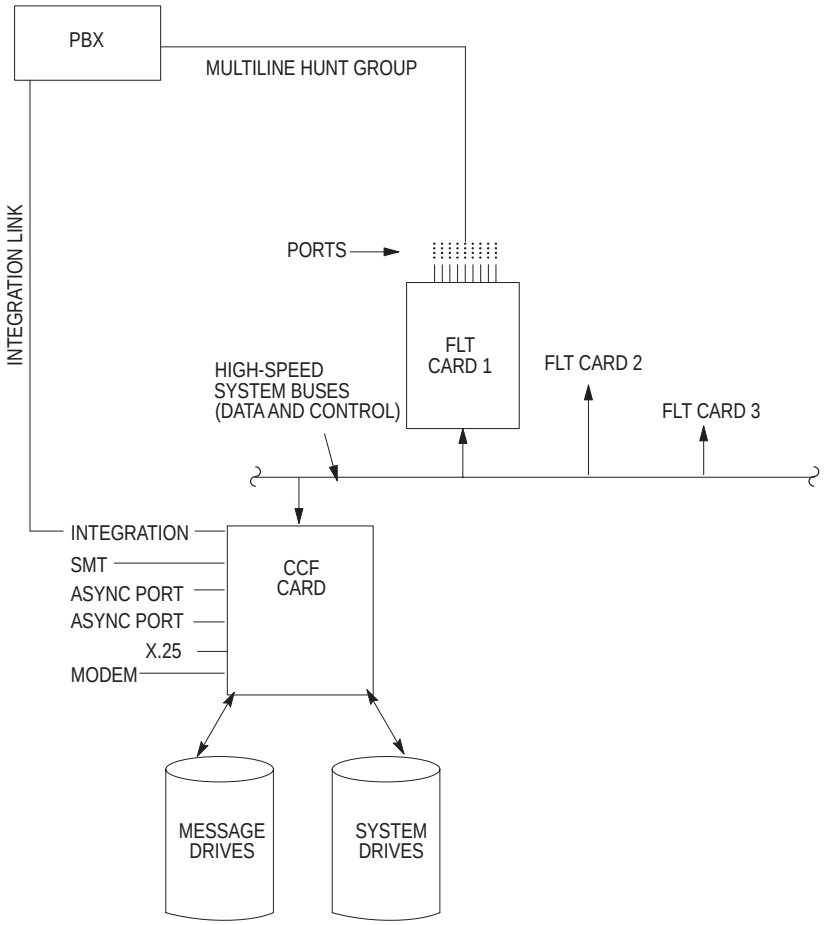


Figure 1-5. PBX-to-Octel Server Call Flow.

6. The CCF card finds the called party's greeting, retrieves the greeting, and passes it over the data bus to the FLT card as digitized voice prompts.

7. The FLT card converts the digitized voice prompts to analog signals and passes them to the caller.
8. The FLT card listens for dual-tone multifrequency (DTMF) tones, silence, or a dial tone and informs the CCF card of the call progress.
9. The caller records a message.
10. The FLT card compresses the caller's digitized voice samples, using digital signal processing (DSP) cells. The DSP cells assemble the digitized voice samples into data records and pass these records through the data bus to the file system on the CCF card.
11. The CCF card selects a message drive and address to store the message and writes the data onto the selected message drive.
12. The caller disconnects from the server by hanging up or pressing a disconnect key. The FLT card detects the caller disconnect or the disconnect command, forces the line to the idle state, and notifies the CCF card, using a control-bus message.
13. The CCF card updates the subscriber user record with the location of the message on the disk, caller identification, and time, priority, and length of the message.
14. The CCF card instructs the FLT card to go on-hook and disconnect the line. The FLT card disconnects the line and continues polling ports for a change of status.
15. The CCF card initiates a set-message-waiting request to the PBX.
    - ❏ In an in-band integration, the CCF card locates an idle message-waiting port, then instructs the associated FLT to go off-hook and execute the message-waiting request, using DTMF tones.
    - ❏ In an RS-232 integration that uses SMDI or certain PBX integration devices (PIDs), the CCF card can use one of its RS-232 links (ASYNC ports) to send a message-waiting request to the central office (CO) or PBX.
    - ❏ In a set-emulation integration, the CCF card locates an idle message-waiting port and sends a message-waiting request to the PBX.
16. After the subscriber has listened to new messages, the CCF card issues a command to the PBX to turn the message-waiting indicator off at the subscriber's telephone.

Integration Methods

When a server is integrated with a PBX or CO, the PBX or CO can send call ID information to the server, and the server can send message-waiting indication (MWI) requests to the PBX. Refer to the "Telephone Answering" section, page 1-2, for a description.

For all integrations, you or the system manager must enter information in system manager menus to enable the server to set MWIs. When a subscriber receives a new message, the server sends a request to the PBX or CO to turn on the MWI at the subscriber's telephone. When the subscriber listens to new messages, the server sends a request to the PBX or CO to turn off MWI at the subscriber's telephone.

Any exchange of integration information requires a physical medium. Octel 250s support the following integration methods:

- ❑ Simplified Message Desk Interface (SMDI)
- ❑ In-band
- ❑ Set emulation
- ❑ PBX integration device (PID)

The following sections briefly describe these integration methods.

Simplified Message Desk Interface (SMDI)

SMDI integration uses dedicated RS-232 links and the SMDI communications protocol to send the call ID from the CO to the server and message-waiting requests from the server to the CO. SMDI integration works only with COs, not PBXs. Although the call ID and message-waiting requests are sent over the RS-232 link, which is a path separate from the incoming voice call, the server associates the call ID with the correct incoming call and issues message-waiting requests for the appropriate telephone.

The Octel 250 has three RS-232 links, labeled ASYNC1, ASYNC2, and ASYNC3 on the CCF card.

When a call is forwarded or placed to the server, the CO uses the RS-232 link to transmit call ID to the server. Call ID is transmitted in ASCII form and typically includes the following:

- ❑ Called party
- ❑ Calling party
- ❑ Type of call (a direct call or a call that was forwarded because of a ring-no-answer, busy, or all-calls-forwarded condition)
- ❑ Message desk (hunt group) and line to which the caller was forwarded

The server's CPU uses data provided in the call ID to identify the called party's mailbox and to answer the port with the appropriate greeting or password prompt, depending on the type of call. The port is identified from information entered in the system manager menus.

The server uses the RS-232 link to send message-waiting requests to the CO.

In-band Integration

In an in-band integration, the PBX and server exchange call ID and message-waiting requests over the same voice channel (port) as the one to which the caller is forwarded. Call ID is transmitted in the form of DTMF tones and can include the following:

- ❑ Called party
- ❑ Calling party
- ❑ Type of call (a direct call or a call that was forwarded because of a ring-no-answer, busy, or all-calls-forwarded condition)

To send message-waiting requests, the server does the following:

1. Seizes an idle port that has been enabled for message waiting.
2. Sends the request to turn the message-waiting indicator on or off as a unique pattern of DTMF tones, followed by the subscriber's telephone number.
3. Returns the port to an on-hook state.

Set-Emulation Integration

For Mitel and Lucent Technologies (formerly AT&T) integrations, the FLT-M and FLT-A cards provide integration by emulating the telephone set, which eliminates the need for a separate integration device or the use of a separate RS-232 link.

Call ID is transmitted through the digital port and includes the following:

- ❑ Called party
- ❑ Calling party
- ❑ Type of call (a direct call or a call that was forwarded because of a ring-no-answer, busy, or all-calls-forwarded condition)

The server uses data provided in the call ID to identify the called party's mailbox and to answer the port with the appropriate greeting, depending on the type of call.

The server sends message-waiting requests to the PBX through a digital port of the FLT-M or FLT-A card.

PID Integration

A variety of PBX integration devices (PIDs) use Octel-proprietary designs to establish integration with PBXs made by various manufacturers. Voice channels connect to analog FLT8 cards in the server; the PID connects to the PBX and uses a dedicated RS-232 link to connect to the server.

Call ID typically includes the following:

- Called party
- Calling party
- Type of call (a direct call or a call that was forwarded because of a ring-no-answer, busy, or all-calls-forwarded condition)
- Line to which the caller was forwarded

The PID sends the call ID over the RS-232 link, which is a path separate from the incoming voice call.

In most cases, the server sends message-waiting requests to the PBX through the PID; in some cases, the server uses DTMF tones to send message-waiting requests through the voice ports.

The server associates the call ID with the correct incoming call and issues message-waiting requests for the appropriate telephone.

The Octel 250 has three RS-232 links, labeled ASYNC1, ASYNC2, and ASYNC3 on the CCF card.

Types of Software

The server uses a multiple-processor, distributed-processing architecture. This means that all major subsystems and most logic cards have their own microprocessors. Server software is distinguished by the manner in which it is stored and executed, as follows:

- Software is stored on disk drives and is executed by being loaded into dynamic RAM (DRAM) every time the system is booted.
- Data and code are stored in static RAM (SRAM), are configurable, and are needed for system-failure recovery. The SRAM is equipped with a battery backup to preserve the values stored in it during system shutdowns and reboots.
- Firmware (hardware-based software) is stored on an EPROM, which is plugged into the appropriate logic card.

Octel Command Language™ (OCL) allows database information to be exchanged between an external application processor (EAP) and a server. Using OCL, external computers can read and write data in the server's database.

Central-Processing (CP) Subsystem

The CP determines the source and destination of all data transfers and the time at which the transfers occur. Other duties of the CP include public functions, such as caller servicing, administrator servicing, and external application processor (EAP) servicing. The CP also has a few private, overhead housekeeping functions that it executes periodically or as needed.

The CP hardware consists of a single component, the CCF card (combination CPU/file card). The CPU runs the initial program load (IPL), which loads the operating system. The operating system loads the rest of the software and initiates the system operation.

The IPL sequence is designed to bring the system on line as quickly as possible, at the same time guaranteeing system integrity when booted. Only diagnostics and the first-stage boot load are stored in EPROMs on the CCF card. All other IPL code is located on the system drives. Therefore, the CCF card must be booted and running, before any other card in the system.

The software consists of *kernel*, *system services*, and *applications layers*. When loaded into the CCF card memory, the operating system consists of the kernel and the I/O section. The kernel is the interface between outer layers of software and the hardware. The kernel handles interrupts, memory, I/O, timers, and errors.

The system-services layer contains services that the kernel makes available to application programs.

The applications layer contains processes that provide the user interface. Applications include the system manager task, line tasks, and other supporting administrative tasks.

Key System-Management Applications

Application code, most of which resides on the CCF card, is located on top of system-services libraries.

Several simple application tasks are provided in this section. Refer to the “Application Programs” section, page 1-18, for information about the more complex application programs (notification, networking, integration, and server applications).

System-Manager-Task Application

The system-manager-task application contains only the system manager task. It executes the commands for the file system to build critical system tables.

The system manager task is loaded first. it causes the file system to build critical system tables, such as the address mapping table (AMT).

The system manager task includes the SMT menu interface and the code that the CPU executes in response to menu selections made by system managers.

Garbage collection is started from the SMT. This is done in two passes:

1. On the first pass, it identifies mailboxes with damaged messages, names, or greetings.
2. During the second pass, it purges damaged messages, updates the free-space table, and lists affected mailboxes.

Purge-Task Application

The purge-task application contains both the purge task and the minute task.

- **Purge task**. The server runs a purge task every two hours, on the even hours (2 a.m., 4 a.m., and so on). A more comprehensive purge task runs at midnight.

  The purge task checks the use count of all messages stored on message drives to determine whether messages can be purged and the space formerly occupied by the messages can be used for new messages.

  Each time a message is sent to subscribers, the use count is increased by one. For example, if a subscriber sends one message to five other subscribers, the message is stored once, but the use count is set to five. As each recipient erases the message, the use count is decreased by one. When the use count reaches zero, the purge task updates the free-space table to include the previously occupied disk space.

  The purge task also performs validity checks on all user records. Each user record contains checkpoints. Each checkpoint has a defined range of values. The purge task verifies that each of the values is within the correct range. You can also run validity checks manually, using reformat menu option ***0***, ***Validity check user records*** (refer to Appendix A).

- **Minute task**. This task works with the purge task. It normally runs every minute, marking various disk regions whose retention time has expired or which are no longer in use. The main functions of the minute task include the following:
  - Scans the status of each telephone line
  - Checks and sets various software and hardware alarms
  - Scans for network messages to other nodes and marks them as ready for transmission
  - Checks the global-time-stamp table that contains all outcall and paging time stamps for all user records and, if there is a time stamp for the current or previous time, places the internal user number (IUN) of the user record in the outcall queue
  - Scans the message-waiting time-stamp table for any future-delivery messages
  - Instructs the purge task to write the system status table (SST)
  - Updates the networking tables at midnight and verifies that the purge task has executed its midnight run

Line-Task Application

The line-task application contains all of the line tasks, one for each voice port. This application performs several functions:

- It handles all incoming telephone calls, which involves several components, including the telephone user interface, called the TREE interpreter, and the actions, called TREE actions, taken by the interpreter in response to caller input. TREE is the Octel-proprietary coding language for the telephone user interface. Each line task is associated with one telephone line, remaining assigned to that line throughout system restarts.
- It contains code that enables networking, so that the server can exchange voice messages with other voice-processing systems.
- It includes code that allows TransAct™ programmers to develop voice-processing applications, including custom phrases. Such phrases are called *application phrases* to distinguish them from Octel-produced system phrases.

A complete list of tasks is provided in Chapter 8.

Application Programs

Application code, most of which resides on the CPU, is located on top of various system-services libraries and provides the server's functionality as experienced by the user. The following sections provide information about

- Notification
- Networking
- Integration
- Server application

Notification

Notification supports the various notification services that the server provides, including message waiting, outcalling, and paging.

In its simplest form, notification informs someone or something that an event has occurred. The most common use of notification is to let a subscriber know that a new, unheard message has arrived.

Notification consists of events and services:

- *Events* are things that happen.
- *Services* are procedures to be performed.

For example, a new message is an event, and message waiting (the act of turning the indicator on or off) is a service. Services are not limited to message waiting, however, and are not performed just for subscribers. Outcalling to a network node to deliver messages is also a service.

Some tasks monitor a single service queue; other tasks might monitor several service queues. For example, one line task might monitor message-waiting, outcall, pager, and networking service queues; another line task might monitor a single networking service queue.

Networking

The server can exchange voice messages with other voice-processing systems through three types of networking:

- **Octel Analog Networking**. With Octel **A**nalog **N**etworking, the server can exchange messages with other Octel servers. Messages are sent according to schedules configured by the system manager.

- **AMIS analog networking**. With AMIS analog networking, the server can exchange messages with any other voice-messaging system that complies with the AMIS telecommunications standard.

- **Administered AMIS analog networking**. Administered AMIS networking enhances standard AMIS networking by requiring that subscribers use only the nodes and mailbox numbers of the recipients to send messages. Messages are sent according to schedules configured by the system manager.

- **Octel Digital Networking**. With Octel **D**igital **N**etworking, the server can exchange messages through digital networks with any other Octel 250 or 350 at Aria 2.0 or newer software and with digital networking enabled.

Analog networking depends on outcalling, which simply means that the server can initiate telephone calls. Digital networking depends on digital connectivity among communicating nodes.

Networking functions are controlled by the CPU. A module in the system-services process performs all network-message-related functions. During system startup, the module builds a table to cross-reference network-node numbers to user-record numbers. A node's user records and its extended records contain the network-node profile and serve as a message queue to store the network messages and their destination addresses, until they are delivered to the network node. This process is called batch networking, which provides the following benefits:

- Separate queues for message priorities: priority/urgent, priority/normal, standard/urgent, and standard/normal.

- Multiple-line transmission.

- Network-message identification numbers. The sender's IUN, message ID, scramble code, length, and time stamp are used together as a unique network-message identification number to distinguish one message from other networked messages.

Integrations

When a server is integrated with a PBX, the PBX and the server can exchange call ID and message-waiting information. Refer to the “Telephone Answering” section, page 1-2, for a description.

Refer to the “Integration Methods” section, page 1-12, for additional information about integrations.

Server Applications

Server applications service external applications such as FaxCall, TransAct, and Centralized System Administration™ (CSA). They differ from other CPU applications in a number of ways:

- ❑ They exist for the single purpose of servicing external applications running on an EAP.
- ❑ They are used only if the server is connected to an EAP and its applications.
- ❑ They do not stand alone. A server application cannot supply, by itself, the service required by an external application.
- ❑ They are optional. Not all servers use them, and those that do must be configured to do so by a system administrator.

Servers and EAPs use X.25 communications protocols to communicate over an X.25 link.

File-Storage Subsystem

The file-storage subsystem is the part of the software loaded in the CCF card for both system-file and message-file subsystems. The CCF card manages and provides system access to voice and data records on the drive modules.

The file-storage subsystem functions as the disk controller. It directs all disk operations, including head positioning, reading, writing, and error detection and correction. It also handles a number of functions outside the scope of a conventional disk controller. A normal disk controller deals with bits, buses, and buffers; any higher-level data structures are invisible and irrelevant to it. The file-storage subsystem handles system tables, disk record types, and fields within records.

The file subsystem is programmed to recognize system data tables and record types, including their names, sizes, and structures, to manage disk space on the system drives. For example, if the CP must create a new user record, it issues the command to the system-file subsystem, which finds the space, allocates it, assigns the user record, and so on.

The file-card subsystem receives requests from the CP. The subsystem handles requests by reading or writing the necessary information from or to disk drives and transferring the information, as required, to or from the CCF or FLT cards. The actual destination is determined by the CCF card, which is the master of the Octel packet-interface (OPI) bus.

System-File Subsystem

The system-file subsystem stores frequently used phrases in its in-RAM phrase table and sends the correct phrases, in the correct sequence, when the CP commands it to play a given prompt.

The system-file subsystem plays a key role in the boot process, including ensuring the format of the disk-resident boot data. It also handles garbage collection.

Message-File Subsystem

The message-file subsystem manages disk-space allocation for voice messages. On a GMR server, messages are stored redundantly.

Software Layers

File-card software is layered to isolate certain parts of the design. These software layers are as follows:

- **Application layer**. This layer is the uppermost layer. File-system application tasks function within this layer.
- **Message layer**. This layer hides the internal message format. Layers above it know about messages and positions within messages, while layers below know only about disk records. The message layer is the only layer that knows about the internal message ID, header and index blocks, and the structure of the voice segment.
- **Disk-control-module (DCM) layer**. This layer is the interface between the application layer and the disk-driver layer. It is responsible for
  - Managing allocation of disk-drive space to files
  - Translating requests for data transfers to and from files into physical requests to the drives
  - Handling system-file redundancy on several drives
  - Mapping bad sectors to alternative sectors
  - Saving information in SRAM to enable record recovery, in case of a power or system failure
- **Disk-driver layer**. This layer is responsible for all disk I/O operations. It receives requests from the task, stores them in shared buffers, and handles them in sequence.

  To optimize performance, each drive has two request buffers. When the driver has completed almost all of the requests in one buffer, it issues a request to the task for more requests for that drive. The task stores new requests in the drive's second request buffer. Therefore, the driver always has requests to execute as soon as it can do so. Drive throughput is kept at a maximum.

Telephone-Interface Subsystem

FLT cards consist of two subsystems, the telephone-interface card (TIC) and the digital line card (DLC).

FLT cards provide the telephone interface with the PBX. In some configurations, FLTs handle call ID and message-waiting operations. The TIC and DLC functions on the FLT cards are described in the following sections.

TIC Subsystem of FLT Card

TICs are the server's telephone connection to the PBX. Because there are many vendors and many models of PBXs, different types of TICs must be used. Many PBXs, however, are sufficiently similar so that a single TIC type can handle several models.

All TICs perform the following basic functions:

- ❑ Raise a flag when they detect a new incoming call on any of their telephone lines. Each TIC has one flag per line. When the TIC raises a flag, it also indicates which line is receiving the call.
- ❑ Electrically isolate the server and the PBX from one another

The number of concurrent calls that a server can handle is the number of TICs (that is, the number of FLT cards) it contains, times the number of ports (channels) per TIC, which is eight for all Octel 250 FLT cards.

The FLT8 card uses analog TICs. Analog TICs amplify analog input signals, as needed, to compensate for transmission loss and to ensure a standard recording level for all messages. Digital FLT cards such as the FLT-M card for Mitel integrations and the FLT-A card for Lucent Technologies (formerly AT&T) integrations use digital TICs.

DLC Subsystem of FLT Card

On the Octel 250, all DLCs are fax-capable. DLCs communicate with the CCF card through the Octel packet-interface (OPI) bus and with TICs through the PCM highway. Each DLC supports eight voice channels. A DLC performs several functions, on a line-by-line basis:

- ❑ The DLC compresses and decompresses speech.
- ❑ When receiving data from callers and subscribers, the DLC controls the signal level, detects and compresses silence, and detects standard tones (ring, error, reorder, and so on).
- ❑ When sending data to the caller or subscriber, the DLC generates and detects DTMF tones. It also processes playback-control commands that are entered by the caller or subscriber, to adjust playback speed or volume. In some countries, playback speed or volume cannot be changed by the subscribers, but are maintained at fixed levels by the DLC.

By performing these tasks, the DLC protects the CCF card; no voice data ever finds its way to the CCF card. Voice and fax data are transmitted between the CCF card and the DLCs by direct memory access (DMA) transfers through the OPI bus, under the direction of the CCF card.

The Intel 80C186, the main processor on the DLC, controls the following hardware elements on the DLC:

- The OPI chip is connected to the control and data buses and communicates with its counterpart on the CCF card.
- The pulse-code-modulation (PCM) highway chip is connected to the PCM highway and communicates with its counterpart on the TIC.

The RAM of the 80C186 stores the program code and data for the 80C186. A portion of the RAM is also dual-ported and used as shared memory between the 80C186 and digital-signal-processing (DSP) cells for code download and communications purposes.

The DLCs consist of eight C31 DSP cells that process one channel each. During system boot, the code is loaded from the system drives to the DLC, and it is activated, as follows:

1. The 80C186 code contains only the DSP bootload code; it does not contain the DSP runtime code. The C31 DSP code is a separate image on the system drives. Therefore, the 80C186 initialization code loads only the bootload into the dual-port RAM.
2. The CCF card instructs the DLC to download DSP code for each cell from system drives. This is called the secondary, or second-level, download.

DSP code is loaded from system drives to the DLC, using DMA transfers between the CCF card and the DLC. The CCF card instructs the DLC to set up the DMA transfer.

Octel-Packet-Interface Bus Subsystem

The bus subsystem consists of physical paths and logic that link all logic cards in the server to each other. In the Octel 250, the bus subsystem is the Octel packet interface (OPI).

The OPI is Octel's proprietary local-area network that consists of a data bus and a control bus. These buses provide communication among all logic cards. The OPI chip connects the logic cards to the buses.

The control and data buses control communication among the logic cards, as follows:

- **Control bus**. Handshaking between the CCF card (the master) and the other cards (slaves) is accomplished through the *control bus*. The CCF card communicates with one card at a time. It can send simple commands, such as resetting a card, setting up a data transfer between itself and another card, or transferring data among cards. It can also send broadcast control-bus messages to all cards.

Control-bus packets can be 240 bytes long. The OPI chip generates and appends a 2-byte checksum to the end of each message, which is transparent to the software on the cards.

- **Data bus**. The *data bus* also known as the DMA channel, provides the bandwidth for high-volume data transfer of digitized speech, code, and other data among all cards. DMA transfers can be broadcast (one card transmitting to several cards).

  Actual data transfers take place on the data bus. The CCF card selects the cards to transfer the data, then the data is transferred in variable-sized bit packets.

The CCF card is the master of both the control and data buses. It allows particular cards to transmit on the bus, it frames control and data packets by way of *go* signals, it fields interrupts from all other cards, and it resets individual cards. All other cards are slaves (peripherals) and must receive explicit permission from the CCF card to transmit on either bus.

Control-bus handshaking consists of commands from the master and responses from the slaves, as follows:

1. The control-bus enable signals select the card(s) that receive the commands. The commands specify the type and length of the data.
2. The data bus sends the information. The data-bus enable signal is generated by the master. The master selects the cards between which data will be transferred. The data, which usually comprises digitized and compressed voice records, is transmitted at 16 Mbps.

All control-bus operations occur between two parties, one of which is always the CCF card; control-bus messages between slaves are not allowed.

For some requests, the operations are completed instantly and responses are sent to the CPU immediately after the commands are executed. In situations in which it takes longer for a command to be executed or an event to take place or if the event does not happen at all, there is a timeout value in the message that tells the card the latest time to respond, regardless of the result. The CPU starts its own timer and waits for the response. The timeout value on the CPU must be long enough (that is, longer than the card's timer) to avoid a premature timeout error.

Key Data Structures

Each subsystem in a server might have many data structures, which are required to support its various functions. Refer to the "User Records" section, page 1-25, through the "Record 50" section, page 1-28, for descriptions of the following data structures:

- User records
- Message-delivery system
- Message database

- Memory-resident tables
- Status log
- System-status table
- Record 50

User Records

Voice-messaging mailboxes make up the majority of user records on a server. This type of user record contains all information about a mailbox, including information about recorded names, greetings, and messages.

Each flag and field in a user record might have a different meaning for each mailbox type. For example, the flag and field for a standard voice-messaging mailbox might differ from the flags and fields for a bulletin mailbox, a listen-only ICMB, or a general fax-message mailbox.

User records include the following types of fields:

- **Special recordings fields**. These fields consist of the following:
  - Greetings
  - Subscriber name
  - Security access
  - Recorded names of group lists
  - Messages
- **Password fields**. These fields store the digit strings for passwords.
- **Attendant fields**. These fields store data related to the attendant designated to be the *operator* for a mailbox.
- **Cross-reference IUN fields**. These fields contain references to other mailboxes. The system-manager task reads the user record indicated by this IUN and retrieves the mailbox number from the associated user record. The purge task also checks this field and deletes the IUN from this field, if the user record is no longer active.
- **Message notification fields**. These fields relate to message waiting and outcalling. They can be classified into two categories:
  - Fields and switches related to the notification state
  - Fields that store data about message-notification parameters, such as the telephone number to be called for an outcall and the interval of the outcall

- **Statistics fields**. These fields contain statistical data about mailbox use. They are divided into two categories:
  - Regular statistics fields that roll over automatically
  - Fields used to hold data on ECP usage temporarily
- **Internal reference/box fields**. These fields store internal reference numbers (IRNs), extension numbers, or mailbox numbers.
- **Other restricted-use fields**. User records contain other fields, such as mailbox-creation time and department name.
- **General-purpose fields**. These fields are used only by TREES or the system-manager task.

Message-Delivery System (MDS)

The MDS is a file system that uses the resources of the existing user records available on system drives and the address management table (AMT). One objective of the MDS is to shield applications from data structures (user records) and procedures (disk I/O and AMT access) that are used to store application data.

MDS records are used by applications such as Octel Net**working**, attendants, and communities.

- MDS records store network-node profiles for Octel Net**working**. In addition, network messages **for a** node are queued in the destination node's MDS records until the delivery time **specified in** the node profile.
- MDS records store attendant-availability schedules and target extensions created in the system manager menus.
- MDS records store community profiles created in the system manager menus.

Message Database

The message database contains recorded messages. When a message is stored on a message drive, the following sequence occurs:

1. The message file card generates a message ID and scramble code to identify the message uniquely.
2. The message ID and scramble code are stored in the subscriber's user record with the message itself.
3. To retrieve the message, the message file card uses the message ID and scramble code to locate the first record of the message. This record contains the following:
   - Message header, including the message ID and scramble code
   - Pointers to additional message segments, if any
   - Up to 12 KB of speech
4. The message file card uses the message-segment pointers in the first record to locate the remaining message segments.

5. The message segments are passed from the message file card to the DLC. Each message segment is 4 KB long and consists of the following:
   - ❑ A file-card header known only to the message file card
   - ❑ A common header known by the message file card and the DLC
   - ❑ A line-card header known only by the DLC
   - ❑ Digitized voice

   For efficiency, four message segments are passed simultaneously between the message file card and the DLCs. Message segments are also grouped when written to disk.

The segments of a single message are not normally stored on multiple drives. Only messages stored in a conference mailbox are distributed over the message drives.

In servers that have the Global Message Redundancy (GMR) feature, message drives are associated with each other in pairs, and all messages on one drive are duplicated on the other drive in the pair.

Memory-Resident Tables

Memory-resident tables include the following:

- ❑ Address mapping table
- ❑ Name mapping table
- ❑ Notification tables

These tables are described in the following sections.

Address Mapping Table (AMT)

The AMT, maintained by the CPU, cross-references internal user numbers (IUNs) to mailbox numbers. It contains the following information:

- ❑ Mailbox number
- ❑ Number of digits in the mailbox number
- ❑ Record type (mailbox, MDS record, alias address, and so on)
- ❑ IUN of the user record

The AMT is built by the CPU at boot time. The AMT is used to do the following:

- ❑ Matches called-party ID (typically in the form of a telephone number) to a subscriber's mailbox number
- ❑ Identifies the destination network node when a subscriber enters a network address as the recipient of a message
- ❑ Identifies the MDS records associated with community profiles

Name Mapping Table (NMT)

The NMT stores mailbox names used by the dial-by-name feature. It contains the following information:

- ❑ User-record type (always a mailbox)
- ❑ IUN of the mailbox
- ❑ The DTMF key string required to spell the mailbox name

Notification Tables

Notification tables maintained in CPU memory contain the following information:

- ❑ Flags used for internal event and data administration
- ❑ Message-waiting information
- ❑ Message-waiting port table (only for in-band integration)
- ❑ Time-stamp table used for future-delivery messages
- ❑ Message-waiting extension numbers
- ❑ SMDI-link information (only for SMDI integrations)
- ❑ Outcalling time-stamp table

Status Log

The status log is a ring buffer that contains a log of significant error and nonerror events. It maintains a running record of significant events as they occur within the server, such as a system boot, errors when reading or writing to a data file, and task timeouts.

For a description of the status log, refer to Chapter 8 and the *Status Log Interpretation Guide*.

System-Status Table (SST)

The SST contains database information that is entered in the system manager menus 0 through 6. Examples of SST data include user records of the system manager mailboxes, system serial number, maximum number of mailboxes, outcall parameters, and the most current copy of the status log.

Record 50

The record 50 file contains the status log, control-bus trace buffer, and other troubleshooting information. It is updated only after a system-software failure.

The SST contains the original copy of the status log, and record 50 has a copy of the status log, which is updated only during a system failure. It is useful only for diagnosing the failure.

2 COMPONENT DESCRIPTIONS

The major components of the server are the logic cards, the disk-drive modules, the alarm panel, and the power system. Figure 2-1 shows the front view and Figure 2-2 shows the rear view of the server.

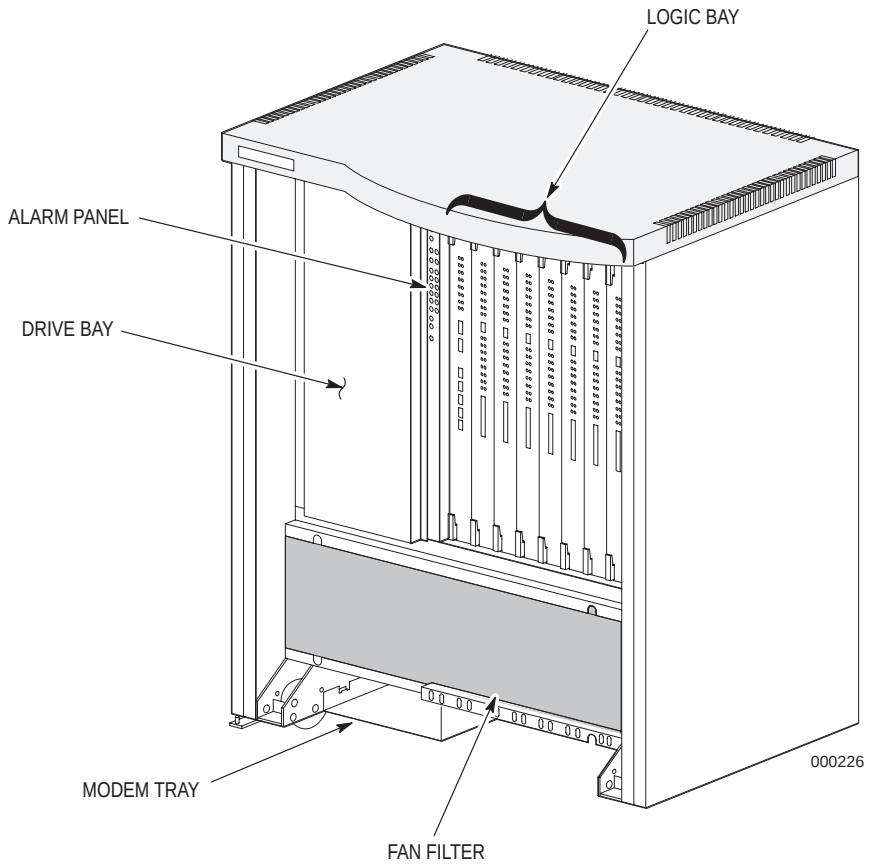


Figure 2-1. Front View of an Octel 250.

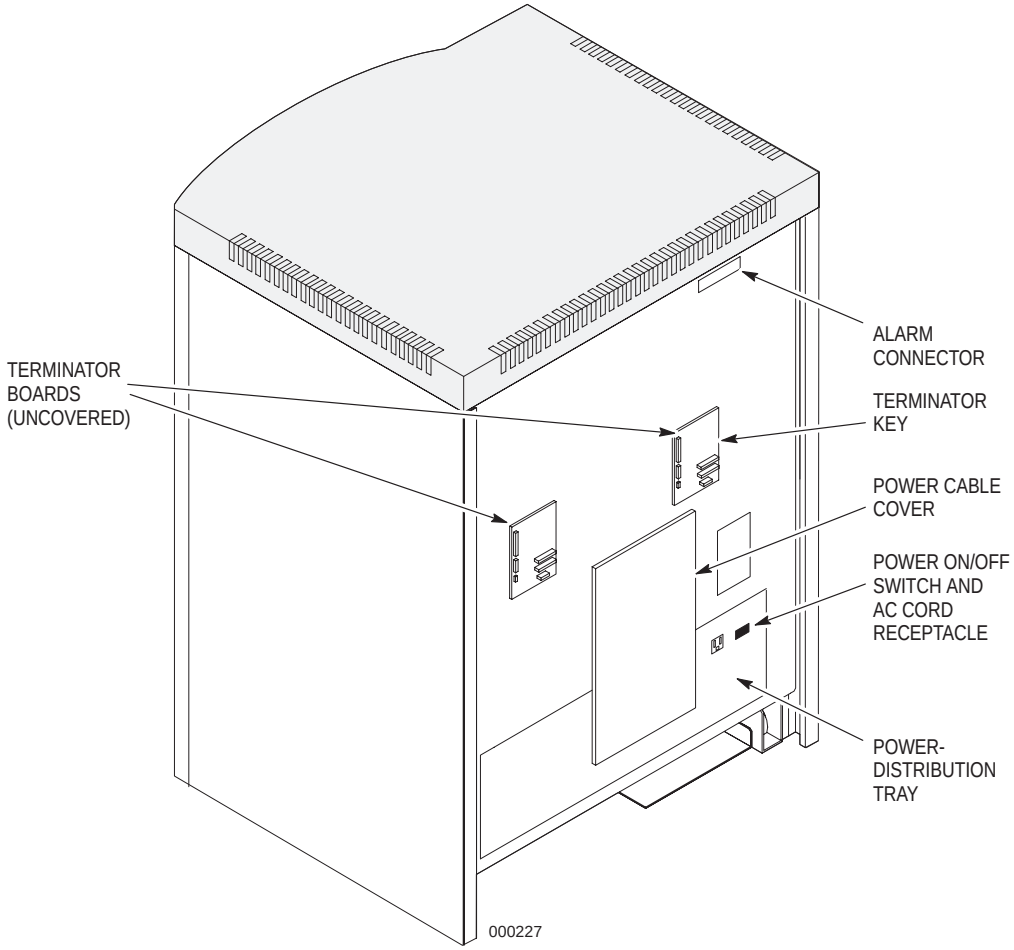


Figure 2-2. Rear View of an Octel 250.

The following sections describe the major components of the server. For functional descriptions, refer to Chapter 1.

Logic Cards

There are up to eight logic cards in a single-cabinet Octel 250 server. Logic cards include the CCF (combination CPU/file) card and up to seven fax-capable, 8-port FLT (line/telephone interface) cards. One or two additional FLT cards can be installed in a second, attached cabinet to increase port capacity to a maximum of 72 ports. An optional local-area-network (LAN) card can be installed in slot 8 of single-cabinet servers or slot 16 of dual-cabinet servers, which allows digital networking of messages and other functionality.

The logic cards are installed in the logic bay and are accessible from the front. The slots are shown in Figure 2-3.

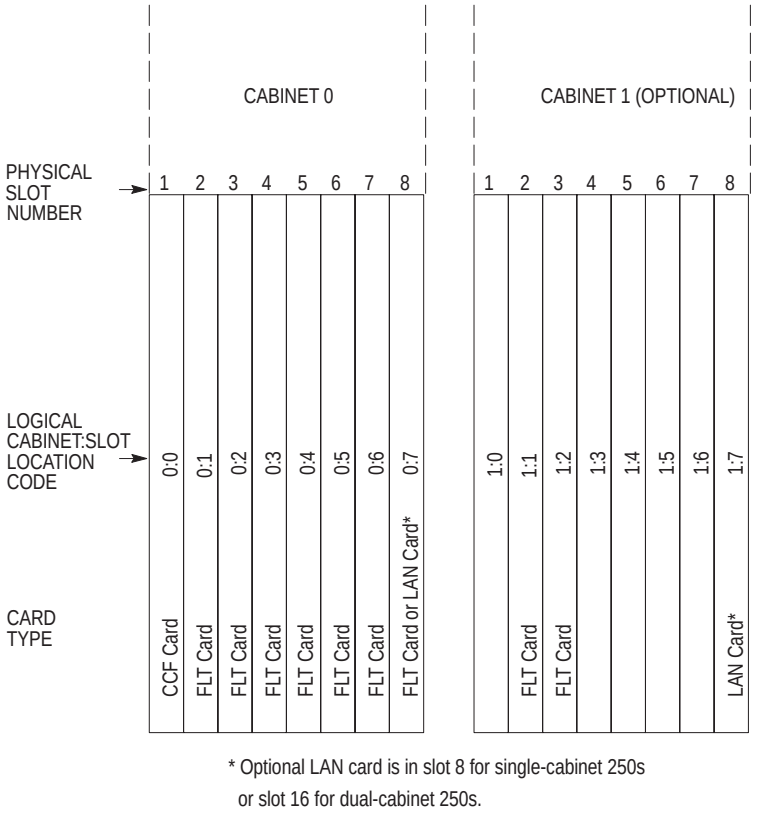


Figure 2-3. Octel 250 Logic-Bay Configuration.

The following sections describe each type of logic card.

CCF Card

The CCF card is a combination CPU and file card that controls system operation. It contains the following components:

- ❑ Central processor unit (CPU)
- ❑ File-system processor
- ❑ Alarm LEDs
- ❑ Cable connections

Central Processor Unit (CPU)

The CPU uses an 80486DX microprocessor that controls communication among all cards and executes software-application commands. The CPU contains 20 MB of random-access memory (RAM) and the time-of-day clock.

The CPU determines the source and destination of data transfers and the time they occur. The CPU uses the two system serial buses, the control bus and the data bus, to control communication among the logic cards. Handshaking between the CPU and the other cards is through the control bus.

The CPU communicates with one card at a time. The CPU can send simple commands, such as resetting a card, setting up data transfer between itself and another card, or transferring data among cards. The CPU can also broadcast control-bus messages to all cards. For example, the CPU can instruct all cards to identify themselves.

Data and digitized speech are transferred through the data bus. The CPU selects the cards for the data transfer. Data is transferred in variable-sized bit packets (up to 64 KB) through the data bus, at a rate of 16 Mbps.



Warning!

The lithium battery, Dallas Semiconductor model DS 1287, in location U19 on the CCF card, is not user-replaceable. Damage or injury could occur if the lithium battery is incorrectly replaced. For service, return the card to Octel Communications Corporation.

The CPU battery provides backup power to maintain the date and time and the static-RAM information on the CPU if input power is interrupted. If power is off for more than 4 hours, the software requires that the time and date be reset manually before the boot process is complete, even though the battery could provide power for many years. This software checkpoint ensures that the clock time does not drift.

File-System Processor

The server file system uses the same 80486DX microprocessor as the CPU and provides system access to voice and data records stored on the drives. The file system communicates with the system drive and message drive modules through the main backplane and disk backplanes.

The file-system processor determines where data is stored and controls the system software, data tables, and phrases, although the CCF card also contains a speech-cache memory that stores frequently accessed prompts that are 3 seconds long or shorter. This memory reduces the time the CCF card spends retrieving prompts from disk drives.

The CCF card also determines where messages are stored and performs the read and write operations to and from the disk drives.

CCF-Card LEDs

The CCF card reports alarms in the Octel 250 status log and in menu 13.8 (Review Current Alarm Status), lights the appropriate LEDs on the front edge of the card, and controls alarm relays that have contact outputs at the rear of the cabinet. Refer to Chapter 9 for a description of the alarms produced by the CCF card.

Figure 2-4 shows the status and alarm LEDs on the front edge of the CCF card. Table 2-1 describes the LED functions.

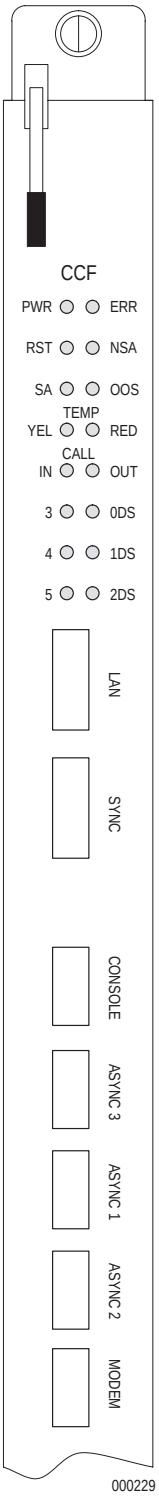


Figure 2-4. Front Edge of a CCF Card.

Table 2-1. LEDs on the CCF Card.

LED Label	LED Color	Function
PWR	Green	Card receiving power
ERR	Red	Fault (card out of service)
RST	Yellow	Normally flickering faintly (brighter during reboot)
NSA	Yellow	Non-service-affecting alarm
SA	Red	Service-affecting alarm
OOS	Red	Out-of-service alarm
TEMP		
YEL	Yellow	In-cabinet temperature above 45°C (113°F)
RED	Red	In-cabinet temperature above 60°C (140°F)
CALL		
IN	Yellow	Modem port status; incoming call to modem port
OUT	Green	Modem port status; call is connected (off-hook)
DS0–DS5	Yellow	Internal diagnostics (used during boot process)

CCF-Card Cable Connections

The CCF card provides the data and control-bus connections. Cables for the X.25, modem, and system manager terminals (SMTs) are connected to the CCF card, as follows:

- ❑ **LAN**. This connector is not used.
- ❑ **SYNC**. X.25 data links from the data module connect to the SYNC port on the CCF card, using a DB15-to-DB25 cable, P/N 057–1331–001.
- ❑ **CONSOLE**. The SMT normally connects to the CONSOLE connector on the CCF card, using an SMT cable, P/N 057–1335–000.
- ❑ **ASYNC1–ASYNC3**. Integration lines and secondary SMTs can connect to the three RS-232 connections ASYNC1, ASYNC2, and ASYNC3 on the CCF card.
- ❑ **MODEM**. An externally mounted, Hayes-compatible modem connects to the MODEM port on the CCF card.

Refer to Chapter 3 for instructions about preparing cables for connection. Refer to Chapter 4 for instructions about attaching cables to the CCF card.

FLT Cards

The Octel 250 supports up to seven fax-capable, 8-port FLT (line-telephone interface) cards in a single cabinet and two more in an expansion cabinet for a maximum of 72 ports. The FLT card provides the connections for the PBX lines or trunks and has the following components:

- ❑ Telephone-interface circuits
- ❑ Line circuits
- ❑ LEDs
- ❑ Cable connections

You can replace existing FLT cards while the Octel 250 is on line. Menu 13.11, Review Card Management, shows the status of installed FLT cards. Refer to Chapter 11 for information about replacing hot-plug FLT cards.

Each FLT card provides 8 channels to the PBX and provides the interface between the CCF card and the PBX. The FLT cards communicate with the CCF card through data and control buses on the backplane.

Telephone-Interface Circuits

The FLT cards provide an interface, approved by domestic and international regulatory authorities, when used in conjunction with public networks in many countries.



Caution!

For continued protection against risk of fire, do not replace fuses with fuses of different ratings. Changing fuses invalidates your warranty.

Fuses are provided in each FLT port for user and network safety and to prevent severe card and system damage in the event of high voltage surges on telephone lines. These fuses are not field-replaceable and cannot be altered or bypassed in any manner. *Doing so invalidates your warranty.*

Line Circuits

The FLT card performs three major line-circuit functions:

- ❑ Voice digitization and compression
- ❑ Voice expansion
- ❑ Call control

The standard FLT8 card digitizes incoming analog voice messages. Voice messages sent to FLT-A cards, which are used for integration with Lucent Technologies (formerly AT&T) PBXs, are already digitized.

During the recording of a message, digital-signal-processing (DSP) cells located on any FLT card compress the digitized voice samples sent from the telephone-interface circuits. DSP cells are configured to receive digitized voice samples from the telephone-interface circuits. DSP cells compress the digitized voice samples, then the FLT card transfers the compressed data through the system data bus to the CCF card. When the message is played back, the DSP cells expand the digitized voice data and send it to the telephone line through the telephone-interface circuits.

The DSP cells handle digitized voice signals and control message playback. The DSP cells also detect and generate DTMF, call-progress, and test tones. The main processor handles higher-level call control, including on-hook and off-hook control, and supervision of voice-data transfers between DSP cells and the CCF card. The interpretation of DTMF and call-progress tones received from the telephone lines through telephone interface circuits is handled by the DSP processor.

FLT Card LEDs

Figure 2-5 shows the status and alarm LEDs on the front edge of any type of FLT card. Table 2-2 describes the function of the LEDs.

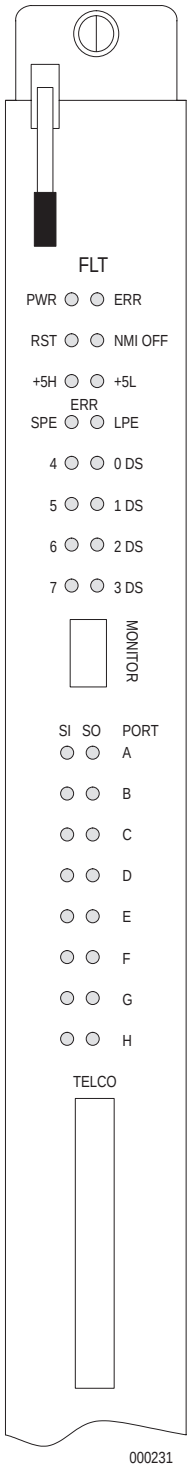


Figure 2-5. Front Edge of an FLT Card.

Table 2-2. LEDs on the FLT Card.

LED Label	LED Color	Function
PWR	Green	Card receiving power
ERR	Yellow	Fault (card out of service)
RST	Red	Card in reset mode
NMI OFF	Red	Nonmaskable interrupt disabled
+5H	Red	Operating voltage above 5.25 V
+5L	Red	Operating voltage below 4.75 V
ERR		
SPE	Red	Problem with the small-packet portion of OPI bus
LPE	Red	Problem with the large-packet portion of OPI bus
DS 0–DS 7	Yellow	Internal diagnostics (during boot process)
PORT	. . .	LED pairs (SI and SO) indicate incoming and outgoing signals for each port, A through H
SI	Yellow	Receive signal for each port; PBX signaling to the Octel server port (ringing)
SO	Green	Transmit signal for each port; Octel server signaling to the PBX (outcalling or off-hook)

FLT-Card Cable Connections

The FLT card provides a telephony (TELCO) connector for the connection to the PBX. The PBX trunk cables are connected to the FLT card, with 25-pair male Amphenol-type connectors. A 9-pin data connector is also used for test access during manufacturing of the card.

Refer to Chapter 3 for instructions about preparing cables for connection. Refer to Chapter 4 for instructions about attaching cables to the FLT card.

The MONITOR connector on the CCF card is used for troubleshooting.

LAN Card

In a server at Aria 2.0, the local-area-network (LAN) card can be connected to a data network. Voice and fax messages can be sent through a digital network to other Octel 250s/350s that also have Aria 2.0, LAN cards, and digital networking configured. The LAN card also supports digital communication on a LAN for other purposes.

The advantages of digital networking, as compared to analog networking, include lower messaging costs, better transmission quality, improved delivery speeds, reduced number of analog ports required, improved message security, use of existing data networks, and the capability to use the Simple Network Management Protocol (SNMP) for network management and troubleshooting. If messages cannot be delivered digitally, they can still be delivered through analog telephone lines if the fallback capability is enabled.

There are utilities that specifically support the LAN card and digital networking. These include ping and echo tests, displays of digital-networking statistics, displays of the digital-networking-channel status, and the software reset of the LAN card.

LAN-Card LEDs

Figure 2-6 shows the status and alarm LEDs on the front edge of the LAN card. Table 2-3 describes the LED functions.

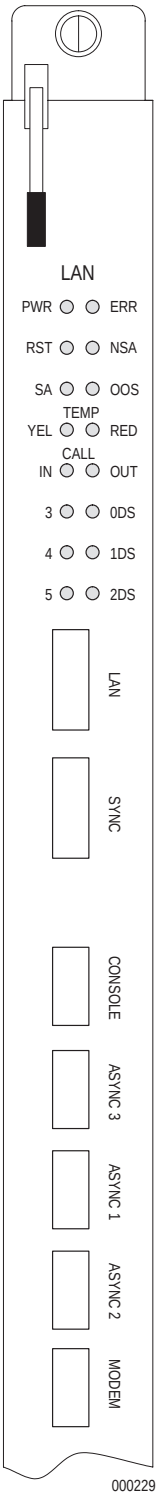


Figure 2-6. Front Edge of a LAN Card.

Table 2-3. LEDs on the LAN Card.

LED Label	LED Color	Function
PWR	Green	Card receiving power
ERR	Red	Fault (card out of service)
RST	Yellow	Normally flickering faintly (brighter during reboot)
NSA	Yellow	Not used
SA	Red	Not used
OOS	Red	Not used
TEMP		
YEL	Yellow	Not used
RED	Red	Not used
CALL		
IN	Yellow	Not used
OUT	Green	Not used
DS0–DS5	Yellow	Internal diagnostics (used during boot process)

LAN-Card Cable Connections

The only connector used on the LAN card is the LAN connector (Figure 2-6). The Attachment Unit Interface (AUI) cable provided by Octel is attached to this connector. The other end of this cable plugs into the DB15 connector of a network-interface cable or into the DB15 connector of a transceiver that also connects to an RJ45 network cable. Transceivers, if required, and network cables must be provided by the customer.

Power Supplies

The power system is located in the power-distribution tray, near the bottom of the cabinet. This tray is accessed from the rear of the cabinet.

The power-distribution tray draws power from a customer-provided power source, operating at 90 to 265 Vac, at 47 to 63 Hz, single phase. The power supplies in the power-distribution tray convert the input power to 26 to 29 Vdc for internal use.

The tray contains redundant power supplies. If one of the power supplies fails, the others provide the full power requirements of the server until repair is performed.

Power-supply test points are located on the alarm panel. Refer to Chapter 10 for the location of the test points.

Only certified service personnel should replace power supplies. Refer to Chapter 11 for information about replacing power supplies.

Fuses on the main backplane are limited to 3 amperes. The fuse holders accept an industry standard fuse.

Main Backplane

The main backplane, at the inside back of the logic bay, connects logic cards to the system data and control buses and distributes power to all cards. The main backplane provides the following connections:

- Data and control buses to the CCF, FLT, and LAN cards
- 26 to 29 Vdc to all cards

Two terminators are located on the main backplane. The serial bus runs between these terminators, behind logic card slots 1 and 8.

Drives and Drive Backplane

System and message disk drives and the optional tape drive are each mounted on their own drive-module circuit board; together, the assembly is called a drive module. From the front of the server, the drive modules slide into slots labeled 0 to 6, located to the left of the logic bay. The modules plug directly into the drive backplane, also known as the disk-drive backplane.

Drive Modules

An Octel 250 server can have one system drive in slot 0 or two system drives in slots 0 and 1, and up to four messages drives in slots 2–5. Slot 6 is reserved for the optional tape drive, which can be used for backup of the system to disk or the database to tape or, if the server is at Aria 2.0 or newer, for online upgrade from tape.

The disk drives and tape drive use the small-computer-system-interface (SCSI). The 1-GB message drives provide 100 hours of message space, the 2-GB message drives provide 215 hours of message space, and the 4-GB message drives provide 450 hours of message space.

The drive-module circuit board provides circuitry for multiplexing drive data and clock signals between the disk drives and the drive backplane. Power, data-bus, and control-bus cables for each disk drive connect to the drive-module circuit board, which plugs directly into the drive backplane.

Power is distributed to the drive modules through the drive backplane. The drive backplane is connected to a bus connector at the back of the CCF card.

Three LEDs are visible on the front of each drive-module circuit board; they are used for disk drives, as follows:

- **INOP (inoperative)**. A red LED that lights when the system is turned on until the drive reaches a ready state or if the drive is inoperative and removed from service
- **RDY (operating)**. A green LED that lights when the disk is on and running
- **SEL (active)**. A yellow LED that indicates disk read/write activity

Drive Backplane

The drive backplane, located behind the drive modules, allows the CCF card to communicate with the system drives and message drives and, if present, the tape drive. It also provides power to the drives. Refer to Chapter 11 for information about replacing a drive backplane.

Global Message Redundancy

Global Message Redundancy (GMR), a feature available with Aria 1.1 or newer software, allows duplicate storage of all messages on a server. This software-based capability uses drive pairs to store duplicate messages. If one of the drives in a pair fails, messages are not lost and can still be accessed.

The server must be converted to GMR to use the redundant capability. This procedure is run on line, so that the server does not have to be taken out of service.

In converted servers, drive 2 is redundant with drive 3, and drive 4 is redundant with drive 5. Messages are no longer stored on the system drives. On servers with GMR, drives 2 and 4 are the primary message drives and drives 3 and 5 are the secondary message drives. During conversion to GMR, messages on drives 3 and 5 are moved to the primary message drives and then mirrored on the secondary drives.

Once converted to GMR, procedures for drive replacement, enabling, and installing drives are different than for non-GMR servers. Refer to Chapter 11 and Appendix A for information about replacing, enabling, and installing drives in a GMR server.

Tape Drive

With Aria 1.1 or newer software, the server can have an optional tape drive. Octel Communications recommends that the system manager back up the system data to tape on a regular, scheduled basis to ensure that the results of activities such as adding or deleting mailboxes is safeguarded. Do not perform this procedure unless you are instructed to do so.

The optional tape drive is mounted on a drive-module circuit board. If used, it is installed in slot 6.

A backup tape contains NameNet entries, system database, application messages (including forms and conference mailbox messages), IVR phrases, and recorded subscriber names and greetings. Messages are automatically backed up for all voice-application mailboxes. Voice-application mailboxes include types 1, 2, 3, 10, 11, 12, 30, 31, 32, 33, 34, 35, and 40. You can also back up selected fax and voice messages for subscriber mailboxes for a class-of-service range you specify. If a backup is already under way, you cannot schedule a new one until the current backup is completed. Menu 20 is not accessible while a backup is in progress. Software patches are not backed up and cannot be printed.

A tape backup takes approximately 1 minute for each hour of message space used. You might want to run a Short Form Subscriber Usage report (report 3) to determine total used message space.

If the server is at Aria 2.0, the tape drive can also be used to upgrade software to a newer level.

The red LED on the circuit board remains lit until you are taping. The yellow LED on the circuit board flashes as you access a tape. The green LED on the tape-drive chassis flashes as you load, eject, or access a tape; it stays on when the tape is loaded and ready. When the amber LED on the tape drive blinks, the tape drive must be cleaned. When the amber LED stays lit, the tape drive cannot be used.

Alarm Panel

The alarm panel, at the front of the server between the logic-card bay and drive-module bay, contains LEDs that indicate alarm situations. This panel also includes test points and a reset switch. Figure 2-7 shows the LEDs on the alarm panel. Table 2-4 contains definitions of the LEDs.

If two cabinets are connected, the green CAB 2 LED is on. If an alarm occurs on either of the connected cabinets, the appropriate CAB LED turns red to show which cabinet produced the alarm. The rest of the LEDs on the alarm panel are specific to the cabinet that produced the alarm. The cabinet-address dip switch on the alarm-panel logic board identifies the cabinet as a primary or expansion cabinet. Refer to Chapter 11 for a description of correct switch settings. Refer to Chapter 12 for information about adding an expansion cabinet.

The alarm panel has a MASTER RESET switch and LED TEST switch. The MASTER RESET switch reboots the Octel server. The LED TEST switch lights all of the LEDs on the alarm panel.

The alarm panel has two test points, V1 TEST and GND TEST, for measuring power and ground (Figure 2-7). Refer to Chapter 9 for descriptions of alarm-panel LEDs. Refer to Chapter 10 for information about testing power and ground.

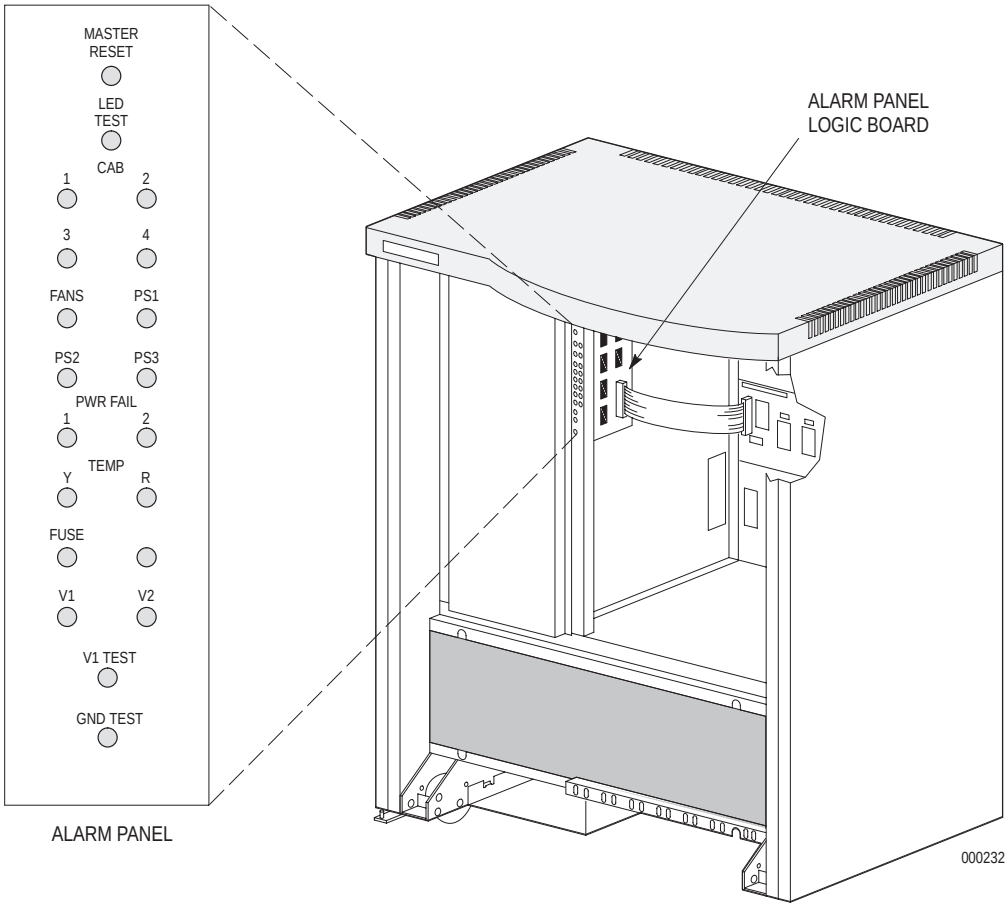


Figure 2-7. Alarm-Panel LED Indicators.

Table 2-4. Alarm Panel LED Descriptions.

LED Label	LED Color	Description
CAB		
1	Green/Red	Alarm for cabinet 1
2	Green/Red	Alarm for cabinet 2
3	Green/Red	Alarm for cabinet 3
4	Green/Red	Alarm for cabinet 4
FANS	Red	One or more fans in power-distribution tray failed
PS1	Red	Power-supply 1 failed
PS2	Red	Power-supply 2 failed
PS3	Red	Power-supply 3 failed
PWR FAIL		
1	Red	First-level power failure
2	Red	Second-level power failure
TEMP		
Y	Yellow	Yellow-line temperature, above 45^{o}C (113^{o}F)
R	Red	Red-line temperature, above 60^{o}C (140^{o}F)
FUSE	Red	Blown fuse
V1	Green	+24-V power OK
V2	Green	Auxiliary power board +5-V power OK

System Manager Terminal

Server software supplies a system interface for database management and system maintenance, called the system manager terminal (SMT). This interface allows you to add, delete, modify, and review administrative information for the server. The SMT is normally connected to the server through the CONSOLE connector on the CCF card, using a DB9-to-DB25 cable, P/N 057–1335–000.

You can connect the SMT locally to the server, if it is within 50 feet (15.2 meters); otherwise, you must connect it remotely to the server. If the SMT is more than 50 feet (15.2 meters) from the server, you must use a modem at each end of the connection. Use a null-modem cable to connect the modem to the server.

In addition to the primary SMT port (CONSOLE), serial ports ASYNC1, ASYNC2, and ASYNC3 on the CCF card can be configured for secondary SMT connections.

The printer is connected directly to the SMT. Refer to the *Peripheral Equipment* manual for instructions about installing the SMT and printer.

II INSTALLATION

The ***Installation*** section consists of the following chapters:

- ❏ Chapter 3. Site Preparation
- ❏ Chapter 4. Server Installation
- ❏ Chapter 5. Startup and Initialization

Chapter 3 provides information for preliminary work that must be completed before the server arrives at the site. The subjects addressed include requirements for space, power, cabling to locations throughout the server, and environmental requirements for air conditioning, electrostatic discharge (ESD) reduction, and grounding.

Chapter 4 provides information required to install the server at its final location. During installation, the cables prepared during the site preparation are connected; the primary SMT, the printer, the modem, and the antitilt bracket are installed; and the system ID dip switch is checked.

Chapter 5 provides information about starting up and initializing the server after you have physically installed it. During initialization, you run the startup diagnostics, enter information in the first-time setup in menu 0, set the line types and port assignments in menu 4, and establish dialing and serial-channel parameters in menu 6. You verify and test the server, then it is ready for operation.

3 SITE PREPARATION

Before installing an Octel 250 server, you must prepare the site to meet specific requirements. This chapter contains instructions for preparing the site before the equipment is delivered, including information about the following:

- ❑ Equipment location
- ❑ Cabling and connector requirements
- ❑ Procedures for installing power, modems, and telephone wiring

The procedures for cabling can help you to determine cable lengths and connector locations. Perform these procedures before delivery of the Octel server.

The customer must supply ac power for this server.

Before preparing the site for installing the server, refer to Chapter 2 for descriptions of server components. Determine the environmental and power needs, and observe all distance and length limitations specified. Use shielded cable for all data connections to external hardware. Telephone connections can use standard unshielded 25-pair cables. The customer is responsible for equipment not supplied by Octel and for meeting the server's site requirements.

Figure 3-1 shows the flow of the site-preparation tasks discussed in this chapter. Tools and equipment required for specific procedures are listed in the related sections.

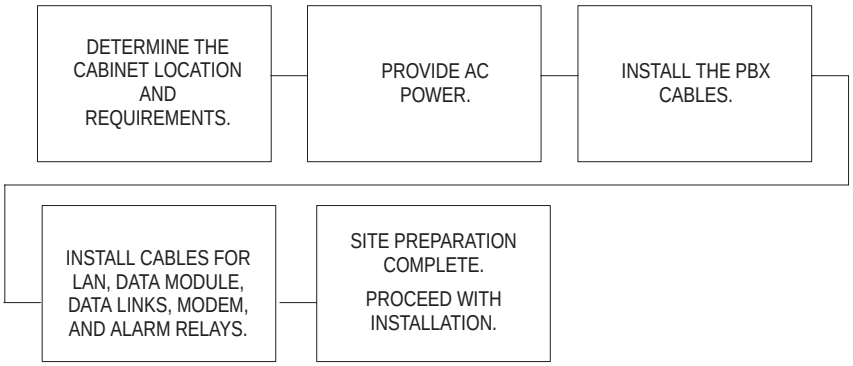


Figure 3-1. Site-Preparation Task Flow.

The following tools and test equipment are required to perform the procedures in this chapter:

- ❑ Crimping tool, swage
- ❑ Wire cutter, diagonal
- ❑ Screwdrivers, flat blade, small and medium, minimum 4½-inch shaft length
- ❑ Screwdrivers, Phillips, #1 and #2
- ❑ Cable ties, nylon

Tools and equipment required for specific procedures are listed in the related sections.

Site-Entry Clearances

The Octel 250 server arrives at the customer site in a carton on a pallet. To ensure that the server can reach the proposed site, determine a route that has unrestricted passage from the shipping dock, through doorways, halls, and elevators, to the server site. Figure 3-2 shows the server cabinet dimensions and carton dimensions.

Space Requirements

For optimum performance, the customer should plan a location that is as close as possible to the PBX. For example, at sites using RS-232 integrations and where the length of a data link exceeds 50 feet (15.2 meters), use customer-supplied modems to extend the link between the PBX and the CCF card in the server. At sites using other types of integrations, for example, in-band, there are no restrictions for the distance between the PBX and the server.

Table 3-1 provides the uncrated and crated dimensions and the weight of the Octel 250.

The server can be placed on any standard office-flooring material.

Table 3-1. Octel 250 Dimensions and Weight.

Configuration	Height In. (mm)	Width In. (mm)	Depth In. (mm)	Weight lbs (kg)
Octel 250, uncrated	29 (740)	20.5 (520)	18 (460)	130 (59)
Octel 250, crated	43.5 (1105)	29.5 (750)	22.5 (575)	170 (77)

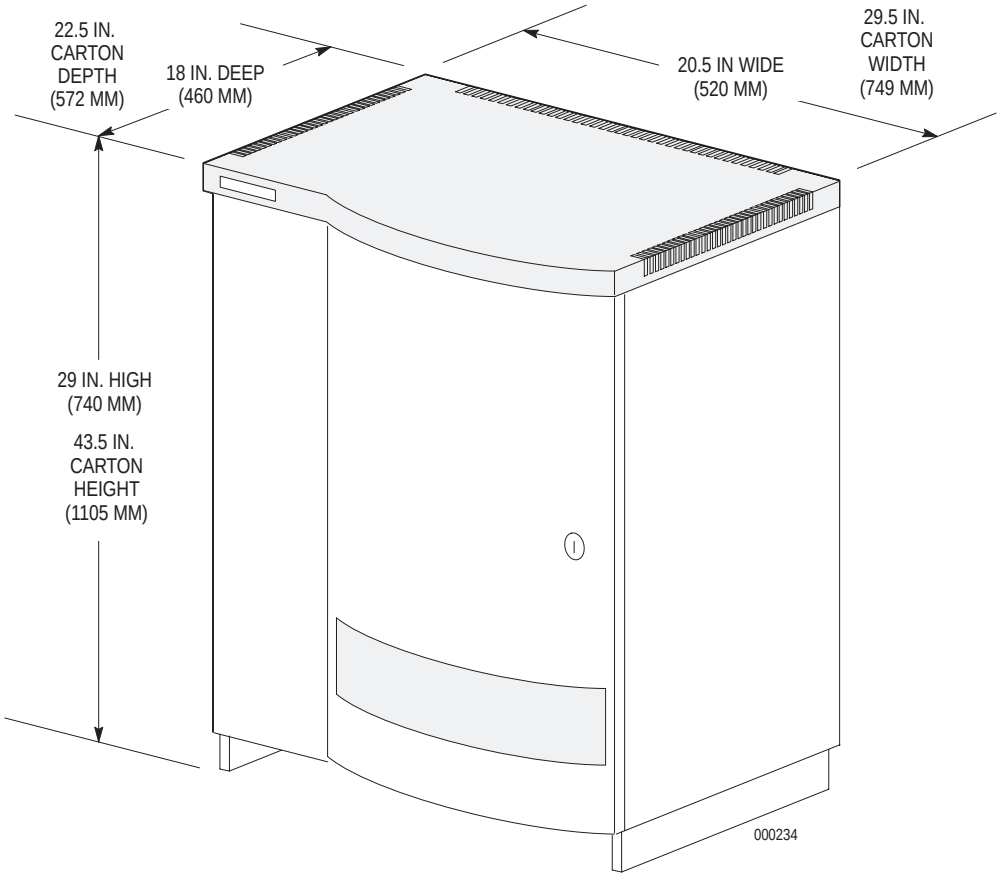


Figure 3-2. Octel 250 Server Cabinet and Carton Dimensions.

Consider the following factors when determining the location for the server:

- ❑ Allow sufficient clearance for service personnel to obtain access around the server. Figure 3-3 shows the allowances for the work space required around the cabinet. Enough space is required for the door at the front of the cabinet to be opened, plus additional clearance for working and aisle space. Allow enough space on the left side and rear, so that you can access the power switch.

- ❑ The customer should plan a location for the primary system manager terminal (SMT) and optional printer. A cable is provided to locate the SMT within 25 feet (7.6 meters) of the message server. However, the SMT can be located up to 50 feet (15.2 meters) from the server by using a customer-provided 50-foot (15.2 meter) cable. For distances greater than 50 feet (15.2 meters), the customer must provide modems and an additional terminal at the server site for maintenance procedures. Octel Communications does not recommend or support remote PC-based terminals.

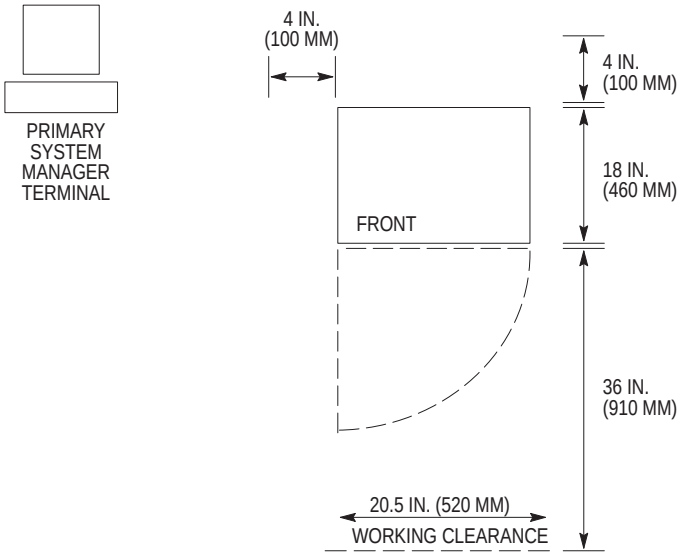


Figure 3-3. Required Clearances for the Cabinet.

Environmental Requirements

Communications systems require specific environmental conditions to operate reliably. Temperature and humidity levels are important, because they affect the operation of the server. Because of the prevalence of electrical equipment in the area, fire safety is essential, as is protection against electromagnetic interference, electrostatic discharge, and shock.

Air Conditioning

The air-conditioning system for the room in which the server is installed should maintain the air temperature and moisture content within the parameters required by the server, as listed in Table 3-2. Extremely low or high humidity can degrade system reliability. Low humidity increases static discharge, which damages system components. High humidity increases the chance of condensation, which can also damage the equipment. If the site has subfloor cabling, the air-conditioning system *must* keep duct and subfloor air temperatures above the dew point.

An air-conditioning system must be operating before you install the server. The customer must do the following:

- ❑ If the air conditioning system in place at the server location is not adequate for the needs of the server, either expand its capabilities or install a new one.
- ❑ When selecting the air-conditioning system, consider its air-filtering methods, heat dissipation, and the operating environment.
- ❑ Select and install the air-conditioning system in compliance with local codes and regulations.

Table 3-2. Environmental Requirements.

Parameter	Requirement
Normal operating temperature	41°F to 95°F (5°C to 35°C)
Normal operating relative humidity	20–80%, noncondensing
Altitude	From 1,000 ft below sea level to 10,000 ft above sea level (2000 m to 3,000 m)
Maximum heat dissipation*	300 Btu/hr (500 Kcal/hr)
Vent openings	
At cabinet front	Intake
At cabinet top	Exhaust outlet
Grounding provisions	Through power cabling; optional chassis ground

* Each Octel 250 server cabinet dissipates a maximum of 800 watts during normal operation. Refer to Table 3-3.

Electrostatic-Discharge (ESD) Reduction

ESD results from the static-charge buildup on two nonconductive surfaces. If the static discharges through the server components to a ground, damage to the server could result. Minimize ESD by always wearing a grounded wrist strap when handling server components.

Grounding

Before installing the Octel 250 server, perform the following steps:

1. Inspect all wiring and electrical outlets for correct grounding and voltage. Make sure that the third-wire power ground is connected in compliance with local, state, and national electrical codes. Voltage measurements between the hot wire (live) and third-wire ground (earth) should equal 90 to 265 Vac. Measurements between the neutral wire and the third-wire ground (earth) should be 0 Vac.

2. In areas where electrical storms pose a danger, the customer should install a transient ac protection device on the power lines. This is particularly important where power is provided by outside overhead lines. The customer should install a transient ac protection device, if the server is installed in a manufacturing area, where motor-driven machinery, compressors, pumps, elevators, or other periodically operating units are located. If power outages are a problem, the customer should consider installing an uninterruptable power supply (UPS).

3. Protect the equipment against accumulated static electricity, which can damage sensitive electronic circuitry in the cabinet. If the site is at a high altitude or in a dry climate, the customer might need to humidify the area to correct static electricity problems. Another effective control is to put ESD discharge mats under and in front of the server.

If the customer wants to connect the server chassis to earth or to another ground point in addition to the ground connection in the ac power cord, a connection point is available, as described in Chapter 4, Server Installation. Chapter 4 also includes procedures for verifying the grounding of the TELCO connectors on the FLT cards.

Electrical Requirements

Table 3-3 provides information about electrical requirements for each Octel 250 cabinet.

Table 3-3. Fully-Loaded Octel 250 Electrical Specifications, Per Cabinet.

Specification	Values, Per Cabinet
Input requirement	90 to 265 Vac, 47 to 63 Hz, single phase
Maximum consumption	7 A, 800 W
Recommended provisioning	5 A at 220 Vac; 10 A at 110 Vac; 1 KVA
In-rush current	41 A for 10 ms

Make sure that a suitable number of wall outlets are available. Each server and piece of auxiliary equipment, such as the SMT and printer, requires a wall outlet.

Because of the prevalence of electrical equipment in the area, fire safety is essential, as is protection against electromagnetic interference, electrostatic discharge (ESD), and electrical shock.

Cabling Requirements

A number of external cables are required for the Octel 250 message server. All RS-232 data links for integration, remote terminals, switching control-center system (SCCS), and simplified message desk interface (SMDI) require a customer-supplied modem if the equipment is more than 50 feet (15.2 meters) from the server.



Caution!

Use shielded cables for data connections to external hardware.

External cables can be connected to the CCF card, FLT cards, and the optional LAN card. Additional cabling for external alarms can be connected on the back of the Octel server. Figure 3-4 shows the general locations of the external cable connections to the server.

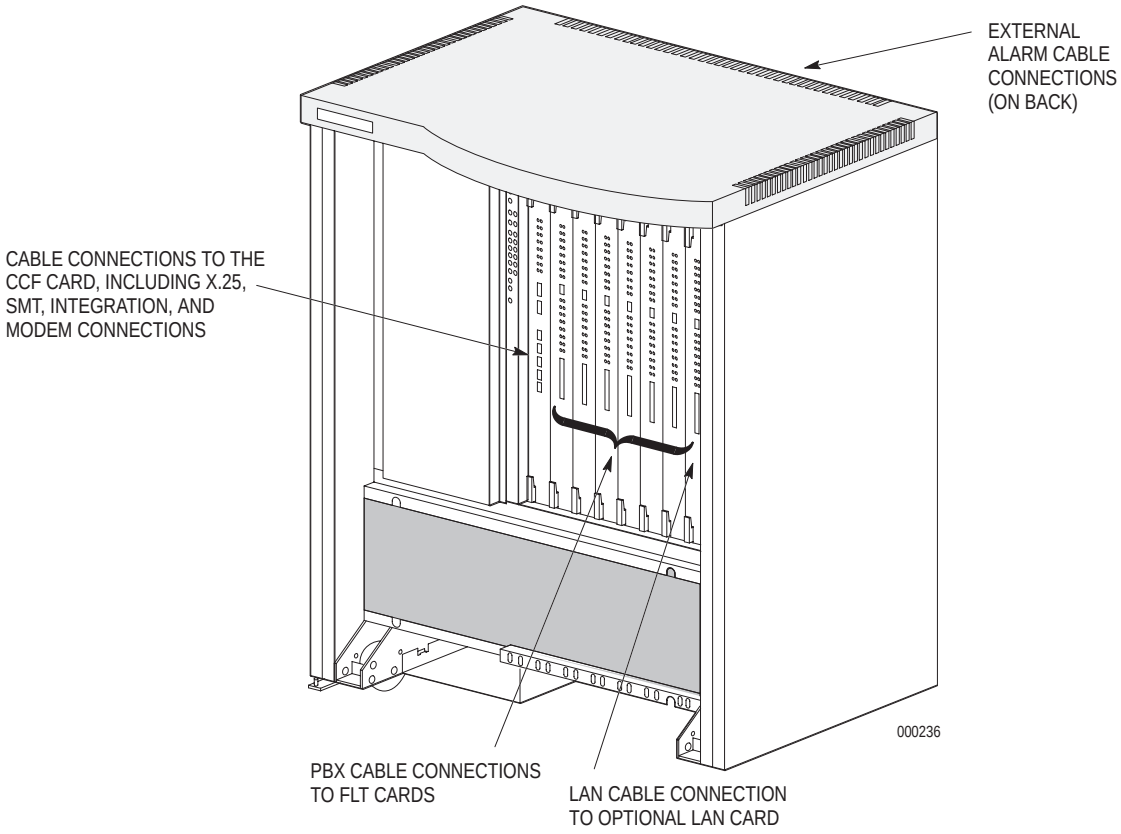


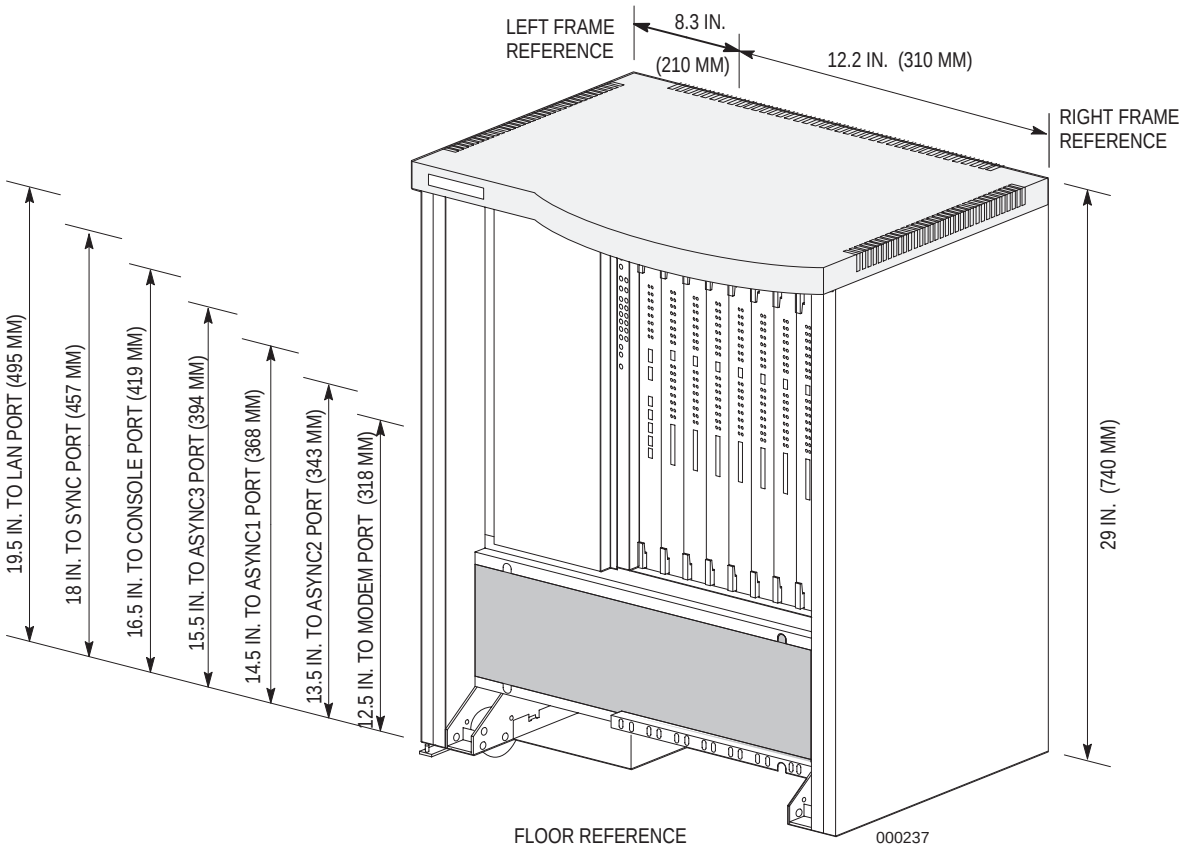
Figure 3-4. Cable Connections on an Octel 250 Server (Front View).

Use the following criteria to ensure correct cabling:

- ❑ Use the height from the floor to the connection to determine the required cable length.
- ❑ Mark each cable end with its termination point (for example, SMT) for easy identification during installation.
- ❑ Make sure that the cables are long enough to allow enough to be dressed on the left side of the server cabinet.

Combination CPU/File (CCF) Card Connections

The CCF card provides the data connections for the X.25, modem, integrations, and SMTs. Figure 3-5 shows the measurements from the floor reference to the CCF-card cable connections.



NOTES:

- DIMENSIONS ARE APPROXIMATE. ALLOW SLACK FOR CABLES.
- FRAME REFERENCES ARE FROM THE FRONT.

Figure 3-5. Measurements to the CCF Card and LAN Card Connectors.

LAN Connection

The LAN connector on the CCF card is not used.

X.25 Connection

Use the X.25 cable assemblies, P/N 057–1331–001, supplied with the data module, to connect the X.25 data links from the data module to the SYNC port on the CCF card. Refer to Figure 3-5 for the cable lengths for the X.25 interface connections on the CCF card. Table 3-4 lists the pin assignments.

Table 3-4. SYNC Connector Pin Assignments.

Pin Number	Abbreviation	Name
1	CGND	Chassis ground
2	TXD	Transmit data
3	RXD	Receive data
4	RTS	Request-to-send
5	CTS	Clear-to-send
6	DSR	Data set ready
7	GND	Ground
8	CD	Carrier detect
9	RING	Ring
10	TC	Transmit clock
11	N/C	Not connected
12	RC	Receive clock
13	N/C	Not connected
14	TCO	Transmit clock out
15	DTR	Data terminal ready

SMT Connections

Connect the SMT to the server at the CONSOLE connector on the CCF card, using a DB9-to-DB25 cable, P/N 057–1335–000. The DB9 interface provides the pin assignments listed in Table 3-5.

In addition to the primary SMT port (CONSOLE), you can configure serial ports ASYNC1, ASYNC2, and ASYNC3 for secondary SMT connections.

Table 3-5. CONSOLE, ASYNC1, ASYNC2, ASYNC3, and MODEM Connector Pin Assignments.

Pin Number	Abbreviation	Name
1	CD	Carrier detect
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Data terminal ready
5	GND	Ground
6	DSR	Data set ready
7	RTS	Request-to-send
8	CTS	Clear-to-send
9	RING	Ring

Data-Link Connections

The CCF card has the DB9 connectors ASYNC1, ASYNC2, and ASYNC3 for integration. You can also use these connectors for secondary SMTs. The pin assignments are the same as for the SMT's CONSOLE connector, as shown in Table 3-5.

Modem Connection

The MODEM port on the CCF card has a DB9 connection for the external Hayes-compatible modem. This modem resides on the modem tray at the bottom left side of the server and is connected with a modem cable, P/N 057–1325–000. The pin assignments are the same as for the SMT's CONSOLE connector, as shown in Table 3-5.

FLT Card Connections

The FLT card has the connections for the PBX lines or trunks, labeled TELCO. The PBX cables are connected to the FLT card, with 25-pair male Amphenol-type connectors. Figure 3-6 shows the measurements required for the FLT card connections.

Use a marker to write the extension number assigned to the FLT-card port on the Amphenol cables. The cables are routed into the bottom of the server.

Depending on the type of PBX and whether the server is integrated with the PBX, the method of connecting to the PBX varies. Refer to the appropriate configuration note for specific PBX requirements. For U.K. installation and for ground-start lines in the U.S., pins 25 and 50 must be connected to the PBX ground for recall purposes. The pin assignments for a standard FLT8 card are shown in Table 3-6. Refer to the appropriate configuration note for pin assignments for other types of FLT cards.

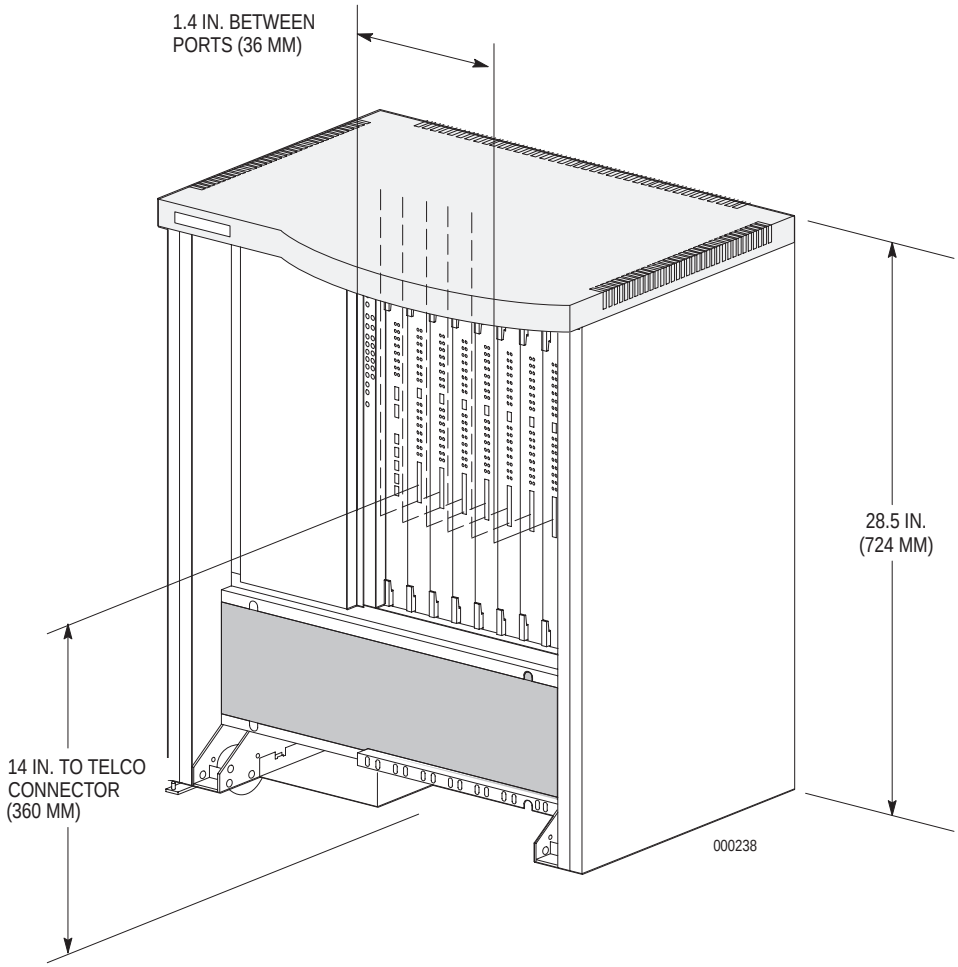
The server interacts with any PBX software that allows call forwarding and supports a hunt group comprised of extension numbers. The class of service for the server extension numbers should include trunk access for outcalling, the capability to flash, and the capability to be a target for forwarded calls.

The pilot number of the hunt group contains all of the extension numbers assigned to the server as its members. A subscriber dials the pilot number of the hunt group to access the server. A rotary or circular hunt group allows the server to distribute calls evenly to all ports.

Create the extensions in the PBX database. Assign equipment numbers from at least two separate PBX line cards. This prevents total loss of voice-message service in the event of a single PBX line-card failure. Refer to the appropriate configuration note for instructions to install the server with each type of PBX.

The FLT card contains a MONITOR connector, which you can use for diagnostic purposes. Table 3-7 lists its pin assignments.

Refer to the "Grounding" section, page 3-5, for information about grounding FLT cards.



NOTES:
- ❑ FLT CARD CONNECTORS ON 1.4-INCH (36 MM) CENTERS.
- ❑ DIMENSIONS ARE APPROXIMATE. ALLOW SLACK FOR CABLES.
- ❑ FRAME REFERENCES ARE FROM THE FRONT.

Figure 3-6. Measurements to the FLT Card Connectors.

Table 3-6. FLT8 Ports Assigned to Pin Numbers.

Pin No.	Description	TELCO Cable Wire Color (U.S.)	Pin No.	Description	TELCO Cable Wire Color (U.S.)
1	Ring Port A	Blue/White	26	Tip Port A	White/Blue
2	Carrier ground	. . .	27	Carrier ground	. . .
3	Ring Port B	Green/White	28	Tip Port B	White/Green
4	Carrier ground	. . .	29	Carrier ground	. . .
5	Ring Port C	Slate/White	30	Tip Port C	White/Slate
6	Carrier ground	. . .	31	Carrier ground	. . .
7	Ring Port D	Orange/Red	32	Tip Port D	Red/Orange
8	Carrier ground	. . .	33	Carrier ground	. . .
9	Ring Port E	Brown/Red	34	Tip Port E	Red/Brown
10	Carrier ground	. . .	35	Carrier ground	. . .
11	Ring Port F	Blue/Black	36	Tip Port F	Black/Blue
12	Carrier ground	. . .	37	Carrier ground	. . .
13	Ring Port G	Green/Black	38	Tip Port G	Black/Green
14	Carrier ground	. . .	39	Carrier ground	. . .
15	Ring Port H	Slate/Black	40	Tip Port H	Black/Slate
16	Carrier ground	. . .	41	Carrier ground	. . .
17	Carrier ground	. . .	42	Carrier ground	. . .
18	Carrier ground	. . .	43	Carrier ground	. . .
19	Carrier ground	. . .	44	Carrier ground	. . .
20	Carrier ground	. . .	45	Carrier ground	. . .
21	Carrier ground	. . .	46	Carrier ground	. . .
22	Carrier ground	. . .	47	Carrier ground	. . .
23	Carrier ground	. . .	48	Carrier ground	. . .
24	Carrier ground	. . .	49	Carrier ground	. . .
25	Telecom ground	. . .	50	Telecom ground	. . .

Table 3-7. MONITOR Connector Pin Assignments for All FLT Cards.

Pin Number	Abbreviation	Name
1	CD	Carrier detect
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Data terminal ready
5	GND	Ground
6	DSR	Data set ready
7	RTS	Request-to-send
8	CTS	Clear-to-send
9	RING	Ring

LAN Card Connections

The LAN card, if used, is installed in slot 8 in a single-cabinet server or slot 16 in a dual-cabinet server. Attach the Attachment Unit Interface (AUI) cable, provided by Octel, to the LAN connector on the LAN card. The customer provides the network cable for attachment to the AUI cable, and, if required, the transceiver to be attached between the network cable and the AUI cable. Refer to Figure 3-5 for the vertical dimension to the LAN connector on LAN card (and the unused LAN connector on the CCF card). Table 3-8 lists the pin assignments for the LAN connector.

Table 3-8. LAN Connector Pin Assignments.

Pin Number	Abbreviation	Name
1	GND	Ground
2	CLSN	Collision +
3	TRMT	Transmit data +
4	GND	Ground
5	RCV	Receive data +
6	GND	Ground
7	N/C	Not connected
8	GND	Ground
9	/CLSN	Collision –
10	/TRMT	Transmit data –
11	GND	Ground
12	/RCV	Receive data –
13	+12V	12 V power
14	GND	Ground
15	N/C	Not connected

External-Alarm Connections

Alarm relay dry-contact closures for out-of-service (OOS), service-affecting (SA), and non-service-affecting (NSA) alarms are located at the alarm connector on the upper part of the back of the server. These relay closures can be used to activate audible or visual alarm indicators. Use the external-alarm cable, P/N 057–1337–000, for connection to alarm outputs. Table 3-9 lists the pin assignments for the connector.

Table 3-9. External-Alarm-Connector Pin Assignments.

Pin Number	Abbreviation	Name
1	OOS–COM	Out-of-service, common
2	OOS–NC	Out-of-service, normally closed
3	OOS–NO	Out-of-service, normally open
4	SA–COM	Service-affecting, common
5	SA–NC	Service-affecting, normally closed
6	SA–NO	Service-affecting, normally open
7	NSA–COM	Non-service-affecting, common
8	NSA–NC	Non-service-affecting, normally closed
9	NSA–NO	Non-service-affecting, normally open

4 SERVER INSTALLATION

Before installing the Octel 250 message server, the site must be prepared as described in Chapter 3, Site Preparation. All power, telephone, and data-link cables must be installed and correctly terminated for connection to the server.

Installing the server requires the tasks shown in Figure 4-1, as described in this chapter.

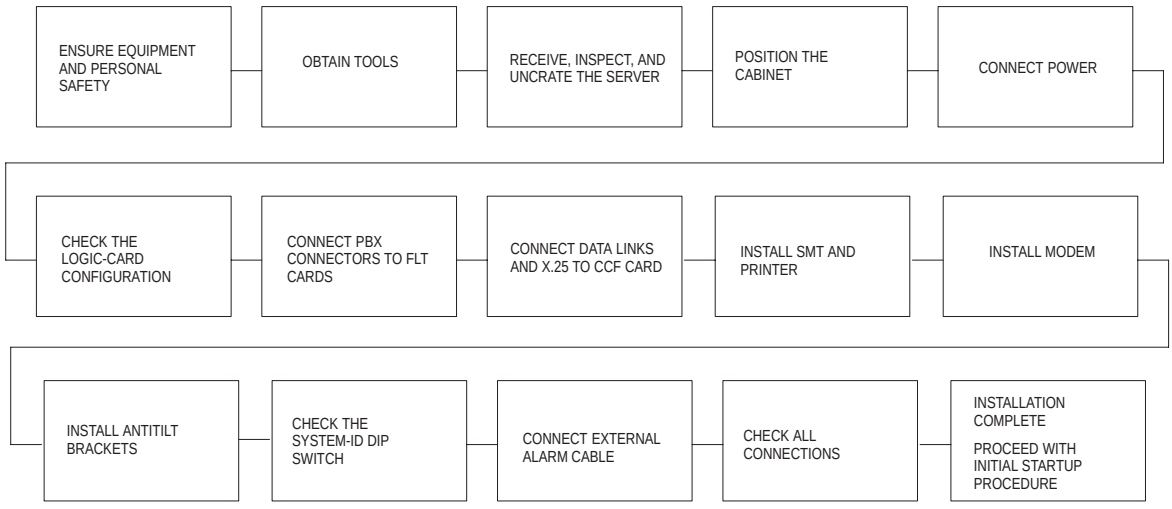


Figure 4-1. Installation Procedures.

Ensuring Equipment and Personnel Safety

Preventing injury and safeguarding equipment must be primary considerations during the server installation. Safety issues include electrical, equipment-handling, and environmental safety.

Follow the installation procedures in this chapter to prevent equipment damage and personal injury. Safety hazards arise from the weight and bulk of the server and the electrical connections that must be made.

Electrical Safety

Some of the installation tasks require attaching cables to the server and installing modules. When performing any of these tasks, follow these precautions:



Caution!

When working on the server, *always* wear an antistatic wrist strap that is grounded to the server cabinet and that contains a minimum of 1 megohm resistance from attachment to wrist.

Handle cards only by their sheet-metal stiffeners. Do not touch the components or the edge connectors. Do not stack the cards on top of one another. Logic cards can be damaged by static discharge currents or by physical mishandling.

Do *not* turn on the power to the server until the installation is complete and has been checked. To do otherwise could damage equipment components.

- ❑ Because the server is sensitive to static, make sure to wear an antistatic wrist strap that is grounded to the server cabinet, and that contains a minimum of 1 megohm resistance from the attachment to your wrist, when working on the server.
- ❑ Be careful when handling cards; do not touch either the components or the edge connectors.
- ❑ Do not stack the cards on top of one another.
- ❑ *Always* keep components that are not installed in their antistatic bags in which they are shipped. If components must be returned to the factory, make sure to package them in antistatic bags.
- ❑ Although FLT cards are hot-pluggable and can be removed and replaced while power is on, *do not perform any initial installation task with power applied.*

If the customer wants to have the server chassis connected to earth or to another ground point in addition to the green-wire ground in the ac power cord, use the threaded 8–32 screw hole on the power-distribution tray (approximately 4 inches from the left edge and 1 inch from the top edge of the tray) at the bottom rear of the server as the connection point to the server.

The 25-pin TELCO connectors on the FLT cards have two types of ground connections: carrier ground and telecom ground. Carrier ground connects to the TELCO cable shield and local grounds. When the FLT card is installed, carrier ground is connected to the chassis sheet metal (therefore, also to the green-wire ground in the ac power cord), as well as to the logic dc return line. Use an ohmmeter to verify that the mounting screws and cable shields of the TELCO connectors on the FLT cards are electrically connected to the server's sheet metal.

Telecom ground in the TELCO connector is isolated from the server. It is intended to connect to the ground point of the remote PBX. It is the voltage reference point for a ground-start analog interface.

To prevent ground loops, circulating currents, and noisy telephone connections, telecom ground and carrier ground should *not* be connected to each other. Use an ohmmeter to verify that there is no dc electrical path between them. For an FLT8 card, carrier ground is on pins 16–24 and 41– 49 of the TELCO connector, and telecom ground is on pins 25 and 50. Refer to the appropriate configuration note for ground pin locations on other types of FLT cards.

Equipment-Handling Safety



Warning!

Be careful when moving and unloading the shipping carton and moving the server. Equipment could be damaged and personal injury could result if the server falls.

The Octel 250 server weighs up to 130 pounds (59 kg). The servers in their shipping crates are even heavier. Use mechanical-lifting equipment and enough qualified personnel to handle the server safely.

Use caution when unloading, uncrating, and moving this heavy equipment. Damage to the server and personal injury could occur.

Environmental Safety

The server must operate within safe environmental parameters. Refer to Chapter 3 for descriptions of environmental requirements.

The Octel 250 server depends on the positive air pressure created by the air flow in the cabinet to maintain the temperature within operating limits. The card cage and the disk-drive bays constitute part of an air plenum. Verify that blank slot and drive panels, which are shipped with and installed in the server, are in the empty slots in the card cage, to prevent air leakage. The slot panels are required for environmental air and electromagnetic-interference (EMI) control.

Obtaining Required Tools

The following tools are required to unpack, assemble, and install the Octel 250 server:

- ❑ Screwdrivers
  - ❑ Phillips-head, no. 2
  - ❑ flat-blade, medium
- ❑ 7/16 socket wrench (1/4-inch drive) for unpacking

Inspecting and Unpacking the Server

Perform the following steps when you inspect and unpack the server:

1. Inspect all shipping cartons and the other containers for signs of damage before unpacking the equipment.
2. Use the unpacking instructions shipped on the outside of the carton. Inspect the equipment during the unpacking process. Any damage sustained during shipment is the responsibility of the carrier.
3. During the unpacking process, always compare the equipment and accessories received with the packing list.
4. Report any damage to both the carrier and the Octel Communications Customer Services Center or your Octel distributor.

Positioning the Cabinet

Place the server close to the connection point for the telco cables, as long as other installation requirements are met. Allow sufficient clearance around the server for access by service personnel. Have space available for the primary system manager terminal (SMT) and a printer. Refer to Chapter 3 for site-preparation requirements.

Lock the cabinet casters by turning the front-wheel lock screws to the right, as shown in Figure 4-2.

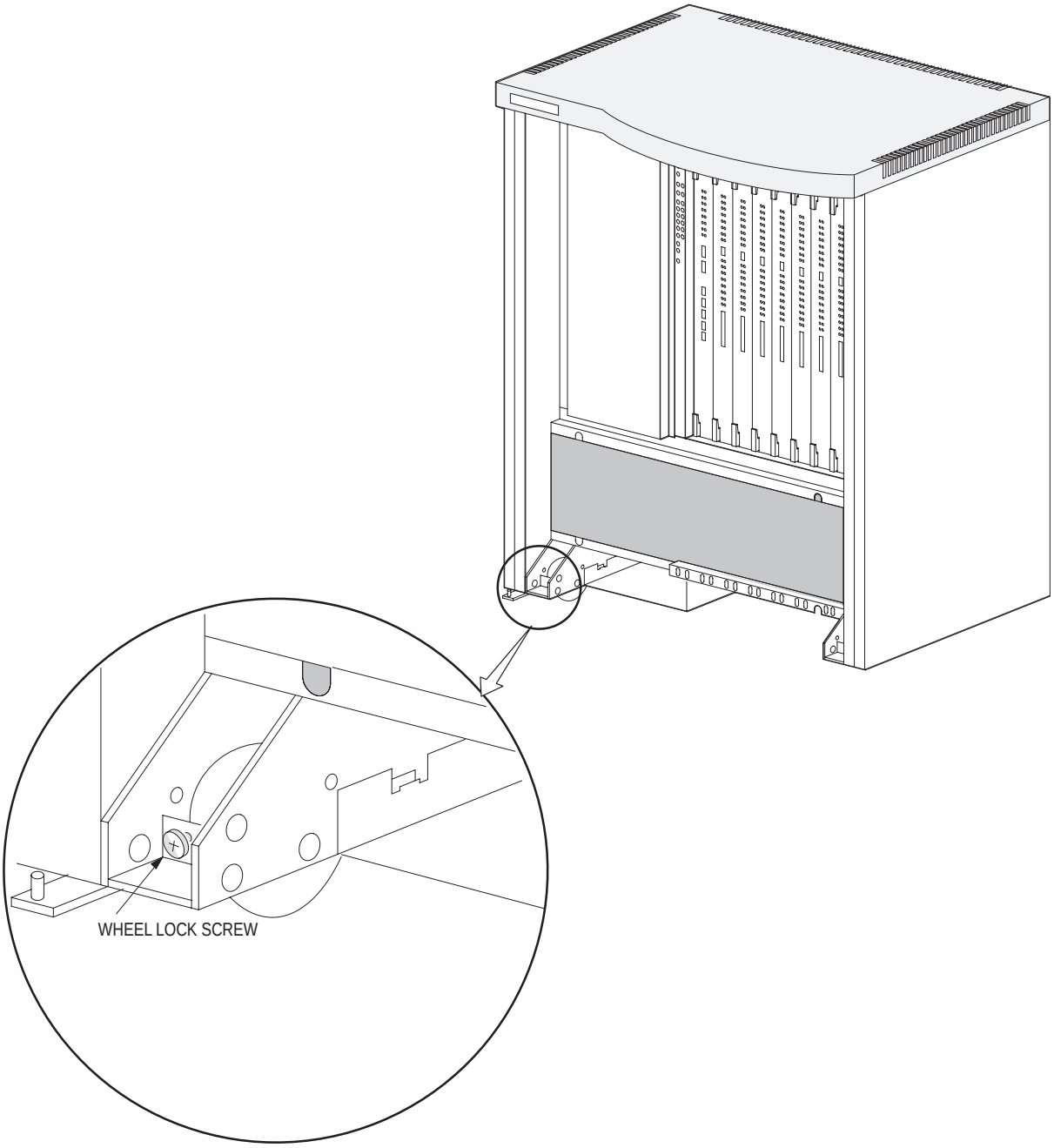


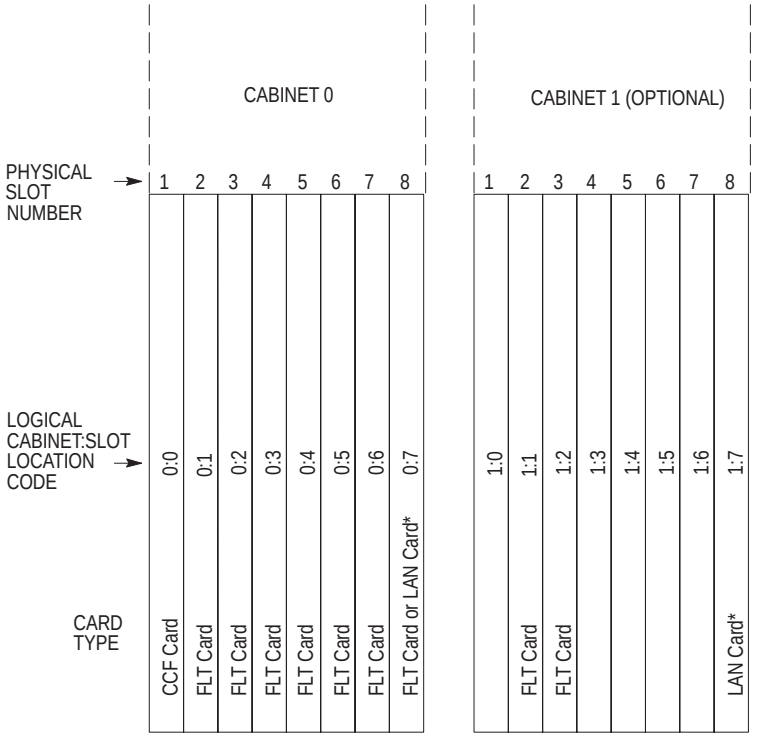
Figure 4-2. Location of the Wheel Lock Screws on the Octel 250.

Connecting the Power

Plug the server power cord into a wall outlet that supplies input power of 90 to 265 Vac. Make sure that a suitable number of wall outlets are available. Each server requires its own wall outlet, and peripheral equipment, such as SMTs, printers, and modems, also require wall outlets. The outlets should not be switch-controlled.

Checking the Logic-Card Configuration

Logic cards must be configured according to the requirements of the customer. Open the front door of the cabinet to verify that the locations of the logic cards in the specific logic-bay slots are as shown in Figure 4-3.



* Optional LAN card is in slot 8 for single-cabinet 250s or slot 16 for dual-cabinet 250s.

Figure 4-3. Logic-Bay Slot Assignments.

FLT cards, other than the FLT8, are configured at the factory for use with particular PBXs and integrations. For example, the FLT-M card is used for Mitel integrations and the FLT-A card is used for Lucent integrations. Make sure that the FLT cards that were shipped with the server are the correct ones to use at the site.

Connecting Telephone Cables

Each cable connector should have had its FLT card number written on it during the site preparation. Connect the telephone cables, as follows:

1. Dress each 25-pair amphenol cable to the left or right side of the cabinet frame, and route the cable to the bottom of the cabinet.

2. Insert the cable-end connector into the appropriate TELCO connector on the FLT card. Secure the cable with the Velcro tie. Repeat for all other pertinent telephone connectors. Refer to Figure 4-4 for the location of the TELCO connector on an FLT card (the first FLT card, in slot 2, is illustrated).

Connecting Cables to the CCF Card

The CCF card provides the data-bus and control-bus connections. Cables for the X.25, modem, and SMTs are connected to the CCF card. Make sure to connect the correct cable to the correct connector on the CCF card. Refer to the “Installing a Modem” section, page 4-11, for information about how to install a modem. Figure 4-5 shows the CCF card with the pertinent connectors identified.

The cables should have been marked during the site-preparation stage (refer to Chapter 3), when they were measured and terminated. Make the connections to the CCF card, as follows:

1. Use a DB9-to-DB25 cable, P/N 057–1335–000, to connect the primary SMT to the CONSOLE connector on the CCF card.

2. Connect the three RS-232 connections to connectors ASYNC1, ASYNC2, and ASYNC3 on the CCF card, if required for integration. You can also use these connections for secondary SMTs.

3. If you are using data module, connect the X.25 data link from the data module to the SYNC port on the CCF card.

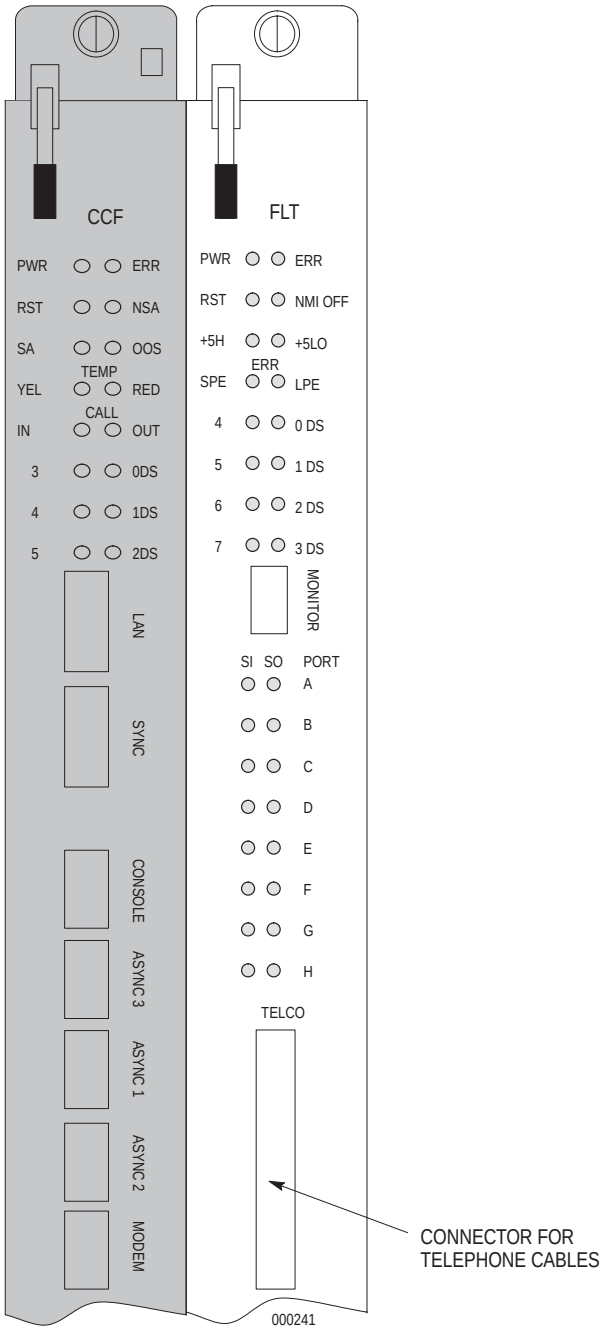


Figure 4-4. TELCO Connector on an FLT Card (Slot 2).

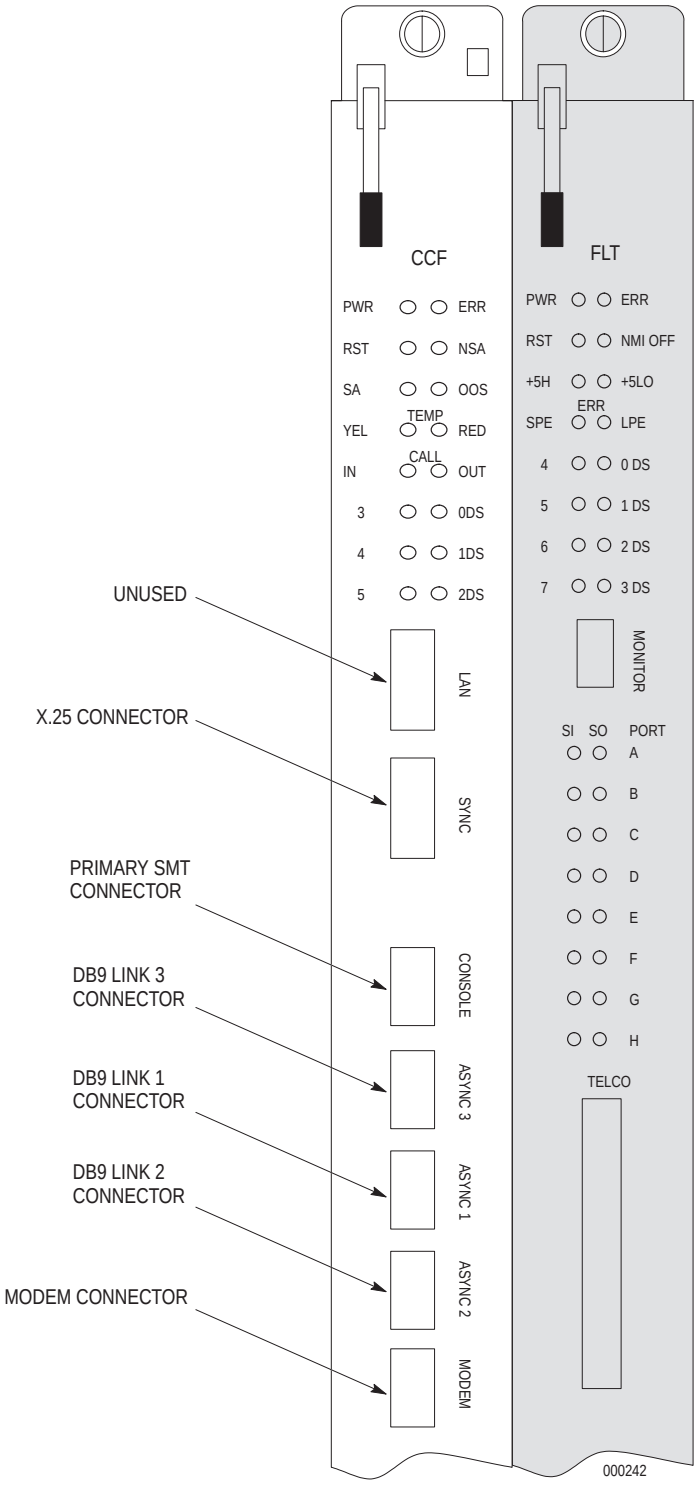


Figure 4-5. X.25, SMT, Asynchronous, and Modem Connectors on the CCF Card.

Connecting the Cable to the LAN Card

On servers with Aria 2.0 or newer software, the LAN connector on the optional local area network (LAN) card provides the connection from the server to the customer's LAN, which can be used for digital networking of messages or for other purposes. Attach the cable, as follows:

1. Refer to Figure 4-6, and plug the Attachment Unit Interface (AUI) cable, P/N 057–1557–002, provided by Octel into the LAN connector on the LAN card, located in slot 8 or 16, and screw on the cable connector.

2. Plug the other end of the AUI cable into the DB15 connector of a network interface cable or into the DB15 connector of a transceiver that also connects to an RJ45 network cable. Transceivers, if required, and network cables are provided by the customer.

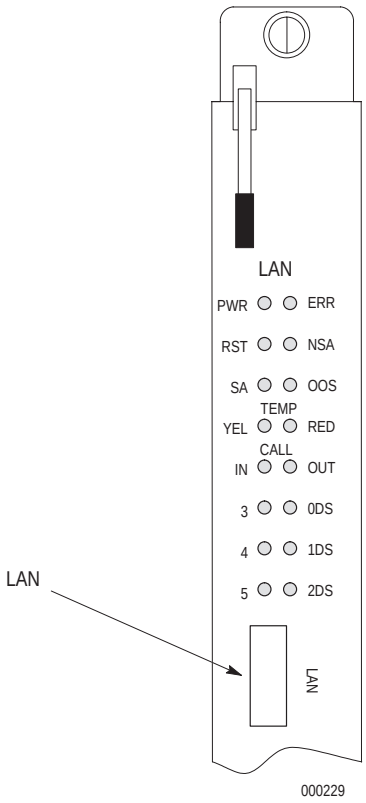


Figure 4-6. LAN Connector on the LAN Card.

Installing the Primary SMT and Printer

For a direct connection, the SMT is usually located within 25 feet (7.6 meters) of the server; however, it *must* be within 50 feet (15.2 meters). Octel provides a 25-foot cable. For distances of 25 to 50 feet, the customer can provide a cable. If the SMT is more than 50 feet (15.2 meters) from the server, you must use modems. Do not turn the terminal on until the server is fully installed. Refer to the *Peripheral Equipment* manual for a list of supported terminals and printers and to install terminals and printers. Connect the terminal to the server, as follows:

1. Place the SMT on a sturdy desk or table near the server, so that the length of the cable connecting the SMT to the server does not exceed 50 feet (15.2 meters).

2. Make sure that the power switch on the server is set to OFF.

3. Verify that the DB9-to-DB25 cable for the SMT is connected to the CONSOLE connector on the CCF card. Refer to the “Connecting Cables to the CCF Card” section, page 4-7.

4. Connect the DB25 end of the cable to the appropriate connector on the SMT as described in the documentation that came with the SMT. The name of this connector depends on the make and model of the SMT.

5. Make sure that there is a grounded (earthed) ac power outlet within reach of the power cord, but *do not* plug in the terminal at this time.

6. If a printer is being used with the SMT to provide hard-copy records of system menus, statistics, distribution lists, usage reports, and maintenance information, connect it as described in the *Peripheral Equipment* manual.

Installing a Modem



Caution!

Because the remote connection to the server is made through a dial-up modem, consider its security. When you use a dial-up modem with a direct-dial number for access, anyone with a Hayes-compatible modem can call the server modem and attempt access to the SMT. Therefore, Octel Communications suggests that an extension with no direct outside access be used for the modem telephone line.

A Hayes-compatible modem and cable are provided to allow field service personnel to perform system maintenance and troubleshooting from a terminal at a remote location.

The server communicates at either 1200 baud or 9600 baud; 9600 baud is recommended for remote system management.

Refer to the “Required Components” section, following, for a list of the components needed to connect a modem to the server. If the server has already been set up for remote online upgrades, all modem hardware for remote system management is in place. Refer to the *Peripheral Equipment* manual for instructions about how to configure modems at remote PCs or terminals to communicate with the server.

Required Components

Octel provides the following components to connect a modem to the server:

- ❑ External Hayes-compatible modem
- ❑ Modem cable, P/N 057–1325–000

The customer must provide the following components to connect the modem to the telephone line:

- ❑ 2- or 4-wire modular telephone cord to connect the modem to the telephone line. (This cord is usually supplied with the modem.)
- ❑ Appropriate power receptacle for the modem.
- ❑ Telephone line with RJ11 jack.

Configuring the Modem

Some Octel 250s were shipped with Hayes modems. However, since February 1997, a Hayes-compatible Bocamodem has been shipped with the server. Some of the procedures below apply to one or the other or both modems, as described. Before you connect the modem to the server, configure the modem from any terminal or PC, as follows:

1. Use the appropriate cable to connect the modem to any terminal or PC.
2. Configure the terminal or PC communications program to use 9600 baud, 8 bits, no parity, 1 stop bit, and full-duplex operation.
3. Connect the modem power source.
4. Turn on the modem power switch. For the Hayes modem, check that the TR (terminal ready) and MR (modem ready) LEDs on the modem are lit.
5. For the Bocamodem, refer to its manual and establish and test communication between the PC and the modem, then go to step 8.

6. For the Hayes modem, from the keyboard, type ***AT*** and press ***Enter***.

   - ❑ Depending on the current modem configuration, either ***OK*** or ***0*** appears on the screen. If either appears, go to step 8.
   - ❑ If nothing appears on the screen after you press ***Enter***, watch the RD (receive data) and the TD (transmit data) LEDs as you type ***AT E1*** on the keyboard. The RD and the TD LEDs should light as you type the commands, indicating that the modem is now configured to echo the keyboard commands. If the LEDs light, go to step 8.

7. If the RD and TD LEDs do not light as you type the commands, make sure that the cabling between the modem and the terminal or PC is correct. If the modem still does not respond, make sure that the terminal or PC parameters, such as the serial-port configuration and the serial-port number in the communications software, are configured correctly.

8. After communication has been established with the modem, type ***ATE0Q1&C1&D0S0=1S37=9&K0&Y0&W0*** and press ***Enter***. (You can type the command in either upper- or lower-case.) Refer to Table 4-1 for a description of the commands.

Table 4-1. Command Description for Server's Modem.

Command	Description
AT	Attention, modem configuration commands follow.
E0	Do not echo characters.
Q1	Do not return result codes.
&C1	Track status of carrier detect.
&D0	Ignore status of DTR.
S0=1	Set modem to answer after 1 ring.
S37=9	Set DCE speed to 9600.
&K0	Disable local flow control.
&Y0	Set user profile 0 as power-on configuration.
&W0	Write current configuration to user profile 0.

9. Type ***AT&V*** and press ***Enter*** to view the modem configuration. Check that the modem settings for the active profile and stored profile 0 match the correct configuration values shown in Figure 4-7 for the Hayes modem or in Figure 4-8 for the Bocamodem. Refer to the modem's manual for more information about configuring the modem.

```
AT&V
ACTIVE PROFILE:
B16 B1 B41 B60 E0 L2 M1 N1 P Q1 V1 W0 X4 Y0 &A0 &C1 &D0 &G0 &J0 &K0 &Q5 &R0 &S0 &T4 &U0 &X0 &Y0
S00:001 S01:000 S02:043 S03:013 S04:010 S05:008 S06:002 S07:050 S08:002 S09:006
S10:014 S11:095 S12:050 S18:000 S25:005 S26:001 S36:007 S37:009 S38:020 S44:003
S46:002 S48:007 S49:008 S50:016 S97:030 S108:002 S109:062 S110:002

STORED PROFILE 0:
B16 B1 B41 B60 E0 L2 M1 N1 P Q1 V1 W0 X4 Y0 &A0 &C1 &D0 &G0 &J0 &K0 &Q5 &R0 &S0 &T4 &U0 &X0
S00:001 S02:043 S06:002 S07:050 S08:002 S09:006 S10:014 S11:095 S12:050 S18:00
S25:005 S26:001 S36:007 S37:009 S38:020 S44:003 S46:002 S48:007 S49:008 S50:016
S97:030 S108:002 S109:062 S110:002
```

Figure 4-7. Hayes Modem Configuration.

```
AT&V
ACTIVE PROFILE:
B1 E0 L1 M1 N1 Q1 T V1 W0 X4 Y0 &C1 &D0 &G0 &J0 &K0 &Q5 &R1 &S0 &T4 &X0 &Y0
S00:001 S01:000 S02:043 S03:013 S04:010 S05:008 S06:002 S07:050 S08:002 S09:006
S10:014 S11:095 S12:050 S18:000 S25:005 S26:001 S36:007 S37:009 S38:020 S44:020
S46:138 S48:007 S95:046

STORED PROFILE 0:
B1 E0 L1 M1 N1 Q1 T V1 W0 X4 Y0 &C1 &D0 &G0 &J0 &K0 &Q5 &R1 &S0 &T4 &X0
S00:001 S02:043 S06:002 S07:050 S08:002 S09:006 S10:014 S11:095 S12:050 S18:000
S36:007 S37:009 S40:105 S41:135 S46:138 S95:046
```

Figure 4-8. Bocamodem Configuration.

Configuring the Hayes Modem as a Dumb Modem

The Hayes modem can be configured as a dumb modem. The Bocamodem cannot be configured as a dumb modem.

Octel strongly recommends, but does not require, that the Hayes modem connected to the server be configured as a dumb modem, because remote system management is less prone to disconnect problems and other errors if the modem is configured in this manner. If the modem is required for other applications that cannot be performed through a dumb modem, skip the following steps.

To configure the modem as a dumb modem, change the dip-switch settings on the modem, as follows:

1. Turn off the modem power switch and disconnect the modem from the power source.

2. Disconnect the modem from the terminal or PC, if connected.

3. Disconnect the modem from the telephone line.
4. Remove the modem front panel by inserting a screwdriver into the notch on the side of the front panel, beneath the plastic tabs at the side. Twist the screwdriver slightly to loosen the panel and remove it completely.
5. Locate the dip switches on the left side of the circuit board, at the front of the modem.
6. Set the dip switches, as shown in Figure 4-9.

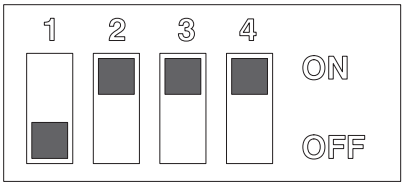


Figure 4-9. Dip-Switch Settings for the Hayes Modem.

Connecting the Modem to the Server

After configuring the modem, connect it to the server as follows:

1. Insert the modem into the modem tray on the bottom left side of the server, as shown in Figure 4-10.
2. Plug the provided cable, P/N 057–1325–000, into the DTE interface (RS-232) port of the modem.
3. Plug the other end of the cable into the MODEM connector on the CCF card (Figure 4-5 on page 4-9).
4. Connect one end of the modular telephone cord into the telephone jack. Connect the other end to the LINE jack on the modem.
5. Plug in the power cord for the modem.

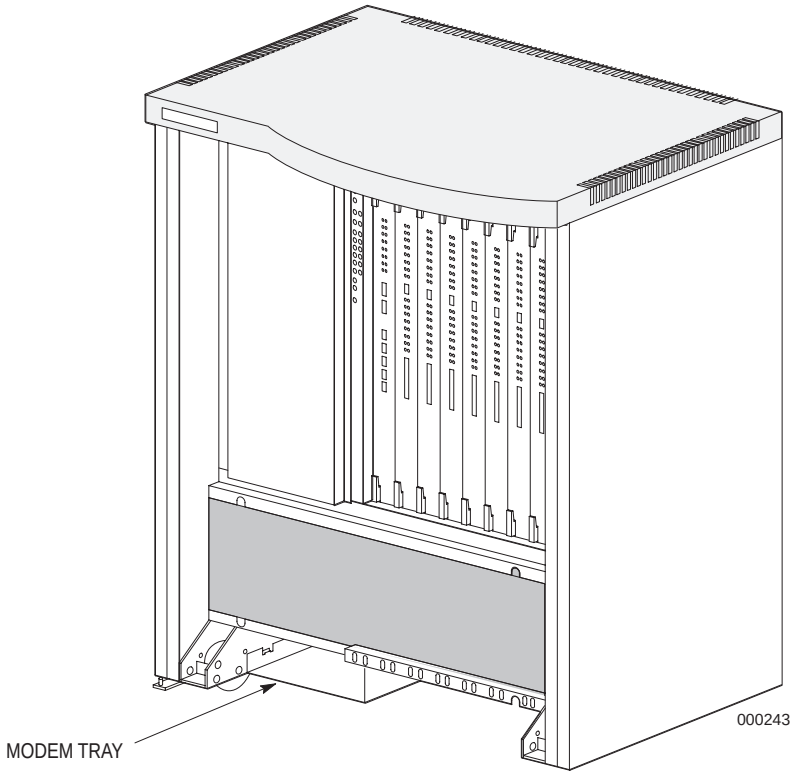


Figure 4-10. Modem Tray Location.

Installing the Antitilt Bracket

When the server is in place, install an antitilt bracket on the front and back wheels to prevent the server from accidental tilting and falling when subjected to severe side forces. The brackets are included with the new server. Install the antitilt brackets, as follows:

1. Unpack the two antitilt brackets, P/N 012–2510–000, with the bolts partially installed.
2. Use a 1/4-inch wrench to remove the bolts. Slide the antitilt bracket under the wheel brackets, from the side of the server, as shown in Figure 4-11.
3. Align the threaded holes in the antitilt bracket with the holes in the wheel bracket, and install the bolts from the top.
4. Repeat steps 2 and 3 at the other side of the server, with the second bracket.

If the server must be moved, you must remove the antitilt brackets.

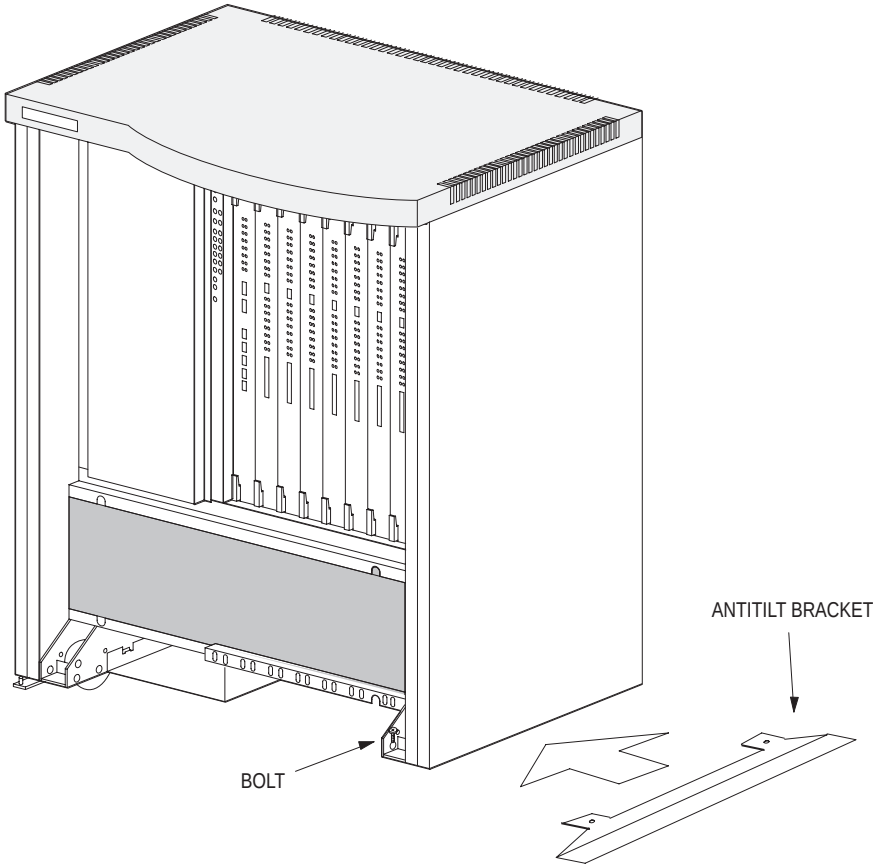


Figure 4-11. Position of the Antitilt Bracket, Side View.

Checking the System ID Dip Switch

From the rear of the server, check the system ID dip switch, as follows:

1. Remove the sheet metal cover from the unkeyed terminator board.

2. On the terminator board, shown in Figure 4-12, check the 8-position dip switch at location U1. Make sure that all switches are set to ON.

3. Replace the sheet metal cover on the terminator board.

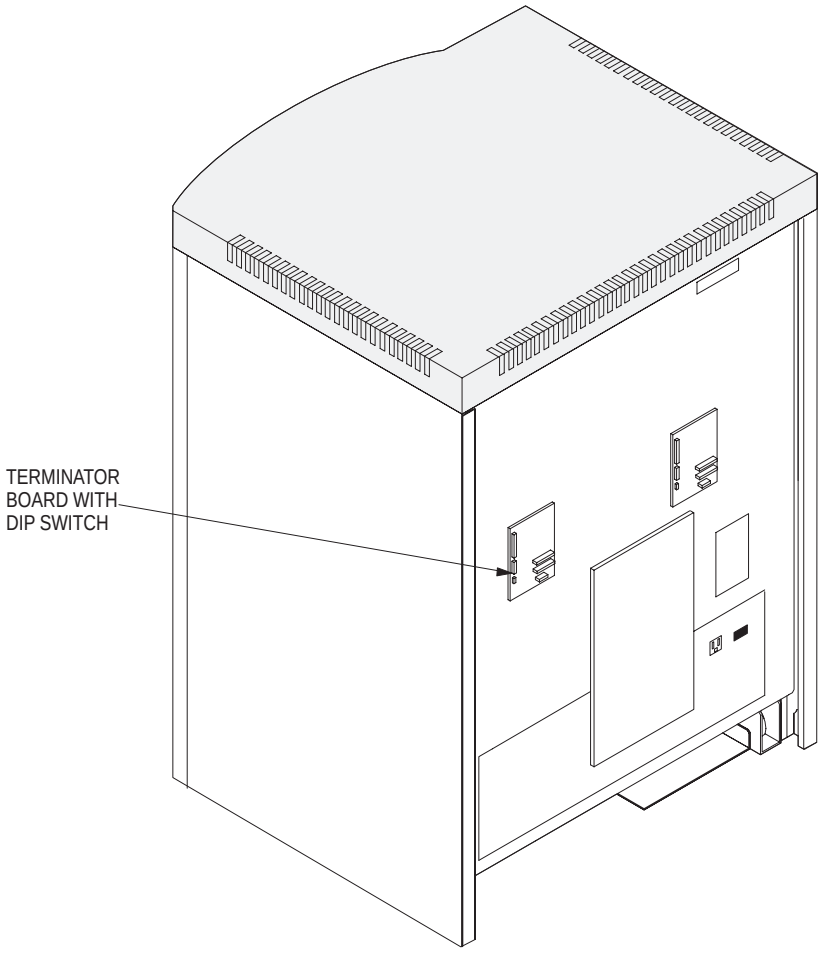


Figure 4-12. Terminator Boards (Rear View).

Connecting an External Alarm Cable

Connect the remote alarm outputs for the out-of-service (OOS), service-affecting (SA), and non-service-affecting (NSA) alarms to the alarm connector on the back of the server, as shown in Figure 4-13. Use the 9-position plug cable, P/N 057–1337–000, provided for connection to alarm outputs. Refer to Chapter 3, the “External-Alarms Connection” section, page 3-14 for pin assignments.

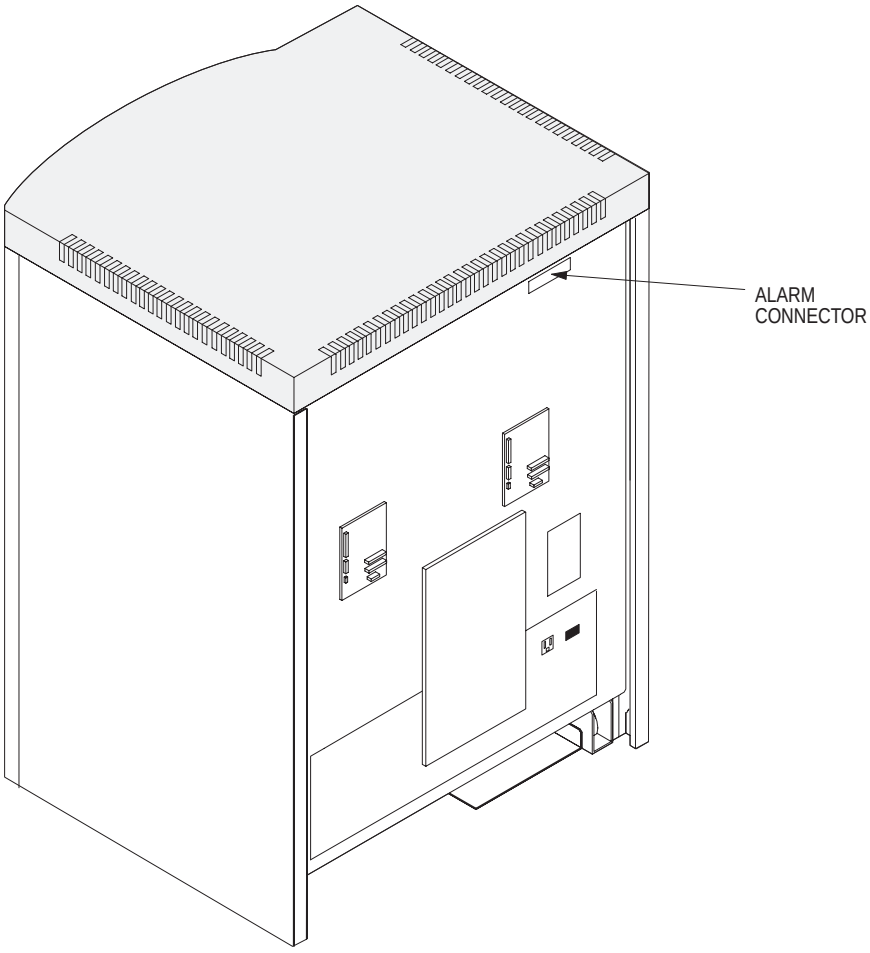


Figure 4-13. Location for the External Alarm Connector.

Checking Connections

Before initializing the server, check that all connections have been made and are secure. Check the following:

- ❑ Power
- ❑ Connections to CCF card, especially SMT
- ❑ Connections to all FLT cards
- ❑ Connection to the LAN card, if used
- ❑ External alarm

If all connections are secure, proceed with initialization; refer to Chapter 5 for a description.

5 STARTUP AND INITIALIZATION

After the Octel 250 message server has been installed, its external cables connected, and its internal switches and connections verified, the server can be started up and initialized. Several steps must be performed before the server is operational.

The system manager terminal (SMT) must be powered up and configured before the server is powered up for the first time. The SMT enables the server's power-on and boot routines to be viewed. At the completion of the boot process, server parameters are established through menus 0 and 4. The server is then tested to ensure correct operation. Figure 5-1 shows the tasks that comprise startup and initialization.

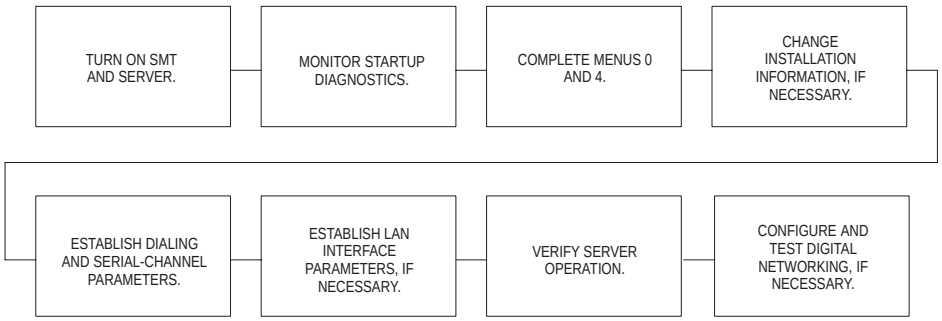


Figure 5-1. Startup and Initialization Procedures.

Initializing the SMT and Printer

The server supports several terminals that can function as the primary SMT. Select the terminal type when you boot the server for the first time. Normally, Octel configures the server to operate with the customer's terminal type before shipment. However, check the terminal type to ensure that it is correct. If it is incorrect, the server boots, but the display is unreadable. Refer to the *Peripheral Equipment* manual for information about terminal types, procedures to configure the SMT, and procedures to establish printer parameters.

Configure the SMT and printer, as follows:

1. Make sure that the terminal is correctly installed and connected to the CONSOLE terminal on the CCF card.

2. Press the power button to turn on the terminal. Listen for an immediate beep, which indicates that there is power to the terminal. Wait for the cursor to appear in the upper left corner of the screen.

3. Use the intensity control to adjust the screen intensity. If the intensity is too high, highlighted fields do not appear brighter than nonhighlighted fields.

4. Configure the SMT and printer parameters, as described in the manufacturers' manuals and the *Peripheral Equipment* manual. Make sure that XON/XOFF protocol is enabled for the SMT and printer.

Refer to the "About This Manual" section, in the front of this manual, for information about using the keyboard and notation conventions used in this manual.

Monitoring Startup Diagnostics

When the server is started up, the CCF card determines that the voltages are within the tolerance range and issues a reset to the other logic cards. Power is supplied to the system fans and the disk drives. The CCF card then establishes communication with the SMT, which displays the progress of the startup. Chapter 6 describes startup fault isolation.



Caution!

If the server has any problems during startup, it might not boot. If any problems occur during startup, refer to Chapter 6 for startup fault isolation.

Starting Up the Server

Press the power switch to the ON position to start up the server. The SMT screen displays the progress of the system startup, which takes about 2 minutes.

Monitoring the CPU Diagnostic Tests

As shown in Figure 5-2, the screen displays the initial program load (IPL), which begins with CPU diagnostic self-tests loaded from the CPU on the CCF card. At the end of the CPU diagnostics, three boot options appear on the SMT display, under the ***Please select from the following:*** prompt. Do not enter a boot prompt at this time. Let the boot continue automatically (the timeout is 7 seconds).

```
Prom Resident Test Demon, Production Version

CCF CARD Self-Test Status:

CPU Test..................................... PASSED
Console Test................................. PASSED
Data/Stack RAM Test.......................... PASSED
*** MTA Support Enabled
*** XOFF/XON Timeout ENABLED

Scrubbing all “known” DRAM memory (00000000-01400000)
Timer Test................................... PASSED

Copyright 1989 – 1996 Octel Communications Corp
Prom Resident Production Version: 9611CF.C  (APR 10, 1997  10:16 AM)

Board Type is: CF
CPDIAG: RUN *
Display (but NOT execute) Self-Test Status..... (00) PASSED
DRAM Walking 1s DWORD Test..................... (33) STARTED
............................00 01 02 03
DRAM Walking 1s DWORD Test..................... (33) PASSED
DRAM 3PAR DWORD Test executed from DRAM........ (7D) STARTED
0wA 1w5 0rA 2wA 1r5 0w5 2rA 1wA 0r5 2w5 1rA 2r5

DRAM 3PAR DWORD Test executed from DRAM........ (7D) PASSED
Alarms Test.................................. (7C) PASSED
Intra-Card OPI Test.......................... (5A) PASSED
ENET Test.................................... (74) PASSED
Watch Dog Timer.............................. (5F) PASSED
ISCC Register R/W Verifications.............. (57) PASSED
ISCC SDLC Test............................... (58) PASSED
SCSI Chip test............................... (4C) PASSED
SCSI Disk configuration...................... (50) STARTED
Drive Configurations: D D . D . . T
SCSI Disk configuration...................... (50) PASSED
SCSI Disk drive diagnostic................... (4D) PASSED
SCSI Disk write/read/verify test............. (4F) STARTED
W01-W11-W31-.R0.R1.R3.C0.C1.C3W0fe-W1fe-W3fe-.R0.R1.R3.C0.C1.C3
W01-W11-W31-.R0.R1.R3.C0.C1.C3W0fe-W1fe-W3fe-.R0.R1.R3.C0.C1.C3
SCSI Disk write/read/verify test............. (4F) PASSED
SCSI Disk Multi threading test .............. (63) STARTED
SCSI Disk Multi threading test .............. (63) PASSED

Please select from the following:

     B   Boot the System
    ^DB  Boot the System (clear autoboot, set SRAM=0xFF)
    ^DD  Run Diagnostics Interactively

Selection->
No response...
- Beginning OS BOOT process
Verify Serial No..
Warning: Can NOT detect the presence of the Touch Memory, check backplane!

[IPL routine not shown here]
```

Figure 5-2. CPU Diagnostic Test Display at Startup.

Checking the System-File Status

As shown in Figure 5-3, the screen then displays a message for the beginning of the initial program load (IPL), phase 1 (IPL1). IPL1 tests are loaded by the IPL1 program, located on the CPU, each time the server is restarted.

The server displays the PIPL (protected mode IPL) version, then the ***SYSTEM FILE STATUS:*** line, including 10 hexadecimal bytes (offsets). The first offset is the overall disk-drive status code. Its value should be ***00***. Other offsets indicate which drives are installed and which are running. The system-file status bytes are described in detail in Chapter 6.

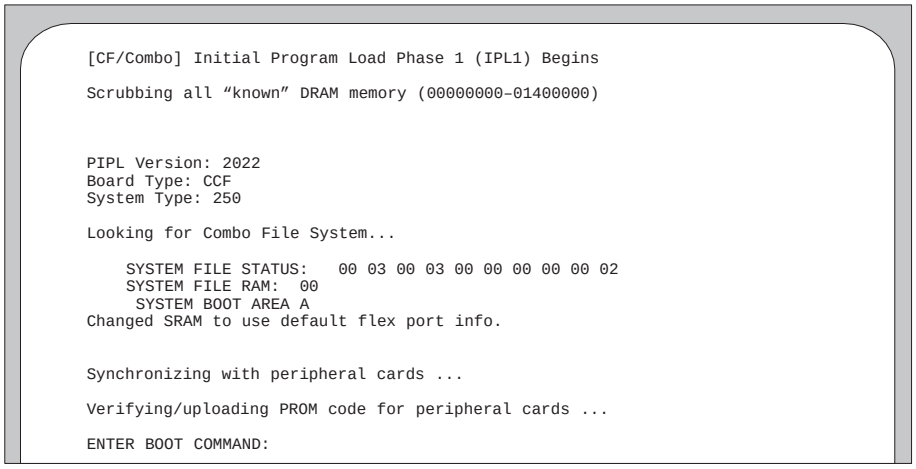


Figure 5-3. Example of IPL1 and PIPL.

The server must pass all tests before it can be booted.



Caution!

Do *not* attempt to boot the server if the value in the first offset of the system-file status is not ***00*** or ***03***. Any other value indicates a fault that must be corrected before booting the server. Refer immediately to Chapter 6 for procedures to correct the problem.

If any of the tests fail, the SMT displays a ***Boot not permitted . . .*** message with failed test indications. If this error message appears, refer to Chapter 6 for corrective procedures. The server can boot only after all the tests have been completed successfully.

Selecting the Terminal Type and Speed

The first time the terminal is turned on, default settings control its operation, but you might need to change them to the parameters required by the particular terminal type. The first time that the ***ENTER BOOT COMMAND:*** prompt appears, the following prompt might also appear at the bottom of the screen, because the terminal type has not yet been selected:

Invalid terminal type . . . select terminal type using utilities. Press any key to continue.

Set the terminal parameters, as follows:

1. At the ***ENTER BOOT COMMAND:*** prompt, type ***Ctrl+D***, then ***R***. (You can access this utility when the service and engineering bits are both off.) The TERMINAL SELECTION OPTIONS screen appears, as shown in Figure 5-4.

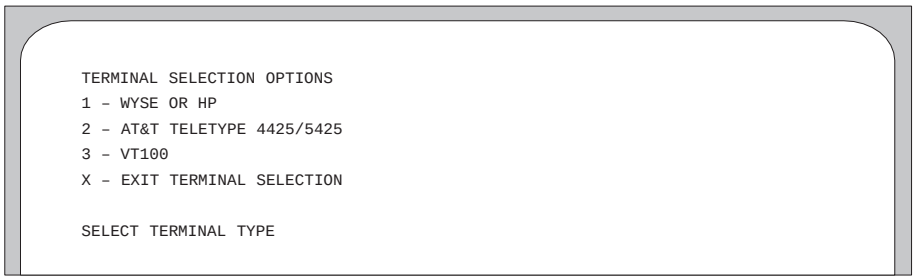


Figure 5-4. The TERMINAL SELECTION OPTIONS Menu.

2. Enter ***1*** for an HP 700/43 or Wyse 50 or 55 terminal, ***2*** for an AT&T 4425 or 5425 terminal, or ***3*** for a DEC VT120 or VT220 terminal.
3. If the terminal type selected is not accepted by the terminal, the screen displays the invalid terminal type prompt again. If this prompt reappears, call the Octel Customer Services Center or your Octel distributor.
4. If no error message appears, press ***X*** to return to the ***ENTER BOOT COMMAND:*** prompt.
5. If the terminal (console) speed is incorrect, type ***Ctrl+D***, then ***Y***. (You can access this utility when the service and engineering bits are both off.) From the CHANGE SPEED OPTIONS menu, select ***A*** to access the console port speed options, and select the required speed. Press ***X*** to return to the ***ENTER BOOT COMMAND*:** prompt.

Completing the Boot Process

The following are valid entries used to boot the server:

A boots the server on line and directs the server to reboot automatically after any type of system restart other than a restart initiated by a shutdown using menu 13.1. Use the ***A*** command to boot a normally operating program after maintenance. (Some maintenance procedures require booting with a ***B*** first, and indicate when to do so.)

B begins the boot process, starting with logic card EPROM diagnostics, refreshes the RAM on the CPU and file cards, then returns to the ***ENTER BOOT COMMAND*:** prompt. After testing drives or exiting utilities, use the ***B*** command once, then use ***A*** at the next ***ENTER BOOT COMMAND*:** prompt.

0 (zero) boots the server on line like the ***A*** command, except that it boots the server only once. If the input power fails following this boot command or the server attempts to reboot after a fatal inconsistency, the server waits for a boot command. Use this boot command only as directed.

Typing ***Ctrl+D*** followed by a certain letter boots only IPL2 and particular maintenance utilities associated with that letter. The server is not booted on line.

At the ***ENTER BOOT COMMAND:*** prompt, enter ***A*** to load the PIPL program. The command instructs the CCF card to load the operating program from disk to memory.

Refer to the following sections for descriptions of correct completion of the boot process. Refer to Chapter 6 to troubleshoot any problems that occur.

System-Status Table (SST)

The SST contains site-specific information and is stored on system drives 0 and 1. The SST information includes the PBX type, the number of digits in a mailbox, and the system manager mailbox number. The SST must be successfully loaded for the server to operate correctly. When the SST has been loaded successfully, the screen displays the message ***LOAD SST: OK***. If the SST cannot load successfully, turn off the main circuit breaker and call the Octel Customer Services Center or your Octel distributor immediately.

Card Configuration (Aria 1.2 Only)

For Aria 1.2 but not for Aria 2.0, the CCF card sends a broadcast control-bus message to all cards in the server, directing them to identify themselves. The card configuration is displayed after the FLT cards respond to the CCF message. The SMT displays an ***F*** for the CCF card and a dash (**–**) for every other card or empty slot. If this display is not correct for Aria 1.2, call the Octel Customer Services Center or your Octel distributor.

Direct-Memory-Access (DMA) Data Bus

The CCF card tests the DMA data bus by sending messages to and from FLT cards. When the data bus is working correctly, the screen displays the following message:

DATA BUS DMA: OK.

Operating System

The IPL reads the operating program into CPU memory. The message ***LOAD OPERATING SYSTEM: OK*** indicates that the operating system has been loaded successfully.

The file system attempts to build the dial-by-name table during this part of the boot process. The file system searches for mailboxes; since there are none, it displays menu 0 later in the process. Figure 5-5 shows the display confirming that the operating system has been loaded successfully.

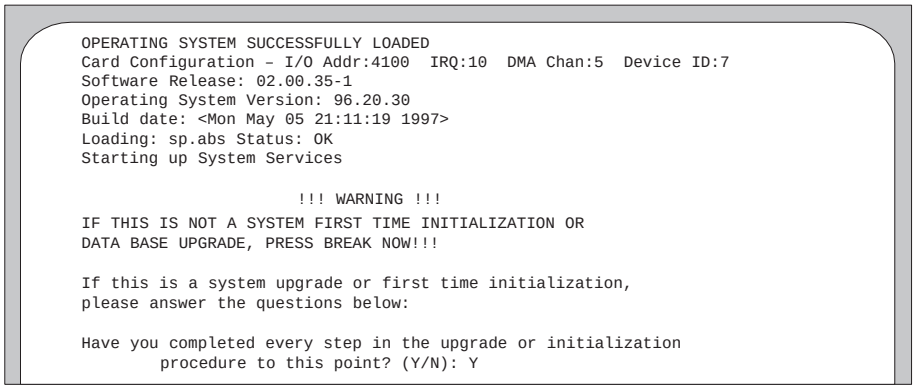


Figure 5-5. OPERATING SYSTEM SUCCESSFULLY LOADED Screen.

The display shown in Figure 5-5 ends with the ***Have you completed every step in the upgrade or initialization procedure to this point? (Y/N):*** prompt. Enter ***Y.***

At the ***ARE YOU SURE YOU WANT TO DO THIS (Y/N):*** prompt, enter ***Y.*** The display scrolls to the information shown in Figure 5-6.

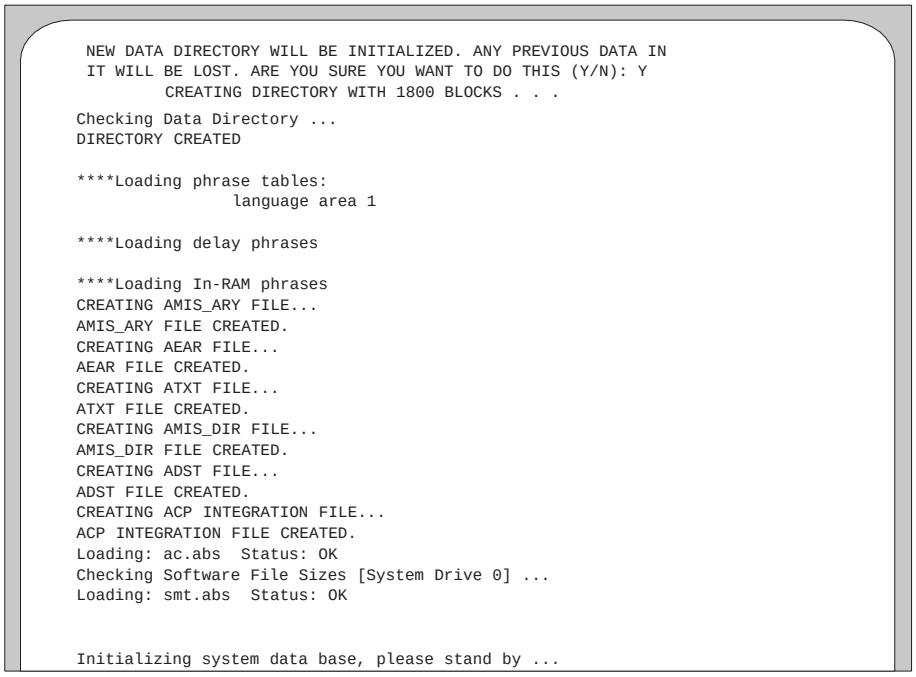


Figure 5-6. Initialization Screen.

Completing the First-Time Setup in Menu 0

Refer to all applicable configuration notes for the PBX and the intended integration.

Menu 0 appears only when the server is initialized.



Caution!

Be careful when entering information in the ***VPMOD Serial Number:***, the ***Type of Telephone System VPMOD is Connected to:***, the ***AT&T System 85 Special Message Waiting:***, and the ***SMDI/Inband Special Message Waiting:*** fields. They cannot be changed unless the server is reinitialized. During reinitialization, the database and all messages are lost.

Most of the entries in menu 0 can be changed in menu 1. However, the following fields *cannot be changed*, unless you reinitialize the server, which deletes all messages and the database:

- ❑ The serial number of the server in the ***VPMOD Serial Number:*** field
- ❑ The type of telephone system to which the server is connected, identified in the ***Type of Telephone System VPMOD is Connected to:*** field (refer to the "Entering Server Information" section, page 5-9)
- ❑ The ***AT&T System 85 Special Message Waiting:*** field (refer to the appropriate configuration note)
- ❑ The ***SMDI/Inband Special Message Waiting:*** field

If you set any of these fields incorrectly, call the Octel Customer Services Center.

The ***Number of digits in a mailbox number:*** field can be changed only by trained service personnel, with the server off line. The value in this field can only be increased.

Menu 0 consists of four screens, containing the following information:

- ❑ Company information
- ❑ Server information
- ❑ System manager information
- ❑ Current date and time

Refer to the following sections for discussions of the four screens of menu 0.

Entering Company Information

The first screen of Menu 0 – First-Time Setup provides information about the company that owns the server, as shown in Figure 5-7.

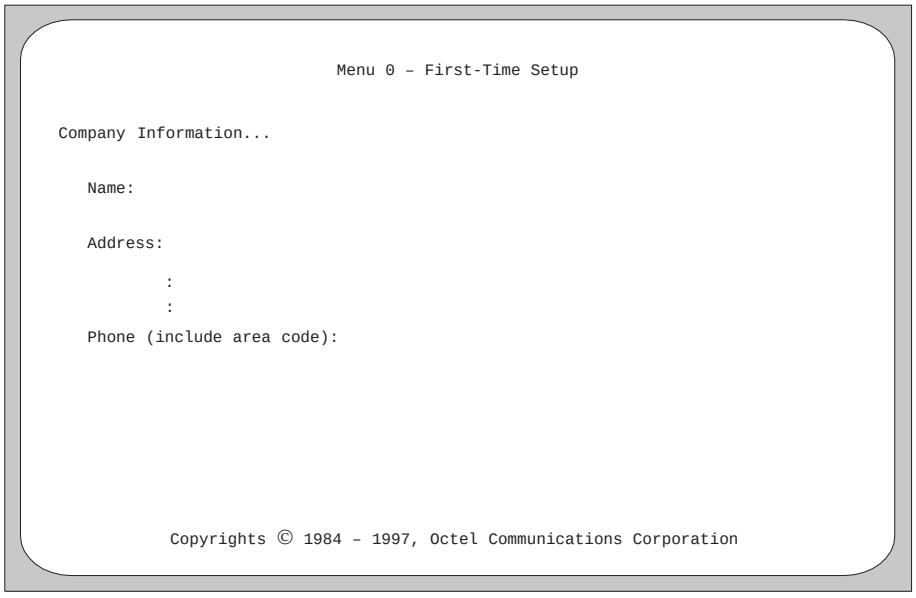


Figure 5-7. First Screen of Menu 0 – First-Time Setup.

Enter a description of the company that owns server in the ***Company Information. . .*** fields, as follows:

1. In the ***Name:*** field, enter the name of the company that owns and is responsible for operation of the server.

2. Enter the company address in the ***Address:*** field. This field has three lines, each allowing a maximum of 30 characters, including spaces.

3. Enter the company telephone number in the ***Phone (include area code):*** field in the form (XXX) YYY-YYYY, where XXX is the area code and YYY-YYYY is the 7-digit telephone number. This number is the basic telephone number for the company and *not* the server-access number used by subscribers.

4. When you have completed the last field, press ***Enter***. The second menu 0 screen appears.

Entering Server Information

Complete the fields on the second screen of menu 0, which is also known as menu 0.1. Figure 5-8 is an example of menu 0.1. Enter information specific to the server. VPMOD means voice-processing module; when used on an SMT screen, it refers to the server.

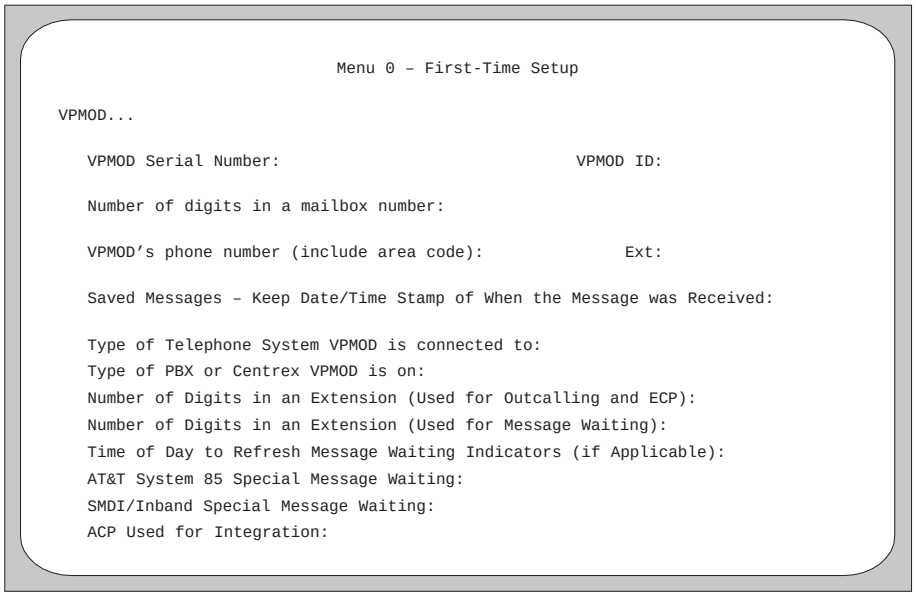


Figure 5-8. Second Screen of Menu 0 – First-Time Setup (Menu 0.1).

Complete menu 0.1, as follows:

1. Locate the server's 5-digit serial number on the rear of the cabinet.

Caution!

Be careful when completing the ***VPMOD Serial Number:*** field. The entry in this field cannot be changed unless the server is reinitialized. During reinitialization, the database and all messages are lost.

2. Enter the serial number in the ***VPMOD Serial Number:*** field. The serial number can be changed *only* during a reinitialization, which deletes all messages and the database. If you set this field incorrectly, call the Octel Customer Services Center.

3. In the ***VPMOD ID:*** field, enter a unique description, up to 10 alphanumeric characters long, to identify the server.

Caution!

Make sure that the number of digits in a mailbox number (3 to 10) is entered correctly. This number can *only be increased*. Only a certified service person can change this parameter.

4. Enter the number of digits to be used in a mailbox number in the ***Number of digits in a mailbox number:*** field, and press ***Enter***. Mailbox numbers must be 3 to 10 digits long. *This field entry can be changed only by certified service personnel. Once set, the mailbox-number lengths can only be increased.*

Shortened, lengthened, or variable-length mailbox addresses can also be defined by using an express address or an alias address. (Refer to the *System Manager Manual* for information about express addresses and alias addresses.)

5. Enter the server's telephone number (also known as the access number) in the ***VPMOD's phone number (include area code)***: field. The format requires a 3-digit area code, in parentheses, followed by the 7-digit telephone number. Refer to the appropriate configuration note for integration-related issues that might affect this field.

6. If the server is configured to be accessed through an extension, enter the extension number in the ***Ext:*** field.

7. In the ***Saved Messages – Keep the Date/Time Stamp of When the Message was Received:*** field, enter ***Y*** if the date and time for a saved message is to reflect the time the message was received. Enter ***N*** if the date and time is to reflect the time a message was saved. The allowed save time begins at the time indicated by the date-and-time stamp. If ***N*** is entered, the clock starts when the message is saved, providing additional save time for the subscriber. The default for this field is ***N***.



Caution!

Be careful when selecting the country code to enter in the ***Type of Telephone System VPMOD is Connected to:*** field. The entry in this field cannot be changed unless the server is reinitialized. During reinitialization, the database and all messages are lost.

8. Enter the code for the type of telephone system in the ***Type of Telephone System VPMOD is Connected to:*** field. This entry can be changed *only* during a reinitialization, which deletes all messages and the database. Enter one of the following country codes:

   1 – North American
   2 – Australian
   3 – New Zealand
   4 – United Kingdom
   5 – France
   6 – Germany
   7 – Belgium
   8 – Netherlands

   If you set this field incorrectly, call the Octel Customer Services Center.

9. Select the code for the type of PBX connected to the server. You can use menu 1 to change this field later, without reinitializing the server, if you change the PBX to which the server is connected.

   - ❑ The server can be connected to a PBX in a nonintegrated manner. Enter ***2 – Other*** in this field if in-band integration is to be used or if all of the ports are connected to the PBX in a nonintegrated manner.

- ❑ If all of the ports are integrated with the PBX, enter the correct code for the PBX. The Octel 250 server supports all the listed PBXs. For assistance, refer to the appropriate integration configuration note or call the Octel Customer Services Center or your Octel distributor.

Enter one of the following codes in the ***Type of PBX or Centrex VPMOD is on:*** field:

1 – None (used with 1MB, WATS, and DID)

2 – Other (used if none of the other options apply)

3 – 1A ESS/SMDI, Full Duplex (Centrex, used only with CO integration, full-duplex)

A – NEC 2400 MMG/MCI

B – PBX integration device / ROLM

D – INTECOM with VMP Interface

E – PBX integration device / AT&T 75

F – PBX integration device / AT&T 85

G – Ericsson MD110

H – PBX MID NT Meridian 1/SL–1

I – PBX DMID NT Meridian 1

J – Mitel SX50 (if the server has FLT-M cards)

K – Mitel SX100/200 (if the server has FLT-M cards)

L – Mitel SX200 Digital (if the server has FLT-M cards)

M – Mitel SX2000 (if the server has FLT-M cards)

10. Enter a digit between ***2*** and ***7*** in the ***Number of Digits in an Extension (Used for Outcalling and ECP):*** field. This entry must equal the number of digits that the server dials to call a telephone number on the PBX or Centrex. This number must also equal the number of digits in the extension number used by the server to transfer callers to the called party, using automated attendant or Enhanced Call Processing ™ (ECP) mailboxes.

    The server dials this number of digits when calling subscribers to notify them of new messages when the outcall-notification feature is activated.

11. In the ***Number of Digits in an Extension (Used for Message Waiting):*** field, enter a number between ***2*** and ***10*** (***7*** for a Centrex). This is the number of digits in the subscriber extensions for which the server requests that the PBX set message waiting. In most cases, this entry is the same as the entry in the ***Number of Digits in an Extension (Used for Outcalling and ECP):*** field. Check the appropriate configuration note for information about the fields described in this step.

12. Enter the time of day in the ***Time of Day to Refresh Message-Waiting Indicators (If Applicable)*** field when the server should refresh message-waiting indicators, if the PBX or Centrex turns them off each day or if power interruptions occur. Enter the time in one of the following formats:

- ❏ hh:mmA for a.m.
- ❏ hh:mmP for p.m.

Noon is p.m. Midnight is a.m.

Make an entry in this field *only* if your server is integrated with the PBX. Some PBXs routinely purge all message-waiting indicators, on all extensions, at a specified time of day. Also, some PBX and Centrex systems lose message-waiting information after power interruptions. If the server is integrated with this type of PBX or Centrex or if power failures occur frequently, the time of day entered in this field determines when the message-waiting commands are refreshed.

Leave the field blank if routine purging of message-waiting indicators does not take place.



Caution!

Be careful when completing the ***AT&T System 85 Special Message Waiting:*** field. The entry in this field cannot be changed unless the server is reinitialized. During reinitialization, the database and all messages are lost.

13. Enter a ***Y*** or an ***N*** in the ***AT&T System 85 Special Message Waiting:*** field. If you entered ***1*** in the ***Type of PBX or Centrex on Which VPMOD is Connected:*** field, this field does not appear. This entry can be changed *only* during a reinitialization, which deletes all messages and the database.

    - ❏ Under most conditions, leave the default of ***N*** in this field. Enter a ***Y*** *only* if the server is to be integrated with a PBX that requires each message-waiting indication (MWI) to be cleared using the same port that set the MWI. These PBXs include, but are not limited to the AT&T System 85, the AT&T System 75, the AT&T Definity G3, and the Rolm 9006i. *Entering a **Y** under any other conditions can have severe negative consequences to the performance of the server.* Refer to the appropriate configuration notes for information about integrations.
    - ❏ If the ***AT&T System 85 Special Message Waiting:*** field appears, leave the ***Time of Day to Refresh Message Waiting Indicators (if Applicable):*** field blank and make sure that the ***Reset Message Waiting on System Boot:*** field in menu 6.2 contains a ***Y*** (the default value). If an ***N*** is entered in the ***Reset Message Waiting on System Boot:*** field, the message-waiting table is not rebuilt at reboot, and message waiting is not activated.

    If you set this field incorrectly, call the Octel Customer Services Center.



Caution!

Be careful when completing the ***SMDI/ Inband Special Message Waiting:*** field. The entry in this field cannot be changed unless the server is reinitialized. During reinitialization, the database and all messages are lost.

14. Enter a ***Y*** or an ***N*** in the ***SMDI/Inband Special Message Waiting:*** field. If you entered ***1*** in the ***Type of PBX or Centrex on Which VPMOD is Connected:*** field, this field does not appear. This entry can be changed *only* during a reinitialization, which deletes all messages and the database.

    - ❑ The default value is ***N***. Enter a ***Y*** in this field *only* if the server is to be integrated with *multiple* PBXs, using in-band integration for each PBX or using a combination of SMDI integration for at least one PBX and in-band integration for at least one PBX. If all integrations to multiple PBXs are SMDI, retain the default (***N***). Refer to the appropriate configuration notes for information about specific integrations.
    - ❑ If the ***SMDI/Inband Special Message Waiting:*** field appears, leave the ***Time of Day to Refresh Message Waiting Indicators (if Applicable):*** field blank and make sure that the ***Reset Message Waiting on System Boot:*** field in menu 6.2 contains a ***Y*** (the default value). If an ***N*** is entered in the ***Reset Message Waiting on System Boot:*** field, the message-waiting table is not rebuilt at reboot, and message waiting is not activated.

    If you set this field incorrectly, call the Octel Customer Services Center.

15. In the ***ACP Used for Integration:*** field, enter an ***N***, because the ACP feature is not available for the Octel 250.

16. When you have completed the last field, press ***Enter***. The third screen of menu 0 appears.

Assigning System Manager Information

The third screen of menu 0, also known as menu 0.2, contains information specific to the primary and secondary system managers, as shown in Figure 5-9. The following sections provide procedures for completing menu 0.2.

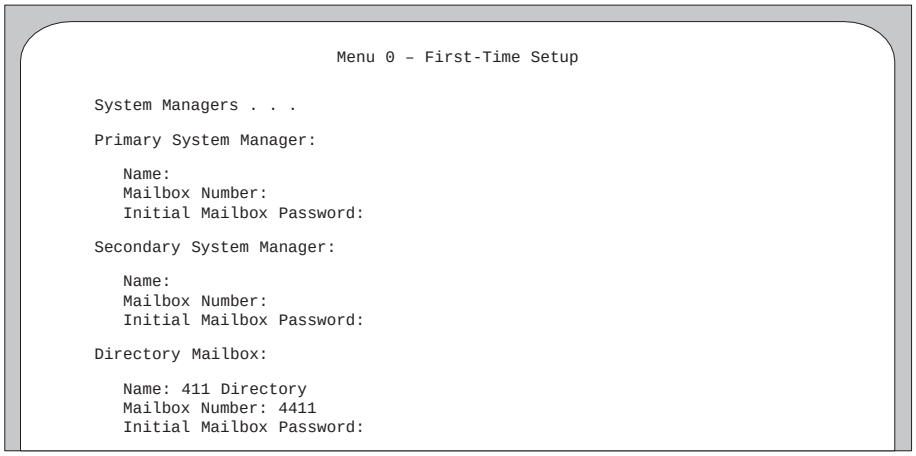


Figure 5-9. Third Screen of Menu 0 – First-Time Setup (Menu 0.2).

Primary System Manager

The primary system manager has primary responsibility for the tasks assigned to the system manager. Enter parameters for the primary system manager, as follows:

1. In the ***Name:*** field, enter a name that is unique to the primary system manager. The name can be from 2 to 20 characters long. Precede the name with the digit ***1***. The digit prevents callers from accessing the system manager mailbox through the dial-by-name feature.

2. Enter the number of the mailbox reserved for the primary system manager in the ***Mailbox Number:*** field, and press ***Enter***. The number of digits must be the same as established in the second screen of menu 0 (menu 0.1). The mailbox is created automatically during the initialization process.

3. In the ***Initial Mailbox Password:*** field, enter an initial password for the primary-system-manager mailbox. This initial password can have up to 15 digits. For security reasons, Octel Communications recommends at least 12 digits.

   - ❏ The installer requires a password to gain access to the menus on the system manager terminal. The password for the system manager terminal is the same as the mailbox password of either of the designated system manager mailboxes. The system manager can change the terminal password at any time.
   - ❏ To change this mailbox password, access either of the system manager mailboxes and use the touch-tone keypad in response to the Personal Options menu.
   - ❏ Do *not* begin a password with a zero, or the server could interpret the first digit as a request for a transfer to an operator. Misinterpretation can occur, especially if there is a pause between entering the first and second digits. Beginning a password with a zero can prevent initialization of the system manager's mailbox, but it does not affect accessing the terminal screens.



Caution!

The server requires a system manager password before it allows a system manager access to the SMT. If both system manager passwords are lost, access is denied. To gain access, the server must be reinitialized. *The database and all messages would be lost.*

4. Record the system manager password and keep it in a safe place, to ensure that it is not lost.

Secondary System Manager

The secondary system manager acts as a backup to the primary system manager. Enter a unique name, mailbox number, and initial mailbox password in the fields as described for the primary system manager. Record the system manager password and keep it in a safe place, to ensure that it is not lost.

Directory Mailboxes

The directory mailbox allows subscribers and outside callers to dial the number of the directory mailbox, spell a subscriber's name, and be transferred to that subscriber's telephone number. The directory mailbox is a type 30 automated-attendant mailbox that is created automatically in menu 0.2 during the initialization process. Create a directory mailbox, as follows:

1. The ***Name:*** field defaults to ***411 Directory***. Change the name, as desired.

2. The initial default for the ***Mailbox Number:*** field is ***411***, for a 3-digit mailbox. For mailboxes with more digits, the server adds ***4***s to the beginning of the mailbox number, until the correct number of digits has been reached. Leave the default setting or change the mailbox number as desired, but make sure to have the correct number of digits.

3. In the ***Initial Mailbox Password:*** field, enter a temporary password, at least 12 digits long, for the directory mailbox. This temporary password allows the directory mailbox manager to access the mailbox and customize it through a touch-tone telephone.

4. When you have completed the last field, press ***Enter***. The fourth screen of menu 0 appears.

Caution!

Once you complete menu 0, it cannot be accessed again. Make sure that you enter the correct information in menu 0. Before you complete menu 0, if you made any mistakes in previous menu 0 screens, you can press ***Ctrl+C*** to return to those menu 0 screens.

Entering Current Date and Time

Figure 5-10 shows the fourth screen of menu 0, also known as menu 0.3.

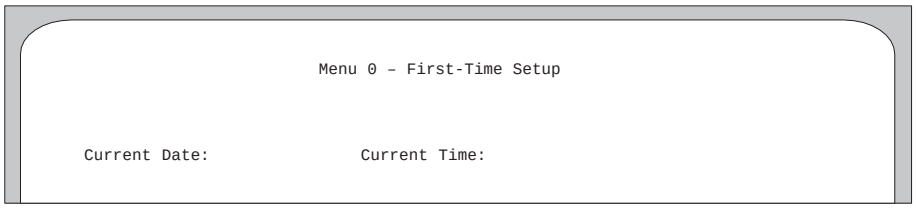


Figure 5-10. Fourth Screen of Menu 0 – First-Time Setup (Menu 0.3).

Complete menu 0.3, as follows:

1. In the ***Current Date:*** field, enter the current date, in the format mm/dd/yy or dd/mm/yy, as appropriate. Press ***Enter*** to move to the ***Current Time:*** field.

2. Enter the current time in the ***Current Time:*** field in the format hh:mm:ssA (for a.m.) or hh:mm:ssP (for p.m.). For international servers, enter the time based on a 24-hour clock, in the hh:mm:ss format.

The date and time are required in several date-and-time-dependent areas, such as the following:

- ❑ Entry into the SMT
- ❑ Date-and-time stamps for messages
- ❑ Future deliveries
- ❑ Record-transaction times for reports
- ❑ Accurate status-code logging
- ❑ Outcalling
- ❑ Networking

You must establish the correct line types, using menu 4. Depending on the type of FLT card, the following prompts might appear after you complete menu 0:

Loading System Tables – Please Wait

Port [first port] – Line type is not valid for the type of PBX System is connected to

Press any key to continue:

When you press any key, the first screen of menu 4.1, Port Assignments, appears.

If the above prompt does not appear and the screen goes blank, press ***Enter***, enter the system manager password as requested (it was written down or memorized when it was assigned in menu 0.2, First-Time Setup), and access menu 4.1. Continue to the following section and enter correct line types and port assignments.

Establishing Line Types and Port Assignments

The first screen of Menu 4.1 – Port Assignments has options for various sets of ports, as shown in Figure 5-11. However, ports 10A through 18H do not exist in the Octel 250. Enter new information for existing ports, based on the appropriate configuration note for the PBX.

```
                          Menu 4 – Port Assignments              [ VPMOD ID ]

   1 – Ports 1A–3H

   2 – Ports 4A–6H

   3 – Ports 7A–9H

   4 – Ports 10A–12H

   5 – Ports 13A–15H

   6 – Ports 16A–18H


                                    Enter Option:
```

Figure 5-11. Menu 4.1, Port Assignments.

The first submenu, menu 4.1.1, is shown in Figure 5-12.

```
                          Menu 4 – Port Assignments              [ VPMOD ID ]

 Pt  Extension/ Phone No.   I O  T  M  N  P  F  Ln Tp  D  Pt Gp   Pt  Extension/ Phone No.   I O  T  M  N  P  F  Ln Tp  D  Pt Gp
 1A  030010001              Y  Y  Y  Y  Y  N  N   35      1      2E  030010013              Y  N  Y  N  Y  N  N   35      1
 1B  030010002              Y  Y  Y  Y  Y  N  N   35      1      2F  030010014              Y  N  Y  N  Y  N  N   35      1
 1C  030010003              Y  Y  Y  Y  Y  N  Y   35      1      2G  030010015              Y  N  Y  N  Y  N  Y   35      1
 1D  030010004              Y  Y  Y  Y  Y  N  N   35      1      2H  030010016              Y  N  Y  N  Y  N  N   35      1

 1E  030010005              Y  Y  Y  Y  Y  N  N   35      1      3A  030010017              Y  N  Y  N  Y  N  N   35      1
 1F  030010006              Y  Y  Y  Y  Y  N  Y   35      1      3B  030010018              Y  Y  Y  N  Y  N  Y   35      1
 1G  030010007              Y  Y  Y  Y  Y  Y  Y   35      1      3C  030010019              Y  Y  Y  N  Y  Y  Y   35      1
 1H  030010008              Y  Y  Y  Y  Y  Y  Y   35      1      3D  030010020              Y  Y  Y  N  Y  Y  Y   35      1

 2A  030010009              Y  Y  Y  N  Y  N  N   35      1      3E  030010021              Y  N  Y  N  Y  N  N   35      1
 2B  030010010              Y  Y  Y  N  Y  N  N   35      1      3F  030010022              Y  Y  Y  N  Y  Y  N   35      1
 2C  030010011              Y  N  Y  N  Y  N  Y   35      1      3G  030010023              Y  Y  Y  N  Y  Y  Y   35      1
 2D  030010012              Y  N  Y  N  Y  N  N   35      1      3H  030010024              Y  Y  Y  N  Y  Y  N   35      1
```

Figure 5-12. Example of a Completed Menu 4.1.1 Screen for Ports 1A Through 3H.

The other submenus are the same, except that the port numbers differ. Only the line types (***Ln Tp*** column) and the number of digits (***D*** column) in a forwarded call must be entered in menu 4.1 submenus at this stage. The remaining data can be entered by accessing menu 4.1 again, after completing menus 1, 2, and 3. However, information for all of the columns in menu 4.1.1 is shown in Figure 5-12.

Assigning Line Types

The line types allow the server to set certain internal operating parameters, such as signaling protocols and dial-tone frequencies. Establish the line types as follows:

1. From menu 4.1, access the submenu that includes the required port number.
2. Change the line-type entries in the ***Ln Tp*** column from the default of ***1*** to the appropriate line types for the type of FLT card associated with each port. Refer to the appropriate configuration note for the installed PBX to determine the line type.

   Move the cursor directly to the ***Ln Tp*** column. Enter the number for the correct line type, and press ***Enter***. The supported line types are listed in Appendix B.
3. After entering the correct line type, press ***Send*** or ***Enter*** until the cursor moves to the next field that needs a new entry, in the ***D*** column for this port or the ***Ln Tp*** column for the next port. An entry in the ***D*** (digits) column is required if the server uses direct-inward-dial (DID) trunks or generic in-band integration to integrate with a PBX. If an entry is required in the ***D*** column, refer to the following section. Continue until all the line types and digits are correct, then press ***Send*** or ***Enter*** until menu 4.1 reappears.
4. After the correct line types and number of digits in a forwarded call (if required) have been completed, you can enter the port characteristics by reaccessing each submenu from the basic menu 4.1 and entering the desired values for each port. The port characteristics can also be added later, by selecting menu 4 from the Main Menu. Refer to the "Entering Port Parameters" section, page 5-19, for a discussion of these entries.
5. When the required information has been entered in menu 4, the software continues to load, after which the SMT screen blanks. Press any key and enter the password; the Main Menu appears on the screen.

Assigning the Number of Digits in a Forwarded Call

Complete the ***D*** (digits) column in the menu 4 submenus only if the server uses direct-inward-dial (DID) trunks or generic in-band integration to integrate with a PBX. When calls are forwarded to a server using generic in-band integration, the server receives digits from the PBX that identify the telephone number of the called party. Make entries in the ***D*** column as follows:

1. In the ***D*** column, enter the number of digits received, and press ***Enter***. This could include DTMF codes preceding the telephone number to identify the type of forwarding to the server. Codes for in-band integration are identified later, in menu 6.2. Leave column ***D*** blank for all other types of lines.
2. Refer to step 3 in the "Assigning Line Types" section, preceding, and continue to enter data in the ***D*** column, as required.

Entering Port Parameters

From menu 4.1, select each option, in turn, and enter the port parameters for the selected ports. You can complete the fields in all submenus for the selected ports at the same time as you set the line types, or you can enter or change them at a later time by accessing menu 4 from the Main Menu**.** If assistance is needed, consult the server's system manager.

The first column in the menu 4.1 submenus lists the server port numbers. The server ports are identified by the number of ports on each FLT card and the position of each port on the FLT card. Each FLT card contains eight ports. The port number is the FLT card number followed by a letter A through H. Each server port is associated with the following:

- ❑ An extension number associated with a PBX
- ❑ A direct-dial number associated with a PBX
- ❑ A logical terminal number (LTN) that is used with some integrations

Enter port information in menu 4, as follows:

1. In the ***Extension/Phone No.*** column, enter the telephone or LTN number next to the appropriate port number indicated in the ***Pt*** column. Entries can each be up to 10 digits long. For information about data-link integrations and in-band integrations, refer to the appropriate configuration note.
2. In column ***I*** (incoming), enter ***Y*** to allow or ***N*** to prohibit using the port for incoming calls to the server for subscriber access. If you enter ***N***, the port always gives a ring-no-answer status.
3. In column ***O*** (outcalling), enter ***Y*** to allow or ***N*** to prohibit using the port to outcall to telephones.

   To take a port out of service temporarily, enter ***N*** in both the ***I*** and the ***O*** columns. This action prevents calls through this port until ***Y*** is entered in one or both columns. *A service person should also take this particular port out of service at the PBX.*
4. In column ***T*** (telephone answering), enter ***Y*** to allow nonsubscribers to use the port to access the server in telephone-answering mode. The port then receives busy and ring-no-answer forwarded calls, which are routed to the personal greetings of subscribers. Enter ***N*** to prohibit nonsubscribers from using the port; subscribers can still use the port, if you have entered ***Y*** in column ***I***.

   If you have entered ***Y*** in column ***T***, then you must enter ***Y*** in column ***I***.

   The option of ***Y*** or ***N*** in column ***T*** allows companies to implement several different telephone-number line appearances for the server.
5. In column ***M*** (message waiting), enter ***Y*** to allow or ***N*** to prohibit using the port to send message-waiting activation and deactivation information between the server and the PBX. Enter ***N*** if the server and PBX will not be using message waiting. Refer to the appropriate integration configuration note for detailed information about the specific PBX.
6. In column ***N*** (network outcalling), enter ***Y*** to allow or ***N*** to prohibit using the port to place outcalls to other message servers for networked messages.
7. In column ***P*** (pager outcalling), enter ***Y*** to allow or ***N*** to prohibit using the port to outcall to pagers.

   Allowing a port to outcall to pagers does not prevent that port from performing other functions. The system manager can select one or multiple ports to support pager outcalling. If no ports allow paging, pager outcalls fail.

8. In column ***F*** (fax outcalling), enter ***Y*** to allow or ***N*** to prohibit using the port to queue (*send*) faxes from the server.

   The ***I*** and ***T*** columns must have ***Y*** entries to allow the server to *receive* faxes on the port.

9. Each server port is assigned to one of four supported port groups: P1, P2, P3, and P4. Port-group designations allow selective return to an attendant when a subscriber or outside caller needs help. Leave the default value in the ***Pt Gp*** field, because the system manager is responsible for completing this field.

After you enter all required data for all ports, press ***Enter*** repeatedly until you exit menu 4. The screen goes blank or the Main Menu reappears. Refer to the *System Manager Manual* for more information about menu 4.

Using the Main Menu

To obtain access to the Main Menu, press any key to display the password prompt, then enter one of the system manager passwords. The password is not displayed; this information should have been written down or memorized when it was assigned in menu 0.2, First-Time Setup. The Main Menu is the directory for all the server functions, as shown in Figure 5-13.

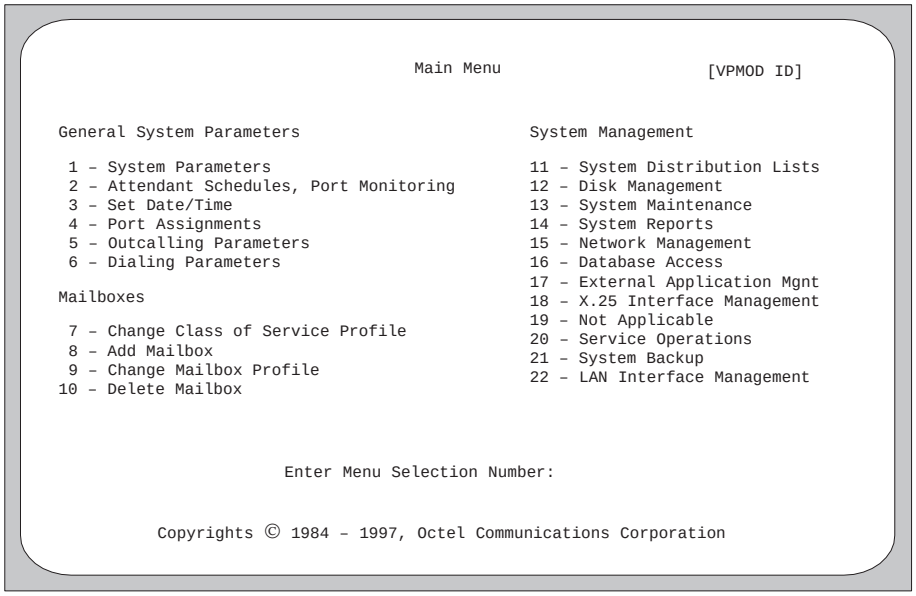


Figure 5-13. Main Menu (Aria 2.0).

The Main Menu divides the task-oriented menus into three groups, as follows:

- ❑ General System Parameters (menus 1 through 6)
- ❑ Mailboxes (menus 7 through 10)
- ❑ System Management (menus 11 through 18, 21, and 22). Menu 22 is available for Aria 2.0, but not for Aria 1.2.

A fourth group, Service (menus 13, 20, 21, and 22), is implied.

At the Main Menu**,** enter the number of the menu needed to complete a specific task, and press ***Enter***. When establishing operating parameters and subscriber profiles for the first time, use the menus in the order shown on the Main Menu and described in this manual. To exit an operation and return to the Main Menu, press ***Ctrl+C*** or the ***Break*** key.

To end an SMT session, press ***Ctrl+C*** or ***Break*** from the Main Menu. The password must be reentered to perform any additional functions through the terminal. Always use ***Ctrl+C*** to end a session; *do not* walk away from the terminal if it is logged on. If the server detects no activity on the SMT in 10 minutes, the terminal screen blanks and the password must be reentered. This protects the SMT from unauthorized entry.

Enter only the information given in the following procedures. Other data entry is the responsibility of the system manager.

Changing Installation Information

Even though most of the minimum programming has already been completed, it is sometimes necessary to change installation information. If this is necessary, select ***1*** from the Main Menu. Menu 1 – System Parameters appears, as shown in Figure 5-14.

```
                        Menu 1 – System Parameters          [VPMOD ID]

1 – Change Installation Information
2 – Change Configuration Parameters
3 – Community/Group
4 – Community Fax Printing
                                        Enter Option:
```

Figure 5-14. Menu 1 – System Parameters.

Select option ***1*** on menu 1 to display the first submenu, menu 1.1, Installation Information. Use menu 1.1 to update information about the server location. An example of menu 1.1 is shown in Figure 5-15. For information about the remaining submenus, completed by the system manager, refer to the *System Manager Manual*.

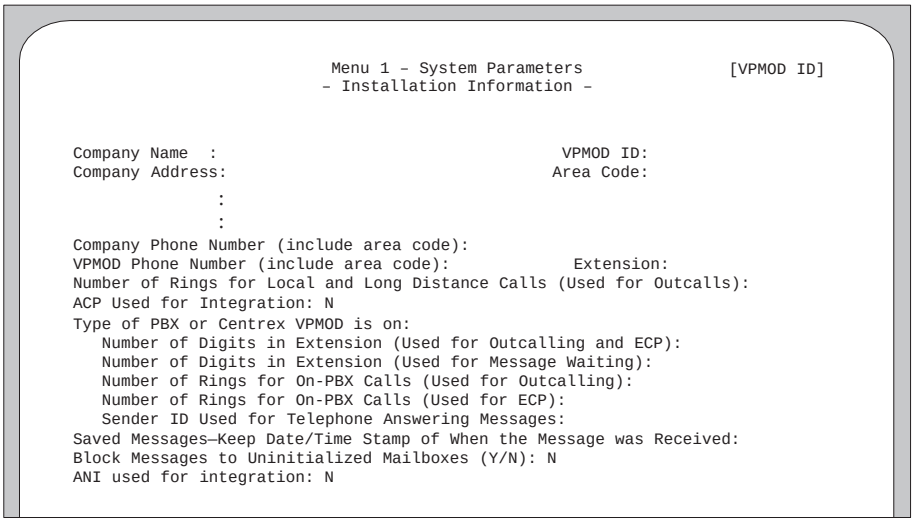


Figure 5-15. Menu 1.1, Installation Information.

Complete the fields in menu 1.1, as follows:

1. Several fields in menu 1 are duplicates of parameters in menu 0. Change or update the following fields, as required:
   - ❑ ***Company Name:***
   - ❑ ***Company Address:***
   - ❑ ***Company Phone Number (include area code):***
   - ❑ ***VPMOD Phone Number (include area code):***
   - ❑ ***Extension:***
   - ❑ ***Type of PBX or Centrex VPMOD is on:***
   - ❑ ***Number of Digits in Extension (Used for Outcalling and ECP):***
   - ❑ ***Number of Digits in Extension (Used for Message Waiting):***
   - ❑ ***Saved Messages—Keep Date/Time Stamp of When The Message was Received:***
2. In the ***Number of Rings for Local and Long-Distance Calls (Used for Outcalls):*** field, enter the number of rings allowed for outcalling before the server considers the outcall unanswered and disconnects, and press ***Enter***. The maximum number allowed is ***20***.

   This field determines the number of rings for outcalls to a local (7-digit) or long-distance (10-digit) number—for example, calling a pager, the subscriber's home, or the subscriber's office.
3. In the ***Number of Rings for On-PBX Calls (Used for Outcalling):*** field, enter the number of rings allowed when the server places an outcall to a telephone number within the PBX or Centrex partition, and press ***Enter***. The maximum number allowed is ***20***. If the telephone remains unanswered after the specified number of rings, the server disconnects and attempts the call at a later time.

An excessive number of rings can cause delays in the connection. The number of rings should be set for one less than the number of rings allowed for call forwarding or ring-no-answer by the PBX. This field shows only the number of rings for outcalls to a telephone number in the PBX. It does *not* show the number of rings before an outside call is forwarded to another extension or to the server.

4. In the ***Number of Rings for On-PBX Calls (Used for ECP):*** field, the maximum number is ***20***; the minimum is ***2***.

   - ❑ If the server is connected to a PBX or Centrex and uses ECP mailboxes and transfer supervision, you must make an entry in this field. Enter a number less than the number of ring cycles that the PBX or Centrex uses before it forwards calls to the server. For example, enter ***3*** in the ***Number of Rings for On-PBX Calls (Used for ECP):*** field, if the number of rings the PBX or Centrex uses before forwarding calls is four. This setting allows the server to inform the caller that the called party is unavailable and to provide further instructions to the caller.

   - ❑ If the server is not connected to a PBX or Centrex, enter the same number that you entered in the ***Number of Rings for Local and Long Distance Calls (Used for Outcalls):*** field.

5. In the ***Sender ID Used for Telephone Answering Messages:*** field, enter a code for the calling-party identification that is used by the server in the telephone-answering mode. Enter one of the following codes:

   - ❑ Enter ***1*** if the server is standalone or interfaced. The server does not look for calling-party identification, because it handles all calls in telephone-answering mode, as though they were from outside callers.

   - ❑ Enter ***2*** if the server should use the calling-party identification provided by the PBX. This feature allows subscribers to reply to telephone-answering messages if (1) the message originator has an extension on the PBX and a corresponding mailbox in the server and (2) the PBX is integrated with the server.

6. Press ***Enter*** to save the entries when menu 1.1 is complete. Press any key to return to menu 1, then press ***Ctrl+C*** to return to the Main Menu.

The system manager enters the data in menus 2 through 5, then the installer completes the fields in the submenus of menu 6. Entering data in menu 6 is discussed in the following section.

Establishing Dialing and Serial-Channel Parameters

Menu 6 allows you to specify dialing sequences and serial-channel options for various server functions. Menu 6 comprises six screens: the basic menu shows the dialing-sequence and serial-channel options, as shown in Figure 5-16. Select one of the options to access a submenu. Menu 6.4 does not apply to the Octel 250 server.

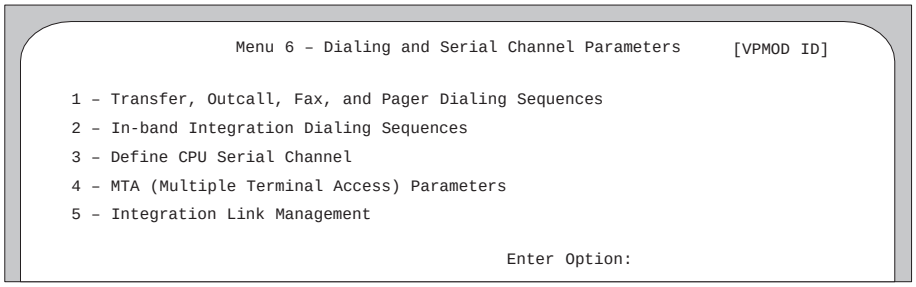


Figure 5-16. Menu 6 – Dialing and Serial Channel Parameters.

Setting Transfer, Outcall, Fax, and Pager Dialing Sequences

Establish dialing sequences for transferring calls, outcalls, faxes, and outcalls to pagers, as follows:

1. Select ***1*** from the primary menu 6 screen. Menu 6.1, Transfer, Outcall, Fax, and Pager Sequences appears, as shown in Figure 5-17. These parameters seldom need to be changed.



Caution!

All PBXs associated with a single server must have the same dialing sequences entered in the dialing-sequence fields.

2. Confirm the default value of 500 milliseconds (1/2 second) in the ***"Flash" On-hook Time:*** field. The server simulates a switch-hook flash immediately before sending a transfer-call command to the PBX. Refer to the appropriate integration configuration note.

   To ensure correct flash timing, test the flash timing on the PBX after it is set. If it is not correct, reset the value.

3. Check that the default value for a pause in the ***"Pause" Time:*** field is 1,000 milliseconds (1 second), which can be changed, if required.

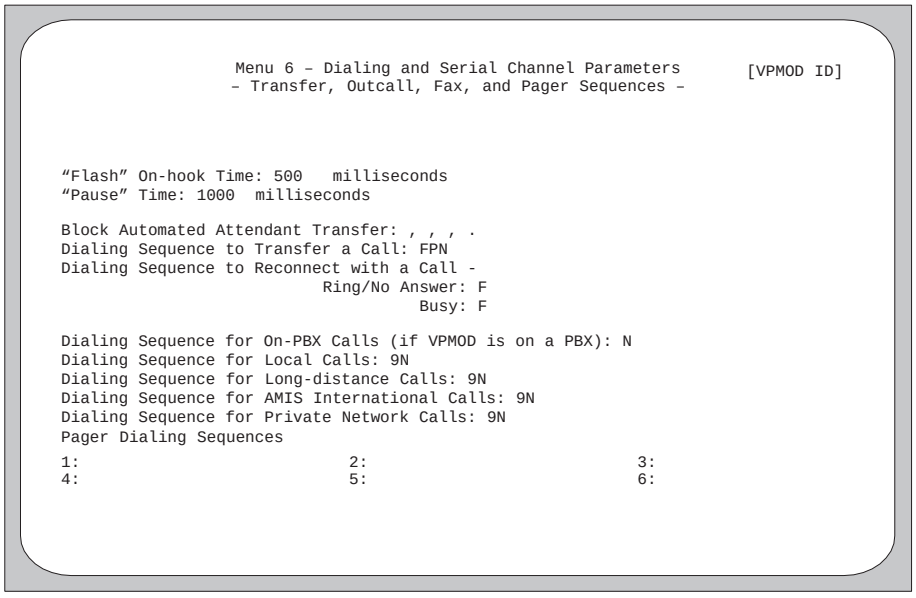


Figure 5-17. Menu 6.1, Transfer, Outcall, Fax, and Pager Sequences.

4. To allow the server to transfer a call, enter the transfer-to-telephone sequence in the ***Dialing Sequence to Transfer a Call:*** field. Enter an ***F*** (flash), transfer-code feature (if required), and ***N*** for the number to be dialed (the transfer target). Refer to the appropriate configuration note, PBX manual, or telecom manager for the transfer-code feature applicable for a particular PBX.

   - ❑ If the transfer sequence is used to transfer a caller to an attendant or operator, the server completes the transfer sequence and then disconnects, if supervised transfer is not enabled in menu 1.2.
   - ❑ If the transfer sequence is used to transfer a caller to a specific extension (using the ECP feature), the server stays on the line to monitor the status of the dialed number. In this controlled transfer, if the desired number is busy, unanswered, or forwarded to the server, the server automatically reconnects with the caller to announce the status of the call.

5. In the ***Ring/No Answer:*** and ***Busy:*** fields below the ***Dialing Sequence to Reconnect with a Call –*** line, enter the sequences to be dialed by the server to reconnect with a caller when a transfer attempt has been unsuccessful. This field is generally entered as ***F*** (flash) plus the feature code (if required); for example, ***F*∗*1*** or simply ***F***.

   Most PBXs use the same reconnect sequence for both ring-no-answer and busy calls. However, the AT&T #5ESS, for example, uses separate dialing sequences that require the system manager to complete both fields. The default settings are ***F*** for both entries; enter the appropriate sequence instead of these defaults, if applicable. Refer to the appropriate configuration note for details and for the reconnect protocol.

6. Enter ***N*** (extension number) in the ***Dialing Sequence for On-PBX Calls (if VPMOD is on a PBX):*** field. The server only needs to dial the extension to enable PBX calls.

7. In the ***Dialing Sequence for Local Calls:*** field, enter the dialing sequence to be used for local calls. For residential support, use ***N***. For Centrex support, use ***9N***, which the PBX interprets as dial ***9*** and then dial the number requested by the subscriber. Test the dialing sequence to determine whether pauses are required. For example, ***9PN*** indicates a pause between dialing the ***9*** and the number requested.

   Test this dialing sequence to validate the time intervals specified.

8. In the ***Dialing Sequence for Long-distance Calls:*** field, enter the dialing sequence to be used for long distance calls. For residential support, use ***N***. For Centrex support, use ***9N***, which the PBX interprets as dial ***9*** and then dial the number requested by the subscriber. Test the dialing sequence to determine whether pauses are required. For example, ***9PN*** indicates a pause between dialing the ***9*** and the number requested.

   Test this dialing sequence to validate the time intervals specified.

9. In the ***Dialing Sequence for AMIS International Calls:*** field, enter the dialing sequence to be used when replying to an international AMIS analog network message. Enter sequences that can include digits ***0*** through ***9***, the characters ∗ and ***#***, and the letters ***K*** (key pulse), ***S*** (stop pulse), and ***P*** (pause). Enter an ***N*** where the subscriber-supplied telephone number should be dialed. Enter a ***C*** where an authorization code, if any, should be inserted.

   Some companies might want to use special long-distance carriers when making international calls. If desired, enter the dialing sequence to access the long-distance carrier designated for international calls.



Caution!

Sending AMIS analog messages to international destinations increases a company's telephone bill. Make sure that the entries in the ***Dialing Sequence for AMIS International Calls*****:** field use cost-effective means for placing international calls.

   The ***Dialing Sequence for AMIS International Calls:*** field is used for replying to an AMIS message. Initiating an AMIS message to an international destination requires information from the dialing-sequence table established in menu 15.2.

10. In the ***Dialing Sequence for Private Network Calls:*** field, enter the dialing sequence for replying to an AMIS message through a private network. Enter digits ***0*** through ***9***, the characters ∗ and ***#***, and the letters ***K*** (key pulse), ***S*** (stop pulse)***,*** and ***P*** (pause). Enter an ***N*** at the point where the subscriber-supplied telephone number should be dialed. Enter a ***C*** at the point where an authorization code, if any, should be inserted.

    The ***Dialing Sequence for Private Network Calls:*** field is used for replying to an AMIS message. Initiating an AMIS message to a private network destination requires information from the dialing-sequence table established in menu 15.2.

11. In the ***Pager Dialing Sequences*** fields, enter up to six different pager dialing sequences. These sequences are a series of commands that allow the server to communicate with various types of paging terminals. Some of the entries in a sequence are explained in Table 5-1.

Table 5-1. Pager-Dialing-Sequence Codes.

Code	Name	Description
#	Pound	The pound character informs the paging terminal that all digits have been sent. The star character works the same as the pound character. Use the correct code for the specific paging terminal.
*	Star	The star character informs the paging terminal that all digits have been sent. The pound character works the same as the star character. Use the correct code for the specific paging terminal.
0–9	Numeric characters	These characters are the telephone number to be called.
A	Answer Detect	The server waits to detect a ring cycle from the paging terminal. To establish the ring cycle, the server must receive a minimum of three full ringback tones. Because most paging terminals answer in two rings or less, the server does not receive the required three ringback tones. The ***A*** code is not recommended for most paging applications.
B	Callback number	These characters are the telephone number to be called.
C	User Authorization Code	The server sends the digits entered in the ***Outcalling Authorization Code:*** field in the mailbox profile (menus 8 and 9.1). The ***C*** code is used to display a mailbox number on a display pager. The code can be used as either a PBX authorization code for PBXs that require codes for outcalling access or a pager identification code. Some paging services require the caller to enter a number to identify which person to page, rather than have a unique telephone number associated with each pager. In these cases, the server can use the ***C*** code to transmit the subscriber's pager identification number to the paging terminal.
D	Disconnect	The server disconnects the port. Every pager dialing sequence should end with the ***D*** code. If the ***D*** code is not in the pager dialing sequence, the server plays outcalling prompts and can keep the port off-hook up to 2 minutes. The server considers the page a failure.
H	Initial high tone	The server waits to receive a 2.0-kHz tone from the paging terminal. This parameter was designed for Spectrum-type paging terminals that send the 2.0-kHz tone as a single tone. Once the server receives the initial high tone, it continues with the paging dialing sequence. If the tone is not received within 40 seconds, the server times out, hangs up, and retries the page.
K	Key pulse	The ***K*** character indicates a signal of a multifrequency or digital multifrequency pulse before the dialed number.
L	Initial low tone	The server waits to receive a 1.4-kHz tone from the paging terminal. This parameter was specifically designed for BBL-type paging terminals that send the 1.4-kHz tone in three short bursts (90-ms tone on, 120-ms tone off). Once the server receives the initial low tones, it continues with the paging dialing sequence. If the tone is not received within 30 seconds, the server times out, hangs up, and retries the page.
N	Number	***N*** directs the server to dial the telephone number specified in the subscriber's paging schedule, either in system manager menus 8 or 9.1 or in the mailbox personal options.

Table 5-1. Pager-Dialing-Sequence Codes (Continued).

Code	Name	Description
N	Number	***N*** directs the server to dial the telephone number specified in the subscriber's paging schedule, either in system manager menus 8 or 9.1 or in the mailbox personal options.
P	Pause	The server pauses for the amount of time specified in the ***Pause Time:*** field in menu 6, option 1.
S	Stop pulse	The ***S*** character is used after the dialed number.
V	Verification	For display pagers, the server verifies that the paging terminal has received all the digits to be displayed. The verification code functions according to the initial tone used. If no initial tone code is specified or if the ***H*** code is used, the server waits for a special tone that Spectrum-type paging terminals generate. If the ***L*** code is used as the initial tone, the server requires a fast-busy after the pound character is sent. If the fast-busy is not received within 30 seconds, the server times out, hangs up, and retries the page.
Z	Flag used for always sending a C	This flag can be used for any pager type that requires an authorization code. For example, a national pager that is accessed by dialing an 800 number and a PIN *always* requires the authorization code C.

Each type of paging terminal has a specific form of interacting with incoming calls. In many cases, the pause, tone detect, and digit sequences need to be experimented with to make sure that the pager dialing sequence matches the sequence required for supportable pagers. The server's pager dialing sequences specifically support two major brands of paging terminal equipment: BBL and Spectrum. The following sequences alert the following types of paging terminals:

- **BBL-type pagers**
  - LVD (tone-only)
  - LPC#VD (display)
  - LP5551234#VD
  - LPC5551234#VD
- **Spectrum-type pagers**
  - VD (tone-only)
  - HPC#VD (tone-only)
  - HP5551234#VD (display)
  - HPC5551234#VD (tone and display)
- **Sky Pagers**
  - PPPPPPPC#5551234#D

Specifications for paging terminals vary with manufacturers; adjust the preceding sequences for such variations. Also, these sequences are *only* for pagers that have a tone interface. Terminals that interface with the caller through recorded voice prompts require different paging sequences.

Always end the paging sequence with a ***D*** for disconnect. If the ***D*** is not entered, the server plays the standard outcall-notification prompt and continues to retry the outcall, according to the schedule established in menu 5. However, if voice pagers are used, omit the ***D*** at the end of the sequence, which allows the notification prompt to play, with the pager holder hearing that the server has initiated the page.

Achieving In-band Integration

The second submenu of menu 6, shown in Figure 5-18, is also known as menu 6.2. Use it to specify digit sequences received or sent by the server to achieve in-band integration with a PBX.

This submenu does not appear if the in-band-integration feature option is not installed. It is not applicable to PBXs that do not support in-band integration.

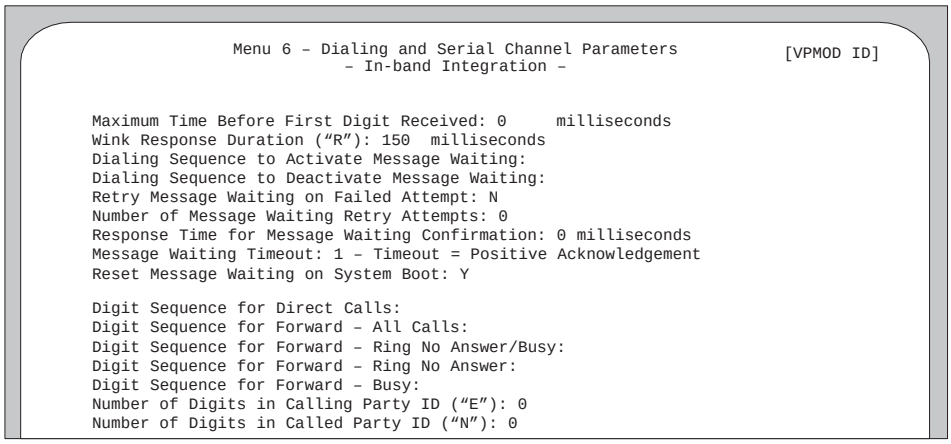


Figure 5-18. Menu 6.2, In-band Integrations.

If the PBX and the server use in-band integration, make sure that a copy of the appropriate configuration note is available. Integration configuration notes provide specific information about the PBX. Establish the parameters for in-band integration, as follows:

1. Depending on the integration, in the ***Maximum Time Before First Digit Received:*** field, enter the maximum time allowed, in milliseconds, before the first digit is received from the PBX on forwarded calls. If the server does not receive a digit during this time, the server answers the call with the system greeting.

2. Do not change the default value in the ***Wink Response Duration (“R”):*** field. This field is not used for the Octel 250.

3. In the ***Dialing Sequence to Activate Message Waiting:*** and the ***Dialing Sequence to Deactivate Message Waiting:*** fields of menu 6.2 (Figure 4-30), enter sequences that can include the digits ***0*** through ***9***, ∗, ***#***, ***F*** (flash), ***P*** (pause), ***C*** (authorization code), and ***V*** (verify). Use an ***N*** to indicate where the telephone number should be dialed. Some PBXs require that an ***A*** (answer detect) be used in the sequence. Authorization code ***C*** is required when setting up a dialing sequence to activate message waiting for certain in-band integrations. Refer to Table 5-1 for more information about pager dialing codes.

4. Enter a ***Y*** in the ***Retry Message Waiting on Failed Attempt:*** field if either of the dialing sequences to activate or deactivate message waiting includes an ***A***. Enter an ***N*** if the message-waiting dialing sequences do not include an ***A***.

5. In the ***Number of Message Waiting Retry Attempts:*** field, enter the number of retries the server should attempt if the message-waiting sequence fails.

6. In the ***Response Time for Message Waiting Confirmation:*** field, enter the time, in milliseconds, from ***0*** to ***10000***, the server should wait to determine whether the message-waiting sequence was successful. Enter a value as short as possible, depending on the PBX. If the value is too long, it could reduce the number of message-waiting attempts that the server can make within a specific amount of time.

7. In the ***Message Waiting Timeout:*** field, enter ***1*** for a positive acknowledgment of timeout, or enter ***2*** for a negative acknowledgment of timeout.

8. Enter a ***Y*** in the ***Reset Message Waiting on System Boot:*** field under most circumstances. Enter an ***N*** only if the PBX cannot process at the speed at which the server normally sends in-band refresh-message-waiting commands after system boot. If ***N*** is entered, the message-waiting indication is refreshed, but at a slower rate.

9. In the ***Digit Sequence for Direct Calls:*** field, enter a sequence that can include the digits ***0*** through ***9***, ∗, ***#***, ***X*** (for each undefined digit), and ***N*** (for the telephone number of the calling party). This sequence defines the digits that the server receives from the PBX when a direct call is presented.

10. In the four ***Digit Sequence for Forward*** fields, enter sequences for forwarded calls, including all calls, ring-no-answer or busy calls, ring-no-answer calls, and busy calls. These sequences define the digits that the server receives from the PBX when a call is forwarded to the server. Enter a sequence that can include digits ***0*** through ***9***, ∗, ***#***, ***X*** (for each undefined digit), and ***N*** (for the telephone number of the original called party).

11. In the ***Number of Digits in Calling Party ID (“E”):*** field, enter the number of digits, from ***3*** to ***20***, that the server will receive from the PBX to identify the calling party. Include the number of fill characters, if any.

12. In the ***Number of Digits in Called Party ID (“N”):*** field, enter the number of digits, from ***3*** to ***20***, that the server will receive from the PBX to identify the called party. Include the number of fill characters, if any.

Configuring CPU Serial Channels (Menu 6.3)

The server has numbered, external physical connectors on the CCF card. Channel 4 (connector CONSOLE) is used for service and for the primary SMT. Channels 1, 2, and 3 can be configured for integration or as SMTs. Table 5-2 shows CPU channels as they relate to the physical connectors.

Table 5-2. CPU Serial Channels and Physical Connectors.

CPU Channel	CCF Connector	Function
1	ASYNC1	Integration/SMT
2	ASYNC2	Integration/SMT
3	ASYNC3	Integration/SMT
4	CONSOLE	Service/Primary SMT

Up to three ports on the CCF card can be configured for SMTs or for RS-232 integrations. Configure the ports, as follows:

1. Select option ***3*** from menu 6 to access menu 6.3. The active and stored channel configurations and the ***Channel Number To Be Defined:*** field are displayed. An example of a complete menu 6.3 is shown in Figure 5-19.

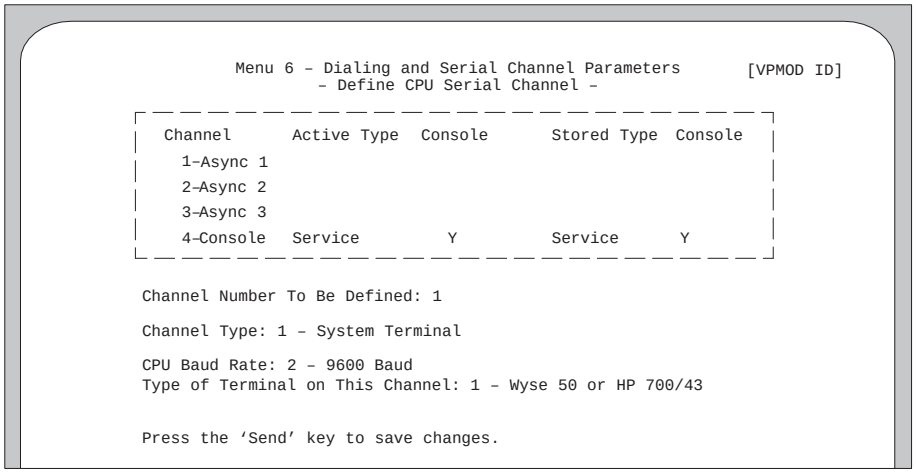


Figure 5-19. Example of Menu 6.3, Define CPU Serial Channel.

2. Enter a valid channel number in the ***Channel Number To Be Defined:*** field. Additional fields with entries appear on the screen, depending on the entry in the ***Channel Type:*** field.

3. Use menu 6.3 to define CPU serial channels on the server. Configure CPU serial channels 1, 2, and 3 on the server main distribution board either for integration or for additional SMTs.

Channel 4 is configured for the primary SMT and for local service. It cannot be changed, although some information about channel 4 can be updated.

If only one channel is needed for integration, two channels can be used for additional SMTs. If two channels are needed for integration, one channel can be for an additional SMT. If RS-232 integration is not used, two of the three configurable channels can be used for SMTs.

Configure each serial channel as described in the following sections.

SMT Channel Configuration

Access menu 6.3 (Figure 5-19). The CPU channel number that appears in the ***Channel*** column corresponds to the connector on the CCF card that is used for each function (Table 5-2). Although ***Service*** is shown in the ***Active Type*** column for channel 4, channel 4 is also used for the primary SMT.

Configure secondary SMTs from menu 6.3 (Figure 5-19), as follows:

1. In the ***Channel Number To Be Defined:*** field, enter ***1*** through ***3***. (If channel number 4 is selected, the channel type cannot be changed.)

2. In the ***Channel Type:*** field, enter ***1*** to specify ***System Terminal***.

   Changes entered do not take effect until the server is rebooted. You can enter a ***0*** to delete the channel type in the ***Stored Type*** column. You can then reenter another channel type or leave that channel undefined, if desired.

3. In the ***CPU Baud Rate:*** field, enter one of the following values:

   1 – 1200 Baud
   2 – 9600 Baud

   One of the following events occurs:

   - ❏ If only the baud rate is changed, it is stored.
   - ❏ If the baud rate being changed is for the terminal being used, you must log off the SMT and then log in again, for the new baud rate to become active.
   - ❏ If the baud rate being changed is for another SMT, you only need to log into that SMT for the change to become active.

   In all cases, reset the baud rate on the affected SMT itself, by following the steps in the Peripheral Equipment manual.

4. In the ***Type of Terminal on This Channel:*** field, select one of the following values:

   1 – Wyse 50 or HP 700/43
   2 – AT&T 4425/5425
   3 – DEC VT102/220

   For a Wyse 55 terminal, select option ***1***.

   Making an entry in this field replaces the previous method of selecting a terminal by using option ***T*** from the INSTALL OPTIONS utility menu and ***Ctrl+D***, then ***R***, at the ***ENTER BOOT COMMAND:*** prompt.

5. Press the ***Send*** or ***Enter*** key until the changes are saved. The changes entered appear in the ***Stored Type*** column for channel 4 immediately, but not in the ***Active Type*** column until the server is rebooted.

If needed, repeat these steps to configure another SMT. The changes entered appear in the ***Stored Type*** column for the specified channel but do not take effect or appear in the ***Active Type*** column until the server is rebooted.

Each SMT's configuration is independent of the others. For example, SMT 1 might have the baud rate set to 1200 and be a DEC VT102 terminal, and SMT 2 could have a baud rate of 9600 and be an HP700/43 terminal.

CPU Channel Configuration for Direct Integration

Use menu 6.3 (Figure 5-19) to configure a CPU channel for direct integration. The CPU channel number that appears in the ***Channel*** column corresponds to the connector on the CCF card that is used for each function (refer to Table 5-2).

From menu 6.3, configure a CPU channel for integration, as follows:

1. In the ***Channel Number To Be Defined:*** field, enter ***1*** through ***3***.

2. In the ***Channel Type:*** field, enter ***3 – Direct Integration***.

   If necessary, you can enter a ***0*** to delete the channel type in the ***Stored Type*** column. You can then reenter another channel type or leave that channel undefined, if desired.

3. Press the ***Send*** or ***Enter*** key until the changes are saved. The changes entered appear in the ***Stored Type*** column for the selected channel immediately, but not in the ***Active Type*** column until the server is rebooted.

If needed, repeat these steps to configure another channel for direct CPU integration. These integration links can be reviewed by accessing menu 6.5 and selecting option ***3 – Review Integration Links on System.*** Select option ***6 – Integration Link Status*** from menu 6.5 to display error and status information for each integration link. To reset an integration link, select option 5 from menu 6.5 (refer to the "Integration-Link Reset" section, page 5-38). For specific integrations, refer to the appropriate configuration note.

Managing Integration Links (Menu 6.5)

Use menu 6.5 to configure the integration link. From menu 6 (Figure 5-16), select option ***5*** to access menu 6.5, Integration Link Management. Figure 5-20 shows an example of the options that appear in menu 6.5. These options are described in the following sections.

```
                Menu 6 – Dialing and Serial Channel Parameters      [VPMOD ID]
                       – Integration Link Management –


1 – Add Integration Link

2 – Change Integration Link Configuration

3 – Review Integration Links on System

4 – Delete Integration Link

5 – Reset Integration Link

6 – Integration Link Status


                                Enter Menu Selection Number:
```

Figure 5-20. Menu 6.5, Integration Link Management.

Integration-Link Additions

Add an integration link, as follows:

1. Select option ***1*** from menu 6.5 to add integration links. Menu 6.5.1 appears, with only the ***Link Number:*** field displayed. Figure 5-21 is an example of menu 6.5.1 with all fields displayed and completed.

```
                Menu 6 – Dialing and Serial Channel Parameters      [VPMOD ID]
                          – Add Integration Link –


Link Number: 1

Link Name: Milpitas link 1
Type of Switch to which the System is Integrated: 3 – 1A ESS/SMDI, Full Duplex

Baud Rate: 0 – 1200 Baud
Number of Data Bits: 0 – 7 Data Bits
Number of Stop Bits: 0 – 1 Stop Bits
Parity (None/Odd/Even): 2 – Even Parity
XON/XOFF: 1 – Ignore XON/XOFF
Carrier Detect: 1 – Carrier Detect Not Used
Extension to Check SMDI Message Waiting: 5999
Max. Msg. Waiting Operations per second:  1
Switch Number to which this Link is Associated:  1
SMDI link down alarm threshold counter:  1
```

Figure 5-21. Example of a Completed Screen for Menu 6.5.1.

2. In the ***Link Number:*** field, enter a link number associated with the link connections used on the CCF card. The ***Link Name:*** and the ***Type of Switch to which the System is Integrated:*** fields appear on the screen.

3. In the ***Link Name:*** field, assign a name to the link.

4. In the ***Type of Switch to which the System is Integrated:*** field, enter one of the following (refer to the appropriate integration configuration note):

   3 – 1A ESS/SMDI, Full Duplex (Centrex, used only with CO integration, full-duplex)

   A – NEC 2400 MMG/MCI

   B – PBX integration device / ROLM

   D – INTECOM with VMP Interface

   E – PBX integration device / AT&T 75

   F – PBX integration device / AT&T 85

   G – Ericsson MD110

   H – PBX MID NT Meridian 1/SL–1

   I – PBX DMID NT Meridian 1

   When this field is completed, the remaining fields appear on the screen.

5. In the ***Baud Rate:*** field, select one of the following:

   0 – ***1200 Baud***
   1 – 2400 Baud
   2 – 4800 Baud
   3 – 9600 Baud
   4 – 19.2K Baud

6. In the ***Number of Data Bits:*** field, enter ***0*** for seven data bits or ***1*** for eight data bits.

7. In the ***Number of Stop Bits:*** field, enter ***0*** for one stop bit or ***1*** for two stop bits.

8. In the ***Parity (None/Odd/Even):*** field, select one of the following:

   0 – ***No Parity***
   1 – Odd Parity
   2 – Even Parity

9. In the ***XON/XOFF:*** field, select one of the following:

   0 – Use XON/XOFF
   1 – Ignore XON/XOFF

   Select ***1*** for all PBX types, except for the Northern Telecom DMS-100/SL-100 with 1X67 I/O card, Revision BC or BD, which uses XON/XOFF.

10. In the ***Carrier Detect:*** field, enter one of the following:

    0 – Carrier Detect Used
    1 – Carrier Detect Not Used

11. In the ***Extension to Check SMDI Message Waiting:*** field, enter an extension (3–10 digits) to check link status when SMDI integration is used. For example, enter a 7-digit telephone number that is invalid on the CO, such as ***999-9999***. An INV message is then returned from the CO, which indicates that the link is functioning.



Caution!

Use caution when changing the following field from the default value of ***1***. A higher number could cause message waiting to fail.

12. In the ***Max. Msg. Waiting Operations per second:*** field, enter the number of message-waiting commands sent to the PBX each second, and press ***Enter***. The range is from ***1*** to ***4*** if the link is configured for 1200 baud or from ***1*** to ***5*** if the link is configured for 9600 baud. The default is ***1***.

13. In the ***Switch Number to which this link is Associated:*** field, enter a number that represents the PBX with which this link is associated. The field supports multiple PBXs that use PID/R or APID 75 integrations. Enter a number between ***1*** and ***3***. The default is ***1***.

14. Enter a number from ***1*** to ***9*** in the ***SMDI link down alarm threshold counter:*** field. The server identifies that the link is down after it sends that many message-waiting requests (one per minute) to an invalid telephone number on the CO, without receiving any INV message from the CO.

Add as many links as are connected to the CCF card by repeating menu 6.5.1 for additional link numbers.

Integration-Link Changes

Select option ***2*** from menu 6.5 to change an integration link. Changing an integration link is similar to adding a link. Refer to the “Integration-Link Additions“ section, page 5-35, for details. The same fields appear in menu 6.5.2 as in menu 6.5.1, except that there are already entries in the fields. Changes can be made in the fields as required. You must use menu 6.5.5 to reset the integration links for the changes to take effect.

Integration-Link Reviews

Select option ***3*** from menu 6.5 to review all the integration links configured on the server and their corresponding fields. This menu is for information only, and the fields cannot be changed.

Integration-Link Deletions

To delete an integration link, perform the following steps:

1. Select option ***4*** from menu 6.5**.** Menu 6.5.4 appears, with only the ***Enter Integration Link to delete:*** field displayed.

2. Enter the link number of the link to be deleted. The link number and link name appear under the ***Link Number*** column and the ***Link Name*** column, respectively. A prompt, ***Do you really want to delete? (Y/N):*** appears at the bottom of the screen.

3. Enter ***Y*** to delete the link or ***N*** to leave it as is.

Integration-Link Reset

To reset an integration link, perform the following steps:

1. From menu 6.5, select option ***5*** to reset the integration link. Menu 6.5.5 appears, with only the ***Enter Integration Link Number:*** field displayed.
2. Enter the link number. The ***Link Number*** and ***Link Name*** column heads appear, with the designated link number and name displayed in the columns. A prompt, ***Reset Link? (Y/N):*** is displayed at the bottom of the screen.
3. Enter ***Y*** to reset the link or ***N*** to leave it as is.

Integration-Link Status

To view the status of the integration link, perform the following steps:

1. Select option ***6*** from menu 6.5. The first screen of menu 6.5.6 appears, with only the ***Enter Integration Link Number:*** field displayed.
2. Enter the number of the link to be viewed, and press ***Enter***. The remaining fields appear.
3. After viewing the first screen, press ***Enter*** to continue. The second screen is displayed.
4. After viewing the second screen, press ***Enter*** to continue to the third screen.
5. Type ***C*** to clear the statistics, or press ***Enter*** to return to the first screen.

Configuring the Server for the LAN Interface

If the server is at Aria 2.0 or newer software and has a LAN card installed, use the information in this section to configure the server for the LAN interface. Otherwise, go to the “Verifying Server Operation” section, page 5-43.

Checking Feature Options and Obtaining Required Information

When you configure the server for the LAN interface, you should check the applicable feature options and obtain other required information before proceeding, as follows:

1. Access menu 13.7 and press ***Enter*** to see the second screen. Make sure that feature option 73 – Connectivity is enabled for any intended use of the LAN card. Enabled features have a ***Y*** preceding the feature number and name.

   If the LAN card is to be used for digital networking, make sure that feature options 44 – Networking and 74 – Digital Networking are also enabled. Digital networking works among correctly configured Octel 250s and Octel 350s, but not with other products. If the LAN card is to be used for other than digital networking, different feature options might be required.

If necessary, call the Octel Customer Services Center to have the required feature options enabled.

2. Obtain information from the network administrator to complete the following fields that are to be entered in the submenus of menu 22 or used to test digital networking:
   - ***This Server's IP Address:*** This field identifies the Octel 250 to the network.
   - ***IP Net Mask:*** This is the subnet mask used by routers to identify a specific LAN. The router that is connected directly to the LAN sends traffic to the appropriate host within the LAN, in this case, the Octel 250.
   - ***Broadcast Address:*** This address is used by routers to send messages to every host in a network.
   - ***Gateway IP Address:*** This is the IP address of the gateway/router used by the Octel 250 to transmit network messages to systems that are not on the same network.
   - Optional simple network-management protocol (SNMP) fields. If the Octel 250 is installed in an SNMP environment, the following SNMP fields are needed:
     - ***SNMP Manager IP Address:*** This is the IP address of the SNMP manager.
     - ***Trap Community Name:*** This is the name of the SNMP management community to which trap events should be sent. This field is case-sensitive and must be identical for the SNMP manager and for the Octel 250.
     - ***Get Community Name:*** This is the name of the SNMP management community with which the Octel 250 will exchange "Get" messages. This field is case-sensitive and must be identical for the SNMP manager and for the Octel 250.
     - ***Set Community Name:*** This is the name of the SNMP management community from which the Octel 250 will receive "Set" messages. This field is case-sensitive and must be identical for the SNMP manager and for the Octel 250.
     - ***System Name:*** This is the SNMP manager's name for the Octel 250.
     - ***System Location:*** This is the SNMP manager's location name for the Octel 250.
     - ***System Contact:*** This is the contact for digital networking on the Octel 250.
   - Information for digital networking to and from another node. If digital networking is enabled on this Octel 250 and on any other Octel 250 or 350 in the network, the following fields must be completed for testing:
     - ***Node Number:*** and ***Node Name:*** This node information is for the remote Octel 250 or 350.
     - ***IP Address:*** This field is the address of the remote Octel 250 or 350.

     You need test mailboxes on the local and remote nodes, including the mailbox passwords and pilot numbers of the nodes.

Entering LAN Parameters

Use menus 22.1, 22.2, and 22.3 to define the LAN interface, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit turned on.
2. Log into the SMT.
3. At the Main Menu, enter ***22*** to access Menu 22 – LAN Interface Management, as shown in Figure 5-22.
4. Select one of the options from menu 22, and proceed, as described in the following sections.

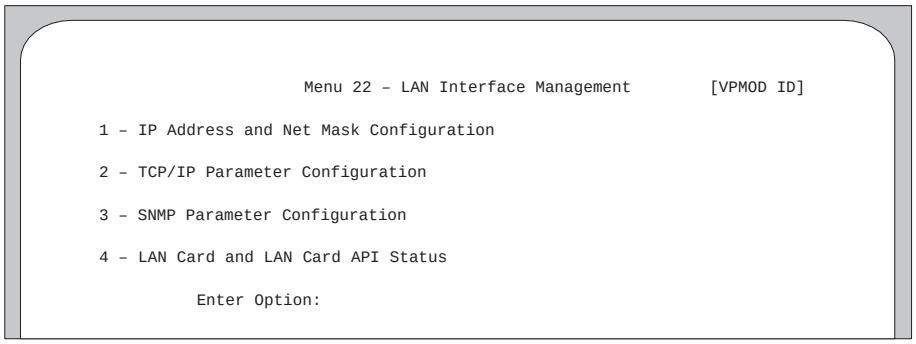


Figure 5-22. Menu 22, LAN Interface Management.

IP Address and Net Mask Configuration (Menu 22.1)

Use menu 22.1 to define network addressing for the Octel 250, as follows:

1. From menu 22, enter ***1*** to access menu 22.1, as shown in Figure 5-23. The entry in the ***This Server's Ethernet Address:*** field is preset; it is a unique address assigned during LAN card manufacturing, and it cannot be changed. It is not stored on the system drives.

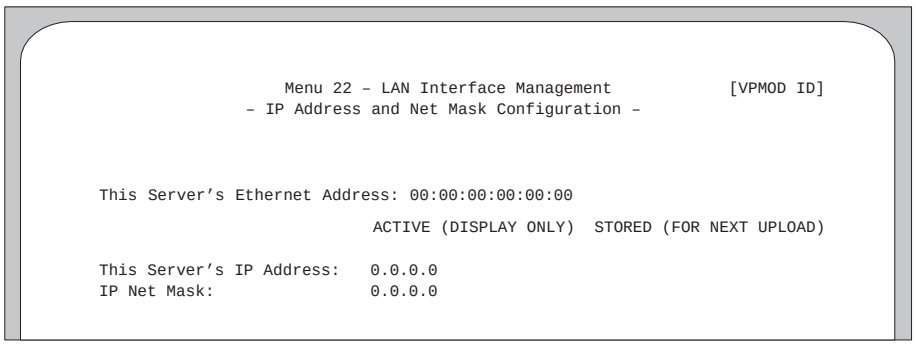


Figure 5-23. Menu 22.1, IP Address and Net Mask Configuration.

The cursor is in the right column, titled ***STORED (FOR NEXT UPLOAD)***. The values you enter in the ***This Server's IP Address:*** and ***IP Net Mask:*** rows do not become active (effective) until the next upload takes place during a system reboot, a LAN card hot-plug, or a LAN card reset, which you perform later.

2. In the ***This Server's IP Address:*** row, enter the IP address of the LAN connection to be used by the Octel 250.

3. In the ***IP Net Mask:*** row, enter the subnet mask that identifies the subnetwork in which the Octel 250 resides.

4. Press ***Enter*** to store the values to be activated during the next upload.

TCP/IP Parameters (Menu 22.2)

Use menu 22.2 to define TCP/IP parameters, as follows:

1. From menu 22, enter ***2*** to access menu 22.2, as shown in Figure 5-24. On this screen, the entries in the ***This Server's Ethernet Address:***, ***This Server's IP Address:***, and ***IP Net Mask:*** fields are for display only; they cannot be changed.

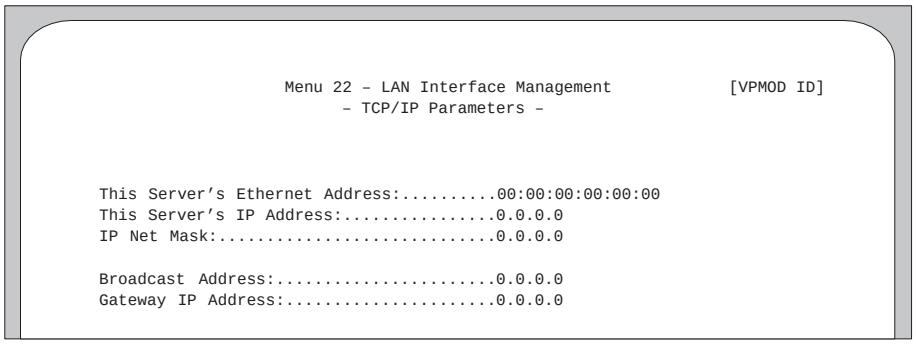


Figure 5-24. Menu 22.2, TCP/IP Parameters.

2. In the ***Broadcast Address:*** field, enter the broadcast address provided by the network administrator. This address is used by the router to send a message to every host on a network or subnetwork.

3. In the ***Gateway IP Address:*** field, enter the IP address of the router to be used by the Octel 250 to transmit network messages to servers that are not on the same network.

4. Press ***Enter*** to store the values entered.

SNMP Parameters (Menu 22.3)

Enter SNMP information in menu 22.3, if SNMP is used in the customer's network environment. Establish the following SNMP parameters, if necessary:

1. From menu 22, enter ***3*** to access menu 22.3, as shown in Figure 5-25.

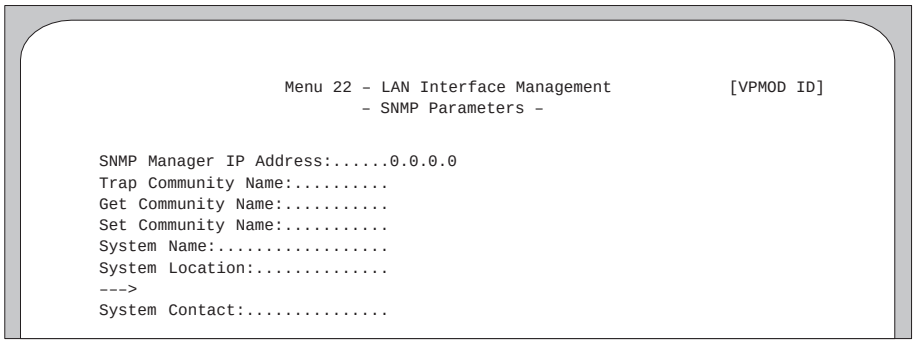


Figure 5-25. Menu 22.3, SNMP Parameters.

2. In the ***SNMP Manager IP Address:*** field, enter the IP address of the SNMP manager.
3. In the ***Trap Community Name:*** field, enter the name of the SNMP management community to which trap events should be sent. This field is case-sensitive. The SNMP manager and the message server cannot interact, unless their entries in this field are identical.
4. In the ***Get Community Name:*** field, enter the name of the SNMP management community with which the Octel 250 will exchange "Get" messages. This field is case-sensitive. The SNMP manager and the message server cannot interact unless their entries in this field are identical.
5. In the ***Set Community Name:*** field, enter the name of the SNMP management community from which the Octel 250 will receive "Set" messages. This field is case-sensitive. The SNMP manager and the message server cannot interact unless their entries in this field are identical.
6. In the ***System Name:*** field, enter the system name that the SNMP manager will display for the Octel 250.
7. In the ***System Location:*** field, enter the system location that the SNMP manager will display for the Octel 250.
8. In the ***System Contact:*** field, enter the name of the system manager or network administrator who manages network connectivity for the Octel 250. This field will also be displayed by the SNMP manager for the Octel 250.
9. Press ***Enter***.
10. When all parameters have been entered, access menu 20, then the ***LAN Utilities*** option. Enter the number for the ***Reset LAN Card and LAN Card API*** option and press ***Enter*** to reset the LAN card and activate the parameters entered in menu 22.1.

Verifying Server Operation

Use the following tests to ensure that the server has been installed and is operating correctly. The installer must set up a few basic features (such as dialing parameters and a mailbox) to check the operation of the server.

Testing the Printer

Refer to the manufacturer's manuals for the SMT and the printer and make sure that you can print the screen displayed on the SMT.



Caution!

If the SMT is an HP 700/43, *do not* press the ***Copy Pr*** key while the Main Menu is displayed. Pressing the ***Copy Pr*** key at the Main Menu causes the printer to stop working. If this occurs, turn the printer power off and back on.

Testing Server Operation

The operation of the server must be tested before it is ready for subscribers. This test *must* be performed on all installed ports. Test the server, as follows:

1. Create a mailbox with a password to receive the calls. The password must be 1234567890 to verify all DTMF tones.
2. Access Menu 12 – Disk Management, and verify that all installed drives are operating.
3. Check the server dialing parameters in menus 6.1 and 6.2.
4. Check menu 13.7, Display Software Features Installed. Verify that all features purchased are enabled. Enabled features have a ***Y*** preceding the feature number and name.
5. Access menu 8 and create a test voice mailbox with a matching telephone number. Use the default values in menu 8, except for the ***Mailbox Number:*** field, the ***Mailbox Name:*** field, and the ***Password:*** field. Enter data in these respective fields as follows:
   a. Enter a mailbox number that corresponds to the telephone number, with the number of digits matching the number established in menu 0.
   b. Enter a name for the mailbox, such as ***Test***.
   c. Enter ***1234567890*** for the initial password.
6. Place a call to the server and initialize the test mailbox. Keep 1234567890 as the password, to test all the DTMF tones.

7. Dial the pilot number of the main hunt group to perform a port-to-port check, as follows:
   a. Verify that the recorded name is played.
   b. Identify which port is accessed, by observing the FLT card LEDs.
   c. Record and send a message at least 6 seconds long to the mailbox.
   d. Use all the playback controls to review the message, then delete the message.
   e. Exit and verify that each port disconnects correctly.
   f. Repeat steps a. through e., until all ports have been tested.
8. Dial a telephone number that is forwarded to the server. Verify that the PBX forwards the call to the server. The server should answer the call.
9. Check the hunt groups. Dial the pilot number and verify that the hunt-group can access all lines associated with the hunt group.
10. If outcalling is enabled, set up outcalling in the test mailbox, and have the server place an outgoing call on each outcalling port.
11. Verify correct message-waiting operation by sending a message to the test mailbox.
12. Use menu 10 to delete the test mailbox.

If these tests operate correctly, proceed to the next group of tests. If a test does not work, refer to Chapter 7.

Verifying the Boot Routine

During this test, the server power is cycled off and back on again. Let the server boot automatically, while you view the boot process on the SMT screen. Verify the boot routine, as follows:

1. Turn off the server at the main circuit breaker, and allow the drives to spin down (about 30 seconds).
2. Turn the server back on.
3. Verify that the server boots automatically.
4. Verify that the IPL menus show the correct number of ports and drives.
5. Ensure that the date and time are correct.

If these tests operate correctly, proceed to the next section. If a test does not work, refer to Chapter 6.

Testing the LAN Card

This procedure describes how to use the ping utility to verify that the LAN card is operating correctly. If the LAN card is to be used for digital networking and the network has another Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured for digital networking, you also use the echo-test utility. Both utilities are accessed through the LAN Utilities menu.

The ping utility is a standard TCP/IP network utility that uses ICMP protocol to determine whether the host at a specified IP address is responding. It does not test any function within the host that is beyond the host's attachment to the LAN. It does not provide round-trip times or throughput data.

The ping utility can test any IP address; the destination address does not have to be another Octel 250 or 350. It sends 64 data bytes, including an ICMP header, to the specified IP address.

You also use the echo test to check whether servers are active. The server to which the echo test is sent must be an Octel 250 or 350 at Aria 2.0 and with a LAN card installed. The echo-test utility provides round-trip times and throughput data.

Refer to the "Running the Ping Utility" section, following, and the "Running the Echo-Test Utility" section, page 5-47, and perform the following tests:

1. From Menu 20 – Service Operations, access the LAN Utilities menu, then perform the following tests:
   a. Ping the IP address of this LAN card (specify the entry in the ***This Server's IP Address:*** field in menu 22.1), to confirm that it responds.
   b. Ping a different active IP address once, to confirm that it responds.
   c. If the IP address is an Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured, send echo-test messages to it to confirm that the network is not losing data messages and to obtain throughput data.
2. Go to another host to test the Octel 250 you have just installed. Proceed to step 3 or step 4, depending on the type of host.
3. If the host is an Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured, perform the following tests:
   a. Access the LAN Utilities menu at the host, and ping the Octel 250 you have just installed. Ping it once.
   b. Access the LAN Utilities menu at the host, and perform the echo test. Send the data 25 times.
4. If the host is *not* an Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured, perform the following tests:
   a. Use a ping utility, if available, or use the command

      ping [250 IP address]

      Ping the Octel 250 you have just installed. Ping it once.
   b. Use a ping utility, if available, or use the command

      ping –s [250 IP address] 64 25

      Ping the Octel 250 you have just installed. Ping it 25 times. For additional command options, check the syntax of the ping command on this host. In this example, the ping command can be read as follows: ping sequence [IP address] 64 data bytes, 25 times.

If any of these tests fail, refer to Chapter 7 for problem-isolation procedures. When testing is complete, if the LAN card is to be used for digital networking, go to the "Configuring the Server for Digital Networking" section, page 5-49.

Running the Ping Utility

To ping an active IP address once, perform the following:

1. Log into the SMT. The Main Menu appears.
2. Access Menu 20 – Service Operations, then the LAN Utilities menu, as shown in Figure 5-26.

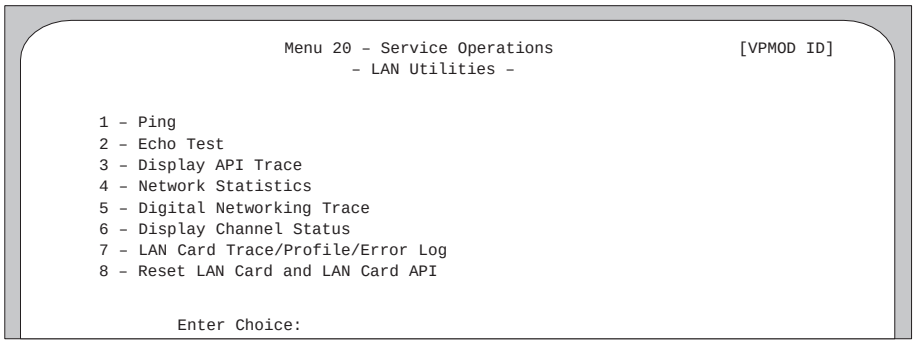


Figure 5-26. LAN Utilities Menu.

3. Select the Ping utility. The Ping Utility screen appears, with only the ***Enter the IP address to Ping (format: n.n.n.n, n=0–255):*** field displayed. Figure 5-27 is an example of the Ping Utility screen, with all fields completed.

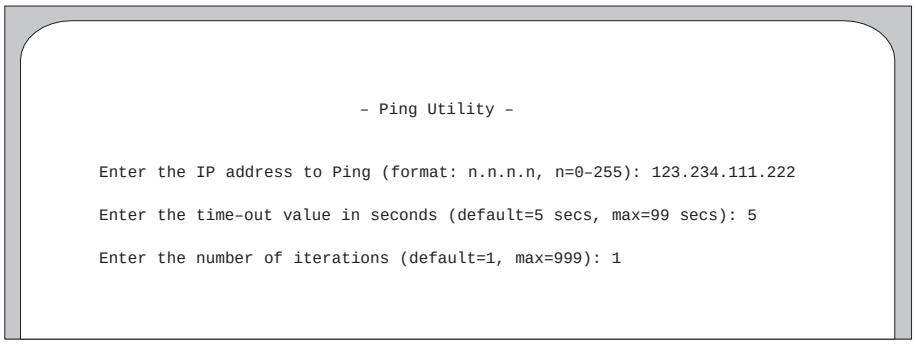


Figure 5-27. Example of Completed Ping Utility Screen.

4. Enter the IP address to which you want to send a ping, and press ***Enter***.

   The ***Enter the time-out value in seconds (default=5 secs, max=99 secs):*** field appears.

5. Enter the desired timeout value, and press ***Enter***, or simply press ***Enter*** to accept the default.

   The ***Enter the number of iterations (default=1, max=999):*** field appears.

6. Enter ***1*** to ping the IP address once, and press ***Enter***.

   The ping utility sends 64 bytes of data (including ICMP header) to the IP address, and the recipient sends back the same data it received.

   - ❑ If ***Ping Successful*** is displayed, continue to step 7.
   - ❑ If an error message is displayed indicating that the ping failed, refer to Chapter 7 for problem-isolation procedures.

7. Press ***Enter*** until the screen returns to the LAN Utilities menu.

Running the Echo-Test Utility

Run the echo-test utility to determine whether the network is dropping data and to obtain throughput data, as follows:

1. Log into the SMT. The Main Menu appears.
2. Access Menu 20 – Service Operations, then the LAN Utilities menu (Figure 5-26), then the Echo Test utility.

   The Echo Test Utility screen appears, with only the ***Enter the destination IP address (format: n.n.n.n,n=0–255):*** field displayed. Figure 5-28 is an example of the Echo Test Utility screen, with all fields completed and the test results shown.

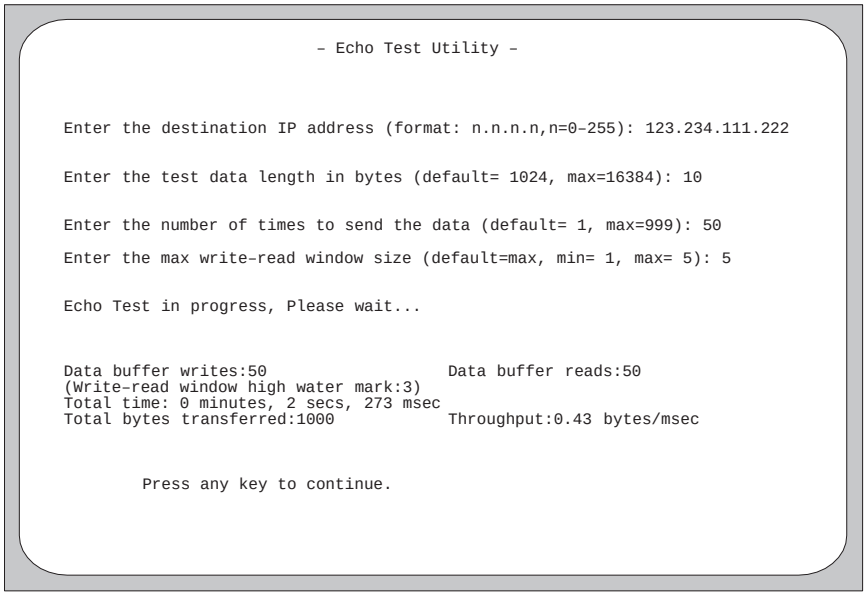


Figure 5-28. Example of Completed Echo-Test Utility Screen.

3. Enter the IP address to which you want to send the echo command, and press ***Enter***.

   The ***Enter the test data length in bytes (default= 1024, max=16384):*** field appears.

4. Enter the desired data length, and press ***Enter***, or simply press ***Enter*** to accept the default.

   The ***Enter the number of times to send the data (default= 1, max=999):*** field appears.

5. Enter the desired number of times to send the data, and press ***Enter***, or simply press ***Enter*** to accept the default.

   The ***Enter the max write-read window size (default=max, min= 1, max= 5):*** field appears.

6. Enter the desired maximum write-read window size, and press ***Enter***, or simply press ***Enter*** to accept the default. The entry in this field is the maximum number of transmissions (***Data buffer writes:***) that can have outstanding (unreceived) replies (***Data buffer reads:***), before the next echo data transmission is permitted.

   The echo test begins, and the results are displayed (Figure 5-28):

   - The numbers in the ***Data buffer writes:*** and ***Data buffer reads:*** fields should be equal.
   - The entry in the ***(Write-read window high water mark:)*** field is the highest number of replies that were ever outstanding during the echo test.
   - The entry in the ***Total time:*** field is the round-trip time for data requests and replies.
   - The entry in the ***Total bytes transferred:*** field should be double the number of bytes sent in all requests, to account for both requests and replies.
   - The entry in the ***Throughput:*** field is the number of data bytes sent per millisecond; it does not include the overhead bytes of the ICMP header.

   If the total bytes transferred are fewer than expected or if the total time or throughput is unacceptable, refer to Chapter 7 for problem-isolation procedures.

7. Press ***Enter*** until the screen returns to the LAN Utilities menu.

Printing Screens

Print pertinent menus and screens and save the printouts, as follows:

1. Access menu 13.2, Review Status Log.
2. Print and clear the status log. Save the printout for future reference.
3. Make sure that the system manager has completed menus 1, 2, 3, and 5.
4. Access menus 1 through 6 and 22 (if used) and each of their submenus, and print each one. Save the printouts for future reference.

If the customer will be using the server for digital networking, continue to the next section. If not, the installation is complete.

Configuring the Server for Digital Networking

Use this section to configure digital networking, if the server has a LAN card installed for this purpose.

Configuring System Parameters for Digital Networking

Use menu 15.1.2 for the following purposes:

- ❑ To enable or disable digital networking system-wide
- ❑ To specify the maximum number of digital connections and the maximum number of simultaneous, outgoing digital connections
- ❑ To define the number of digital retry attempts before the server falls back to Octel **A**nalog **N**etworking

To enable digital networking system-wide, complete menu 15.1.2, as follows:

1. From the Main Menu, enter ***15*** to access Menu 15 – Network Management.
2. Enter ***1*** to access menu 15.1, Octel Net**working** Administration.
3. Enter ***2*** to access menu 15.1.2, System Parameters for Digital Networking. Figure 5-29 is an example of menu 15.1.2 for an Octel 250.
4. Enter ***0*** in the ***Digital Networking:*** field to enable digital networking.

For this installation, leave the default values in the remaining fields. The system manager can modify this menu later, if necessary.

Depending on the value chosen for the ***Max Digital Connections:*** field, up to 16 digital connections or tasks can be under way simultaneously, to and from the LAN card. The value in the ***Max Outgoing Digital Connections:*** field can range from ***1*** through ***16***, but must not be greater than the value in the ***Max Digital Connections:*** field. The default is ***12***. The difference between the values in these two fields is the number of digital connections reserved exclusively for incoming transmissions. Any connection can be used, at times, for incoming transmissions and, at other times, for outgoing transmissions, but not for both simultaneously.

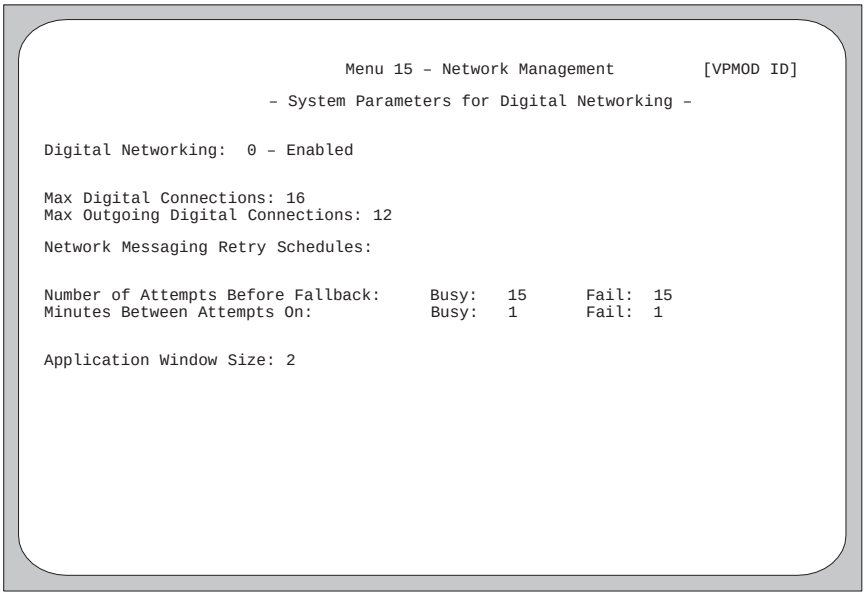


Figure 5-29. Example of Menu 15.1.2, System Parameters for Digital Networking for an Octel 250.

Establishing Node Profiles and Testing Digital Networking

You can allow individual nodes to use digital networking by completing three fields or options (introduced in Aria 2.0) in each node profile, menu 15.1.3:

- ***Node Type:***, new option ***2 – Octel Digital*** **Networking**
- ***IP Address:***
- ***Fallback:***

An example of a node profile for Aria 2.0 is shown in Figure 5-30, with the fields or options for digital networking highlighted. Note that some of the other field names have been revised from previous releases. Work with the system manager to establish the field entries for a node profile. You can then enter the pertinent parameters to establish and test digital networking to that node. If digital networking has not been installed on any other nodes within Octel **N**etwork**ing**, then you cannot test message delivery.

Establish a node profile for digital networking, and send test voice messages between nodes that have digital networking installed, as follows:

1. Log into the SMT of the local message server. The Main Menu appears.
2. Enter ***15*** to access Menu 15 – Network Management.
3. Enter ***1*** to access menu 15.1, Octel Net**working** Administration.

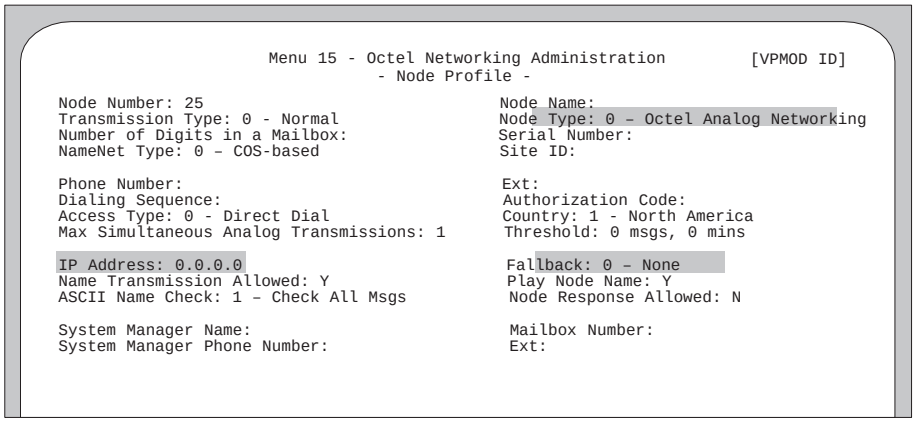


Figure 5-30. Example of Menu 15.1.3, Node Profile (Aria 2.0).

4. Enter ***2*** to access menu 15.1.2, System Parameters for Digital Networking.
5. Verify that the ***Digital Networking:*** field is set to ***0***. This enables digital networking.
6. Press ***Ctrl+C***. The screen returns to menu 15.1, Octel Net**working** Administration.
7. If you know the node number to which you want to send a message, proceed to step 8. If you do not know the node number, determine it, as follows:
   a. Enter ***5*** to access menu 15.1.5, List Valid Node Numbers on the Network.
   b. In the ***Select Node:*** field, enter ***0*** to select all nodes. In the ***Select Message Queue:*** field, enter ***9*** to display all message queues.
   c. Review the nodes until you find the one to which you want to send a message, and write down its number.
   d. Press ***Ctrl+C***. The screen returns to menu 15.1, Octel Net**working** Administration.
8. Enter ***3 – Define/Change Node Profile***. Menu 15.1.3, Node Profile, appears, with only the ***Node Number:*** field displayed.
9. Enter the number of the node to which you want to send a message. Because this is a new node, the remaining fields appear on the screen. An example of a node profile, with the digital networking fields highlighted, is shown in Figure 5-30.
10. Change the ***Node Type:*** field to ***2 – Octel Digita*****l Networking** to allow messages to be delivered to the node through digital networking.
11. In the ***IP Address:*** field, enter the IP address of the node to which your test message will be sent.
12. Note the current entry in the ***Fallback:*** field, and set it to ***0 – None*** to ensure that the test message cannot be sent using analog fallback. The purpose of fallback is to allow messages to be sent using analog networking automatically, if the digital network becomes unavailable.

13. Press ***Send*** or ***Enter*** until the updated node profile is written to disk, and the weekday message-delivery schedule appears on the screen.

14. Establish a desired delivery schedule for the test message.

15. Set up test mailboxes on both the local and destination message servers. Enter ***2*** in the ***Octel Net*****working** ***Priority Level:*** field in a class of service in menu 7 selected for both test mailboxes.

16. Send a voice message from the local test mailbox to the test mailbox residing on the destination node. The server sends the message on the delivery schedules defined for that node.

17. Monitor the digital networking channels to confirm that the test message was delivered.

    a. At the local server's SMT, display the channel status by accessing menu 20, then the LAN Utilities menu, and then Display Channel Status.

    b. Press ***E*** for an automatic screen update every few seconds.

    c. Because the message might be delivered before you display the channel status, you might want to display digital networking statistics by accessing menu 20, then the LAN Utilities menu, then Network Statistics.

    Refer to Chapter 7 for details about these utilities.

18. Check the receiving mailbox on the remote node, after the time that you expect the message to be delivered:

    ❑ If the message has been delivered, continue to step 19.

    ❑ If the message has not been delivered, refer to Chapter 7 for problem-isolation procedures.

19. Leave the ***Fallback:*** field in the node profile set to ***0 – None***, or change it to ***1 – Octel Analo*****g Networking**, as required.

20. Repeat this entire procedure from the remote node, sending a test message to the local server in which you have just installed digital networking.

    a. Monitor the digital networking channels at the remote node to confirm that the test message was delivered.

    b. Check the receiving mailbox on the local server, after the time that you expect the message to be delivered.

       ❑ If the message has been delivered, the testing is complete. Continue to step 21.

       ❑ If the message has not been delivered, refer to Chapter 7 for problem-isolation procedures.

21. If the database and messages on this server were transferred or will be transferred from an Aspen, Branch, or Maxum, you must consider the following:

    - ❑ Advise the system manager that transferred subscribers must re-record their names. If digital networking is enabled, recorded names transferred from an Aspen, Branch, or Maxum to this server cannot be transmitted *digitally* to any Octel 350 that has any DLC cards (rather than all UDLC cards), according to that Octel 350's menu 15.1.2, System Parameters for Digital Networking. Analog fallback is not invoked in this case, so until the names are re-recorded, the names will not be available for transmission to any Octel 350s that have any DLC cards.

    - ❑ If this server has any messages that were transferred during a conversion from an Aspen, Branch, or Maxum voice processor, Aria 2.0 software does not allow those messages to be transmitted *digitally* to any Octel 350 node that has any DLC cards (rather than all UDLC cards), because DLCs can play these converted messages *only* if they are re-recorded during analog transmission. Also, some IVR-generated messages can be sent using analog transmission only. The software automatically uses analog networking to send the messages described here, even if analog fallback is disabled. However, to ensure that analog transmission is possible, you or the system manager must do the following:

      a. Configure at least one port for networking in menu 4.1.

      b. Complete the ***Phone Number:*** field in menu 15.1.3, Node Profile, for each remote node.

      Perform these steps, even if this server is intended for digital connection only.

22. When you have tested digital networking to one remote node, use this procedure to enable and test digital networking to other Octel 250s or 350s at Aria 2.0 and with digital networking installed.

TROUBLESHOOTING III

The ***Troubleshooting*** section consists of the following chapters:

- ❏ Chapter 6. Troubleshooting Server Startup
- ❏ Chapter 7. Troubleshooting Server Operation
- ❏ Chapter 8. Status Log Interpretation
- ❏ Chapter 9. Alarm Interpretation

Chapter 6 provides detailed procedures for troubleshooting the server to resolve issues identified during the boot process. Startup fault isolation includes issues with power, the power source, disk drives, cooling fans, logic cards, and the SMT.

Chapter 7 provides detailed procedures for troubleshooting the server to resolve issues or potential issues identified during customer operation, based on the symptoms observed.

Chapter 8 provides details about the most important status codes in the status log and how to interpret them.

Chapter 9 provides details about interpreting alarms on the server.

6

TROUBLESHOOTING SERVER STARTUP

When you turn on the power to an Octel 250 server, you should monitor the startup sequences, at the SMT. Procedures for correcting problems encountered during startup are provided for the following aspects of startup:

- ❑ Preliminary fault isolation
- ❑ CPU tests
- ❑ File-system tests
- ❑ Line-configuration tests

If the server boots successfully, but a problem is encountered, refer to Chapter 7 for more information.



Caution!

Turn off the server before removing CCF cards, disconnecting cables, or removing subassemblies. Failure to turn off the server can result in lost messages, damaged data, or hardware failures.

Wear an antistatic wrist strap while handling or examining any logic cards.

Preliminary Fault Isolation

When power is applied to the server, the power supply sends a signal to the CCF card. The CCF card sends a hardware-reset signal to the alarm panel and to the FLT and optional LAN cards.

If the main circuit breaker trips and shuts off the power immediately after it is turned on, call the Octel Customer Services Center or your Octel distributor for assistance.

If logic cards, fans, or drives do not power up, proceed to the following sections.

Power-Supply Problems

If the input power is not correct, the server does not boot. Determine and correct any input-power problems, as follows:

1. Make sure that the server's power cord is plugged into an appropriate power outlet and that the main circuit breaker is in the ON position.

2. Check the voltage. Use a digital voltmeter to verify that the internal power supply provides 26 Vdc to 29 Vdc. When the positive (red) lead of the voltmeter is connected to the V1 TEST point and the negative (black) lead is connected to the GND TEST point on the server, the voltmeter must read between +26 Vdc and +29 Vdc, *not* a negative voltage. Figure 6-1 shows the location of the test points on the alarm panel.

3. If the voltmeter does not display between +26 Vdc and +29 Vdc, check the alarm panel to determine which power supplies are not functioning, and use the procedures in Chapter 11 to replace the faulty power supplies.

Disk-Drive, Cooling-Fan, and Logic-Card Problems

Power is supplied to the cooling fans, disk drives, and logic cards after the server is powered on. If none of the cooling fans turn on, none of the disk drives begin spinning, and none of the logic cards receive power, the problem is probably the auxiliary power board. Perform the following steps to check the fans, disk drives, and logic cards, and their power:

1. Open the front door of the cabinet.

2. Remove the air filter from the chassis.

3. Verify that the fans are spinning. If any of the fans are not spinning, check the cable that supplies power to the fans. If none of the fans are operating and all the cables are secure, replace the auxiliary power board. Refer to Chapter 11 for replacement procedures.

4. Reinstall the air filter.

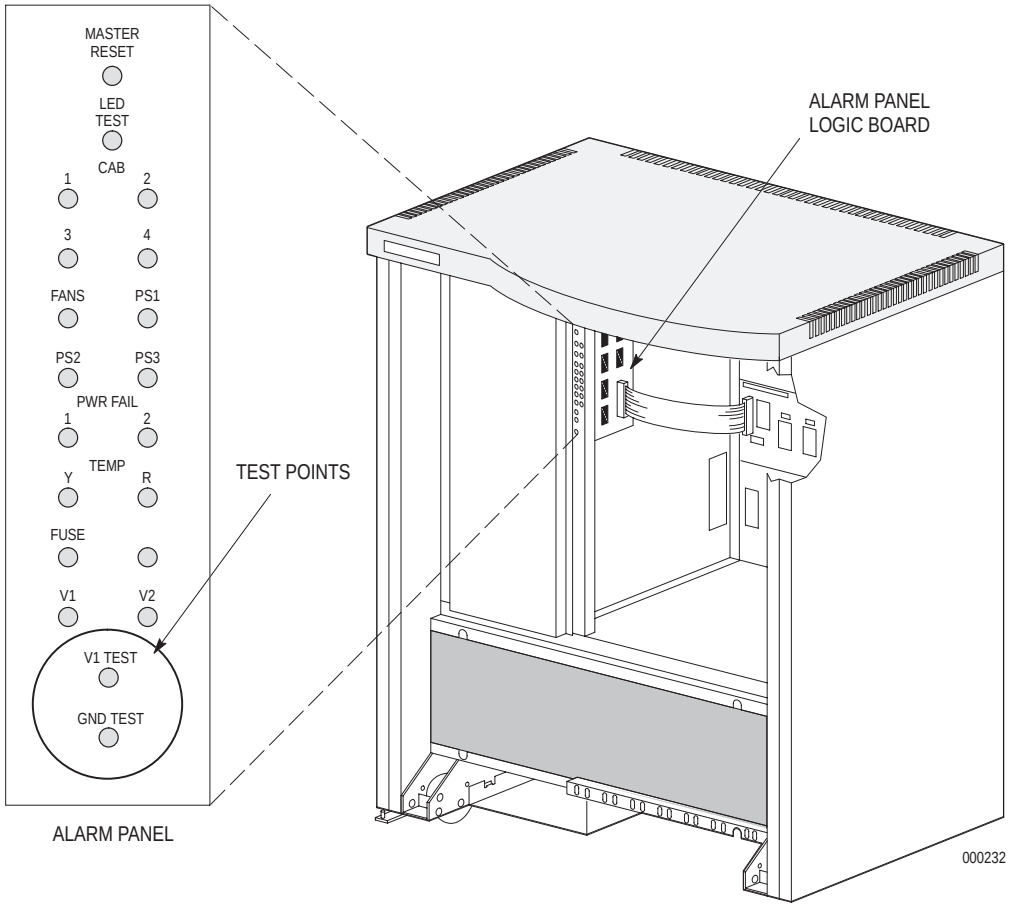


Figure 6-1. Test Points on the Alarm Panel.

5. If the problem is not resolved, open the door to the drive bay.

6. Check the status LEDs on the front of the drive modules to confirm that at least some of the drives are receiving power.

7. If no LEDs on any of the drives are lit, go to step 8.

   If some, but not all, of the drives have LEDs lit, try reseating the inoperative drive modules to establish operation, as follows:

   a. Turn off the power to the server.

   b. Pull out the drive-module extractor, and pull out the module.

   c. Inspect the connectors on the module and the drive backplane for possible damage.

   d. Inspect the fuse on the drive backplane to ensure that it is not blown. If the fuse is blown, a colored dot appears on the fuse. Replace the fuse, if necessary.

e. Push the drive module firmly into the drive bay, and push in the drive-module extractor to secure the module.

f. Go to step 9.

8. If no LEDs on any drives are lit and the test-point voltage is correct, the power connection to the drives is at fault. Check the connection, as follows:

   a. Turn off the power to the server.

   b. Remove the cover for the 24-V power cable.

   c. Check the 24-V power cables on the rear of the server to make sure that they are connected correctly to the drive backplane and the main backplane, as shown in Figure 6-2.

   d. Reinstall the power-cable cover.

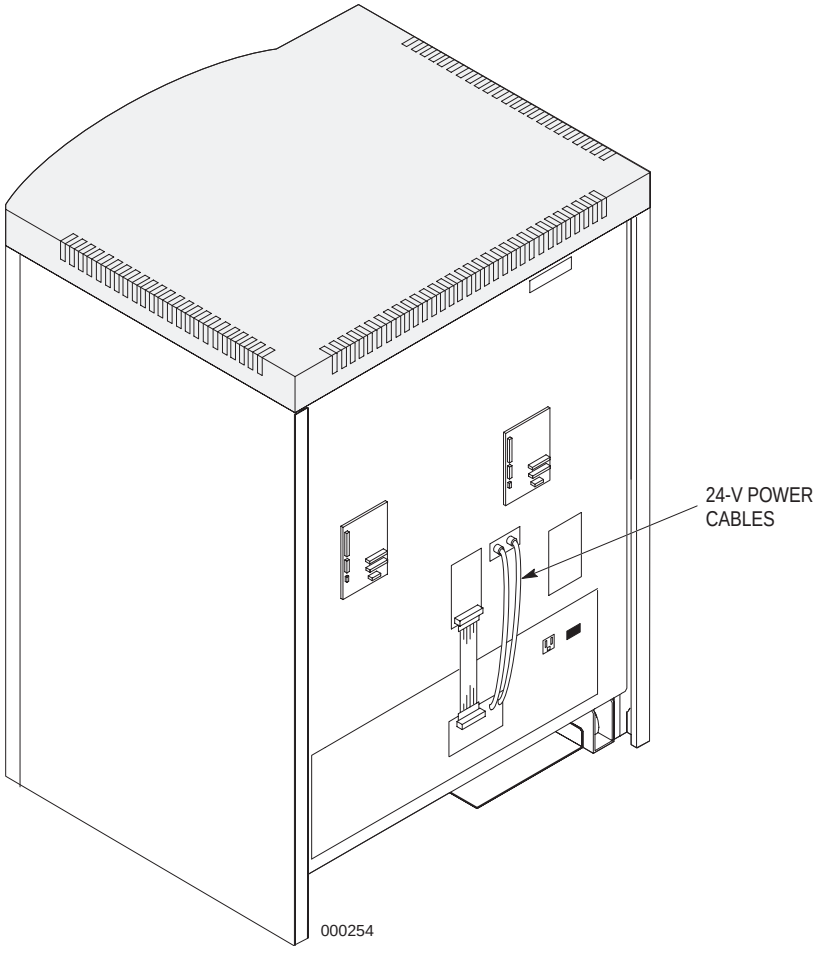


Figure 6-2. Power Connections to the Drive Backplane.

9. Turn on power to the server and boot the server. Verify that the LEDs on the drives flash. The server can boot, even if only system-drive 0 or 1 functions. If the server cannot boot, verify that the CCF card is seated correctly in the logic bay.
10. The green PWR LED on the front of each logic card should be lit. If the red ERR LED on any card is lit after the server has had time to boot, use the procedures in Chapter 11 to replace the faulty logic card.
11. If the server cannot boot, turn off the power to the server and call the Octel Customer Services Center or your Octel distributor for assistance.

System Manager Terminal Problems

The system manager terminal (SMT) should display diagnostic information about 30 seconds after the server is turned on. If it does not, troubleshoot the SMT, as follows:

1. If a display does not appear on the screen, verify that the SMT is connected to an ac power source and is turned on, and adjust the screen intensity.
2. Make sure that the SMT is connected to the CONSOLE connector on the CCF card in slot 1.
3. If the display is still blank, press any key on the keyboard. If the screen-saver feature has blanked the screen, this action restores the display.
4. If a printer is connected to the SMT, make sure that the printer is either on line or turned off. A printer that is turned on but is not on line can interfere with SMT operation.
5. Turn the SMT power off and on again. Wait a few seconds to see whether startup messages begin appearing, then wait to see whether the ***ENTER BOOT COMMAND:*** prompt is displayed.
6. If a modem is installed between the SMT and the server, make sure that the modem is working correctly.
7. If the SMT is still not working, refer to the *Peripheral Equipment* manual to verify the SMT's setup parameters. Make sure that XON/XOFF protocol is enabled for the SMT and printer.

Failed CPU Tests

The server can boot only after the initial diagnostic tests have been completed successfully. The CPU tests are displayed on the SMT. If the message ***FAILED*** appears at any time during the tests, reboot the server with ***B*** at the ***ENTER BOOT COMMAND:*** prompt. If ***FAILED*** appears during the second try, turn off the server power, and troubleshoot as follows:

1. Make sure that the FLT cards are correctly seated.

2. Make sure that all cables connected to all cards in the cabinet are correctly and securely connected.

3. Make sure that the cards are receiving power, by checking that their PWR LEDs are lit.

4. Remove the CCF card. Check that its SIMMs and EPROMs are seated correctly. Reinstall the CCF card, and reboot the server. If the message ***FAILED*** appears again, replace the CCF card.

System-File Status Codes

The status of the file system is displayed on the SMT after the CPU tests are successfully completed, before the boot prompt.

After the CCF card runs the diagnostic tests, IPL1 executes and then loads PIPL from the system drives. The PIPL program displays the operational status of the CCF card and the disk drives as ***SYSTEM FILE STATUS***. This information is displayed every time the server is restarted. Figure 6-3 is an example of IPL1 and PIPL, showing the system-file status.

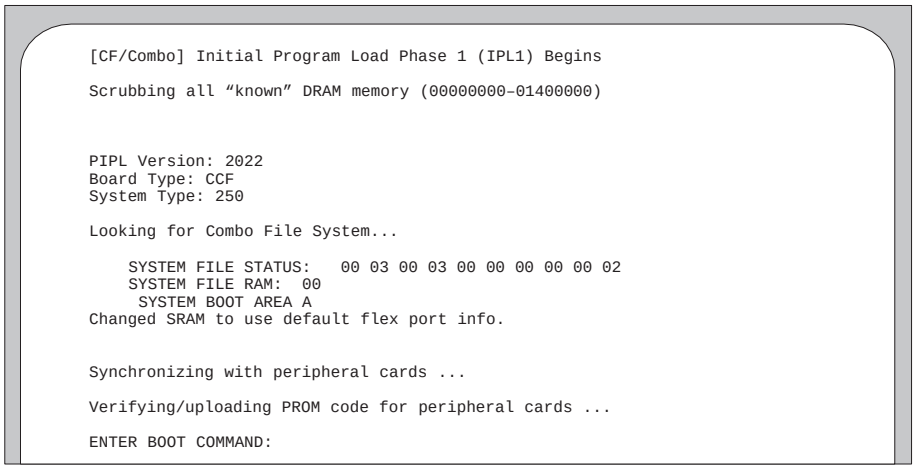


Figure 6-3. Example of IPL1 and PIPL.

The system-file status is represented in 10 hexadecimal bytes. The position of each byte, or offset, is determined by counting from the left, starting with 00. Table 6-1 provides brief descriptions of the bytes in each offset.

Table 6-1. System-File Status Format.

Offset	Description
00	Status code for disk drives
01–02	Indicates which drives the software sees as installed
03–04	Indicates which drives are running
05–08	Not used
09	Always contains ***02*** (indicates drives are SCSI)

Offset 00 of the file status reports any discrepancy found by the CCF card while reading the install and boot tables on each drive. The CCF card uses the data in these tables to locate the drives during startup. Table 6-2 lists the disk-drive status codes that can appear in offset 00. When the status code in offset 00 is ***00***, all installed disk drives are running.

Table 6-2. Disk-Drive Status Codes in Offset 00.

Status Code	Meaning
00	All installed disk drives are present and running.
03	Not all installed disk drives are running.
20	Neither system drive 0 nor system drive 1 could load IPL.
22	Serial numbers on drives are not correct.



Caution!

Do not attempt to boot the server if the value of the first offset in the system file status is not ***00*** or ***03***. Any other value indicates a fault that must be corrected before booting the server. Correct the problem immediately, as described in this section.

The install table on each drive contains information about all the disk drives. When any disk drive is installed, the CCF card writes the drive's serial number to the install tables on all the installed disk drives. The install tables are identical on all the installed disk drives.

Offsets 01–02 report which disk drives are installed, in transposed hexadecimal form. The CCF card reads the install table to identify which disk drives are installed.

Offsets 03–04 report which disk drives are running, in transposed hexadecimal form.

If a status-code 20 appears, immediately go to the "Status-Code 20" section, page 6-9, for corrective procedures. For all other status codes, continue this procedure.

In the hexadecimal bytes in offsets 01–02, one bit is set for each disk drive installed in slots 0–5; if present, a tape drive in slot 6 is ignored. In the hexadecimal bytes in offsets 03–04, one bit is set for each disk drive in slots 0–5 that is running; if present, a tape drive in slot 6 is ignored. The value of ***02*** in byte 09 in the status indicates that the server uses SCSI drives.

Identify the disk drives that are installed and running, as follows:

1. Transpose (interchange) the two bytes. For example, in Figure 6-3, the values ***03 00*** in offsets 01–02 and in offsets 03–04 are transposed to ***00 03***.

2. Use Table 6-3 to convert the bytes from hexadecimal to binary form. The binary code entries in Table 6-3 range from ***0000 0000*** for no disk drives installed and running to ***0011 1111*** for all disk drives 0–5 installed and running.

   In the example, the binary codes for offsets 01–02 and for offsets 03–04 are ***0000 0011***.

3. After converting the bytes to binary, each disk drive is represented by a bit, read from right to left. The same disk drives should be both installed and running. In this example, the server has disk drives 0 and 1 installed and running.

Table 6-3. Hexadecimal-to-Binary Conversion, With the Disk Drives Shown in Their Binary Equivalents.

Hexadecimal Bytes	Binary Codes for Disk Drives 0–5 (Read Right to Left)		Hexadecimal Bytes	Binary Codes for Disk Drives 0–5 (Read Right to Left)	
00	0000	0000	0A	0000	1010
01	0000	0001	0B	0000	1011
02	0000	0010	0C	0000	1100
03	0000	0011	0D	0000	1101
04	0000	0100	0E	0000	1110
05	0000	0101	0F	0000	1111
06	0000	0110	1F	0001	1111
07	0000	0111	2F	0010	1111
08	0000	1000	3F	0011	1111
09	0000	1001			

The following sections describe status-codes 03, 20, and 22 in offset 00.

Status-Code 03

When the status code in offset 00 is ***03***, at least one installed drive is not running. The server might still be able to complete the system startup and begin processing calls.

The following example of system-file status shows that one of the installed system drives is not running:

SYSTEM FILE STATUS: 03 07 00 05 00 00 00 00 00 02

The first offset, 00, is the status code; its value is ***03***. The installed drives are shown in offsets 01–02 as ***07 00****;* when transposed, the value is ***00 07****,* which can be converted to the binary value of ***0000 0000 0000 0111***. Reading from right to left, each bit corresponds to a drive number, starting with drive 0; in this example, three drives (0, 1, and 2) are installed.

The running drives are shown in offsets 03–04 as ***05 00***; when transposed, the value is ***00 05***, which can be converted to the binary value of ***0000 0000 0000 0101***, indicating that two drives (0 and 2) are running; drive 1 is not running.

To correct the problem that causes status-code 03, replace the drive that is not running. If the server was booted to the Main Menu and was in service for *any* length of time, use the appropriate procedure in Chapter 11.

Status-Code 20

When the status code in offset 00 is ***20***, the file system cannot read valid boot information from either system-drive 0 or 1. The CCF card EPROMs automatically attempts to restart the boot process. The contents of bytes 01–05 have no meaning. An example of a status-code 20 in the system-file-status line appears, as follows:

SYSTEM FILE STATUS: 20 34 34 34 34 00 00 00 00 02

When there is a hardware or a software problem, neither system-drive 0 nor system-drive 1 is ready. If status-code 20 appears, reseat the CCF card. If status-code 20 reappears, reseat the system drive or drives. If status-code 20 still appears, replace the CCF card. If card replacement does not work, call the Octel Customer Services Center or your Octel distributor.

Status-Code 22

When the status code in offset 00 is ***22***, the file system found a mismatch of serial numbers on the drives. The file system reads the unalterable serial number written to the boot table on each drive, and compares those serial numbers with the complete set of serial numbers stored in the install tables on every drive. If the serial numbers do not match, the file-system software does not allow the server to boot.

If you know the original drive configuration of the server when it was shipped from Octel, reestablish that configuration and try to reboot the server. Otherwise, call the Octel Customer Services Center or your Octel distributor for assistance.

SST-Loading Failure

In the rare case where the SST does not load correctly, turn off the main circuit breaker and call the Octel Customer Services Center or your Octel distributor immediately.

Card-Configuration-Test Failure (Aria 1.2 Only)

For Aria 1.2, if the card-configuration test display is not correct, call the Octel Customer Services Center or your Octel distributor.

Data-Bus DMA-Test Failure

The CPU tests the direct-memory-access (DMA) data bus by sending messages to and receiving them from FLT cards. If ***DATA BUS DMA: FAILED*** is displayed, an FLT card is probably the cause of the failure. Determine which FLT card caused the test failure, as follows:

1. Remove half the FLT cards from their slots and boot the server.
2. If the server boots and ***DATA BUS DMA: OK*** is displayed, remove the working FLT cards, insert the FLT cards previously removed, and reboot the server.
3. If the server does not boot, isolate the bad FLT card by removing one FLT card at a time, and attempt to reboot the server after each card removal.
4. Replace the bad FLT card and reboot the server.

Load-Application-Test Failure

In the rare case where the application software is not loaded successfully, ***LOAD APPLICATION: FAILED*** is displayed on the screen. If this message appears, call the Octel Customer Services Center or your Octel distributor immediately.

7 TROUBLESHOOTING SERVER OPERATION

When an Octel 250 message server experiences a problem, use diagnostic tools and troubleshooting procedures to determine the cause. Problems or concerns with the following topics can be analyzed and repaired in the field:

- ❑ Message waiting
- ❑ Delayed messages
- ❑ Personal greetings
- ❑ Returning to the operator
- ❑ Talk-off
- ❑ Automated attendant mailboxes
- ❑ Integration
- ❑ Ring-no-answer
- ❑ Deleting network nodes
- ❑ Disk drives
- ❑ Tape drive
- ❑ Digital networking

If using the procedures in this chapter does not solve the problem, call the Octel Customer Services Center or your Octel distributor.

Basic Troubleshooting Guidelines

Use the following basic troubleshooting guidelines:

- ❑ Collect all available information about the problem and its symptoms. Determine whether the problem is system-wide or local, affects all users or just one, and affects one port or all ports.
- ❑ Analyze the status logs and alarms to gather information associated with the problem. Refer to Chapter 8, Status Log Interpretation, and Chapter 9, Alarm Interpretation, to identify the probable cause of a log entry or an alarm.
- ❑ Confirm that the customer is using the server correctly.
- ❑ Maintain a logical, sequential approach, and use caution whenever replacing parts on the server. Re-create the problem, if possible, but try not to interrupt or degrade the server's operation.
- ❑ If a status log entry or alarm identifies the most probable cause of the problem, follow the corrective action recommended for that status log entry or alarm.
- ❑ If the problem has not generated status log entries or alarms, use the server's diagnostic tools to isolate and correct the problem. Refer to Table 7-1 for the appropriate indication.
- ❑ After troubleshooting is completed, verify that the subsystem operates correctly and the problem has been corrected.
- ❑ If the problem persists, call the Octel Customer Services Center or your Octel distributor.

Table 7-1. Problem Indications for the Octel 250 Server.

Symptom	Possible Cause	Refer to
Server does not boot.	Power not connected	Chapter 6
	CCF card incorrectly seated	Chapter 6
	Drive damaged or not running	"Disk-Drive Problems" section, page 7-25
Server boots, but nothing appears on the SMT screen.	SMT turned off, connected incorrectly, or configured incorrectly (including baud rate); incorrect or bad SMT cable	Chapter 6
Message-waiting indicator does not work.	Message waiting not allowed for the PBX	"Message-Waiting Problems" section, page 7-7
	Message waiting accidentally turned off in the mailbox profile	"Message-Waiting Problems" section, page 7-7
	Possible problem with integration	"Integration Problems" section, page 7-17

Table 7-1. Problem Indications for the Octel 250 Server (Continued).

Symptom	Possible Cause	Refer to
Message delivery is delayed.	Subscriber error	"Delayed Messages" section, page 7-8
	Message-waiting-indicator (MWI) problem	"Message-waiting indicator does not work" symptom in this table.
	Too few ports allocated for outcalling or MWI requests	"Delayed Messages" section, page 7-8
	Pager problem	"Delayed Messages" section, page 7-8
	Aria-domain server has reverted (fallen back) to analog networking and too many messages waiting to be sent	"Digital-Networking Problems" section, page 7-27
System or personal greetings are recorded as messages.	Subscribers or outside callers not exiting the server correctly	"Problems With Personal Greetings" section, page 7-11
Transfer-to-operator problem.	PBX or server programming wrong	"Return-To-Operator Problems" section, page 7-12
	System-wide problem	"System-Wide Return-to-Operator Problems" section, page 7-12
	Problem with one extension or group	"Return-to-Operator Problems on One Extension or Group" section, page 7-12
Server hangs up while the subscriber is recording a message.	Server mistakenly interprets combination of sounds as DTMF tone while subscriber records message ("talk-off")	"Talk-Off Problems" section, page 7-14
Caller does not hear the appropriate greeting for the automated-attendant mailbox on a port-monitored extension.	Port monitoring not established on the port being called, an automated attendant available/not available schedule not correctly set, or customized greeting not recorded	"Appropriate Greeting Is Not Played" section, page 7-15
A few seconds after the caller hears the appropriate automated-attendant greeting, then enters an extension and hears the prompt "please hold," the caller hears the greeting again, instead of a busy or ring-no-answer message.	The connecting sequence in menu 6 incorrect, or called party hung up before transfer completed	"Greeting Plays After "Please Hold" Prompt" section, page 7-15

Table 7-1. Problem Indications for the Octel 250 Server (Continued).

Symptom	Possible Cause	Refer to
Caller enters an extension from an automated attendant and immediately hears a personal greeting, without hearing whether the extension was busy or experienced ring-no-answer.	Automated attendant might not be using type 30 or 32 mailbox for extensions	"Greeting Plays Immediately After Caller Enters Extension" section, page 7-16
Caller enters an extension from an automated-attendant mailbox, hears "please hold," then ringing, and then a live operator or error tone.	Check the PBX or server configuration	"Incorrect Transfer Occurs After "Please Hold" Prompt" section, page 7-17
Caller enters a caller's menu mailbox and hears "That mailbox is not in service."	Type 31 mailbox without a customize greeting	"Mailbox Is Not in Service" section, page 7-17
Caller enters 0 for assistance, hears ringing, and is returned to the server.	Designated transfer point not forwarded to server	"Call to Operator Returns to the Server" section, page 7-17
Menu 12 reports a drive is not running; status code 70, 72, CD, or CE entries are logged; or when performing the Initial Program Load (IPL), the file status displays 03 in the first byte.	Drive damaged or not running	"Disk-Drive Problems" section, page 7-25
Caller gets ring-no-answer (RNA).	Server out of service or all ports busy	"RNA Problems Caused by Server" section, page 7-23
	PID or MID application down	"Caused by a PID or MID Application" section, page 7-24
	An FLT card or port malfunctioning	"Caused by FLT Cards and Ports" section, page 7-24
	Integration problem	"Integration Problems" section, page 7-17
Network node cannot be deleted.	Diagnostic message exists in system manager mailbox for that node.	"Problems With Deleting Network Nodes" section, page 7-25
Errors during use of tape drive.	Tape-drive problem or tape media problem	"Tape-Drive Problems" section, page 7-27
Digital networking is not working or frequently falls back to analog networking.	LAN card or LAN problem	"Digital-Networking Problems" section, page 7-27
Miscellaneous problems with message waiting, greetings, partial messages, or outcalling.	Integration problem	"Integration Problems" section, page 7-17

Diagnostic Tools

Several diagnostic tools are available to assist in analyzing a situation:

- ❑ The status log. Refer to Chapter 8.
- ❑ Remote access
- ❑ Online CDR utility
- ❑ Octel Call Detail Records™ (Octel PC/CDR™)
- ❑ Octel DecisionPro Reporting Package™ (DecisionPro™)
- ❑ Terminal Data Communications (TDC). To use TDC, call the Customer Services Center.
- ❑ Port Testing Utilities (including Port Traffic Statistics). Refer to Chapter 10.
- ❑ LAN Utilities (including Network Statistics), for servers at Aria 2.0. Refer to the "LAN Utilities" section, page 7-32 and the "Analog-Networking Statistics" section, page 7-49.

Remote Access

You can use modems to access the system manager terminal (SMT) from a remote location. Installing a modem on the Octel 250 server is described in Chapter 4. Installing and configuring a remote SMT is described in the *Peripheral Equipment* manual.

Two modems are required to connect a remote SMT to the server. One modem is placed at the server location and the other at the remote terminal site. You can use a PC as the remote terminal if it has a terminal-emulation program installed that supports SMT emulations. The modem connected to the server is referred to as the server modem. The modem connected to the PC or remote terminal is referred to as the PC/terminal modem.

A Hayes-compatible modem works best for this application. The server communicates at either 1200 baud or 9600 baud, but 9600 baud is recommended for remote system management.

Online CDR Utility

Use the Online CDR utility to review CDR events directly from the SMT. When you use Online CDR, you do not have to first download the CDR data to a PC, as is required when using the optional Octel PC/CDR software package.

With Online CDR, you can track and troubleshoot information related to any significant activity that occurs on the server, including networking, paging, outcalling, fax, and subscriber activities. You can perform customized searches for specific ranges of dates and times, and you can target individual or multiple mailboxes, application IDs, ports, message IDs, nodes, and events. You can enter any combination of search criteria (the search results are those events that match all the criteria entered).

Online CDR uses the same statistical data (stored in the CDR buffer) as the optional Octel PC/CDR and Octel DecisionPro Reporting Package applications. It does not affect the collection of CDR events or the operation of Octel PC/CDR or DecisionPro.

To access the Online CDR Utility, from the SMT Main Menu, access Menu 20 – Service Operations, then enter the number for the Online CDR Utility. (Before you can use the Online CDR utility, feature option 16 – Call Detail Recording must be enabled. Using menu 13.7, if a ***Y*** is next to the feature number, the feature is enabled.)

Alarms are generated if blocks of CDR events in the CDR buffer have not yet been downloaded to a PC using the Octel PC/CDR or DecisionPro program and are about to be overwritten. You can use an Online CDR utility option to disable these alarms. If CDR data is regularly downloaded to a PC for use with another application, *do not* disable the alarms. If the alarms are disabled, the buffer might become full, causing important CDR data to be lost. If CDR data is used *only* for Online CDR, you might want to disable the alarms.

For information about using the Online CDR utility, enabling and disabling CDR buffer alarms, and for descriptions of all CDR events, refer to the *Online CDR User Reference Guide*, P/N 101–1479–000 for Aria 1.2 or P/N 101–1553–000 for Aria 2.0. Use the information in the *Online CDR Reference Guide* to interpret events displayed as a result of an Online CDR search.

Octel PC/CDR

The Octel PC/CDR software package is a data collection and processing application that provides detailed records of activity on the server. Octel PC/CDR is an optional software package available for new servers, or it can be added to an existing server. You can use CDR data for many applications, including monitoring call activity and port traffic on the server, collecting data for billing, and troubleshooting.

CDR data is collected in the call detail records (CDR) buffer in the server. Use a PC containing the Octel PC/CDR software to download the CDR data to the PC, collate the data, and then sort it into output files. You can view and print these output files through the Octel PC/CDR File Utilities menu, or the files can be imported into an application program for further processing.

CDR data from Octel servers differs from the call detail records provided by a private branch exchange (PBX) or central office (CO) switch. Data from the CDR buffer in the server provides details about calls as they take place on the server. Each time a significant action occurs during a call, the server records an event in the CDR buffer. CDR data is based on the series of events occurring from the time a server port goes off-hook to receive a call to the time the port goes on-hook when the call is complete. This data includes events for entering a mailbox, conducting a password test, beginning an outcall, or transferring to another mailbox or to a telephone number. Data is also collected for message waiting and server events unrelated to the status of the ports.

The CDR buffer is a circular buffer; that is, it overwrites older blocks of CDR events when the buffer becomes full. When all the blocks are filled, the oldest block is overwritten, and its information is lost. The more events that occur on your server, the sooner the buffer becomes full and begins overwriting the older blocks.

If you are collecting CDR data for use with Octel PC/CDR, you must regularly monitor the CDR buffers on all servers for which CDR data is collected to make sure the buffers do not become full. Perform regular downloads to prevent blocks from being overwritten and to prevent data from being lost. Use SMT menu 16.1.1, Call Detail Recording Status, to monitor important information about the CDR buffer status.

Alarms are generated if blocks of CDR events in the CDR buffer have not yet been downloaded to the CDR PC and are about to be overwritten. These alarms are recorded in SMT menu 13.8.

For additional information about Octel PC/CDR, refer to the *Octel PC/CDR Manual* (P/N 101–1480–000 for Aria 1.2 or P/N 101–1552–000 for Aria 2.0).

DecisionPro

DecisionPro is an optional Windows-based software package that runs on a PC. You can use DecisionPro to download CDR events (CDR data) and user record profiles from an Octel message server to a PC, to load this data into a database, and to provide detailed reports about message server activity. DecisionPro's standard reports address several areas of interest to the system manager, including file maintenance and troubleshooting issues.

If you are collecting CDR data for use with the DecisionPro application, you must regularly monitor the CDR buffers on all servers for which CDR data is collected to make sure that the buffers do not become full. Perform regular downloads to prevent blocks from being overwritten and to prevent data from being lost. Use SMT menu 16.1.1, Call Detail Recording Status, to monitor important information about the CDR buffer status.

Alarms are generated if blocks of CDR events in the CDR buffer have not yet been downloaded and are about to be overwritten. These alarms are recorded in SMT menu 13.8.

Refer to the *DecisionPro Operations Manual* (P/N 101–1562–000 for Aria 1.2 or P/N 101–1567–000 for Aria 2.0) for information about using the DecisionPro application. Refer to the *DecisionPro Reports Reference Manual* (P/N 101–1561–000 for Aria 1.2 or P/N 101–1568–000 for Aria 2.0) for information about DecisionPro reports.

Message-Waiting Problems

If the server has message waiting problems, perform the following:

- ❑ Check the configuration notes to make sure that message waiting is allowed for the PBX.
- ❑ Make sure that message waiting is set in the mailbox profile. Message waiting might have been accidentally turned off. Check for message waiting in the mailbox profile, as follows:

    1. From the SMT Main Menu, access Menu 9 – Change Mailbox, and select option ***1***. Menu 9.1, Change Mailbox Profile, appears, with only the ***Number:*** field displayed.
    2. Enter the mailbox number, and press ***Enter***. The remaining fields appear on the screen.

3. Check the ***Message Waiting Allowed:*** field. If the field shows that message waiting is not allowed, change it to allow message waiting.
4. Press ***Ctrl+C*** until the Main Menu reappears.

   For message-waiting problems related to specific integrations, refer to the "Integration Problems" section, page 7-17.

Delayed Messages

Messages can be delayed or can *appear* to be delayed for a variety of reasons. Messages usually arrive immediately after they are sent, except in the case of messages sent across a network, which arrive at predefined, scheduled times. Message delivery appears to be delayed when messages are actually delivered correctly but the message-waiting indication (MWI) is not set correctly, so subscribers do not realize that they have unheard messages.

The following sections describe conditions that cause subscriber perceptions of delays in message delivery and actual delays in message delivery or problems with MWI.

Subscriber Perceptions of Message Delays and MWI Issues

For several reasons, subscribers can *think* that message delivery is delayed when it is *not*. The most common reasons are as follows:

- **Subscribers do not listen to the voice prompts**. Subscribers who are experienced with voice messaging might not pay close attention to the voice prompts and might miss critical status information.
- **Subscribers skip messages**. When subscribers want to skip messages, they should press the **#** key once. If they inadvertently press the **#** key twice, the server plays their archived messages, regardless of whether they have any unheard messages. Delivery of the unheard messages then seems to be delayed.
- **Subscribers exit their mailboxes prematurely**. Subscribers might exit their mailboxes, either by pressing the * (star) key repeatedly or hanging up, when they mistakenly think they have listened to all new, unheard messages. When they access their mailboxes again, the subscribers hear the previously delivered but unheard messages and conclude that delivery of those messages was delayed.
- **There is no MWI**. Some subscribers have no physical telephone extensions, only mailboxes on the server, so they have no MWI. Some telephones have no MWI.

  Some subscribers might have inadvertently deactivated message waiting on their telephones or in their mailboxes, making it appear as if they have no messages, when they do have messages. Envelope information or information in the message can indicate when it was sent. To correct this condition, if subscribers can control their MWIs, they should check the status of their MWI controls on their telephones and in their mailboxes.

Servers do not request PBX activation of the MWI for system-broadcast messages or bulletin-broadcast messages. The system manager might need to review with subscribers how these messages act.

- **Subscribers' and server's clocks do not match**. Some subscribers' watches might be set ahead of the server's clock, and new messages could arrive just as the subscribers exit their mailboxes. Subscribers can reaccess their mailboxes soon after, check the envelope information in the new messages, and conclude incorrectly that the messages were delayed. Make sure that the server clock is set accurately and that affected subscribers are informed of the correct time.

- **Subscribers didn't really access their mailboxes**. Subscribers can mistakenly think that they have accessed their mailboxes; however, CDR analysis shows that they did not actually access their mailboxes when they thought they did.

- **Subscribers access only one of their multiple mailboxes**. Subscribers who have two mailboxes could listen to all new messages in one mailbox and intend to do the same for their other mailbox, but they are interrupted. They later think that they have accessed both mailboxes or that they accessed the one they didn't access.

- **Subscribers change the wrong passwords**. Subscribers could intend to change their personal passwords, but mistakenly change one of their guest passwords instead. When they try to access their mailboxes, they enter their new passwords and unknowingly access their guest mailboxes, where there are no new messages, whereas their home mailboxes do have messages.

- **Multiple subscribers to the same mailbox misuse it**. When one mailbox has multiple subscribers, one subscriber can deactivate the MWI without informing the other mailbox subscribers or can listen to and skip messages. Because the messages have been heard, the prompt to check for unheard messages is not played for other owners. Correct this condition, as follows:

  - Have the mailbox subscribers agree upon whether to enable message waiting.
  - Have the subscribers review how the "Check unheard messages" prompt works.
  - Use the access security feature so that multiple subscribers know who was last in the mailbox.

Problems With MWI or Actual Delays in Message Delivery

Subscribers do not control some causes of incorrect MWIs or *actual* delays in message delivery. This section includes descriptions of these causes and the recommended recovery actions.

Causes and recovery actions for incorrect setting of MWIs are as follows:

- **MWI deactivated for all telephones**. Telecom might have intentionally or inadvertently deactivated MWIs on the PBX. To correct this condition, contact Telecom or the PBX vendor.

- **MWI disabled for a subscriber**. Telecom or the system manager might have intentionally or inadvertently deactivated the MWI for a specific subscriber extension. To correct this condition, check that the MWI is enabled on both the PBX and the server.

- **Insufficient number of ports**. Although the server can have a sufficient number of ports allocated for answering incoming calls, it might have too few ports allocated for outcalling or message-waiting requests. To correct this condition, system managers should review and consider increasing the number of ports allocated for outcalling and message waiting.

  The server might also have an insufficient number of ports to handle both incoming calls and message-waiting requests. To correct this condition, system managers should consider adding ports to the server.

- **Integration issues**. Problems with integration can prevent MWIs from being set correctly. If MWIs are not being set correctly, refer to the "Message-Waiting Problems" section, page 7-7.

  Single-port, in-band integrations dedicate only one PBX port for message waiting, which often causes a bottleneck for message-waiting requests. System managers should inform subscribers of this limitation.

- **PBX places a higher priority on answering calls than on setting MWI**. The server can only ask the PBX to activate the MWI; the server cannot activate it. Most PBX software places a higher priority on handling incoming calls than on responding to message-waiting requests. During peak use, the PBX buffers message-waiting requests from the server.

  To work around this condition, activate outcalling in subscribers' mailboxes, so that they are notified when new messages arrive.

Causes and recovery actions for delays in message delivery are as follows:

- **Message was sent to a large distribution list during peak usage**. A message that was sent during peak usage to a large system-distribution list could take a long time to deliver to all the recipients. The system manager might need to advise subscribers to send messages to large system-distribution lists at off-peak times.

- **Analog fallback from digital networking**. For Aria 2.0 and newer, and especially in an Aria domain, delays can occur if digital networking has failed, fallback is enabled, and messages are taking longer to deliver using analog networking. Refer to the "Digital-Networking Problems" section, page 7-27.

- **Hardware, firmware, or software error**. A hardware or firmware problem or a programming error might have occurred within the integration. Contact the vendor for that particular integration to correct this condition.

- **Pager problems**. If a subscriber uses a pager for message notification, the paging company might have failed to complete the page, or its PBX might be so busy that the request is put in a queue to be completed later.

Correct this condition, as follows:

1. Verify that the pager configuration in menu 6.1 is correct for the pager being used. If the pager company changes its software, it might require changes to the fields in menu 6.1.
2. Contact the pager company to determine whether it is queuing paging requests at peak times.
3. Make sure that the pager is turned on and that its batteries are good.
4. Call the pager directly to determine whether it pages.
5. Compare the time the page occurred with the envelope of the message to determine whether a significant delay is occurring.

Another possibility is that the pager is turned off or its batteries are low. If the page was completed in a timely manner, the subscriber might not have noticed it and might think it was delayed.

Problems With Personal Greetings

When subscribers or outside callers do not exit the server correctly, system or personal greetings can be recorded as messages. Correct this condition, as follows:

1. Tell subscribers to press the * (star) key to disconnect from the server and to hang up completely before placing another call. Greetings will then be recorded as messages less often.
2. In the automated-attendant greeting, remind callers to stay on the line while being transferred and to press the * (star) key to disconnect.

The following example shows how system or personal greetings can be recorded as messages:

A caller accesses an extension and is forwarded to the server. When the personal greeting plays, the caller attempts to disconnect by doing a switch-hook flash. The caller has unintentionally placed the server port on soft hold.

Eventually, the PBX rings back the extension that placed the server port on soft hold. If the extension is busy or is unanswered, the PBX forwards the call to another server port. The server port answers with the system or personal greeting. The two server ports are now connected to each other.

The server port on soft hold records the system or personal greeting playing on the other server port.

Return-To-Operator Problems

Problems can occur when someone calling a mailbox tries to transfer to an operator. Transfers to an operator might go to the wrong extension. If transfers to an operator are going to the wrong extension, perform the following steps:

1. Check the mailbox profile to determine whether it has a correct place to transfer calls, as follows:
   a. From the SMT Main Menu, access Menu 9 – Change Mailbox, and select option ***1***. Menu 9.1, Change Mailbox Profile, appears, with only the ***Number:*** field displayed.
   b. Enter the mailbox number, and press ***Enter***. The remainder of the fields appear on the screen.
   c. Confirm that the entry in the ***Attendant Extension:*** field is the extension of the attendant to which this mailbox should transfer. Check the ***Attendant Schedule:*** field for the timing of the transfers.
   d. Press ***Ctrl+C*** until the Main Menu reappears.
2. Check with the designated attendant to see whether the attendant's telephone is forwarded.

If callers are being cut off from the operator, check the following:

- ❑ When a caller presses ***0*** to transfer, the PBX allows transfers to a busy extension.
- ❑ The PBX is set up for supervised or unsupervised transfers.

System-Wide Return-to-Operator Problems

If the return-to-operator problems are system-wide, perform the following steps:

1. Check the configuration notes for any restrictions with this integration.
2. Check the PBX programming to see whether it allows transferring to an operator.
3. Check menu 6.1 for flash timers and transfer sequence, as follows:
   a. From the SMT Main Menu, access Menu 6 – Dialing and Serial Channel Parameters, and select option ***1***. Menu 6.1, Transfer, Outcall, Fax, and Pager Sequences, appears.
   b. Check the ***"Flash" On-hook Time:*** field. If the flash is too short, the PBX cannot detect it, and the subscriber or caller remains connected to the server. If the flash is too long, the PBX disconnects the call.
   c. Test the flash timing.
   d. Check the ***Dialing Sequence to Transfer a Call:*** field to confirm that the dialing sequence is correct.

4. Check menu 1.2 to see whether the call has to be supervised, as follows:
    a. From the SMT Main Menu, access Menu 1 – System Parameters, and select option ***2***. Menu 1.2 appears on the screen.
    b. Check the entry in the ***Supervised Return to Operator:*** field. When the server returns calls to the operator, the transfers can be either supervised or unsupervised. If the field is ***Y***, then the caller is given various options, if the attendant is busy or not available. If the field is ***N***, the call is automatically transferred, and no options are offered to the caller if the attendant is busy or not available.
    c. Press ***Ctrl+C*** until the Main Menu reappears.
5. If the server is equipped with analog lines, place a test call and monitor it with a test set or similar equipment for the correct sequence. For example, check whether the PBX recognizes flash and whether digits are being sent.
6. Call ports (extensions) other than the one with the return-to-operator problem, to see whether the problem also occurs on other ports. If the problem does not occur on other ports, the problem is probably with the port on which it occurred.
7. Try to simulate a transfer from an extension to an extension to verify correct operation of the PBX.

If any part of this procedure fails, stop and call the Octel Customer Services Center or your Octel distributor.

Return-to-Operator Problems on One Extension or Group

For return-to-operator problems that occur on one extension or on a group of extensions, perform the following steps:

1. Check the mailbox profile for the correct attendant schedule and extension, as follows:
    a. From the SMT Main Menu, access Menu 1 – System Parameters, then select option ***3***, then option ***1***. Menu 1.3.1 appears.
    b. Check the ***Attendant Extension:*** field. Make sure that the number in the field is the correct attendant extension.
    c. Check the ***Attendant Schedule:*** field. Make sure that the number in the field is the correct attendant-schedule number.
2. Make sure that the extension is not forwarded.
3. Check the PBX programming for any discrepancies with this extension.
4. Determine whether the transfer target is over tie lines and whether supervised transfer must be used system-wide.

If any part of this procedure fails, stop and call the Octel Customer Services Center or your Octel distributor.

Talk-Off Problems

Talk-off is the term used when a server mistakenly interprets a combination of sounds as a DTMF tone while callers are recording a message. Talk-off can interrupt normal message recording.

To eliminate talk-off, a server could be designed to accept only a narrow band of DTMF tones; however, subscribers might then need to press the touch-tone keys multiple times to obtain DTMF recognition.

The server is designed to obtain the optimum balance between DTMF recognition and talk-off. This design minimizes, but might not completely eliminate talk-off. All Octel Communications products exceed the requirements in the Bell Communications Research TR–TSY–000763 Digit Simulation Specification.

However, in certain situations, signals are so close to DTMF that they are misinterpreted and talk-off occurs. Table 7-2 indicates possible reasons for talk-off.

Table 7-2. Reasons for Talk-off.

Problem	Reason
Talk-off on a speaker phone	Speaker-phone harmonics
General talk-off	Some voices duplicate DTMF tones
Overdriving voice input	High audio-signal levels on circuits into the server

If talk-off is reported, perform the following steps:

1. Verify that all ports are working and that they meet Octel Communications specifications.
2. Make sure that the audio signal level into the ports is between 0 dBm and –23 dBm. The optimum level is –11 dBm. If the audio signal is greater than 0 dBm, the incidence of talk-off increases. Make necessary changes.
3. Track complaints for a week to confirm that talk-off no longer occurs. Keep track of the subscribers, mailboxes, locations, and the application.

If complaints persist, call the Octel Customer Services Center or your Octel distributor.

Automated-Attendant Mailbox Problems

The following symptoms can indicate problems with automated-attendant mailboxes:

- ❏ The appropriate greeting is not played.
- ❏ The caller hears a greeting after the “please hold” prompt.

- ❑ The caller enters an extension number and hears the greeting immediately.
- ❑ The caller enters the extension number and hears “please hold.”
- ❑ The mailbox is not in service.
- ❑ A call to the operator returns to the server.

The following sections discuss these symptoms and the procedures to address them.

Appropriate Greeting Is Not Played

If the caller does not hear the appropriate greeting for the automated-attendant mailbox on a port-monitored extension, perform the following steps:

1. Make sure that port monitoring is established on the port being called and that the attendant schedules are correctly set, as follows:
   a. From the SMT Main Menu, access Menu 2 – Attendant Schedules and Port Monitoring, then select the option for the ports you want to see.
   b. Check the ***Port Monitoring Active:*** field to make sure it is set to ***Y.*** If it is set to ***N***, type ***Y***, and press ***Send*** or press ***Enter*** repeatedly until the parameters are updated. Press ***Ctrl+C*** until the SMT returns to the Main Menu.
   c. From the SMT Main Menu, access Menu 2 – Attendant Schedules and Port Monitoring, then select option ***1***. Menu 2.1, Attendant Schedules, appears with only the ***Attendant Schedule Number:*** field displayed.
   d. In the ***Attendant Schedule Number:*** field, enter the number for the schedule you want, and check the schedule.
   e. Press ***Ctrl+C*** until the Main Menu reappears.
2. Make sure that a customized greeting has been recorded.

If the caller does not hear the appropriate greeting for the automated-attendant mailbox when forwarding to that mailbox from an extension, check the following:

- ❑ Verify that the server is correctly integrated by checking that other extensions receive the appropriate mailbox greeting.
- ❑ Make sure the forwarded extension and the automated-attendant mailbox are the same number. This application only works on integrated servers.

Greeting Plays After “Please Hold” Prompt

If the caller hears the appropriate automated-attendant greeting, enters an extension number, hears the “please hold” prompt, and within a few seconds hears the same greeting again, perform the following steps:

1. If the connecting sequence is not defined correctly and the call is not answered, the PBX transfers the call back to the server port that attempted the transfer. Check the connecting sequence, as follows:

   a. From the SMT Main Menu, access Menu 6 – Dialing and Serial Channel Parameters, then select option ***1***. Menu 6.1, Transfer, Outcall, Fax, and Pager Sequences, appears.

   b. Check the connecting sequence.

   c. Press ***Ctrl+C*** until the Main Menu reappears.

2. Verify that the called party did not hang up before the transfer was completed. If the called party hangs up before the call is transferred, the PBX transfers the call back to the server port that attempted the transfer.

If the caller hears the appropriate automated-attendant greeting, enters an extension number, hears the prompt "please hold," and within a few seconds hears the middle of the personal greeting, verify that the server-to-server detect capability is working correctly. Check the following:

- ❑ If a caller enters an extension through automated attendant and that extension is forwarded to the server, the server should realize that it has called itself and break the connection.

- ❑ If server does not recognize that it has called itself, a problem might exist with one of the FLT cards. Refer to Chapter 10 and perform a port-to-port check.

Greeting Plays Immediately After Caller Enters Extension

If the caller enters an extension and immediately hears a personal greeting without hearing whether the extension was busy or experienced ring-no-answer, perform the following steps:

1. Verify that the mailbox is a type 30 or 32. If the caller does not hear "please hold" before the greeting, the caller might have heard the system greeting for the server or a type 33 mailbox. Use a type 30 or 32 mailbox as an extension.

2. Verify that the server handles ring-no-answer and busy calls in the same manner for extensions forwarded to the server. If an extension is forwarded to the server under all conditions, the server does not tell the caller the status before playing the personal greeting.

Check the mailbox type in the mailbox profile, as follows:

1. From the SMT Main Menu, access Menu 9 – Change Mailbox, then select option ***1***. Menu 9.1, Change Mailbox Profile, appears with only the ***Number:*** field displayed.

2. Enter the mailbox number, and press ***Enter***. The remaining fields appear on the screen.

3. Check the ***Mailbox Type:*** field. The type should be ***30 – Automated Attendant*** or ***32 – Caller's Menu + Ext***.

4. Press ***Ctrl+C*** until the Main Menu reappears.

Incorrect Transfer Occurs After “Please Hold” Prompt

If the caller enters an extension number and hears “please hold,” then ringing, then a live operator or error tone, verify that the extension is valid and that it exists on the PBX. Some PBXs send the call directly to the operator.

If the caller enters a valid extension number, then hears the system greeting again, the called party might have answered the call but hung up before the transfer was completed. Most PBXs ring back the server port that attempted the transfer.

If the caller enters a valid extension number and hears “please hold,” then dial tone, check the PBX ports for correct operation, including detection of DTMF tones. The transfer appeared to be successful to the message server.

Mailbox Is Not in Service

If the caller accesses a caller’s menu mailbox and hears a prompt indicating that the mailbox is not in service, verify that the mailbox is a type 31 without a personal greeting. If it is, the server plays the prompt to indicate that that mailbox is not in service. To correct this problem, record a personal greeting for that mailbox.

Call to Operator Returns to the Server

If the caller enters ***0*** for assistance, hears ringing, and is returned to the server, check the following:

1. Verify that the designated transfer point is not forwarded to the server.
2. If the transfer point is busy or unanswered and has no forwarding target, verify that the PBX is ringing back the server port that attempted the transfer (Mitel, Rolm, NEC).
3. Verify that if a blind transfer to ***0*** is attempted, the NEC PBX immediately rings back the server port that attempted the transfer. The NEC PBX does not allow a blind transfer to ***0***.

Integration Problems

Use the section below that best describes the configuration and the problem.

RS-232 Integration Problems (Message Waiting)

With some RS-232 integrations, message-waiting operations might not take effect as quickly as with other integrations. If a server exhibits this symptom, call the Octel Customer Services Center or your Octel distributor for advice. On a case-by-case basis, you might be able to improve the message-waiting operation remotely. Message-waiting operation depends on system usage and the PBX integration; some servers could require system optimization.

SMDI Integration Problems

If the server is integrated with CO equipment using the Simplified Message Desk Interface (SMDI) protocol, two types of communication need to occur between the server and the CO to achieve integration:

1. The CO sends the station identification (call ID) of any calls forwarded to the server.

2. The server sends a signal to the CO requesting activation of a message-waiting indicator (MWI) on a subscriber's telephone.

This communication is completed over a full-duplex RS-232 data channel.

The server side of the link is connected to the ASYNC1, ASYNC2, or ASYNC3 connector on the CCF card. The CO side is generally connected through data sets (modems) to the server.

The ports assigned to the server are configured into a multiline hunt group (MLHG). Each port is assigned a unique logical terminal number (LTN) by the CO.

Message-Waiting Problems

For MWI problems, perform the following steps:

1. Obtain assistance from the Customer Services Center to run the TDC utility for SMDI integrations. The server sends a message to the CO in the following format:

   OP:MWI 5551234!

   where ***5551234*** is the number of the extension on which to set message waiting.

   The CO responds to the server with a negative acknowledgment ***INV*** message if the extension number in the server's MWI request does not exist in the CO database or if the extension does not have message waiting allowed in the CO's class of service. If the server receives this type of response, a status-code ***F9*** entry is logged.

   The server sends a message in the following format to the CO when the server requires that message waiting be turned off:

   RMV:MWI 5551234!

2. If message-waiting requests can be seen in TDC but cannot be seen on a data scope, perform the following steps:

   a. Check the cable plugged into the ASYNC1, ASYNC2, or ASYNC3 connector on the CCF card.

   b. Make sure that the data set uses a 25-pin to 9-pin cable to connect to the appropriate ASYNC port on the CCF card.

c. The data set at the customer location and the data set at the CO should have the same configuration. When working correctly, the data set should have constant carrier, indicated by the carrier LED. When message-waiting requests are transmitted from the server to the CO, the transmit LED flickers. If the data sets are not operating correctly, call the Octel Customer Services Center for assistance.

d. If the cables and data sets are correct, the problem is with the link. Call the Octel Customer Services Center for assistance.

Greeting Problems

Symptoms that indicate inconsistencies in data received by the server from the CO are as follows:

- ❑ A caller receives a generic greeting on a call forwarded from a subscriber's extension.
- ❑ A subscriber receives a generic greeting or the wrong recorded name on a direct call from his or her own extension.

If a caller receives a generic greeting after being forwarded from a subscriber's extension, it indicates that the data received over the link was invalid or the logical terminal number (LTN) in the data did not match the structure defined in Menu 4 – Port Assignments.

When a subscriber calls the server, the CO sends the calling-party identification over the data link. The server matches the calling-party ID with the subscriber's mailbox, then plays the recorded name associated with that mailbox and a prompt to enter a password. If a subscriber does not hear this prompt or hears another person's recorded name, it indicates that the data received is invalid. It might also indicate that the LTN in the data did not match the structure defined in Menu 4 – Port Assignments.

Greeting Problems for Incoming Calls

When the CO passes a message describing an incoming call to the server, it looks similar to the following (using the TDC utility for SMDI integrations):

MD0020014A5551234

The ***MD002*** is the message desk assigned to this link; it is used only for reference in the CO. The next digits, ***0014***, represent the LTN associated with the call. The next character identifies the condition of the call. Possible values are as follows:

- ❑ ***A*** means all calls are forwarded.
- ❑ ***B*** means calls are forwarded on a busy signal.
- ❑ ***D*** means a direct call to the pilot number.
- ❑ ***N*** means the call was forwarded for a ring-no-answer condition.
- ❑ ***U*** means the call was forwarded for an unknown reason.

The remaining digits are the 7-digit telephone number of the called or calling party.

Each voice channel is assigned an LTN when the MLHG is defined in the CO. The LTNs are entered in Menu 4 – Port Assignments in the column labeled ***Extension/Phone No***. The server uses the LTN to associate the data received through the link with the voice channel on which the incoming call is located.

The server performs the following sequence of events:

1. The server compares the LTN sent by the CO with the LTN structure defined in Menu 4 – Port Assignments and identifies the voice channel on which an incoming call is located.
2. The server then waits for ring voltage on the voice channel.
3. When the ring voltage is detected, the server answers the call and plays either the personal greeting or the recorded name of the subscriber identified in the link message.

To check for incoming-call problems, check and correctly match the voice channels with the LTN designated in Menu 4 – Port Assignments. If there are one or more mismatches, callers intermittently receive generic greetings, instead of personal greetings or recorded names. When the server receives an invalid LTN (one that is not defined in Menu 4 – Port Assignments), it waits three ring cycles for a valid LTN, then answers the call with a generic greeting.

Check the status log for ***F9*** status codes, and refer to Chapter 8 for details about this status code.

Server Receives Link Message but No Ring (Greeting Problems)

If the server receives a message from the CO but does not receive ringing on the voice channel that matches the LTN, it might log a status-code ***F9*** (refer to Chapter 8). The server goes off hook on the voice channel and plays a generic greeting. This can happen when a caller to the server hangs up before the server has answered; this usually does not affect the user interface.

Use menus 6.5.3 and 6.5.6 to check the status of the integration link. Refer to Chapter 5 for information about menus 6.5.3 and 6.5.6.

Server Receives Ringing but No Link Message (Greeting Problems)

If the server receives ringing on a voice channel but does not receive a message over the link within three ring cycles, it answers the call with a generic system greeting.

Use menus 6.5.3 and 6.5.6 to check the status of the integration link. Refer to Chapter 5 for information about menus 6.5.3 and 6.5.6. Perform the following steps:

1. Place a data scope on the RS-232 link at the server side
2. Place a call to the pilot number of the MLHG.
3. Check the appropriate data structure. If the data does not appear, the problem is within the CO. If the data structure appears but the server answers with a generic greeting, perform the following steps:
    a. Verify the integration link configuration in menu 6.5.
    b. Verify the PBX configuration.
    c. Verify that the data-link cable is not damaged and that it is correctly connected to the CCF card.
    d. If the problem is still not resolved, refer to Chapter 11, and replace the CCF card.

SMDI Data Message From CO Is Garbled or Incomplete (Greeting Problems)

If the SMDI data message from the CO is garbled, the server waits three ring cycles for a good message. If a good message is not received, the server answers with a generic greeting and logs an ***F9*** status code. Refer to Chapter 8 for details about this status code.

Ring-No-Answer Problems

If the data link is working correctly, the server answers a call during the first ring. If the data link is not working, the server answers a call in three rings. If the call is never answered, perform the following steps:

1. From the SMT Main Menu, access Menu 4 – Port Assignments, and select option ***1***. A list of port ranges appears.
2. Select the set of ports whose assignments you want to review.
3. Check column ***I*** for the affected port. Column ***I*** should contain a ***Y.***
4. Verify that the ***Ln Tp*** (line type) column contains the correct value for the affected port.
5. Press ***Ctrl+C*** until the Main Menu reappears.
6. From the SMT Main Menu, access Menu 1 – System Parameters, and select option ***1***. Menu 1.1, Installation Information appears.
7. Check that the entry in the ***Type of PBX or Centrex VPMOD is on:*** field is correct.
8. Press ***Ctrl+C*** until the Main Menu reappears.
9. Check the following items on the CO:
   - ❑ **MLHG structure**. Make sure the pilot number and hunt-group members have been created correctly.
   - ❑ **Main distribution frame (MDF) punch down**. Substitute a telephone or test set for the suspected server port and check for dial tone.

Data-Link Problems With SMDI Integrations

Symptoms of the data link not coming on line are as follows:

- ❑ The carrier LED on the customer's data set (modem) is off.
- ❑ Callers receive the generic system greeting on all calls after three rings.

To deal with this condition, have the CO technician check the link.

APID Integration Problems

The server can integrate with an AT&T System 75 or 85 through an AT&T PID (APID).

If the voice channels are locking up so that they have to be reset in the PBX, a convenient way to reset the channels in the PBX is to reset the APID, as follows:

1. Call-forward the pilot number of the AT&T hunt group.
2. Unplug the APID power cord from the electrical outlet, and then plug it back in.
3. Restore the pilot number.

If the APID does not place calls to the server, perform the following steps:

1. Temporarily replace one of the lines from the PBX with an AT&T telephone to the voice channels.
2. Verify that the lines are operational, and that the line cords are correctly connected.
3. Check that the voice-channel configuration in the PBX complies with the appropriate configuration note.
4. Disconnect the power connector from the APID, and measure it for +12-volt input.
5. If the APID does not operate, replace it.

Rolm Integration Problems

The server integrates with the Siemens/Rolm PBX, using a Rolm PID (PID/R). The PID/R emulates the Rolmphone 400.

DTMF Tones Not Being Passed

The older models of Rolm CBXs (8000 and 9000 series) could be equipped with attendant consoles that do not pass DTMF tones and therefore require the use of an external tone generator. If the console cannot generate DTMF tones, the operator cannot connect callers to subscribers' mailboxes.

Install a peripheral tone generator by bridging it across the tip-and-ring leads of the console. Detailed installation instructions are provided by the manufacturer.

The newer Rolm 9755 attendant console generates DTMF tones and does not require the peripheral tone generator.

Dial Tone Not Heard for Outcalls

If dial tone is not heard for outcalls, call the Octel Customer Services Center for assistance. Do not attempt to resolve the problem yourself.

PID/R Not Operational

If the PID/R has just been logged in, allow up to 10 minutes for it to become fully operational.

AMID Integration Problems

If the analog Meridian integration device (AMID) has just been logged in, allow up to 10 minutes for it to become fully operational.

Ring-No-Answer Problems

An incorrect ring-no-answer (RNA) indication can have various causes. Troubleshoot the following areas for an incorrect RNA indication:

- ❑ Server problems
- ❑ PID/MID application problems
- ❑ FLT card and port problems

Refer to the following sections for procedures to check these problems.

Caused by Server

RNA conditions can be caused by an "all ports busy" condition on the server. However, check the server for hardware and configuration problems, as follows:

1. Check the LEDs on the alarm board. If the OOS (out-of-service) alarm LED is lit, refer to Chapter 9 for more information.
2. Check the SMT to see whether the server is on line.
3. From the SMT Main Menu, access Menu 13 – System Maintenance, and select option ***2***. The status log scrolls onto the screen. Press ***Enter*** as needed to pause the scrolling and to resume scrolling.
4. Examine the status log. If status-code 70, 72, CD, or CE entries are recorded, refer to Chapter 8 to determine which drive is causing the entries.
5. Return to menu 13 by pressing any key except ***P*** or ***C.***
6. Press ***Ctrl+C*** until the Main Menu reappears.
7. Access Menu 4 – Port Assignments, and select option ***1***. A list of port ranges appears.
8. Select the set of ports whose assignments you want to review.
9. Check the columns for the ports that have incoming traffic. The ***I*** and ***T*** columns should be set to ***Y*** for all ports that have incoming traffic. If they are not set to ***Y,*** perform the following steps:
    a. In the ***I*** and ***T*** columns for the ports that have incoming traffic, change ***N*** to ***Y.***
    b. Press the ***Send*** key or press ***Enter*** repeatedly until the parameters are updated.
10. Press ***Ctrl+C*** until the Main Menu reappears.

Caused by a PID or MID Application

To check whether a PID or MID application is causing an RNA indication, cycle the power to the PID or MID. If the RNA condition persists, call the Octel Customer Services Center or your Octel distributor.

You can use menus 6.5.3 and 6.5.6 to check the status of the integration link. Refer to Chapter 5 for information about menus 6.5.3 and 6.5.6.

Caused by FLT Cards and Ports

If there are RNA problems, make sure that calls are being processed, by checking the following items on the FLT cards (of any type):

1. Verify that the SI and SO LEDs light up on the FLT cards during the ring cycle.

2. Use the Port Traffic Statistics utilities to monitor port activity. Refer to Chapter 10.

3. Refer to Chapter 10 and perform a port-to-port test. You should perform the port-to-port test monthly to verify that the ports are working correctly.

4. If there is a DTMF recognition problem, the problem is either with the FLT card or the PBX. Test whether the problem is with the FLT card or with the PBX, as follows:

    a. Plug the telephone line in question into another FLT card.

    b. Repeat the port-to-port test to verify DTMF recognition. If the same DTMF recognition problem occurs (the system responds by stating that 1234567890 is not a valid password number), then the problem is with the PBX. If there is no problem with DTMF recognition (the password is valid), use the procedures in Chapter 11 to replace the FLT card.

5. If the RNA condition seems to be caused by a faulty FLT card, perform the following steps:

    a. Exchange the suspected FLT card with a known working FLT card. Refer to Chapter 11 for FLT-card replacement procedures.

    b. Monitor the server to see whether the RNA problem occurs for the port that now contains the known working FLT card.

        - ❑ If the RNA problem does not occur on the same ports, use the procedures in Chapter 11 to replace the suspected FLT card.

        - ❑ If the problem still occurs on the same ports, the problem is with the PBX or ports.

Problems With Deleting Network Nodes

Before attempting to delete a node, make sure that there are no messages queued for delivery to that node. If you specify deletion of a node that has messages queued, you cannot reestablish that node number, if it becomes necessary, until after the purge task runs at midnight.

When a network node has been marked for deletion, menu 15.1.2 for Aria 1.2 or menu 15.1.5 for Aria 2.0, Valid Node Numbers and Message Queues, displays a ***Node Under Deletion*** entry in the ***Node Name*** column. This status message can remain for up to 24 hours. (You can enter ***0*** in the ***Select Node:*** field in the menu to display the status of all the nodes.) If this status persists for more than 24 hours, have the system manager access the system manager mailbox and delete all diagnostic messages pertaining to that node. The following occurs:

1. When the system manager accesses the system manager mailbox, diagnostic notification messages are played before the usual prompts. Each message includes an error number, the node number, the node name, and the date and time.

2. The server prompts the system manager to press ***1*** to review again or press ***2*** to delete the message and continue.

Deleting the diagnostic messages for a node allows the node itself to be deleted.

Disk-Drive Problems

A disk drive might have problems if the server has one or more of the following symptoms:

- ❑ Menu 12 reports the drive not running.
- ❑ Status-code 70, 72, CD, or CE entries are logged.
- ❑ The file status displays 03 in the first byte during the Initial Program Load (IPL).

Investigate drive problems, as follows:

1. Check the drive status and hardware.

2. Check the CCF card status.

These steps are detailed in the following sections. Make sure that you complete each step before continuing to the next one.

If any part of this procedure fails, stop and call the Octel Customer Services Center or your Octel distributor.

Drive Status and Hardware

Determine whether a drive is running, as follows:

1. From the SMT Main Menu, access Menu 13 – System Maintenance, and select option ***2***. The status log scrolls onto the screen. Press ***Enter*** as needed to pause scrolling and to resume scrolling.
2. Examine the status log. Note or print all status-code 70, 72, CD, or CE entries.
3. Return to menu 13 by pressing any key except ***P*** or ***C.***
4. Press ***Ctrl+C*** until the Main Menu reappears.
5. Access Menu 12 – Disk Management.
6. Check menu 12 to see whether all the drives are running. If one of the drives is not running, menu 12 displays the affected drive number.
7. If there were any status-log entries associated with this problem, use the procedures in Chapter 8 to identify the problem and to take the appropriate action.
8. If a drive is not running but there is no associated status-log entry or other error indication, refer to Appendix A for details about the Drive Install utilities, and perform the following steps:
    a. Verify that at least one of the LEDs on the drive module is lit. If none are lit, use the procedures in Chapter 10 to check power to the drives.
    b. For a non-GMR server, have the system manager notify subscribers that some messages might be temporarily unavailable. A single-drive server must be taken out of service.
    c. Call the Octel Customer Services Center or your Octel distributor and have the service bit turned on.
    d. Use the Drive Install utilities to disable the drive.
    e. Remove the drive and check the connectors on the drive and drive backplane.
    f. If you observe any damage, go to the appropriate replacement procedure in Chapter 11.
    g. Reinsert the drive.
    h. Use the Drive Install utilities to enable the drive.
    i. If no problem was found with the drive, proceed to the next section to check the CCF card.

CCF Card Status

Check the CCF card status, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call forward the pilot number of the ports in the PBX to an extension that will be answered.
3. Use menu 13.1 to shut down the server.
4. Check the file status during the IPL routine. Use the procedures in Chapter 6, the "System-File Status Codes" section, page 6-6, to check the file status.
5. If the file status reports a status-code ***03*** in the first byte, one or more of the drives are not recognized by the file subsystem on the CCF card. If the status code is ***03***, turn off the power to the server and use the troubleshooting procedures in Chapter 6.

Tape-Drive Problems

Refer to Chapter 8 and review the status log for any entries associated with the tape drive.

If a Backup or Restore failed because of a problem with the tape drive, continue to follow the Backup or Restore procedure, and use the Review History of Last Event option to identify the reason the last Backup or Restore failed.

Some problems can be resolved by cleaning the tape drive (refer to Chapter 10) or by using a different tape.

Digital-Networking Problems

Use the following tools and guidelines, described in this section, to maintain digital networking and the LAN card:

- ❑ Division of responsibilities between Octel and the customer for hardware and software maintenance
- ❑ Typical digital-networking troubleshooting
- ❑ LAN utilities
- ❑ Displaying the valid node numbers and message queues

Division of Responsibilities for Hardware and Software Maintenance

Octel's and the customer's maintenance responsibilities are shown in Figure 7-1. Responsibilities for installing and maintaining digital networking are summarized in Table 7-3.

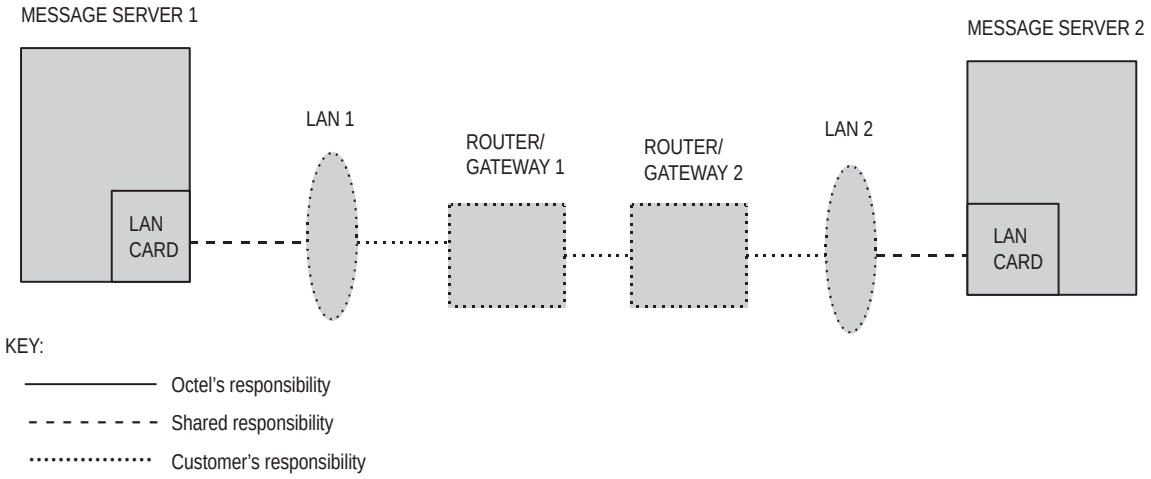


Figure 7-1. Responsibilities in Maintaining Digital Networking.

Table 7-3. Division of Responsibilities.

Category	Item	Responsibility	Remarks
Hardware	Octel 250 or 350 message server	Octel	An Octel or Octel-approved representative sells, installs, and maintains the message server.
	Message server connections	Octel	Octel is responsible for connections at the message server.
	LAN or WAN	Customer	The customer ensures that the network is installed and operational, before the message server is installed.
	Network connection (layers 1 and 2)	Customer	The customer is responsible for the network and network connections.
Software	Aria 2.0	Octel	. . .
	Digital networking	Octel	The software includes networking layers 3 and higher.
Fault isolation	Network connection (layers 1 and 2)	Shared	Collaboration is required when isolating a networking problem. However, the customer repairs network equipment and cables connected to the message server. Octel repairs message-server hardware and software.
	Networking problems (layers 1–3)	Shared	Octel assists in isolating problems affecting digital networking, up to and including the router/gateway connecting the message server to the customer's network.

Typical Digital-Networking Troubleshooting

The following typical problems might be encountered when installing or using digital networking or when modifications to the LAN configuration affect the message server:

- ❑ Messages sent using digital networking are not delivered.
- ❑ The ping utility fails (refer to the "Ping Utility" section, page 7-33).
- ❑ The echo-test utility indicates one of the following problems (refer to the "Echo-Test Utility" section, page 7-35):
  - ❑ The network loses data.
  - ❑ Total transmission time and throughput are below the acceptable values provided by the network administrator. For this condition, verify that the ***Application Window Size:*** field in menu 15.4 is set to ***2***. If the value is correct, then (1) one of the servers could be on a congested LAN segment, (2) the link between LAN segments could be congested, or (3) the LAN segment could be slow. Work with the network administrator to resolve this problem.

If the digital network becomes unavailable and the networking message queue is not empty, messages can be delivered through analog networking, if fallback to analog is enabled in menu 15.1.3, Node Profile. When a fallback occurs, it causes a status-log entry.

If fallback to analog networking is enabled and the message queue is not empty, the attempt to fall back to analog networking creates a CDR event 181 (DN_FALLBACK). If the fallback is successful, line-task CDR events occur.

If the LAN or other node becomes inaccessible, digital networking on the message server operates, as follows:

1. Normally, network messages queued for delivery using digital networking remain in the queue until the scheduled delivery time.
2. If network messages are scheduled for delivery while the LAN is out of service, digital networking attempts to deliver them until the number of retries in the ***Number of Attempts Before Fallback:*** field in menu 15.1.2, System Parameters for Digital Networking, is exhausted.
3. One of the following then occurs:
   - ❑ If fallback to analog networking is enabled for the delivery node, digital networking falls back to analog networking. Messaging operates on the delivery schedules for that node, analog-networking statistics are updated, and multiline networking is used, if enabled. When the network queue becomes empty, digital networking to that node is automatically reestablished.
   - ❑ If fallback to analog networking is not enabled for the delivery node, the messages are returned to their senders. (Unlike analog networking, no status-log entry is created if the sender's mailbox is full when the message is returned.)

If the digital network is down, you can set the ***Digital Networking:*** field in menu 15.1.2 to option ***2 – Disabled. Messages retained.*** before or after the LAN or the other node becomes unavailable. This allows analog telephone-line charges caused by the fallback to analog networking (if enabled) to be avoided, and it prevents network messages from being returned to senders. When the LAN or other node is operating again, reenable digital networking in menu 15.1.2. However, it is preferable to have the system manager establish retry schedules in menu 15.1.2 that can accommodate the duration of most planned and unplanned digital-network outages.

If you want to disable digital networking to a particular node, change the ***Transmission Type:*** field in menu 15.1.3 for that node.

An Aria domain can be established that makes up to six Octel 250s and Octel 350s (in any combination) appear to operate as though they are one server. All the domain nodes in an Aria domain must have digital networking and must be on the same PBX or on separate PBXs with networking software. Each subscriber on all the nodes in the domain perceives all the other subscribers in the domain to be on the same server, from the standpoints of message addressing, replying to messages left in telephone-answering mode, and leaving messages in the voice mailbox of a forwarded extension. Outside callers also have the same interface to all subscribers in the domain.

If the server is operating as part of an Aria domain, fallback is allowed but not recommended, because of the following:

- ❏ Message delivery using analog networking is up to 20 times slower than delivery using digital networking.
- ❏ If the network used for digital networking fails, if fallback is enabled, and if too few analog ports are allowed to deliver networked messages among the domain nodes during fallback, messages quickly back up in the queue awaiting an available port, and message delivery times increase significantly. As a result, the network failure could appear to be a problem with the message server.

When you are instructed to run ping and echo-test utilities, refer to the “LAN Utilities” section, page 7-32. You can use menu 15.1.5 to display the complete set of nodes configured on this server, with information about their message queues; refer to the “Valid Node Numbers and Message Queues” section, page 7-48.

For any failure mode, refer to Figure 7-1, and assume that you have attempted to send a ping, run the echo test, or send messages from message server 1 to message server 2. *Do not* use the Reset LAN Card and LAN Card API option or remove the LAN card if it is currently being used successfully. Determine the cause of the failure, as follows:

1. At message server 1, verify that the following fields on the SMT were completed correctly (contact the network administrator to determine correct IP addresses):
   - ❏ ***This Server’s IP Address:*** field in menu 22.1. The server requires rebooting or a LAN card reset before any new entry in this field takes effect.
   - ❏ ***IP Net Mask:*** field in menu 22.1. The server requires rebooting or a LAN card reset before any new entry in this field takes effect.

- ❑ ***Gateway IP Address:*** field in menu 22.2.
- ❑ ***Digital Networking:*** field in menu 15.1.2 must be set to enable the feature.
- ❑ ***Node Type:*** field in menu 15.1.3 must be set to ***2 – Octel Digita*****l Networking** for the node **profile** that defines message server 2.
- ❑ ***IP Address:*** field in menu 15.1.3 must be set for the node profile that defines message server 2.
- ❑ If you used the ping utility to attempt a ping, verify that the value you specified in the ***Enter the IP address to Ping:*** field on the Ping Utility screen is that of the IP address of the message server or router/gateway you intended to ping.

2. At message server 1, observe the transceiver LEDs if a transceiver is being used. If the LINK LED is off, the problem is probably with the network. If the POLARITY or POWER LED is off, the problem is probably in the LAN card, in the transceiver, or in the Attachment Unit Interface (AUI) cable between the LAN card and the transceiver.

3. From message server 1, access menu 20, then the LAN Utilities menu; select the Ping option. Ping the LAN card in message server 1 (specify the entry in the ***This Server's IP Address:*** field in menu 22.1) to verify that the LAN card responds.
   - ❑ If the ping of the LAN card is successful, proceed to step 4.
   - ❑ If the ping fails, refer to the "Reset LAN Card and LAN Card API Utility" section, page 7-48, and reset the LAN card, then ping this LAN card again.
   - ❑ If the ping still fails, use the procedures in Chapter 11 to replace the LAN card.
   - ❑ If the ping is successful after the LAN card reset, the problem is resolved, at least temporarily. Restore the message server to normal status, send a message from server 1 to server 2, and use the LAN Utilities menu option for Display Channel Status (refer to the "Display Channel-Status Utility" section, page 7-47) to check for correct message delivery or a network state that indicates failure, such as Session Aborted.

4. Use the entry in the ***Gateway IP Address:*** field in menu 22.2 to ping router/gateway 1.
   - ❑ If the ping of router/gateway 1 is successful, proceed to step 5.
   - ❑ If the ping fails, ping another device on LAN 1.
   - ❑ If the ping to another device on LAN 1 fails, the problem is between message server 1 and LAN 1. Check the network cable connections to the LAN card and the LAN, and verify that the network cable is connected to the correct port on the router/gateway.
   - ❑ If the ping to the other device on LAN 1 is successful, the problem is in the connection from LAN 1 to the router or in the router itself; contact the network administrator.

5. Contact the system manager for message server 2 or access menu 22.2 on message server 2 to obtain the entry in its ***Gateway IP Address:*** field. Use this entry to ping router/gateway 2 from message server 1.

- ❑ If the ping is successful, verify that the entry in the ***Gateway IP Address:*** field in menu 22.2 for message server 2 is correct. If this address is incorrect, message server 2 can receive pings from message server 1, but it responds to an incorrect address instead of responding to message server 1. If the address is correct, proceed to step 6.
- ❑ If the ping fails, the problem is in one of the routers or between them; contact the network administrator.

6. Contact the system manager for message server 2 or access menu 22.1 or 22.2 on message server 2 to obtain the entry in its ***This Server's IP Address:*** field. Use this entry to ping message server 2 from message server 1.

   - ❑ If the ping is successful, the problem that you have attempted to isolate is intermittent or occurs only during message transmission on the digital network. Verify that digital networking is enabled on message server 2; otherwise, the message gets rejected.

     Restore message server 1 to normal status, send a message from server 1 to server 2, and use the LAN Utilities menu option for Display Channel Status (refer to the "Display Channel-Status Utility" section, page 7-47) to check for correct message delivery or a network state that indicates failure, such as Session Aborted. Messages might not be delivered because of heavy traffic on the LAN.
   - ❑ If the ping still fails, the problem must be between message server 2 and router/gateway 2. You have tested as much of the connection as you can from message server 1.

     You must now repeat this isolation procedure, starting at step 1 and working initially from message server 2. The easiest way to follow the preceding steps is to change your perspective: Think of the previous message server 2, LAN 2, and router/gateway 2 as message server 1, LAN 1, and router/gateway 1. Also think of the previous message server 1, LAN 1, and router/gateway 1 as message server 2, LAN 2, and router/gateway 2.

LAN Utilities

The LAN utilities assist in monitoring networking performance and tracking network problems. From Menu 20 – Service Operations, enter the number for LAN Utilities. The LAN Utilities menu appears, as shown in Figure 7-2.

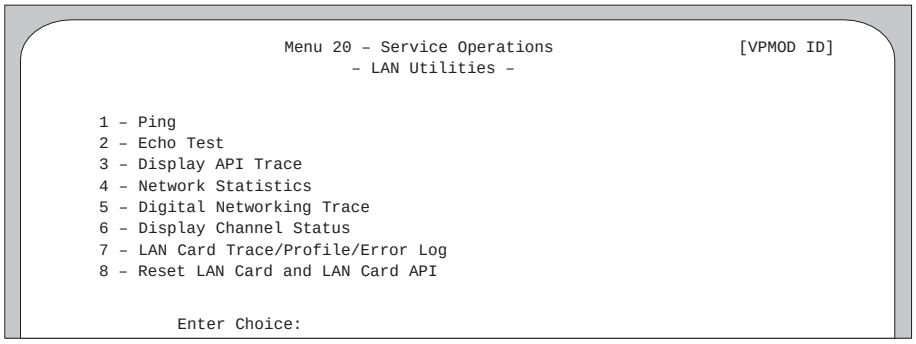


Figure 7-2. LAN Utilities Menu.

The following sections describe the LAN utilities in the order displayed on the screen, except for the Display API Trace, Digital Networking Trace, and LAN Card Trace/Profile/Error Log utilities, which are for use by Octel engineers only.

Ping Utility

The ping utility is a standard TCP/IP network utility that uses ICMP protocol to determine whether the host at a specified IP address is responding. It does not test any function within the host, beyond the host's attachment to the LAN. You can send a single ping to determine whether the IP address can respond; then, you can send a series of pings to the IP address to determine whether the network is losing data. The sending of multiple pings stops after the first unsuccessful ping; an associated error message is displayed on the SMT.

To perform a ping, from menu 20, access the LAN Utilities menu, then the Ping utility. Figure 7-3 is an example of the Ping utility.

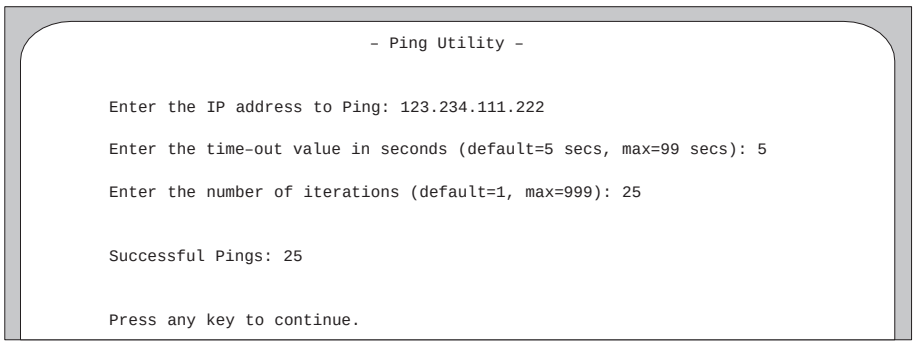


Figure 7-3. Example of Ping Utility Screen.

In this example,

- ❏ The IP address that was pinged was ***123.234.111.222***.
- ❏ The timeout period given for the IP address to respond was ***5*** seconds.
- ❏ The message server pinged the IP address ***25*** times.
- ❏ All ***25*** pings were successful.

SMT messages that can be displayed after you attempt a ping are shown in Table 7-4. If an error occurs, refer to the “Typical Digital-Networking Troubleshooting” section, page 7-29, unless other error recovery actions are indicated.

Table 7-4. Ping Results Shown on the Ping Utility Screen.

SMT Message	Description
Ping successful.	The ping was successful.
LAN card not found on system.	There is no LAN card in the server. Install one.
LAN card shutdown pending.	Another SMT was being used to hot-plug or reset the LAN card when you tried a ping. To recover, refer to the “Reset LAN Card and LAN Card API Utility” section, page 7-48, and reset the LAN card. If this does not solve the problem, use the procedures in Chapter 11 to reseat (hot-plug) or replace the LAN card.
LAN card subsystem is down.	The LAN card is not working. To recover, refer to the “Reset LAN Card and LAN Card API Utility” section, page 7-48, and reset the LAN card.
Ping failed.	The specified IP address could not be found; the server from which you are pinging or the server that should be receiving the ping is not connected to the network, or there is a network failure between them.
Protocol error.	This error message usually indicates an internal error. To recover, refer to the “Reset LAN Card and LAN Card API Utility” section, page 7-48, and reset the LAN card.
Unknown response from LAN card API (unknown response itself).	This error message usually indicates an internal error. The value in parentheses is the unknown response. To recover, refer to the “Reset LAN Card and LAN Card API Utility” section, page 7-48, and reset the LAN card.

If the service or engineering bit is turned on and the ping fails, the error message on the ping utility screen is followed by an error code and a subcode. Write them down to use later.

A single ping is equivalent to the following generic ping format:

ping [IP address]

Multiple pings are equivalent to the following generic ping format:

ping –s [IP address] [datalength] [number of pings]

Some products might use a graphical user interface to initiate a ping.

Echo-Test Utility

The echo test can be performed only between two Octel 250 or 350 message servers at Aria 2.0 and with LAN cards installed and configured. It provides more information than the ping utility. Use it to test whether the network is losing data and to estimate average throughput and round-trip time between message servers. The responding message server must send back the same data that it receives. Unlike a ping, the echo test requires that the destination server, including its processor, be operational to respond successfully.

To perform an echo test, from menu 20, access the LAN Utilities menu, then the Echo Test utility. Figure 7-4 is an example of the echo-test utility.

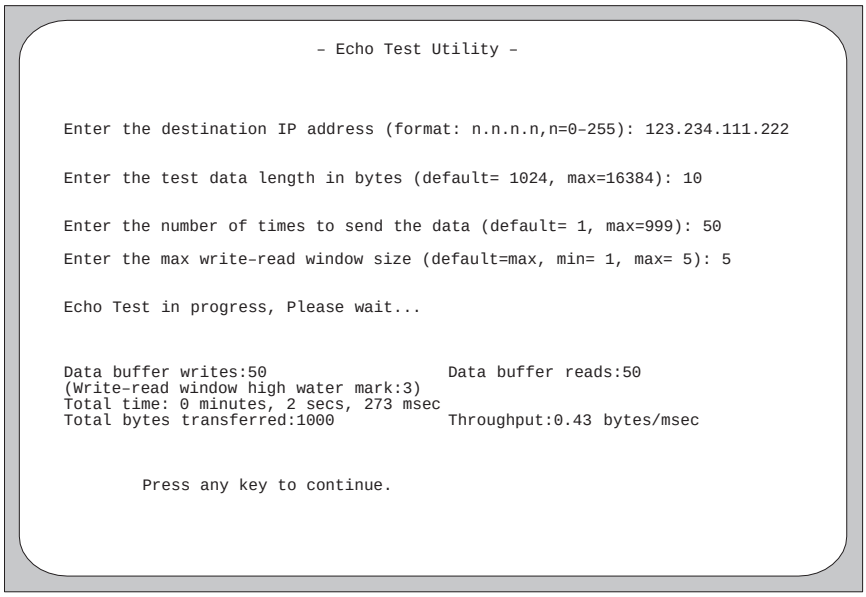


Figure 7-4. Example of Echo Test Utility.

In this example,

- The IP address that was tested was ***123.234.111.222***.
- Each data message sent to the IP address was ***10*** bytes long.
- The data message was sent ***50*** times.
- A maximum write-read window size of ***5*** was chosen. The entry in this field is the maximum number of transmissions (***Data buffer writes:***) that are allowed to have outstanding (unreceived) replies (***Data buffer reads:***) before the next echo-test data transmission is allowed.

The test results for the example are as follows:

- There were ***50*** data-buffer writes and reads; the number of writes and reads should be equal.
- The value of ***3*** in the ***(Write-read window high water mark:)*** field is the highest number of replies that were outstanding during the echo test.

- ❑ The total, or round-trip, time for both the echoes *and* echo replies was ***2.273*** seconds.
- ❑ The number of bytes transferred includes bytes sent in both the echoes *and* echo replies:

  (10 bytes) x (50 times) x 2 (1 echo, 1 reply) = ***1000*** bytes
- ❑ The throughput was ***0.43*** data bytes per millisecond (not including the overhead bytes of the ICMP header).

The throughput and the round-trip time should be compared with acceptable transfer speeds on other message servers.

If the echo test fails, the ***Data buffer writes:*** and ***Data buffer reads:*** fields might or might not be completed, depending on the error; the statistics following these fields are not reported.

Table 7-5 describes various echo-test failures as they are presented on the SMT. If an error occurs, refer to the "Typical Digital-Networking Troubleshooting" section, page 7-29, unless other error-recovery actions are indicated.

Table 7-5. Echo-Test Errors on the Echo-Test Utility Screen.

Start of Error Message	End of Error Message	Description
Connection was not accepted	[code/subcode].	The connection was rejected by the remote message server. Codes and subcodes appear only when the engineering or service bit is on. If any codes and subcodes are displayed, write them down for later use.
Connection was rejected/aborted	. . .	The connection was rejected by the remote message server.
ERROR:	Buffer read is corrupt.	The data sent to the remote message server and echoed back was corrupted.
	Timed out waiting for application queue event.	One of the three expected events (message in, message out, or session status) was not encountered within the timeout period.
	Timed out waiting for connection status event.	The local message server did not receive the connection status event from the remote message server within the timeout period.
LAN Card CONNECT:	Capacity/resource error.	Internal-capacity error in local message server.
LAN Card CONNECT:, LAN Card READ:, or LAN Card WRITE:	LAN card not found on system.	There is no LAN card in the message server. Install one.

Table 7-5. Echo-Test Errors on the Echo-Test Utility Screen (Continued).

Start of Error Message	End of Error Message	Description
LAN Card CONNECT:, LAN Card READ:, or LAN Card WRITE: (continued)	LAN card shutdown pending.	The SMT was used to hot-plug or reset the LAN card, with the option chosen to wait for line tasks to clear; then, before the line tasks cleared, an echo test was attempted from a different SMT. To recover, refer to the "Reset LAN Card and LAN Card API Utility" section, page 7-48, and reset the LAN card. If this does not solve the problem, use the procedures in Chapter 11 to reseat (hot-plug) or replace the LAN card.
	LAN card subsystem is down.	The LAN card is not working, or the SMT was used to hot-plug or reset the LAN card, with the option to shut down immediately (without waiting for line tasks to clear) chosen; then, before the shutdown was completed, an echo test was attempted from a different SMT. To recover, refer to the "Reset LAN Card and LAN Card API Utility" section, page 7-48, and reset the LAN card. If this does not solve the problem, use the procedures in Chapter 11 to reseat (hot-plug) or replace the LAN card.
	Protocol error.	This error message usually indicates an internal error.
	Unknown response from LAN card API (unknown response itself).	This error message usually indicates an internal error. The value in parentheses is the unknown response.
LAN Card READ: or LAN Card WRITE:	Data length is 0.	Internal error.
	Invalid channel ID.	An attempt was made to write to or read from an invalid channel on the local LAN card.
	Invalid size.	Internal error.
	No avail LAN Card buffers.	No LAN card buffers are available. Might be caused by heavy network traffic.
	Internal error.	Internal error in local message server.
UNEXPECTED EVENT(nnn):	Connection status event expected.	A connection status event was expected, but an unexpected event [nnn] was encountered instead.
UNEXPECTED EVENT(nnn):	Expecting MSG_IN, MSG_OUT, or SESS_STS.	One of the three events—message in, message out, or session status—was expected, but an unexpected event [nnn] was encountered instead.

Digital-Networking Statistics

You can review analog-networking and digital-networking statistics for a general indication of network activity. Do *not* use only these statistics for troubleshooting; also use system manager notifications, message-return reasons, and CDR data to investigate networking problems. Analog-networking statistics are described in the "Analog-Networking Statistics" section, page 7-49.

The statistics screens are not updated dynamically. They do not include statistics for any portion of any currently open networking sessions.

To access the networking statistics, from menu 20, access the LAN Utilities menu, then the Network Statistics menu. Options are then available to select either digital-networking statistics or analog-networking statistics.

After you select the type of statistics you want to display, you are prompted to enter the node number for which you want statistics.

If you choose to display digital-networking statistics for node 0, the SMT displays statistics for all nodes combined. For node 0, the five summary screens differ from the screens for a particular node in the following ways:

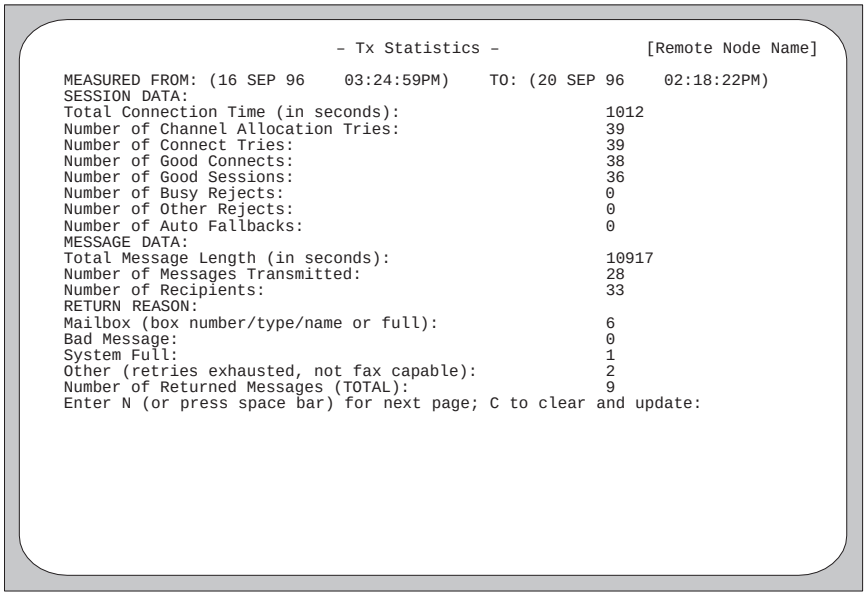
- The node name shown in the upper right of each summary screen is ***HOME***.
- At the bottom of each of the five statistics screens, in addition to the options ***N*** and ***C***, an option ***G*** for clearing and updating all nodes is offered.
- The ***RETURN REASON:*** subheading and the four fields under it, with counts for particular reasons, do not appear on the first and third screens as they do for individual nodes.
- The ***HISTORY OF LAST SESSION:*** field does not appear on the second screen, as it does for individual nodes.
- The fifth screen has additional statistics.

Examples of the five Digital Networking Statistics screens are presented in this section. The Tx Statistics screens summarize messages outbound (transmitted) from the server. The Rx Statistics screens summarize messages incoming to (received by) the server.

The first screen displays statistics for the local node acting as a transmitting node, including session data and the first part of message data, as shown in the example in Figure 7-5.

The fields on this first screen are described as follows:

- ***MEASURED FROM:*** and ***TO:*** The starting time of the measurement, updated each time you enter ***C*** or ***G*** to clear statistics, and the ending time, which is the time you selected this option. This range is referred to as the measurement period.
- ***SESSION DATA:*** The data in the following subordinate fields describes completed transmitting sessions. The data is cumulative since the last time statistics were cleared.
  - ***Total Connection Time (in Seconds):*** The total elapsed time of all successful digital connections initiated by the local node to the remote node, measured from the beginning to the end of each connection.



```
                              – Tx Statistics –               [Remote Node Name]

MEASURED FROM: (16 SEP 96    03:24:59PM)    TO: (20 SEP 96    02:18:22PM)
SESSION DATA:
Total Connection Time (in seconds):                     1012
Number of Channel Allocation Tries:                     39
Number of Connect Tries:                                39
Number of Good Connects:                                38
Number of Good Sessions:                                36
Number of Busy Rejects:                                 0
Number of Other Rejects:                                0
Number of Auto Fallbacks:                               0
MESSAGE DATA:
Total Message Length (in seconds):                      10917
Number of Messages Transmitted:                         28
Number of Recipients:                                   33
RETURN REASON:
Mailbox (box number/type/name or full):                 6
Bad Message:                                            0
System Full:                                            1
Other (retries exhausted, not fax capable):             2
Number of Returned Messages (TOTAL):                    9
Enter N (or press space bar) for next page; C to clear and update:
```

Figure 7-5. Example of Digital-Networking Statistics, First Screen.

- ***Number of Channel Allocation Tries:*** The number of attempts to allocate an outgoing digital channel to the remote node. The allocation fails only if there is no *outgoing* channel available, based on the values entered in the ***Max Outgoing Digital Connections:*** and ***Max Digital Connections:*** fields in menu 15.1.2, System Parameters for Digital Networking.

  The difference between the value in the ***Number of Channel Allocation Tries:*** field and the value in the ***Number of Connect Tries:*** field is the number of channel allocation failures. If the ***Max Outgoing Digital Connections:*** field in menu 15.1.2 cannot be increased, and there are too many channel allocation failures, reschedule message-delivery time among nodes to balance the network load and to avoid the inefficiency of transmission in analog fallback (if enabled).

- ***Number of Connect Tries:*** The total number of attempts to connect to the remote node after an available outgoing channel is obtained. The difference between this value and the value in the ***Number of Good Connects:*** field is the number of connection failures.

- ***Number of Good Connects:*** The number of good connections to the remote node. The difference between this value and the value in the ***Number of Good Sessions:*** field is the number of failures to establish a session, usually because the local node is undefined to the remote node, or one of the nodes does not support Octel mail protocol.

- ***Number of Good Sessions:*** The number of sessions for which all deliverable messages were transmitted correctly to the remote node. Networking-related failures that disable a link cause bad sessions; however, messaging-related problems, such as undeliverable messages and disk full, do not constitute a bad session.

- ***Number of Busy Rejects:*** The number of times the local node could not connect to the remote node, because the remote node had no incoming channels available.

- ***Number of Other Rejects:*** The number of times the local node could not connect to the remote node for reasons other than busy reject, such as a LAN card being down or digital networking at the local or remote node being disabled.

- ***Number of Auto Fallbacks:*** The number of occurrences of fallback from digital to analog networking when transmitting messages to the remote node, caused by connection failures or by the requirement to use analog networking to transmit messages that were converted from an Aspen, Branch, or Maxum to an Octel 250 or 350.

- ***MESSAGE DATA:*** The data in the following subordinate fields describes message data for completed transmitting sessions. The data is cumulative, since the last time statistics were cleared.

  - ***Total Message Length (in seconds):*** The total length of messages sent to the remote node during the measurement period.

  - ***Number of Messages Transmitted:*** The total number of messages sent to the remote node during the measurement period, excluding undeliverable messages.

  - ***Number of Recipients:*** The total number of recipients for all messages sent to the remote node during the measurement period, excluding undeliverable messages. Since all messages are delivered only once, even if they have multiple recipients, this value is greater than or equal to the value in the ***Number of Messages Transmitted:*** field.

- ***RETURN REASON:*** The data in the following subordinate fields indicates how often messages were returned during completed transmitting sessions, for each reason listed. The data is cumulative since the last time statistics were cleared.

  - ***Mailbox (box number/type/name or full):*** The number of messages returned to senders because of mailbox-accessing failures. Possible causes include a nonexistent destination mailbox, an invalid mailbox type, or a mismatch between the ASCII name in the sending server's NameNet table and the ASCII name of the mailbox at the destination server.

  - ***Bad Message:*** The number of messages returned to senders because they are detected as bad during transmission.

  - ***System full:*** The number of messages returned to senders because all disk space is full at the destination.

  - ***Other (retries exhausted, not fax capable):*** The number of messages returned to senders for all other reasons combined, including all retries exhausted, the destination server for a fax message is not fax-capable, or the message does not conform to the servers' *common* capabilities identified during session-setup handshaking.

  - ***Number of Returned Messages (TOTAL):*** The total number of messages returned during the measurement period for the four preceding reasons combined.

The second screen displays the second part of message data, as shown in the example in Figure 7-6.

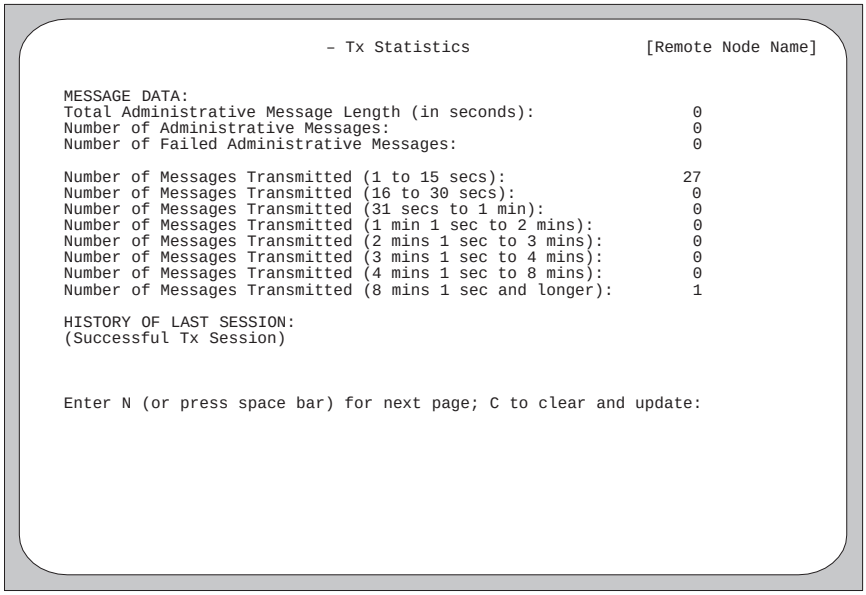


Figure 7-6. Example of Digital-Networking Statistics, Second Screen.

The fields on this second screen are described as follows:

- ***MESSAGE DATA:*** The data in the following subordinate fields describes message data for completed transmitting sessions. The data is cumulative since the last time statistics were cleared.
  - ***Total Administrative Message Length (in seconds):*** The total length of administrative messages sent to the remote node during the measurement period.
  - ***Number of Administrative Messages:*** The total number of administrative messages sent to the remote node during the measurement period, excluding undeliverable messages.
  - ***Number of Failed Administrative Messages:*** The total number of administrative messages that were *not* delivered to the remote node during the measurement period.
  - ***Number of Messages Transmitted (various lengths):*** The number of messages sent for each range of message duration; the sum of these values should equal the value in the ***Number of Messages Transmitted:*** field, shown on the first screen. Shorter messages require relatively more overhead per byte than longer messages for digital transmission.
- ***HISTORY OF LAST SESSION:*** A description of the results of the last completed digital-networking transmission session. The possible entries are as follows:
  - ***(Successful Tx Session)***. The last transmission session was successful.
  - ***(Serial # Mismatch)***. No transmission occurred because the destination node's serial number is entered incorrectly in the local node.

- ***(Networking Fallback)***. Digital networking initiated a fall back to analog networking during the last transmission session.
- ***(Failed Tx Session)***. The last transmission session failed.

The third and fourth digital-networking statistics screens are analogous to the first and second screens, except that they display data for the local node acting as a *receiving* node. Figure 7-7 is an example of the third screen.

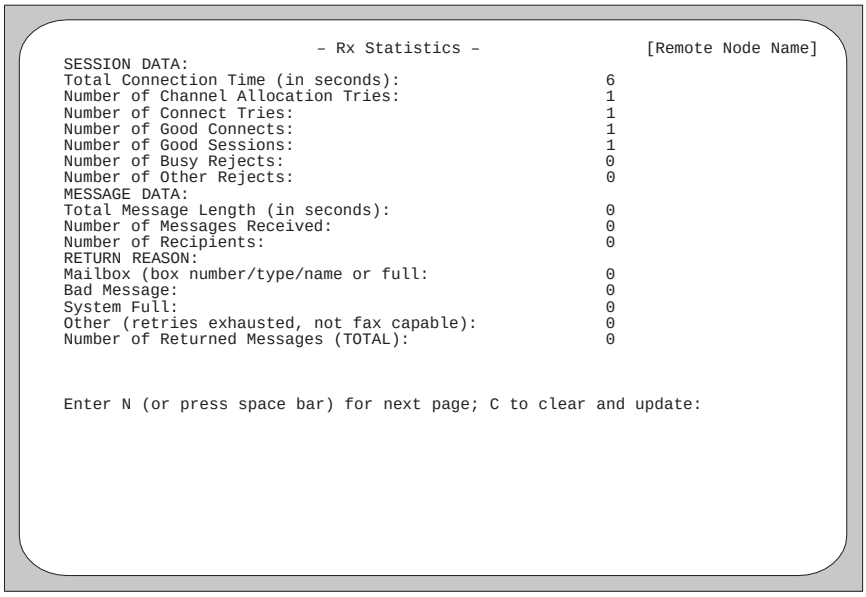


Figure 7-7. Example of Digital-Networking Statistics, Third Screen.

The fields on this third screen are described as follows:

- ***SESSION DATA:*** The data in the following subordinate fields describes completed receiving sessions. The data is cumulative since the last time statistics were cleared.
  - ***Total Connection Time (in Seconds):*** The total elapsed time of all successful digital connections initiated by the remote node to the local node, measured from beginning to end of each connection.
  - ***Number of Channel Allocation Tries:*** The number of attempts to allocate an incoming digital channel for use by the remote node. An incoming connection has a higher priority than an outgoing connection. The allocation fails only if the number of attempts specified in the ***Max Digital Connections:*** field in menu 15.1.2, System Parameters for Digital Networking, is exceeded.

    The difference between the value in the ***Number of Channel Allocation Tries:*** field and the value in the ***Number of Connect Tries:*** field is the number of channel allocation failures. If the ***Max Digital Connections:*** field in menu 15.1.2 cannot be increased and there are too many channel-allocation failures, too many remote nodes are attempting to network simultaneously to the local node.

- ***Number of Connect Tries:*** The total number of attempts to establish a connection from the remote node after an available incoming channel is obtained. The difference between this value and the value in the ***Number of Good Connects:*** field is the number of connection failures.
- ***Number of Good Connects:*** The number of good connections from the remote node. The difference between this value and the value in the ***Number of Good Sessions:*** field is the number of failures to establish a session, usually because the remote node is undefined to the local node or because one of the nodes does not support Octel mail protocol.
- ***Number of Good Sessions:*** The number of sessions for which all deliverable messages were received correctly from the remote node. Networking-related failures that disable a link cause bad sessions; however, messaging-related problems, such as undeliverable messages and disk full, do not constitute a bad session.
- ***Number of Busy Rejects:*** The number of times the remote node could not connect to the local node, because the local node had no incoming channels available.
- ***Number of Other Rejects:*** The number of times the remote node could not connect to the local node for reasons other than busy reject, such as a LAN card being down or digital networking at the local or remote node being disabled.

- ***MESSAGE DATA:*** The data in the following subordinate fields describes message data for completed receiving sessions. The data is cumulative since the last time statistics were cleared.
  - ***Total Message Length (in seconds):*** The total length of messages received from the remote node during the measurement period.
  - ***Number of Messages Received:*** The total number of messages received from the remote node during the measurement period, excluding undeliverable messages.
  - ***Number of Recipients:*** The total number of recipients for all messages received from the remote node during the measurement period, excluding undeliverable messages. Since all messages are delivered only once, even if they have multiple recipients, this value is greater than or equal to the value in the ***Number of Messages Received:*** field.
- ***RETURN REASON:*** The data in the following subordinate fields indicates how often messages were returned during completed receiving sessions, for each reason listed. The data is cumulative since the last time statistics were cleared.
  - ***Mailbox (box number/type/name or full):*** The number of messages returned because of mailbox-accessing failures. Possible causes include a nonexistent destination mailbox, an invalid mailbox type, or a mismatch between the ASCII name in the sending (remote) server's NameNet table and the ASCII name of the mailbox at the destination (local) server.
  - ***Bad Message:*** The number of messages returned to senders because they are detected as bad during transmission.
  - ***System full:*** The number of messages returned because all disk space is full at the destination.

- ***Other (retries exhausted, not fax capable):*** The number of messages returned to senders for all other reasons combined, including all retries exhausted, the destination system for a fax message is not fax-capable, or the message does not conform to the servers' *common* capabilities identified during session-setup handshaking.
- ***Number of Returned Messages (TOTAL):*** The total number of messages returned during the measurement period, for the four preceding reasons combined.

The fourth screen displays the second part of message data for received messages, as shown in the example in Figure 7-8, analogous to the second screen for transmitted messages.

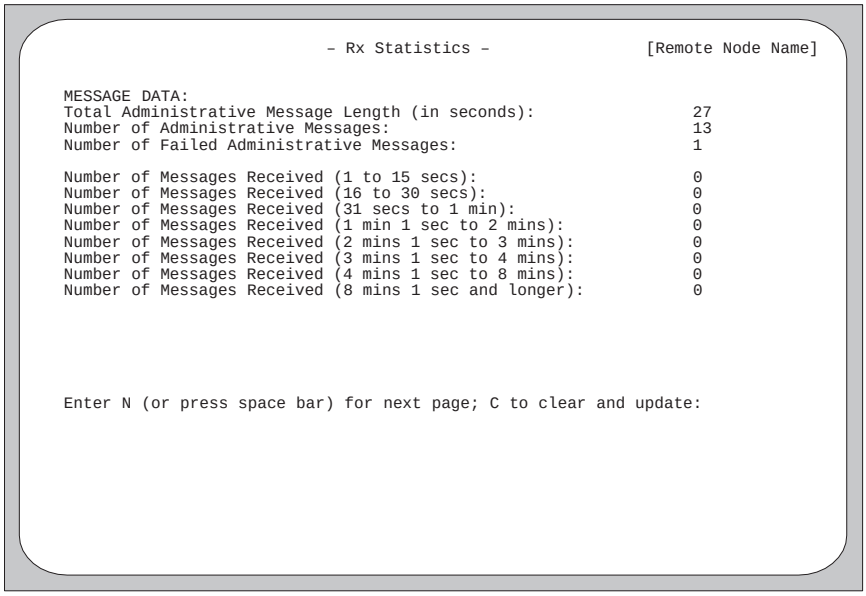


Figure 7-8. Example of Digital-Networking Statistics, Fourth Screen.

The fields on this fourth screen are described as follows:

- ***MESSAGE DATA:*** The data in the following subordinate fields describes message data for completed receiving sessions. The data is cumulative since the last time statistics were cleared.
  - ***Total Administrative Message Length (in seconds):*** The total length of administrative messages received from the remote node during the measurement period.
  - ***Number of Administrative Messages:*** The total number of administrative messages received from the remote node during the measurement period, excluding undeliverable messages.
  - ***Number of Failed Administrative Messages:*** The total number of administrative messages that were *not* delivered to the local node during the measurement period.
  - ***Number of Messages Received (various lengths):*** The number of messages received for each range of message duration; the sum of these values should equal the value in the ***Number of Messages Received:*** field, shown on the third screen. Shorter messages require relatively more overhead per byte than longer messages for digital transmission.

The fifth screen displays overall statistics, as shown in Figure 7-9.

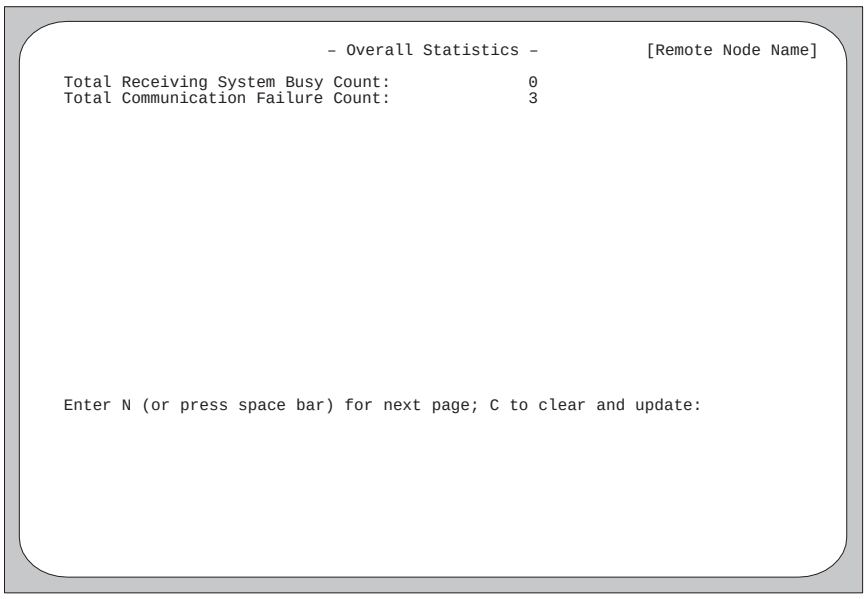


Figure 7-9. Example of Digital-Networking Statistics, Fifth Screen.

If you selected node ***0*** to display digital-networking statistics for all nodes combined, additional fields are displayed as shown in Figure 7-10.

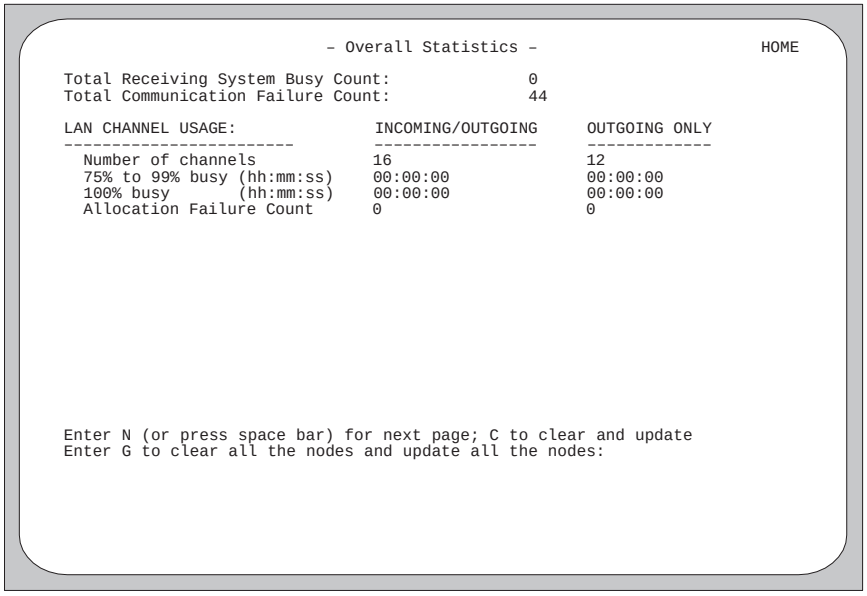


Figure 7-10. Example of Digital-Networking Statistics, Fifth Screen, for Node 0 (All Nodes).

The fields on the screen (Figure 7-10) are described as follows:

- ***Total Receiving System Busy Count:*** The total number of busy conditions encountered by this local node in attempting to connect digitally to *any* remote node. This value is the same, no matter what node is selected for display of statistics. If this value is too high, you can reschedule message delivery among the nodes or enable analog fallback.

- ***Total Communication Failure Count:*** The total number of connection failures encountered by this local node in attempting to connect digitally to *any* remote node. This value is the same, no matter what node is selected to display statistics. Possible causes include digital networking being disabled on the remote node or the LAN card on either server not working.

- ***LAN CHANNEL USAGE:*** **column head**. If node 0 is selected, the following subordinate fields appear. They describe use of the LAN channels for completed sessions for all nodes combined; they are cumulative since the last time statistics were cleared.

  - ***Number of channels***. The value in the ***INCOMING/OUTGOING*** column is the same as the entry in the ***Max Digital Connections:*** field in menu 15.1.2. The value in the ***OUTGOING ONLY*** column is the same as the entry in the ***Max Outgoing Digital Connections:*** field in menu 15.1.2.

  - ***75% to 99% busy (hh:mm:ss)***. The total amount of time that 75% or more, but not all, of the digital channels on this local node are busy. The value in the ***INCOMING/ OUTGOING*** column is the time for both incoming and outgoing digital connections combined. The value in the ***OUTGOING ONLY*** column is the time for outgoing connections only.

  - ***100% busy (hh:mm:ss)***. The total amount of time that all digital channels on this local node are busy. The value in the ***INCOMING/OUTGOING*** column is the time for both incoming and outgoing digital connections combined. The value in the ***OUTGOING ONLY*** column is time for outgoing connections only.

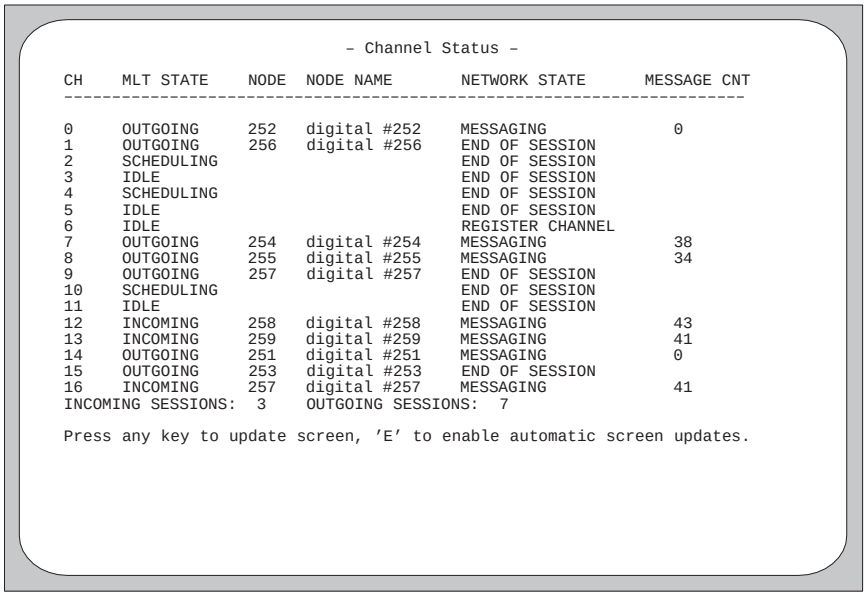
  - ***Allocation Failure Count***. The total number of failures to allocate a channel during attempted transmission from this local node. If no outgoing channels are available because the ***Max Outgoing Digital Connections:*** limit (menu 15.1.2) has been reached by current connections, then *only* the counter in the ***OUTGOING ONLY*** column is incremented. If this limit has not been reached, the server checks for any available channel; if it finds none, because the ***Max Digital Connections:*** limit (menu 15.1.2) has been reached by current connections, then *only* the counter in the ***INCOMING/ OUTGOING*** column is incremented.

Display Channel-Status Utility

Seventeen channels are provided for digital networking; of these, 16 can transmit or receive network messages simultaneously. The 17th channel exists to reject any network-connection requests from other nodes in the network when all 16 channels are busy. Each digital-networking channel has an associated mail task (MLT) on the CPU. The MLTs manage the sending and receiving of voice messages through the digital network.

From menu 20, access the LAN Utilities menu, then the Display Channel Status utility. The Channel Status screen displays the MLT and network states and the node number and node name to which each channel is connected. Figure 7-11 is an example of this display. Table 7-6 and Table 7-7 describe the MLT and network states. The value in the ***MESSAGE CNT*** column is the number of messages that have been transmitted digitally thus far during the current session.

Press ***E*** to have the display automatically updated every few seconds.



```
                              – Channel Status –

CH    MLT STATE    NODE  NODE NAME       NETWORK STATE      MESSAGE CNT
-------------------------------------------------------------------------

0     OUTGOING     252   digital #252    MESSAGING              0
1     OUTGOING     256   digital #256    END OF SESSION
2     SCHEDULING                         END OF SESSION
3     IDLE                               END OF SESSION
4     SCHEDULING                         END OF SESSION
5     IDLE                               END OF SESSION
6     IDLE                               REGISTER CHANNEL
7     OUTGOING     254   digital #254    MESSAGING              38
8     OUTGOING     255   digital #255    MESSAGING              34
9     OUTGOING     257   digital #257    END OF SESSION
10    SCHEDULING                         END OF SESSION
11    IDLE                               END OF SESSION
12    INCOMING     258   digital #258    MESSAGING              43
13    INCOMING     259   digital #259    MESSAGING              41
14    OUTGOING     251   digital #251    MESSAGING              0
15    OUTGOING     253   digital #253    END OF SESSION
16    INCOMING     257   digital #257    MESSAGING              41
INCOMING SESSIONS:  3    OUTGOING SESSIONS:  7

Press any key to update screen, 'E' to enable automatic screen updates.
```

Figure 7-11. Example of Channel Status Screen.

Table 7-6. MLT States.

MLT State	Description
IDLE	There is no task for this MLT.
SHUT DOWN	The LAN card is shut down or is shutting down.
INCOMING	The MLT is a server, receiving a request.
OUTGOING	The MLT is a client, sending a request.
SCHEDULING	The MLT is scheduling the next session.

Table 7-7. Network States.

Network State	Description
INITIAL STATE	Idle.
REGISTER CHANNEL	Request for outgoing message initiated.
CONNECTING	Connection request sent to other message server.
WAIT FOR RESPONSE	Awaiting response from other message server.
CHECKING RESPONSE	Server is sending a response to the client.
LINK CONNECTED	Connection between servers established.
DATA LINK SYNC'D	Connection between servers synchronized.
INIT SESSION	Messaging session initialized.
SESSION AUTHORIZED	Messaging session authorized.
MESSAGING	Messaging under way.
SESSION ABORTED	Error caused messaging session to end.
END OF SESSION	Normal end of messaging session.
DISCONNECTING	Servers are disconnecting.
DISCONNECTED	Servers are now disconnected.
REJECT CONNECTION	Sender's connection request is denied, because all the other 16 channels are busy.

Reset LAN Card and LAN Card API Utility

You can reset the LAN card without removing it. From menu 20, access the LAN Utilities menu, then the Reset LAN Card and LAN Card API option. The following message is displayed:

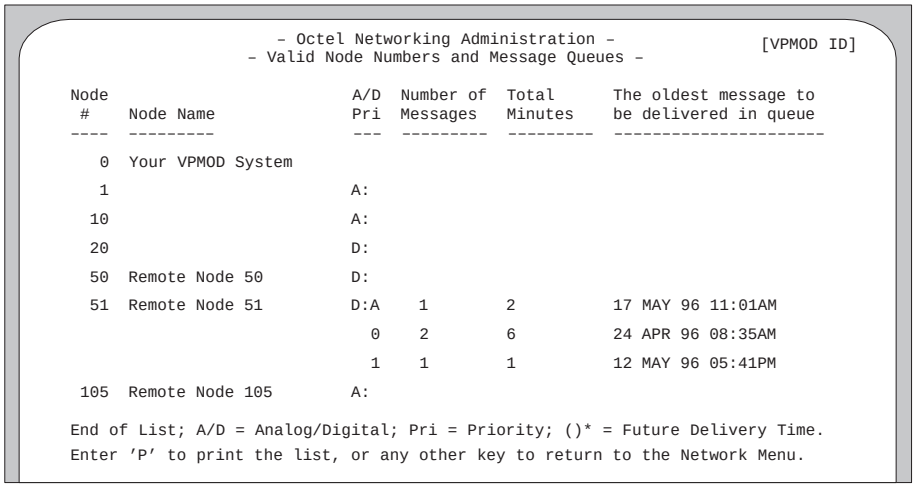
WARNING: This option will STOP all LAN Activities – Proceed (Y/N):

To initialize the LAN card, enter ***Y***. At the ***Enter "1" – allow tasks to clear, "2" – clear immediately, "Break" – cancel:*** prompt, enter ***1*** to allow all digital networking tasks to complete.

If messages to a node are scheduled for delivery using digital networking and the LAN card is out of service, then no attempt is made to deliver the messages unless analog fallback is enabled.

Valid Node Numbers and Message Queues

Access menu 15.1.5 to display the complete set of nodes configured on this server, with information about each node's message queue. After you enter values in the ***Select Node:*** and ***Select Message Queue:*** fields, the data is displayed. Figure 7-12 is an example of menu 15.1.5 when node ***0*** was entered to display data for all nodes, and message queue ***9*** was entered to display all message queues.



```
                    – Octel Networking Administration –                [VPMOD ID]
                  – Valid Node Numbers and Message Queues –

Node                                A/D  Number of  Total      The oldest message to
 #    Node Name                     Pri  Messages   Minutes    be delivered in queue
----  ---------                     ---  ---------  ---------  ----------------------
   0  Your VPMOD System
   1                                A:
  10                                A:
  20                                D:
  50  Remote Node 50                D:
  51  Remote Node 51                D:A    1        2          17 MAY 96 11:01AM
                                      0    2        6          24 APR 96 08:35AM
                                      1    1        1          12 MAY 96 05:41PM
 105  Remote Node 105               A:

End of List; A/D = Analog/Digital; Pri = Priority; ()* = Future Delivery Time.
Enter 'P' to print the list, or any other key to return to the Network Menu.
```

Figure 7-12. Example of Menu 15.1.5, Valid Node Numbers and Message Queues.

For a particular node, if the value *preceding* the colon in the ***A/D Pri*** column is ***D***, that node has digital networking enabled in the ***Node Type:*** field. If the value preceding the colon is ***A***, that node either does not have digital networking enabled or has fallen back to analog networking. The value *after* the colon is the priority of the messages.

The date and time of the oldest message to be delivered in the queue, in conjunction with the networking schedule, can indicate whether there is a problem with analog networking or with digital networking to a particular node or nodes.

If there is no data for a particular node in the rightmost three columns, that node's queue is empty.

Analog-Networking Statistics

You can review analog-networking (Octel Net**working**) statistics for a general indication of analog network activity. Do *not* use only these statistics for troubleshooting; also use system manager notifications, message-return reasons, and CDR data to investigate networking problems. For information about digital-networking statistics, refer to the "Digital-Networking Statistics" section, page 7-38.

The statistics screens are not updated dynamically. They do not include statistics for any portion of currently open networking sessions.

Display analog-networking statistics on a server at Aria 1.2 as follows:

1. Call the Octel Customer Services Center and have the engineering bit enabled.
2. From Menu 20 – Service Operations, access the SMT Debug Utilities.
3. At the > prompt, type ***nwstats*** and press ***Enter***.

For Aria 2.0, although you access the display of analog-networking statistics through the LAN Utilities menu, a LAN card does not have to be installed on the server. With Aria 2.0, neither the engineering bit nor the service bit is required to display analog-networking statistics. Display analog-networking statistics on a server at Aria 2.0 as follows:

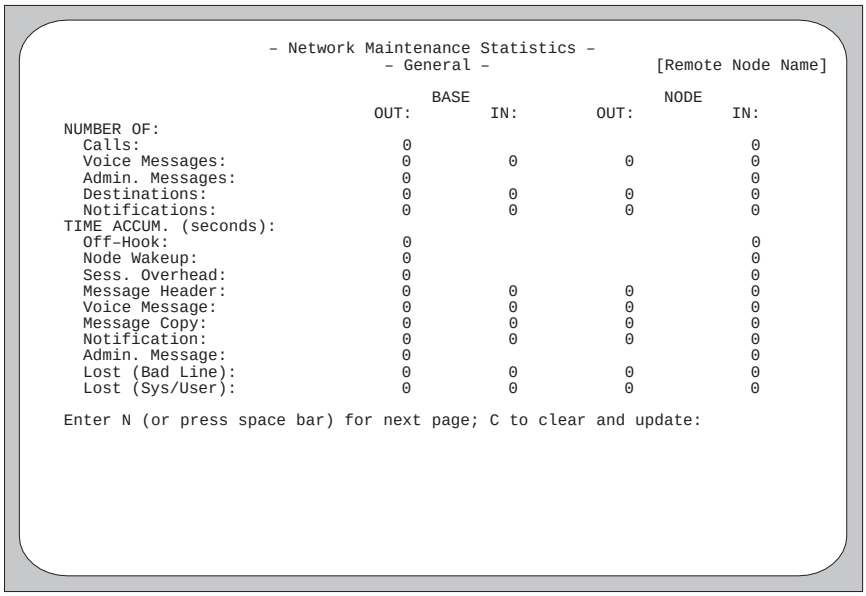
1. From Menu 20 – Service Operations, access the LAN Utilities menu, then the Network Statistics menu.

2. Select the menu option that displays analog-networking statistics.

You are prompted to enter the node number for which you want statistics.

Several examples of the analog-networking statistics screens are shown in this section. These examples show no Octel Net**working** activity for the specified node.

The first statistics screen, General, shown in the example in Figure 7-13, displays the number of messages, destinations, and notifications that were sent from and received by the selected node. The time, in seconds, that the server was off-hook delivering these messages is also displayed and subdivided into components.



```
                    – Network Maintenance Statistics –
                              – General –                  [Remote Node Name]

                                   BASE                          NODE
                              OUT:         IN:          OUT:           IN:
NUMBER OF:
  Calls:                         0                                     0
  Voice Messages:                0            0             0          0
  Admin. Messages:               0                                     0
  Destinations:                  0            0             0          0
  Notifications:                 0            0             0          0
TIME ACCUM. (seconds):
  Off–Hook:                      0                                     0
  Node Wakeup:                   0                                     0
  Sess. Overhead:                0                                     0
  Message Header:                0            0             0          0
  Voice Message:                 0            0             0          0
  Message Copy:                  0            0             0          0
  Notification:                  0            0             0          0
  Admin. Message:                0                                     0
  Lost (Bad Line):               0            0             0          0
  Lost (Sys/User):               0            0             0          0

Enter N (or press space bar) for next page; C to clear and update:
```

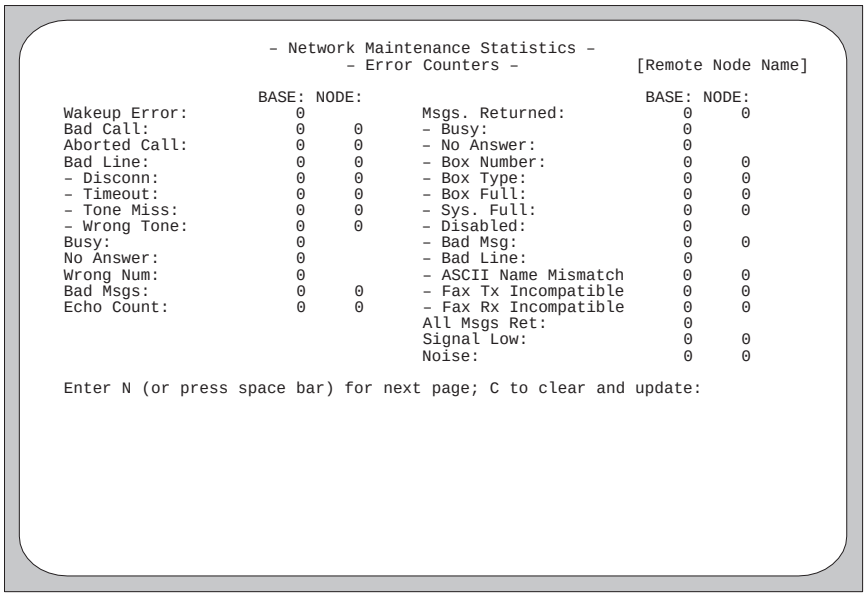
Figure 7-13. Example of Analog-Networking Statistics, First Screen.

The ***BASE OUT:*** column contains data for calls sent from the local server to the remote node. The ***NODE IN:*** column contains data for calls sent from the remote node to the local server. The data in the ***BASE IN:*** and ***NODE OUT:*** columns reflect use of the optional line-turnaround capability specified in the ***Node Response Allowed:*** field of menu 15.1.3, Node Profile; ignore this data when analyzing analog networking.

The fields in the rows on this screen are described as follows:

- ***NUMBER OF:***
  - ***Calls:*** The number of network calls transmitted from the local server to the remote node (***BASE OUT:*** column) and the number of network calls transmitted from the remote node to the local server (***NODE IN:*** column).
  - ***Voice Messages:*** The number of distinct voice messages that were transmitted, excluding copies of the same messages that were sent to multiple subscribers.
  - ***Admin. Messages:*** The number of NameNet administrative messages that were transmitted.
  - ***Destinations:*** The number of destinations for voice messages that were transmitted. If, for example, one message is sent to three subscribers on a destination node, the message is transmitted only once, followed by the two additional mailbox destinations. In this example, the counter for the ***Voice Messages:*** field would be incremented by ***1*** and the counter for the ***Destinations:*** field would be incremented by ***3***.
  - ***Notifications:*** The number of network notifications that were transmitted, such as extended-absence-greeting notifications and return-receipt notifications.
- ***TIME ACCUM. (seconds):***
  - ***Off Hook:*** The total time that the server was off-hook. These values are the totals of the values in the following nine rows (in seconds).
  - ***Node Wakeup:*** The amount of time it took the server to dial and receive DTMF response from the other server.
  - ***Sess. Overhead:*** The amount of time both servers took to prepare for this session of message transmission, including setting DTMF speed and identifying serial numbers.
  - ***Message Header:*** The amount of time it took to transmit the message-header information.
  - ***Voice Message:*** The amount of time it took to transmit the voice messages.
  - ***Message Copy:*** The amount of time it took to transmit the additional destinations, for messages that are sent to more than one destination.
  - ***Notification:*** The amount of time it took for network notifications, such as extended-absence-greeting notifications and return-receipt notifications.
  - ***Admin. Message:*** The amount of time it took to transmit NameNet administrative messages.
  - ***Lost (Bad Line):*** and ***Lost (Sys/User):*** The amount of time used or lost for all other networking activities, such as retries and failures caused by bad line quality and the handling of invalid mailbox addresses. Do *not* use these fields for troubleshooting.

The second analog-networking statistics screen, Error Counters, shown in the example in Figure 7-14, displays counters that can be incremented for a wide variety of reasons; these counters *do not* necessarily indicate networking problems. Many of these conditions occur normally and are associated with subsequent retry and recovery operations for which network messaging succeeded.



```
                    – Network Maintenance Statistics –
                           – Error Counters –            [Remote Node Name]

                   BASE: NODE:                                BASE: NODE:
Wakeup Error:         0                Msgs. Returned:          0     0
Bad Call:             0     0          – Busy:                  0
Aborted Call:         0     0          – No Answer:             0
Bad Line:             0     0          – Box Number:            0     0
– Disconn:            0     0          – Box Type:              0     0
– Timeout:            0     0          – Box Full:              0     0
– Tone Miss:          0     0          – Sys. Full:             0     0
– Wrong Tone:         0     0          – Disabled:              0
Busy:                 0                – Bad Msg:               0     0
No Answer:            0                – Bad Line:              0
Wrong Num:            0                – ASCII Name Mismatch    0     0
Bad Msgs:             0     0          – Fax Tx Incompatible    0     0
Echo Count:           0     0          – Fax Rx Incompatible    0     0
                                       All Msgs Ret:            0
                                       Signal Low:              0     0
                                       Noise:                   0     0

Enter N (or press space bar) for next page; C to clear and update:
```

Figure 7-14. Example of Analog-Networking Statistics, Second Screen.

Information in the ***BASE:*** columns reflects conditions encountered by the local server or messages returned to subscribers on the local server. Information in the ***NODE:*** columns reflects conditions encountered by the remote server or messages returned to subscribers on the remote server during use of the optional line-turnaround capability specified in the ***Node Response Allowed:*** field of menu 15.1.3, Node Profile. Ignore this data when analyzing analog networking.

The counters in the left ***BASE:*** and ***NODE:*** columns reflect any problems that prevented the server from establishing or maintaining a reliable telephone connection to the remote server. The counters in the right ***BASE:*** and ***NODE:*** columns indicate how many messages have been returned to their senders, categorized by reason.

The fields in this second screen are described as follows:

- ***Wakeup Error:*** The server initiates the call by seizing a port enabled for networking, listening for the dial tone, dialing the remote node's telephone number, listening for a ring-back, listening for the remote node to answer, sending autovon wakeup tones, and listening for a special response from the remote node. If dialing is successful but the special response is not received from the remote node, the call fails, and this counter and the counter for the ***Bad Call:*** field are incremented.

- ***Bad Call:*** The total number of calls that failed for any reason. This value should be the sum of all other values in this column.

- ***Aborted Call:*** The number of aborted network sessions. Usually logged if some messages were sent during that session.
- ***Bad Line:*** The sum of the four counters subordinate to this field, reflecting call failures caused by poor line quality.

  – *Disconn:* The number of times this server detected line disconnections during a networking session.

  – *Timeout:* The number of times the other server failed to respond to handshaking.

  – *Tone Miss:* The number of times that expected DTMF tones were not received.

  – *Wrong Tone:* The number of times that unexpected DTMF tones were received.
- ***Busy:*** The number of times that the telephone number the server dialed was busy.
- ***No Answer:*** The number of times that the telephone number the server dialed was not answered.
- ***Wrong Num:*** If the local node is using operator-assisted dialing to reach the remote node, the number of times that the person who answered the call at the remote node pressed ***1*** to discontinue calls rather than transferring the call to the destination message server.
- ***Bad Msgs:*** The number of times that networking failed because of technical difficulties, such as detection of a tone within a message or absence of a detectable end of message. The messages are returned to their senders.
- ***Echo Count:*** The number of DTMF tones that were detected as echoes and were removed.
- ***Msgs. Returned:*** The total number of messages returned to their senders by this node. It is the sum of the following 12 subordinate values:

  – *Busy:* The number of messages returned to senders because the destination node was repeatedly busy and all retries were exhausted.

  – *No Answer:* The number of messages returned to senders because the destination node repeatedly did not answer and all retries were exhausted.

  – *Box Number:* The number of messages returned to senders because the mailbox numbers on the destination node did not exist.

  – *Box Type:* The number of messages returned to senders because the destination mailboxes were not voice-messaging mailboxes.

  – *Box Full:* The number of messages returned to senders because the destination mailboxes were full.

  – *Sys. Full:* The number of messages returned to senders because the destination node was out of disk space for messages.

  – *Disabled:* The number of messages returned to senders because the system manager at this local node disabled transmission to the remote node, with messages returned to sender.

– ***Bad Msg:*** The number of messages returned to senders because of technical difficulties, such as detection of a tone within a message or absence of a detectable end of message.

– ***Bad Line:*** The number of messages returned to senders because the server repeatedly experienced line problems with the remote server and could not deliver messages.

– ***ASCII Name Mismatch***. The number of messages returned to senders because of mismatches between the ASCII names in the local node's NameNet table and the ASCII names of the mailboxes at the destination node.

– ***Fax Tx Incompatible***. The number of fax messages returned to senders because the local node attempted to send the message using a port on a line card that cannot transmit faxes, because the remote node's feature option for fax capability is not enabled, or because the destination mailbox has a class of service that does not allow receipt of faxes.

– ***Fax Rx Incompatible***. The number of fax messages returned to senders because the remote node attempted to send the message using a port on a line card that cannot transmit faxes, because the local node's feature option for fax capability is not enabled, or because the destination mailbox has a class of service that does not allow receipt of faxes.

- ***All Msgs Ret:*** The number of times the server returned all messages to their senders during that session.

- ***Signal Low:*** and ***Noise:*** The number of times the line quality was too poor to handshake successfully or transmit messages.

8 STATUS LOG INTERPRETATION

The status log keeps a record of significant events occurring throughout the server. When an event occurs, information about the event is logged as an individual status-log entry. Significant events include the following:

- A system restart
- An error reading or writing to a data file
- A task timing out
- A network message not being delivered

The status log is an important troubleshooting tool. Decoding status-log entries can help determine the cause of hardware or software problems. Significant failures often can be anticipated and prevented.

Each status-log entry contains information about the event and the status of the server at the time the event occurred. This information frequently includes

- The time the event occurred
- The software task involved
- Pointers to hardware components
- Control-bus messages

An entry might also include special information about the event, such as an associated mailbox number or file number. All of the information in an entry is intended to help establish what happened and why.

Terminology

The following common terms describe fields and data types in the status log:

- **Hexadecimal.** This numbering system uses a base 16 (as compared to decimal, which is a base-10 numbering system).
- **Hexadecimal digits.** These digits include 0 through 9, A, B, C, D, E, and F, for a total of 16 values. Each hexadecimal digit 0 through F corresponds to an equivalent set of four binary bits, 0000 through 1111.

  A number followed by an *h* in text indicates that the number is hexadecimal.
- **Byte.** A byte consists of two hexadecimal digits (8 bits).
- **Nibble.** A nibble is one half of a byte, or one hexadecimal digit.
  - **High-order nibble.** The leftmost hexadecimal digit in a byte
  - **Low-order nibble.** The rightmost hexadecimal digit in a byte
- **Word.** A word is the combination of two bytes.
- **Offset.** The position of a byte, based on a zero-reference point, is called the offset. Figure 8-1 shows how to count byte positions, or offsets, in a status-log entry. The first digit of the offset number is the fourth character of the 5-digit line number located at the left of the row. For example, the second line in the body is labeled ***00020***, so all its offsets begin with a 2. The second digit of the offset number is the column number, in hexadecimal, in the range 0 through F. Therefore, the offsets for line ***00020*** are 20 through 2F. In Figure 8-1, offsets 04–05 (row ***00000***, columns 4–5) contain ***612A***; offset 1C (row 00010, column C) contains ***D6***.

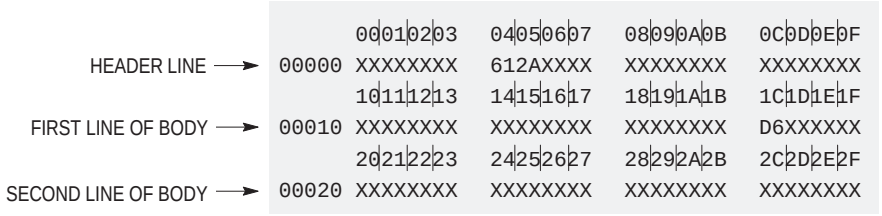


Figure 8-1. Offset Identification for Status-Code Entries.

Most multiple-byte fields are displayed in Intel order, with the most-significant byte shown to the right and the least-significant byte shown to the left. (This is the design used in Intel microprocessors.)

Most multiple-byte fields must have the bytes *transposed* (interchanged) before they can be interpreted. However, fields coded in ASCII, for example, mailbox numbers, do not need to be transposed. Refer to Figure 8-2 for examples of transposed bytes.

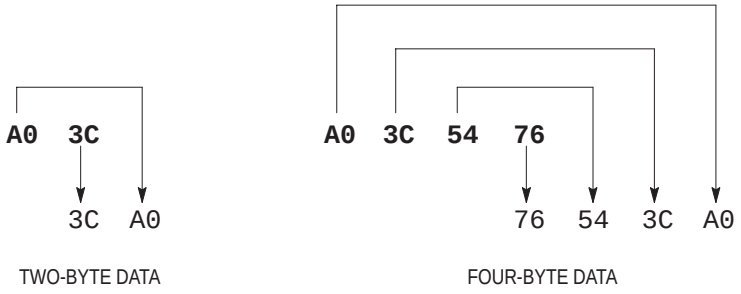


Figure 8-2. Transposing Bytes.

Structure

The status-log buffer can hold up to 2 KB of information. It operates as a ring buffer. As entries fill up the buffer space, they wrap around and overwrite the oldest entries.

The combination CPU/file (CCF) card maintains the status-log buffer. The buffer is written to system drives during a shutdown, and can be viewed in menus 13.2 and 13.3.

Status-log entries are from 16 to 255 bytes long. Because status-log entries vary in length, there is no specific number of entries that causes the status log to overflow.

The Status Log

This section includes the following information:

- ❑ Recommendations for how often to check the status log
- ❑ Instructions for displaying the status log
- ❑ Guidelines for decoding status log entries

When To Check the Status Log

Status-log entries can reveal an impending problem. Check the status log at the following times:

- ❑ **As a part of routine maintenance.** Some entries identify events that are unusual, but not necessarily significant. Others identify events that might be significant, such as the server restarting or the AMIS directory becoming 90% full. Servers that are currently operating normally can have log entries that indicate an unnoticed problem (for example, the server restarted for no known reason) or a developing problem (if the AMIS directory were to reach 100%, some network messages might not be sent).

- **Any time a problem occurs.** Many entries are generated by errors (though not necessarily errors caused by the server).
- **Periodically and frequently.** Because the status log has a fixed size (2 KB), it can fill up quickly. When the log is full, new entries overwrite the oldest entries. If those older entries have not been printed, their information is lost.
- **Any time external alarms are triggered.** Most status-log entries trigger non-service-affecting (NSA) or service-affecting (SA) alarms. External alarms are likely indicators that new entries have been logged.

How To Display the Status Log

You can display the status log from menu 13 while the server is on line or from menu 20 while the server is off line.

Displaying the Status Log From Menu 13

Menu 13.2, shown in Figure 8-3, is a snapshot of the status-log buffer for Aria 2.0. The status log can be printed and cleared from menu 13.2.

Menu 13.3 is a real-time view of the status-log buffer. New entries are displayed as they occur. The status log *cannot* be printed or cleared from menu 13.3.

Display and print the status log from menu 13.2, as follows:

1. Log into the SMT.
2. From the Main Menu, access Menu 13 – System Maintenance, then option 2 – Review Status Log. An inventory of the server's internal software levels is displayed, followed by the status-log entries in chronological order, starting with the oldest entry. Press the space bar to pause scrolling or to resume scrolling. Press ***Ctrl+C*** or ***Break*** to end scrolling. The beginning of the display and all printouts are similar to the example in Figure 8-3.
3. Press ***P*** to print a copy of the status log.
4. Press ***C*** to clear the contents of the status-log buffer.



Caution!

If you access the status log through a remote terminal, the port remains open as long as the status log is displayed. This condition could allow unauthorized entry. After viewing the status log, make sure to return the terminal to a blank screen, so that one would have to enter a password to gain access.

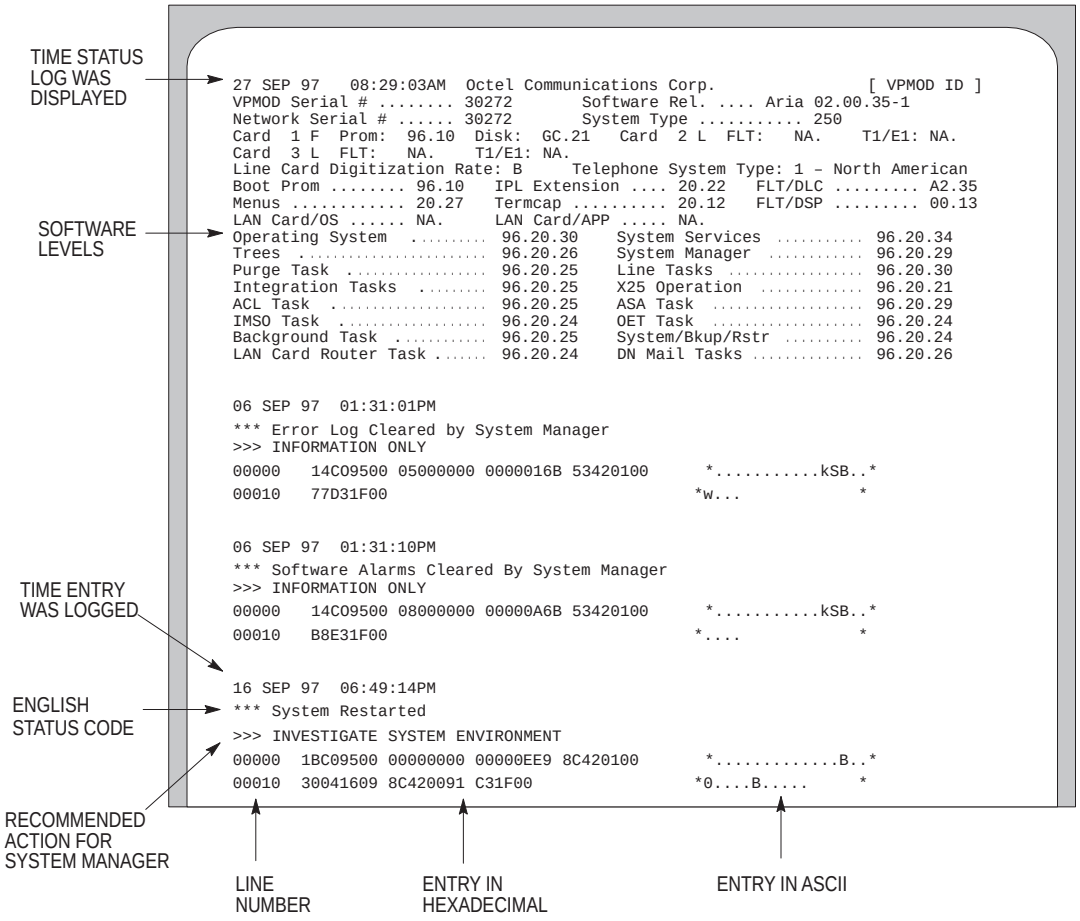


Figure 8-3. Example of Menu 13.2 or Offline Menu 20.9 Status-Log Display (Aria 2.0).

5. When you are finished, press ***Ctrl+C***, until the SMT returns to the Main Menu.
6. Review the printout of the status log to identify entries of interest.
7. Analyze the contents of the status-log entries to determine the sequence of events that led to a concern or a malfunction. It is often necessary to evaluate multiple status-log entries that occurred over a short or a long period of time.
8. If applicable, use the information in this chapter to decode the body of pertinent status-log entries to pinpoint the location of the problem.

Displaying the Status Log From Offline Menu 20

Offline menu 20.9 displays a snapshot of the status-log buffer (Figure 8-3). The status log can be printed and cleared from the offline menu 20.9.

Menu 20 can be displayed on only one terminal at a time. If menu 20 is displayed on the SMT, it cannot appear on any other terminals.

Display the status log from the offline menu 20, as follows:

1. Log into the SMT.
2. From the Main Menu, access Menu 13.1, Shut Down with Dump. Select either a graceful or immediate shutdown.
3. When the ***ENTER BOOT COMMAND:*** prompt appears, press ***Ctrl+D***, then ***U***. The offline menu 20 appears.
4. From menu 20, select option 9 – Display Status Log. An inventory of the server's internal software levels is displayed, followed by the status-log entries in chronological order, starting with the oldest entry. Press the space bar to pause scrolling or to resume scrolling. Press ***Ctrl+C*** or ***Break*** to end scrolling. The beginning of the display and all printouts are similar to the example in Figure 8-3.
5. Press ***P*** to print a copy of the status log.
6. Press ***C*** to clear the contents of the status-log buffer.
7. Press any key to return to menu 20.
8. Enter the number for the Exit option to return to the ***ENTER BOOT COMMAND:*** prompt.
9. Reboot the server with either a ***0*** or an ***A***.
10. Review the printout of the status log to identify entries of interest.
11. Analyze the contents of the status-log entries to determine the sequence of events that led to a malfunction. It is often necessary to evaluate multiple status-log entries that occurred over a short or a long period of time.
12. If applicable, use the information in this chapter to decode the body of pertinent status-log entries to pinpoint the location of the problem.

Understanding the Display

Selected parts of the status log shown in Figure 8-3 are described as follows:

- ❑ **Software levels.** This includes information such as the system name, serial number, system type, serial number, software-release level, and software-segment release levels.
- ❑ **Recommended action for system manager.** These recommendations are for the system manager. For details, refer to the "Entry Header" section, page 8-9.
- ❑ **Entry in hexadecimal.** This raw data is contained in the body of the status-log entry. These bytes define the problems.
- ❑ **Entry in ASCII.** This raw data, expressed in ASCII characters, is also contained in the body of the status-log entry. Periods are substituted for nonprintable characters (00 through 1F and 7F through FF). This form of the entry helps when reading data fields that are written in ASCII codes.

How To Interpret the Status Log

Table 8-1 summarizes the major steps for interpreting status logs.

Table 8-1. Steps in Status-Log Interpretation.

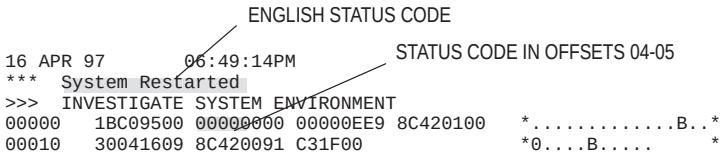
Step No.	Description	Refer to
	Find the Event Description	
1	Print the status log from menu 13.2 or offline menu 20.9.	The “How To Display the Status Log” section, page 8-4
2	Use the English status codes to identify entries, as shown in the following example. Also identify any entry that does not have an English status code.  	The “Entry Header” section, page 8-9
3	Identify the status code from offsets 04–05 in the entry of interest, and find the description in Table 8-18, at the end of this chapter.	Table 8-18
4	Check whether the status code is described in this chapter, using the footnotes of Table 8-18. If the status code is described in this chapter, continue to step 5. If not described, call the Octel Customer Services Center or your Octel distributor for information about the status code of interest.	Table 8-18
5	Identify the subcode, if any, from offsets 08–09. Refer to the section describing the status code of interest.	. . .
	Get More Information, as Needed	
6	Interpret the task ID in offset 02. The task ID tells what part of the software, and possibly which hardware component, was involved. Task IDs and line-task IDs are described in Table 8-19 and Table 8-20, on foldouts at the end of this chapter.	The “Entry Header” section, page 8-9, Table 8-19, and Table 8-20

Table 8-1. Steps in Status-Log Interpretation (Continued).

Step No.	Description	Refer to
7	If there are control-bus (CB) messages, ❑ Interpret the peripheral address in the Input/Output Request Block (IORB) header. ❑ Interpret the task ID in the control-bus messages. ❑ Identify the message types in the control-bus messages. (The task ID and peripheral address indicate the hardware component that was involved.)	The "Input/Output Request Block (IORB) Header" section, page 8-10, and the "Control-Bus (CB) Messages" section, page 8-11
8	Find the descriptions of the message types for various peripheral cards in Table 8-21, on a foldout at the end of this chapter. The message types in this table provide more detailed information about the event.	Table 8-21
9	Examine any other fields indicated in the status-code description.	. . .
	Continue Through the Log	
10	If there are more entries of interest, repeat steps 3 through 9. Take the corrective action recommended in the status-code description.	. . .
11	File the printout of the status log. The printouts form a long-term record of the server's operation.	. . .
12	Clear the status log after *all* entries have been accounted for.	The "How To Display the Status Log" section, page 8-4

⟹ **Important:** Fold out Table 8-19, Table 8-20, and Table 8-21, and leave them folded out for easy reference as you use this chapter.

Entry Format

The format of status-log entries includes the following standard parts:

- ❑ The *entry header* is the first part of every entry. It contains text messages, then the *header line* (line 00000) that includes the task ID, status code, and subcode that define the event.
- ❑ The *body* follows the header. Starting at line 00010, it provides more information, in a format that is determined by the task that logged the entry.

- The input/output request block header (*IORB header*) has information about an exchange of control-bus messages. The IORB header is often included in the body of an entry.
- *Control-bus messages* carry instructions and data between the CCF card and other parts of the server. Control-bus messages are often included in the body of an entry.

Figure 8-4 shows the location of various elements in an example of a status-log entry.

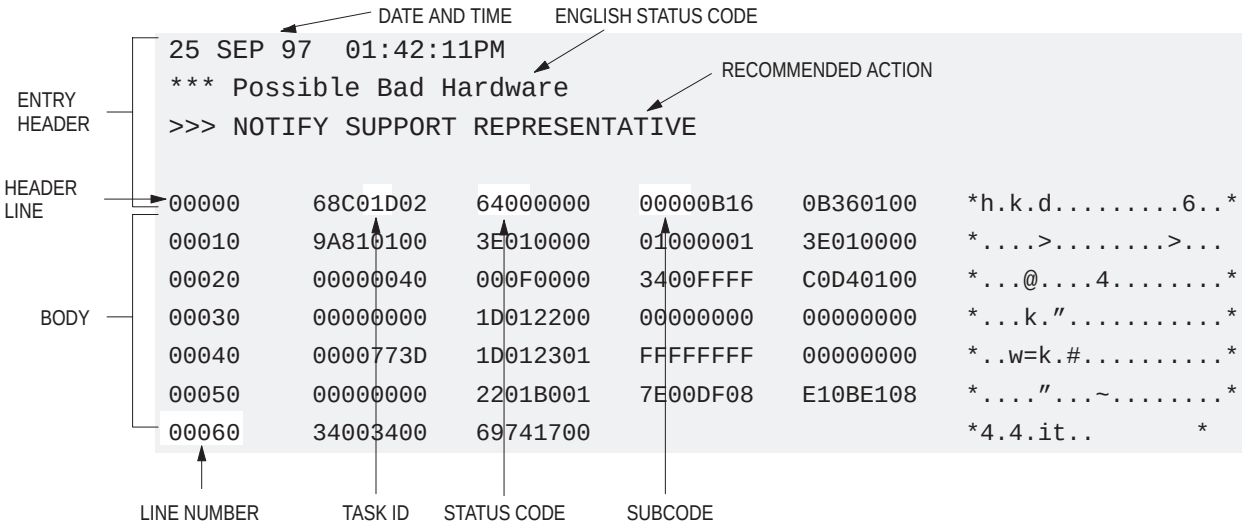


Figure 8-4. Example of a Status-Log Entry Showing the Header and Body Elements.

The following sections include more information about the entry header, the IORB header, and control-bus messages.

Entry Header

The first three lines of an entry header include the date and time the entry was logged, an English-language status code, and the recommended system-manager action.

The English status code allows system managers and service personnel to make decisions rapidly, without having to interpret hexadecimal codes. Not all entries include an English status code.

The recommended-action messages are as follows:

- **INFORMATION ONLY.** Status-log entries with this message require no action by you or the system manager. However, they do indicate events that could affect server operation.
- **MONITOR CLOSELY.** You should be aware of the condition, but you do not need to take immediate action. The entry defines potential problems or situations that could develop. You should decode the body of the entry to identify the specific hardware or circumstances to monitor.

- **INVESTIGATE SYSTEM ENVIRONMENT.** You should evaluate the entry to determine its cause and the appropriate corrective action.
- **NOTIFY SUPPORT REPRESENTATIVE.** You should decode and correct the cause of this entry, using information found in this chapter. If the entry is not described in this chapter, call the Octel Customer Services Center or your Octel distributor for assistance.

The first line of hexadecimal data (line 00000, the header line) is part of the entry header. Figure 8-5 illustrates the content of the header line. Note that the values shown in Figure 8-5 are *offset numbers*, not valid data.

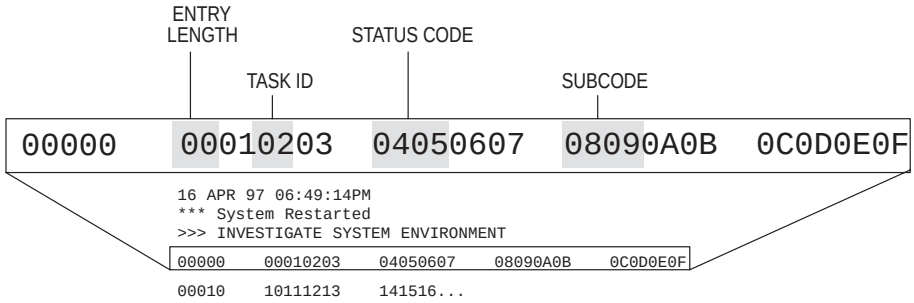


Figure 8-5. Standard Fields in the Status-Log Entry Header Line.

The key fields in the header line (Figure 8-5) are as follows:

- **Entry length (offset 00).** The number of bytes in the entry, in hexadecimal.
- **Task ID (offset 02).** Identifies the software task that generated the entry; also shown as the first byte of a CB message, if present. It often provides clues about which operation, card, or port has a problem. Use Table 8-19, on a foldout at the end of this chapter, to identify the task ID. Line task IDs are shown in Table 8-20, on another foldout at the end of this chapter.
- **Status code (offsets 04–05).** Identifies the event or class of events that caused the entry. Transpose the bytes in these two offsets to obtain the status code. Different tasks can log the same status code. Status codes are listed in numerical order in Table 8-18, located near the end of this chapter.
- **Subcode (offsets 08–09).** When applicable, provides additional information about the status code. Although the subcode is a two-byte field (offsets 08 and 09), the descriptions in this chapter usually refer only to offset 08, because offset 09 is usually zero and can be ignored. Not all status codes report a subcode; if there is no subcode, these offsets contain ***0000***.

Input/Output Request Block (IORB) Header

When control-bus (CB) messages are included in a status-log entry, an IORB header is also included. The IORB header provides information about an exchange of CB messages, including the peripheral address. Not all status-log entries contain an IORB header. *The location of the IORB header, when included in an entry, depends on the status code.*

The IORB header, which is 32 bytes long, precedes the CB messages in the status-log entry. Offsets 04–05 of the IORB header contain the peripheral address. Status-code descriptions in this chapter provide the location of the peripheral address within the IORB header, if present and relevant.

Figure 8-6 is an example of an IORB header, showing the structure and location of the peripheral address. The values shown are *offset numbers*, not valid data.

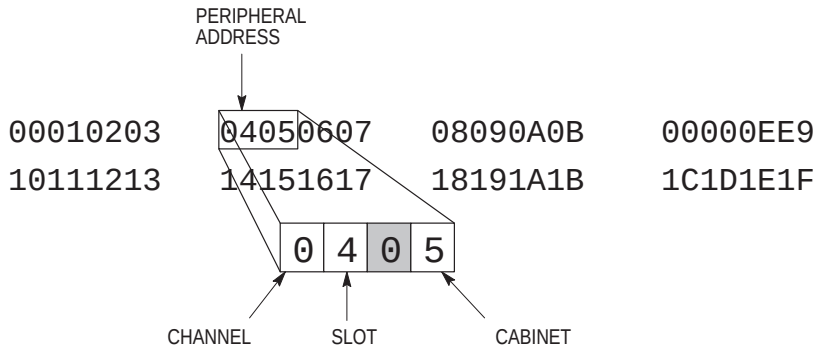


Figure 8-6. Peripheral Address in the IORB Header.

The peripheral address is the destination card with which the CCF card was communicating, using the CB messages included in the status-log entry. The peripheral address, identified by channel, slot, and cabinet, is described as follows:

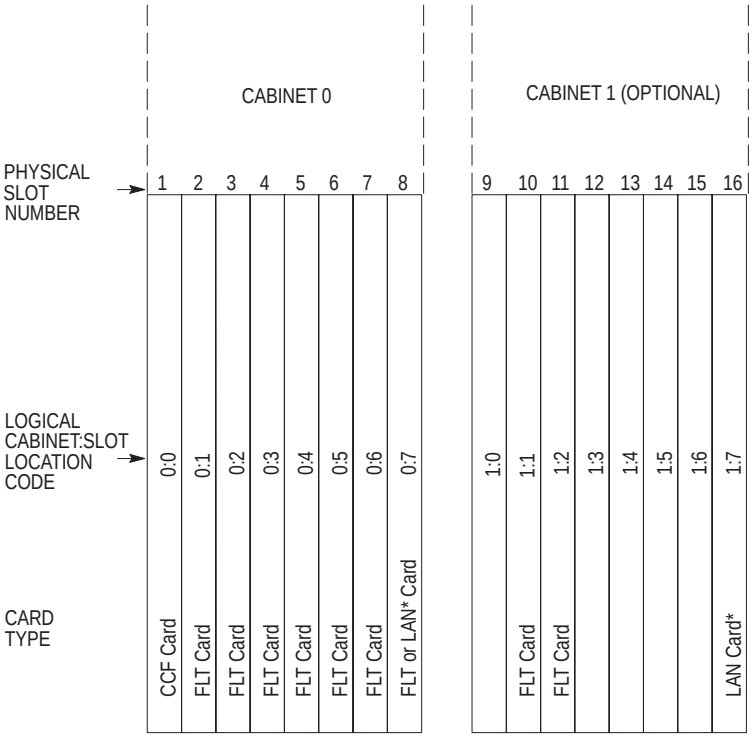
- **Cabinet.** In an Octel 250, the cabinet number, 0 or 1, is sometimes referred to as the bank number. Use the cabinet and slot assignments in Table 8-20 at the end of this chapter or Figure 8-7 to identify the destination card. If the destination card is an FLT card, use Table 8-20 to correlate the channel number and port number.
- **Slot.** A logical slot number that maps to the physical slot position of a card in a cabinet. The type of card in the identified slot depends on the system configuration. Each cabinet has 8 slots.
- **Channel.** A port on an FLT card. This field is not significant for other cards.

Control-Bus (CB) Messages

The CCF card uses CB messages to exchange instructions and data with other parts of the server. CB messages always appear in the status-log entries as a request (CB OUT) and response (CB IN) pair. Each CB OUT and CB IN message is 16 bytes long.

Most requests are issued by the CCF card; responses come to the CCF card from the destination card. If the CCF initiates a request and the peripheral card does not respond, the CB IN data is invalid.

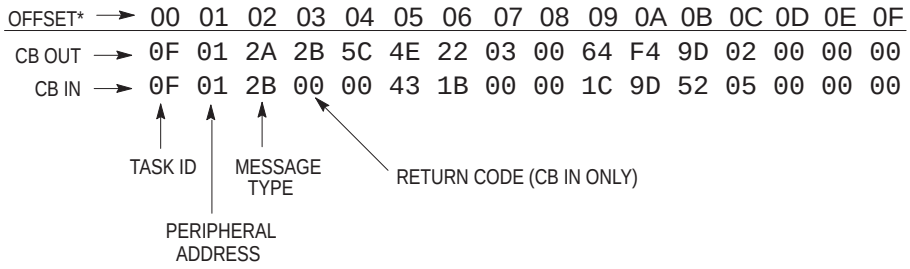
Other cards can initiate CB messages to the CCF card. If a card *other than* the CCF initiated the CB message, and a log entry occurred, the CB OUT data is invalid and the CB IN data reflects the request.



* Optional LAN card is in slot 8 for single-cabinet servers *or* slot 16 for dual-cabinet servers.

Figure 8-7. Card Locations and Cabinet:Slot Addresses for Octel 250.

Figure 8-8 is an example of a CB message pair.



* Within the CB message.

Figure 8-8. Example of a Control-Bus Message Pair.

The fields identified in Figure 8-8 are described and can be interpreted as follows:

- **Task ID (offset 00).** Identifies the task that produced the request message. When a CB message is embedded in a status-log entry, the task ID in the CB message is usually the same as the task ID shown in offset 02 of the entry header.

Table 8-19, on a foldout at the end of this chapter, lists all task IDs. It refers to Table 8-20, on another foldout at the end of this chapter, for a list of all line task IDs and their associated port IDs. Table 8-19 and Table 8-20 are used frequently; leave them folded out for easy reference.

In the example in Figure 8-8, the value ***0F*** in both CB OUT and CB IN falls within the range of line-task IDs, according to Table 8-19. Table 8-20 indicates that line task ***0F*** represents port 2H.

- **Peripheral address (offset 01).** Identifies the card with which the CCF card is communicating. The left nibble is the channel for FLT cards. The right nibble is the slot location within the bank (cabinet). Because the bank value is missing, this field's usefulness is limited. For messages initiated by the CCF, check offsets 04–05 of the IORB header for full destination information.

  In the example in Figure 8-8, the value ***01*** in both messages indicates cabinet 0 and slot 1. Instead of using this field, use the peripheral address located in offsets 04–05 of the IORB header. For this example, assume that the destination card indicated in the IORB header was the CCF card.

- **Message type (offset 02).** For CB OUT, identifies the command that the CCF card sent to the peripheral card. For CB IN, identifies the response from the peripheral card to the CCF, or a request from a peripheral card to the CCF. Table 8-21, on a foldout at the end of this chapter, lists the CB message types for various peripheral cards. In Table 8-21, use the section for the card identified by the peripheral address in the IORB header.

  Table 8-21 is used frequently; leave this table folded out for easy reference.

  In the example in Figure 8-8, the value ***2A*** in the CB OUT message identifies the CCF card's command to the destination card. According to Table 8-21, message type ***2A*** for a file system means *read message buffer.* The value ***2B*** in the CB IN message identifies the destination card's response. According to Table 8-21, message type ***2B*** means *read message buffer response.*

- **Return code (offset 03).** The return code appears only in CB IN messages. It indicates the success or failure of an operation. The meaning of the value in a return code varies with different status-log entries. Return codes are described for each status code, as necessary.

In summary, the task in this example was associated with port 2H, and the CCF card tried to read a message. Other information in the status-log entry, such as the status code, subcode, and peripheral address in the IORB header, combined with other, related entries, help identify the problem.

Not all status-log entries contain CB messages. *When status-log entries contain CB messages, the messages occur at different locations in the body of the status-log entry, depending on the status code.* However, CB OUT and CB IN message pairs often begin at offsets 34 and 44 or offsets 30 and 40. The location of the CB message, if present and relevant, is provided in each status-code description in this chapter. Sometimes only the CB IN message is valid.

Common Status-Log Entries

Status codes that commonly appear in the status log are described in this section. The descriptions include procedures for resolving the problems that generate the entries. The entries are listed by status code, in hexadecimal-numerical order. Call the Octel Customer Services Center or your Octel distributor to discuss any status codes that are not described in this chapter.

Status-Code 00

Status-code 00 is logged each time the server is restarted. A restart can be caused by a commercial power failure, a system-manager shutdown, or a major system failure. Figure 8-9 is an example of a status-code 00.

```
01 0CT 97  05:34:43PM
***System Restarted
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    1CC09500  00000000  00001C2B  976D0100
00010    41042320  976D0041  C4C54700
```

Figure 8-9. Example of Status-Code 00.

The key offsets in a status-code 00 are as follows:

- **Offset 10.** Indicates whether the system was booted with boot command A or 0. If the value is ***30***, the system was booted with a 0 (zero). If the value is ***41***, as shown in Figure 8-9, the system was booted with an A.

- **Offset 11.** Indicates why the system restarted. Table 8-2 lists the values that can be displayed in offset 11.

The example in Figure 8-9 indicates that the system manager shut down the system.

Correct the cause of a status-code 00, as follows:

- If status-code 00 appears frequently and the value in offset 11 is usually ***00*** or ***01*** (refer to Table 8-2), check the input power supply for correct input voltage. Repeated power failures can decrease the life of the system hardware.

- If the value in offset 11 is ***02*** or ***03*** (refer to Table 8-2), the system restarted because of a major malfunction. Correct the malfunction immediately. Check other entries that precede status-code 00 in the status log. You can use these entries to determine the events leading to the restart.

Table 8-2. Offset 11 Values for Status-Code 00.

Value	Description
00	Input power failure (brownout)
01	Input power failure (long)
02	Interrupt 3 (major system error)
03	Memory parity error
04	System manager shutdown
05	Red-line temperature NMI
06	Watchdog timer NMI
07	OPI ready error
08	CP was reset or undetermined error (power failure)
20	DS is not Task State Segment
40	System crash routine entered—SRAM considered to be OK
50	Unable to write SST
60	Unable to write Rec 50

When the server restarts, it sends a hexadecimal printout to the SMT and printer (if a printer is on line). The data is also written to record 50. If the server restarts because of a power failure, the SST validity check might not be printed, and record 50 might not be updated. If the server restarts because of a system manager shutdown, the SST validity check does not contain any significant information.

Status-Code 03

Status-code 03 indicates that someone called the modem port and hung up before accessing the server. Figure 8-10 is an example of a status-code 03.

```
13 JUL 97  02:32:09PM
*** Caller on Remote Access Hung Up Without Entering System
>>> INFORMATION ONLY
00000    56C09502  03000000  00000908  561C0100
00010    01010000  00000000  0000141C  00000000
00020    00000000  00000000  0000D4FC  46000000
00030    THRU 00040 CONTAIN 00
00040    00400001  003C0000  2000007A  0E37405E
00050    405EDD19  8031
```

Figure 8-10. Example of Status-Code 03.

Correct the cause of a status-code 03, as follows:

1. If status-code 03 appears frequently, change the telephone number for the modem port.
2. Make sure that the remote-access number is not a member of the system's hunt group.

Status-Code 05

Status-code 05 is for information only. It identifies the last time the status log was reset or cleared from menu 13.2 or the offline menu 20.9. This status code is always the first entry in the status log, unless the status-log buffer has overflowed. Figure 8-11 is an example of a status-code 05.

```
01 JUN 97  01:11:06PM
*** Error Log Cleared By System Manager
>>> INFORMATION ONLY
00000    14C09500  05000000  000006B7  2C360100
00010    619A1F00
```

Figure 8-11. Example of Status-Code 05.

Status-Code 08

Status-code 08 is for information only. It indicates that the software alarms were cleared in menu 13.8, Review Current Alarm Status. Figure 8-12 is an example of a status-code 08.

```
01 JUN 97  01:11:32PM
*** Software Alarms Cleared By System Manager
>>> INFORMATION ONLY
00000    14C09500  08000000  00001956  29450100
00010    B8E31F00
```

Figure 8-12. Example of Status-Code 08.

Status-Code 21

Status-code 21 is for information only. It indicates that an SMDI protocol error occurred. Offsets 11–15 contain counts of various error types, as shown in Figure 8-13, an example of a status-code 21.

```
01 JUN 97  01:11:32PM
*** SMDI Protocol Error
>>> INFORMATION ONLY
00000    20C00E00  21000000  0100340C  776D0100
00010    000C0000  00007407  000071BB  03008900
```

Figure 8-13. Example of Status-Code 21.

The key offsets in a status-code 21 are as follows:

- **Offset 08.** Integration link (00 through 0F).
- **Offset 11.** Number of occurrences of a ring on a port with no integration message.
- **Offset 12.** Number of occurrences of an incomplete message.
- **Offset 13.** Number of occurrences of a parity error.
- **Offset 14.** Number of occurrences of an overrun error.
- **Offset 15.** Number of occurrences of a framing error.

To correct the cause of a status-code 21, use menu 6.5.6, Integration Link Status, to obtain detailed error information.

Status-Code 24

Status-code 24 is generated by events that occur when the server uses an X.25 data link to communicate with an external applications processor (EAP).

EAP applications include any of the data-module applications, such as TransAct™, CSA™, and FaxCall™. External applications that communicate with the server by using Octel Command Language (OCL™), a proprietary X.25-programming language, are also EAP applications.

Figure 8-14 is an example of a status-code 24.

```
01 SEP 97 12:30:21PM
***EAP Related Error
>>> MONITOR CLOSELY
00000    3AC0A400   24000000   080015EE   9D550100
00010    36000000   4D000000   80000000   4E000000
00020    00000000   4F000000   00000000   50000000
00030    84040000   EF1E0300   8900
```

Figure 8-14. Example of Status-Code 24.

The key offsets in a status-code 24, described in Table 8-3, are as follows:

- **Offset 08.** Subcode.
- **Offset 12.** Supplemental status code.
- **Offsets 18–1B.** Error value, obtained by transposing these bytes.

Table 8-3. Data Fields in Status-Code 24.

Offset	Field Name	Field Value	Field Description
08	Subcode	01	Data-exception error
		02	Function error
		03	Protocol error
		04	Session error
		05	Time-out error (error value in offsets 18–1B is 76)
		06	EAP non-service-affecting error
		07	EAP service-affecting error
		08	Facility error
12	Supplemental status code	00	No specific value logged
		01	App queue error
		02	OCL queue error
		03	Dummy queue error
		04	App table error
		05	LUN (logical unit number) table error
		06	Line table error
		07	Act table error
		08	LCL app-table error
		09	LCL line-table error
		0A	Add app error
		0B	Add line error
		0C	XLUN table error
		10	Unknown serial number received
		11	Missing serial number
		12	Record length too short
		13	Bad command within packet header
		14	Bad packet header received
		15	Bad parameter received

Table 8-3. Data Fields in Status-Code 24 (Continued).

Offset	Field Name	Field Value	Field Description
12 (cont'd)	Supplemental status code	16	Invalid application number or password in SIGNON
		17	Invalid application number in READY record
		C3	Application number does not exist
		C4	OCL is not up
		C5	OCL interface-routine internal error
		C6	All logical unit numbers (LUNs) for the requested application number are busy
		C7	Low LUNs for the requested application number
		C8	Buffer overflow; LUN will be cleared
		C9	LUN is cleared
		CA	Operation time-out; LUN will be cleared
		CB	LUN already open; ACL_CLOSE must be called first
		CC	ACL_INIT already performed
		CD	Successful ACL_OPEN call not performed
		CE	ACL_INIT call not performed
18–1B	Error value	00	No specific value logged
		01	Incorrect command-header length
		02	Unknown command type
		03	Unexpected command modifier
		04	Invalid command received
		05	Illegal parameter type
		06	Parameter not valid with this command
		07	Required parameter missing
		08	Parameter value out of range
		09	String length incorrect
		0A	Variable-length value incorrect
		0B	Nondigit found in digit string
		0C	Inconsistent data

Table 8-3. Data Fields in Status-Code 24 (Continued).

Offset	Field Name	Field Value	Field Description
18–1B (cont'd)	Error value	0D	Not an ASCII string
		0E	Conflicting parameters
		6E	X.25 task not ready
		6F	OCL task not ready
		80	X.25 communication link down; line number logged at offset 12
		81	X.25 communication link up; line number logged at offset 12
		FC	Completion code not received from ACL_WRITE
		FD	Completion code not received from ACL_READ
		FE	Completion code not received from ACL_OPEN
		FF	Server internal error

Correct the cause of a status-code 24, as follows:

1. Decode all significant bytes, as described in Table 8-3.
2. For status-code 24 with subcodes 01 through 04, call the Octel Customer Services Center or your Octel distributor for assistance.
3. For status-code 24 with subcodes 05 through 08, access menu 18.2 to check the status of the X.25 port.
   - ❑ If the status message ***PHYSICAL (1) STARTED*** is displayed in menu 18.2, the physical link from the X.25 port to the EAP has been disconnected. Make sure that the X.25 link is connected to the X.25 port on the distribution board. Notify the EAP administrator that the X.25 link has failed at the physical level, even if connecting the link corrects the problem.
   - ❑ If the status message ***FRAME (2) STARTED*** is displayed in menu 18.2, the frame layer of the X.25 link is not configured correctly. Notify the EAP administrator that the X.25 link has failed at the frame layer.

Status-Codes 50 Through 58 and 5D

One of the status-codes 50 through 58 or status-code 5D is logged if the CCF card does not receive an expected CB message from a card within a predetermined timeout period. These status codes also are logged if the CB message from a logic card contains errors. The length of the status-code entry varies, depending on the status code. Figure 8-15 is an example of a status-code 50.

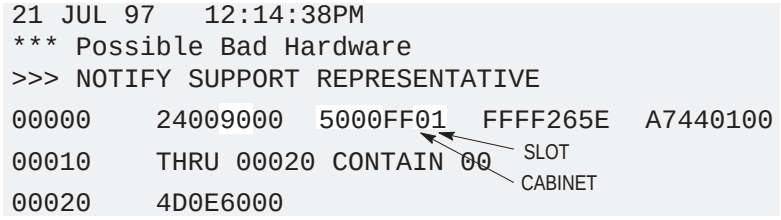


Figure 8-15. Example of Status-Code 50.

The key offsets in status-codes 50 through 58 and 5D are as follows:

- **Offset 02.** Task ID. Identify the task by using Table 8-19, at the end of this chapter.
- **Offset 07.** Cabinet and slot location of the affected card. The left nibble represents the cabinet, the right nibble represents the slot. Identify the affected card by referring to Figure 8-7 on page 8-12 or Table 8-20 at the end of this chapter.

  In the example in Figure 8-15, logical cabinet 0, slot 1 is physical slot 2 in the first cabinet, which contains an FLT card.

Status-code 57 (control-bus error; reset peripheral) usually follows a status-code 51, 54, or 58 entry in the status log. If an error occurs, the CCF card sends the CB message again.

Correct the problem, as follows:

- If one of these status codes is logged, monitor the indicated card closely.
- If multiple status codes are logged that indicate the same card, refer to Chapter 11 and replace the card.
- If multiple status codes are logged that indicate various cards, refer to Chapter 11 and replace the CCF card.

Status-Code 60

A status-code 60 gives the status of installed logic cards. The length of the status-code 60 entry varies, depending on the subcode logged in offsets 08 and 09. Figure 8-16 is an example of a status-code 60.

```
20 OCT 97   05:49:31PM
*** Hot Plug/Status Error
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    10009E00  60000003  00001F6D  51450100
```

Figure 8-16. Example of Status-Code 60 With Subcode 00.

The key offsets in a status-code 60 are as follows:

- **Offsets 08–09.** Transpose these bytes to obtain the subcode, described in Table 8-4. Depending on the subcode, additional information is included in the entry.

  In the example in Figure 8-16, subcode ***00*** indicates that a failing logic card was detected. For subcode 00, offsets 06–07 show that the physical slot number of the failing card is ***03***.

Table 8-4. Subcodes (Offsets 08–09, Transposed) for Status-Code 60.

Subcode	Description	Additional Fields
00	Logic card is not responding.	Offsets 06–07: Physical slot of card, in hexadecimal.
01	Logic card was uploaded and is running.	Offsets 06–07: Physical slot of card, in hexadecimal.
02	Line task was aborted by daemon task because of card failure.	Offsets 06–07: Task ID of aborted task.
03	Logic-card diagnostic test failed. Length of status-log entry varies with the number of tests that failed.	Offset 06: Card type. Refer to the *Status Log Interpretation Guide*, if necessary. Offset 07: Physical slot of card. Offset 10–11: ID of failed tests; number of IDs depends on number of tests that failed.
04	Logic card failed to upload. The CB messages are the last messages to the card.	Offsets 06–07: Physical slot of card, in hexadecimal. Offset 10: CB OUT message. Offset 20: CB IN message. Offset 30–31: upload error.
05	No FLT card was found.	None

Correct the cause of a status-code 60, as follows:

1. Identify the subcode in offsets 08–09. Refer to Table 8-4.
2. Depending on the subcode, check any additional bytes identified in Table 8-4.
3. If the indicated card is an FLT or a LAN card, perform the following steps:
   a. Use menu 13.11 to disable the card.
   b. Reseat the card (with power on) when the SMT tells you to replace it.
   c. Use menu 13.11 to enable the card.
   d. If the card is initialized correctly, monitor it closely for additional failures.
   e. If the card is not initialized or if it continues logging errors in the status log, refer to Chapter 11 and replace the card.

4. If the indicated card is a CCF card, perform the following steps:

   a. Schedule a system restart to initialize the card again.

   b. Monitor the boot process to determine whether the affected card is initialized successfully.

   c. If the card is not initialized, refer to Chapter 11 and replace the card.

Status-Code 64

Status-code 64 indicates an error in the interface between the file system software and the CP software. Figure 8-17 is an example of a status-code 64 entry in the 68*h*-byte format. There is also an 82*h*-byte format. The length of the entry is shown in offset 00.

```
17 AUG 97  08:44:27AM
*** Possible Bad Hardware
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    68C01D02  64000000  00001B6C  3E450100
00010    8AEE0100  A2000000  00000001  A2000000
00020    00000040  001D0000  5400FFFF  C0D40100
00030    00000000  1D002200  00000000  00000000
00040    0000373E  1D002301  FFFFFFFF  00000000
00050    00000000  2200B001  0000E10C  E30CD014
00060    54005400  CD791F00
```

Figure 8-17. Example of Status-Code 64 (68*h*-byte format).

Use one of the following to correct the problem:

- ❑ If a single status-code 64 is logged, monitor the CCF card closely.
- ❑ If multiple status-code 64 entries are logged, refer to Chapter 11 and replace the CCF card.

Status-Code 65

Status-code 65, line-card protocol error—restart system or session/task, appears in the status log when there is a problem with a port or an extension. Figure 8-18 is an example of a status-code 65 entry in the 68*h*-byte format. There is also an 82*h*-byte format. The length of the entry is shown in offset 00.

```
10 AUG 97 06:56:32PM
*** Possible Bad Hardware
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    68C00A02  65000000  00002070  19450100
00010    00000000  7A000000  22000001  7A000000
00020    00000008  00150000  4400FFFF  C0D40100
00030    00000000  0AA005B0  04000000  00000000
00040    00000000  0AA045F0  00000000  00000000
00050    00000000  00006315  0000E10C  72157402
00060    44004400  95711F00
```

Figure 8-18. Example of Status-Code 65 (68*h*-byte format).

The key offsets in a status-code 65 are as follows:

- **Offset 02.** Task ID. Identify the port by using Table 8-20, at the end of this chapter.

  In the example in Figure 8-18 and according to Table 8-20, the value of ***0A*** in offset 02 indicates port 2C on the FLT card in slot 3.

- **Offset 34 (68*h*-byte format) or 30 (82*h*-byte format).** Beginning of CB OUT message.

  Offset 36 (68*h*-byte format) or 32 (82*h*-byte format) contains the CCF card's command to the peripheral card. For a list of message types for various peripheral cards, refer to Table 8-21, at the end of this chapter.

Status-code 65 is often caused by extension problems. For example,

- If the entry indicates a failure to seize a port (message-type ***05*** in offset 36), the extension terminations might be reversed or the extension might be busied-out in the PBX.
- If the entry indicates a failure to go on hook (message-type ***03***), the extension might have a tip grounded on the line.

Correct the cause of a status-code 65, as follows:

1. Test the affected extension on the PBX and exchange it with a known good extension to determine whether the problem follows the extension or stays with the port on the FLT card.
   - If the problem follows the extension you moved, reestablish the original configuration and check the PBX.
   - If the problem stays with the FLT card, continue to step 2.
2. If multiple status-code 65 entries appear, determine whether ports on a single FLT card are affected.
   - If a single FLT card is affected, refer to Chapter 11 and replace the card.
   - If ports on various FLT cards are affected or if status-code 65 entries continue to appear after an FLT card is replaced, make sure that the lines connected to the indicated ports are not busied-out in the PBX.

Status-Codes 6C Through 6E

Status-codes 6C, 6D, and 6E are logged by a line task to report invalid data in a user record. A user record is the data structure used to contain database structures, such as mailboxes (all types), network profiles, attendant schedules, and community profiles.

If the damaged user record is a mailbox, callers to the mailbox might hear an area-of-interest (AOI) notification or invalid-mailbox-number prompt while trying to access the mailbox.

Status-codes 6C, 6D, and 6E have the same structures. Figure 8-19 is an example of a status-code 6C.

```
10 OCT 97  03:24:03PM
*** Damaged User Record
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    68C00202  6C000000  000033EE  8B6F0100
00010    8E090000  0A030000  06000001  0A030000
00020    00000010  0C2B0000  64000200  C0D40100
00030    00000000  0600FFFF  03930000  10000000
00040    00000000  00062900  00100000  00000000
00050    00000000  9300EBEB  1F080100  720F0000
00060    64006400  0BED2700
```

Figure 8-19. Example of Status-Code 6C.

The key offsets in status-codes 6C through 6E are as follows:

- **Offset 02.** Task ID. Identify the port by using Table 8-20, at the end of this chapter.

  In the example in Figure 8-19 and according to Table 8-20, the value of ***02*** in offset 02 indicates port 1C on the FLT card in slot 2.

- **Offsets 54–55**. Transpose these bytes to obtain the internal user number (IUN) of the damaged user record.

  In the example in Figure 8-19, the damaged user record is ***0093*** (offsets 54–55, transposed).

The damaged user record must be repaired. Call the Octel Customer Services Center or your Octel distributor immediately for assistance with repairing the damaged user record.

Status-Codes 70 and 72

Status-codes 70 and 72 are logged when drive errors occur. Status-code 70 appears during a disk-write operation and indicates a file-system-drive I/O error. Status-code 72 appears during a disk-read operation and indicates a scramble-code error or I/O error during a message-read operation. Status-codes 70 and 72 can be logged for any drive. A subscriber hears a deletion notification or an area of interest (AOI) message when these errors occur.

Figure 8-20 is an example of a status-code 72. The highlighted bytes are the significant bytes for both status-code 70 and status-code 72.

```
11 AUG 97 08:18:19AM
*** Scramble Code Error
>>> MONITOR CLOSELY
00000    68C00E02  72000000  000009E7  F2430100
00010    2FFC0100  3B010000  00000001  3B010000
00020    00006E04  00180000  5C00FFFF  C0D40100
00030    00000000  0E001A00  8042A112  05000000
00040    00000000  0E001B01  00000000  00000000
00050    00000000  F40450F5  00806E1C  6E1C791C
00060    5C005C00  E2652F00
```

Figure 8-20. Example of Status-Code 72.

The key offsets in status-codes 70 and 72 are as follows:

- **Offset 34.** Beginning of CB OUT message.
  - Offset 36 displays the CCF card's command to the peripheral card. For a list of message types for various peripheral cards, refer to Table 8-21, at the end of this chapter.
  - Offset 37 reports the affected drive in the high-order (leftmost) nibble.
- **Offset 44.** Beginning of CB IN message.

  Offset 47 contains a return code that indicates the reason the file system could not perform its function. Refer to Table 8-5 for a list of offset 47 values.

  In the example in Figure 8-20, offset 47 indicates an unrecoverable drive error.

Table 8-5. Return Codes (Offset 47) for Status-Codes 70 and 72.

Return Code	Description
01	Unrecoverable drive error
02	Scramble-code error (software error or deleted message)
04	Use count at zero (software error or deleted message)
06	DMA timeout on previous operation; system reboot required

Correct the cause of a status-code 70 or 72, as follows:

1. If multiple 70 and 72 status-code entries indicate different drives, replace the CCF card. Refer to Chapter 11 for the procedure for replacing a CCF card. If the same drive is indicated repeatedly, continue to step 2.

2. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
3. From Menu 20 – Service Operations, enter the number for SMT Debug Utilities, and press ***Enter***.
4. At the > prompt, type ***reformat***.
5. Run validity checks (reformat options 0, 10, and 11).
6. Run garbage collect on the affected drive (use the Miscellaneous Utilities option in menu 20). If any errors occur, call the Octel Customer Services Center or your Octel distributor. Do *not* run the second pass.
7. Shut down the server (menu 13.1).
8. At the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D***, then ***T***, to access the drive-test utility menu, and run a long drive test on the affected drive (refer to Appendix A for procedures).
   - ❑ If the drive test fails, enter ***Ctrl+C*** to exit the debug utilities. Refer to Chapter 11 and replace the drive.
   - ❑ If the drive test passes, monitor that drive. Enter ***Ctrl+C*** to exit the debug utilities. Reboot the server with a ***B***, then with an ***A*** to return the server to normal operation.

Status-Code 75

Status-code 75, line-task seize-line timeout, appears in the status log when there is a problem with a port or an extension. Figure 8-21 is an example of a status-code 75.

```
13 AUG 97  01:07:32PM
***Scanner Read/Response Timeout
>>>MONITOR CLOSELY
000000    68C04602   75000000   00002292   F5440100
000010    00000000   EF000000   A2020001   EF000000
000020    00000008   00150000   5400FFFF   C0D40100
000030    00000000   46A205B0   04000000   00000000
000040    00000000   46A24510   00000000   00000000
000050    00000000   00006315   00000000   72157402
000060    54005400   A2711700
```

Figure 8-21. Example of Status-Code 75.

The key offsets in a status-code 75 are as follows:

- ❑ **Offset 02.** Task ID. Identify the port by using Table 8-20, at the end of this chapter.

  In the example in Figure 8-21 and according to Table 8-20, the value of ***46*** in offset 02 indicates port 9G on the FLT card in slot 11.

- **Offset 34.** Beginning of CB OUT message.

  Offset 36 displays the CCF card's command to the peripheral card. For a list of line-card message types, refer to Table 8-21, at the end of this chapter.

- **Offset 44.** Beginning of CB IN message.

  Offset 46 displays the peripheral card's response in the form of a message type. Refer to Table 8-21, at the end of this chapter.

Status-code 75 entries can be caused by extension problems. The status-code 75 entry typically indicates a failure to seize a port or to go on-hook. The extension terminations might be reversed, the extension might be busied-out in the PBX, or the extension might have a tip grounded on the line.

Correct the cause of a status-code 75, as follows:

1. Test the extension associated with the failing port, and exchange it with a known good extension to determine whether the problem follows the extension or stays with the port on the FLT card.
   - If the problem follows the extension you moved, reestablish the original configuration and check the PBX.
   - If the problem stays with the FLT card, continue to step 2.
2. If multiple status-code 75 entries appear, determine whether ports on a single FLT card are affected.
   - If a single FLT card is affected, refer to Chapter 11 and replace the card.
   - If ports on various FLT cards are affected or if status-code 75 entries continue to appear after an FLT card is replaced, make sure that the lines connected to the indicated ports are not busied-out in the PBX.

Status-Code 84

Status-code 84 is logged if a caller tries to access a mailbox and enters the incorrect password a number of times during one session. The server disconnects the caller after a predetermined number of attempts. The system manager can set the maximum number of attempts allowed to one, two, or three in menu 1.2. Three attempts is the default setting.

Status-code 84 helps the system manager detect possible unauthorized activity in the server. When adding many new subscribers, the bad-password-disconnect error (but not the disconnection itself) can be disabled by using menu 13.9. When new subscribers have had the opportunity to become accustomed to their mailboxes and passwords, the error logging can be reenabled.

Figure 8-22 is an example of a status-code 84.

```
29 SEP 97  10:48:19PM
*** Illegal Number of Bad Password Attempts Accessing Mailbox
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    24C01500    84000000    000013B8    23360100
00010    810D0000    5A010100    02000794    56221000
00020    462A2700
```

Figure 8-22. Example of Status-Code 84.

The key offsets in a status-code 84 are as follows:

- **Offsets 16–17.** Transpose these bytes to obtain the number of disconnects from the mailbox during the current statistical reporting period. Each time a caller is disconnected because of an incorrect password, a new status-code 84 is logged and this field is incremented. This value continues to increment until the end of the current statistical reporting period set in menu 14.5, when it is reset to 0.
- **Offsets 18–19.** Transpose these bytes to obtain the maximum number of password attempts allowed, as set in menu 1.2.
- **Offset 1A.** Number of digits in a mailbox.
- **Offsets 1B–1F.** Mailbox number, in decimal, up to 10 digits long. If the mailbox number has fewer than 10 digits, ***F***s, ***0***s, or random characters are used to fill in the unused bytes. The number of digits in the mailbox number is in offset 1A. In the example in Figure 8-22, the mailbox number is ***7*** digits long and it is ***9456221***.

Status-Code 85

Status-code 85 is logged if a subscriber exits his or her mailbox without listening to new, unheard messages and the unheard-messages reminder is enabled in the subscriber's mailbox profile. Figure 8-23 is an example of a status-code 85.

```
22 SEP 97  12:00:06PM
*** Subscriber Exited With Unheard Messages
>>> INFORMATION ONLY
00000    24C01500    85000000    000013B8    23360100
00010    810D0000    5A000000    02000726    32621000
00020    462A2700
```

Figure 8-23. Example of Status-Code 85.

The key offsets in a status-code 85 are as follows:

- **Offset 1A.** Number of digits in a mailbox.
- **Offsets 1B–1F.** Mailbox number, in decimal form, up to 10 digits long. If the mailbox number has fewer than 10 digits, ***F***s, ***0***s, or random characters are used to fill in the unused bytes. The number of digits in the mailbox number is in offset 1A. In the example in Figure 8-23, the mailbox number is ***7*** digits long and is ***2632621***.

Status-Code 86

Status-code 86 occurs when a line task does not send a response to the CCF card's CB OUT message. The CB IN message shown in the entry is usually clearly inappropriate as a response. The error is followed by a reset command to the port. Figure 8-24 is an example of a status-code 86.

```
08 JUL 97  01:30:01PM
*** Possible Bad Line Card
>>> NOTIFY SUPPORT REPRESENTATIVE
000000   CFC00202  86000000  0000018A  5E440100
000010   00000000  9F000000  21000001  9F000000
000020   00000050  00000000  0000FFFF  20BF0200
000030   00000000  02208400  00000000  00000000
000040   00000000  02209404  00000000  00000000
000050   009A6E81  018A9105  00000000  00007402
000060   5C005C00  B1B11F00  00000000  00000000
000070   THRU 000C0 CONTAIN 00
0000C0   00000000  00000000  00000000  000000
```

Figure 8-24. Example of Status-Code 86.

The key offset in status-code 86 is as follows:

- **Offset 02.** Task ID. Identify the port by using Table 8-20, at the end of this chapter.

  In the example in Figure 8-24 and according to Table 8-20, the value of ***02*** in offset 02 indicates port 1C on the FLT card in slot 2.

Correct the cause of a status-code 86, as follows:

- If a single entry is logged, monitor the indicated port and the status log for additional errors caused by the port.
- If multiple entries are logged for the same port or for multiple ports on one FLT card, perform the following steps:

  1. Use menu 13.11 to disable the card.
  2. Reseat the card (with power on) when the SMT tells you to replace it.
  3. Use menu 13.11 to enable the card. If the card is initialized correctly, monitor it closely for additional failures.
  4. If additional status-log entries are logged for the same FLT card, refer to Chapter 11 and exchange the FLT card with another FLT card. If the problem follows the FLT card, replace it.
  5. If the problem does not follow the FLT card, call the Octel Customer Services Center or your Octel distributor.

Status-Code 90

A status-code 90 appears in the status log when an outcalling command was generated, but no outcalling telephone number exists in the subscriber's outcall schedule. For example, if a subscriber enables outcalling in the mailbox but the system manager has deleted the outcalling telephone number in menu 9.1, a status-code 90 is logged. Figure 8-25 is an example of a status-code 90.

```
09 JUL 97  08:00:32AM
*** Missing Outcalling number
>>> MONITOR CLOSELY
000000   1EC00300  90000000  000020E0  62440100
000010   86040100  046257FF  FFFFF4F3  2700
```

Figure 8-25. Example of Status-Code 90.

The key offsets in a status-code 90 are as follows:

- **Offsets 12–13.** Transpose the bytes to obtain the outcall schedule. After transposing bytes, ***0000*** = temporary schedule, ***0001*** = first schedule, ***0002*** = second schedule.
- **Offset 14.** Number of digits in the mailbox number.
- **Offsets 15–19.** Mailbox number, displayed as an ASCII-character string, up to 10 digits long. Unused offsets are filled with ***F***s, ***0***s, or random characters.

In the example in Figure 8-25, the outcall schedule is ***0001***, or *schedule 1*, there are ***4*** digits in the mailbox, and the mailbox number is ***6257***.

Use one of the following methods to correct the cause of a status-code 90:

- If the subscriber does not use outcalling, instruct the subscriber to disable outcalling in his or her mailbox.
- If the subscriber uses outcalling, instruct the subscriber to enter a telephone number in the indicated schedule.
- Enter an outcalling number for the subscriber's mailbox, using menu 9.1.

Status-Codes 98 Through 9A

Status-codes 98, 99, and 9A are typically logged by the purge task. They report that the purge task found invalid data in a user record. A user record is the data structure used to contain database structures, such as mailboxes (all types), network profiles, attendant schedules, and community profiles.

If the damaged user record is a mailbox, callers to the mailbox might hear an area-of-interest (AOI) notification or invalid-mailbox-number prompt while trying to access the mailbox.

Status-codes 98, 99, and 9A have the same structures. Figure 8-26 is an example of a status-code 98.

```
10 OCT 97  03:24:03PM
*** Damaged User Record
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    66C09D02  98000000  000003DC  5F360100
00010    27000000  00000001  27000000  00000028
00020    00280000  2C000200  C0D40100  00000000
00030    0100FFFF  049E0500  28000000  00000000
00040    4A012900  00280000  00000000  00DE483E
00050    9E059E05  00284038  12008C02  6B132C00
00060    2C00E04F  1F00
```

Figure 8-26. Example of Status-Code 98.

The key offsets in status-codes 98, 99, and 9A are as follows:

- **Offset 02.** Task ID. Identify the task by using Table 8-20, at the end of this chapter.

  In the example in Figure 8-26 and according to Table 8-20, the value of ***9D*** in offset 02 indicates the purge task.

- **Offsets 50–51**. Transpose these bytes to obtain the internal user number (IUN) of the damaged user record.

  In the example in Figure 8-26, the damaged user record is ***059E*** (offsets 50–51, transposed).

The damaged user record must be repaired. Call the Octel Customer Services Center or your Octel distributor immediately for assistance with repairing the damaged user record.

Status-Code CD

A status-code CD is logged when a hard or soft disk error is encountered during drive tests or disk read-and-write operations. Figure 8-27 is an example of a status-code CD.

```
10 AUG 96  04:54:31PM
*** Error on Disk Drive
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    64C09E02   CD000000   00001FF6   18450100
00010    64000000   01000001   64000000   00000002
00020    F6030000   3400FFFF   00E00100   00000000
00030    93015812   00000000   00000000   00000000
00040    9301590C   30C30202   E3010B07   10000000
00050    0228A005   0700FF0F   A80E0000   34003400
00060    F90D1F00
```

Figure 8-27. Example of Status-Code CD.

The key offset in a status-code CD is as follows:

- **Offset 47.** Affected drive.

Use one of the following to correct the cause of a status-code CD:

- If only one CD error occurred during the past week, monitor the server for further CD errors, and evaluate other status-log entries.
- If multiple CD errors indicate more than one drive, refer to Chapter 11 and replace the CCF card.
- If multiple CD errors indicate a single drive, refer to Chapter 11 and replace the drive. (If the Octel 250 has only one drive, the problem could be the drive or the CCF card.)

Status-Code CE

A status-code CE indicates that a drive was found that is not running. The server logs a status-code CE if the minute task finds a drive that is not running (that is, the minute task does not receive a response from that drive). Menu 12 shows which drive is not running.

If the drive that failed is a message drive, status-code 72 entries are logged each time subscribers try to review messages stored on the failing drive.

Figure 8-28 is an example of a status-code CE.

```
25 AUG 97  10:41:33AM
*** Disk Drive Has Been Taken Out Of Service
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    64C09E02    CE000000    000020A7    ED440100
00010    53000000    01000001    53000000    0000000A
00020    F6030000    3400FFFF    00E00100    00000000
00030    9E014400    00000000    00000000    00000000
00040    9E014507    05010014    F871EA00    00000000
00050    6F007F00    0700FF0F    A80E0000    24002400
00060    3E0E1F00
```

Figure 8-28. Example of Status-Code CE.

The key offsets in a status-code CE are as follows:

- **Offset 40.** Beginning of CB IN message.
  - Offset 43 contains the drives-installed bit map, in hexadecimal. After you convert the hexadecimal value to binary, the drives are represented by binary ones, read from right to left. A ***1*** in any bit position indicates that a drive is installed in that drive slot. Refer to Table 8-6 for a hexadecimal-to-binary conversion chart.

    In the example in Figure 8-28, convert ***07*** (offset 43) to binary 0000 0111. Drives 0, 1, and 2 are installed.

- Offset 44 contains the drives-running bit map, in hexadecimal. After you use Table 8-6 to convert the hexadecimal value to binary, the drives are represented by binary ones, read from right to left. A ***1*** in any bit position indicates that a drive is running in that drive slot.

Table 8-6. Hexadecimal-to-Binary Conversions.

Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

Compare the bit maps derived from offsets 43 and 44 to determine which drive is not running.

In the example in Figure 8-28, convert ***05*** (offset 44) to binary 0000 0101. Drives 0 and 2 are running; drive 1 is installed, but not running.

The cause of a status-code CE must be corrected immediately. Complete the following steps:

1. Access Menu 12 – Disk Management to verify which drive is not running.
2. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
3. Check offsets 43 and 44.
   - If offsets 43 and 44 indicate that a drive is installed but not running, reseat the drive and try to enable it. Refer to Appendix A for procedures.
     - If the drive becomes enabled, check the status log for other errors.
     - If the drive does not become enabled, refer to Chapter 11 and replace the drive.
   - If offsets 43 and 44 indicate that all drives are installed and running, despite the CE status code, call the Octel Customer Services Center or your Octel distributor.
   - If offsets 43 and 44 indicate that a drive is running but not installed, it was probably removed with power on and without disabling it.

Status-Code E9

A status-code E9 is logged when a line task fails to respond to a CB message sent from the CCF card. Figure 8-29 is an example of a status-code E9.

```
08 JUL 97  01:30:01PM
*** LC Failed To Respond Within Timeout Period
>>> NOTIFY SUPPORT REPRESENTATIVE
000000   82C00202  E9000000  02003319  BB6A0100
000010   5C040000  27000001  5C040000  08000040
000020   00000000  4B07FFFF  C8AF0000  00000000
000030   32278400  00000000  00000000  00000000
000040   32279300  00050301  00000000  00000000
000050   3A8A0000  00000000  00000000  5C040000
000060   08000000  10000000  90070000  64006400
000070   3B03C309  9D000000  84070000  186B0800
000080   8900
```

Figure 8-29. Example of Status-Code E9.

The key offsets for a status-code E9 are as follows:

- **Offset 02.** Task ID. Identify the port by using Table 8-20, at the end of this chapter.

  In the example in Figure 8-29 and according to Table 8-20, the value of ***02*** in offset 02 indicates port 1C on the FLT card in slot 2.

- **Offsets 7C–7F.** Extended instruction pointer.

- **Offsets 80–81.** Code segment.

Use one of the following to correct the cause of a status-code E9:

- If a single status-code E9 is logged, monitor the indicated port and status-log entries for additional errors caused by the port.

- If multiple entries are logged for the same port or for multiple ports on one FLT card, perform the following steps:

  1. Use menu 13.11 to disable the card.
  2. Reseat the card (with power on) when the SMT tells you to replace it.
  3. Use menu 13.11 to enable the card. If the card is initialized correctly, monitor it closely for additional failures.
  4. If additional status-log entries are logged for the same FLT card, refer to Chapter 11 and exchange the FLT card with another FLT card. If the problem follows the FLT card, replace it.
  5. If the problem does not follow the FLT card, note the values of the extended instruction pointer (offsets 7C–7F) and the code segment (offsets 80–81) for all the E9 errors. Call the Octel Customer Services Center or your Octel distributor, and be prepared to provide this information.

Status-Code F9

The F9 status code is a general-purpose entry used to identify integration errors or status changes. The information included in a status-code F9 depends on the subcode logged in offsets 08–09 (transposed). Table 8-7 lists all the subcodes for status-code F9, for the Octel 250.

The following most commonly logged subcodes are described in this section:

- Subcode ***65***, integration status message (refer to the "Subcode 65" section, page 8-40).
- Subcode ***08***, no dial tone detected for PBX integration device (refer to the "Subcode 08" section, page 8-49).
- Subcode ***69***, line disabled by Meridian integration device (refer to the "Subcode 69" section, page 8-50).
- Subcode ***25***, FLT-A line-status change (refer to the "Subcode 25" section, page 8-51).

Table 8-7. Subcodes (Offsets 08–09, Transposed) for Status-Code F9.

Sub-code	Description
01	Error reported by the line card
02	Unrecognized response from line card
03	Wrong incoming message
04	Bad digit in message
05	Error code in input/output request block (IORB) from operating system
06	Unexpected message from serial link
07	Bad return from ACIO
08*	No dial tone detected for PID/R™
09	Integration timeout
0A	Continuous incoming message
0B	Incoming queue overflow
0C	Too many digits in dial request
0D	Nonzero return code in CIP message
0E	Incoming integration message on port marked “no” for incoming calls in menu 4
0F	Incoming integration message on nonintegrated port (nonintegrated line type)
10	Bad return from line card
11	Error writing to line card
12	APID™/85 failed to send incoming call after sending alerting message
13	APID/85 message-waiting queue failure
14	Failed to get in-band dial tone
15	Wrong response to configuration message
16	Unrecognizable response to configuration message
17	Error returned from line card for special on-hook
18	Error returned from line card for special off-hook
19	Unrecognized return from special on-hook
1A	Unrecognized return from special off-hook
1B	No buffer available
1C	Seize line failed
1D	Timeout collecting in-band digit
1E	Invalid digit count for in-band digits
1F	Invalid return from digit collect
20	Error collecting in-band digits
21	Failed message-waiting retry
22	Message-waiting resumes operational
23	Maximum error retry count reached

* Explained further in this section.

Table 8-7. Subcodes (Offsets 08–09, Transposed) for Status-Code F9 (Continued).

Sub-code	Description
24	FLT-M or FLT-A report error
25*	FLT-A line-status change
26	Timed out waiting for on-hook
30	Error code in INT response
32	Unexpected message
51	Length of variable error
60	Unexpected integration message
61	Integration timeout
62	Unknown return code from ACIO routine
63	Continuous incoming message
64	Operating system error
65*	Integration status message
66	Error code in INT response message
67	Queue overflow
68	Line status error from MID
69*	Line disabled by MID
6A	Link number in user record does not exist
6B	Stack error; the primary, secondary, or active stack does not match the primary, secondary, or active stack in the system partition
90	Invalid link number passed to SP
91	Invalid serial port number passed to SP
93	Illegal request
94	Error creating integration file
95	Error in integration file status
96	Error creating event for port request
97	Unknown table operation type
99	Error creating MDS record
9A	Error getting user data from MDS record
9B	Reading or writing nonexistent MDS record
C0	Abort signaled from operating system
C1	Invalid return code from SP
C2	Bad return code from operating system
D0	Cannot create an event
D1	Cannot create timer
D2	Cannot start timer
D3	Failed to send batched messages

* Explained further in this section.

Table 8-7. Subcodes (Offsets 08–09, Transposed) for Status-Code F9 (Continued).

Sub-code	Description
D4	Failed to get buffers from operating system
D5	Error setting task ID
D6	Unexpected return in IORB status word
D7	Error stopping timer
D8	Error in return from multiple wait
D9	Invalid message-waiting queue length
DA	Invalid serial port message from operating system driver
DB	Invalid CIP message received from another task
DC	Invalid port ID received from PID/R
DD	Control-bus response message with wrong message type or return code not OK
DF	DMA failure
E0	CIP message for the local station sent to the wrong station
E2	Failed to pass an event to the OS, return code not OK
E3	Checksum mismatch on batch of CIP messages
E4	Invalid station number received
E5	Out-of-sequence buffer received
E6	Timeout waiting for DMA request from receive task
E7	Error on getting DMA buffer
E8	Error reading MDS (FLT configuration) record
E9	Timeout receiving message from cluster receive task
EA	Unrecognized return code from AC
EC	Invalid peripheral address for FLT; FLT configured in software, but no card actually present
ED	DMA request queue overflow, DMA request lost
EE	Timeout waiting for response from FLT
EF	Error getting DMA request from queue
F0	Error verifying lock on DMA buffer
F1	DMA length greater than the DMA buffer or zero
F2	Not able to access FLT; card not responding
F3	Invalid information in CIP message from FLT
F4	Invalid integration message
F5	Serial port transmit error
F6	Error queueing message for transmit

Subcode 65

Subcode ***65*** in status-code F9 indicates an integration status message. Figure 8-30 is an example of an F9 status-code with a subcode of ***65*** (transpose offsets 08–09).

```
14 FEB 97 02:11:00PM
*** ACP Integration Error
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    82C09102  F9000000  65002743  45470100
00010    30010000  00000000  30010000  FFFF0000
00020    00000000  0000FFFF  30750000  00000000
00030    91000500  91003331  062FFF00  00000000
00040    A6008600  91000361  3331062F  FFFF2FFF
00050    A8770000  00000000  10000000  1E000000
00060    E4FFFFFF  10000000  19010000  34003400
00070    00000000  55008002  EC040000  CC005000
00080    0F00
```

Figure 8-30. Example of Status-Code F9 With Subcode 65.

Other key offsets for status-code F9 with a subcode ***65*** are as follows:

- **Offset 32.** CB IN message type. Table 8-8 lists the most common CB message types at offsets 32 and 42.

  In the example in Figure 8-30, the message type ***05*** in offset 32 indicates an invalid request to set message waiting. A command was sent by the CCF card to have message waiting set on a specific extension that did not have the message-waiting feature.

- **Offset 33.** The high-order nibble of offset 33 contains the logical-integration-link ID. For example, for the three possible links, logical link ***0*** is equivalent to physical link 1, logical link ***2*** is equivalent to physical link 3, and so on.

  In the example shown in Figure 8-30, the logical link ID is ***0***, equivalent to physical link 1.

  Link-ID information is important when troubleshooting and managing links. This information is needed when using menu 6.5 submenus such as Review Link Status and Reset Integration Link. For details about managing integration links, refer to the *System Manager Manual*.

- **Offsets 36–3F.** Refer to Table 8-8 and use offset 32 to define offsets 36–3F.
  - When the value in offset 32 is ***03***, ***04***, ***05***, or ***06***, offsets 36–3F contain the telephone or extension number.
  - When the value in offset 32 is ***80***, ***81***, or ***82***, offsets 36–3A contain the called-party ID and offsets 3B–3F contain the calling-party ID.
  - When the value in offset 32 is ***83***, offsets 36–3A contain the calling-party ID.

Table 8-8. CB Message Types at Offsets 32 and 42 for Status-Code F9.

Value	Description	Value	Description
01	Asynchronous port configuration	82	All calls forwarded on incoming call
02	Set LTN	83	Direct incoming call
03	Dial digits	85	Data communication response
04	Transfer call	86	Serial link error
05	Set message waiting	88	Seize line response
06	Clear message waiting	89	Dial digits response
07	Reconnect to call on hold	8A	Reconnect response
08	Seize line	8B	Transfer response
09	Start data communication	8C	Set message-waiting response
0A	End data communication	8D	Clear message-waiting response
0B	Return data communication	8E	On-hook response
0C	Go on-hook	8F	Off-hook response
0D	Go off-hook	91	Asynchronous port configuration response
10	Call picked	92	Set LTN response
11	Error logging on/off	93	Polling response
12	Poll message to serial link	94	Disconnect detected
15	Log in agent ID on MID	96	Set message-waiting extension response
16	Set LTN internal	97	Log in agent ID response
19	Ready to dial last digit for PID/R	98	Set LTN internal response
1A	Pilot number download response	9A	Request special buffer response
80	Ring-no-answer on incoming call	9B	Pilot number download request
81	Busy on incoming call		

- **Offset 42.** CB OUT message type.

  In the example in Figure 8-30, message-type ***86*** in offset 42 indicates a serial link error (Table 8-8), which is a command showing error information from the installed PID.

- **Offset 46.** Information specific to the integration device installed. When the value in offset 42 is ***86***, refer to Table 8-9 for the possible values for offset 46.
  - When the value in offset 46 is ***03***, the value in offsets 48–4C is the extension with the message-waiting problem.
  - When the value in offset 46 is ***06***, there was a PID/R error. Values at offsets 47 and 48–4D are affected. Refer to Table 8-10 for pertinent information.
  - When the value in offset 46 is ***07***, the analog MID is at fault. Values describing the entry in further detail are located in offsets 47–4B. Refer to Table 8-11 on page 8-43 for pertinent information about the analog MID and the action to take when these entries occur.

- When the value in offset 46 is ***08***, the DMID is at fault. Values describing the entry in further detail are located in offsets 47–4B. Refer to Table 8-12 on page 8-46 for pertinent information about the DMID and the action to take when these entries occur.

Table 8-9. Offset 46, When Value of Offset 42 Is 86 in Status-Code F9.

Offset 46 Value	Description
03	Message-waiting, illegal-extension
04	AT&T System 75 PBX integration device (APID/75)
05	APID/85
06	PBX integration device/Rolm (PID/R)
07	Analog Meridian and SL-1 integration device (AMID)
08	Digital Meridian and SL-1 integration device (DMID)

Table 8-10. Offsets 47 and 48–4D, When Value of Offset 46 Is 06 in Status-Code F9.

Offset 47 Value	Offset 47 Description	Offsets 48–4D Value
01	Timeout for port request	PID/R extension number with ringing
04	Timeout for call picked message	PID/R extension number with ringing
08	Peg counters	Offset 08: message buffer overflow Offset 09: no extension at ringing port Offset 0A: not used Offset 0B: incomplete message timeouts
09	Pick failed	LTN of the server executing the pick
0A	Timeout from ready-to-dial last digit mode	PID/R extension number with ringing
0B	Pick exceeded maximum retries	Unused
20	EPROM revision level	Revision number (ASCII)
21	Message-waiting indication already enabled	Message-waiting extension number
22	Message-waiting indication already disabled	Message-waiting extension number
23	PID/R telephone reset	00 indicates telephone 0*, 01 indicates telephone 1*

* Offset 48 only.

- **Offsets 48–4D.** When an *integration device* is installed (when offset 46 has a value of ***01*** through ***08***), these offsets indicate the extension number for a request that failed.

  The example in Figure 8-30, page 8-40, indicates that extension 333-1062 was the affected extension number (value of ***3331062*** in offsets 48–4B).

Table 8-11. Offsets 47 and 48–4B, When Value of Offset 46 Is 07 in Status-Code F9.

Offset 47 Value	Offset 47 Description	Action[a]	Entries in Additional Offsets[b]			
			Offset 48	Offset 49	Offset 4A	Offset 4B
00	Revision numbers of EPROMs associated with 652 and 751 processor.	. . .	EPROM 652 rev. no.	EPROM 652 rev. no.	EPROM 652 rev. no.	EPROM 652 rev. no.
03	Internal error on 751 processor.	3	751 channel no.	652 state	. . .	. . .
04	Incoming message buffers overwritten on 751 processor.	1	751 channel no.	652 state	. . .	. . .
05	751 processor detected checksum error while communicating with 652 processor.	2	751 channel no.	652 state	. . .	. . .
06	751 processor detected error on IIC bus.	2	751 channel no.	652 state	. . .	. . .
07	751 processor detected a line-input overrun.	1	751 channel no.	652 state	. . .	. . .
08	751 processor detected an unrecognized command.	1	751 channel no.	652 state	. . .	. . .
30	652 processor detected an incorrect message from 751 processor.	1	652 channel no.	652 state	. . .	. . .
31	652 processor detected an unmatched message from 751 processor.	1	652 channel no.	652 state	. . .	. . .
32	652 processor detected a checksum error on the IIC bus from 751 processor.	1	652 channel no.	652 state	. . .	. . .
33	652 processor detected no response from 751 processor.	1	652 channel no.	652 state	. . .	. . .
40	Internal RAM error on 652 processor.	3	652 channel no.	652 state	. . .	. . .
41	External RAM error on 652 processor.	3	652 channel no.	652 state	. . .	. . .
42	652 processor detected that 188 processor sent wrong message.	1	652 error ext. no.	Ext. no.	Ext. no.	Ext. no.
43	652 processor detected that 188 processor sent bad checksum.	1	652 error	Ext. no.	Ext. no.	Ext. no.
44	652 processor detected that 188 processor sent bad serial number.	1	652 channel no.	652 state	. . .	. . .

[a] Action:
1 – Service-affecting; not fatal, usually minor.
2 – Service-affecting; not fatal unless it occurs frequently.
3 – Fatal; call the Octel Customer Services Center or your Octel distributor.

[b] 652 refers to a 652 EPROM; 751 refers to a 751 EPROM; 188 refers to a 188 EPROM.

Table 8-11. Offsets 47 and 48–4B, When Value of Offset 46 Is 07 in Status-Code F9 (Continued).

Offset 47 Value	Offset 47 Description	Action[a]	Entries in Additional Offsets[b]			
			Offset 48	Offset 49	Offset 4A	Offset 4B
45	652 processor detected that 188 processor sent unmatched message.	1	652 error	Ext. no.	Ext. no.	Ext. no.
46	652 processor detected that 188 processor sent unmatched general message.	1	652 error	Ext. no.	Ext. no.	Ext. no.
47	652 processor detected that 188 processor sent message that was too long.	1	652 error	Ext. no.	Ext. no.	Ext. no.
49	652 processor detected 188 processor message not processed.	1	652 channel no.	652 state	. . .	. . .
50	652 processor detected no digits in buffer during incoming call.	1	652 channel no.	652 state	. . .	. . .
51	652 processor detected too few digits in buffer during incoming call.	1	652 channel no.	652 state	. . .	. . .
52	652 processor detected more than 16 digits in buffer during incoming call.	1	652 channel no.	652 state	. . .	. . .
53	652 processor detected a condition where state is longer than 60 seconds.	1	652 channel no.	652 state	. . .	. . .
54	Transmit buffer-overrun error on 652 processor.	1	652 error	652 error	Ext. no.	Ext. no.
55	Bad or blocked extension for transfer.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
56	No message-waiting indication DN found.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
57	No message-waiting clear DN found.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
58	No digit echo during message-waiting indication.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
59	No digit echo during message-waiting clear.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
5A	Bad or blocked extension for message-waiting indication.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
5B	Bad or blocked extension for message-waiting clear.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.
5C	Outcall failed.	1	751 channel no. 1–12	Ext. no.	Ext. no.	Ext. no.

[a] Action:
1 – Service-affecting; not fatal, usually minor.
2 – Service-affecting; not fatal unless it occurs frequently.
3 – Fatal; call the Octel Customer Services Center or your Octel distributor.

[b] 652 refers to a 652 EPROM; 751 refers to a 751 EPROM; 188 refers to a 188 EPROM.

Table 8-11. Offsets 47 and 48–4B, When Value of Offset 46 Is 07 in Status-Code F9 (Continued).

Offset 47 Value	Offset 47 Description	Action[a]	Entries in Additional Offsets[b]			
			Offset 48	Offset 49	Offset 4A	Offset 4B
5D	During transfer, no digits found.	1	652 channel no.	652 state	. . .	. . .
5E	During transfer, no message from SL-1 for approximately 12 seconds.	1	652 channel no.	652 state	. . .	. . .
5F	During in-call, no volume message from SL-1 for approximately 12 seconds.	1	652 channel no.	652 state	. . .	. . .
60	No digit information received from PBX on incoming call. Add feature might not be enabled on the PBX for that TN.	1	Channel no.	. . .	. . .	. . .
61	PBX timed out (in less than 24 seconds) waiting for digits after the line had been seized.	1	Channel no.	. . .	. . .	. . .
80	Revision number for 188 processor displayed.	. . .	188 rev. no.	188 rev no.	188 rev no.	188 rev no.
81	652 processor failed.	3	Code identifying bad 652[c]	. . .	. . .	. . .

[a] Action:
1 – Service-affecting; not fatal, usually minor.
2 – Service-affecting; not fatal unless it occurs frequently.
3 – Fatal; call the Octel Customer Services Center or your Octel distributor.

[b] 652 refers to a 652 EPROM; 751 refers to a 751 EPROM; 188 refers to a 188 EPROM.

[c] 0A – processor A, first board.
1A – processor A, second board.
0B – processor B, first board.
1B – processor B, second board.

Table 8-12. Offsets 47 and 48–4B, When Value of Offset 46 Is 08 in Status-Code F9.

Offset 47 Value	Offset 47 Description	Action[a]	Entries in Additional Offsets			
			Offset 48	Offset 49	Offset 4A	Offset 4B
00	DMID firmware revision number; DMID logs this when the DMID power is on, even if status logging is disabled.	. . .	Rev. no.	Rev. no.	Reserved	Reserved
01	System-link serial interface problem.	2	No RS-232 buffer error counter	Bad RS-232 message-length error counter	RS-232 message-time-expired (100 ms) error counter	Bad RS-232 header error counter
02	Interrupt 0/1 problem.	2	Interrupt 0 error counter	Interrupt 1 error counter	Watchdog interrupt error counter	Reserved
03	MPDA[b]–A serial interface problem.	2	. . .	. . .	. . .	. . .
04	MPDA[b]–B serial interface problem.	2	. . .	. . .	. . .	. . .
05	MPDA[b]–C serial interface problem.	2	MPDA I/F parity error counter	MPDA I/F overflow error counter	MPDA I/F bad-header error counter	MPDA I/F message-time-expired (100 ms) error counter
06, 07	DMID received unknown transparency message. Resets telephone and reestablishes transparency. When PBX was initialized, it sent this message.	2	Received message	Received message	Reserved	Reserved
16, 18, 19, 1A	MPDA[b] A/B/C[c] power-up warning.	3	A/B/C[c]	A/B/C[c] state	A/B/C[c] timer	Data
17	MPDA[b] A/B/C[c] power-up warning.	3	A/B/C[c]	. . .	. . .	. . .
20	DMID received LED wink message and does not know how to process it.	4	. . .	. . .	. . .	. . .

[a] Action:
1 – Service-affecting; not fatal unless it occurs frequently.
2 – Fatal; call the Octel Customer Services Center or your Octel distributor.
3 – Not service-affecting; not fatal.
4 – Not service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor.
5 – Not service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor if too many errors are logged.
6 – Service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor if too many errors are logged.
7 – Service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor.

[b] Meridian programmable data adapter

[c] A/B/C means MPDA serial interface A or B or C

Table 8-12. Offsets 47 and 48–4B, When Value of Offset 46 Is 08 in Status-Code F9 (Continued).

Offset 47 Value	Offset 47 Description	Action[a]	Entries in Additional Offsets			
			Offset 48	Offset 49	Offset 4A	Offset 4B
22	DMID received LED flash message when channel state was not in this state. PBX can send multiple-lamp-flash message.	5	. . .	. . .	. . .	. . .
27	DMID received a digit but the channel state is not in this state.	5	. . .	. . .	. . .	. . .
29	DMID received an ASCII message but the channel state is not in this state.	5	LTN no.	LTN state	LTN timer	Reserved
2C	Bad LTN message from scanner.	1	Message type from scanner	LTN no.	LTN no.	Reserved
2D	Got off-hook response message from scanner when channel state is not in this state.	2	LTN no.	LTN state	LTN timer	Reserved
2E	Off-hook response from scanner expired. Caller might get system greeting or be dropped.	7	TN no.	LTN state	LTN timer	A/B[c] counter
30	Bad system-link message from scanner.	6	Message type from scanner	LTN no.	LTN no.	Reserved
31	Off-hook or call ID message pending expired. Caller will hear system greeting.	6	LTN no.	LTN state	LTN timer	Reserved
32	18 seconds expired in answer-pending state.	6	TN no.	LTN state	LTN timer	A/B state
35	MPDA[b] A/B/C[c] response timeout for IDLE POLL message. Transparency is reestablished. Check DMID channels A, B, and C connections. Check internal cables.	6	A/B/C[c]	A/B/C[c] state	A/B/C[c] timer	Reserved
36	5 seconds expired in phone-session state.	5	. . .	. . .	. . .	. . .
37, 38	DSP enable time expired.	5	A/B[c]	A/B[c] state	A/B[c] timer	Processing LTN

[a] Action:
1 – Service-affecting; not fatal unless it occurs frequently.
2 – Fatal; call the Octel Customer Services Center or your Octel distributor.
3 – Not service-affecting; not fatal.
4 – Not service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor.
5 – Not service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor if too many errors are logged.
6 – Service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor if too many errors are logged.
7 – Service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor.

[b] Meridian programmable data adapter

[c] A/B/C means MPDA serial interface A or B or C

Table 8-12. Offsets 47 and 48–4B, When Value of Offset 46 Is 08 in Status-Code F9 (Continued).

Offset 47 Value	Offset 47 Description	Action[a]	Entries in Additional Offsets			
			Offset 48	Offset 49	Offset 4A	Offset 4B
39	Scanner sent nondigit extension for message.	7	TN no.	LTN state	LTN timer	Received digit
3A	DMID received MIK LED on message when not in this state.	5	. . .	. . .	. . .	. . .
3B	DMID received MCK LED on message when not in this state.	5	Received message	Received message	Received message	Received message
3C	MIK/MCK release expired. Transparency mode will be reestablished. Message waiting will not work until transparency mode is reestablished.	6	C[c]	C[c] state	C[c] timer	C[c] counter
3D-3F	Received type 1, 2, or 3 off-hook message from PBX. Logs this if the telephone is being programmed in overlay 11 or if hook switch is toggled.	3	. . .	. . .	. . .	. . .
40, 41	Received type 1 or 2 on-hook message from PBX. Logs this if the telephone is being programmed in overlay 11 or if hook switch is toggled.	3	. . .	. . .	. . .	. . .
42	Received unknown message from MPDA[b]. Emulates Meridian telecenter software. Reestablish transparency mode.	2	Received message	Received message	A/B/C[c]	Reserved

[a] Action:
1 – Service-affecting; not fatal unless it occurs frequently.
2 – Fatal; call the Octel Customer Services Center or your Octel distributor.
3 – Not service-affecting; not fatal.
4 – Not service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor.
5 – Not service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor if too many errors are logged.
6 – Service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor if too many errors are logged.
7 – Service-affecting; not fatal. Call the Octel Customer Services Center or your Octel distributor.

[b] Meridian programmable data adapter

[c] A/B/C means MPDA serial interface A or B or C

Subcode 08

Subcode ***08*** in status-code F9 indicates that no dial tone from the PID/R was detected by the FLT8 card. Figure 8-31 is an example of an F9 status-code entry with a subcode of ***08*** (transpose offsets 08–09).

```
17 NOV 97  02:37:09PM
*** ACP Integration Error
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    82C01502  F9000000  080021B1  6B450100
00010    7A010000  53000000  7A010000  00000000
00020    00000000  0000FFFF  30750000  00000000
00030    15151020  15000000  00000000  00000000
00040    A6008700  15000450  31FFFFFF  0F000000
00050    A8770000  AA170000  00000000  58460000
00060    E4FFFFFF  10000000  B20B0000  5C005C00
00070    5C000000  95058046  EC030000  934B0000
00080    1700
```

Figure 8-31. Example of Status-Code F9 With Subcode 08.

Other key offsets for status-code F9, subcode ***08***, are as follows:

- **Offset 02.** Task ID. Identify the task by using Table 8-19, at the end of this chapter.

  In the example in Figure 8-31, the value of ***15*** in offset 02 indicates port 3F on the FLT card in slot 4, according to Table 8-20, which is referred to by Table 8-19.

- **Offset 32.** CB IN message type. (Refer to Table 8-8, page 8-41.)

  In the example in Figure 8-31, message type ***10*** (Table 8-8) in offset 32 indicates that a CCF card command has notified the PID/R that the FLT8 card has picked the call and that the call should be released from the PID/R.

- **Offset 33.** The high-order nibble of offset 33 contains the logical-integration-link ID. For example, for the three possible links, logical link ***0*** is equivalent to physical link 1, logical link ***2*** is equivalent to physical link 3, and so on.

  In the example shown in Figure 8-31, the logical link ID is ***2***, equivalent to physical link 3.

Subcode 69

Subcode ***69*** in status-code F9 indicates that a line was disabled by the MID. Figure 8-32 is an example of an F9 status-code with a subcode of ***69*** (transpose offsets 08–09).

```
17 NOV 97 03:15:01PM
*** ACP Integration Error
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    82C01502  F9000000  69002719  AA470100
00010    2D010000  53000000  2D010000  00000000
00020    00000000  0000FFFF  B80B0000  00000000
00030    91151200  15000000  00000000  00000000
00040    90158610  15000700  18000400  00000000
00050    A8770000  05000000  88020000  00000000
00060    E4FFFFFF  10000000  8C010000  3400D801
00070    00000000  55008002  EC040000  CF080000
00080    0F00
```

Figure 8-32. Example of Status-Code F9 With Subcode 69.

Other key offsets for status-code F9, subcode ***69***, are as follows:

- **Offset 02.** Task ID. Identify the task by using Table 8-19, at the end of this chapter.

  In the example in Figure 8-32, the value of ***15*** in offset 02 indicates port 3F on the FLT card in slot 4, according to Table 8-20, which is referred to by Table 8-19.

- **Offset 32.** CB IN message type. (Refer to Table 8-8, page 8-41.)

  In the example in Figure 8-32, message type ***12*** (Table 8-8) in offset 32 indicates that a poll has been taken to determine whether the serial link is installed. This poll occurs every 30 seconds.

- **Offset 42.** Additional information about CB IN message types.

  In the example in Figure 8-32, message type ***86*** (Table 8-8) in offset 42 indicates a serial link error, which is a command showing error information from the installed MID.

- **Offset 46.** Information specific to the integration device installed. When the value in offset 42 is ***86***, refer to Table 8-9 on page 8-42 for the possible values in offset 46. Depending on the value in offset 46, refer also to Table 8-10 on page 8-42, Table 8-11 on page 8-43, or Table 8-12 on page 8-46 for further information and actions to take.

Subcode 25

Subcode ***25*** in status-code F9 indicates that the status of the lines between the server and the PBX for a digital FLT card (FLT-A) changed, because the line was noisy or the cables or their connections are malfunctioning. As a result, the server might not answer the call or might be slow to answer the call. Figure 8-33 is an example of an F9 status-code with a subcode of ***25*** (transpose offsets 08–09).

```
29 SEP 97  10:48:19PM
*** Integration Error
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    24C00700    F9000000    25003650    276F0100
00010    01021717    17171717    1717EC07    0000D485
00020    01001700
```

Figure 8-33. Example of Status-Code F9 With Subcode 25.

Other key offsets for status-code F9, subcode ***25***, are as follows:

- **Offset 10.** Report type. If the value is ***01***, the status-log entry is a line-status report. If the value is ***02***, the entry is a hardware error report.

- **Offset 11.** If the value in offset 10 is ***01*** and the value in offset 11 is ***00***, the link or line is idle, up, or connected. If the value in offset 10 is ***01*** and the value in offset 11 is ***02***, the link or line is disabled, down, or disconnected.

In the example in Figure 8-33, the telco line between the server and the PBX went down.

For intermittent problems, status-code F9 errors with subcode 25 can occur in pairs, one error indicating that the line went down, the other indicating that it came up.

Correct the cause of this error by checking telco cable connections at the server and at the PBX. If this does not resolve the problem, call the Octel Customer Services Center or your Octel distributor for assistance.

Status-Code FA

Status-code FA is logged by the InterMail task. A status-code FA occurs when the X.25 port is polled at reboot for functionality and no connection is found or when communication initiated from the server, through the X.25 link, to an external processor (such as the 500D Data Module) has failed. Status-codes FA and FB usually occur within a short time of each other.

Figure 8-34 is an example of a status-code FA.

```
29 APR 97  08:58:30AM
*** InterMail (VPMOD to Host Task)
>>> INFORMATION ONLY
00000   22C0A900   FA000000   130036D5   D9420100
00010   0300CC00   0400C3FF   EC030000   1A0A0000
00020   1F00
```

Figure 8-34. Example of Status-Code FA.

The following offsets are pertinent to identifying any problems with the X.25, OCL, ASA, overflow-evaluation, InterMail, and simplified-protocol tasks:

- **Offsets 08–09.** Transpose these bytes to obtain the subcode. The subcode can provide additional information about the event. Table 8-13 lists these subcodes.

- **Offsets 16–17.** Usually an Octel Command Language (OCL) library value. Table 8-14 lists the values that can occur in these offsets.

  In the example in Figure 8-34, the status-code FA was logged because the application number did not exist (***C3FF*** in offsets 16–17).

To correct the error causing the status-code FA, take the appropriate repair action based on the subcode, or call the Octel Customer Services Center or your Octel distributor.

Table 8-13. Subcodes (Offsets 08–09, Transposed) for Status-Code FA.

Subcode	Description
11	Failure on OCL_INIT call
12	Virtual circuit already open on OCL_OPEN call
13	Failure on OCL_OPEN call
14	Failure on OCL_READ call
15	Failure on OCL_WRITE call
19	Problem with user-record update
1A	EAP requested update for non-host-to-message-server user record
1B	Failure on PQ_INIT call
1C	Priority queue overflow
1D	Problem with priority queue receive
1E	Problem with InterMail priority queue
1F	Problem with message-server-to-host OCL command header
20	Failure on UR lock
21	Failure on UR read
22	Failure on UR write
23	Problem with message-waiting evaluation

Table 8-14. Offsets 16–17 for Status-Code FA and FB.

Value	Description
C2FF	Operation failed
C3FF	Application number does not exist
C4FF	OCL is not up
C5FF	OCL interface routine internal error
C6FF	All LUNs for requested application number are busy
C7FF	No LUNs for requested application number
C8FF	Buffer overflow; LUN will be cleared
C9FF	LUN cleared
CAFF	Operation timeout; LUN will be cleared
CBFF	LUN already open
CCFF	OCL_INIT already performed
CDFF	Successful OCL_OPEN call not performed
CEFF	OCL_INIT call not performed

Status-Code FB

Status-code FB is logged by the overflow-evaluation task. Status-code FB occurs as follows:

- When the X.25 port is polled during reboot for functionality and no connection is found.
- When communication that was initiated from an external processor (such as the 500D Data Module), through an X.25 link, to the server has failed.

Status-codes FA and FB usually occur within a short time of each other.

Figure 8-35 is an example of a status-code FB.

```
10 MAY 97  09:12:02PM
*** InterMail (Host to VPMOD Task)
>>> INFORMATION ONLY
00000   22C0AA00   FB000000   130031D5   D9420100
00010   0100D900   0400C3FF   EC030000   2A0B0000
00020   1F00
```

Figure 8-35. Example of Status-Code FB.

The following offsets provide additional information for status-code FB:

- **Offsets 08–09.** Transpose these bytes to obtain the subcode. The subcode can provide additional information about the event. Table 8-15 lists these subcodes.
- **Offsets 16–17.** Usually an Octel Command Language (OCL) library value. The possible values for status-code FB are the same as for status-code FA. Refer to Table 8-14.

  In the example in Figure 8-35, the status-code FB was logged because the application number did not exist (***C3FF*** in offsets 16–17).

To correct the error causing the status-code FB, take the appropriate repair action based on the subcode, or call the Octel Customer Services Center or your Octel distributor.

Table 8-15. Subcodes (Offsets 08–09, Transposed) for Status-Code FB.

Subcode	Description
11	Failure on OCL_INIT call
12	Virtual circuit already open on OCL_OPEN call
13	Failure on OCL_OPEN call
14	Failure on OCL_READ call
15	Failure on OCL_WRITE call
16	Problem with host-to-message-server OCL command header
17	Too many host-to-message-server updates
18	IUN out of range
19	Problem with user-record update
1A	EAP requested update for non-host-to-message-server user record
1B	Failure on PQ_INIT call
1C	Priority queue overflow
1D	Problem with priority queue receive
20	Failure on UR lock
21	Failure on UR read
22	Failure on UR write
23	Problem with message-waiting evaluation

Status-Code 141

Status-code 141 indicates that an error has occurred during system backup or restore. Many of these errors also present an error message on the SMT when they occur. Refer to backup and restore procedures in Chapter 11 and to the *Status Log Interpretation Guide* for details. Figure 8-36 is an example of a status-code 141.

```
17 NOV 97 02:27:39PM
*** SBR Internal Error
>>> INVESTIGATE SYSTEM ENVIRONMENT
00000    EDC0AF02  41010000  090230A1  CF6D0100
00010    0038C700  00020000  00000000  0005E7FF
00020    THRU 00030 CONTAIN 00
00030    00000000  08000006  05002400  00000000
00040    431E0902  03000000  00000000  00000000
00050    THRU 000A0 CONTAIN 00
000A0    00000000  06000000  00000000  00000000
000B0    THRU 000D0 CONTAIN 00
000D0    00000000  00000000  00000000  00010040
000E0    000100EC  07000050  C6010017  00
```

Figure 8-36. Example of Status-Code 141.

Status-Code 148

Status-code 148 indicates that an error has occurred during a tape operation. Many of these errors also present an error message on the SMT when they occur. Refer to backup and restore procedures in Chapter 11 and to the *Status Log Interpretation Guide* for details. Figure 8-37 is an example of a status-code 148.

```
17 NOV 97 02:27:39PM
*** RMM Internal Error
>>> INFORMATION ONLY
00000    BEC09502  48010000  000022A7  CF6D0100
00010    03000000  00000000  00009500  00000000
00020    01000000  00000000  00009500  00000000
00030    02000000  00000000  00009500  00000000
00040    0400F7FF  04800000  00009500  00000000
00050    02000000  00000000  00009500  00000000
00060    0400F7FF  04800000  00009500  00000000
00070    03000000  00000000  00009500  00000000
00080    01000000  00000000  00009500  00000000
00090    02000000  00000000  00009500  00000000
000A0    0400F7FF  04800000  00009500  00000000
000B0    03000000  3C060000  794E0C00  8900
```

Figure 8-37. Example of Status-Code 148.

Status-Code 165

Status-code 165 means that, while the server was using digital networking, the number of retries specified in the ***Number of Attempts Before Fallback:*** field in menu 15.1.2 was exhausted, and digital networking was unsuccessful. Figure 8-38 is an example of a status-code 165.

```
10 JULY 97  09:12:02PM
*** Digital Networking – Retries Exhausted
>>> NOTIFY SUPPORT REPRESENTATIVE
00000   14C0B701   65010000   91012892   6A690100
00010   120071FF
```

Figure 8-38. Example of Status-Code 165.

The key offsets in a status-code 165 are as follows:

- **Offsets 08–09.** Transpose these bytes to obtain the subcode. After transposing bytes, subcode ***191*** means that the server fell back to analog networking. Subcode ***192*** means that fallback was disabled and that messages were returned to their senders.
- **Offsets 10–11.** Transpose these bytes and convert from hexadecimal to decimal to obtain the node number for which the number of retries was exhausted.
- **Offsets 12–13.** Transpose these bytes to obtain the reason code that describes why digital networking failed. The reason codes are documented in the *Status Log Interpretation Guide*.

In the example in Figure 8-38, digital networking to node 18 (0012*h* converted to decimal) failed, and fallback to analog networking occurred.

To correct the cause of a status-code 165, refer to digital-networking troubleshooting procedures in Chapter 7.

Status-Codes 1C0 Through 1C2

One of the status-codes 1C0, 1C1, or 1C2 is logged if the CCF card does not receive an expected CB message from another card within a predetermined timeout period. One of these status codes is also logged if the CB message from a logic card contains errors. The length of the status-code entry varies, depending on the status code. Figure 8-39 is an example of a status-code 1C0.

```
21 JUL 97   12:14:38PM
*** OPI SP error
>>> INFORMATION ONLY
00000    1400FF00  C0010000  0A0036FD  B56A0100
00010    F74B6000
```

Figure 8-39. Example of Status-Code 1C0.

The key offset in a status-code 1C1 is as follows:

- **Offset 02.** Task ID. Identify the task by using Table 8-19, at the end of this chapter. This offset contains invalid data (***FF***) for status-codes 1C0 and 1C2.

For status-code 1C0 or 1C2 errors, use associated CB messages to identify the probable failing card.

Use one of the following to correct the problem:

- If only one of these status codes is logged, monitor the indicated card closely.
- If multiple status codes are logged indicating the same card, refer to Chapter 11 and replace the card.
- If multiple status codes are logged indicating various cards, refer to Chapter 11 and replace the CCF card.

Status-Code 1E5

Status-code 1E5 is logged on servers that have the Octel **Networking** and NameNet™ features enabled, when a server calls another server to retrieve NameNet administrative information and the NameNet feature is not installed or is disabled in menu 15.3.1 in the receiving server. The status-code 1E5 is logged in the sending server's status log. Figure 8-40 is an example of a status-code 1E5.

```
13 JUL 97  02:32:09PM
*** Admin Protocol related error
>>> MONITOR CLOSELY
00000    42C00602  E5010000  01002BC4  AF6C0100
00010    74890000  00000000  13030000  00000000
00020    E0FFFFFF  08000000  600B0000  64006400
00030    13039B03  A7000000  EC070000  39700000
00040    1700
```

Figure 8-40. Example of Status-Code 1E5.

Use one of the following methods to correct the cause of a status-code 1E5:

- Enable NameNet in menu 15.3.1 on the receiving server.
- Tell the customer to purchase the NameNet feature for the receiving server.
- On the sending server, change the delivery schedules for the receiving server, so that the sending server does not have a window to transmit administrative messages.

Refer to the *System Manager Manual* for more details about the NameNet feature and menus.

Status-Code 1E6

A status-code 1E6 is logged when an EDBN (NameNet) administrative message occurs. The subcode describes the message type and the reason for the error. Often, a subscriber has not recorded his or her name, which causes this error. Figure 8-41 is an example of a status-code 1E6.

```
01 SEP 97 12:30:21PM
***Admin Message process information
>>> INFORMATION ONLY
00000     37C00600   E6010000   15000CBF   F86C0100
00010     00000000   320B0000   47270100   160B0000
00020     A7000000   00230007   32499990   00EC0700
00030     00924200   001700
```

Figure 8-41. Example of Status-Code 1E6.

The key offsets in a status-code 1E6 are as follows:

- **Offset 08.** Subcode indicating the message type in the high nibble and the error reason in the low nibble. Refer to Table 8-16 for a list of message types and Table 8-17 for a list of error reasons.
- **Offsets 10–24.** The ASCII name in the mailbox, if offset 08 is ***x3***.
- **Offsets 25–26.** The node number of the destination, transposed, in hexadecimal.

  In the example in Figure 8-41, transpose ***2300*** to 0023*h*, and convert to node number 35 decimal.
- **Offsets 27–2C.** The mailbox number of the destination.

Correct or have the system manager correct the cause of the status-code 1E6, based on the subcode. Subcode 15 is common; it means that the subscriber had not recorded his or her name when the EDBN function tried to retrieve it.

Table 8-16. High Nibble of Subcode at Offset 08 for Status-Code 1E6.

High Nibble	Message Type
1x	Administrative retrieval of ASCII spoken name, transmit
2x	Administrative retrieval of full name, transmit
3x	Administrative retrieval of ASCII spoken name, receive
4x	Administrative retrieval of full name, receive
5x	Administrative change mode
6x	Administrative name confirmation
7x	Administrative retrieval of full name from hub

Table 8-17. Low Nibble of Subcode at Offset 08 for Status-Code 1E6.

Low Nibble	Error Reason
x0	OK
x1	Mailbox type is not allowed in network directory
x2	Mailbox does not exist
x3	Mailbox exists, but ASCII name does not match. Refer also to the mailbox ASCII name in offsets 10–24.
x4	Mailbox exists but has no ASCII name
x5	Spoken name not recorded
x6	Cannot access network directory
x7	Feature not supported
x8	Spoken name corrupted
x9	Name added to network directory
xA	Syntax error in name; name not added
xB	More than nine same names in NMT; name not added
xC	Cannot update network directory
xD	Stop protocol; name already exists
xE	System full

Status-Code 200

A status-code 200 is logged for a system reboot that was not initiated by a power outage or by the system manager. Figure 8-42 is an example of a status-code 200.

```
17 AUG 97  08:44:27AM
*** Abnormal System Shutdown
>>> NOTIFY SUPPORT REPRESENTATIVE
00000    90009507  00020000  12001E82  D76E0100
00010    53595343  52415348  2020203A  00000000
00020    THRU 00030 CONTAIN 00
00030    40ED9700  9A070000  00000000  01000000
00040    08000000  01000000  08E20100  D0070000
00050    E4004000  0000FF00  0000886F  0000A16C
00060    THRU 00090 CONTAIN 00
```

Figure 8-42. Example of Status-Code 200.

Call the Octel Customer Services Center or your Octel distributor to correct the cause of a status-code 200.

Complete List of Status Codes

Table 8-18 lists, in hexadecimal order, all the status codes that can be found in the status log.

Table 8-18. Status Codes in the Status Log.

Status Code[a]	Description
00[b]	System restarted
01	SST (system status table) bad at write
03[b]	Caller on remote access hung up without entering system
04	RS-232-C link reset
05[b]	Status log reset
06	Error during garbage collect
07	SMT internal error
08[b]	Software alarms cleared
09	Software download utility error
0A	SMT invalid user record lock state—user record locked for longer than timeout value
0B	File system I/O error
0C	SMT-related OCL error
0D	SMT-related file management error
0E	SMT-related X.25 line error
0F	File creation informational entry
10	SMT-related audio message interchange specification (AMIS) internal error
11	Error during upgrade performed by SMT
12	SMT could not get new user record
13	SMT could not find internal community number (ICN) in AMT
14	Summary of internal record usage
15	MDS file creation problem
16	LAN card initialization failed
17	IP address netmask not sent
18	TCP/IP not initialized
19	Scanner task internal error
1A	Scanner task protocol error
1B	PBX busy during message waiting operation
1C	Message waiting, illegal extension
1D	Error counters reported by scanner
1E	Error information from PID
22	Internal error in the X interface code
23	Internal error in the OCL interface code

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
1F[c]	RS-232 link is down
20	SMDI task internal error
21[b]	SMDI protocol error
22	Internal error in the X interface code
23	Internal error in the OCL interface code
24[b]	EAP-related error
25	Error in the OCL system utility routine
26	Internal error occurred during IVR application
27	Internal error occurred during ASA application
28	Internal error in the OCL task
29	Internal error in the router code
2E	Debug messages in X.25
2F	OCL debug error
30	SP-related OCL error
31	Task loop—task running for more than 4 seconds without performing I/O
32	Task locked out—task has not run for more than 5 minutes although in a ready state
33	Fatal inconsistency in operating system
34	Fatal inconsistency for requester in application task
35	Control-bus error—minor
36	Control-bus error—major
37	Control-bus error—indeterminate
38	Privileged violation interrupt
39	Spurious interrupt
3A	Data-bus error—unsolicited device interrupt
3B	Data-bus error—unsolicited software timer interrupt
3C	Data-bus error—device timeout
3D	DMA error—unsolicited device interrupt
3E	DMA error—unsolicited software timer interrupt
3F	DMA error—device timeout
40	Scanner card error—minor
41	Scanner card error—major
42	Scanner card error—indeterminate
43	System manager I/O error; transmission error
44	DUART-0 (dual universal asynchronous receiver/transmitter) spurious device interrupt
45	Scanner card error—acknowledgment bad channel

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

[c] Access menu 6.5 for integration-link status.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
46	Scanner card error—acknowledgment not expected
47	Scanner card error—bad checksum
48	Scanner card error—transmit timeout
49	Scanner card error—transmit timeout maximum
4A	Scanner card error—duo errors
4B	Scanner card error—parity error
4C	Scanner card error
4E	PIPL flash upgrade error
50[b]	Control-bus error—checksum error
51[b]	Control-bus error—checksum errors exceeded limit
52[b]	Control-bus error—checksum NAK on response
53[b]	Control-bus error—checksum NAK on transmission
54[b]	Control-bus error—checksum exceeded limit
55[b]	Control-bus error—invalid channel reference
56[b]	Control-bus error—empty control bus slot
57[b]	Control-bus error—reset peripheral
58[b]	Control-bus error—transmit error
59	Serial bus interface (SBI) DMA FIFO underrun
5A	SBI DMA FIFO overrun
5B	SBI failed to cycle in CB input read
5C	SBI failed to cycle in CB output write
5D[b]	Soft reset of CB peripheral
5E	SBI DMA CRC error
5F	X.25 task crashed
60[b]	Logic card status
62	First digit was blocked for Automated Attendant transfer
63	Channel reset was successful
64[b]	File system/central processor software error—restart system or session/task
65[b]	Line card protocol error—restart system or session/task
66	Line task internal error—restart system or session/task
67	Tree invalid parameter to action—restart system or session/task
68	Tree invalid action sequence—restart system or session/task
69	Tree invalid user record lock state—restart system or session/task
6A	Tree missing event
6B	Interpreter temporary area overflow
6C[b]	Bad user record at read—restart system or session/task
6D[b]	Bad user record during processing—restart system or session/task

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
6E[b]	Bad user record at write—restart system or session/task
6F	Tree internal error (error action)
70[b]	File system drive I/O error—restart system or session/task
71	File system DMA timeout—restart system
72[b]	Scramble code error or I/O error during message operation
73	Scanner unexpected error acknowledgment
74	Scanner wrong incoming message
75[b]	Line-task seize-line timeout—log error and continue
76	Scanner incoming message at write
77	Scanner incoming queue overflow
78	Scanner error request prior to reset
79	Scanner/ITIC line failure
7A	Message-waiting bad telephone number
7B	Data-bus checksum error
7C	File system out of synchronization
7D	Batch network transmit error
7E	Batch network receive error
7F	Batch network file system I/O error
80	Batch network internal error
81	Debug information message
82	Error status from operating system
83	Catastrophic error signalled by scanner
84[b]	Disconnect because of incorrect password
85[b]	Subscriber exited with unheard messages
86[b]	Line-task read or response timeout
87	Batch network returned message-sender's mailbox full
88	Bad community record at read
89	Batch network informational error
8A	SMDI integration-related error
8B	Bad command code for InfoTex
8C	AMIS-related error
8D	AMIS extended absence record (EAR) array at least 90% full
8E	AMIS directory at least 90% full
8F	Unknown network prefix in group number
90[b]	Outcalling attempted but no outcalling telephone number found in user record

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
91	Message waiting on denied extension for digital MID (DMID)—class of service does not allow message waiting
92	Octel Networking scheduler error
93	Fax queue full
94	Return fax user is full
95	Return fax user is gone
96	File system/central processor software error
97	Purge task internal error
98[b]	Bad user record at read
99[b]	Bad user record during processing
9A[b]	Bad user record at write
9B	File system drive I/O error
9C	File system DMA timeout
9D	Data checksum mismatch
9E	Data-bus error return code
9F	Scramble-code error or I/O error during message
A0	SST bad at write
A1	User record message directory out of order
A2	Invalid user record lock state
A3	Unknown network prefix in group list member
A4	Purge task encountered an error while accessing the IVR message directory
A5	Bad member found in personal group list: either invalid internal reference number (IRN) or incorrect length
A6	Error detected by MDS functions
A8	SP general error
AA	EDBN directory not cleared after two passes
B0	Node-management error
B1	Network-message-queue error
B2	Error with bulletin mailbox
B3	Bad mailbox name has been found or software error
B4	Bad network alias or software error has been found
B5	Failed to read network alias record from disk
B6	Failed to write network alias record to disk
B7	System restarted by software—failed to allocate memory for alias data
B8	Failed to write company record to disk
B9	Error in notification library
BA	Error in the queueing module of the notification library

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
BB	Error in the lock module of the notification library
BC	Error in the lock module of the notification library
BD	Bad company record found during startup process
BE	Bad user records found while building AMT/NMT during system startup
BF	Bad INN or function code found while building network maps for node serial number and mailbox length
C1	Bad AMIS transmission table found or software error
C2	Failed to write AMIS transmission table to disk
C3	Bad AMIS EAR has been found or software problem
C4	Failed to write AMIS EAR record to disk
C5	Bad AMIS directory has been found or software error
C6	Failed to write AMIS directory back to disk
C8	Unable to read clock chip (continuous ripple status set)
C9	Clock chip went bad while running (after boot)
CA	System timer drifted too far from clock chip date/time
CB	Clock chip bad or too different from SST timer at boot
CC	Minute task internal error
CD[b]	Hard-disk error detected by minute task alarm
CE[b]	Drive not running detected by minute task alarm
D0	CPU file system protocol out of sequence
D1	Operating system reported failed data-bus operation with file system
D2	Data-bus checksum error between central processor and file system
D3	Control-bus operation failed while preparing or checking data-bus operation with file system
D4	Inconsistent or no status from operating system on control-bus/data-bus operation
D5	Operating system reported control-bus error
D6	File system returned bad status in control-bus message
D7	File system reported drive error in returned control-bus message
D8	File system reported DMA failure on some previous operation
D9	File system failed to respond within timeout period
DA	General file system control-bus status log
DB	General file system data-bus status log
DC	General directory-related error
DD	Failed to read user record from disk
DE	Failed to read company record from disk
DF	Failed to write user record to disk
E0	System error

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
E1	Failed to start application; application not found; partition header damaged; or application requested cold start and not available
E2	AMT error
E3	Phrase concatenation library failure
E4	ASA system partition (SP) routine general error
E5	ASA SP routine I/O error
E6	Line card control-bus error
E7	Line card message contains unexpected value
E8	Central processor/line card protocol (low-level) error
E9[b]	Line card failed to respond within timeout period
EA	Line card data-bus error
EB	Message library failure
EC	IVR message directory error
ED	Phrase library error
EE	Mailbox library
EF	Name announcement library error
F0	System name announcement library failure
F1	System MID library failure
F2	System MIDG library failure
F4	Bad AMIS message array found or software error
F5	Failed to write AMIS message array back to disk
F6	Bad AMIS dialing sequence table found or software error
F7	Failed to write AMIS dialing sequence table back to disk
F8	SP AMIS I/O error
F9[b]	Integration general error
FA[b]	InterMail error—VPMOD-to-Host task
FB[b]	InterMail error—Host-to-VPMOD task
FC	Error in overflow event task
FD	File access error
FE	Invalid error code
FF	Invalid error code
100	CDR RAM buffer overflowed
101	CDR disk write error
102	Short message service error
104	LAN card router task, non-service-affecting errors
105	LAN card router task, service-affecting error

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
106	LAN card API error
107	CP/LAN card protocol out of sequence
108	LAN card timeout
110	CB error in getting new IUN
111	No IUN available
112	Error reading MDS record
113	MDS record validity check error
114	Error writing MDS record
115	Error in AMT search for MDS
116	MDS file validity check error
11B	Fax-queue error
120	DMD-entry read error
121	DMD-entry write error
130	Bad security checksum
131	Security checksum revalidated
132	System Backup/Restore internal error
141[b]	System Backup/Restore general error code
148[b]	RMM (SCSI Media Applications) general error code
150	MDS file-access error
151	NSA alarm for port test
152	SA alarm for port test
154	CDR review utility error
155	CIP MDS file error
156	NWPL MDS access error
164	Digital networking internal error
165[b]	Digital networking connect retries exhausted
1C0[b]	SP error
1C1[b]	LP error
1C2[b]	Arbitration master error
1E0	Network directory error
1E1	Network directory I/O errors
1E2	Number of network directory entries exceeds critical space threshold
1E3	Number of network directory entries exceeds directory full alarm threshold
1E4	Network directory completely full
1E5[b]	Octel Networking error
1E6[b]	Administrative message error
1E7	Network directory access error

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-18. Status Codes in the Status Log (Continued).

Status Code[a]	Description
1E8	Debug logs snapshot
1FC	Local lock error
200[b]	Abnormal system shutdown
202	R2 control table error
228	Background task error

[a] Although status codes are four characters long, leading zeroes are not shown in this table.

[b] Explained further in this chapter.

Table 8-19. Task IDs.

Offset 02 Entry	Description
00–47	Line-task number*
48–8F	Unused
90	Root task
91	Scanner task 0
92	Scanner task 1
93	Scanner task 2
94	File task 0
95	System manager task 0
96	System manager task 1
97	System manager task 2
98	System manager task 3
99	System manager task 4
9A	System manager task 5
9B	System manager task 6
9C	System manager task 7
9D	Purge task
9E	Minute task
9F	File task 1
A0	File task 2
A1	File task 3
A2	X.25 task
A3	OCL task
A4	ASA task
A5	SMDI task start

Offset 02 Entry	Description
A6	Unused
A7	SMDI task end
A8	InterMail task
A9	InterMail task
AA	Overflow evaluation task
AB	Simplified protocol task
AC	SMS task
AD	Background task
AE	Modem task
AF	SBR task
B0	Administrative task
B1	ABCA communications handler task
B2	Unused
B3–C3	Digital-networking mail tasks
C4–E8	Unused
E9	Poll daemon task
EA	Modem daemon task
EB	Test daemon task
EC	SCSI task
ED	File-system-cleanup daemon task
EE	Debug task
EF	Idle task
F0–FE	Unused
FF	Special (set by software)

* Refer to Table 8-20 for a description of the line tasks.

Table 8-20. Line-Task IDs/Logic Cards, Ports, Channels, and Slots.

Line-Task ID or Logic Card Name	Port	Destination		Physical Slot (1–16)
		Cabinet: Slot Address	FLT Card Channel	
00	1A	0:1	0	2
01	1B	0:1	1	2
02	1C	0:1	2	2
03	1D	0:1	3	2
04	1E	0:1	4	2
05	1F	0:1	5	2
06	1G	0:1	6	2
07	1H	0:1	7	2
08	2A	0:2	0	3
09	2B	0:2	1	3
0A	2C	0:2	2	3
0B	2D	0:2	3	3
0C	2E	0:2	4	3
0D	2F	0:2	5	3
0E	2G	0:2	6	3
0F	2H	0:2	7	3
10	3A	0:3	0	4
11	3B	0:3	1	4
12	3C	0:3	2	4
13	3D	0:3	3	4
14	3E	0:3	4	4
15	3F	0:3	5	4
16	3G	0:3	6	4
17	3H	0:3	7	4
18	4A	0:4	0	5
19	4B	0:4	1	5
1A	4C	0:4	2	5
1B	4D	0:4	3	5
1C	4E	0:4	4	5
1D	4F	0:4	5	5
1E	4G	0:4	6	5
1F	4H	0:4	7	5
20	5A	0:5	0	6
21	5B	0:5	1	6
22	5C	0:5	2	6
23	5D	0:5	3	6
24	5E	0:5	4	6
25	5F	0:5	5	6
26	5G	0:5	6	6
27	5H	0:5	7	6
28	6A	0:6	0	7
29	6B	0:6	1	7
2A	6C	0:6	2	7
2B	6D	0:6	3	7
2C	6E	0:6	4	7
2D	6F	0:6	5	7
2E	6G	0:6	6	7
2F	6H	0:6	7	7
30	7A	0:7	0	8
31	7B	0:7	1	8
32	7C	0:7	2	8
33	7D	0:7	3	8
34	7E	0:7	4	8
35	7F	0:7	5	8
36	7G	0:7	6	8
37	7H	0:7	7	8
38	8A	1:1	0	10
39	8B	1:1	1	10
3A	8C	1:1	2	10
3B	8D	1:1	3	10
3C	8E	1:1	4	10
3D	8F	1:1	5	10
3E	8G	1:1	6	10
3F	8H	1:1	7	10
40	9A	1:2	0	11
41	9B	1:2	1	11
42	9C	1:2	2	11
43	9D	1:2	3	11
44	9E	1:2	4	11
45	9F	1:2	5	11
46	9G	1:2	6	11
47	9H	1:2	7	11
CCF Card	. . .	0:0	. . .	1
LAN Card (1-cabinet servers)	. . .	0:7	. . .	8
LAN Card (2-cabinet servers)	. . .	1:7	. . .	16

Table 8-21. Control-Bus (CB) Message Types.

Code	Description
File-System Message Types	
10	Abandon new message
11	Abandon new message response
12	Close name/announcement
13	Close name/announcement response
14	Close new message
15	Close new message response
16	Close old message
17	Close old message response
18	Close phrase
19	Close phrase response
1A	Decrement use count
1B	Decrement use count response
1C	Increment use count
1D	Increment use count response
1E	Load prompt IDs
1F	Load prompt IDs response
20	Open name/announcement
21	Open name/announcement response
22	Open new message
23	Open new message response
24	Open old message
25	Open old message response
26	Open phrase
27	Open phrase response
28	Read data
29	Read data response
2A	Read message buffer
2B	Read message buffer response
2C	Read name/announcement buffer
2D	Read name/announcement buffer response
2E	Read prompt buffer
2F	Read prompt buffer response
30	Set prompt level
31	Set prompt level response
32	Skip to old message end
33	Skip to old message end response
34	Write data
35	Write data complete
36	Write data response
37	Write message buffer
38	Write message buffer complete
39	Write message buffer response
3A	Write phrase buffer
3B	Write phrase buffer complete
3C	Write phrase buffer response
3D	Reset a channel
3E	Reset a channel response
3F	Install drive
40	Install drive response
41	General configuration response for file card
42	Checkpoint
43	Checkpoint response
44	Space available request
45	Space available request response
46	Garbage collect begin
47	Garbage collect begin response
48	Garbage collect end
49	Garbage collect end response
4A	Garbage collect mark message
4B	Garbage collect mark message response
4C	Check RAM status
4D	Check RAM status response
52	Drive test
53	Drive test response
54	Drive verify
55	Drive verify response
56	Drive copy
57	Drive copy response
58	Return error counters
59	Return error counters response
5A	Read half record
5B	Read record response
5C	Write record
5D	Write record response
5E	Write record complete
5F	Get length of old message
60	Get length of old message response
61	Assign internal record number (CB OUT request)
61	General configuration response for secondary file card (CB IN response)
62	Assign IRN response
63	Release IRN
64	Release IRN response
65	Assign EAR
66	Assign EAR response
67	Return EAR
68	Return EAR response
69	Release EAR
6A	Release EAR response

Table 8-21. Control-Bus (CB) Message Types (Continued).

Code	Description
6B	Return NODE and EAR counter
6C	Return NODE and EAR counter response
6D	Update IUN/INN record
6E	Update IUN/INN record response
6F	Update IUN/INN record complete
71	New message
72	New message response
73	Additional message segment
74	Additional message response
75	Send/update message
76	Send/update message response
77	Start message search
78	Start message search response
79	Return next message
7A	Return next message response
7B	Return next segment
7C	Return next segment response
7D	Return destinations of the message
7E	Return destination response
7F	Partial read IUN/INN record
80	Partial read IUN/INN record response
81	Build XREF tables
82	Build XREF tables response
83	Check INN
84	Check INN response
85	Update node field
86	Update node field response
87	Update node field complete
88	Return number of messages in node
89	Return number of messages in node response
90	Add bad track
91	Add bad track response
A1	General configuration status request
A2	General read memory
A3	General write memory
A4	Return code level
A5	Set DMA test
A6	General utility command
A7	CDR utility command
B2	General read memory response
B3	General write memory response

Code	Description
B4	Return code level response
B5	Set DMA test response
B6	General utility command response
B7	CDR utility command response
C0	New message primitives
C1	New message primitives response
C2	Phrase table primitives
C3	Language area primitives response
C4	New garbage collect primitives
C5	New garbage collect primitives response
C6	Miscellaneous commands
C7	Miscellaneous commands response
C8	New data file primitives
C9	New data file primitives response
CA	New data file primitives write complete
CB	Get phrase table pointers
CC	Get phrase table pointers response
CD	Put phrase table pointer
CE	Put phrase table pointer response
D0	Message information file operation
D1	Message information file operation response
D2	Put message information file entry
D3	Put message information file entry response
FE	CP software synchronization
Line Card Message Types	
01	Line card answer call (if possible)
02	Line card answer supervision
03	Line card go on-hook
04	Line card flash hook
05	Line card seize line
06	Line card return port type
07	Line card configure port
08	Line card get pulse digit
09	Line card set incoming dial pulses
0A	Line card set outgoing wink
0C	Special off-hook
0D	Special on-hook
10	Second level software download query
11	Line card diagnostics
12	Begin second level download
13	Second level download DMA setup
14	Second level download DMA done

Table 8-21. Control-Bus (CB) Message Types (Continued).

Code	Description
15	Second level download complete
16	Second level software download sync
17	Clear second level alarms
18	Download data start
19	Download data done query
1A	Set number of digits
20	Auto answer command
21	Go off-hook
22	Return called-party ID
23	FLT event poll command
24	Reconnect call command
25	Message-waiting command
26	Dial digit command
27	Datacom and error command
28	Set pilot number
41	Line card answer call response
42	Line card answer supervision response
43	Line card go on-hook response
44	Line card flash hook response
45	Line card seize line response
46	Line card return port type response
47	Line card configure port response
48	Line card get pulse digit response
49	Line card set dial pulses response
4A	Line card set outgoing wink response
4C	Line card special off-hook response
4D	Line card special on-hook response
50	Second level software download response
51	Line card diagnostics response
52	Begin second level download response
53	Second level download DMA setup response
54	Second level download DMA done response
55	Second level download complete response
56	Second level software download sync response
57	Line card send clear alarm response
58	Download data start response
59	Download data done response
5A	Set number of digits response
60	Auto answer command response
61	Go off-hook response
62	Return called-party ID response
63	FLT event poll command response
64	Reconnect call command response
65	Message-waiting command response
66	Dial digit command response
67	Datacom and error command response

Code	Description
68	Set pilot number response
80	Line card purge event queue
81	Line card get input event
82	Line card transmit speech
83	Line card read speech buffer response
84	Line card read speech buffer done
85	Line card receive speech
86	Line card write speech buffer response
87	Line card write speech buffer done
88	Line card reset channel
89	Line card dial DTMF digit
8A	Line card get signal transition
8B	Line card signal detect begin
8C	Line card signal detect end
8D	Line card set dial tone
8E	Line card enable Autovon keys
8F	Line card stop special phrase
90	Line card purge event queue response
91	Line card get input event response
92	Line card read speech buffer
93	Line card read speech buffer set
94	Line card transmit speech end
95	Line card write speech buffer
96	Line card write speech buffer set
97	Line card receive speech end
98	Line card reset response
99	Line card dial DTMF digit response
9A	Line card get signal transition response
9B	Line card signal detect begin response
9C	Line card signal detect end response
9D	Line card set dial tone response
9E	Line card enable Autovon keys response
9F	Line card stop special phrase response
A0	FLT detect
A1	General configuration status request
A2	General read memory
A3	General write memory
A4	Return code level
A9	Read fax buffer set
AA	Read cover sheet done
AB	Get fax ID
B0	FLT detect response
B1	General configuration response
B2	General read memory response
B3	General write memory response

Table 8-21. Control-Bus (CB) Message Types (Continued).

Code	Description
B4	Return code level response
C4	Line card set dial tone
C5	Line card monitor call
CA	Read cover sheet done response
CB	Get fax ID response
D4	Line card set dial tone response
D5	Line card monitor call response
E1	Line card set ID response
E2	General read memory response
E3	General write memory response
FD	DSP second level download
FE	DSP ready
LAN Card Message Types	
22	Reset
23	Reset response
26	Open channel
27	Open channel response
28	Read data
29	Read data ready
2A	Read data complete
2B	Write data
2C	Write data ready
2D	Write data complete
2E	Outgoing connection request
2F	Outgoing connection response
30	Outgoing connection status
31	Incoming connection
32	Incoming connection status

Code	Description
33	Incoming connection status response
34	Disconnect channel
35	Disconnect channel response
36	Request network service
37	Request network service response
3A	Data message in
3B	LAN card session status
3D	Write data network service
3E	Write data ready network service
3F	Write data complete network service
40	Read data network service
41	Read data ready network service
42	Read data complete network service
43	Write initial configuration
44	Write initial configuration response
45	Write data configuration
46	Write data ready configuration
47	Write data complete configuration
48	SNMP notification
49	Read trace buffer
4A	Read trace buffer response
4B	Read error log
4C	Read error log response
4D	Set time of day
4E	Set time of day response
4F	Set task trace
50	Set task trace response

9 ALARM INTERPRETATION

The Octel 250 server alarms are activated by software or hardware malfunctions. The following aspects of the server design are associated with alarm conditions:

- ❑ The current alarm-status menu
- ❑ LEDs on the front edge of each logic card
- ❑ LEDs on the disk drives
- ❑ LEDs on the alarm panel
- ❑ Remote alarm relays
- ❑ The status log

The status log might have entries associated with the alarm conditions. Refer to Chapter 8 and the *Status Log Interpretation Guide* for information about interpreting the status log. This chapter describes the other topics related to alarms.

Reviewing the Current Alarm Status (Menu 13.8)

The server sets alarms when there are software or hardware malfunctions in the system. The server updates the alarms every minute. You or the system manager should review the current alarm status from menu 13.8 daily. This menu should be printed and filed in a system-maintenance notebook. Reviewing these printouts can alert you or the system manager to possible problems; for example, bad-password disconnects. During maintenance, view and print out the current alarm status.

You or the system manager should also review the status log in menu 13.2 daily. Refer to Chapter 8 for procedures for viewing and evaluating the status log.

Printing the Current Alarm Status (Menu 13.8)

Print the current alarm-status menu, as follows:

1. Make sure that the printer connected to the SMT is on line and has sufficient paper.
2. From the Main Menu, access Menu 13 – System Maintenance, as shown in Figure 9-1.

```
                          Menu 13 – System Maintenance                [VPMOD ID]

     1 – Shut Down with Dump
     2 – Review Status Log
     3 – Scroll Status Log
     4 – Display Software Levels
     5 – Turn Message Waiting Indicators Back On
     6 – Reset RS232 Integration Link
     7 – Display Software Features Installed
     8 – Review Current Alarm Status
     9 – Bad Password Disconnect Error (Enabled/Disabled): [current status]
    10 – Review Phrase Management
    11 – Review Card Management
    12 – CPU Switchover – Normal: [N] Abnormal: [N]
    13 – Block Automated Attendant Transfer Error (Enable/Disable): [curr. status]
    14 – Purge and Convert Follow–Me–Forward Mailboxes
    15 – Display Capacity Information

                                      Enter Option:
```

Figure 9-1. Menu 13 – System Maintenance.

3. From menu 13, select ***8*** to access menu 13.8, Review Current Alarm Status. Figure 9-2 is an example of menu 13.8. These alarm conditions are activated by software and hardware malfunctions. Refer to the “Interpreting the Alarm-Status Menu (Menu 13.8)” section, page 9-3, for descriptions of the alarm types. When all of the entries have been displayed, sometimes across multiple screens, the following prompt appears:

   Current alarm Status display complete. Enter “P” to print current status, “C” to clear software alarms, “S” to disable/enable the software alarms, or any other key to return to System Maintenance Menu.

```
                          Menu 13 – System Maintenance                [VPMOD ID]
                          Review Current Alarm Status

Cabinet 1 Hardware Alarms:
T – Description                    Alarm      Date          Time      Location


Software Alarms:        Enabled                  Last Clear: 13 MAY 97     10:57:06AM
T – Description                   Alarm      Date          Time     Count  Threshold
S – Entry in Status Log            NSA     13 MAY 97     11:42:44AM    001
```

Figure 9-2. Example of Menu 13.8, Review Current Alarm Status.



Caution!

To prevent losing current software-alarm data, *do not* press ***C*** to clear the alarms before printing the screen. *Never* select ***S*** to disable the software alarms. If the alarms are cleared or disabled, alarm-generating conditions might not be corrected before irreparable damage occurs.

4. Press ***P*** to print menu 13.8. When printing is complete, this prompt appears:

   Printout Complete.
   Current alarm Status display complete. Enter "P" to print current status, "C" to clear software alarms, "S" to disable/enable the software alarms, or any other key to return to System Maintenance Menu.

5. Press ***C*** to clear the current alarms. The following prompt appears:

   Enter "Y" to clear the current software alarms, or enter "N" to cancel clear:

6. Press ***Y*** and ***Enter*** to return to menu 13. Hardware alarms cannot be cleared. If the cause of the alarm is not fixed, hardware alarms and some software alarms reappear almost immediately.
7. Press the ***Enter*** key again to return to the Main Menu.
8. Press ***Ctrl+C*** to log out. When finished with the maintenance menu, *always* log out to deny access to the server software by unauthorized personnel. The screen clears, and the cursor moves to the upper left (home) position. If a backup or software upgrade is to be performed, logging off is not necessary.
9. Remove the printout from the printer, and review the alarm status for possible maintenance action. If no action is required, file the printout in the system-maintenance notebook kept by the system manager. If action is required, refer to the "Interpreting the Alarm-Status Menu (Menu 13.8)" section, following, and Chapter 8, or call the Octel Customer Services Center or your Octel distributor.

Interpreting the Alarm-Status Menu (Menu 13.8)

The server can set the following three major types of alarms, listed from most to least severe:

- **Out-of-Service (OOS) Alarms**. These alarms alert the system manager and service personnel that the server has shut down. The OOS alarm indicates a CPU, hardware, or software failure. However, this alarm does not appear in menu 13.8, because with an OOS alarm, menus cannot be accessed, as the server has restarted and cannot reboot to an online state.
- **Service-Affecting (SA) Alarms**. These alarms alert the system manager and service personnel about conditions that affect server operation, such as low CDR space. Voice messages in process or stored could be lost. An SA alarm condition can also result in a permanent loss of data.

- **Non-Service-Affecting (NSA) Alarms**. These alarms warn the system manager and service personnel of conditions that could degrade service, if not corrected, such as low message-storage space. These conditions do not require immediate attention.

For both hardware and software alarms, menu 13.8 (Figure 9-2) displays the following information:

- The ***T*** column designates the type of alarm. ***S*** indicates a software alarm, and ***H*** indicates a hardware alarm.
- The ***Description*** column describes the alarm. Refer to the "Software Alarms" section, following, and the "Hardware Alarms" section, page 9-5, for alarm descriptions.
- The ***Alarm*** column shows the type of alarm. NSA is a non-service-affecting alarm and SA is a service-affecting alarm. The OOS alarm is never shown.
- The ***Date*** and ***Time*** columns indicate when the alarm was registered.
- The ***Location*** column appears only for hardware alarms and shows the general location of the hardware malfunction in the server.
- The ***Software Alarms:*** field shows whether software alarms are enabled or disabled. ***Software Alarms:*** also acts as a heading for the software alarm data that follows.
- The ***Last Clear:*** field shows the date and time the software alarms were last reset when ***C*** (clear) was typed. If an alarm condition is still present when the alarms are cleared (reset), that alarm condition reappears on menu 13.8 within 1 minute.
- The ***Count*** column appears only for software alarms and shows the number of times the alarm condition has occurred since the alarm was reset.
- The ***Threshold*** column appears only for software alarms and shows, where applicable, the point at which an alarm condition is activated. All software alarm thresholds are fixed. Refer to the "Software Alarms" section, following, for the threshold levels.

Hardware alarms are cleared automatically when the problem is corrected. Software alarms must be cleared manually using SMT menu 13.8 after the problem has been corrected. The following sections describe the software and hardware alarms that can appear in menu 13.8. Refer to the "Determining and Correcting the Alarm Condition" section, page 9-10, for information about how to correct an alarm condition.

Software Alarms

The following types of software alarms can occur in the server:

- **Out-of-Service (OOS) Alarms**
  - **System Manager Shutdown**. Logged when the server is intentionally shut down using menu 13.1, but does not indicate any problems with the server. The alarm appears in menu 13.8 only *after* the server is rebooted. The alarm is not cleared until you type ***C*** to clear it.

- **System Software Failure**. Results in the server being out of service. A system software failure requires that the server be rebooted. The alarm appears in menu 13.8 only *after* the server is rebooted. The alarm is not cleared until you type ***C*** to clear it.

- **Service-Affecting (SA) Alarms**
  - **Disk Space Critical**. Indicates that 10% of the message space remains.
  - **Status Log Space Critical**. Indicates that 10% of the status-log buffer space remains.
  - **CDR Space Critical**. Indicates that 10% of the call-detail-records (CDR) buffer space remains.
  - **RS232 Integration Link Down**. Indicates that the RS-232 link failed.
  - **Critical Entry in Status Log**. Indicates that a condition causing an SA alarm is recorded in the status log.
  - **Disk Drive Not Running**. Indicates that a disk drive is not running.
  - **Hard Disk Errors**. Indicates that a disk drive had multiple errors.
  - **Faulty Logic Card**. Indicates that a logic card failed.
  - **LAN Card/API Down**. Indicates that the LAN card detected a failure (Aria 2.0 only).

- **Non-Service-Affecting (NSA) Alarms**
  - **Disk Space Low**. Indicates that 20% of the message space remains.
  - **Status Log Space Low**. Indicates that 20% of the status-log buffer space remains.
  - **CDR Space Low**. Indicates that 20% of the CDR buffer space remains.
  - **Entry in Status Log**. Indicates that a condition causing an NSA alarm is recorded in the status log.
  - **System Backup/Restore Error**. Indicates that a failure occurred during system backup or restore.
  - **Frame Sync Error**. Indicates that the port on a FLT-A card used to synchronize with the PBX lost synchronization.

Hardware Alarms

The following types of hardware alarms can occur in the server:

- **Out-of-Service (OOS) Alarms**
  - **Red Line Temperature**. Indicates occurrence of a critical temperature in the cabinet, above 60°C (140°F).

- **Service-Affecting (SA) Alarms**
  - **Power Supply**. Indicates a problem with one or more of the power supplies in the power-distribution tray.

- **Non-Service-Affecting (NSA) Alarms**
  - **Yellow Line Temperature**. Indicates occurrence of an excessive, but not critical, temperature in the cabinet, above 45°C (113°F).

Checking Logic-Card and Disk-Drive Alarm LEDs

Each logic card contains LEDs on its front edge that show the card's status. Use these indicators to determine the type of alarm that has occurred. Figure 9-3 shows the front edges of the combination CPU/file (CCF) card and the fax-capable, 8-port line/telephone interface (FLT) card.

When the following LEDs on the CCF card are lit, they indicate alarm conditions:

- ***OOS*** indicates an out-of-service alarm. Refer to the "Out-of-Service (OOS) Alarms" section, page 9-11, for more information.
- ***SA*** indicates a service-affecting alarm. Refer to the "Service-Affecting (SA) Alarms" section, page 9-13, for more information.
- ***NSA*** indicates a non-service-affecting alarm. Refer to the "Non-Service-Affecting (NSA) Alarms" section, page 9-16, for more information.
- ***YEL*** indicates that the operating temperature is above 45°C (113°F) on the logic card.
- ***RED*** indicates that the operating temperature is above 60°C (140°F) in the server. This LED might not light if the CPU has shut down.

The LPE and SPE LEDs on an FLT card indicate a system-bus error. The LPE LED indicates a problem with the large-packet portion of the Octel Packet Interface (OPI) bus, and the SPE LED indicates a problem with the small-packet portion of the OPI bus.

The remaining LEDs on the CCF and FLT cards and the LEDs on the LAN card do not indicate alarm conditions. Refer to Chapter 2 for descriptions of these LEDs.

When troubleshooting a logic card or disk-drive failure, the LEDs on the card or drive can help isolate the problem. To isolate and correct the problem, perform the following steps:

1. Access menu 13.2 and view the status log to determine whether any logic card or drive failures have been reported. Use the information in Chapter 8 to interpret the status log.
2. Check menu 13.11, Card Management, and verify that all cards are active.
3. Open the front door of the server.
4. Check the LEDs on the front edges of the logic cards. The ERR LED indicates a problem with the logic card. Use the procedures in Chapter 11 to replace any card that has its ERR LED lit. If all the logic cards appear to be working, one of the disk drives might be faulty. Proceed to step 5.

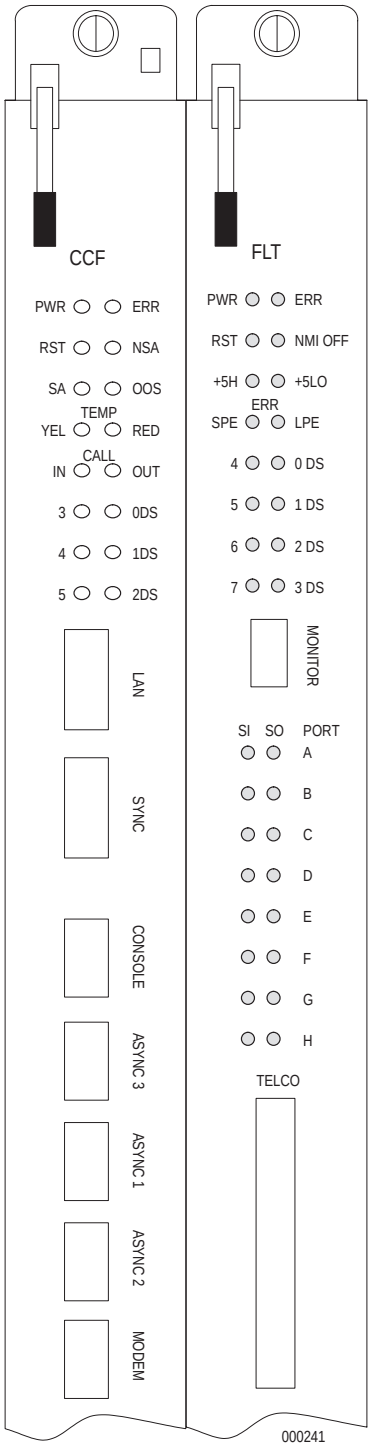


Figure 9-3. Logic Card Indicators.

5. Make sure that the three LEDs on each disk drive, as shown in Figure 9-4, are lit as follows: During normal operation, the green RDY LED is on, the red INOP LED is off, and the yellow SEL LED flashes on during read and write operations. If the green RDY LED is off or the red INOP LED is on, the drive is faulty. Refer to Chapter 11 for replacement procedures.
   - ❑ If the server is on line, check the status log for drive-related errors. Refer to Chapter 8.
   - ❑ If the server cannot boot, use the procedures in Chapter 6 to troubleshoot the drive.

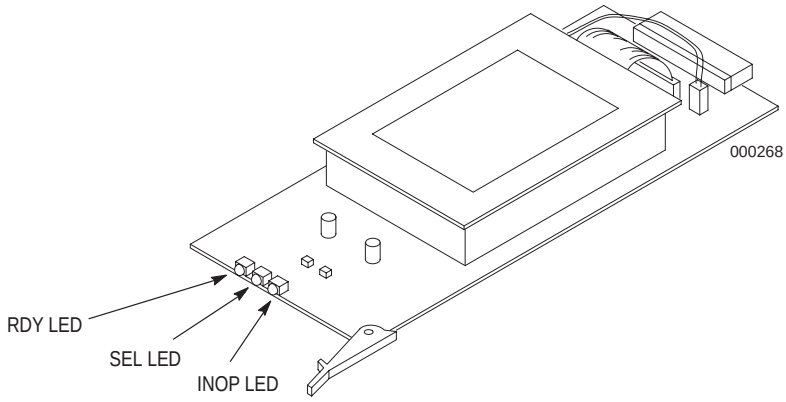


Figure 9-4. Disk-Drive-Module LEDs.

6. After replacing a suspect logic card or drive, clear all alarms in menu 13.8, Review Current Alarm Status, and verify that the SA LED goes off.
7. Close the front door of the server.

Checking Alarm-Panel LEDs

The alarm panel, located at the front of the server between the logic bay and drive bay, has LEDs that indicate alarm situations. Figure 9-5 shows the LEDs on the alarm panel, which are defined in Table 9-1.

If two cabinets are connected, the CAB 1 or CAB 2 LED lights (in both cabinets) to show which cabinet produced the alarm. The rest of the LEDs on the alarm panel are specific to the cabinet that produced the alarm, and do not light on the other cabinets.

If the PWR FAIL 1 LED lights, a first-level power failure has occurred, which means that power has failed to all logic cards and drives except the CCF card. If the PWR FAIL 2 LED lights, a second-level power failure has occurred, which means that power has failed to all logic cards and drives, including the CCF card.

Refer to the “Determining and Correcting the Alarm Condition” section, following, for information about correcting hardware and software alarm conditions.

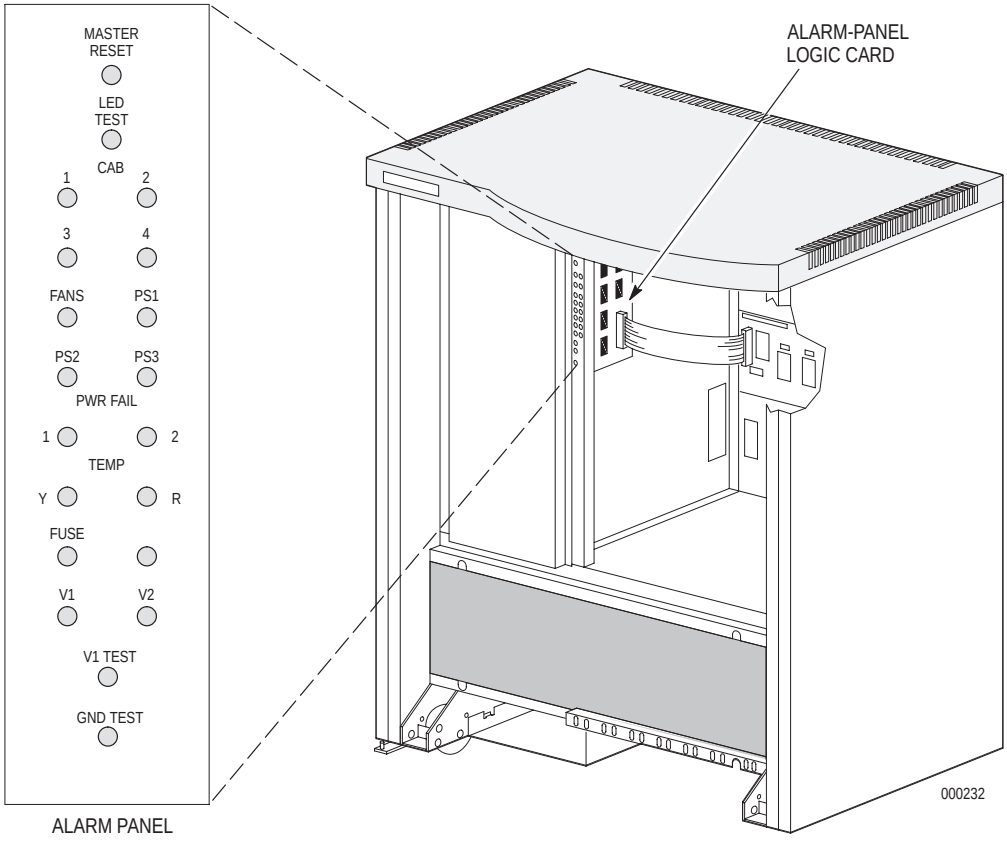


Figure 9-5. Alarm-Panel LED Indicators.

Table 9-1. Alarm-Panel LED Descriptions.

LED Label	LED Color	Description
CAB		
1	Green/Red	Alarm for cabinet 1
2	Green/Red	Alarm for cabinet 2
3	Green/Red	Alarm for cabinet 3
4	Green/Red	Alarm for cabinet 4
FANS	Red	One or more fans failed
PS1	Red	Power-supply 1 failed
PS2	Red	Power-supply 2 failed
PS3	Red	Power-supply 3 failed
PWR FAIL		
1	Red	First-level power failure
2	Red	Second-level power failure
TEMP		
Y	Yellow	Yellow-line temperature, above 45^{o}C (113^{o}F)
R	Red	Red-line temperature, above 60^{o}C (140^{o}F)
FUSE	Red	Blown fuse
V1	Green	+24-V power OK
V2	Green	Auxiliary power board +5-volt power OK

Determining and Correcting the Alarm Condition

Use menu 13.8 to identify an alarm condition. Refer to the “Reviewing the Current Alarm Status (Menu 13.8)” section, page 9-1. In some situations, menu 13.8 is not accessible. In addition to menu 13.8, observe the OOS, SA, and NSA LEDs on the CCF card.

- ❑ If menu 13.8 or the OOS LED indicates an out-of-service alarm, refer to the “Out-of-Service (OOS) Alarms” section, following.
- ❑ If menu 13.8 or the SA LED indicates a service-affecting alarm, refer to the “Service-Affecting (SA) Alarms” section, page 9-13.
- ❑ If menu 13.8 or the NSA LED indicates a non-service-affecting alarm, refer to the “Non-Service-Affecting (NSA) Alarms” section, page 9-16.

If you do not know the type of alarm, refer to all of the following sections and use the most appropriate subsection.

Out-of-Service (OOS) Alarms

OOS alarms do not appear in menu 13.8 until after the server is rebooted. All OOS alarms, except for a system manager shutdown, require immediate resolution. Table 9-2 shows the status of the CCF-card and alarm-panel LEDs for various out-of-service conditions.

Table 9-2. CCF-Card and Alarm-Panel LEDs for Out-of-Service Conditions.

CCF-Card LED Lit	Alarm-Panel LED Lit	Alarm Condition
OOS	. . .	Intentional (system manager) shutdown
OOS	. . .	System software failure
. . .	TEMP R	Red-line-temperature alarm
OOS	PWR FAIL 1	First-level power loss
. . .	PWR FAIL 2	Second-level power loss
. . .	V1 *(not* lit)	Total +24-volt power loss
. . .	V2 (*not* lit)	Auxiliary-power-board failure

The server might not boot if an OOS alarm has occurred. Perform the following steps:

1. Try to boot the server.
2. If the server boots, print menu 13.8, Review Current Alarm Status, and menu 13.2, Review Status Log, and interpret the entries to determine the cause of the shutdown. Refer to Chapter 8 and the *Status Log Interpretation Guide* for information about interpreting the status log. If the server does not boot, use the startup-fault isolation procedures in Chapter 6.
3. When power to the server is turned on, check the LED indicators on the front of the CCF card and on the alarm panel. Refer to Table 9-2 and the “Checking Logic-Card and Disk-Drive Alarm LEDs” section, page 9-6.
4. Depending on the LED status and the alarms in menu 13.8, use the most appropriate of the following sections to correct the OOS alarm condition.

Intentional (System Manager) Shutdown

Although an intentional shutdown is logged as an OOS alarm, this alarm does not indicate any problems with the server. The alarm appears in menu 13.8 only *after* the server is rebooted. The alarm is not cleared until you type ***C*** to clear it. If the alarm appears again after you reboot the server and clear the alarm, call the Octel Customer Services Center or your Octel distributor immediately.

System Software Failure

An OOS alarm caused by a software failure results in the server being out of service, and the server must be rebooted. The alarm appears in menu 13.8 only *after* the server is rebooted. The alarm is not cleared until you type ***C*** to clear it. If the alarm appears again after you reboot the server and clear the alarm, call the Octel Customer Services Center or your Octel distributor immediately.

Red-Line-Temperature Alarm

The CCF card generates a red-line-temperature OOS alarm if the exhaust plenum temperatures reach 60ºC (140ºF). The RED TEMP and SA LEDs light on the CCF card, and the TEMP R LED lights on the alarm panel. The OOS LED on the CCF card lights when the server attempts to reboot. If the red-line-temperature alarm is detected, the alarm board automatically shuts down the logic cards. The server cannot reboot until the red-line-temperature alarm has been cleared.

When the boot process is completed, the OOS LED turns off if the temperature has cooled sufficiently. The red-line-temperature alarm can be caused by the following problems:

- ❑ An increase in room temperature
- ❑ A faulty temperature sensor
- ❑ A blocked air filter
- ❑ Total fan failure
- ❑ Hardware failure

If a card or drive might be overheating, perform the following steps:

1. Put on an antistatic wrist strap.
2. With server power off, remove the cards and drives, one at a time, and visually inspect each one. After inspecting each card or drive, partially reinsert it, but do not reseat it.
3. Reseat the cards and drives, one at a time. After you reseat each card or drive, turn on the server power and allow the server to attempt to boot. Turn off the server power before reseating the next card or drive.

   Replace the card or drive that prevents the server from rebooting. Refer to Chapter 11 for replacement procedures.
4. Reinstall all other cards and drives.
5. Reboot the server.
6. Remove the antistatic wrist strap.
7. Close the front door of the server.

Three fans in the power-distribution tray help control the temperature in the cabinet. The temperature in the cabinet should not reach the red-line temperature even if two of the three fans fail.

First-Level or Second-Level Power Loss

The CCF card generates OOS and SA alarms if total power loss occurs. When the power supplies fail, the SA LED on the CCF card and PWR FAIL 1 LED on the alarm panel light and the OOS relay is activated. The OOS LED on the CCF card and the PWR FAIL 2 LED on the alarm panel light only after the server attempts to reboot.

If the PWR FAIL 1 LED lights, a first-level power failure has occurred, which means that power is off to all logic cards and drives, except the CCF card. If the PWR FAIL 2 LED lights, a second-level power failure has occurred, which means that power is off to all logic cards and drives, including the CCF card.

To correct a power-supply failure, check cables, connections, and the ac input power, and then replace the power supply, if necessary. Refer to Chapter 11 for replacement procedures.

Total +24-Volt Power Loss

This failure can occur only if there is a compete loss of +24 volts to the server cabinet, or if the main-cabinet circuit breaker has tripped. This alarm is indicated if the V1 LED is *not* lit, which means that no power is being supplied from the power supplies in the tray. If the main circuit breaker is not tripped, check the circuit breaker of the main power source. Also check the power supplies. Refer to Chapter 11 for replacement procedures, if necessary.

Auxiliary-Power-Board Failure

This failure can occur if a component or connector on the auxiliary power board is damaged. This alarm is indicated if the V2 LED is *not* lit, which means that no power is being supplied from the auxiliary power board. Another cause for this alarm is that a connector on the auxiliary power board is disconnected. Open the power-distribution tray and check the connections. If necessary, replace the auxiliary power board, as described in Chapter 11.

Service-Affecting (SA) Alarms

If an SA alarm occurs, refer to menu 13.8, Review Current Alarm Status, and Table 9-3, which shows the status of CCF-card and alarm-panel LEDs for various service-affecting conditions. The ***Generated by*** column indicates whether the alarm is hardware- or software-generated.

Table 9-3. CCF-Card and Alarm-Panel LEDs for Service-Affecting Conditions.

CCF-Card LED Lit	Alarm-Panel LED Lit	Alarm Condition	Generated by
SA	. . .	Disk space critically low (10% left)	Software
SA	. . .	Status-log space critically low (10% left)	Software
SA	. . .	CDR-buffer space critically low (10% left)	Software
SA	. . .	RS-232 integration link failure	Software
SA	. . .	Critical status-log entry	Software
SA	. . .	Disk-drive failure	Software
SA	. . .	Logic-card failure	Software
SA	. . .	LAN card/API failure	Software
SA	PS1, PS2, or PS3	Partial power loss	Hardware
SA	FUSE	Blown fuse	Hardware

Refer to Table 9-3 and the "Checking Logic-Card and Disk-Drive Alarm LEDs" section, page 9-6. Depending on the LED status and the alarms in menu 13.8, use the most appropriate of the following sections to correct the SA alarm condition.

Disk Space Critically Low

If the available disk space is critically low (less than 10%), an SA alarm is generated. Refer the problem to an Octel Communications sales representative, so that an additional drive can be purchased. As a temporary measure until the drive-space issue can be remedied, instruct the system manager to send a broadcast message to all subscribers, requesting that they delete all unneeded messages.

Status-Log Space Critically Low

If the available status-log space is critically low (less than 10%), perform the following steps:

1. Access menu 13.2, print the status log, and clear it.
2. Access menu 13.8, Review Current Alarm Status, and print it. Refer to the "Printing the Current Alarm Status (Menu 13.8)" section, page 9-2, for information about printing menu 13.8.
3. Clear all alarms.
4. If recent status-log entries require attention, refer to Chapter 8.

If any problems still exist, call the Octel Customer Services Center or your Octel distributor.

CDR-Buffer Space Critically Low

If the available CDR-buffer space is critically low (less than 10%), an SA alarm is activated. CDR data should be downloaded when the CDR buffer becomes 30% to 50% filled with new CDR records. Refer to the *Online CDR User Reference Guide* or *DecisionPro Manual* for instructions about CDR data collection.

RS-232 Integration Link Failure

An SA alarm is activated when the RS-232 link fails. An RS-232 link failure is reported in menu 6.5, Integration Link Management. For additional information, check the status log for any ***F9*** entries and refer to Chapter 8 for status-code details. Also refer to integration troubleshooting procedures in Chapter 7. Perform the following steps to correct the link failure:

1. Make sure that the RS-232 cable is securely connected to the server.
2. Check menu 6.5.3 to review all the integration links. Check the field entries for the RS-232 link. If any entries need to be changed, access menu 6.5.2 and make the necessary changes (refer to Chapter 5).
3. If the status log has any status-code ***F9*** entries, refer to Chapter 8 and take action based on the subcode in offset 08.
4. If you are using an integration device, such as an APID, PID/R, MID, or DMID, perform the following steps:
   a. Reset the link, using menu 6.5.5 (refer to Chapter 5).
   b. If the link is not restored after 15 minutes, reset the integration device. (PID/R and AMID integration devices can take up to 10 minutes to become fully operational after they are logged in.)
5. If the problem persists and you cannot resolve it using the integration troubleshooting procedures in Chapter 7 or the status-log procedures in Chapter 8, call the Octel Customer Services Center or your Octel distributor.

Critical Entry in Status Log

When this SA alarm occurs, access menu 13.2 and print the status log. Refer to Chapter 8 for status-code details.

Disk-Drive Failure

An SA alarm is activated when a disk drive fails. To determine which drive has failed, check the LEDs on all the drives (Figure 9-4). During normal operation, the green RDY LED is on, the red INOP LED is off, and the yellow SEL LED flashes on during read and write operations. If the green RDY LED is off or the red INOP LED is on, the drive is faulty. Refer to Chapter 11 for replacement procedures.

Logic-Card Failure

An SA alarm is activated when a logic card fails. To determine which card has failed, check the LEDs on all the cards. The card that failed has its ERR LED lit, as shown for the CCF and FLT cards in Figure 9-3. Refer to Chapter 11 for replacement procedures.

LAN Card/API Failure

Refer to Chapter 7 to troubleshoot the LAN card.

Partial Power Failure

A partial power loss occurs when one of the two or three redundant power supplies fails. The power loss generates an NSA alarm if one power supply fails. The server automatically uses the full power from the remaining power supplies. To clear a power-supply failure, check the circuit breakers at the rear of the cabinet. Refer to Chapter 11 and replace the faulty power supply.

Blown Fuse

This failure occurs if a fuse has blown on the main backplane or disk backplane. It generates an SA alarm. Refer to Chapter 11 for information about replacing a blown fuse.

Non-Service-Affecting (NSA) Alarms

If an NSA alarm occurs, refer to menu 13.8, Review Current Alarm Status, and Table 9-4, which shows the status of CCF-card and alarm-panel LEDs for various non-service-affecting conditions. The ***Generated by*** column indicates whether the alarm is hardware- or software-generated.

Table 9-4. CCF-Card and Alarm-Panel LEDs for Non-Service-Affecting Conditions.

CCF-Card LED Lit	Alarm-Panel LED Lit	Alarm Condition	Generated by
NSA	. . .	Disk space low (20% left)	Software
NSA	. . .	Status-log space low (20% left)	Software
NSA	. . .	CDR-buffer space low (20% left)	Software
NSA	. . .	Noncritical status-log entry	Software
NSA	. . .	System backup/restore error	Software
NSA	. . .	Frame sync error	Software
NSA	TEMP Y	Yellow-line-temperature alarm	Hardware
. . .	FANS	One or more fans failed	Hardware

Refer to Table 9-4 and the “Checking Logic-Card and Disk-Drive Alarm LEDs” section, page 9-6. Depending on the LED status and the alarms in menu 13.8, use the most appropriate of the following sections to correct the NSA alarm condition.

Disk Space Low

If the available disk space is low (less than 20%), an NSA alarm is generated. Refer the problem to an Octel Communications sales representative, so that an additional drive can be purchased. As a temporary measure until the drive-space issue can be remedied, instruct the system manager to send a broadcast message to all subscribers, requesting that they delete all unneeded messages.

Status-Log Space Low

If the available status-log space is low (less than 20%), an NSA alarm is generated. Perform the following steps:

1. Access menu 13.2, print the status log, and clear it. Refer to Chapter 8 for information about printing and interpreting the status log.
2. Access menu 13.8, Review Current Alarm Status screen, and print it. Refer to the "Printing the Current Alarm Status (Menu 13.8)" section, page 9-2, for information about printing menu 13.8.
3. Clear all alarms.
4. If recent status-log entries require attention, refer to Chapter 8.

If any problems still exist, call the Octel Customer Services Center or your Octel distributor.

CDR-Buffer Space Low

If the available CDR-buffer space is low (less than 20%), an NSA alarm is generated. Download the CDR data when the CDR buffer becomes 30% to 50% filled with new CDR records. Refer to the *Octel Call Detail Records Manual* or *DecisionPro Manual* for detailed instructions about CDR data collection.

Noncritical Entry in Status Log

This NSA alarm indicates that a noncritical event was logged in the status log. Print and then clear the status log. Unless it recurs often, the alarm can usually be ignored, and the status log can be reviewed on the next scheduled printout. Refer to Chapter 8 for descriptions of the status codes.

System Backup/Restore Error

Refer to Appendix A, the "Review History of Last Event" section, page A-80, for information about retrieving the status of the last backup or restore. (The status is stored on the system drive.) Use this information to troubleshoot the problem.

Frame Sync Error

If the server has only one FLT-A card, the software selects two of its ports for primary and secondary clock synchronization with the PBX. If the server has two or more FLT-A cards, the software selects one of the ports on the leftmost FLT-A card as the primary source and one of the ports on the next FLT-A card to the right as the secondary source for synchronization with the PBX.

If either the primary or the secondary synchronization source loses synchronization with the PBX, the software generates a Frame Sync Error NSA alarm in menu 13.8. A CDR event 118 (GEN_ERR) is also generated; it defines which synchronization, primary or secondary, was lost. Use the Online CDR utility to review the event. If the primary synchronization source fails, all FLT-A cards automatically switch to the secondary source, without affecting normal server operation.

Troubleshoot the problem, as follows:

1. Make sure that the telco connections on the FLT-A card are secure.
2. Use status-log entries to help diagnose the problem. Refer to Chapter 8.
3. If the problem has not been identified, exchange a known good FLT-A card with the suspect FLT-A card to determine whether the FLT-A card is the source of the problem. Refer to Chapter 11 for removal and replacement procedures.

Yellow-Line-Temperature Alarm

The yellow-line-temperature NSA alarm occurs when the temperature in the exhaust plenum reaches 45°C (113°F). To correct a yellow-line-temperature alarm, perform the following steps:

1. Make sure that the air filters are not blocked.
2. Make sure that the environmental temperature (air conditioning) is normal.
3. Make sure that all covers and blank panels are in place.
4. Ensure that all fans are running.
5. If the system environment is correct and the fans are all running, one of the logic cards or drives could be overheating. Shut down the server, using menu 13.1, and turn off the power.
6. Put on an antistatic wrist strap.
7. Remove the cards and drives, one at a time, and visually inspect each one. After inspecting each card or drive, partially reinsert it, but do not reseat it.
8. Reseat the cards and drives one at a time. After you reseat each card or drive, turn on the server power and check the alarm LEDs. Turn off the server power before reseating the next card or drive.

   Replace the card or drive that causes the alarm LED to light. The alarm LED might not light immediately; if it lights, the cause could be any installed card or drive. Refer to Chapter 11 for replacement procedures.
9. Wait for the temperature to stabilize and the alarm to clear.
10. Turn off the power to the server.

11. Reinstall all other cards and drives.
12. Reboot the server.
13. Remove the antistatic wrist strap.
14. Close the front door of the server.

Fan Failure

Sensors located on the auxiliary power board monitor each fan's revolutions per minute (rpm) to detect fan failures.

If temperatures reach the red-line-temperature threshold of 60ºC (140ºF) because of fan failure, the alarm panel shuts down the server; for an explanation, refer to the "Red-Line-Temperature Alarm" section, page 9-12. Menu 13.8 might be updated, depending on how quickly the server shuts down.

Because there are multiple fans in the power-distribution tray, total fan failure is extremely unlikely. However, if total fan failure occurs, check to see whether the fans are running. If none of the fans are running, check the following:

- ❑ Input power
- ❑ Auxiliary-power board
- ❑ Fuses on the main backplane
- ❑ Fan-power harness
- ❑ All fans

Refer to Chapter 11 for replacement procedures.

Using Remote Alarm Relays

The server provides dry-contact relays that allow customer-supplied external audible or visual alarms to be connected through the alarm connector on the back of the frame, using a special 9-position plug connector.

Each relay consists of three contacts: a normally open (NO), a normally closed (NC), and a common (COM) contact. Connect a remote audible or visual alarm to the NO contact for each alarm category.

The server's alarm conditions can be distinguished by the pattern of the audible or visual alarm, as follows:

Alarm Pattern	Meaning
Continuous indication	Out-of-service (OOS) alarm
Slow on/off pulse	Service-affecting (SA) alarm
Rapid on/off pulse	Non-service-affecting (NSA) alarm

Voltage ratings for remote-alarm relays comply with UL and CSA standards and are as follows:

- ❑ 0.5 ampere at 60 Vdc or 42.4 Vac
- ❑ 2.0 amperes at 30 Vdc

If the server generates multiple alarms at the same time, the audible or visual alarm indicates only the most serious alarm condition.

MAINTENANCE IV

The ***Maintenance*** section consists of the following chapters:

- ❏ Chapter 10. Routine Maintenance
- ❏ Chapter 11. Repair and Replacement
- ❏ Chapter 12. Server Expansion
- ❏ Chapter 13. Online Upgrade Using Diskettes
- ❏ Chapter 14. Online Upgrade Using Tape

Chapter 10 consists of the routine maintenance procedures for backing up a system drive to another disk drive, backing up the database and messages to tape, testing ports, measuring power and ground, inspecting and cleaning the server (including replacing the air filter), and cleaning the tape drive.

Chapter 11 consists of detailed procedures for replacing malfunctioning components, including the logic cards, drives, power supplies, fans, main backplane, disk-drive backplane, covers, modem, and SMT.

Chapter 12 consists of procedures for expanding the server capacity or capabilities, including procedures to add a second system drive, message drives, ports, mailboxes, CDR space, software features, languages from a master drive, and an expansion cabinet. Procedures to upgrade message drives to higher capacity are also included.

Chapter 13 provides instructions for installing Aria 2.0 software on a PC using diskettes, then on the server.

Chapter 14 provides instructions for using the tape drive in the server to upgrade software, if the server is at Aria 2.0 or newer software.

10 ROUTINE MAINTENANCE

The Octel 250 message server requires routine maintenance. Octel recommends that you regularly perform the maintenance activities shown in Table 10-1. Except for backing up the system drive, you can perform this maintenance with the server in service.

Table 10-1. Recommended Frequency of Routine Maintenance.

Task	Frequency
Review current alarm status and status log	Daily
Back up system drive's software, phrases, and database to a backup disk drive	As required
Back up database and selected messages to the optional tape drive	As required
Test ports	Monthly
Measure power and ground	Monthly
Inspect and clean cabinets	Semiannually
Clean the optional tape drive	After 25 hours of use
Store and handle the disk drives	As required

The tasks shown in Table 10-1 are described in the following sections.

Reviewing Alarm Status and the Status Log

Each day, you or the system manager should view the current alarm status from menu 13.8 (refer to Chapter 9) and the status log from menu 13.2 (refer to Chapter 8). Print these menus weekly, and file them in a system-maintenance notebook. Reviewing these printouts can alert you or the system manager to possible problems; for example, bad-password disconnects. Use these printouts when you encounter a potential problem.

Backing Up a System Drive to Another Disk Drive

Octel recommends that a backup of system-drive 0 or 1 be made on a regular, scheduled basis to ensure that the results of activities such as adding or deleting mailboxes are safeguarded. This procedure backs up the software, phrases, and database. For non-GMR servers, it also backs up the messages on the selected system drive.



Caution!

When performing a software upgrade, use the Create Backup Drive only to make a backup copy of the existing system drive. *Do not* copy a master drive to an existing system drive, because doing so would destroy the system database and cause messages to be lost.

The backup requires taking the server out of service for about 1 hour. Coordinate the shutdown with the system manager in advance. Back up the system drive, as follows:

1. Log into the primary SMT. The SMT Main Menu appears.
2. Access menu 13 and select option 2 to display the status log; then select option 8 to display the alarm status menu. Print out and clear both the status log and the current alarm status. Write on the printouts that they were printed before a backup, include the date, and file the printouts in the system-maintenance notebook.
3. Call the Octel Customer Services Center or your Octel distributor and inform them that you will perform a backup of a system drive. Provide the hunt-group pilot number for the server to be backed up, and request that the service bit be enabled.
4. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

5. Use menu 13.1 to shut down the server.

6. At the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D***, then ***U***, to access offline menu 20.

7. If a tape drive is installed in slot 6, verify that no backup of database and messages to tape is currently in process or scheduled during the system-drive backup. Then perform one of the following, depending on the Aria software level:

   - ❑ If the server is at Aria 1.2, remove the tape drive. (The removal can cause CD status-log entries.)
   - ❑ If the server is at Aria 2.0, access the Drive Install utilities, then the Disable Drive utility. Disable slot 6, and remove the tape drive. Press ***Ctrl+C*** until menu 20 reappears.

8. Insert the backup disk drive into slot 6.

9. Access the Drive Install utilities menu, then the Enable Drive utility. Enable slot 6.

10. Press ***Ctrl+C*** until menu 20 reappears.

11. Access the Drive Copy utilities menu, then the Create Backup Drive option.

12. At the ***Enter position of source drive [0–1, 6]:*** prompt, enter the number of the drive to be copied. You should usually enter ***0*** for system-drive 0 or ***1*** for system-drive 1.

13. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the source drive is correct.

14. At the ***Enter position of destination drive [0–1, 6]:*** prompt, enter the number of the slot containing the backup disk drive. You should usually enter ***6***.

15. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the destination drive is correct.

    Figure 10-1 is an example of a completed Backup Drive screen.

```
                                    Backup Drive
Enter position of source drive[0–1, 6]: 0
        Drive Serial No: O100012
        Is this the correct drive? (y/n): Y
Enter position of destination drive[0–1, 6]: 6
        Drive Serial No: M002042
        Is this the correct drive? (y/n): Y

C O P Y I N G . . . .

Copy complete
        Press any key to continue.
```

Figure 10-1. Example of Prompts and Responses for the Create Backup Drive Utility.

16. When the backup is completed, press any key to return to the Drive Copy Utilities menu.
17. Press ***Ctrl+C*** until menu 20 reappears.
18. Access the Drive Install utilities menu, then the Disable Drive utility. Disable slot 6.
19. Press ***Ctrl+C*** until menu 20 reappears.
20. Remove the backup drive from its slot, and clearly label it as the backup, including the date of the backup.
21. If a tape drive was removed from slot 6, reinsert it. Then perform one of the following, depending on the Aria software level:
    - ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive, to make the tape drive operable.
    - ❑ If the server is at Aria 2.0, access the Drive Install utilities, then the Enable Drive utility, and enable slot 6. Press ***Ctrl+C*** until menu 20 reappears.
22. From offline menu 20, type the number for the ***Exit*** option. The server shuts down, performs the initial boot process, and returns to the ***ENTER BOOT COMMAND:*** prompt.
23. When the ***ENTER BOOT COMMAND:*** prompt reappears, enter ***A*** to boot the server and return it to normal operation.
24. Cancel the call-forwarding of the pilot number for the server hunt-group, and restore the server to service.

Backing Up the Database and Messages to Tape

With Aria 1.1 or newer software, the server can have an optional tape drive. Octel Communications recommends that the system manager back up the system database and messages on a regular, scheduled basis. However, *do not* perform this procedure unless you are instructed to do so.

You can back up NameNet entries, the system database, application messages (including forms and conference mailbox messages), IVR phrases, and recorded subscriber names and greetings. Messages are automatically backed up for all voice-application mailboxes. Voice-application mailboxes include types 1, 2, 3, 10, 11, 12, 30, 31, 32, 33, 34, 35, and 40. You can also back up selected fax and voice messages for subscriber mailboxes, for a class-of-service range you specify. Up to 350 messages hours can be backed up to tape. If a backup is already under way, you cannot schedule a new one until the current backup is completed. Menu 20 is not accessible while a backup is in process.

A tape backup cannot be run at the same time as an online upgrade. If an online upgrade is in process, a scheduled backup does not begin until the upgrade is complete. If a scheduled tape backup is in process, the online upgrade remains at the SMT Main Menu until the backup is completed.

The tape-backup procedure describes how to print important configuration information that is not backed up. However, software patches are *not* backed up, and they cannot be printed.

Do *not* remove any disk drives while the tape drive is in use. If you do, the tape drive goes out of service.

A backup takes approximately 1 minute for each hour of message space used. You might want to run a Short Form Subscriber Usage report (report 3) to determine total used message space.

Note: This section describes operation for Aria 2.0 software. Some SMT prompts and options do not appear for Aria 1.2; however, the procedures are essentially the same.

Figure 10-2 shows Menu 21 – System Backup, accessed from the Main Menu for any server with Aria 2.0 software and feature option 77 enabled. You can run all of these utilities on line.

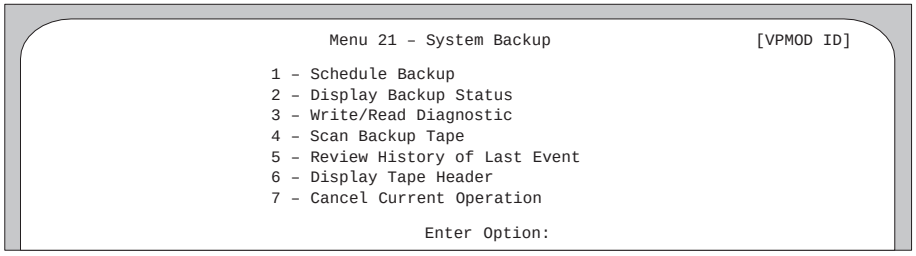


Figure 10-2. Online Menu 21 – System Backup (Aria 2.0).

Back up the database and selected messages to tape, as follows:

1. Log into the primary SMT. The SMT Main Menu appears.

2. Place a DDS-2 4-GB backup tape into the tape drive. The tape is ready when the left green LED stops blinking and remains steady.

   If the amber LED blinks, you must clean the tape drive. Refer to the “Cleaning the Tape Drive” section, page 10-23, for information about cleaning the tape drive.

3. From the SMT Main Menu, access menu 21. The System Backup screen appears (Figure 10-2).

4. At the ***Enter Option:*** field, enter ***1*** to access the Backup screen (menu 21.1), as shown in Figure 10-3, except that it does not display the ***Starting Class of Service:*** and ***Ending Class of Service:*** fields.

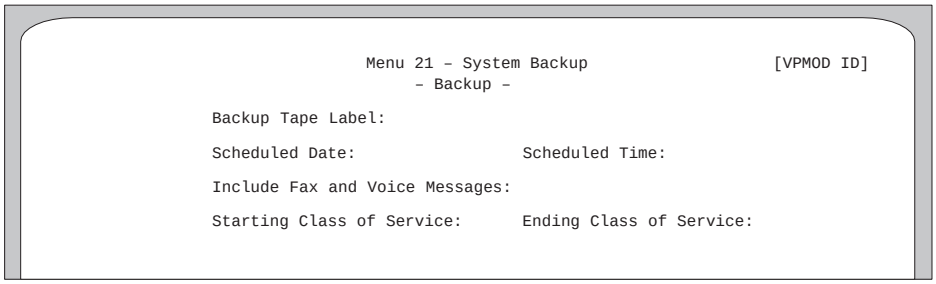


Figure 10-3. Backup Screen.

5. If the ***Cancel Currently Scheduled Backup (Y/N):*** prompt appears, enter ***Y*** to cancel a previously scheduled backup and continue. (Make note of the scheduled backup, so that you can reestablish it later, if necessary.) Enter ***N*** to cancel the change to the backup schedule.

6. In the ***Backup Tape Label:*** field, enter the name of the backup tape (up to 15 alphanumeric characters). Octel Communications recommends that the name include the date of the backup plus the server ID, if several servers are maintained at the same site. Press ***Enter***.

7. In the ***Scheduled Date:*** field, enter the date the backup is to start, in the format mm/dd/yy, then press ***Enter***.

8. In the ***Scheduled Time:*** field, enter the time the backup is to start, in the format hh:mmA (for a.m.) or hh:mmP (for p.m.), then press ***Enter***.

9. In the ***Include Fax and Voice Messages:*** field, enter ***Y*** to include fax and voice messages for subscriber mailboxes on the backup, or enter ***N*** to exclude these messages. Excluding the fax and voice messages can shorten the backup time. Press ***Enter***. If you enter ***Y***, proceed to step 10. If you enter ***N***, skip to step 12.

10. The ***Starting Class of Service:*** and ***Ending Class of Service:*** fields appear. The class-of-service range you specify determines which subscriber mailboxes will have their messages backed up. Messages in mailboxes with any class of service out of this range are not backed up.You can use this range to reduce the number of message hours the server attempts to back up, if the message space used exceeds the 350 message hours the tape can contain.

    In the ***Starting Class of Service:*** field, enter the beginning class of service for message backup, and press ***Enter***. The lowest-numbered class of service possible is ***1***.

11. In the ***Ending Class of Service:*** field, enter the last class of service for message backup, and press ***Enter***. The highest-numbered class of service possible is ***64***.

12. The ***Backup queued. Press any key to continue.*** prompt appears on the screen.

    Press any key to continue with the backup. The System Backup screen reappears.

13. The backup takes approximately 1 minute for each hour of message space used. No message appears that indicates when the backup is finished. Use option ***2*** to display the status of the backup.

Occasionally, press any key to refresh the screen with current status. (If you press ***Break***, the screen returns to menu 21 without providing any status information, but the backup continues.) If the screen returns to menu 21 when you press any key to refresh the status screen, the backup has been completed.

After the backup is completed, select option ***5*** in menu 21 to display the history of the last backup, and print this screen.

14. If the backup was successful, remove the backup tape. If the backup failed because the tape is full, try another backup with a more restrictive class-of-service range. If the backup fails for any other reason, refer to the "Review History of Last Event" section in Appendix A.

15. Print the following menus for a record of configuration information that is not backed up:

    a. Menu 4 – Port Assignments

    b. Menu 2 – Attendant Schedules and Port Monitoring

    c. Menu 6.3, Define CPU Serial Channels (flex ports)

    d. Menu 6.5.3, Review Integration Links

    e. Menu 18.1, Interface Configuration (X.25 links)

    f. Menu 13.7, Feature Options

    g. Menu 22.1, IP Address and Net Mask Configuration; menu 22.2, TCP/IP Parameter Configuration; and menu 22.3, SNMP Parameter Configuration, if the server is at Aria 2.0 and a LAN card is installed

    Note that software patches are not backed up and cannot be printed.

16. Provide the printouts and the backup tape to the system manager.

17. Reestablish a backup schedule, if necessary.

Testing Ports

Perform a port-to-port test monthly to verify that the ports are functioning correctly. The port-to-port test is described in the following sections.

The port-testing utilities do not require that the service bit be enabled; therefore, both system managers and service personnel can access the utilities. The port-testing utilities can be accessed *only* in the online mode.

Use the port-testing-utility to test the basic outcalling functions of each port. Display the Port Testing Utilities menu, as follows:

1. From the SMT Main Menu, access Menu 20 – Service Operations, then the Port Testing Utilities menu, shown in Figure 10-4.

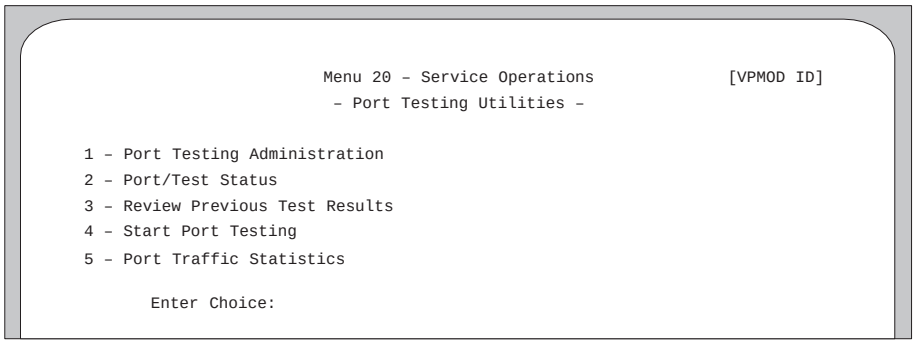


Figure 10-4. Port Testing Utilities Menu.

Procedures for the options on the Port Testing Utilities menu are found in the following sections:

- ❑ To establish the port testing parameters, refer to the “Port-Testing Administration” section, following.
- ❑ For the status of server ports or of a test in process, refer to the “Port/Test Status” section, page 10-12.
- ❑ To review the results of the last four tests, refer to the “Review Previous Test Results” section, page 10-14.
- ❑ To start the port testing, refer to the “Start Port Testing” section, page 10-17.
- ❑ To review port traffic statistics, refer to the “Port Traffic Statistics” section, page 10-19.

Port-Testing Administration

The port-testing-administration option allows the parameters for port tests to be established. Once established, port-test parameters are used for all the server port tests.

To establish the port-testing-administration parameters, select option ***1 – Port Testing Administration*** from the Port Testing Utilities menu (Figure 10-4), and press ***Enter***. The Port Testing Administration screen appears, as shown in Figure 10-5.

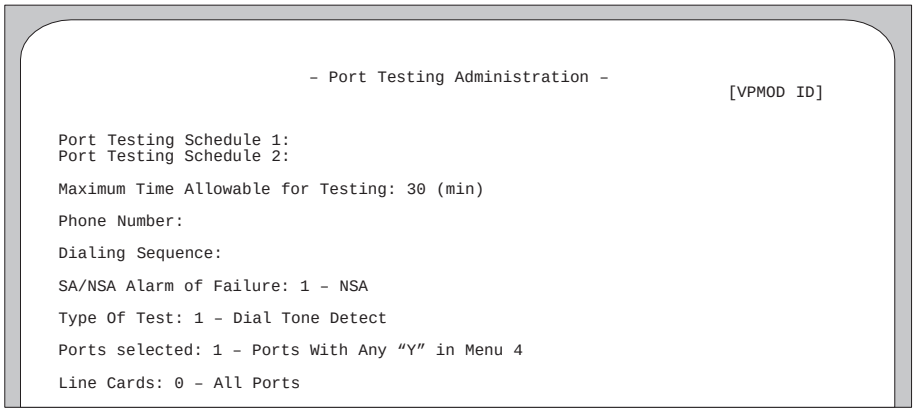


Figure 10-5. Example of the Port Testing Administration Screen.

Port tests can be scheduled to run automatically up to twice daily, or they can be started manually at any time. (Refer to the "Start Port Testing" section, page 10-17, for information about manual tests.)

You can run either dial-tone-detect port tests or loop-back port tests, as described in the following sections. For either test, you specify whether you want a failure to create one of the following:

- ❑ A non-service-affecting alarm and a status-code 151 entry, as shown in the example in Figure 10-6.
- ❑ A service-affecting alarm and a status-code 152 entry, as shown in the example in Figure 10-7.

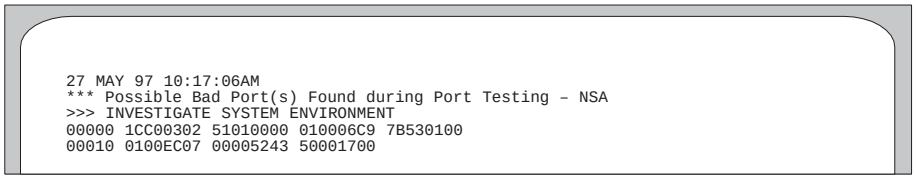


Figure 10-6. Example of Status-Code 151.

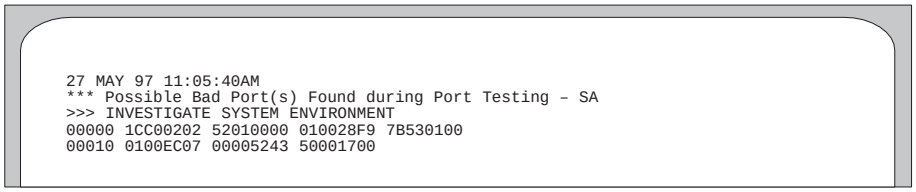


Figure 10-7. Example of Status-Code 152.

When a port-test error (status-code 151 or 152) is logged in the status log, an outcalling error is also logged. Refer to the "Review Previous Test Results" section, page 10-14, for details about port-test failures. If you need additional information, analyze the outcalling errors logged with the port-test error.

If a port-test error (status-code 151 or 152) is logged in the status log and there is no associated outcalling error, verify that the Port Testing Administration screen (Figure 10-5) was configured correctly, and run the test again. An incorrect entry in the Port Testing Administration screen can cause a repeated busy or ring-no-answer condition on the port being tested.

Dial-Tone-Detect Port-Testing Parameters

Perform dial-tone-detect tests to verify that specified ports can go off hook and obtain a dial tone from the PBX or Centrex. (If ports can successfully go off hook on digital PBXs that do not provide dial tone, the dial-tone-detect test passes.) The server tests ports randomly, one at a time, until all ports are tested.

To establish dial-tone-detect port-testing parameters, refer to Figure 10-5 and complete the following fields:

- **Port Testing Schedule 1:** and **Port Testing Schedule 2:** Enter the time that the first scheduled test should start, in the format hh:mmA (for a.m.) or hh:mmP (for p.m.).

  If a schedule is established in either the ***Port Testing Schedule 1:*** or ***Port Testing Schedule 2:*** field, the port test will run at the next scheduled start time. If no schedule is established, tests will run only when manually started. Refer to the “Start Port Testing” section, page 10-17, for details about performing manual tests.

  When performing scheduled maintenance on a server that has an FLT card that is out of service, it might be necessary to suspend scheduled testing. To suspend scheduled tests, delete the entry in both the ***Port Testing Schedule 1:*** and ***Port Testing Schedule 2:*** fields. To resume scheduled tests, enter a new time in either of the fields.

  If a manual test is running when a scheduled test is supposed to start, the scheduled test is skipped. The scheduled test runs the next time it is supposed to start, unless there is another conflict with a manual test.

  Scheduled tests cannot overlap each other. The server refers to the time entered in the ***Port Testing Schedule 1:***, ***Maximum Time Allowable for Testing:***, and ***Port Testing Schedule 2:*** fields to verify that the two schedules do not overlap. If a second schedule is entered that overlaps the first, the server prompts for a schedule that prevents the overlap.

- **Maximum Time Allowable for Testing:** Enter the maximum amount of time, in minutes, that a scheduled test should run, regardless of whether the test has been completed. For example, if a scheduled test should begin at midnight and be completed by 5:00 a.m. to ensure that all ports are available for heavy morning traffic, enter 300 minutes. Enter a number from ***30*** to ***720*** minutes. The default is ***30***.

- **Phone Number:** For the dial-tone-detect test, the server ignores any entry in this field.

- **Dialing Sequence:** For the dial-tone-detect test, the server ignores any entry in this field.

- **SA/NSA Alarm on Failure:** Enter the type of alarm to be generated if the server detects a port failure. Enter one of the following values:

  1 – NSA. A non-service-affecting alarm is generated if a port failure is detected (status-code 151).

  2 – SA. A service-affecting alarm is generated if a port failure is detected (status-code 152).

  The default is ***1 – NSA***.

- **Type of Test:** Enter ***1 – Dial Tone Detect***.

- **Ports selected:** Enter the ports to be tested, as follows:

  0 – All Ports. All available ports are tested.

  1 – Ports With Any "Y" in Menu 4. All ports for which there is a ***Y*** in *any* column in menu 4 are tested.

  2 – Outcall Ports Only. Only ports for which there is a ***Y*** in the ***O*** (outcalling) column in menu 4 are tested.

- **Line Cards:** Enter one of the following values to specify the FLT cards to be tested:

  0 – All Ports. Ports on all FLT cards are tested.

  1 – Ports on Line Card 1.

  2 – Ports on Line Card 2.

  3 – Ports on Line Card 3.

  4 – Ports on Line Card 4.

  5 – Ports on Line Card 5.

  6 – Ports on Line Card 6.

  7 – Ports on Line Card 7.

  8 – Ports on Line Card 8.

  9 – Ports on Line Card 9.

Press the ***Enter*** key. The ***Parameter updated. Press any key to return to the Port Testing Menu.*** prompt appears.

Loopback-Testing Parameters

Perform loopback testing to verify that the server can generate an outcall and detect that another server has received that outcall. The port being tested generates an autovon "A" tone and listens for an autovon "A" tone in response. Perform the loopback test by having the server call either a hunt group on the same server or a remote server's port or hunt group. The server tests ports randomly, one at a time, until all ports are tested.

To establish loopback port-testing parameters, refer to Figure 10-5 and complete the fields as described in the “Dial-Tone-Detect Port-Testing Parameters” section, page 10-10, with the following exceptions:

- ❑ **Phone Number:** Enter the telephone number that the server will use to place the test calls.
- ❑ **Dialing Sequence:** Enter the complete dialing sequence used to place the test calls. The entry in this field must match the appropriate dialing-sequence (local, long distance, international, or private network) field entered in menu 6.1.
- ❑ **Type of Test:** Enter ***2 – Loopback Test***.

Press ***Send*** once or press ***Enter*** repeatedly until the ***Parameter updated. Press any key to return to the Port Testing Menu.*** prompt appears.

If a schedule is established in either of the ***Port Testing Schedule 1:*** or ***Port Testing Schedule 2:*** fields, the port test will run at the next scheduled start time. If no schedule is established, tests will run only when manually started. Refer to the “Start Port Testing” section, page 10-17, for details about performing manual tests.

Port/Test Status

To view the status of server ports or the status of a test in process, select option ***2 – Port/Test Status*** from the Port Testing Utilities menu (Figure 10-4), and press ***Enter***. The port-testing status displayed depends on whether a test is in process, as described in the following two sections.

Port-Testing Status When Test Is Not in Process

If there is no test in process, the Port Testing Status screen is a real-time display of subscriber use by mailbox number and outbound networking traffic by node number for each port, similar to the example shown in Figure 10-8.

In the ***Status*** column, fields remain blank for those ports that are idle or in use for other reasons (outcalling, paging, fax delivery, telephone answering, inbound networking, etc.). The Port Testing Status screen is automatically updated to display any changes in status.

To display the next screen for different ports, press ***N***. To return to the first screen, press ***R***. To exit the Port Testing Status screen, press ***Ctrl+C***.

If the port status is being displayed when a scheduled test begins, the screen automatically changes to display the test status (refer to the following section). When the test is complete, the screen returns to displaying the port status, if no changes were made (no keys were pressed) while the test status was displayed on the screen during the test. If changes were made, the server returns to the Port Testing Utilities menu (Figure 10-4) when testing is complete.

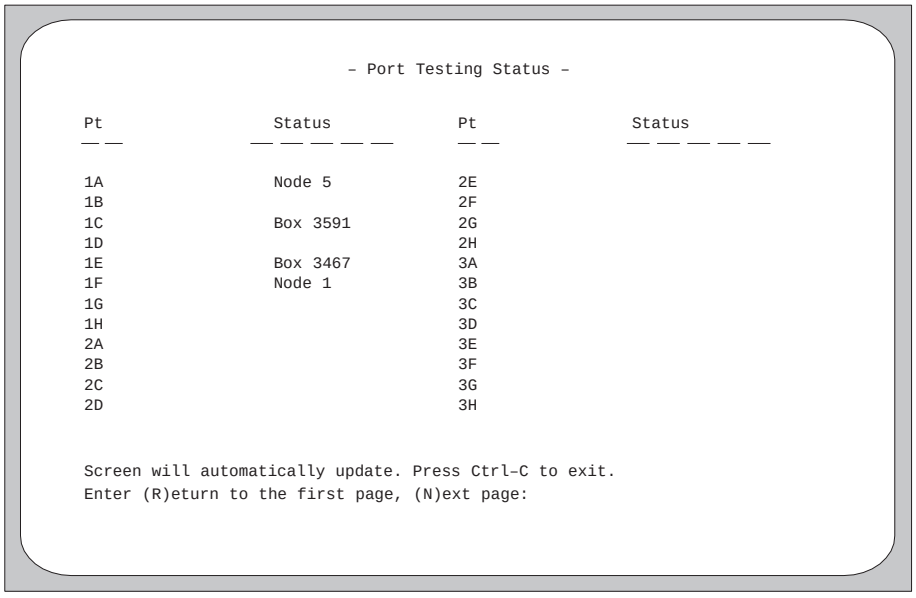


Figure 10-8. Example of the Port Testing Status Screen When Testing Is Not In Process.

Port-Testing Status When Test Is in Process

If a test is in process, the Port Testing Status screen displays the real-time test status of each port, similar to the example shown in Figure 10-9.

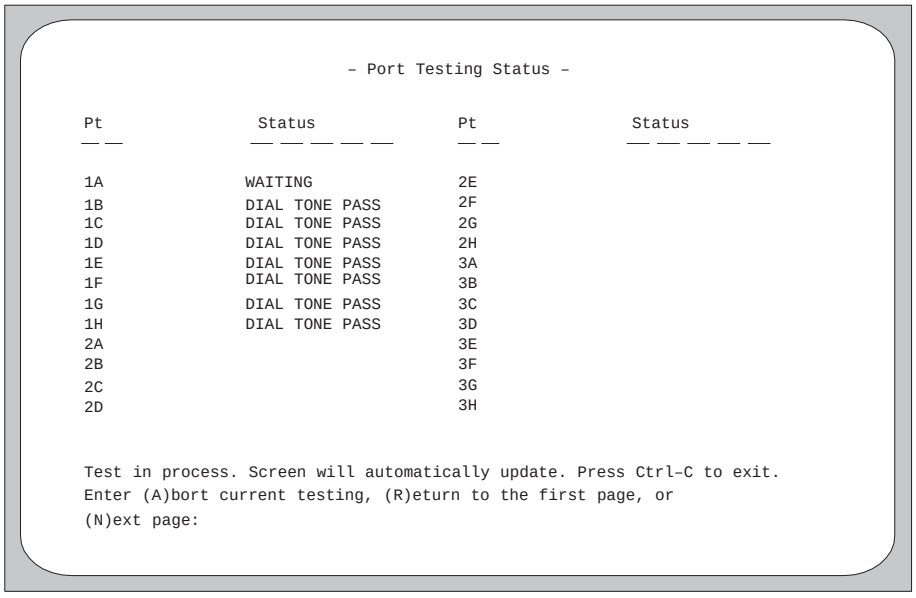


Figure 10-9. Example of the Port Testing Status Screen When a Test Is In Process.

As each port is tested, the screen is automatically updated to display changes in the port status. A port's status can change more than once during a port test. A port is not considered to have failed a port test unless the test has been unsuccessful three times.

The retry interval for failed tests for a port is related to the entry in the ***Maximum Time Allowable for Testing:*** field on the Port Testing Administration screen (Figure 10-5). When a port test fails, the server calculates the remaining time allowed for testing, divides that time into three equal amounts, and schedules the retry to begin after one-third of the remaining time expires. For example, if a port fails and 30 minutes remain for testing, the server schedules the retry to begin in 10 minutes (1/3 of 30 minutes).

Status conditions are reported in the ***Status*** column during the port test. Error conditions are reported when a specific port test has been unsuccessful. Refer to the "Review Previous Test Results" section, following, for descriptions of error conditions and the appropriate corrective action. Other possible non-error-condition entries shown in the ***Status*** column when a port test is running are as follows:

- ❑ **WAITING**. The server is performing port tests, but it has not yet tested the specified port.
- ❑ **LOOP BACK PASS**. The server took the port off hook, obtained a dial tone, and dialed the telephone number in the ***Phone Number:*** field on the Port Testing Administration screen (Figure 10-5). The server detected that the destination telephone was answered, then the server generated an autovon "A" DTMF tone and received an autovon "A" DTMF tone from the destination in response.
- ❑ **DIAL TONE PASS**. The server took the port off hook and obtained a dial tone.

Results of the last four port tests are stored in the server. Refer to the "Review Previous Test Results" section, following, for details about reviewing test results.

When a test is completed, the server automatically returns to the Port Testing Utilities menu (Figure 10-4).

- ❑ To display the next screen for different ports, press ***N***.
- ❑ To return to the first screen, press ***R***.
- ❑ To end the port test, press ***A,*** then enter ***Y*** and press ***Enter*** at the ***Are you sure you want to abort port testing? (y/n)*** prompt.
- ❑ To exit the Port Testing Status screen while a test is in process, press ***Ctrl+C***.

Review Previous Test Results

To review the results of the last four port tests, select option ***3 – Review Previous Test Results*** from the Port Testing Utilities menu (Figure 10-4) and press ***Enter***. The first Testing Results Review screen appears, as shown in Figure 10-10.

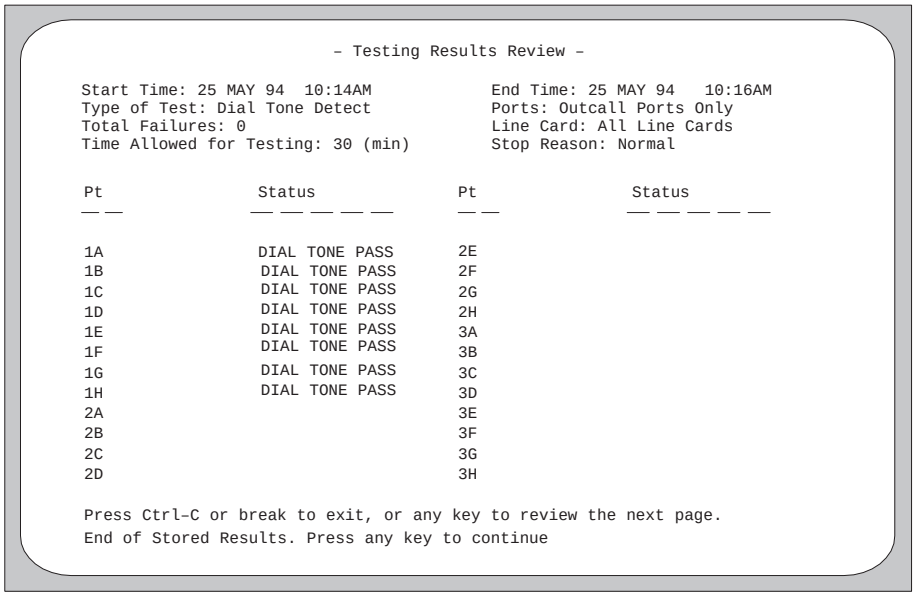


Figure 10-10. Example of the Testing Results Review Screen.

Each Testing Results Review screen displays the following information in fields at the top of the screen:

- **Start Time:** The date and time that the test began
- **End Time:** The date and time that the test ended
- **Type Of Test:** The option that was entered in the ***Type of Test:*** field on the Port Testing Administration screen (Figure 10-5)
- **Ports:** The option that was entered in the ***Ports selected:*** field on the Port Testing Administration screen (Figure 10-5)
- **Line Card:** The option that was entered in the ***Line Cards:*** field on the Port Testing Administration screen (Figure 10-5)
- **Total Failures:** The total number of ports that failed the test after all retries
- **Stop Reason:** The reason that the port test ended; possible entries follow:
  - **Normal**. The port test ran successfully and completed all tests in the time allowed.
  - **Aborted by System Manager**. The system manager manually canceled the test.
  - **Time Elapsed**. The port test was not completed in the time entered in the ***Maximum Time Allowable for Testing:*** field on the Port Testing Administration screen (Figure 10-5).
- **Time Allowed for Testing:** The value that was entered in the ***Maximum Time Allowable for Testing:*** field on the Port Testing Administration screen (Figure 10-5)

In addition, the test results list the status of each port when the test is completed. For the following status and error conditions that might be reported in the ***Status*** column after a port test, perform the indicated corrective actions, if required:

- ❑ **WAITING**. The server was unable to test the specified port before the time allowed for testing expired. If required, extend the maximum time allowed for testing and run the port test again.
- ❑ **SEIZE LINE FAIL**. The server was unable to take the specified port off hook. If ***SEIZE LINE FAIL*** is reported, verify the following:
  - ❑ The telephone line is connected correctly.
  - ❑ The PBX is providing a dial tone to the port.
  - ❑ The FLT cards are working correctly.

  If a port is ringing at the exact time that the test utility attempts to take the port off hook, the test call is aborted, and the incoming call takes precedence. This condition, known as *glare*, is reported as a seize-line failure. In the extremely unlikely event that glare occurs three successive times on the same port, the port fails the test. If glare is suspected as the cause of a port failure, perform the port test again during a period of low system traffic.
- ❑ **NO DIAL TONE**. The server took the port off hook, but no dial tone was detected from the PBX. If ***NO DIAL TONE*** is reported, verify the following:
  - ❑ The telephone line is connected correctly.
  - ❑ The PBX is providing a dial tone to the port.
  - ❑ The FLT cards are working correctly.
- ❑ **DIAL TONE PASS**. The specified port successfully passed the dial-tone-detect test. No action is required.
- ❑ **RECV LINE BUSY**. The server took the port off hook, obtained a dial tone, and dialed the telephone number entered in the ***Phone Number:*** field on the Port Testing Administration screen (Figure 10-5). However, a busy signal was detected when the telephone number was dialed. If ***RECV LINE BUSY*** is reported, verify the following:
  - ❑ The telephone number was entered correctly in the ***Phone Number:*** field on the Port Testing Administration screen.
  - ❑ The dialing sequence was entered correctly in the ***Dialing Sequence:*** field on the Port Testing Administration screen.
  - ❑ A busy condition does not exist on the destination telephone line or hunt group.
  - ❑ The FLT card is generating or detecting DTMF tones correctly.
- ❑ **RING NO ANSWER**. The server took the port off hook, obtained a dial tone, and dialed the telephone number entered in the ***Phone Number:*** field on the Port Testing Administration screen (Figure 10-5). However, there was no answer when the telephone number was dialed. If ***RING NO ANSWER*** is reported, verify the following:

- ❑ The telephone number was entered correctly in the ***Phone Number:*** field on the Port Testing Administration screen.
- ❑ The dialing sequence was entered correctly in the ***Dialing Sequence:*** field on the Port Testing Administration screen.
- ❑ The FLT card is generating or detecting DTMF tones correctly.

❑ **NO AV A RESP**. The server took the port off hook, obtained a dial tone, and dialed the telephone number entered in the ***Phone Number:*** field of the Port Testing Administration screen (Figure 10-5). The server detected that the destination telephone line was answered, but the destination server did not generate an autovon "A" DTMF tone in response to the autovon "A" DTMF tone that was sent. If ***NO AV A RESP*** is reported, verify the following:

- ❑ The telephone number was entered correctly in the ***Phone Number:*** field on the Port Testing Administration screen.
- ❑ The dialing sequence was entered correctly in the ***Dialing Sequence:*** field on the Port Testing Administration screen.
- ❑ No person or unintended device is answering the test call.
- ❑ The FLT card is generating or detecting DTMF tones correctly.

❑ **LOOP BACK PASS**. The specified port successfully passed the loop-back test. No action is required.

❑ **DID**. The specified port is a direct-inward-dial (DID) port. DID ports are not tested. The ***Ln Tp*** (Line Type) column of menu 4 identifies DID ports. No action is required.

To display the next screen of results for different ports, press any key. To exit the Testing Results Review screen, press ***Ctrl+C***.

Start Port Testing

Before starting a manual (unscheduled) port test, verify that the information on the Port Testing Administration screen (Figure 10-5) is correct for the type of test to be performed. Refer to the "Port Testing Administration" section, page 10-8, for information about configuring the Port Testing Administration screen for the appropriate type of test.

After the information in the Port Testing Administration screen is configured, start a manual (unscheduled) port test by selecting option ***4 – Start Port Testing*** from the Port Testing Utilities menu (Figure 10-4) and pressing ***Enter***. The port test begins immediately, and the Port Testing Status screen appears, as shown in the example in Figure 10-11.

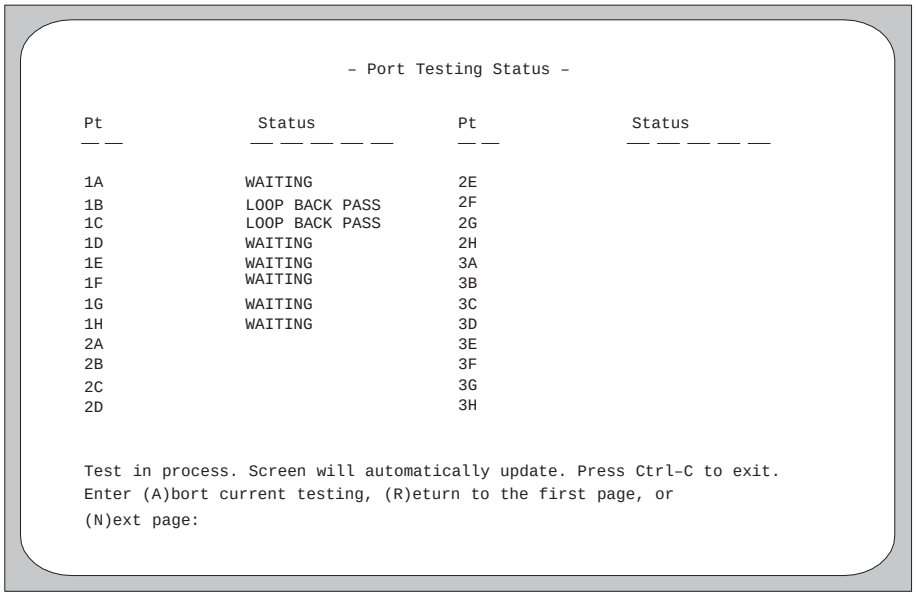


Figure 10-11. Example of the Port Testing Status Screen.

As each port is tested, the Port Testing Status screen is updated to reflect any change in status. The status of a port can change more than once during a port test. A port is considered to have failed a port test only if the test has been unsuccessful three times. Refer to the "Review Previous Test Results" section, page 10-14, for descriptions of port-test status conditions and appropriate corrective actions.

When a test is completed, the server automatically returns to the Port Testing Utilities menu (Figure 10-4).

- ❑ During testing, press the ***N*** key to display the next screen for different ports.
- ❑ To return to the first screen, press ***R***.
- ❑ To cancel the port test, press ***A***, then, at the ***Are you sure you want to abort port testing? (y/n)*** prompt, enter ***Y*** and press ***Enter***.
- ❑ To start another port test immediately, select option ***4 – Start Port Testing*** from the Port Testing Utilities menu (Figure 10-4).
- ❑ To exit the Port Testing Status screen without canceling a test in process, press ***Ctrl+C***. After exiting, option ***4 – Start Port Testing*** cannot be reentered while a test is running. To view the status of ports being tested or to cancel a test after exiting option ***4***, use option ***2 – Port/Test Status*** (refer to the "Port-Testing Status When Test Is in Process" section, page 10-13).

Port Traffic Statistics

The Port Traffic Statistics utilities assist in diagnosing port problems by showing how many incoming and outgoing calls have occurred on each port, either as a snapshot or as a continuously updated display. You do not need to place any test calls. Each time an incoming or outgoing call is made on a port, a corresponding counter for that port is incremented. The maximum counter value is approximately 4 billion calls per port. You can reset the counters by using one of the utility options or by rebooting the server. Hot-plugging logic cards does not reset the counters.

Select option ***5 – Port Traffic Statistics*** from the Port Testing Utilities menu (Figure 10-4) and press ***Enter***. The Port Traffic Statistics Utility menu shown in Figure 10-12 appears.

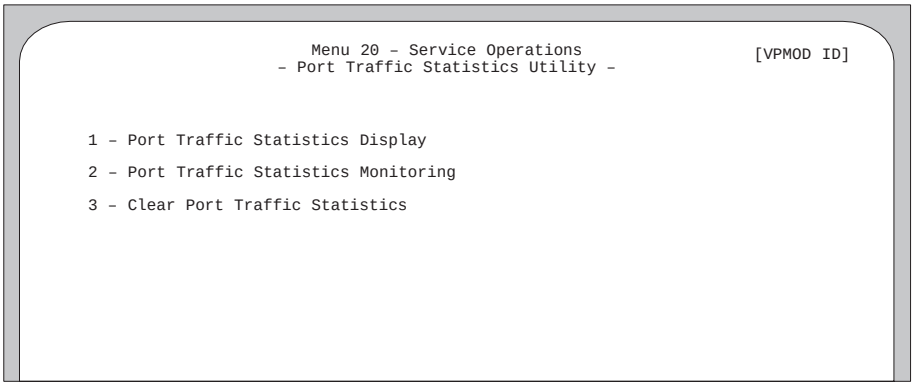
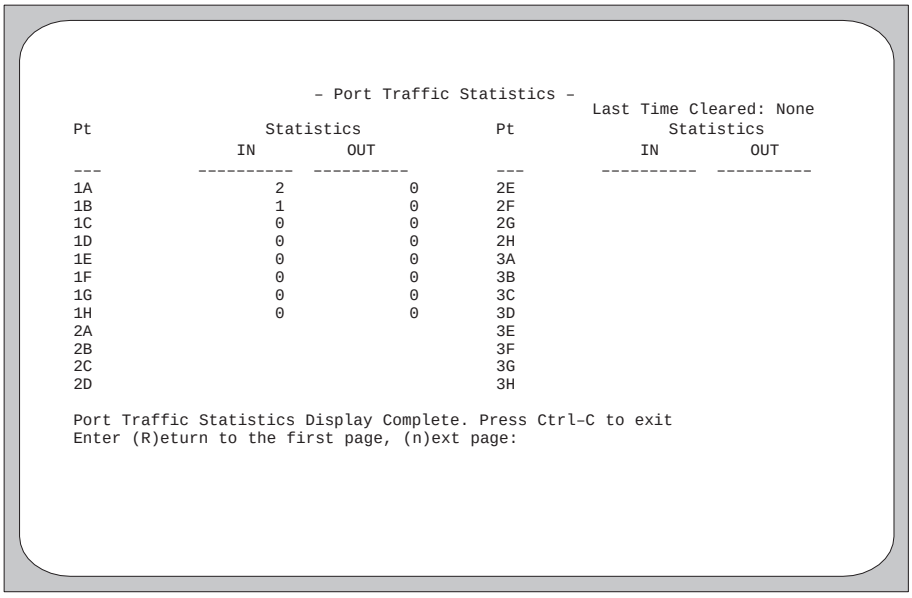


Figure 10-12. Port Traffic Statistics Utility Menu.

To display a snapshot of port traffic, select option ***1 – Port Traffic Statistics Display***. To display port traffic on a screen that is updated every 2 seconds, select option ***2 – Port Traffic Statistics Monitoring***. For these options, a screen similar to the Port Traffic Statistics screen shown in Figure 10-13 appears. The ***IN*** and ***OUT*** columns show the number of incoming and outgoing calls that have occurred for each displayed port since the counters were reset.

To reset the counters to 0 for all ports, select option ***3 – Clear Port Traffic Statistics***. (This does not affect reporting, CDR data, or maintenance statistics.)

Enter ***N*** to display to the next screen for different ports, ***R*** to return to the first screen, or ***Ctrl+C*** to exit.



```
                          – Port Traffic Statistics –
                                                          Last Time Cleared: None
Pt                  Statistics                Pt                  Statistics
                  IN          OUT                               IN          OUT
---          ----------  ----------          ---         ----------  ----------
1A                    2           0          2E
1B                    1           0          2F
1C                    0           0          2G
1D                    0           0          2H
1E                    0           0          3A
1F                    0           0          3B
1G                    0           0          3C
1H                    0           0          3D
2A                                           3E
2B                                           3F
2C                                           3G
2D                                           3H

Port Traffic Statistics Display Complete. Press Ctrl–C to exit
Enter (R)eturn to the first page, (n)ext page:
```

Figure 10-13. Example of the Port Traffic Statistics Utility Screen.

Measuring Power and Ground

Measure the power and ground monthly, as follows:

1. Open the front door of the server.

2. Locate the V1 TEST and GND TEST test points on the alarm panel, as shown in Figure 10-14.

3. Using a voltmeter, measure across V1 TEST and GND TEST. Verify that the internal power supply provides +26 to +29 Vdc. When the positive (red) lead of the voltmeter is connected to the V1 TEST point and the negative (black) lead is connected to the GND TEST point on the server, the voltmeter must read between +26 and +29 Vdc, *not* a negative voltage.

4. To measure the ground, connect the positive (red) lead of the voltmeter to the GND TEST point. Connect the negative (black) lead to any metal part of the chassis. The reading should be no more than 0.1 volt.

5. Close the front door of the server.

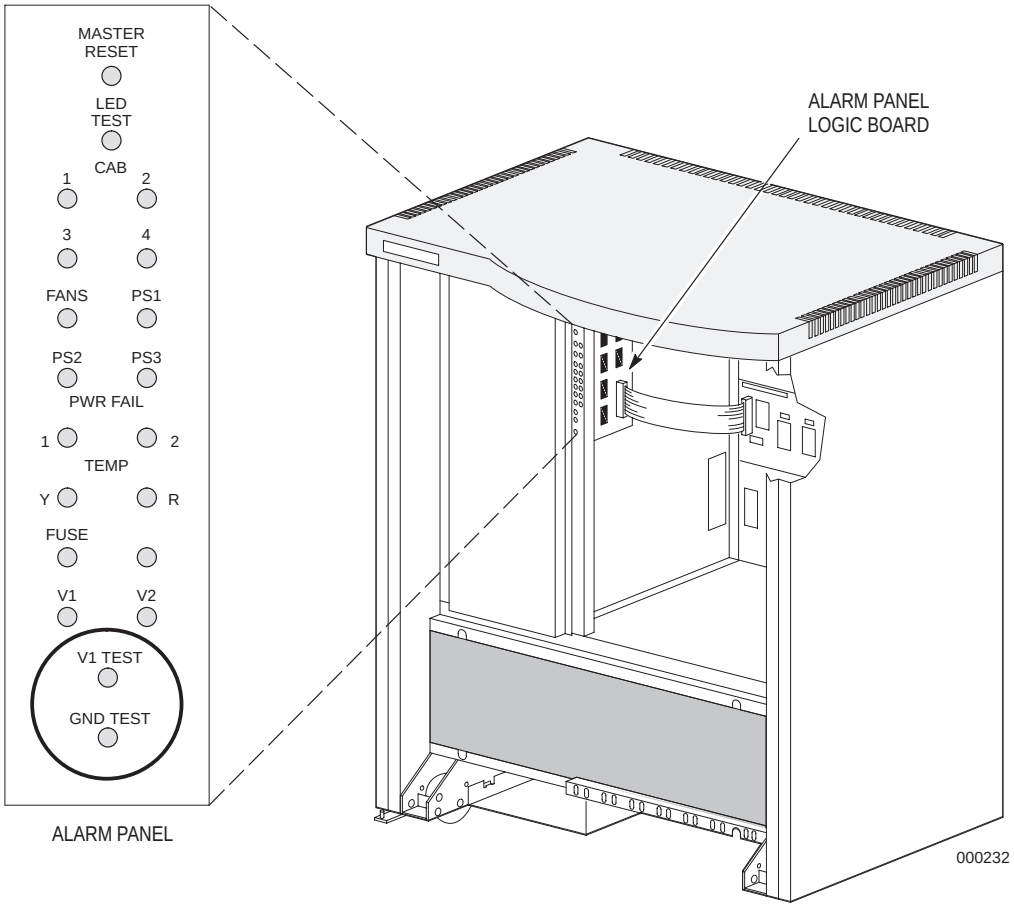


Figure 10-14. Alarm Panel, Showing the Location of V1 and GND Test Points.

Inspecting and Cleaning the Server

Inspect and clean the server while it is in service. For a typical operating environment, perform an inspection and a cleaning twice a year. Change the frequency or modify the following procedures as required for the specific operating environment. Inspect and clean the server, including replacing a dirty air filter, as follows:

1. Make sure that you have a spare air filter on hand, if it is needed. Call the Octel Customer Services Center or your Octel distributor and order an air filter, P/N 056–1065–000.

Caution!

Do not use detergents or solvents to clean the exterior of the server. These chemicals could damage the painted surfaces.

2. Clean the exterior of the cabinet with a clean cloth dampened with a mild solution of soap and warm water. Do not use chemicals or solvents.

3. Open the front cabinet door. The air filter is located below the card cage and drive bay. Refer to Figure 10-15 for the location of the air filter.

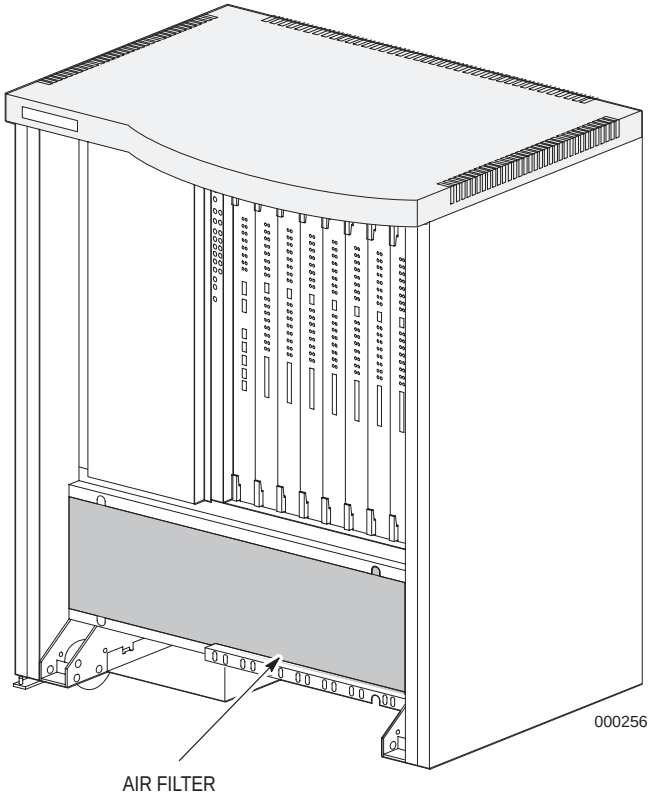


Figure 10-15. Octel 250 Air Filter.

4. If the cables to the logic cards have insufficient slack to allow the fan filter to be removed, cut the cable tie wraps to provide slack. If this is still not sufficient, perform the following steps:

   a. Coordinate with the system manager to take the server out of service.

   b. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

c. Use menu 13.1 to shut down the server.

d. Label and disconnect the cables from the logic cards, as required.

5. Gently pull the filter down and out from under the upper flange. Then pull the filter up and out of the lower flange.

6. Inspect the filter. With normal conditions and usage, filters typically need to be replaced about every 3 months.

7. If the filter is dirty, discard it and unpack the new one.

8. Install the new air filter by inserting the bottom and side edges of the filter into the lower flange. Tuck the upper edge of the filter under the upper flange.

9. If you have shut down the server, reconnect all cables to the logic cards, and reboot the server.

10. Use tie wraps to secure the cables, as necessary.

11. Visually inspect the server. Look for these discrepancies:

- **Loose connectors**. Inspect all cables, particularly at the connector termination. Check the restraining straps on all connectors for tightness. If cable repair or replacement is required, schedule it for the next server shutdown.
- **Broken or worn insulation**. Fix any problems with the insulation to prevent unwanted electromagnetic emissions or susceptibility.
- **Inoperative fans**. An inoperative fan typically causes a non-service-affecting alarm at the time it fails. If a fan is not rotating or appears to be slower than the other fans, use the procedures in Chapter 11 to replace it.

12. Close the front door of the server.

Cleaning the Tape Drive

Octel Communications recommends that the tape drive be cleaned after every 25 hours of use. When the amber LED on the tape drive blinks, the tape drive must be cleaned. When the amber LED stays lit, the tape drive cannot be used.

Clean the tape drive, as follows:

1. Insert the cleaning cartridge, P/N 217–0001–000, into the tape drive. The drive automatically loads the cartridge and begins to clean the heads.

2. When the cleaning is finished, the cartridge is automatically ejected. Remove the cartridge.

3. Mark the date of the cleaning on the cartridge. If the cartridge has been used 25 times, discard the cartridge and purchase a new one from Octel Communications.

Storing and Handling Disk Drives

Refer to the drive-module replacement procedures in Chapter 11 for information about correct storage and handling of disk drives.

11 REPAIR AND REPLACEMENT

The following parts of the Octel 250 message server can be replaced:

- ❑ Logic cards
- ❑ Alarm-panel logic board
- ❑ Disk-drive and tape modules
- ❑ Modem
- ❑ System manager terminal (SMT)
- ❑ Cooling fans
- ❑ Power-distribution tray repairs, including
  - ❑ Power supplies
  - ❑ Auxiliary power board
- ❑ Main backplane
- ❑ Drive backplane
- ❑ Cover

Replacement procedures for these parts are presented in this chapter. Procedures to restore the database and messages onto a server from tape are also presented in this chapter.

Replacing Logic Cards

Do not repair logic cards in the field. If a problem is found, replace the logic card and ship it back to the factory. However, you can replace EPROMs on logic cards, as required for upgrades; refer to the installation instructions shipped with the EPROMs.

Caution!

Do not attempt to repair any logic card. The warranty is void if the card is tampered with or damaged from mishandling.

Replacement procedures for the following parts are described in this section:

- ❑ Combination CPU/file (CCF) cards
- ❑ 8-port fax-capable line/telephone interface (FLT8, FLT-M, and FLT-A) cards
- ❑ LAN cards

Replacing Any Logic Card

Caution!

The procedure in this section provides general information about replacing any logic card. Use this procedure *only* when other *specific* logic-card-replacement procedures refer you here.

Perform the following steps when replacing any logic card:

1. Open the server's front door.
2. Wear a correctly grounded antistatic wrist strap.
3. Loosen the thumb screws at the top and bottom of the card. These screws must be completely disengaged from the chassis.
4. When removing a logic card from the logic bay, use the card extractors, as shown in Figure 11-1. Do not force or bend the card.

   When handling a logic card, handle only the sheet-metal stiffener attached to the card. Do *not* touch the components or the edge connectors. Place all removed cards in antistatic bags. Do *not* stack the cards on top of one another.

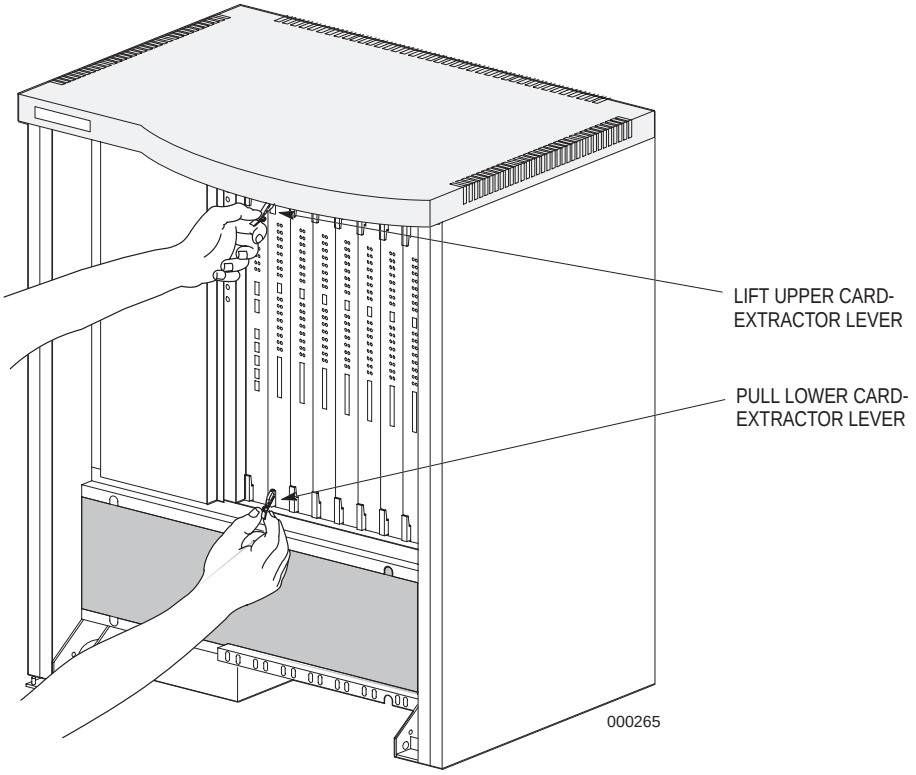


Figure 11-1. Removing a Logic Card.

5. Before installing a logic card, inspect all connectors, as follows:
   a. Check the card connectors for damaged plastic in and around the connectors, broken ejectors, or bent sheet metal.
   b. Check the backplane connectors to make sure there are no bent or broken pins.
   c. Make sure that the EPROMs on the new card are compatible with the server software release and card revision level.

   When interchanging (swapping) cards to isolate a problem, always check for damaged connectors on each card. A damaged connector can damage the corresponding slot in the logic bay. A damaged slot in the logic bay can damage any card installed in that slot. If a damaged connector in the logic bay is suspected, call the Octel Customer Services Center or your Octel distributor.

   If any damage or incompatibilities are found, do not install the card, as damage could be propagated to other cards or backplane slots.

6. Install the new card, as follows:
   a. Remove the new card from its antistatic storage bag.
   b. Slide the card, with the extractors fully open, into its slot. Use gentle, even pressure to slide the card into the appropriate slot. Do not force the card into the card cage. If you encounter resistance, check the connectors for the conditions listed in step 5.

c. Use the card extractors to apply pressure on the outer edges of the board to make sure that the card is correctly seated in the backplane. Refer to Figure 11-2.

d. Tighten the thumb screws at the top and bottom of the card.

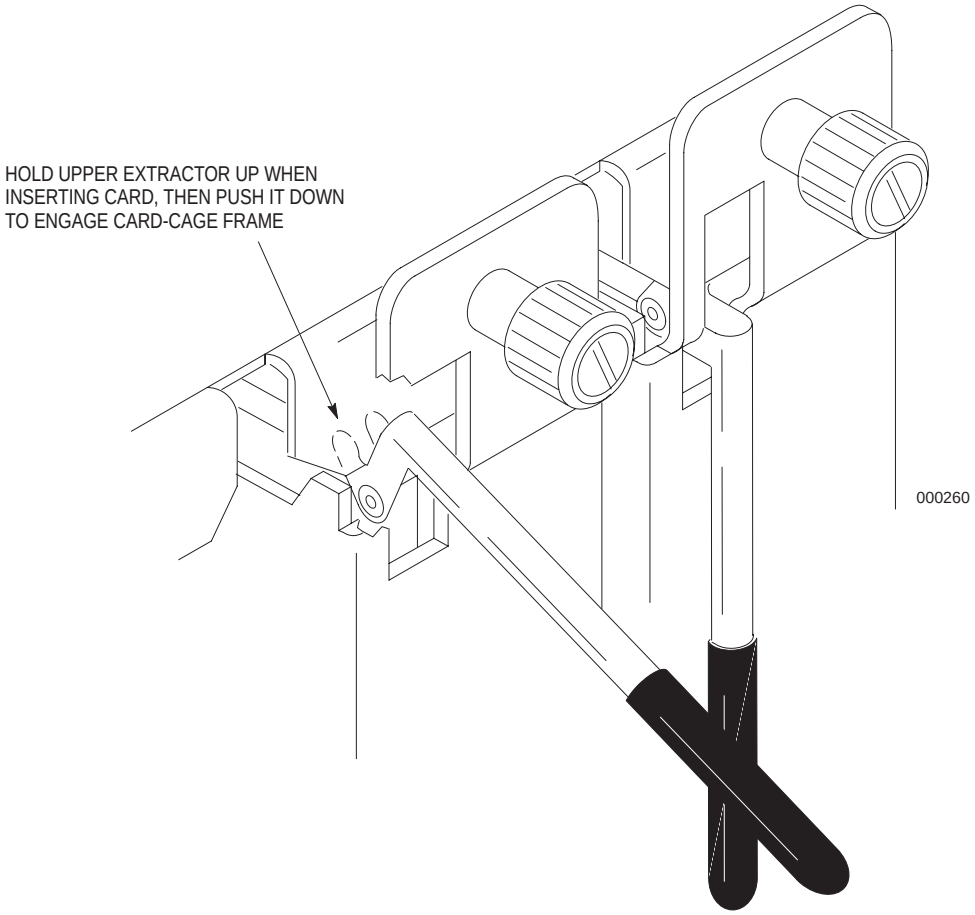


Figure 11-2. Engaging Card Extractors.

Replacing CCF Cards

Replace a CCF card, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.

2. Coordinate with the system manager to take the server out of service.

3. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

4. Use menu 13.1 to shut down the server.
5. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
6. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the server power by switching the main-power circuit breaker on the back of the power-distribution tray to the OFF position (0).
7. Put on an antistatic wrist strap that is correctly grounded.
8. Label and remove the cabling to the CCF card in slot 1.
9. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2), and remove the CCF card.
10. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2), and install the replacement CCF card.
11. Reconnect the cables to the CCF card.
12. Remove the antistatic wrist strap.
13. Turn on the power to the server by switching the main power circuit breaker to the ON position (1). Verify that all CPU diagnostic tests are passed. When the ***ENTER BOOT COMMAND:*** prompt appears, enter ***A***.
14. After the protected-mode initial program load (PIPL) is complete, if the replacement CCF card has EPROM firmware that differs from the level on the system drive, the server automatically installs the firmware from the system drive into the flash EPROMs, and activates it. The upgrade of the flash EPROMs can take several minutes, with a message on the SMT, informing you of the upgrade. You do not need to take any action. The server reboots, using the new firmware. This automatic upgrade means that the version of firmware that is actually in the EPROMs might differ from the version printed on the EPROMs.

    Two separate areas are available in the flash EPROMs for two different firmware levels. If you need to revert to the prior level of firmware on the CCF card EPROMs for any reason, use the procedure in the "Reverting to the Prior EPROM Firmware on the CCF Card" section, following.
15. Check the system date and time. You must reset the date and time if the server was turned off for more than 4 hours.
16. Run validity checks and garbage collect. Refer to Appendix A for the procedures to run these tests. Reformat options 0, 10, and 11 are required for validity checks. Garbage collect can be run from menu 20.
17. Return the server to normal operation.
18. Close all server doors.
19. Return the defective card to Octel Communications.

Reverting to the Prior EPROM Firmware on the CCF Card

Two separate areas are available in the CCF card's flash EPROMs for two different firmware levels. If you need to revert to the prior level of firmware on the CCF card EPROMs for any reason, perform the following steps:

1. Use menu 13.1 to shut down the server.
2. Turn off the power to the server.
3. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2), and remove the CCF card.
4. Move switch 3 at location S2 on the CCF card to the ON position.
5. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2), and reinstall the CCF card.
6. Reboot the server. The prior level of firmware on the card is used.

Once you have reverted to the older firmware, the next reboot loads the firmware from the system drive into the area for new firmware again. This new firmware does *not* become active unless you perform the following steps:

1. Use menu 13.1 to shut down the server.
2. Turn off the power to the server.
3. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2), and remove the CCF card.
4. Move switch 3 at location S2 on the CCF card back to the OFF position.
5. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2), and reinstall the CCF card.
6. Reboot the server.

Replacing an FLT8, FLT-M, or FLT-A Card

Every type of FLT card is hot-pluggable. Aria 1.0 supports only the standard FLT8 card. Aria 1.1 and newer software also support the FLT-M card, which is used for Mitel integration with the Octel 250. Aria 1.2 and newer software also support the FLT-A card, which is used for the Lucent Technologies integration with the Octel 250. The FLT-M and FLT-A cards provide integration by emulating the telephone set, eliminating the need for a separate integration device or the use of a separate RS-232 link.

Menu 13.11, Review Card Management, allows you to view card status when replacing existing FLT cards while the server is on line. You must respond to the prompts that appear on the screen to view any changes in card status.

Replace an FLT8, FLT-M, or FLT-A card, as follows:

1. From the SMT Main Menu, access Menu 13 – System Maintenance, and select option ***11***. Menu 13.11, Review Card Management, appears, as shown in the example in Figure 11-3.

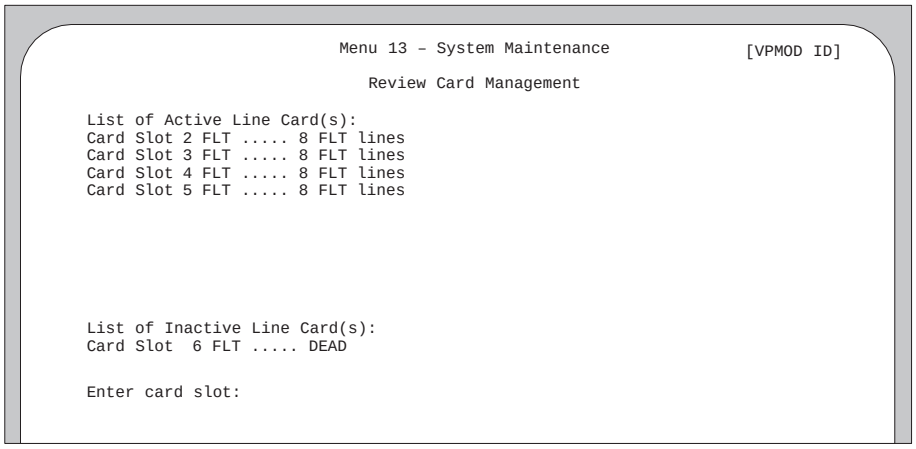


Figure 11-3. Example of Menu 13.11, Review Card Management.

2. At the ***Enter card slot:*** prompt, enter the slot number for the card you need to replace. The following prompt appears:

   Please "BUSY OUT" the disabled card.
   Card slot X will be disabled.

   Enter "1" – allow lines to clear, "2" – clear immediately, "Break" – cancel:

   where ***X*** represents the slot number for the card you are disabling.

3. Type ***1*** and press ***Enter*** to allow the lines to clear. Type ***2*** and press ***Enter*** to disable the card immediately.

   The following prompt appears:

   Card slot X disabled.
   Waiting for lines to clear...
   All lines are cleared.

   Please replace card X.
   Press "Q" to quit or any other key to continue:

4. Open the server's front door, and locate the FLT card to be replaced.

5. Put on an antistatic wrist strap that is correctly grounded.

6. Disconnect the telco cable from the card to be replaced.

7. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to remove the FLT card.



Caution!

The card slot must remain empty for at least 30 seconds to allow the server to recognize that the card has been removed. Insert the new card carefully, to prevent damage to the card, card extractors, and backplane pins.

8. Wait *at least* 30 seconds, then use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to install the replacement FLT card.

9. Connect the telco cable to the replacement card. Secure the cable with the Velcro tie.

10. Remove the antistatic wrist strap.

11. At the SMT, press any key (except ***Q***) to continue. The following message appears:

    Card upload initiated...

    If the upload is successful, the following prompt appears after a few minutes (up to 10 minutes for an FLT-A card):

    Card Slot XX uploaded. Status: OK
    Undo the "BUSY OUT" of the disabled card.

    REMINDER: Use Menu 4 to change port assignments if necessary.

    Card upload completed. Press any key to continue:

    If the upload is not successful, press the ***Break*** key to cancel the upload, then restart the card-replacement procedure at step 1. If the upload still fails, call the Octel Customer Services Center or your Octel distributor.

12. For the FLT-A card only, observe the LEDs during startup. For other FLT cards, proceed to step 13.

    Normal startup of the FLT-A card occurs, as follows:

    a. If the server has only one FLT-A card, the software selects two of its ports for primary and secondary clock synchronization with the PBX.

       If the server has two or more FLT-A cards, the software selects one of the ports on the leftmost FLT-A card as the primary source and one of the ports on the next FLT-A card to the right as the secondary source for synchronization with the PBX.

    b. When the diagnostic tests on an FLT-A card have been completed successfully, all the SI and SO LEDs for all of that card's ports flash together; as each port synchronizes with the PBX, its pair of SI and SO LEDs turns off.

If either the primary or secondary synchronization source loses synchronization with the PBX, the software generates a non-service-affecting (NSA) alarm called “Frame Sync Lost” and turns on the NSA alarm LED on the CCF card. You can use menu 13.8, Review Current Alarm Status, to display information about NSA alarms. A CDR event 118 (GEN_ERR) is also generated; it defines which synchronization, primary or secondary, was lost. You can view the event in Online CDR. If the primary synchronization source fails, all FLT-A cards automatically switch to the secondary source, without affecting normal server operation.

13. Press any key to return to menu 13.11. This screen should show that all line cards are active.
14. Press ***Ctrl+C*** until the Main Menu reappears.
15. Access menu 4.1 and verify that the ports associated with this card are configured correctly.
16. Test the ports, on line. From the SMT Main Menu, access Menu 20 – Service Operations, then the Port Testing Utilities menu. Refer to Chapter 10 for testing procedures.

    For the FLT-A card only, if you call an individual port directly from a test station that has a mailbox on the Octel 250, you hear the personal greeting of the calling party, rather than the calling party’s recorded name and the password prompt. If you call the pilot number directly, you hear the calling party’s recorded name and the password prompt.
17. Press ***Ctrl+C*** until the Main Menu reappears.
18. Close all server doors.
19. Return the defective card to Octel Communications.

Replacing a LAN Card

The LAN card is hot-pluggable; it can be removed while the message server is on line. Replace the LAN card, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. If you have not already done so, attempt to resolve the problem by performing a software reset of the LAN card. Access menu 20, then the LAN Utilities menu, then the Reset LAN Card and LAN Card API option. If this does not resolve the problem, continue with the following steps.
3. If digital networking is enabled, disable it in menu 15.1.2.
4. From the SMT Main Menu, access Menu 13 – System Maintenance, and select option ***11***. Menu 13.11, Review Card Management, appears, as shown in the example in Figure 11–3 on page 11–7.
5. At the ***Enter card slot:*** prompt, enter the slot number for the LAN card (enter ***8*** for a single-cabinet server, or ***16*** for a dual-cabinet server).

6. At the ***Warning – This option will STOP all LAN Activities – Proceed (Y/N):*** prompt, enter ***Y*** to continue.
7. At the ***Enter "1" – allow tasks to clear, "2" – clear immediately, "Break" – cancel:*** prompt, enter ***1*** to allow digital networking tasks to complete. When the SMT screen tells you to insert the LAN card, continue with the following steps to remove and replace the card.
8. Put on an antistatic wrist strap that is correctly grounded.
9. Label, then disconnect the cables from the LAN card.
10. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to remove the LAN card.
11. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to install the replacement LAN card.
12. Remove the antistatic wrist strap.
13. Press any key on the SMT to continue. The ***Card upload initiated...*** prompt appears.

    If the replacement LAN card has EPROM firmware that differs from the level on the system drive, the server automatically installs the firmware from the system drive into the flash EPROMs and activates it. This automatic upgrade means that the version of firmware that is actually in the EPROMs might differ from the version printed on the EPROMs themselves.

    Two separate areas are available in the flash EPROMs for two different firmware levels. If you need to revert to the prior level of firmware on the LAN card EPROMs for any reason, use the procedure in the "Reverting to the Prior EPROM Firmware on the LAN Card" section, following.
14. After the upload is completed and the ***LAN Card is UP and running, press any key to continue*** prompt appears, access menu 22.2 and note the entries in the ***This Server's IP Address:*** and ***Gateway IP Address:*** fields.
15. Access Menu 20 – Service Operations, then the LAN Utilities menu, then the Ping utility. Use the entry in the ***This Server's IP Address:*** field to ping the LAN card to confirm that it is operating.
16. Use the entry in the ***Gateway IP Address:*** field to ping the message server's router/gateway to confirm that the LAN card can communicate with it.
17. Ping a network address to confirm that the LAN card can communicate through the network.
18. If applicable, reenable digital networking in menu 15.1.2.
19. Press ***Ctrl+C*** until the Main Menu reappears.
20. Close all server doors.
21. Return the defective card to Octel Communications.

Reverting to the Prior EPROM Firmware on the LAN Card

Two separate areas are available in the LAN card's flash EPROMs for two different firmware levels. If you need to revert to the prior level of firmware on the LAN card EPROMs for any reason, perform the following steps:

1. Using menu 13.11, identify the slot for the LAN card, if you have not done so already.
2. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to remove the LAN card.
3. Move switch 3 at location S2 on the LAN card to the ON position.
4. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to reinstall the LAN card. This causes the prior level of firmware to be used.

Once you have reverted to the older firmware, the next hot-plug loads the firmware from the system drive into the area for new firmware again. This new firmware does *not* become active unless you perform the following steps:

1. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to remove the LAN card.
2. Move switch 3 at location S2 on the LAN card back to the OFF position.
3. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2) to reinstall the LAN card.

Replacing EPROMs on Logic Cards

To replace the EPROMs on any logic card for the Octel 250, refer to the installation instructions that are shipped with the EPROMs.

Replacing the Alarm-Panel Logic Board

The alarm-panel logic board is located at the front of the logic bay. Replace a defective alarm-panel logic board, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

3. Use menu 13.1 to shut down the server.

4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.

5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the server power by switching the main-power circuit breaker on the back of the power distribution tray to the OFF position (0).

6. Open the server's front door.

7. Put on the antistatic wrist strap located toward the front of the cabinet.

8. Label all cable connections to the logic cards.

9. To access the panel, use the card extractors to remove all the cards from the logic bay. Use the correct removal and handling procedures (refer to the "Replacing Any Logic Card" section, page 11-2).

10. Remove the alarm cable from the alarm-panel connector, as shown in Figure 11-4.

11. Remove the two face-panel screws that secure the alarm-panel logic board to the frame.

12. Remove the alarm-panel logic board, and put it in an antistatic bag.

13. Address the alarm board for the correct cabinet, by setting the cabinet-address dip switch, shown in Figure 11-4. Use the settings in Table 11-1 to address the dip switch for the appropriate cabinet.

14. Insert the new alarm-panel logic board.

15. Replace the two screws that secure the alarm-panel logic board to the frame.

16. Connect the alarm cable to the alarm-panel connector (Figure 11-4).

17. Insert the logic cards into the logic bay. Use the correct card inspection and installation procedures (refer to the "Replacing Any Logic Card" section, page 11-2).

18. Reconnect all cables to the logic cards.

19. Restore the server to service.

20. Close all server doors.

21. Return the defective board to Octel Communications.

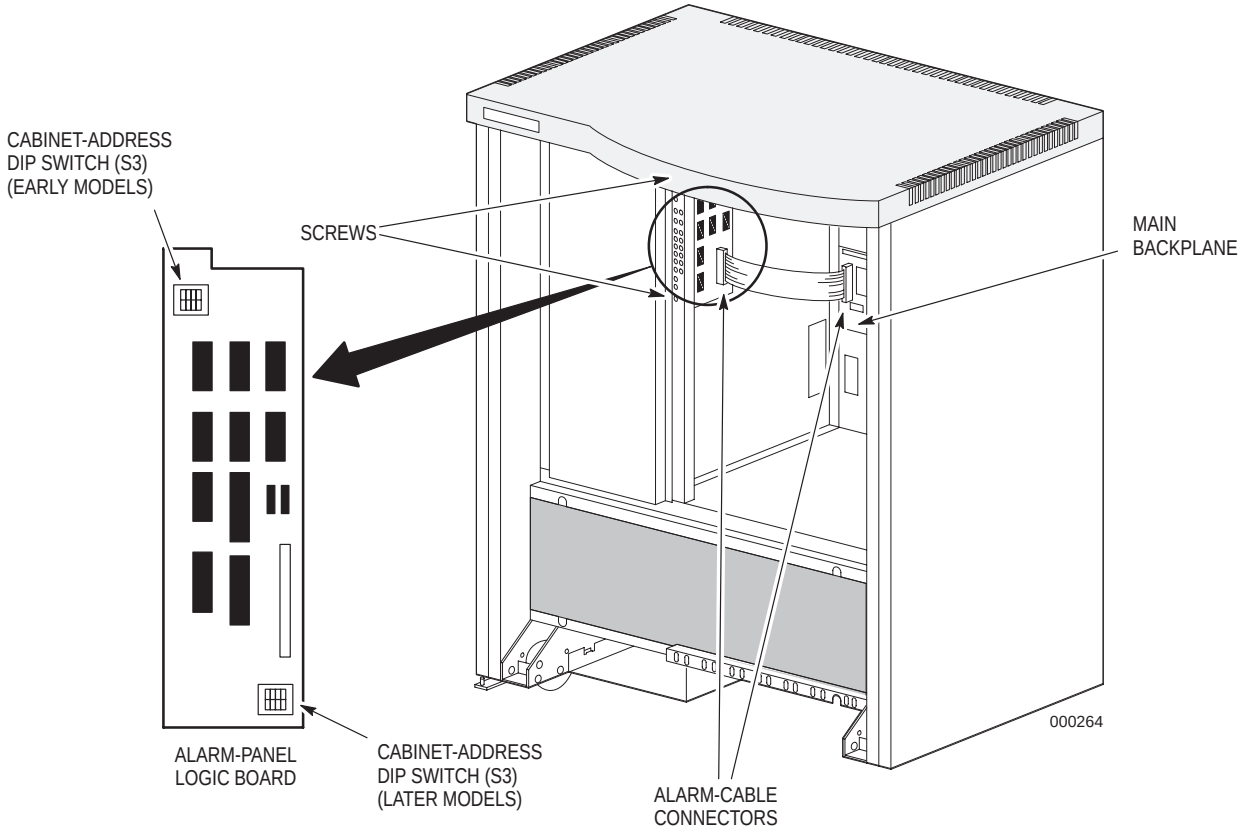


Figure 11-4. Location of Alarm-Panel Logic Board (Front View).

Table 11-1. Switch Settings for Switch S3.

Cabinet	Switch 1	Switch 2
primary (first)	Closed (On)	Closed (On)
expansion	Open (Off)	Closed (On)

Replacing Drive Modules

Do not perform repairs on the drive modules in the field. Replace faulty drive modules as a unit. When replacing or installing drive modules, inspect all connectors for damage. When inserting a drive module into the server, use gentle, even pressure to slide it into the drive slot. Do not force the drive into the drive backplane. If you encounter resistance, check the connectors and drive backplane for damaged plastic in and around the connectors, broken ejectors, or bent sheet metal. Make sure that the drive extractor is engaged in a manner that causes the drive to be fully seated.



Caution!

Do *not* use the drive replacement procedures in this service manual for any servers that are at software *older* than Aria 1.2. Doing so could result in machine damage and loss of data.

Disk drives can be damaged if incorrectly stored or handled. Shock or vibration, electrostatic discharge (ESD), and the effects of humidity can damage disk drives.



Caution!

Dropping a disk drive from a height of as little as 1/2 inch onto a solid surface can shock a drive, which could result in damage.

Use the following guidelines to ensure safe and correct handling of disk drives:

- **Shock or vibration**. Excessive shock or vibration that causes a disk-drive head to contact the media surface can result in permanent damage to the drive. Do not place drives on hard surfaces or stack them together.
- **Electrostatic discharge**. Exposing the electronic components of a hard disk to ESD can result in damage to the components. When handling drives, use the following precautions:
  - Before removing a drive from a server, attach an antistatic wrist strap or use an equivalent method to provide a high-resistance path to ground.
  - After a drive is removed, immediately place it in an antistatic bag.
  - When installing a drive, keep the drive in its antistatic bag until you are ready to use it.
  - When returning a drive to Octel Communications, place the drive in an antistatic bag and place the bag into a shipping container immediately.
- **Humidity**. If moisture forms on the media surface of the drive, it can cause the head to stick to the media, resulting in damage to the media surface. Use the following precautions when working in an environment with high humidity:
  - Keep the disk drive in a sealed bag until installed to prevent moisture from condensing on it.
  - Do not store disk drives in a high-humidity environment for long periods of time, because moisture penetrates a sealed bag over time.

Open the server's front door to access the drive bay for any drive-replacement procedure. Procedures for the following drives are described in this section:

- Replacing the system drive in a single-drive server (go to the "Replacing the System Drive in a Single-Drive Server" section, following)
- Replacing a system drive in a two-system-drive server (go to the "Replacing a System Drive in a Two-System-Drive Server" section, page 11-19)

- ❏ Replacing a message drive in a non-GMR server (go to the “Replacing a Message Drive in a Non-GMR Server” section, page 11-22)
- ❏ Replacing a message drive in a GMR server (go to the “Replacing a Message Drive in a GMR Server” section, page 11-24)
- ❏ Replacing the tape drive (go to the “Replacing the Tape Drive” section, page 11-26)

Chapter 12 contains procedures for replacing message drives with drives having higher capacity.

Replacing the System Drive in a Single-Drive Server

You can use a replacement drive of a higher capacity than the original drive; however, its usable capacity for software and messages would be the same as for the original drive.

Refer to the “Replacing Drive Modules” section, page 11-13, and use it to physically remove a drive when directed to do so.

If the Octel 250 has only one disk drive, that drive contains server software and messages. In general, it is referred to as the system drive. Use one of the following procedures to replace the system drive in a single-drive server:

- ❏ “Replacing the Only Drive Using Software, Phrases, Data Files, and Messages From the Original Drive” section (following).
- ❏ “Replacing the Only Drive Using Software and Phrases on the Replacement Drive” section, page 11-17.

Replacing the Only Drive Using Software, Phrases, Data Files, and Messages From the Original Drive

Use this procedure to replace system-drive 0 in a single-drive server when the software and phrases on the system drive are known to be good. If either software or phrases might be bad, use the alternative replacement procedure on page 11-17.

In this procedure, the server copies software, phrases, data files, and messages from the malfunctioning drive to the replacement drive. Replace system-drive 0, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. Run garbage collect on the drive to be replaced, as follows:
   a. From the SMT Main Menu, access Menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the Garbage Collect utility.

      The ***Enter drive to garbage collect [0–5] or ’A’ for all drives:*** prompt appears.

   b. Enter ***0*** to run garbage collect on the system-drive 0 to be replaced. The ***Do you want a long garbage collect? (y/n):*** prompt appears.

c. Enter ***Y*** for a long garbage collect.

d. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If no errors occur, press any key to continue. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect. When the second pass is finished, the ***Garbage Collect Complete*** message appears.

e. Press ***Ctrl+C*** until menu 20 reappears.

3. Take the server out of service, as follows:

   a. Coordinate with the system manager to take the server out of service.

   b. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

   c. Use menu 13.1 to shut down the server.

   d. After the ***Execution Trace*** message appears and the trace begins, press ***Ctrl+C***.

   e. When the ***ENTER BOOT COMMAND:*** prompt appears, type ***Ctrl+D***, then ***U***, to access the offline menu 20.

4. Run the Drive Replacement utility, as follows:

   a. From menu 20, access the Drive Replacement Utilities menu, then the Replace System Drive option.

      The ***Do you wish to use the original drive 0 software and phrases (y/n):*** prompt appears.

   b. Enter ***Y***. The ***Please insert the new replacement drive into slot 1. Once the new drive is inserted, press any key to continue*** prompt appears.

   c. Insert the replacement drive into slot 1.

   d. Press any key. The server enables the new drive and displays the serial numbers of the original and replacement drives and the ***Is this correct? (y/n):*** prompt.

   e. Enter ***Y*** if the serial numbers shown are correct.

      The utility checks the capacity of the replacement drive, initializes it, and copies all files to the replacement drive, including software, phrases, data files, and messages.

   f. When the utility is finished, the following prompt appears:

      System will now automatically shutdown. Place the new System Drive 0 into slot 0 and reboot the system. Upon reboot, Garbage Collection will automatically run to clean up the new System drive.
      Replace System drive complete.
      Press any key to continue.

      Remove the malfunctioning drive from slot 0 and move the replacement drive from slot 1 to slot 0.

g. Press any key to shut down the server.

h. At the ***ENTER BOOT COMMAND:*** prompt, type ***Ctrl+D***, then ***U***. (If you enter ***0***, ***1***, or ***A***, the system goes off line and prompts you to continue booting off line.)

The server runs garbage collect on the replacement drive. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If no errors occur, press any key to continue. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect. When the second pass is finished, the ***Garbage Collect Complete*** message appears. Press any key to continue.

i. Exit menu 20. At the ***System shutting down. Press any key to continue.*** prompt, press any key to continue system shutdown.

5. Restore the server to service, as follows:

a. When the ***ENTER BOOT COMMAND:*** prompt appears, reboot with an ***A***.

b. Verify that the server is functioning correctly.

c. Restore the server to normal operation.

6. Close all server doors.

7. Return the defective drive to Octel Communications.

Replacing the Only Drive Using Software and Phrases on the Replacement Drive

Use this procedure to replace system-drive 0 with a drive that already has the required software and phrases. The server copies data files, IVR phrases, customized PMTs, and messages from the malfunctioning drive to the replacement drive.

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.

2. Run garbage collect on the drive to be replaced, as follows:

a. From the SMT Main Menu, access menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the Garbage Collect utility.

The ***Enter drive to garbage collect [0–5] or 'A' for all drives:*** prompt appears.

b. Enter ***0*** to run garbage collect on the system-drive 0 to be replaced. The ***Do you want a long garbage collect? (y/n):*** prompt appears.

c. Enter ***Y*** for a long garbage collect.

d. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If no errors occur, press any key to continue. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect. When the second pass is finished, the ***Garbage Collect Complete*** message appears.

e. Press ***Ctrl+C*** until menu 20 reappears.

3. Take the server out of service, as follows:

a. Coordinate with the system manager to take the server out of service.

b. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

c. Use menu 13.1 to shut down the server.

d. After the ***Execution Trace*** message appears and the trace begins, press ***Ctrl+C***.

e. When the ***ENTER BOOT COMMAND:*** prompt appears, remove system-drive 0, and insert the replacement drive that has software and phrases into slot 0.

f. At the ***ENTER BOOT COMMAND:*** prompt, type ***B*** to reset the server with its new drive.

g. When the ***ENTER BOOT COMMAND:*** prompt reappears, type ***Ctrl+D***, then ***U***, to access the offline menu 20.

4. Run the Drive Replacement utility, as follows:

a. From menu 20, access the Drive Replacement Utilities menu, then the Replace System Drive option.

The ***Do you wish to use the original drive 0 software and phrases (y/n):*** prompt appears.

b. Enter ***N***. The ***Please insert the original System drive 0 into slot 1. Press any key to continue*** prompt appears.

c. Insert the malfunctioning system-drive 0 into slot 1.

d. Press any key to continue. The server enables the drive in slot 1 and displays the serial numbers of the original and replacement drives and the ***Is this correct? (y/n):*** prompt.

e. Enter ***Y*** if the serial numbers shown are correct.

The utility checks the capacity of the replacement drive, matches the file size of the system data, then copies data files, IVR phrases, and messages to the replacement drive. Software and phrases are *not* copied. (You might see brief messages that indicate that phrases are being copied.)

f. When the utility is finished, the following prompt appears:

System will now automatically shutdown. Remove the original System Drive 0 from slot 1 and reboot the system.
Replace System drive complete.
Press any key to continue.

Remove the drive from slot 1.

g. Press any key to shut down the server. The server shuts down and the SMT returns to the ***ENTER BOOT COMMAND:*** prompt.

5. Restore the server to service, as follows:
   a. When the ***ENTER BOOT COMMAND:*** prompt appears, reboot with an ***A***.
   b. Verify that the server is functioning correctly.
   c. Run a long garbage collect on system-drive 0. Refer to the procedures in the preceding step 2.
   d. Restore the server to normal operation.
6. Close all server doors.
7. Return the defective drive to Octel Communications.

Replacing a System Drive in a Two-System-Drive Server

You can use a replacement drive of a higher capacity than the original drive; however, its usable capacity for software in any server and for messages in a non-GMR server would be the same as for the original drive.

Refer to the “Replacing Drive Modules” section, page 11-13, and use it to physically remove a drive when directed to do so.

Use the following procedure to replace one of the system drives in a server that has two system drives. The server copies software, phrases, and data files from the functioning system drive. For non-GMR servers, the server copies messages from the malfunctioning system drive to the replacement drive. You can perform this procedure online or offline, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. Run garbage collect on the drive to be replaced in a non-GMR server or on the *other* system drive (*not* to be replaced) in a GMR server, as follows:
   a. From the SMT Main Menu, access Menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the the Garbage Collect utility.

      The ***Enter drive to garbage collect [0–5] or ’A’ for all drives:*** prompt appears.

   b. Enter ***0*** or ***1*** to run garbage collect on the appropriate system drive. The ***Do you want a long garbage collect? (y/n):*** prompt appears.

c. Enter ***Y*** for a long garbage collect.

d. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If no errors occur, press any key to continue. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect. When the second pass is finished, the ***Garbage Collect Complete*** message appears.

e. Press ***Ctrl+C*** until menu 20 reappears.

3. For a non-GMR server only, coordinate with the system manager to send a broadcast message to inform subscribers that some messages might be temporarily unavailable.

4. If this is a non-GMR server at Aria 2.0 that has message drives installed in all slots 2 through 5 and a tape drive installed in slot 6, verify that a server backup is not currently in process or scheduled during the system-drive replacement. Then, from menu 20 access the Drive Install Utilities menu, then the Disable Drive utility, and disable slot 6. Press ***Ctrl+C*** until menu 20 reappears.

5. From menu 20, access the Drive Replacement Utilities menu, then the Replace System Drive option.

6. At the ***Enter Choice:*** prompt on the Replace System Drive screen, enter ***1*** for system-drive 0 or ***2*** for system-drive 1.

7. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown is correct.

   The server disables and deinstalls the selected system drive. The ***Please remove the original drive X and insert new replacement drive into slot X. Press any key to continue.*** prompt appears.

8. Remove the specified system drive from its slot, and insert the new drive in its place.

9. Press any key to continue. The server enables the new drive. (If you have inadvertently inserted the original drive as the replacement drive, the server notifies you of this error and returns to the previous prompt.)

10. The prompts and responses in this step depend on whether or not the server has GMR:

    ❑ **GMR servers**. A GMR server initializes the drive, copies software, phrases, and data files from the other system drive to the replacement system drive, and runs garbage collect on the new drive. System drives in a GMR server do not contain messages.

    If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect.

    At the ***Replace System drive complete. Press any key to continue.*** prompt, proceed to step 11.

- **Non-GMR servers**. For a non-GMR server, at the ***Please insert the original System drive X into slot Y. Press any key to continue.*** prompt, insert the original system drive into the specified slot. If the prompt tells you to install the drive in slot 6, remove the tape drive, if any, from slot 6. For servers at Aria 1.2, removing the tape drive can cause CD status-log entries.

  Press any key. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown is correct.

  The server attempts to initialize the drive, to copy software, phrases, data files, and messages from the original system drive to the replacement drive, and to run garbage collect on the new drive. However, if the original (failing) system drive cannot be enabled in its new temporary slot, the ***ERROR – Failed spin control. Press any key to continue.*** prompt appears. After you press any key, the following prompt appears:

  WARNING – Unable to spin up the original System Drive X in slot Y.
  If you continue all messages from the original System Drive X will be lost.
  y – Continue and install the new System Drive.
  n – Re-insert original System Drive into slot Y and try to spin up again.
  Continue? (y/n):

  If this prompt appears, you can reinsert the original system drive into its temporary slot, type ***N***, and press ***Enter*** to try to enable the original system drive. You can type ***Y*** and press ***Enter*** to proceed with the installation of the new system drive; if you choose this option, the messages on the original system drive are lost.

  If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect.

  At the ***Please remove the original System drive X from slot Y. Replace System drive complete. Press any key to continue.*** prompt, remove the original system drive.

11. Press ***Ctrl+C*** until the Main Menu reappears.

12. If you replaced drive 1 off line or on line in a server at Aria 1.2, perform the following steps:

    a. If you replaced drive 1 off line and the server fails to boot, remove drive 1 and boot the server from drive 0. Then insert drive 1 and, from menu 20, access the Drive Install Utilities menu, then the Enable Drive utility, and enable drive 1.

    b. If you replaced drive 1 off line or on line in a server at Aria 1.2, you must make the system drives redundant, using drive 0 as the source. From menu 20, access the Drive Copy Utilities menu, then the Make Drive(s) Redundant Utilities menu, then the Make System Drives Redundant option, then the Make Both Areas Redundant option. Proceed with the copy from drive 0 to drive 1, regardless of any prompts that indicate that the drives are already redundant. Refer to Appendix A for detailed procedures, if necessary.

13. If a tape drive was removed from slot 6 to perform the drive replacement, reinstall the tape drive.
    - ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive to make the tape drive operable.
    - ❑ If the server is at Aria 2.0, from menu 20, access the Drive Install Utilities menu, then the Enable Drive utility, and enable slot 6.
14. Press ***Ctrl+C*** until the Main Menu reappears
15. Close all server doors.
16. Return the defective drive to Octel Communications.

Replacing a Message Drive in a Non-GMR Server

Use this procedure to replace a message drive in a non-GMR server by copying messages from the malfunctioning message drive to the replacement drive.

Refer to the "Replacing Drive Modules" section, page 11-13, and use it to physically remove a drive when directed to do so.



Caution!

If you encounter CB messages pertaining to the replacement drive, *do not* continue with this procedure. Call the Octel Customer Services Center or your Octel distributor.

Replace a message drive in a non-GMR server, as follows:

1. Make sure that the replacement message drive has at least the capacity of the drive to be replaced. You can use a replacement drive of a higher capacity; however, its usable capacity would be the same as for the original drive.
2. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
3. If this non-GMR server is at Aria 2.0 and has message drives installed in all slots 2 through 5 and a tape drive installed in slot 6, verify that a server backup is not currently in process or scheduled during the message-drive replacement. Then, from menu 20 access the Drive Install Utilities menu, then the Disable Drive utility, and disable slot 6. Press ***Ctrl+C*** until menu 20 reappears.
4. Coordinate with the system manager to send a broadcast message to inform subscribers that some messages might be temporarily unavailable.

5. Run garbage collect on the drive to be replaced, as follows:
   a. From menu 20, access the Miscellaneous Utilities menu, then the Garbage Collect utility.

      The ***Enter drive to garbage collect [0–5] or 'A' for all drives:*** prompt appears.

   b. Enter the number of the message drive to be replaced. The ***Do you want a long garbage collect? (y/n):*** prompt appears.

   c. Enter ***Y*** for a long garbage collect.

   d. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If no errors occur, press any key to continue. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect. When the second pass is finished, the ***Garbage Collect Complete*** message appears.

   e. Enter ***Ctrl+C*** until menu 20 reappears.

6. From menu 20, access the Drive Replacement Utilities menu, then the Replace Message Drive utility.

   The ***Enter position of drive to be replaced [2–5]:*** prompt appears.

7. Enter the number of the malfunctioning drive. The following prompt appears:

   Do you want to copy messages from Message drive X onto the new replacement drive ? If you select no, all messages on Message drive X will be lost after the replacement (y/n):

8. Enter ***Y*** to copy the messages to the replacement drive.

   The ***Please insert the new replacement drive into slot Y. Once the new drive is inserted, press any key to continue.*** prompt appears.

9. Insert the replacement drive into the specified slot. If the prompt tells you to install the drive in slot 6, first remove the tape drive, if any, from slot 6. For servers at Aria 1.2, removing the tape drive can cause CD status-log entries.

10. Press any key.

    The server enables the new drive and displays the serial numbers of the original and replacement drives and the ***Is this correct? (y/n):*** prompt.

11. Enter ***Y*** if the serial numbers shown are correct. The server initializes the drive.

    The ***Do you wish to wait for Line Tasks to cycle? (y/n):*** prompt might appear for Aria 1.2 or the ***Do you wish to wait for Line Tasks and Mail Tasks to cycle? (y/n):*** prompt might appear for Aria 2.0. Enter ***Y*** to wait for callers or subscribers (and, with Aria 2.0, for digital-networking tasks) to complete their operations, or enter ***N*** to replace the drive immediately. Selecting ***N*** could cause errors if subscribers or digital networking are accessing the drive at this time.

12. The server then copies messages to the replacement drive. For a 1 GB drive, the copy can take approximately 20 minutes. For a 4 GB drive, the copy can take approximately 30 minutes.

    At the ***Remove drive from slot X and replace with new drive from slot Y. Press any key to continue.*** prompt, perform the following steps:

    a. Remove the malfunctioning drive from its slot.

    b. Move the replacement drive to the slot that had the malfunctioning drive.

    c. Press any key to continue. The server enables and installs the new message drive, and asks if you want to run a long garbage collect on it. Type ***Y***.

    d. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor, and *do not continue*. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found, or enter ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect.

13. At the ***Replace Message Drive Complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until the Main Menu reappears.

14. If a tape drive was removed from slot 6 to perform the drive replacement, reinstall the tape drive.

    - ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive to make the tape drive operable.
    - ❑ If the server is at Aria 2.0, from menu 20, access the Drive Install Utilities menu, then the Enable Drive utility, and enable slot 6.

15. Press ***Ctrl+C*** until the Main Menu reappears.

16. Close all server doors.

17. Return the defective drive to Octel Communications.

Replacing a Message Drive in a GMR Server

Use this procedure in a GMR server to copy messages from the redundant drive associated with a malfunctioning message drive to the replacement drive. During replacement of a message drive on a server with GMR, the functioning drive in the GMR pair continues to record messages. The server copies all messages from the functioning drive to the replacement drive.

Refer to the “Replacing Drive Modules” section, page 11-13, and use it to physically remove a drive when directed to do so.



Caution!

If you encounter CB messages pertaining to the replacement drive, *do not* continue with this procedure. Call the Octel Customer Services Center or your Octel distributor.

Replace a message drive in a GMR server, as follows:

1. Make sure that the replacement message drive has at least the capacity of the drive to be replaced. You can use a replacement drive of a higher capacity; however, its usable capacity would be the same as for the original drive.

2. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.

3. From the SMT Main Menu, access Menu 20 – Service Operations, then the Drive Replacement Utilities menu, then the Replace Message Drive utility.

   The ***Enter position of drive to be replaced [2–5]:*** prompt appears.

4. Enter the number of the malfunctioning drive. The following prompt appears:

   The message drives on this system are MIRRORED.
   The Serial No. of the Secondary Drive in slot x: xxxxx
   The Serial No. of the Primary Drive in slot y: yyyyy
   Is this the correct drive? (y/n):

5. Enter ***Y*** to confirm the serial numbers; the server then disables and deinstalls the drive to be replaced. At the ***Please remove the original drive X and insert new replacement drive into slot X. Press any key to continue.*** prompt, perform the following steps:

   a. Remove the malfunctioning drive from its slot.

   b. Check the serial number of the replacement drive, and insert it into the same slot.

   c. Press any key to continue. The server enables and installs the new message drive and copies the messages from the other drive in the pair to the replacement drive. For a 1-GB drive, the copy can take approximately 20 minutes. For a 4-GB drive, the copy can take approximately 30 minutes.

6. At the ***Replace Message Drive Complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until the Main Menu reappears.

7. Close all server doors.

8. Return the defective drive to Octel Communications.

Replacing the Tape Drive

Replace the tape drive, located in slot 6, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. Make sure that a server backup is not currently in process or scheduled to run during the time it takes to replace the tape drive. Allow approximately 15 minutes for tape-drive replacement.
3. If the server is at Aria 2.0, from the SMT Main Menu, access Menu 20 – Service Operations, then the Drive Install Utilities menu, then the Disable Drive utility. Disable slot 6.
4. Remove the malfunctioning tape drive from slot 6. (For servers at Aria 1.2, removing the tape drive can cause CD status-log entries.) Make sure that the connector on the drive backplane is not damaged.
5. Insert the replacement tape drive into slot 6. Make sure that the drive extractor is engaged, so that the drive is fully seated.
6. Perform one of the following, based on the level of Aria software:
   - ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive to make the tape drive operable.
   - ❑ If the server is at Aria 2.0, from menu 20, access the Drive Install utilities, then the Enable Drive utility, and enable slot 6. Press ***Ctrl+C*** until the Main Menu reappears.
7. Verify the correct operation of the replacement tape drive, as follows:
   a. Insert a DDS-2 4-GB tape that you can overwrite into the tape drive. Wait approximately 10 seconds, until the green LED on the tape drive stops blinking and stays on. This indicates that the tape is loaded. If the amber LED blinks, you must clean the tape drive (refer to Chapter 10).
   b. Log into the SMT.
   c. From the SMT Main Menu, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. The results are shown in Figure 11-5.
   d. At the *******WARNING**** YOU WILL OVERWRITE THE BACKUP DEVICE!!! Enter 'Y' to continue, 'N' to cancel:*** prompt, enter ***Y*** to continue the test. If a failure occurs during this test, call the Octel Customer Services Center or your Octel distributor.
   e. When the test is finished, press any key to return to menu 21.
   f. Press ***Ctrl+C*** to return to the Main Menu.
   g. Press the eject button on the tape drive, and remove the tape.
8. Close the server doors.
9. Return the defective drive to Octel Communications.

```
                          Menu 21 – System Backup              [ VPMOD ID ]

                1 – Schedule Backup
                2 – Display Backup Status
                3 – Write/Read Diagnostic
                4 – Scan Backup Tape
                5 – Review History of Last Event
                6 – Display Tape Header
                7 – Cancel Current Operation


                                       Enter Option: 3


*** WARNING *** YOU WILL OVERWRITE THE BACKUP DEVICE!!!

Enter 'Y' to continue, 'N' to cancel.y
qid_sbr_in = 6
qid_sbr_asa = 7

-- Backup Tape Write-Read Test is Starting – Please Wait. --

~sbrbmi:bmi_position_device: device 0 motion 0 count 0
~opening file 0 at 0
~Filemark written at 2050
~current LBA 2091  LREC in blks 41
~opening file 1 at 2091
~Filemark written at 4141
~current LBA 4182  LREC in blks 41
~opening file 2 at 4182
~Filemark written at 6232
~current LBA 6273  LREC in blks 41
~opening file 3 at 6273
~Filemark written at 8323
~current LBA 8364  LREC in blks 41
~opening file 4 at 8364
~Filemark written at 10414
~current LBA 10455  LREC in blks 41
~tapemark type 2 written at 10455
~sbrbmi:bmi_position_device: device 0 motion 0 count 0
~opening file 0 at 0
~opening file 1 at 2091
~opening file 2 at 4182
~opening file 3 at 6273
~opening file 4 at 8364
~

-- Backup Tape Write-Read Test is Completed --

~sbrbmi:bmi_position_device: device 0 motion 0 count 0 ~
Press any key to continue
```

Figure 11-5. Write/Read Diagnostic Screen.

Replacing the Modem

Replace a malfunctioning modem, as follows:

1. Open the server's front door.
2. Note which connector on the CCF card is used for the modem cable, and disconnect the modem cable from the CCF card. Disconnect the other end of the cable from the modem.

3. Turn off the power to the modem, and unplug the power cable from the electrical outlet.
4. Remove the modem from the modem tray, located at the bottom of the cabinet.
5. Configure the new modem, as described in Chapter 4.
6. Insert the new modem in the modem tray.
7. Plug the modem into an electrical outlet, and turn on the power to the modem.
8. Connect the modem cable to the CCF card. Connect the other end of the cable to the modem.
9. Call the server through the modem to verify its operation.
10. Close all server doors.
11. Return the defective modem to Octel Communications.

Replacing the SMT

Refer to the *Peripheral Equipment* manual for more information about system manager terminals. Replace a malfunctioning SMT, as follows:

1. Turn off the power to the SMT.
2. Open the server's front door.
3. Note which connector on the CCF card is used for the SMT cable, and disconnect the SMT cable from the CCF card.
4. Unplug the SMT from its electrical outlet.
5. Disconnect the printer and communications cables.
6. Remove the SMT.
7. Position the replacement SMT where the original SMT was located.
8. Connect the printer and communications cables to the SMT.
9. Connect the SMT cable to the CCF card.
10. Close all server doors.
11. Plug the SMT into an electrical outlet.

12. Turn on the power to the SMT. Listen for an immediate beep, which indicates that there is power to the terminal. Wait for the cursor to be displayed in the upper left corner of the screen.

13. If a cursor does not appear on the terminal, adjust the screen intensity. If the replacement SMT does not function correctly, check all connections and power. If necessary, refer to Appendix A and use the offline Change Terminal Type utility.

14. Configure the new SMT as described in the *Peripheral Equipment* manual.

15. If the defective SMT was purchased from Octel, return it to Octel.

Replacing Cooling Fans

Three intake fans are mounted at the front of the power-distribution tray. Replace the fans, as described in the following sections.



Caution!

These procedures are intended for trained service personnel only. Having untrained personnel perform these procedures can invalidate the warranty.

Removing the Fan Assembly

Remove the fan assembly, as follows:

1. Check all alarms in menu 13 before replacing the fans.

2. Open the front door of the server.

3. If the cables attached to the logic cards have insufficient slack to allow removal of the fan filter and the failing fan assembly, cut the cable tie wraps to provide slack. If this is still not sufficient, perform the following steps:

   a. Coordinate with the system manager to take the server out of service.

   b. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

   c. Use menu 13.1 to shut down the server.

   d. Label and disconnect cables from the logic cards, as required.

4. Remove the fan filter from the front of the server.

5. Use a Phillips screwdriver to remove the four screws that fasten the fan-filter bracket to the frame. Remove the fan-filter bracket.

6. Unplug the power cable for the defective fan from the appropriate fan power plug, as shown in Figure 11-6.

7. Use a Phillips screwdriver to remove the four screws that fasten the fan assembly to the frame. Refer to Figure 11-7 for a detailed view. Save the screws and the four flat washers.

8. Discard the fan assembly.

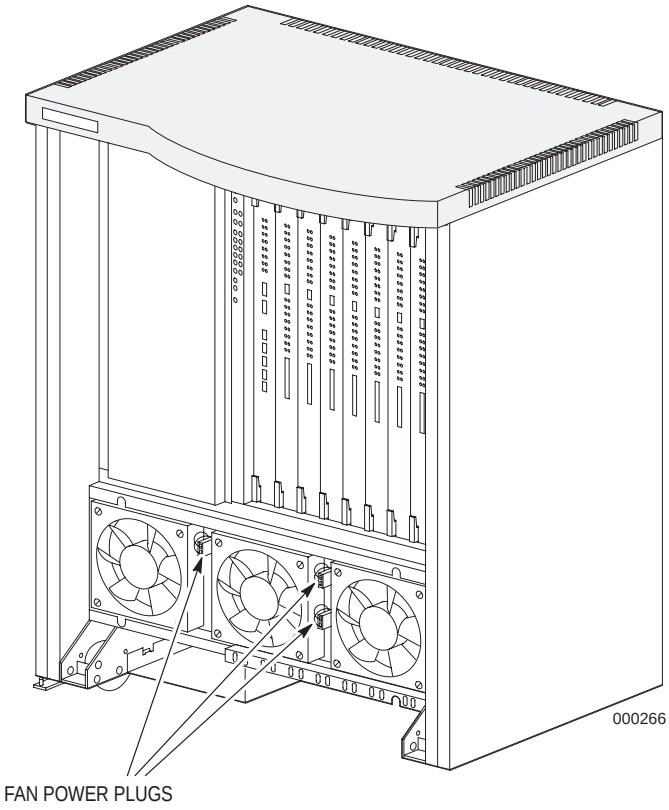


Figure 11-6. Fan Power Plugs on the Front of the Power-Distribution Tray.

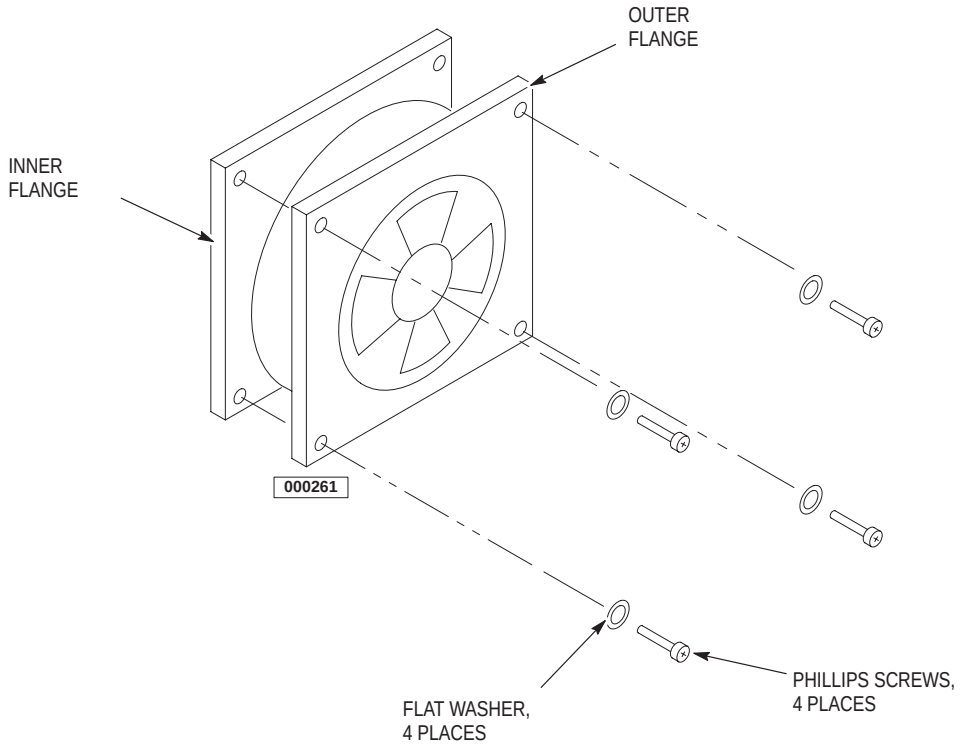


Figure 11-7. Fan Assembly and Grill.

Installing the New Fan Assembly

Install a new fan assembly, as follows:

1. Position the fan assembly so that the airflow is directed toward the server.
2. Carefully position the fan assembly against the hole in the frame. Make sure that the fan wire and connector can reach the power connector on the frame.
3. Use the four #6–32 x 3/4-inch Phillips screws to connect the fan assembly to the frame. Tighten all four screws.
4. Connect the fan-wire connector to the power connector on the frame. The connectors are keyed to fit correctly; do not force the connection.
5. Make sure that the fan begins to spin and that the air flow is directed inward at the front of the server.
6. Use the four previously removed Phillips screws to replace the fan-filter bracket.
7. Replace the fan filter.
8. If you have shut down the server, reconnect all cables to the logic cards, and reboot the server.

9. Use tie wraps to secure the cables, as necessary.
10. Make sure that the server alarms turn off. If alarm LEDs are still lit, call the Octel Customer Services Center or your Octel distributor.

Replacing Power-Distribution-Tray Components

Power supplies cannot be adjusted and are replaced as units. The power supplies are located in the power-distribution tray, which is accessible from the back of the server.

The server power-distribution tray can contain up to three power supplies. At least two power supplies must be installed for the server to function.



Caution!

These procedures are intended for trained service personnel only. Having untrained personnel perform these procedures can invalidate the warranty.

The following tools are required to replace components in the power-distribution tray:

- ❑ Flat-blade screwdrivers, small and medium
- ❑ Phillips screwdrivers, #1 and #2

Removing the Power-Distribution Tray

Remove the power-distribution tray, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
3. Use menu 13.1 to shut down the server.
4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main power circuit breaker to the OFF position (0).
6. Unplug the server's power cord from the electrical outlet.
7. Use a #2 Phillips screwdriver to remove the 12 screws that secure the power-cable cover to the server frame at the rear of the server. Save the screws. Remove the power-cable cover; its location is shown in Figure 11-8.

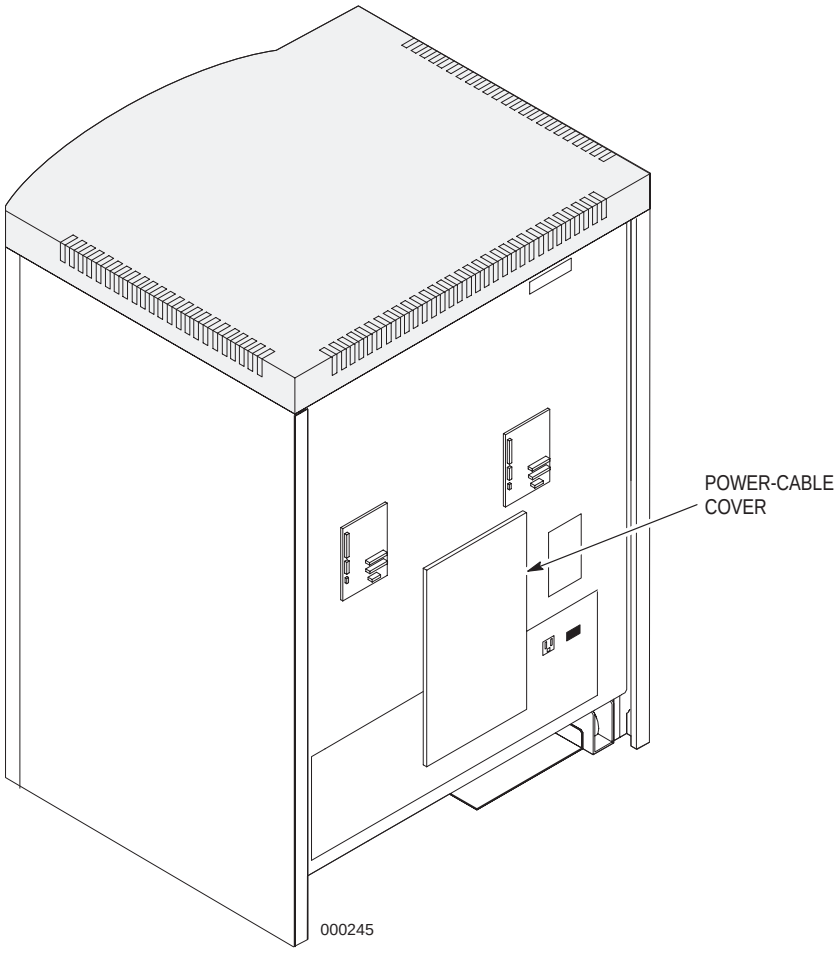


Figure 11-8. Power-Cable Cover on the Rear of the Server.

8. Disconnect the lugs on the 24-volt power cable and the 24-volt return cable from the power-distribution tray connections, as shown in Figure 11-9.

9. Disconnect the main backplane cable from the connector on the power-distribution tray (Figure 11-9).

10. Remove and save the six screws that secure the power-distribution tray to the server frame.

11. Carefully slide the tray out from the frame, and place it on a sturdy surface.

12. Proceed to the “Replacing Power Supplies” section, following, or the “Replacing the Auxiliary Power Board” section, page 11-36, as necessary.

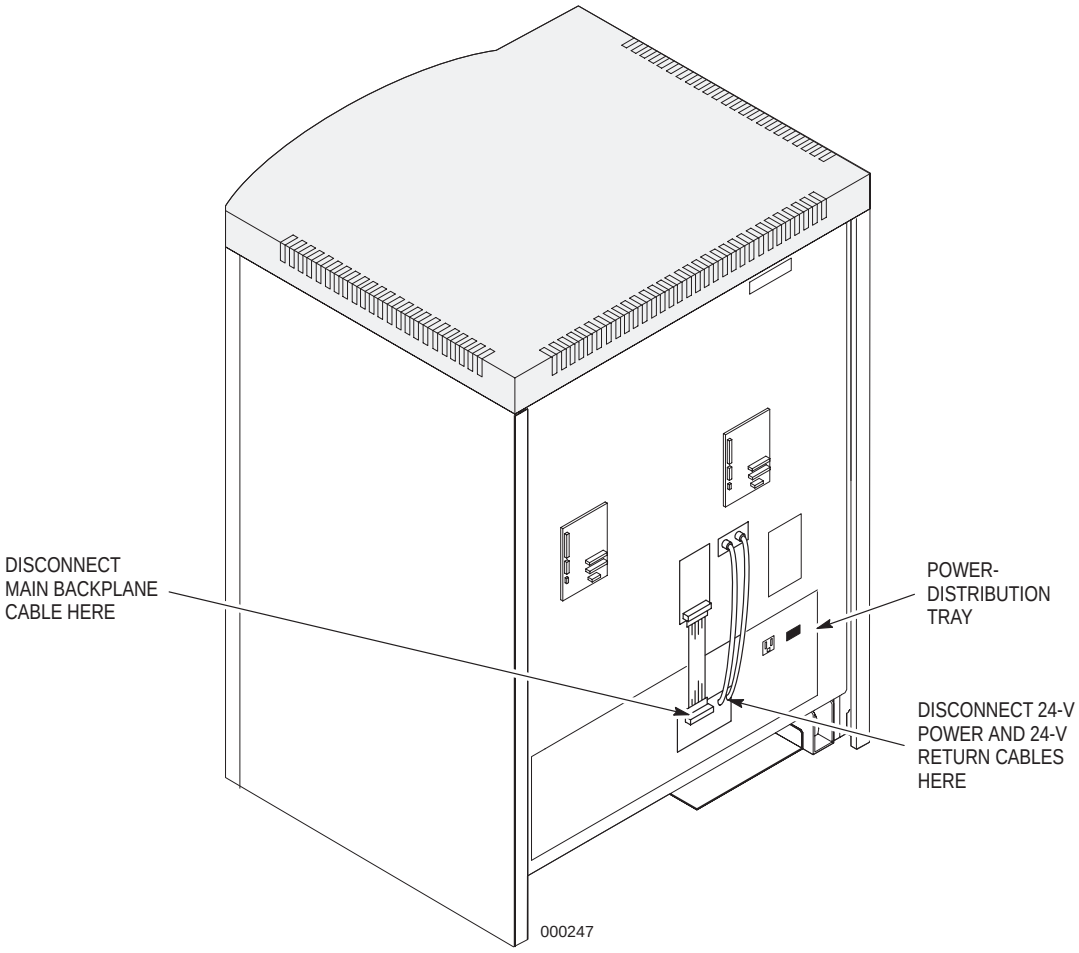


Figure 11-9. External Connections to the Power-Distribution Tray.

Replacing Power Supplies

Power supplies are located in the center of the power-distribution tray, as shown in Figure 11-10. Replace a power supply as follows:

1. Remove the power-distribution tray. Refer to the “Removing the Power-Distribution Tray” section, page 11-32.

2. Note that the power supplies are identified on the alarm panel as PS1, PS2, and PS3. Some older auxiliary power boards in the tray have power-out connectors that are labeled POWER SUPPLY 0, POWER SUPPLY 1, and POWER SUPPLY 2, corresponding to alarms PS1, PS2, and PS3, respectively.

   Disconnect the power-in and power-out cables from the connectors on the power supply to be replaced (Figure 11-10). Also disconnect the other end of the same power-out cable from the auxiliary power board.

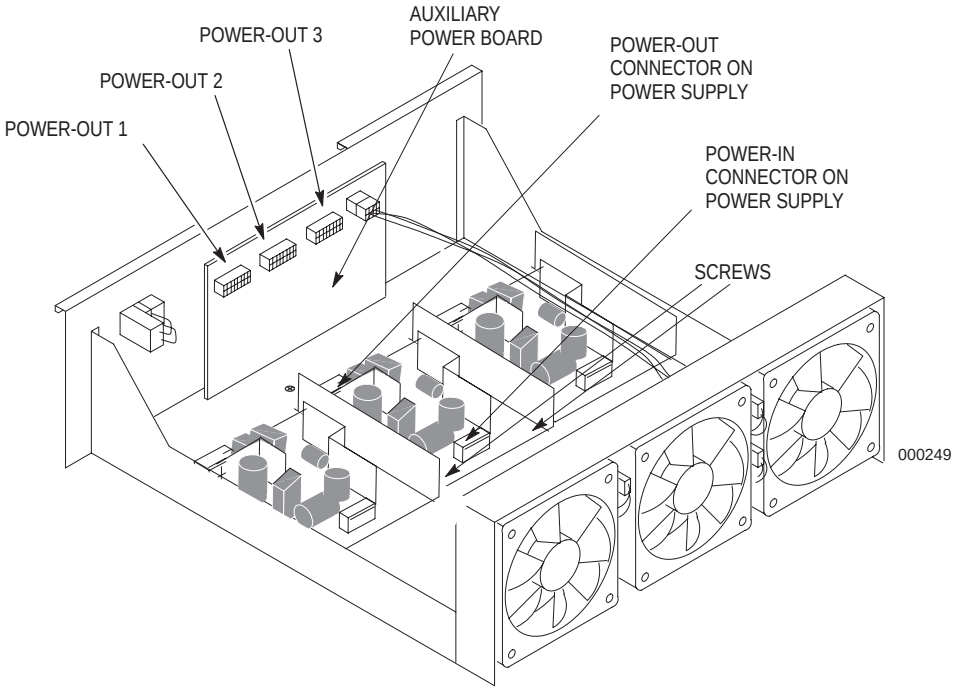


Figure 11-10. Power-Distribution Tray With the Three Power Supplies.

3. Use a #2 Phillips screwdriver to remove and save the two screws that secure the power supply to the tray at the front of the power supply (Figure 11-10).

4. Remove the failing power supply.

5. Connect the power-out cable to the power-out connector on the new power supply.

6. Slide the new power supply under the flange in the power-distribution tray.

7. Replace the two screws that secure the power supply to the tray at the front of the power supply.

8. Reconnect the power-out cable to the auxiliary power board.

9. Reconnect the power-in cable to the connector on the power supply.

10. Inspect the power supply and the surrounding cables to make sure that all cables are correctly reconnected and the assembly is securely installed.

11. Reinsert the power-distribution tray. Go to the “Reinserting the Power-Distribution Tray” section, page 11-37.

Replacing the Auxiliary Power Board

The auxiliary power board is located on the back center of the power-distribution tray, as shown in Figure 11-11.

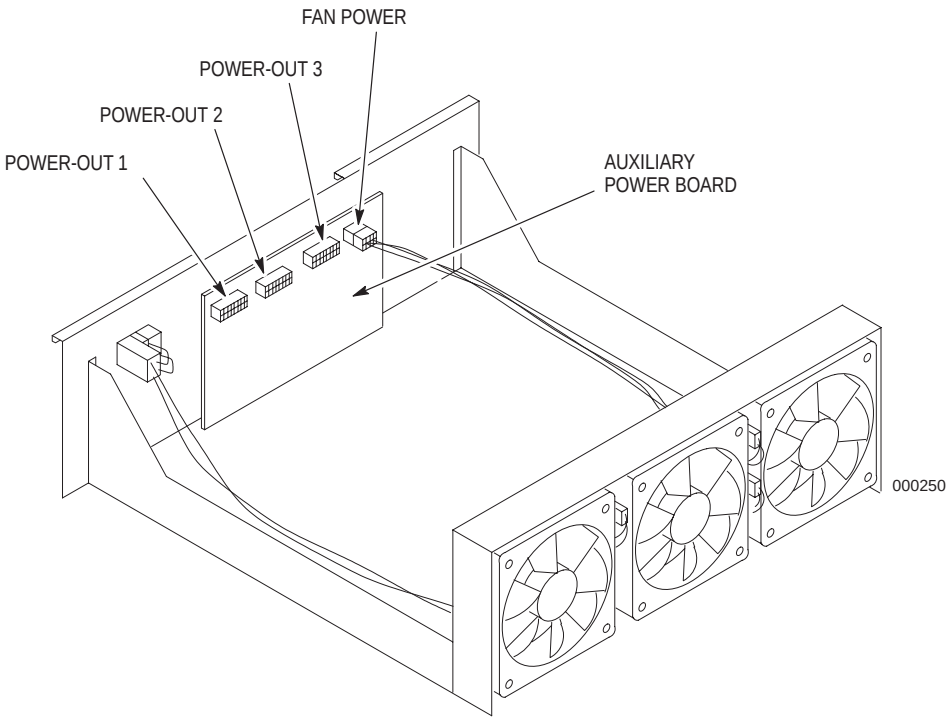


Figure 11-11. Auxiliary Power Board in the Power-Distribution Tray.

Replace the auxiliary power board, as follows:

1. Remove the power-distribution tray. Refer to the “Removing the Power-Distribution Tray” section, page 11-32.
2. Disconnect the cables from the power-out 1, power-out 2, power-out 3, and fan power connectors on the auxiliary power board. (Some older auxiliary power boards have power-out connectors that are labeled POWER SUPPLY 0, POWER SUPPLY 1, and POWER SUPPLY 2.)
3. Use a #2 Phillips screwdriver to remove the two screws that secure the board to the back of the tray near the top of the auxiliary power board. Save the screws.
4. Remove the auxiliary power board.
5. Insert a new auxiliary power board.
6. Use a #2 Phillips screwdriver to replace the two screws that secure the board to the back of the tray.

7. Reconnect the cables to the power-out 1, power-out 2, power-out 3, and fan power connectors on the auxiliary power board.
8. Inspect the auxiliary power board to make sure that all cables are correctly reconnected and the board is securely installed.

Reinserting the Power-Distribution Tray

When all repairs and replacements are finished, reinsert the tray, as follows:

1. Carefully slide the tray into the frame.
2. Replace and tighten the six screws that secure the power-distribution tray to the server frame.
3. Reconnect the main-backplane cable to the connector on the power-distribution tray.
4. Reattach and secure the 24-volt power cable and the 24-volt return cable to the correct power-distribution-tray connections. Leave a small gap between the insulation on the wire lugs and the chassis.
5. Replace the power-cable cover. Replace and tighten the 12 screws that secure the power-cable cover to the server frame.
6. Plug the server's power cord into the electrical outlet.
7. Turn on the power to the server.
8. Observe the LEDs on all cards and drives. The PWR LEDs light on all cards. The disk drives start spinning, and the INOP, then the RUN LEDs on the drive modules light. Check the alarm-card LEDs to ensure that the PS1, PS2, and PS3 alarms on the alarm panel are off.
9. Close the server door.
10. Enter ***A*** at the ***ENTER BOOT COMMAND:*** prompt to return the server to normal operation.
11. Return any defective equipment to Octel Communications.

Replacing the Main Backplane

Replacement procedures for the following backplane components are explained in this section:

- ❑ Fuses
- ❑ Main backplane
- ❑ Terminator board

A #2 Phillips screwdriver is required to replace parts on the backplane.

Caution!

These procedures are intended for trained service personnel only. Having untrained personnel perform these procedures can invalidate the warranty.

Replacing Fuses

Replace fuses in the main backplane, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
3. Use menu 13.1 to shut down the server.
4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main-power circuit breaker on the back of the power-distribution tray to the OFF position (0).
6. Open the front of the cabinet.
7. Put on the antistatic wrist strap, located inside and toward the front of the cabinet.
8. Use the card extractors to remove all cards from the logic bay. Do not force or bend the cards. Handle only the sheet-metal stiffener attached to the cards. Do not touch the components or the edge connectors. Place all removed cards in antistatic bags. Do not stack the cards on top of one another.
9. Replace any blown fuses. The locations of the fuses are shown in Figure 11-12.
10. Insert all logic cards into the logic bay. Use gentle, even pressure to slide the card into the appropriate slot. Do not force the card into the card cage. If you encounter resistance, check the connectors.
11. Close all server doors.
12. Restore the server to service.

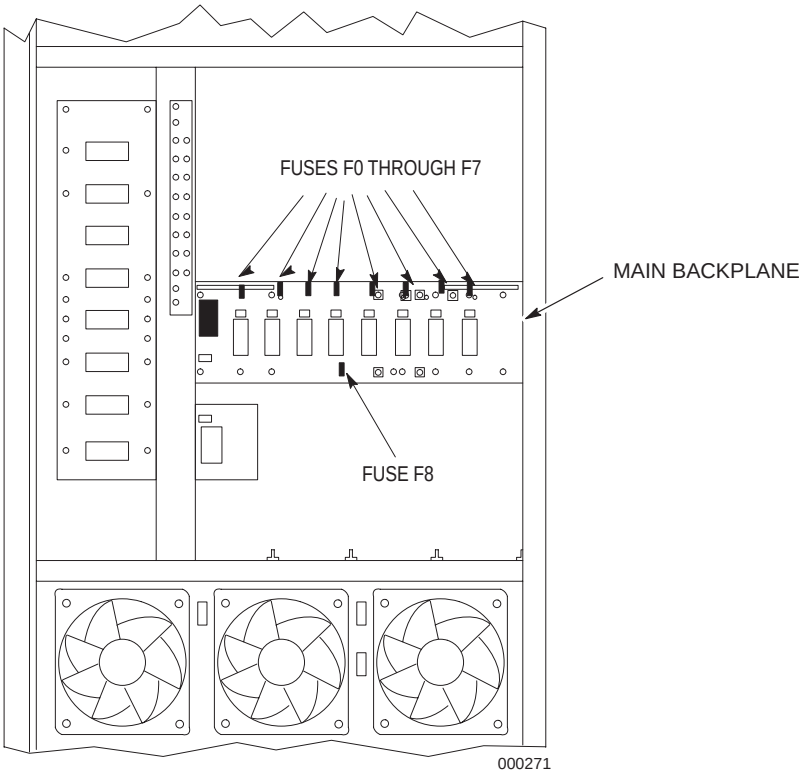


Figure 11-12. Fuses on the Main Backplane (Front View).

Replacing the Main Backplane

You might need to replace the main backplane, if a connector is damaged. Replace the main backplane, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
3. Use menu 13.1 to shut down the server.
4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main-power circuit breaker on the back of the power-distribution tray to the OFF position (0).
6. Unplug the server's power cord from the electrical outlet.
7. Remove the sheet-metal covers from the terminator boards.

8. From the rear of the cabinet, loosen the single, slotted, captive screw that secures the drive-bus-terminator boards to the backplane. The locations of the terminator boards are shown in Figure 11-13.

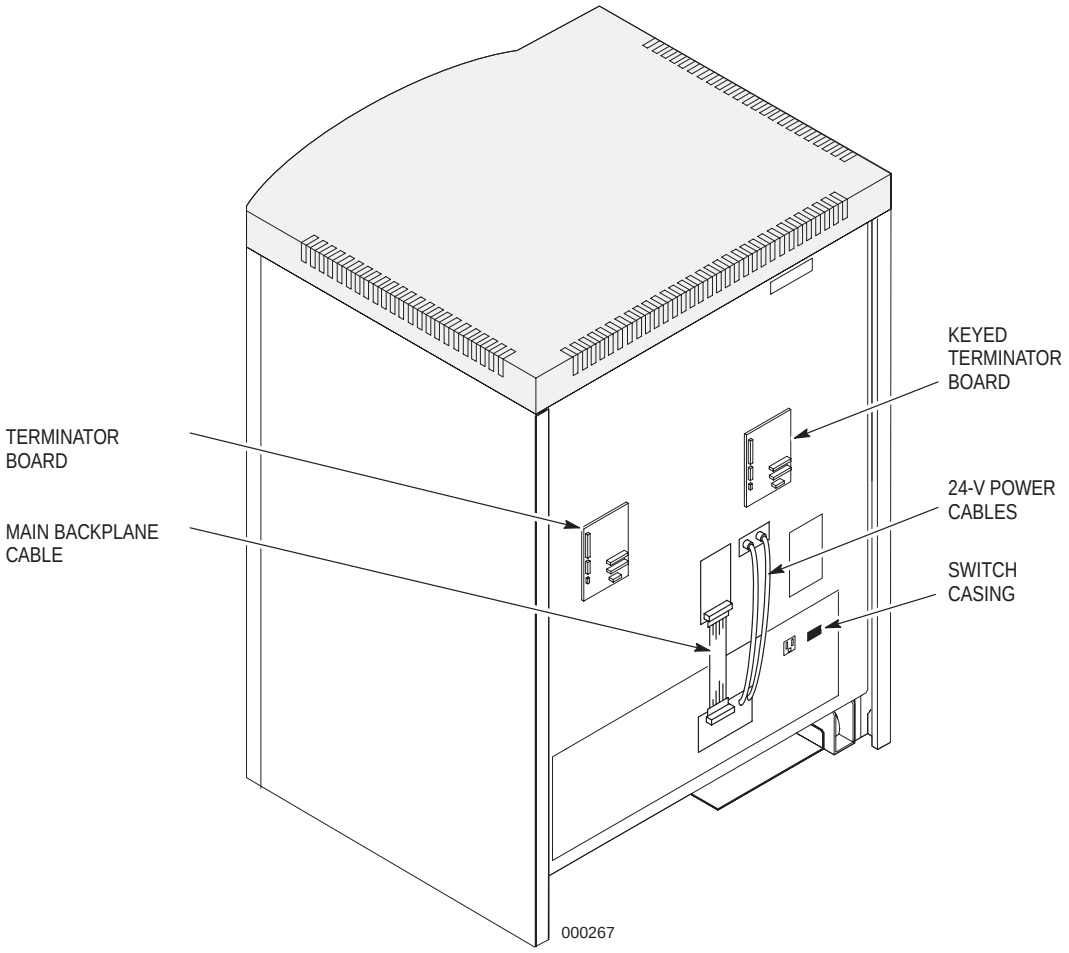


Figure 11-13. Power Connections to the Main Backplane.

9. *Carefully* remove the drive-bus-terminator boards from the backplane. Set them aside in a safe place. Label the keyed bus-terminator board, so that it can be replaced in the correct location.

10. Use a #2 Phillips screwdriver to remove and save the 12 screws that secure the power-cable cover to the server frame. Remove the power-cable cover.

11. Use a #2 Phillips screwdriver to remove the 24-volt power cables from the main backplane connections, as shown in Figure 11-13. Label the cables so that you can reinstall them in the correct locations.

12. Disconnect the main-backplane power cable from the connector on the main backplane, as shown in Figure 11-13.

13. Open the front of the cabinet.

14. Put on an antistatic wrist strap and attach it to the cabinet.

15. Use the card extractors to remove all the cards from the logic bay. Do not force or bend the cards. Handle only the sheet-metal stiffeners attached to the cards. Do not touch the components or the edge connectors. Place all removed cards in antistatic bags. Do not stack the cards on top of one another.

16. Remove the alarm cable from the main backplane connector, as shown in Figure 11-14.

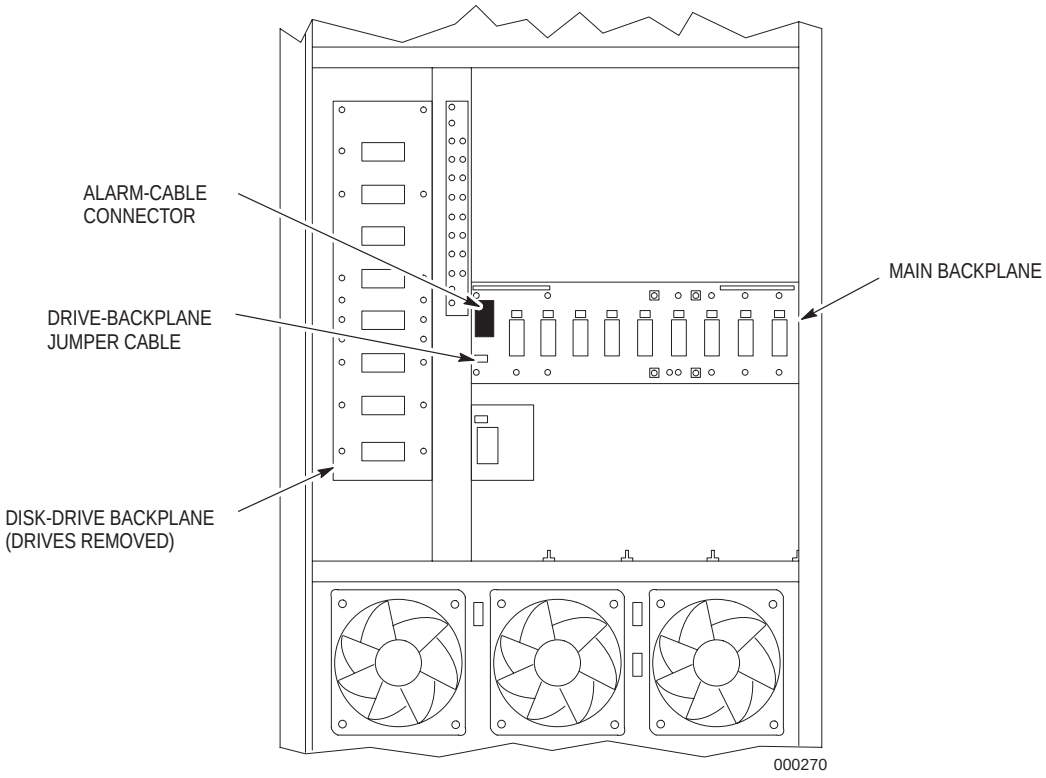


Figure 11-14. Main Backplane (Front View).

17. Disconnect the drive-backplane jumper cable from the main backplane connector (Figure 11-14).

18. Use a #2 Phillips screwdriver to remove the 16 screws that secure the main backplane to the frame.

19. Remove the main backplane.

20. Install the replacement main backplane. Ensure correct alignment, as follows:
    a. Insert three screws to loosely position the backplane.
    b. Insert the CCF card into the leftmost slot, and ensure that the connectors are aligned.
    c. Insert an FLT card into the rightmost slot, and ensure that the connectors are aligned.
    d. Tighten the three inserted screws.
    e. Remove the CCF and FLT cards.
21. Use a #2 Phillips screwdriver to replace the remaining screws to secure the main backplane to the frame.
22. Reconnect the drive-backplane jumper cable to the main-backplane connector (Figure 11-14).
23. Reconnect the alarm cable to the main backplane connector (Figure 11-14).
24. Insert all logic cards into the logic bay. Use gentle, even pressure to slide the card into the appropriate slot. Do not force the card into the card cage. If resistance is encountered, check the connectors.
25. From the rear of the cabinet, use a #2 Phillips screwdriver to connect the 24-volt power and signal cables to the main-backplane connections (Figure 11-13).
26. Replace the power-cable cover. Use a #2 Phillips screwdriver to replace and tighten the 12 screws that secure the power-cable cover to the server frame.



Caution!

When reinstalling the bus-terminator board, carefully align the pins in the backplane with the connector on the terminator board. Misalignment could damage the pins, prevent the securing screw from being engaged, and interfere with the transfer of data.

27. Align the pins in the backplane with the connector on the new terminator board. Make sure that the keyed terminator board is replaced in the correct location.
28. Tighten the captive screw to secure the terminator board to the backplane.
29. Plug the server's power cord into the electrical outlet.
30. Restore the server to service.
31. Close all server doors.
32. Return the defective backplane to Octel Communications.

Replacing Terminator Boards

Replace a malfunctioning terminator board on the backplane as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
3. Use menu 13.1 to shut down the server.
4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main-power circuit breaker on the back of the power-distribution tray to the OFF position (0).
6. Open the server doors, and put on the antistatic wrist strap located inside and toward the front of the cabinet.
7. Remove the sheet-metal covers from the terminator boards.
8. Loosen the single, slotted, captive screw that secures the terminator board to the backplane. The locations of the terminator boards are shown in Figure 11-15.
9. *Carefully* remove the terminator board from the backplane. Set it aside in a safe place.

Caution!

When installing the replacement terminator board, carefully align the pins in the backplane with the connector on the terminator board. Misalignment could damage the pins, prevent the securing screw from being engaged, and interfere with the transfer of data.

10. Align the pins in the backplane with the connector on the new terminator board.
11. Tighten the captive screw to secure the terminator board to the backplane.
12. If the terminator board being replaced is the keyed terminator board, make sure that all of the switches on the 8-position dip switch are set to ON.
13. Restore the server to service.
14. Close all server doors.
15. Return the defective board to Octel Communications.

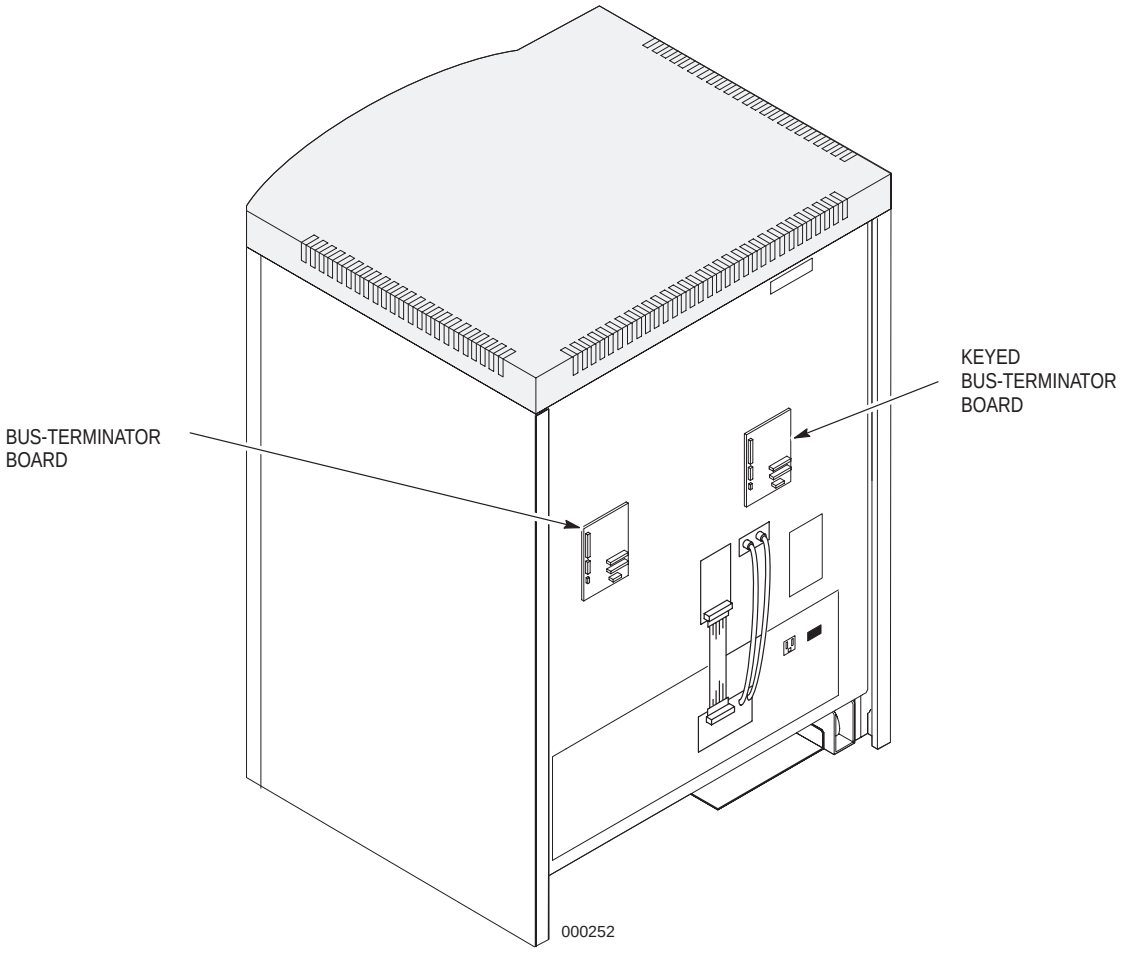


Figure 11-15. Bus-Terminator Boards (Rear View).

Replacing the Drive Backplane

Replacement procedures for the following drive-backplane components are detailed in this section:

- ❑ Fuses
- ❑ Drive backplane

A #2 Phillips screwdriver is required to replace parts on the drive backplane.

Caution!

This procedure is intended for trained service personnel only. Having untrained personnel perform this procedure can invalidate the warranty.

Replacing Fuses

Replace fuses in the drive backplane, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
3. Use menu 13.1 to shut down the server.
4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main-power circuit breaker on the back of the power distribution tray to the OFF position (0).
6. Open the front of the cabinet.
7. Put on the antistatic wrist strap located inside and toward the front of the cabinet.
8. Use the card extractors to remove all the cards from the logic bay. Do not force or bend the cards. Handle only the sheet-metal stiffener attached to the cards. Do not touch the components or the edge connectors. Place all removed cards in antistatic bags. Do not stack the cards on top of one another.
9. Replace any blown fuses. The locations of the fuses are shown in Figure 11-16.
10. Insert all logic cards into the logic bay. Use gentle, even pressure to slide the card into the appropriate slot. Do not force the card into the card cage. If resistance is encountered, check the connectors.
11. Close all server doors.
12. Restore the server to service.

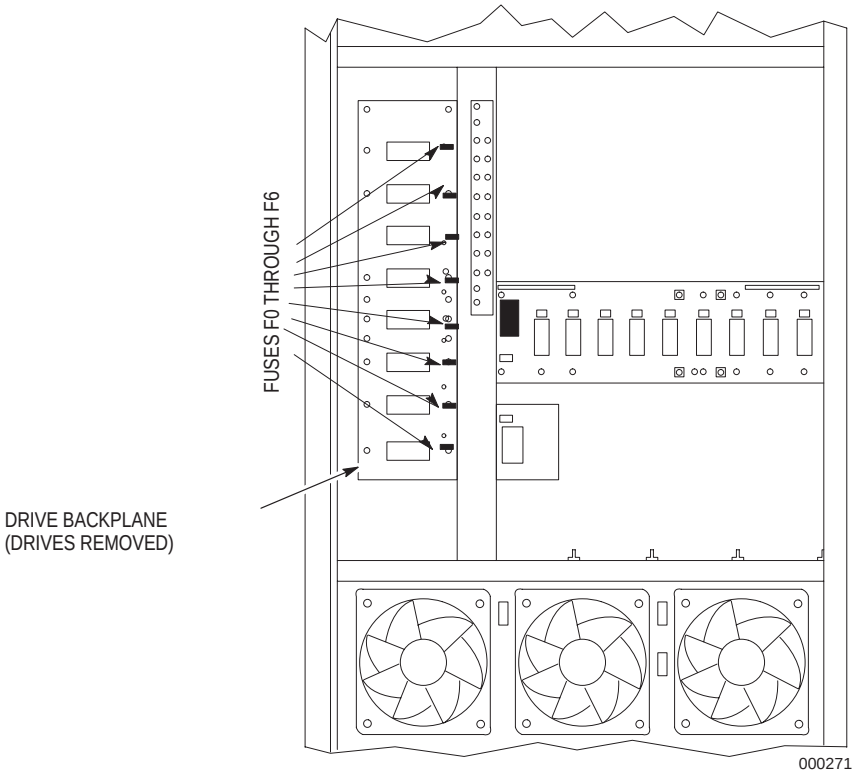


Figure 11-16. Fuses on the Drive Backplane (Front View).

Replacing the Drive Backplane

Unless its connectors have become damaged from disk drives or a tape drive being installed with excessive force, a drive backplane does not need to be replaced. Drive backplanes are replaced from the front of the server. Figure 11-17 shows the upper shelf of the drive backplane with the drive modules removed.

When removing drive modules, use the following guidelines to ensure safe and correct handling:

- **Shock or vibration**. Excessive shock or vibration that causes a disk-drive head to contact the media surface can result in permanent damage to the drive. Do not place drives on hard surfaces or stack them together.

- **Electrostatic discharge**. Exposing the electronic components of a hard disk to ESD can result in damage to the components. When handling drives, use the following precautions:

  - Before removing a drive from a server, attach an antistatic wrist strap or use an equivalent method to provide a high-resistance path to ground.

  - After a drive is removed, immediately place it in an antistatic bag.

- When installing a drive, keep the drive in its antistatic bag until you are ready to use it.
- When returning a drive to Octel Communications, place the drive in an antistatic bag and place the bag into a shipping container immediately.

- **Humidity**. If moisture forms on the media surface of the drive, it can cause the head to stick to the media, resulting in damage to the media surface. Use the following precautions when working in an environment with high humidity:
  - Keep the disk drive in a sealed bag until installed to prevent moisture from condensing on it.
  - Do not store disk drives in a high-humidity environment for long periods of time, because moisture penetrates a sealed bag over time.

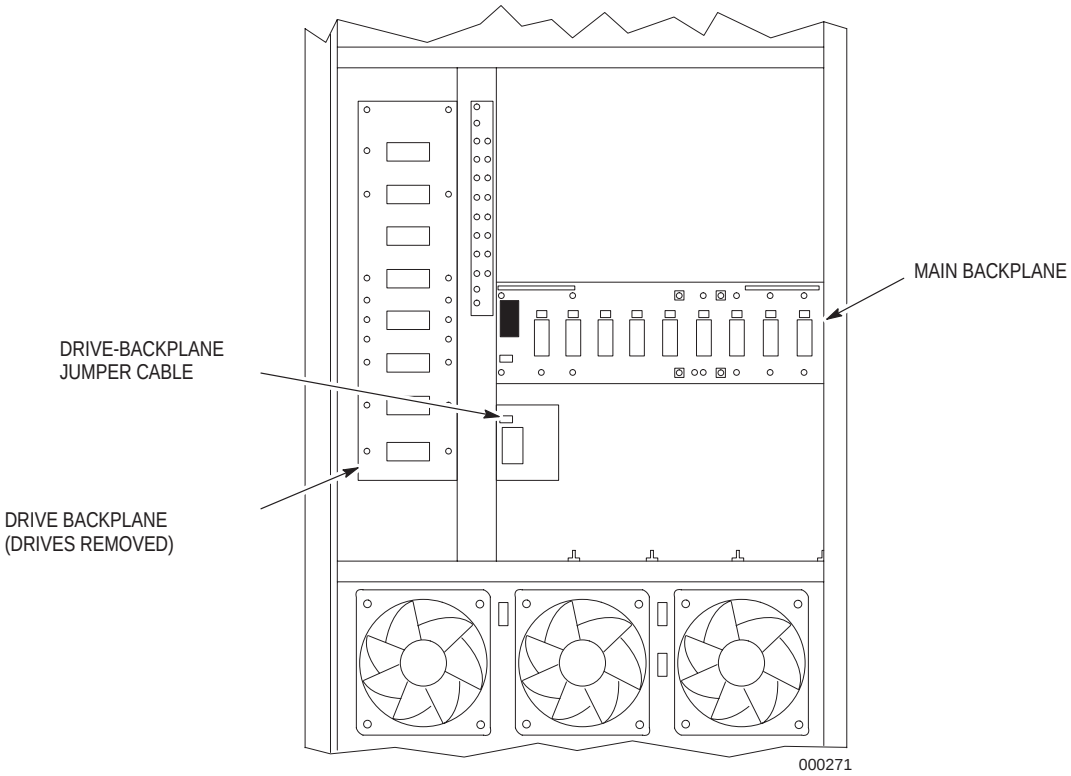


Figure 11-17. Drive Backplane (Front View).

Replace a damaged drive backplane, as follows:

1. Coordinate with the system manager to take the server out of service.
2. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
3. Use menu 13.1 to shut down the server.

4. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
5. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main-power circuit breaker on the back of the power-distribution tray to the OFF position (0).
6. Unplug the server's power cord from the electrical outlet.
7. Use a #2 Phillips screwdriver to remove the 12 screws that secure the power-cable cover to the server frame. Remove the power cable cover.
8. Use a #2 Phillips screwdriver to remove the 24-volt power cables from the drive backplane connections, as shown in Figure 11-18.
9. Open the server's front door.
10. Put on the antistatic wrist strap located inside and toward the front of the cabinet.

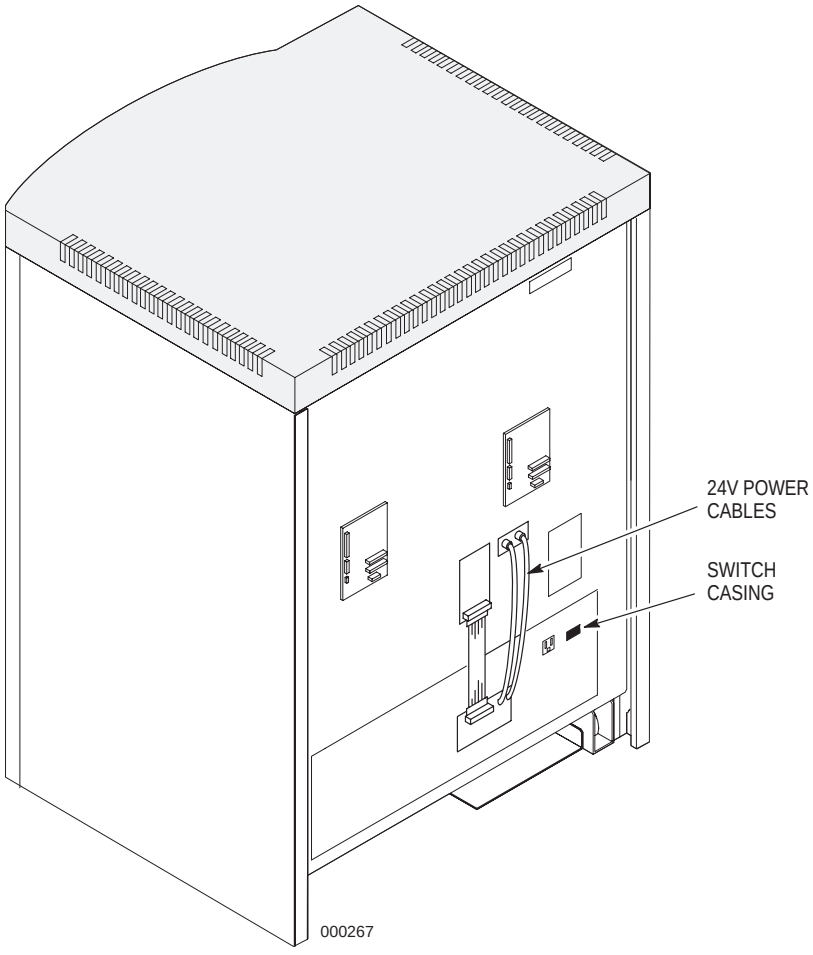


Figure 11-18. Power Connections to the Drive Backplane.

11. Mark the disk drives to indicate their current slots. Remove all drives (including the tape drive, if present) from the drive bay. Place all removed drives in a safe place.

    Disk drives can be damaged if incorrectly stored or handled. Shock or vibration, electrostatic discharge (ESD), and the effects of humidity can damage disk drives.



Caution!

Dropping a disk drive from a height of as little as 1/2 inch onto a solid surface can shock a drive, which could result in damage.

12. Disconnect the drive-backplane jumper cable from the drive-backplane connector (Figure 11-17).
13. Use a #2 Phillips screwdriver to remove the 16 screws that secure the drive backplane to the frame.
14. Remove the drive backplane.
15. Install the replacement drive backplane. Ensure correct alignment, as follows:
    a. Insert three screws to loosely position the backplane.
    b. Insert the CCF card into the first slot, and ensure that the connectors are aligned.
    c. Tighten the three inserted screws.
    d. Remove the CCF card.
16. Use a #2 Phillips screwdriver to replace the remaining screws to secure the drive backplane to the frame.
17. Reconnect the drive-backplane jumper cable to the drive backplane connector (Figure 11-17).
18. Insert all drives into the drive bay. Make sure that the drives are installed in the correct slots.
19. From the rear of the cabinet, use a #2 Phillips screwdriver to connect the 24-volt power cables to the drive backplane connections (Figure 11-18).
20. Use a #2 Phillips screwdriver to replace the power-cable cover. Replace and tighten the 12 screws that secure the power-cable cover to the server frame.
21. Plug the ac power cord into the wall outlet.
22. Restore the server to service.
23. Close all server doors.
24. Return the defective backplane to Octel Communications.

Replacing Covers

The covers on the server seldom need to be replaced; however, if they become damaged in any way, replacement covers are available from Octel Communications.

Caution!

This procedure is intended for trained service personnel only. Having untrained personnel perform this procedure can invalidate the warranty.

Replace the top or side covers, as follows:

1. Open the server's front door.
2. Remove the front door by pulling down on the door-release spring, which is located at the top hinge. Lift the door off the bottom hinge, and place it in a safe place.
3. From the front of the cabinet, use a #2 Phillips screwdriver to remove the five screws that secure the top cover to the frame. These screws are on the underside of the top cover.
4. From the back of the cabinet, use a #2 Phillips screwdriver to remove the four screws that secure the top cover to the back of the frame.
5. Lift the top cover off the frame, as shown in Figure 11-19.
6. Remove the screws that secure the side covers at the front and rear bottom of the frame.
7. Pull the side cover away from the frame.
8. Position the new side cover in its correct location.
9. Replace the screws at the front and rear bottom of the frame.
10. Replace the top cover onto the frame.
11. From the back of the cabinet, use a #2 Phillips screwdriver to replace the four screws that secure the top cover to the back of the frame.
12. From the front of the cabinet, use a #2 Phillips screwdriver to replace the five screws that secure the top cover to the frame.
13. Place the front door onto the bottom hinge. Insert the door release into the top hinge.
14. Close the front door.

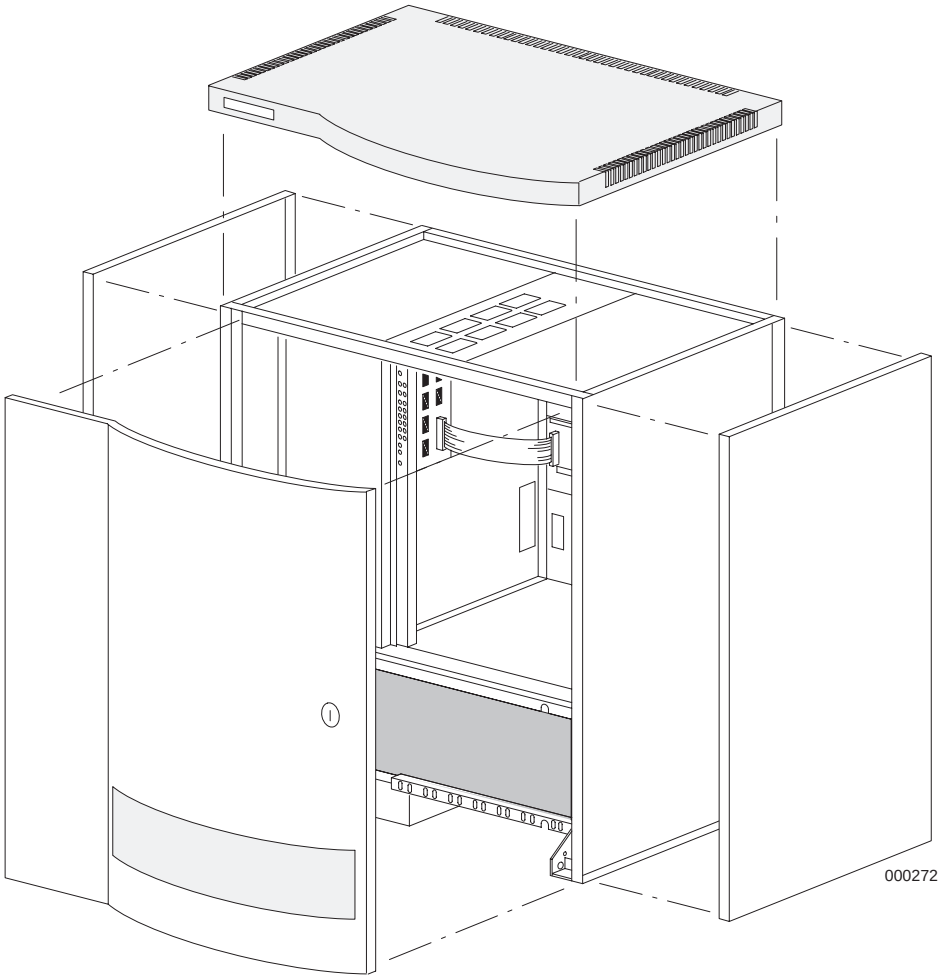


Figure 11-19. Cover Replacement.

Restoring Database and Messages From Tape to a Server

Use the procedures in this section if your server has Aria 1.2 or Aria 2.0 software. If your server is at Aria 1.2, some SMT prompts and options do not appear; however, the procedures for both Aria 1.2 and 2.0 are essentially the same.

Caution!

Data is lost if the Restore option is used. Only NameNet entries, system database, application messages (including forms and conference mailbox messages), IVR phrases, recorded greetings, and messages for selected classes of service are restored.

You must reinstall any software patches that were on the original server after you complete the Restore procedure.

This procedure assumes that a catastrophic server loss has occurred and that a backup tape is available to restore the database. You might be able to repair the original (source) server by replacing its system drives and other components, but typically the entire source server needs to be replaced with a new (destination) server. You can use this procedure in either case; it is written assuming the server is being replaced.

Restore the database off line from a backup tape. The only data restored are NameNet entries, the system database, application messages (including forms and conference mailbox messages), IVR phrases, recorded subscriber names and greetings, messages for voice application mailboxes, and fax and voice messages for subscriber mailboxes for a range of classes of service specified at the time of the backup. Menu 20 is not accessible while a Restore is in process.

Data recorded in the tape header (for Aria 2.0, refer to the “Display Tape Header” section in Appendix A) includes the amounts of installed message space and total used message space in the original server. The used message space might be more than the 350 message hours that the tape can contain; if so, a restricted class-of-service range must have been specified for the backup, if any messages were backed up. If you restore messages, as the Restore begins, the new server checks that its installed message space is at least as large as the value recorded in the tape header for the original server’s total *used* message space. If there is not enough message space, the Restore is aborted, even if the *installed* message space is sufficient to restore all the messages that were backed up.

The new server must have at least as many users and CDR blocks initialized as the original had users and CDR blocks initialized.

Unlike the Initialize System utility, the initialization that takes place during the Restore operation preserves the system- and message-drive configuration and the state of GMR. Do *not* run the Initialize System utility.

Restore data from tape, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. Use menu 13.1 to shut down the server.
3. When the ***ENTER BOOT COMMAND:*** prompt appears, press ***Ctrl+D***, then ***S***. (If you perform a normal boot, you will need to reenter some configuration data after the Restore operation is completed.) The server boots; after several minutes, the Offline System Backup and Restore menu appears, as shown for Aria 2.0 in Figure 11-20.

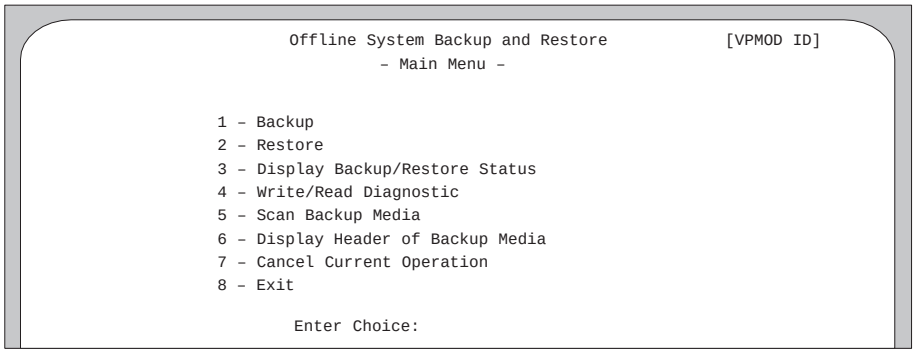


Figure 11-20. Offline System Backup and Restore Menu (Aria 2.0).

4. Select option ***2 – Restore***. The server prompts for initialization the first time you access the Restore menu, as follows:
   a. At the ***You will destroy existing database. Do you wish to continue? (y/n):*** prompt, enter ***Y*** to initialize the server.
   b. At the ***Enter number of user records: [default xxxx]*** prompt, press ***Enter*** to retain the default setting, or enter the desired number of user records. Make sure that this number is at least as large as it was on the original server. If a printout of the History of Last Event was made at the time of the backup, you can refer to its Number of Users value, or if the server is at Aria 2.0, you can refer to the "Display Tape Header" section in Appendix A for procedures to display this value from the tape header.
   c. At the ***Enter number of CDR blocks: [default xxxx]*** prompt, press ***Enter*** to retain the default setting, or enter the desired number of CDR blocks. Make sure that this number is at least as large as it was on the original server. If a printout of menu 16.1.1 was made at the time of the backup, you can refer to it, or if the server is at Aria 2.0, you can refer to the "Display Tape Header" section in Appendix A for procedures to display this value from the tape header.
   d. At the ***About to initialize system. Do you wish to continue (y/n):*** prompt, enter ***Y*** to continue with the initialization. The initialization takes about 30 minutes if there is only one language and about 5 more minutes for each additional language.

      Note that this process clears the system's database and messages, but does not deinstall any drives or change GMR status.
   e. When the initialization is completed, the following prompt appears:

      System Initialization complete.
      System will reboot automatically on exit from this menu.
      Press any key to continue.

      Press any key to reboot the server.
   f. At the ***System shutting down. Press any key to continue*** prompt, press any key.
5. When the ***ENTER BOOT COMMAND:*** prompt reappears, press ***Ctrl+D***, then ***S***. After several minutes, you are prompted for the date and time, as follows:
   a. In the ***Current Date:*** field, enter the current date in the format mm/dd/yy. Press ***Enter*** to move to the ***Current Time:*** field.

b. Enter the current time in the ***Current Time:*** field in the format hh:mm:ssA (for a.m.) or hh:mm:ssP (for p.m.).

The Offline System Backup and Restore menu reappears (Figure 11-20).

6. Insert the backup/restore tape into the tape drive.

7. Select option ***2 – Restore***. The server reads the backup media and begins restoring.

8. As shown in Figure 11-21, the screen displays the current contents of the backup tape, including whether subscriber messages are backed up, the class-of-service (COS) range if any subscriber messages are backed up, and the software levels, total users, total CDR blocks, and used message space for the source (original) and destination (new) servers. For Aria 2.0, but not for Aria 1.2, the installed message space and number of hours used are displayed for the source and destination servers. At the ***Do you wish to restore messages? (Y/N)*** prompt, enter ***Y*** to restore backed-up subscriber messages or ***N*** to skip restoring these messages. Skipping these messages can reduce the time for the restore operation.

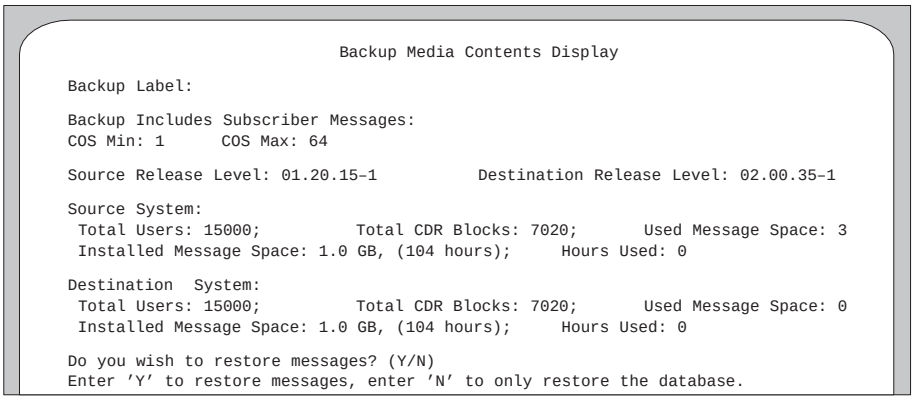


Figure 11-21. Backup Media Contents Display (Aria 2.0).

9. The ***Do you wish to continue with the restore? (Y/N)*** prompt appears. Enter ***Y*** and press ***Enter*** to continue with the process. If you cancel the Restore for any reason, you must restart the entire process from the beginning.

10. Press any key to continue. The ***To initiate Restore and collect system configuration, Press any key to continue.*** prompt appears.

11. Press any key to continue. The Restore begins, and the screen returns to the Offline System Backup and Restore menu. The Restore takes about 2 minutes for each hour of message space. To display a snapshot of the status during the restore, select option ***3 – Display Backup/Restore Status***.

12. When the restore is completed, the following prompt appears:

    XX Mailboxes, YY MDS records, ZZ messages restored.
    Restore completed successfully.
    Enter Y to return to menu.

Compare the values in this prompt with the history of the last backup; refer to the "Review History of Last Event" section, in Appendix A. If any of the values do not match, call the Octel Customer Services Center or your Octel distributor immediately.

13. Enter ***Y*** to return to the Offline System Backup and Restore menu.



Caution!

You *must* exit and reboot, as described in the following steps. Otherwise, the Restore operation will not be completed, and you will need to perform it again.

14. Select the number for the ***Exit*** option, and press ***Enter***. At the ***System shutting down. Press any key to continue.*** prompt, press any key to continue. Wait several minutes for the server to return to the ***ENTER BOOT COMMAND:*** prompt.

15. At the ***ENTER BOOT COMMAND:*** prompt, enter ***B*** to refresh the system.

16. At the next ***ENTER BOOT COMMAND:*** prompt, reboot with an ***A***.

    The server boots to a blank screen or to a screen that requires you to enter the date and time.

17. Press ***Enter***.

    The server asks for the system manager password. This password is the same as the password for the source server.

18. Enter the system manager password.

    The Main Menu appears.

19. Eject the backup tape.

20. Access menu 21 and select option ***5*** to print the event history; refer to the "Review History of Last Event" section in Appendix A. Put this printout with the backup tape, and provide them to the system manager.

21. Access menu 13.8 and print the current alarm status, then access menu 13.2 and print the status log. Save these printouts in case you encounter a problem.

22. If printouts were saved with the backup tape, use them to reestablish the following:

    a. Port assignments (menu 4)

    b. Attendant schedules and port monitoring (menu 2)

    c. CPU serial channel (flex port) configuration (menu 6.3)

    d. Integration link configuration (menu 6.5.3)

    e. X.25 links configuration (menus 18.1 and 18.3)

    f. If a LAN card is installed, IP address and net mask configuration (menu 22.1), TCP/IP parameter configuration (menu 22.2), and SNMP parameter configuration (menu 22.3)

23. If necessary, call the Customer Services Center and have the appropriate set of feature options and the appropriate numbers of message hours, mailboxes, and ports authorized.
24. Make sure that any software patches that were installed in the original server are reinstalled in the new server.
25. Make sure that the server is operational. You *must* perform the following test on all installed ports:
    a. Create a mailbox with a password to receive the calls. The password must be 1234567890 to verify all DTMF tones.
    b. Use Menu 12 – Disk Management to verify that all installed drives are operating.
    c. Check the dialing parameters in menus 6.1 and 6.2.
    d. Check menu 13, option 7 – Display Software Features Installed. Verify that all features purchased are installed. (Installed features have a ***Y*** preceding the feature number and name.)
    e. Use menu 8 to create a test voice mailbox with a matching telephone number. Use the default values in menu 8, except for the ***Mailbox Number:*** field, the ***Mailbox Name:*** field, and the ***Password:*** field. Enter data in these fields, as follows:
        - ❑ Enter a mailbox number that corresponds to the telephone number, with the number of digits matching the number established in menu 0.
        - ❑ Enter a name for the mailbox, such as ***Test***.
        - ❑ Enter ***1234567890*** for the initial password.
    f. Place a call to the server and initialize the test mailbox. Keep 1234567890 as the password to test all the DTMF tones.
    g. Dial the number for each port to perform a port-to-port check. Perform the following tests:
        - ❑ Record and send a message to the mailbox.
        - ❑ Use all playback controls to review the message.
        - ❑ Verify that each port disconnects correctly.
        - ❑ Call the mailbox from the pilot number to verify that you are transferred to the mailbox.
        - ❑ Press ***0*** from the mailbox to make sure that you are correctly transferred to an attendant.
    h. Dial a telephone number that is forwarded to the server. Verify that the PBX forwards the call to the server. The server should answer the call.
    i. Check the hunt groups. Dial the server's pilot number, and verify that the hunt group can access all lines associated with the hunt group.
    j. If outcalling is enabled, set up outcalling in the test mailbox, and have the server place an outgoing call on each outcalling port.
    k. Verify correct message-waiting operation by sending a message to the test mailbox.
    l. Use menu 10 to delete the test mailbox.

If any part of the server does not work, call the Octel Customer Services Center or your Octel distributor.

12 SERVER EXPANSION

The Octel 250 message server can easily be expanded to provide additional server capacity and capabilities. The server can be expanded in the following ways:

- ❑ Adding a second system drive
- ❑ Adding message drives
- ❑ Upgrading message drives to drives with higher capacity
- ❑ Adding authorized message space
- ❑ Adding ports
- ❑ Adding mailboxes
- ❑ Expanding CDR buffer-storage space
- ❑ Adding software features
- ❑ Adding an expansion cabinet
- ❑ Adding a language using a master drive
- ❑ Adding a tape drive
- ❑ Adding a LAN card
- ❑ Adding digital networking

The following sections include procedures to perform these server expansions.

To convert an Octel 250 message server from a non-GMR to a GMR server, refer to the *Converting an Octel 250 to Global Message Redundancy* Installation Instructions, P/N 181–1177–001.

Use the procedures in Chapter 11 to replace any failing parts. *Do not* use the procedures in this chapter.

Storing and Handling Disk Drives

Disk drives can be damaged if incorrectly stored or handled. Shock or vibration, electrostatic discharge (ESD), and the effects of humidity can damage disk drives.



Caution!

Dropping a disk drive from a height of as little as 1/2 inch onto a solid surface can shock a drive, which could result in damage.

Use the following guidelines to ensure safe and correct handling of disk drives:

- **Shock or vibration.** Excessive shock or vibration can cause a disk-drive head to contact the media surface, resulting in permanent damage to the drive. Do not place drives on hard surfaces or stack them together.
- **Electrostatic discharge.** Exposing the electronic components of a hard disk to ESD can damage the components. When handling drives, use the following precautions:
  - Before removing a drive from a server, attach an antistatic wrist strap or use an equivalent method to provide a high-resistance path to ground.
  - After a drive is removed, immediately place it in an antistatic bag.
  - When installing a drive, keep the drive in its antistatic bag until you are ready to use it.
  - When returning a drive to Octel Communications, place the drive in an antistatic bag and place the bag into a shipping container immediately.
- **Humidity.** If moisture forms on the media surface of the drive, it can cause the head to stick to the media, thereby damaging the media surface. Use the following precautions when working in an environment with high humidity:
  - Keep the disk drive in a sealed bag until you install it, to prevent moisture from condensing on it.
  - Do not store disk drives in a high-humidity environment for long periods of time, because moisture penetrates a sealed bag over time.

Adding a Second System Drive

Carefully follow the procedures in the "Storing and Handling Disk Drives" section, page 12-2.



Caution!

Do *not* use the procedures in this service manual to add drives to any servers at a software level *older* than Aria 1.2. Doing so could result in machine damage and loss of data.

Add a second system drive to an Octel 250 that has only one system drive, without shutting down the server, as follows:

1. Call the Octel Customer Services Center or your Octel distributor, and have the service bit enabled.

2. Insert the new system drive into the empty system-drive slot (0 or 1).

3. From the Main Menu, access Menu 20 – Service Operations, then the Drive Install Utilities menu, then the Enable Drive utility.

4. At the ***Enter drive to be enabled [0–6]:*** prompt, enter the number of the new system drive to be enabled.

5. When the ***Enable drive complete. Press any key to continue.*** prompt appears, press any key to return to the Drive Install Utilities menu. The green LED on the new drive should be lit.

6. From the Drive Install Utilities menu, access the Install Drive utility.

7. At the ***Enter the drive to be installed[0–5]:*** prompt, enter the number of the new system drive to be installed.

8. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown is correct.

   The software and phrases are automatically copied from the other system drive, then garbage collect begins. Press any key as directed by the SMT to complete garbage collect.

9. When the installation is complete, press ***Ctrl+C*** until the Drive Install Utilities menu reappears.

10. Access the Drive Status utility, and verify that the new system drive is running.

11. Press ***Ctrl+C*** until the Main Menu reappears.

Adding Message Drives

Carefully follow the procedures in the "Storing and Handling Disk Drives" section, page 12-2.



Caution!

Do *not* use the procedures in this service manual to add drives to any servers at a software level *older* than Aria 1.2. Doing so could result in machine damage and loss of data.

Global Message Redundancy (GMR) is a feature that duplicates messages on pairs of message drives. The following procedures are described in this section:

- **Adding message drives in non-GMR servers.** A non-GMR Octel 250 at Aria 1.2 or newer software supports mixed 1-GB and 2-GB message drives, but *not* 4-GB drives.
- **Adding message-drive pairs in GMR servers.** A GMR Octel 250 at Aria 1.2 or newer software supports mixed 1-GB, 2-GB, and 4-GB message-drive pairs. Both message drives in any particular pair must have the same capacity; however, a GMR server can have any combination of 1-GB drive pairs, 2-GB drive pairs, and 4-GB drive pairs.

Adding a Message Drive in a Non-GMR Server

Use this procedure to increase message space by adding a message drive to a non-GMR server. Message drives must be added in sequential order.

Add message drives while the server is on line, as follows:

1. Call the Octel Customer Services Center or your Octel distributor, and have the service bit enabled.
2. Insert the new message drive into the appropriate slot.
3. From the Main Menu, access Menu 20 – Service Operations, then the Drive Install Utilities menu, then the Enable Drive utility.
4. At the ***Enter drive to be enabled [0–6]:*** prompt, enter the number of the new message drive to be enabled.
5. When the ***Enable drive complete. Press any key to continue.*** prompt appears, press any key to return to the Drive Install Utilities menu. The green LED on the new drive should be lit.
6. From the Drive Install Utilities menu, access the Install Drive utility.
7. At the ***Enter the drive to be installed[0–5]:*** prompt, enter the number of the new message drive to be installed.

8. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown is correct.

9. At the ***Is this a new Message drive X for this system (y/n):*** prompt, enter ***Y.***

10. At the ***About to initialize message drive X. Continue (y/n):*** prompt, enter ***Y*** to proceed with the installation, or enter ***N*** to cancel the installation. If you choose ***Y,*** the server proceeds to install the drive.

11. When the installation is complete, press ***Ctrl+C*** until the Drive Install Utilities menu reappears.

12. Access the Drive Status utility, and verify that the new message drive is running.

13. Press ***Ctrl+C*** until the Main Menu reappears.

Adding a Message-Drive Pair in a GMR Server

Use this procedure to increase message space by adding message drives to a GMR server. You must add message drives as pairs, in sequential order.

Add message-drive pairs while the server is on line, as follows:

1. Make sure that the two message drives of the new pair have the same capacity.

2. Call the Octel Customer Services Center or your Octel distributor, and have the service bit enabled.

3. Insert the new message drives into the appropriate slots. You must add these drives as pairs, either as drives 2 and 3 or drives 4 and 5.

4. From the Main Menu, access Menu 20 – Service Operations, then the Drive Install Utilities menu, then the Enable Drive utility.

5. At the ***Enter drive to be enabled [0–6]:*** prompt, enter the number of one of the new message drives to be enabled.

6. When the ***Enable drive complete. Press any key to continue.*** prompt appears, press any key to return to the Drive Install Utilities menu. The green LED on the drive should be lit.

7. Reaccess the Enable Drive utility, and repeat steps 5 and 6 for the other message drive in the pair.

8. From the Drive Install Utilities menu, access the Install Drive utility.

9. At the ***Enter the drive to be installed[0–1, 2, 4]:*** prompt, enter ***2*** if you are adding message drives 2 and 3, or ***4*** if you are adding message drives 4 and 5. The server installs both drives in the pair.

10. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial numbers shown for both drives in the pair are correct.
11. At the ***Is this a new Message Drive Pair X and Y for this system (y/n):*** prompt, enter ***Y.***
12. At the ***About to initialize Message drive X and drive Y. Continue (y/n):*** prompt, enter ***Y*** to proceed with the installation, or enter ***N*** to cancel the installation. If you choose ***Y,*** the server proceeds to install the drive pair.
13. When the installation is complete, press ***Ctrl+C*** until the Drive Install Utilities menu reappears.
14. Access the Drive Status utility, and verify that the new message drives are running.
15. Press ***Ctrl+C*** until the Main Menu reappears.

Upgrading Message Drives to Drives With Higher Capacity

For some servers, you must perform message-drive upgrades to accommodate the authorized message space. Compare the amount of authorized message space on the server to the drive capacities shown in Figure 12-1.

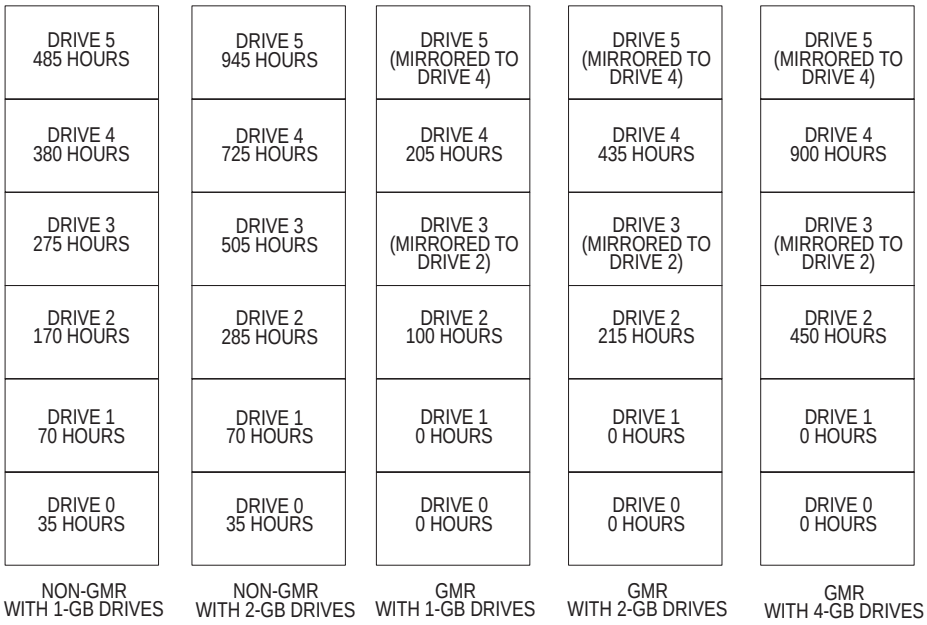


Figure 12-1. Cumulative Message-Hour Capacities for Octel 250 Non-GMR and GMR Servers as 1 GB, 2 GB, or 4 GB Drives Are Added.

On a non-GMR server, Aria 1.2 and newer software supports mixed 1 GB and 2 GB message drives, but *not* 4 GB drives.

On a GMR server, Aria 1.2 and newer software supports mixed 1 GB, 2 GB, and 4 GB message-drive pairs. Both message drives in any particular pair must have the same capacity; however, a GMR server can have any combination of 1 GB drive pairs, 2 GB drive pairs, and 4 GB drive pairs.

The procedure uses the Upgrade Message Drive utility to upgrade message drives from 1 GB to 2 GB, from 1 GB to 4 GB, and from 2 GB to 4 GB. This utility is one of the Drive Replacement Utilities accessed from menu 20. The advantage of the Upgrade Message Drive utility over the Replace Message Drive utility is that it allows you to reinstall the original drive if the new drive fails during the upgrade.

Do not change the size of system drives shipped in the Octel 250, unless directed to do so by Octel. In non-GMR servers, larger system drives do *not* provide increased message capacity as compared to standard system drives.



Caution!

Do not use the procedures in this service manual to upgrade drives in any servers at a software level *older* than Aria 1.2. Doing so could result in machine damage and loss of data.

The following sections include procedures for upgrading message drives in non-GMR and GMR servers. Carefully follow the procedures in the “Storing and Handling Disk Drives” section, page 12-2.

Upgrading Message Drives in a Non-GMR Server

Upgrade message drives to higher-capacity drives in a non-GMR server, as follows:

1. Call the Octel Customer Services Center or your Octel distributor, and have the service bit enabled.

2. For a non-GMR server at Aria 2.0 that has message drives installed in slots 2 through 5 and a tape drive installed in slot 6, verify that a server backup is not in process or scheduled to occur during the message-drive upgrade. Then, from menu 20, access the Drive Install Utilities menu, then the Disable Drive utility, and disable slot 6. Press ***Ctrl+C*** until the Main Menu reappears.

3. From the Main Menu, access Menu 20 – Service Operations, then the Drive Replacement Utilities, then the Upgrade Message Drive utility. The ***Enter position of drive to be upgraded[2–5]:*** prompt appears.

4. Enter the number of the drive to be upgraded. The following prompt appears:

   Do you want to copy messages from Message Drive X onto the new replacement drive ? If you select no, all messages on Message drive X will be lost after the replacement (y/n):

5. Enter ***Y*** to copy the messages to the replacement drive. The ***Please insert the new replacement drive into slot Y. Once the new drive is inserted, press any key to continue.*** prompt appears.

6. Insert the replacement drive into the specified slot. If the prompt tells you to install the drive in slot 6, remove the tape drive, if any, from slot 6. For servers at Aria 1.2, removing the tape drive can cause CD status-log entries.

7. Press any key. The server enables the new drive and displays the serial numbers of the original and replacement drives and the ***Is this correct? (y/n):*** prompt.

8. Enter ***Y*** if the serial number shown is correct. The server initializes the drive, then copies messages to it. The copying can take approximately 20 minutes.

9. At the ***Remove drive from slot X and replace with new drive from slot Y. Press any key to continue.*** prompt, perform the following steps:

   a. Remove the smaller-capacity drive from its slot.

   b. Move the replacement drive to that slot.

   c. Press any key to continue. The server enables and installs the new message drive, then asks if you want to run a long garbage collect on it. Press ***Y*** and ***Enter***.

   d. If the first pass of garbage collect reports any scramble codes or I/O errors, call the Octel Customer Services Center or your Octel distributor. *Do not* continue. If the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***N*** if any errors were found or ***Y*** to change user records and update record-allocation tables in the second pass of garbage collect.

10. At the ***Upgrade Message drive complete. Press any key to continue.*** prompt, press any key to return to the Drive Replacement Utilities menu.

11. If necessary, upgrade other drives by accessing the Upgrade Message Drive utility and repeating steps 4 through 10.

12. Press ***Ctrl+C*** until the Main Menu reappears.

13. If required, convert the server to GMR immediately. Non-GMR servers *do not* support 4 GB message drives. Refer to the *Converting an Octel 250 to Global Message Redundancy* Installation Instructions, P/N 181–1177–001.

14. If a tape drive was removed from slot 6 to perform the message drive upgrade, reinstall the tape drive.

    ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive to make the tape drive operable.

    ❑ If the server is at Aria 2.0, access menu 20, then the Drive Install Utilities menu, then the Enable Drive utility. Enable slot 6.

15. Press ***Ctrl+C*** until the Main Menu reappears.

16. If the customer wants you to consolidate message space and remove unneeded, smaller-capacity drives, use the Copy Messages option in the Drive Copy Utilities menu, then the De-Install Drive option in the Drive Install utilities menu. Refer to Appendix A.

17. Return any removed message drives to Octel Communications.

Upgrading Message Drives in a GMR Server

Upgrade message drives to higher-capacity drives in a GMR server, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.

2. From the Main Menu, access Menu 20 – Service Operations, then the Drive Replacement Utilities, then the Upgrade Message Drive utility. The ***Enter position of drive to be upgraded[2–5]:*** prompt appears.

3. Enter the number of the secondary drive (***3*** or ***5***) of the GMR pair. The serial numbers of this drive and its associated mirrored drive in the GMR pair appear.

4. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial numbers are correct. The server disables and deinstalls the drives to be upgraded.

5. At the ***Please remove the original drive X and insert new replacement drive into slot X. Press any key to continue.*** prompt, perform the following steps:

   a. Remove the drive from its slot.

   b. Check the serial number of the replacement drive, and insert it into the same slot. Use the drive-module extractors to seat the new drive securely.

   c. Press any key to continue. The server enables and installs the new message drive, and copies the messages from the other drive in the pair to the replacement drive. The copy can take approximately 20 minutes.

6. At the ***Upgrade Message drive complete. Press any key to continue.*** prompt, press any key to return to the Drive Replacement Utilities menu.

7. Access the Upgrade Message Drive utility, and repeat steps 3 through 6 to replace the associated primary message drive in the drive pair. The server copies the messages from the new secondary message drive to the new primary message drive. The copy can take approximately 20 minutes.

8. If necessary, upgrade the other message drive pair by accessing the Upgrade Message Drive utility and repeating steps 3 through 7.

9. Press ***Ctrl+C*** until the Main Menu reappears.

10. If the customer wants you to consolidate message space and remove unneeded smaller-capacity drives, use the Copy Messages option in the Drive Copy Utilities menu, then the De-Install Drive option in the Drive Install utilities menu. Refer to Appendix A.

11. Return any removed message drives to Octel Communications.

Adding Authorized Message Space

Message space is limited by the software. Message space can be used up to a maximum of the authorized space displayed in Menu 12 – Disk Management, shown in the example in Figure 12-2. Only GMR servers display the ***THIS SYSTEM HAS REDUNDANT MESSAGE DRIVES*** message. Call Octel to order additional authorized message space.

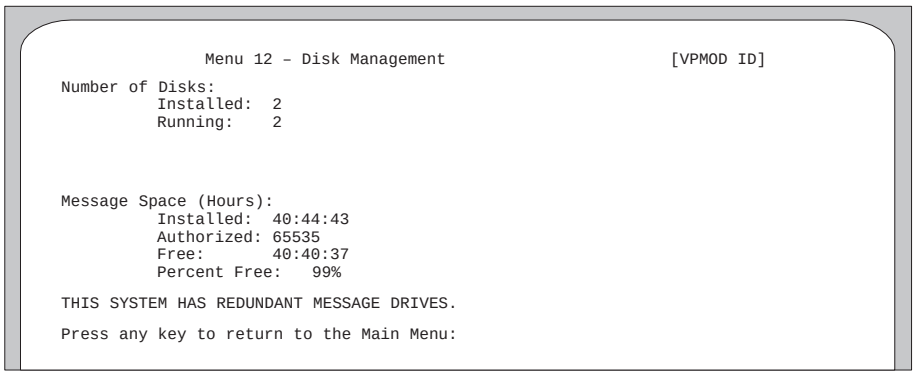


Figure 12-2. Example of Menu 12 – Disk Management.

Additional message space might require additional message drives. Check Menu 12 – Disk Management to determine whether additional message drives are required.

Adding Ports

Each fax-capable, 8-port line/telephone interface (FLT) card contains hardware for eight ports, but these ports must be activated in the software before they can be used. At installation, a certain number of ports are active, but other ports can be added. Call Octel to order the additional ports. Additional FLT cards might be required to support the new ports.

Use the following section to add an FLT8 or FLT-M card. Go to the “Adding an FLT-A Card” section, page 12-13, for procedures to add an FLT-A card. Go to the “Adding an FLT Card in Slot 8, Where a LAN Card Is Installed” section, page 12-16, if you need to add any type of FLT card in slot 8 and a LAN card is already installed in slot 8.

Adding an FLT8 or FLT-M Card

FLT8 and FLT-M cards are hot-pluggable. Aria 1.1 and newer software support the FLT-M card, which is used for a Mitel integration with the Octel 250. The FLT-M cards provide integration by emulating the telephone set, eliminating the need for a separate integration device or the use of a separate RS-232 link.

After adding new cards, you must access menu 4 and configure the new ports.

Menu 13.11, Review Card Management, allows you to view the card status. You must respond to the prompts that appear on the screen to view any changes in card status.

Hot-plug a new FLT8 or FLT-M card in the server, as follows:

1. Open the front door of the cabinet.
2. From the SMT Main Menu, access Menu 13 – System Maintenance, then Menu 13.11, Review Card Management, as shown in the example in Figure 12-3.
3. At the ***Enter card slot:*** prompt, enter the slot number for the card you are adding. The following prompt appears:

   Please insert card X.
   Press "Q" to quit or any other key to continue:

   where ***X*** represents the slot number for the card you are adding.
4. Put on an antistatic wrist strap that is correctly grounded.

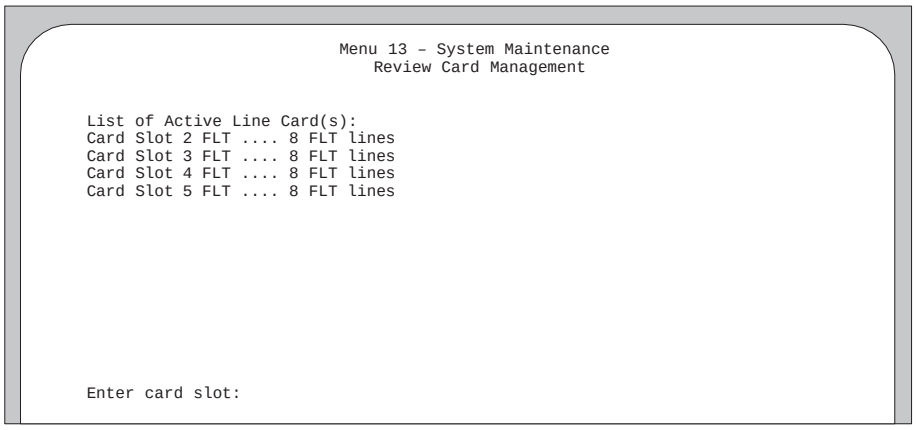


Figure 12-3. Example of Menu 13.11, Review Card Management.

Caution!

Insert the new card carefully to prevent damage to the card, card extractors, and backplane pins.

5. Install the new card. When handling a logic card, handle only the sheet-metal stiffener attached to the card. Do *not* touch the components or the edge connectors.
   a. Check that the connectors are not damaged.
   b. Slide the new card into its slot with the extractors fully open.
   c. Use the extractors to apply pressure on the outer edges of the card to make sure that the card is correctly seated in the backplane. Do not force the card into the card cage.
   d. Tighten the thumb screws at the top and bottom of the card.
6. At the SMT, press any key (except ***Q***) to continue. The following message appears:

   Card upload initiated...

   ❑ If the upload is successful, the following prompt appears after a few minutes:

   Card Slot X uploaded. Status: OK
   Undo the "BUSY OUT" of the disabled card.

   REMINDER: Use Menu 4 to change port assignments if necessary.

   Card upload completed. Press any key to continue:

   ❑ If the upload is not successful, press the ***Break*** key to cancel the upload, then remove the new card. Leave it out for *at least* 30 seconds, reinstall it, and repeat this procedure, starting from step 1. If the upload still fails, call the Octel Customer Services Center or your Octel distributor.
7. Press any key to return to menu 13.11. This screen should show that all line cards are active.
8. Press ***Ctrl+C*** until the Main Menu reappears.
9. Connect the telco cable to the TELCO connector. Secure the cable with the Velcro ties. Refer to Chapter 3 for site requirements.
10. Remove the antistatic wrist strap.



Caution!

If port assignments and line types are not configured in menu 4 for the newly added FLTs, the ports cannot accept incoming calls. Callers forwarded to the new ports hear a ring-no-answer. In addition, if the server reboots, it will not boot on line until the correct line types are entered during the boot process.

11. From the Main Menu, access Menu 4 – Port Assignments, then menu 4.2, Port Capacity Information, as shown in the example in Figure 12-4, to ensure that the new ports were added successfully. Access menu 4.1, and configure the ports for the new cards. Refer to Chapter 5 for more information about menu 4 and configuring port assignments.

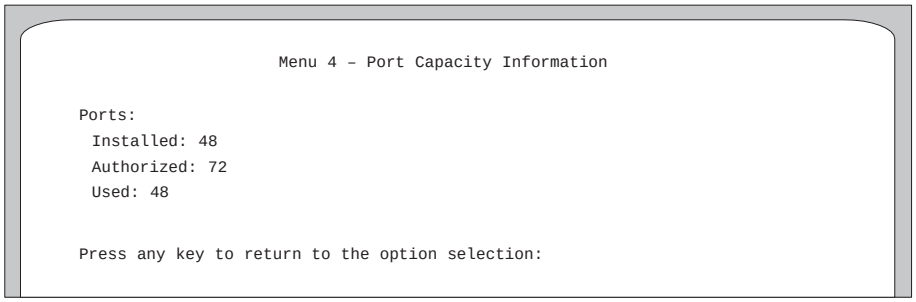


Figure 12-4. Example of Menu 4.2, Port Capacity Information.

12. Test the ports, on line. From the Main Menu, access Menu 20 – Service Operations, then the Port Testing Utilities. Refer to Chapter 10 for testing procedures.

13. Close the server doors.

Adding an FLT-A Card

FLT-A cards are hot-pluggable. Aria 1.2 and newer software supports the FLT-A card, which is used for a Lucent Technologies integration with the Octel 250. The FLT-A cards provide integration by emulating the telephone set, eliminating the need for a separate integration device or the use of a separate RS-232 link.

When the Temporary Bridged Appearance feature is enabled in Lucent System 75 Version 3 and later, Definity G1, Definity G3i, and Definity G3r PBXs, after a call is forwarded or covered to the message server, called parties can pick up their telephones and be bridged to their calls. Some customers might consider this a privacy issue, because anyone could pick up the called telephones and begin conversing or just listen to the messages being recorded.

When the Lucent PBX has the ***Keep Held SBA at Coverage Point?*** parameter set to ***N*** in the FEATURE-RELATED SYSTEM PARAMETERS, Page 1, screen, the Temporary Bridged Appearance feature should be disabled. However, setting this parameter to ***N*** does not successfully disable the feature in Definity G3i and G3r PBXs at software versions 3 and 4.

With Definity G3i and G3r PBXs that have Vectoring, have the PBX technician assign the PIC-A ports in a UCD or ACD group to a Vector to eliminate the potential privacy issue; when calls are forwarded to a Vector, the Temporary Bridged Appearance feature does not apply.

Alternatively, in the G3 PBX, if ***Data Privacy*** is enabled in the class of service assigned to the message-server ports and if the Feature-Related System Parameter ***Prohibit Bridging onto Calls with Data Privacy*** is set to ***Y***, the call will remain bridged to the called party's extension. If the line-appearance button is pressed, the display shows calling party ID, if available, but voice cannot be heard on the extension.

Add a new FLT-A card where no FLT card of any type has been installed before, as follows:

1. Prepare the telco cable, without bridge taps, for attachment directly to the new FLT-A card. Refer to the configuration note for cable requirements for an FLT-A integration.

2. Open the front door of the server, and locate the card slot into which the new FLT-A card will be installed.
3. Put on a correctly grounded antistatic wrist strap.

Caution!

Insert the new card carefully to prevent damage to the card, card extractors, and backplane pins.

4. Carefully install the new card, with its card extractors fully open. When handling a logic card, handle only the sheet-metal stiffener attached to the card. Do *not* touch the components or edge connectors.
   a. Check that the connectors are not damaged.
   b. Slide the new card into its slot with the extractors fully open.
   c. Use the extractors to apply pressure on the outer edges of the card to make sure that the card is correctly seated in the backplane. Do not force the card into the card cage.
   d. Tighten the thumb screws at the top and bottom of the card.
5. Connect the telco cable to the TELCO connector. Secure the cable with the Velcro ties.
6. From the SMT Main Menu, access Menu 13 – System Maintenance, then menu 13.11, Review Card Management, as shown in the example in Figure 12-5.

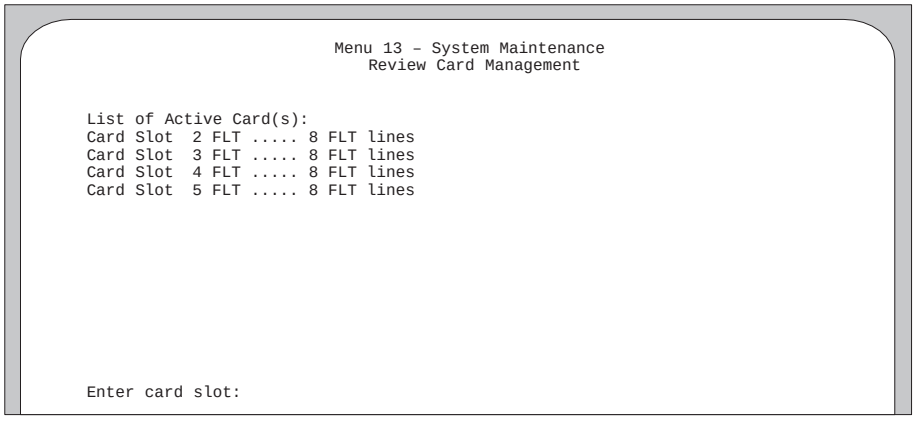


Figure 12-5. Example of Menu 13.11, Review Card Management.

7. At the ***Enter card slot:*** prompt, enter the slot number for the card you are adding. The following prompt appears:

   Please insert card X.
   Press "Q" to quit or any other key to continue:

   where ***X*** represents the slot number for the card you are adding.

8. Remove the antistatic wrist strap.

9. At the SMT, press any key (except ***Q***) to continue. The following message appears:

   Card upload initiated...

   - If the upload, which can take up to 10 minutes, is successful, the following prompt appears:

     Card Slot X uploaded. Status: OK
     Undo the "BUSY OUT" of the disabled card.

     REMINDER: Use Menu 4 to change port assignments if necessary.

     Card upload completed. Press any key to continue:

   - If the upload is not successful, press the ***Break*** key to cancel the upload, then remove the new card. Leave it out for *at least* 30 seconds, reinstall it, and repeat this procedure, starting at step 3. If the upload still fails, call the Customer Services Center or your Octel distributor for assistance.

10. Observe the LEDs on the FLT-A card. The normal startup sequence of the FLT-A card is as follows:

    a. If the server has only one FLT-A card, the software selects two of its ports for primary and secondary clock synchronization with the PBX.

       If the server has two or more FLT-A cards, the software selects one of the ports on the leftmost FLT-A card as the primary source and one of the ports on the next FLT-A card to the right as the secondary source for synchronization with the PBX.

    b. When the diagnostic tests on an FLT-A card have been completed successfully, all the SI and SO LEDs for all of that card's ports flash together; as each port synchronizes with the PBX, its pair of SI and SO LEDs turns off.

    If either the primary or secondary synchronization source loses synchronization with the PBX, the software generates a non-service-affecting (NSA) alarm called "Frame Sync Lost" and turns on the NSA alarm LED on the CCF card. You can use menu 13.8, Review Current Alarm Status, to display information about NSA alarms. A CDR event 118 (GEN_ERR) is also generated; it defines which synchronization, primary or secondary, was lost. You can use Online CDR to view the event. If the primary synchronization source fails, all FLT-A cards automatically switch to the secondary source, without affecting normal server operation.

11. Press any key to return to menu 13.11. This screen should show no inactive line cards.

12. Press ***Ctrl+C*** until the Main Menu reappears.

Caution!

If port assignments and line types are not configured in menu 4 for the newly added FLT-A cards, the ports cannot accept incoming calls. Callers forwarded to the new ports hear a ring-no-answer. In addition, if the server reboots, it will not boot on line until the correct line types are entered during the boot process.

13. From the Main Menu access Menu 4-Port Assignments, then menu 4.2, Port Capacity Information, as shown in the example in Figure 12-6, to ensure that the new ports were added successfully. Access menu 4.1 and configure the ports for the new FLT-A card. Refer to the configuration note for FLT-A integration (or use menu 4.1 to review the port configuration for other, existing FLT-A cards).

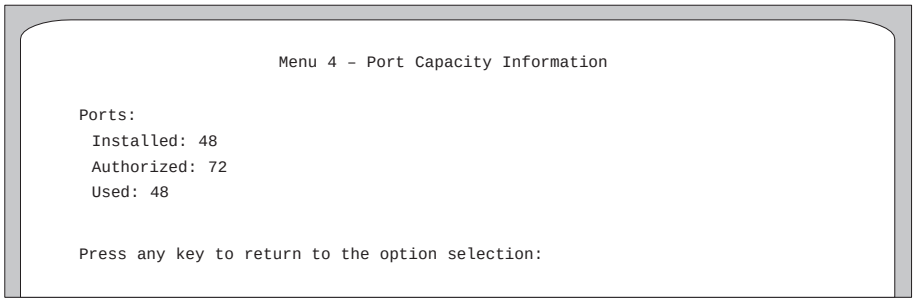


Figure 12-6. Example of Menu 4.2, Port Capacity Information.

14. Test the ports on line. From the Main Menu, access Menu 20 – Service Operations, then the Port Testing Utilities. Refer to Chapter 10 for testing procedures.
    - ❑ If you call an individual port on the FLT-A card directly from a test station that has a mailbox on the Octel 250, you hear the personal greeting of the calling party, rather than the calling party's recorded name and the password prompt.
    - ❑ If you call the pilot number directly, you hear the calling party's recorded name and the password prompt.
15. Close the server doors.

Adding an FLT Card in Slot 8, Where a LAN Card Is Installed

If a LAN card is already installed in slot 8 and the customer wants to add FLT cards (of any type) so that they are installed in slots 2 through 8 (and perhaps in slots 10 and 11 in cabinet 2), you must shut down the server, add a second cabinet, and move the LAN card to slot 16 in the second cabinet. Perform the following steps:

1. Use menu 13.1 to shut down the server and turn off the power to the server.
2. Add a second cabinet (refer to the "Adding an Expansion Cabinet" section, page 12-24).
3. If you are adding FLT-A cards, read the introductory information about the FLT-A card in the "Adding an FLT-A Card" section, page 12-13, but *do not* use that procedure.
4. Put on a correctly grounded antistatic wrist strap, and move the LAN card and attached LAN cable from slot 8 in cabinet 1 to slot 16 in cabinet 2.
5. Install the new FLT cards.
6. Connect the telco cable to the TELCO connector. Secure the cable with the Velcro ties. Refer to Chapter 3 for site requirements.
7. Turn on the power to the server. If you are adding FLT-A cards, refer to step 10 on page 12-15 to understand the expected startup sequence for the LEDs on the FLT-A cards.



Caution!

If port assignments and line types are not configured in menu 4 for the newly added FLTs, the ports cannot accept incoming calls. Callers forwarded to the new ports hear a ring-no-answer. In addition, if the server reboots, it will not boot on line until the correct line types are entered during the boot process.

8. From the Main Menu, access Menu 4 – Port Assignments, then menu 4.2, Port Capacity Information, as shown in the example in Figure 12-7, to ensure that the new ports were added successfully. Access menu 4.1, and configure the ports for the new cards. Refer to Chapter 5 for more information about menu 4 and configuring port assignments.

```
                    Menu 4 – Port Capacity Information

Ports:
  Installed: 56
  Authorized: 72
  Used: 56

Press any key to return to the option selection:
```

Figure 12-7. Example of Menu 4.2, Port Capacity Information.

9. Test the ports on line. From the Main Menu, access Menu 20 – Service Operations, then the Port Testing Utilities. Refer to Chapter 10 for testing procedures.

   For FLT-A cards only,

   - ❑ If you call an individual port on the FLT-A card directly from a test station that has a mailbox on the Octel 250, you hear the personal greeting of the calling party, rather than the calling party's recorded name and the password prompt.
   - ❑ If you call the pilot number directly, you hear the calling party's recorded name and the password prompt.

10. Because you have moved the LAN card, test it, using the "Testing the LAN Card" section, page 12-42.
11. Close the server doors.

Changing from a Different Type of FLT Card to an FLT-A Card

Read the introductory information about the FLT-A card in the "Adding an FLT-A Card" section, page 12-13, but *do not* use that procedure. The FLT-A card is *not* hot-pluggable when you change the integration.

Change a different type of FLT card (possibly an FLT8 with a Lucent integration device) to an FLT-A card, as follows:

1. Prepare the telco cable, without bridge taps, for attachment directly to the new FLT-A card. Refer to the configuration note for cable requirements for an FLT-A integration.
2. Access menu 13.7, and make sure that feature options 33 – Set Emulation, 34 – RS232 Integrations, and 35 – In-band Integrations are enabled. A ***Y*** precedes the name of each enabled feature. Call Octel to order additional software features.
3. Coordinate with the system manager to take the server out of service.
4. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
5. Use one of the following procedures, depending on whether only one port or multiple ports are dedicated to message waiting, to turn off all message waiting indicators.

   - ❑ If only one port is dedicated to message waiting, access menu 6.2, and interchange the values in the ***Display Sequence to Activate Message Waiting:*** and ***Display Sequence to Deactivate Message Waiting:*** fields, then use menu 13.5 to turn off message-waiting indicators (even though the option is titled "Turn Message Waiting Indicators Back On"). After the message-waiting indicators are off, change the values in these two fields in menu 6.2 to their original values.
   - ❑ If multiple ports are dedicated to message waiting, call the Octel Customer Services Center or your Octel distributor and have the service bit enabled. From the Reformat menu, use the "AT&T inband message waiting utilities" option, and turn off all message-waiting indicators. Refer to Appendix A for details about this utility.

6. If menu 4 displays an option ***3*** for Special RS232 Message Waiting, select option ***3***, and enter ***N*** in the ***Special RS232 Message Waiting:*** field.

7. Change the line type to ***6*** for all ports in the ***Ln Tp*** column in menu 4.1.

8. Access menu 1.1 and change the ***Type of PBX or Centrex VPMOD is on:*** field to ***F – PBX Integration Device / AT&T 85***. Refer to the FLT-A configuration note for other menu 1.1 requirements.

9. Access menu 13.1, and shut down the server.

10. After the *****SST VALIDITY CHECK PASSED***** and the ***Execution Trace:*** messages appear on the screen, press ***Ctrl+C***. After several minutes, the ***ENTER BOOT COMMAND:*** prompt appears.

11. Turn off the power by switching the main-power circuit breaker to the OFF (0) position.

12. Open the front door of the server, and locate the card to be replaced.

13. Put on a correctly grounded antistatic wrist strap.

14. Remove the card. Handle only the sheet-metal stiffener attached to the card, and the card's top and bottom edges. *Do not* touch the components or the edge connectors.

    a. Unscrew the thumb screws at the top and bottom of the card to be replaced.

    b. Remove the card by pulling up on the upper card extractor and pushing down on the lower card extractor.

    c. Place the removed card in an antistatic bag.



Caution!

Before you insert the FLT-A card, make sure that all analog lines for the card have been converted to digital lines at the PBX. Analog voltage from the PBX can damage an FLT-A card.

Insert the new card carefully to prevent damage to the card, card extractors, and backplane pins.

15. Carefully install the new FLT-A with its card extractors fully open. When handling a logic card, handle only the sheet-metal stiffener attached to the card. Do *not* touch the components or edge connectors.

    a. Check that the connectors are not damaged.

    b. Slide the new card into its slot with the extractors fully open.

c. Use the extractors to apply pressure on the outer edges of the card to make sure that the card is correctly seated in the backplane. Do not force the card into the card cage.

d. Tighten the thumb screws at the top and bottom of the card.

16. Connect the telco cable directly, without bridge taps, to the new FLT-A card. Secure the cable with the Velcro ties.

17. Remove the antistatic wrist strap.

18. Turn on the power by switching the main-power circuit breaker to the ON (1) position.

19. When the ***ENTER BOOT COMMAND:*** prompt appears, boot with an ***A***.

20. Enter the required options in the SMT menus, as described in the configuration note for an FLT-A integration. The line type for the U.S. standard of pulse-code-modulation (PCM) encoding is ***145***; the line type for the European standard of PCM encoding is ***149.***

21. Observe the LEDs on the FLT-A card. The normal startup sequence of the FLT-A card is as follows:

    a. If the server has only one FLT-A card, the software selects two of its ports for primary and secondary clock synchronization with the PBX.

       If the server has two or more FLT-A cards, the software selects one of the ports on the leftmost FLT-A card as the primary source and one of the ports on the next FLT-A card to the right as the secondary source for synchronization with the PBX.

    b. When the diagnostic tests on an FLT-A card have been completed successfully, all the SI and SO LEDs for all of that card's ports flash together; as each port synchronizes with the PBX, its pair of SI and SO LEDs turns off.

    If either the primary or secondary synchronization source loses synchronization with the PBX, the software generates a non-service-affecting (NSA) alarm called "Frame Sync Lost" and turns on the NSA alarm LED on the CCF card. You can use menu 13.8, Review Current Alarm Status, to display information about NSA alarms. A CDR event 118 (GEN_ERR) is also generated; it defines which synchronization, primary or secondary, was lost. You can use Online CDR to view the event. If the primary synchronization source fails, all FLT-A cards automatically switch to the secondary source, without affecting normal server operation.

22. If the previous integration used an APID or VoiceBridge™, make sure that the message-waiting extension number (channel A on the APID or the digital port that performed message waiting on the VoiceBridge) is defined as a message-waiting port for the appropriate port in menu 4.1 (enter ***Y*** in the ***M*** column).

23. Access menu 4.1 and enable the ports associated with this card.

24. Access menu 13.5, Turn Message Waiting Indicators Back On, to turn the message-waiting indicators back on.

25. Test the ports on line. From the SMT Main Menu, access menu 20, Service Operations, then the Port Testing Utilities. Refer to Chapter 10 for testing procedures.
    - ❑ If you call an individual port on the FLT-A card directly from a test station that has a mailbox on the Octel 250, you hear the personal greeting of the calling party, rather than the calling party's recorded name and the password prompt.
    - ❑ If you call the pilot number directly, you hear the calling party's recorded name and the password prompt.
26. Press ***Ctrl+C*** until the Main Menu reappears.
27. Close the server doors.
28. Cancel the call-forwarding of the pilot number for the server hunt group, and restore the server to service.
29. Complete the appropriate information on the return card, and return the original card and integration device, if any, to Octel Communications, so that the customer qualifies for applicable trade-in discounts.

Adding Mailboxes

User records are activated through software. Mailboxes, including those enabled with FaxAgent™, can be added up to a maximum of those authorized in menu 13.15, shown in the example in Figure 12-8. No hardware expansion is required. Mailboxes with fax messaging capabilities are specified in the class-of-service profile in menu 7. Call Octel to order additional mailboxes and mailboxes with FaxAgent.

```
                    Menu 13 – System Capacity Information

                       Authorized                Used
  Mailboxes:           4000                      2345
  Fax Agent:           5119                      10
  Visual Mailbox:      0                         0

Press any key to return to the option selection:
```

Figure 12-8. Example of Menu 13.15.

Expanding CDR Storage Space

Statistical data, called CDR events, is stored in the CDR buffer on the server. This data contains detailed records about server activity. Several Octel products use CDR events to provide information for tracking and troubleshooting server activity: the Online CDR utility, Octel Call Detail Records™ (Octel PC/CDR™), and the Octel DecisionPro Reporting Package™ (DecisionPro™).

When server activity occurs, CDR events describing this activity are recorded in units called *blocks*. These blocks are stored in space allocated on the server, called the CDR buffer. CDR buffer-storage space does not affect message storage space. The CDR buffer and its contents are duplicated on each system drive.

Server use and applications such as voice mail and Enhanced Call Processing™ (ECP) affect the number of CDR blocks that are filled each day. The record groups selected for collection also affect how quickly the CDR buffer becomes full. If the CDR buffer becomes full before CDR events have been downloaded, important data could be lost. Refer to SMT menu 16.1 to determine the current CDR buffer-storage space setting.



Caution!

Make sure to download CDR data before running the Expand Datafile Size utility. Running this utility erases *all* data in the CDR buffer.

If the CDR buffer fills quickly, you might need to use the Expand Datafile Size utility to increase its size. (This utility is available only off line.) If you are using Octel PC/CDR or DecisionPro, before you increase the number of CDR blocks the CDR buffer can hold, make sure to download *all* CDR blocks that have not been previously downloaded to a PC. Running the Expand Datafile Size utility erases *all* data in the CDR buffer.

Refer to Chapter 7 for additional information about Online CDR, Octel PC/CDR, and DecisionPro. For additional information about the CDR buffer, refer to the *Octel PC/CDR Manual* or the *DecisionPro Operations Manual*.

Increase the number of CDR blocks that can be stored in the CDR buffer, as follows:

1. Log into the primary SMT. The SMT Main Menu appears.
2. Download to a PC all CDR blocks that have not been previously downloaded.
3. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
4. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.

5. Run garbage collect (refer to Appendix A).

6. From the SMT Main Menu, use menu 13.1 to shut down the server. The Expand Datafile Size utility can only be run off line.

7. At the ***ENTER BOOT COMMAND:*** prompt, type ***Ctrl+D***, then ***U*** to access the offline Menu 20 – Service Operations.

8. From menu 20, access the Datafile Utilities, then the Expand Datafile Size menu, as shown in Figure 12-9.

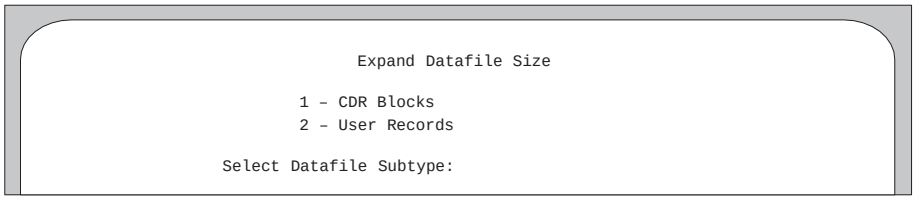


Figure 12-9. Expand Datafile Size Menu.

9. At the ***Select Datafile Subtype:*** prompt, enter option ***1*** to increase the number of CDR blocks to be stored in the CDR buffer, and press ***Enter***. The server displays the buffer's original size, the new size (at this time, the same as the original size), and the number of additional CDR blocks available.

10. At the ***Enter new size:*** prompt, enter the new CDR buffer size in increments of 10 CDR blocks, up to 35,000 blocks, and press ***Enter***. The Expand Datafile Size menu reappears.

11. To proceed with the expansion, at the ***Select Datafile Subtype:*** prompt, press ***Enter***.

12. The ***You will lose all your CDR!! Do you wish to continue (y/n):*** prompt appears. Enter ***Y***, and press ***Enter*** to proceed. To cancel the operation, enter ***N***.

13. At the ***Apply all filesize changes? (y/n):*** prompt, enter ***Y***, and press ***Enter*** to proceed with the expansion. To cancel the expansion, enter ***N***.

    If you enter ***Y***, the server proceeds with the expansion.

14. When the expansion is complete, you are asked to press any key to continue. Press any key to return to the Datafile Utilities menu.

15. Press ***Ctrl+C*** until menu 20 reappears.

16. From the offline menu 20, type the number for the ***Exit*** option. The server shuts down, performs the initial boot process, and returns to the ***ENTER BOOT COMMAND:*** prompt.

17. When the ***ENTER BOOT COMMAND:*** prompt reappears, press ***A*** to boot the server and return it to normal operation.

18. Cancel the call-forwarding of the pilot number for the server hunt group, and restore the server to service.

Adding Optional Software Features

Software features are enabled through the software. Enabled optional software features are listed in the two screens of menu 13.7. A ***Y*** precedes the name of each enabled feature. Call Octel to order additional software features.

Some new optional software features might require new hardware.

Adding an Expansion Cabinet

An additional cabinet can be connected to an Octel 250 server. Adding an expansion cabinet allows the server to have up to 16 more ports (two more FLT cards), for a total of 72 ports. System and message drives cannot be installed in the expansion cabinet. The following tools and equipment are required to add a cabinet:

- ❑ #2 Phillips screwdriver
- ❑ 7/16-inch wrench
- ❑ Expansion Cabinet kit, P/N 278–1165–000
  - ❑ Interconnect cable, P/N 057–1332–000
  - ❑ Dual-cabinet expansion brackets, P/N 061–2539–000
  - ❑ Slot ID label, P/N 051–2510–000
  - ❑ Blank card stiffeners, P/N 012–2516–000
  - ❑ Gaskets, P/N 049–1037–000
  - ❑ Bolts

Add an expansion cabinet, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. Coordinate with the system manager to take the server out of service.
3. Call-forward the pilot number of the hunt group in the PBX to a telephone number that will be answered.
4. Use menu 13.1 to shut down the server.
5. Press ***Ctrl+C*** after the ***EXECUTION TRACE*** message appears on the screen.
6. When the ***ENTER BOOT COMMAND:*** prompt appears, turn off the power to the server by switching the main-power circuit breaker on the back of the power distribution tray to the OFF position (0).
7. Place and connect the two cabinets together, as follows:
    a. Open and remove the front doors of both cabinets.
    b. Remove the antitilt bracket from the side of the original server that will be next to the expansion cabinet (the right side, as you face the front of the cabinet). Save the bracket and bolts.
    c. Place the expansion cabinet next to the original cabinet, so that the fronts of the cabinets are aligned and there is a 1/4-inch (6.4 millimeters) space between them.
    d. Lock the expansion-cabinet front rollers by tightening the front-wheel lockscrews.
    e. From the front of the cabinets, use the cabinet-connection bracket and bolts to connect the cabinets, as shown in Figure 12-10. The upturned corners on the bracket must be flush against the cabinets when you tighten the bolts. Repeat at the rear of the cabinets.
    f. Install the antitilt bracket removed in step 7b on the expansion cabinet (Figure 12-10). Tighten the bolts securely.

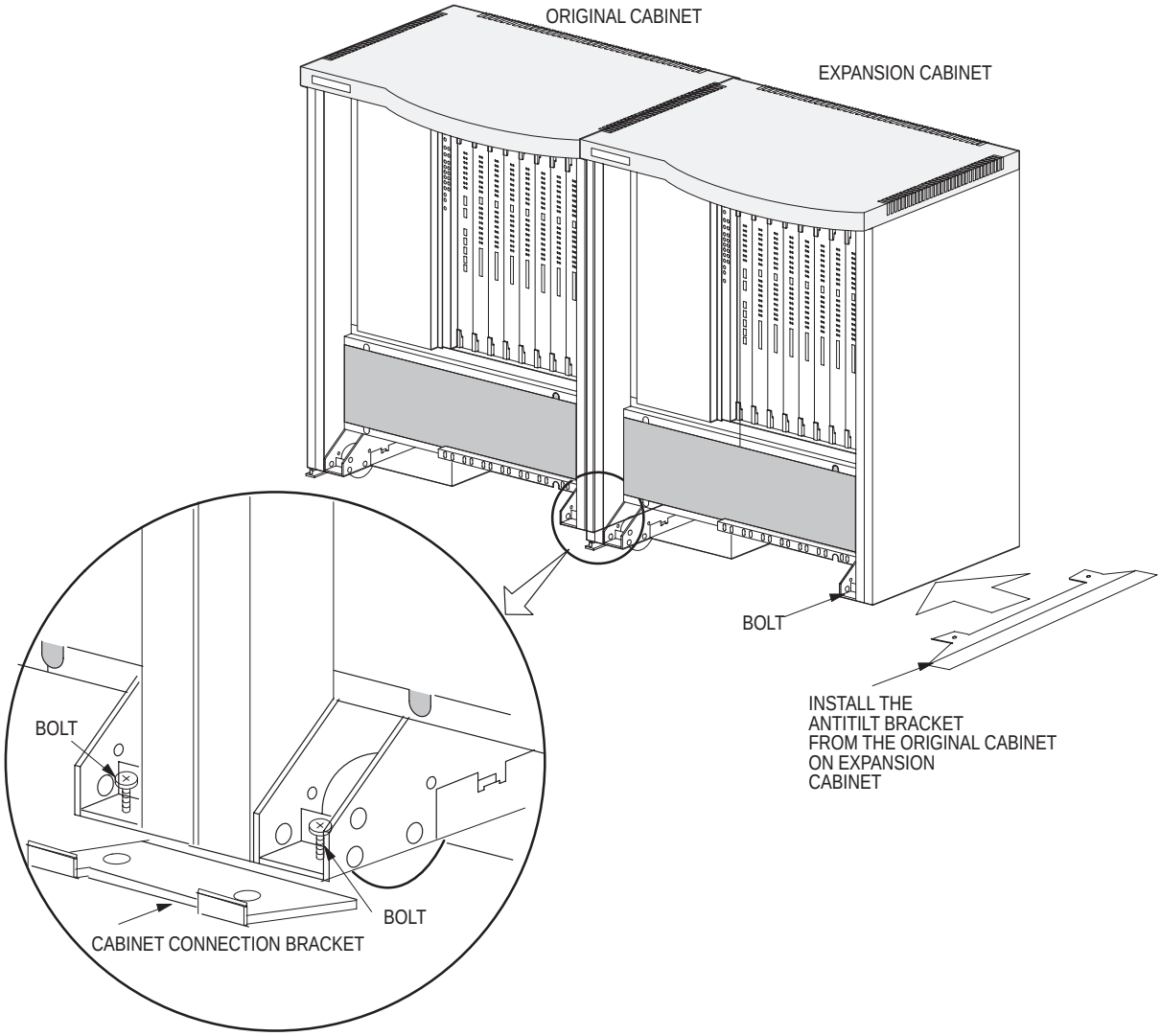


Figure 12-10. Location of the Cabinet-Connection Bracket.

8. From the rear of the cabinets, move the appropriate terminator board and connect the interconnect cable, as follows:
   a. Remove the sheet-metal cover that protects the original cabinet's left terminator board. (You will remove this board later.) Figure 12-11 shows the location of the left backplane connector into which the terminator board is currently plugged.

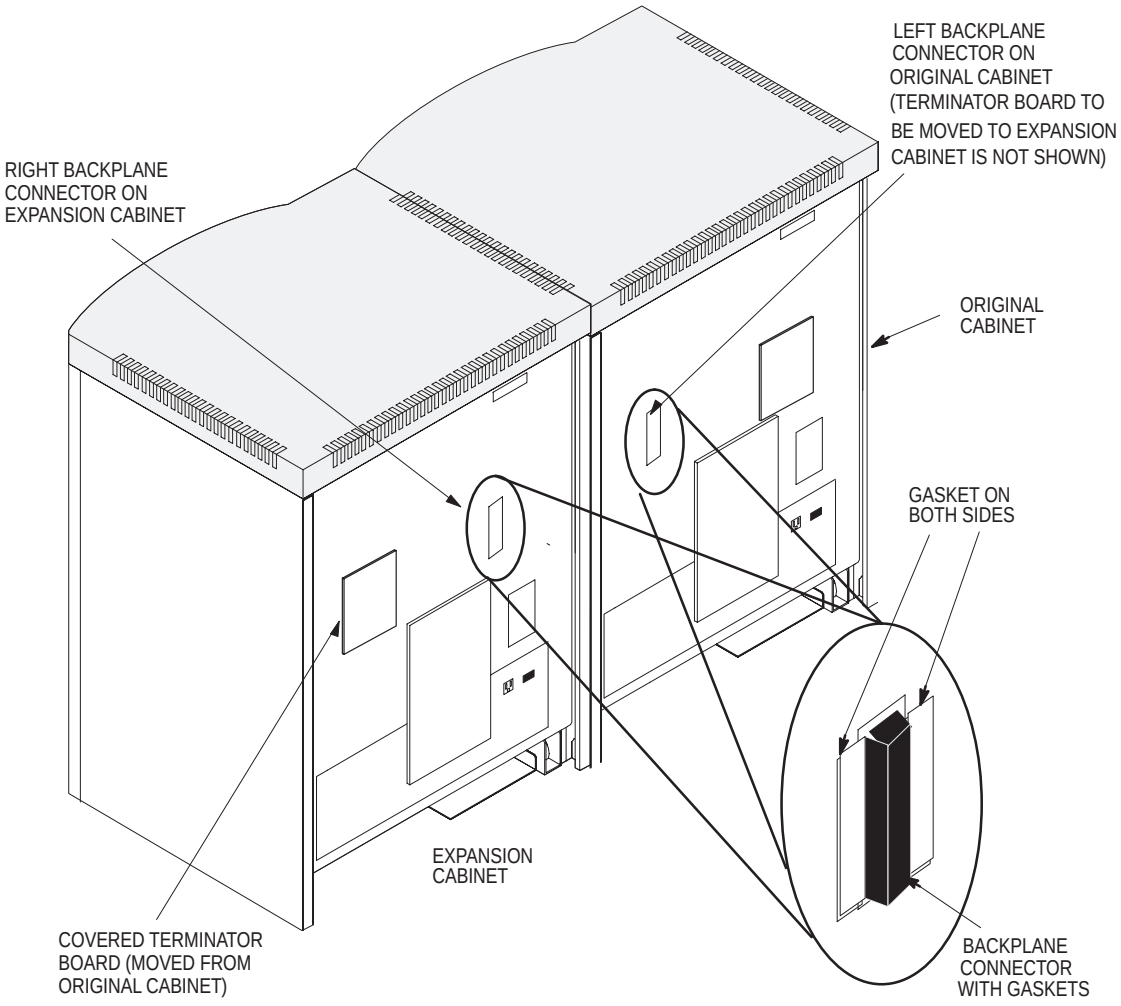


Figure 12-11. Rear View of Cabinets After Terminator Board Is Moved.

   b. Loosen the slotted, captive screw that secures the original cabinet's left terminator board to the backplane.
   c. *Carefully* remove the left terminator board from the original cabinet's backplane connector.
   d. Plug the terminator board into the expansion cabinet's left backplane connector. Tighten the slotted screw. Install the cover over the board. Figure 12-11 shows the location of the covered terminator board after it has been moved from the original cabinet to the expansion cabinet.

e. Attach gaskets to the rear panels of the cabinets, on both sides of the original cabinet's *left* backplane connector, as shown in Figure 12-11. Each gasket should contact the connector housing. Repeat for the expansion cabinet's *right* backplane connector.

f. Connect one end of the interconnect cable, P/N 057–1332–000, to the left backplane connector on the original cabinet.

g. Connect the other end of the interconnect cable to the right backplane connector on the expansion cabinet.

9. Open the front door of the expansion cabinet, and configure it as follows:

a. Remove the CCF and FLT cards from the logic bay. Remove blank stiffeners, as necessary, to access the dip switch on the alarm-panel logic board, shown in Figure 12-12.

b. Configure the alarm board in the expansion cabinet by setting the cabinet-address dip switch (S3), shown in Figure 12-12, to the appropriate setting for the expansion cabinet, as shown in Table 12-1.

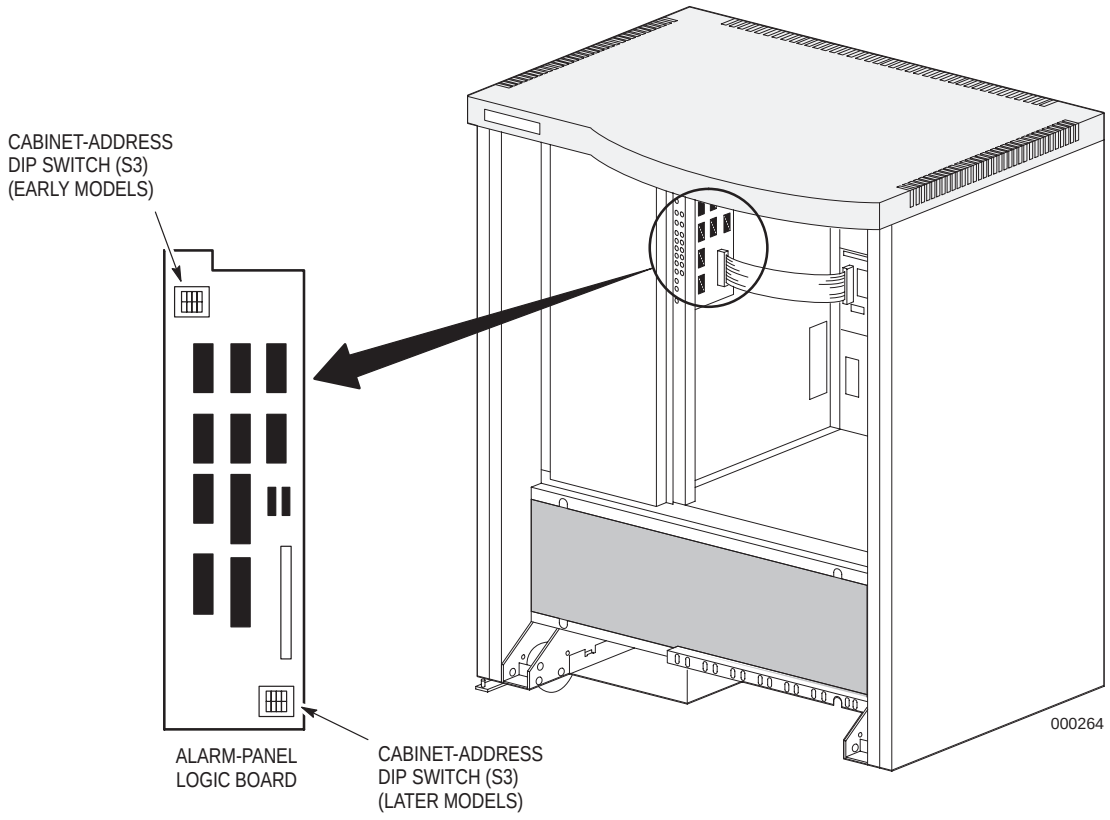


Figure 12-12. Location of Alarm-Panel Logic Board and Switch S3 (Front View).

Table 12-1. Switch Settings for Switch S3.

Cabinet	Switch 1	Switch 2
original	Closed (On)	Closed (On)
expansion	Open (Off)	Closed (On)

c. Reinstall the CCF and FLT cards in the logic bay.

d. In the expansion cabinet, install the appropriate portion of the slot ID label, P/N 051–2510–000, over the old slot ID label. For example, for the second cabinet, install the label for slots 9 through 16.

e. Insert blank card stiffeners into the slots that do not contain cards.

10. Replace the front doors on both cabinets and close all server doors.
11. Connect the power cord from the expansion cabinet to an electrical outlet.
12. Turn on the power for both cabinets.
13. Cancel the call-forwarding of the pilot number for the server hunt group, and restore the server to service.
14. Discard the old terminator covers and screws that were removed.

Adding a Language Using a Master Drive

You can add a language to the server's system drives by copying the language from another disk drive, called a *master drive*. Perform this procedure off line, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit enabled.
2. As a precaution, create a backup of system drive 0 before you add phrases to it. Refer to Chapter 10 for procedures.
3. Shut down the server using menu 13.1.
4. At the ***ENTER BOOT COMMAND:*** prompt, type ***Ctrl+D***, then ***U*** to boot the server to offline menu 20.

   In the following steps, press ***Ctrl+C***, as necessary, to return to the previous menu.
5. Verify that the software and phrase areas are redundant between sides A and B. Access the Miscellaneous Utilities menu, then the Set System Boot Area utility (refer to Appendix A). Check that, above the data in the ***Software Versions:*** and ***Phrase Versions:*** fields, both ***Drive Next Boot Area:*** fields contain ***A & B***, indicating that the software and phrase areas are redundant.

- ❑ If the software areas are not redundant, make them redundant by accessing the Drive Copy Utilities menu, then the Make Drive(s) Redundant utility menu, then the Make Software Areas A and B Redundant utility. Refer to Appendix A.
- ❑ If the phrase areas are not redundant, make them redundant by accessing the Drive Copy Utilities menu, then the Make Drive(s) Redundant utility menu, then the Make Phrase Areas A and B Redundant utility. Refer to Appendix A.
- ❑ Even if the phrases *appear* to be redundant according to the Set System Boot Area utility, if the server uses any IVR phrases, run the Make Phrase Areas A and B Redundant utility. On the Set System Boot Area screen, the ***Drive Next Boot Area:*** field for phrases does *not* indicate whether IVR phrases, if installed, are redundant. If you run the Make Phrase Areas A and B Redundant utility, when it presents a message that the phrases are redundant and asks whether you want to recopy them, enter ***Y***.

6. If a system drive is installed in slot 1 and a tape drive is installed in slot 6, prepare to install the master drive in slot 6, as follows:
   a. Make sure that a server backup is not currently in process or scheduled to run during the time it takes to install the new language (copy phrases from the master drive).
   b. If the server is at Aria 2.0, from offline menu 20, access the Drive Install Utilities menu, then the Disable Drive utility. Use the procedure in Appendix A to disable slot 6.
   c. Remove the tape drive from slot 6. (For servers at Aria 1.2, removing the tape drive can cause CD status-log entries.)
7. Insert the master drive into slot 1, if available, or slot 6.
8. From offline menu 20, access the Drive Install Utilities menu, then the Enable Drive utility. Use the procedure in Appendix A to enable the master drive (specify its slot in the Enable Drive utility).
9. From offline menu 20, access the Drive Copy utilities menu, then the Copy Phrases utility, and copy the desired language to system-drive 0. Use the procedure in Appendix A, and respond to the screen prompts, as follows:
   a. At the ***Enter position of source drive:*** prompt, specify the master drive as the source drive.
   b. Specify area A or B as the area from which to copy. The contents of areas A and B are the same on a master drive.
   c. At the ***Enter Choice:*** prompt after ***Select language number:*** and the list of languages, select the number for the language you want to copy from the master drive to the system drive.
   d. At the ***Enter Choice:*** prompt after ***Select phrase type:*** and the set of options, enter ***1*** to copy only system phrases.
   e. At the ***Enter position of destination drive:*** prompt, enter ***0***.

f. At the ***Destination phrase areas redundant. Copy phrases to both areas (y/n):*** prompt, enter ***Y.*** You *must* copy the new language (phrases) to *both* areas A and B of the destination drive.

g. At the ***Enter Choice:*** prompt after ***Select language number:*** and the list of languages, enter the number of the next available language area (the smallest number that currently contains no language).

h. At the ***Enter Choice:*** prompt to select the phrase type, enter ***1*** to copy only system phrases.

10. When the utility is completed, verify that the new language was copied to both areas A and B. From the Drive Copy utilities menu, access the Display Drive Info utility (refer to Appendix A), and verify that the phrase versions are identical in the ***Area A*** and ***Area B*** columns for the ***Phrases Versions:*** heading.

11. If the server has two system drives, make them redundant. From the Drive Copy utilities menu, access the Make Drive(s) Redundant menu, then the Make System Drives Redundant menu, then the Make Both Areas Redundant option. Specify system-drive 0 as the source drive.

12. Access the Drive Install Utilities menu, then the Disable Drive utility. Use the procedure in Appendix A to disable the master drive (specify its slot in the Disable Drive utility).

13. Remove the master drive.

14. If you removed a tape drive from slot 6 to perform this procedure, reinstall the tape drive.

    - ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive to make the tape drive operable.
    - ❑ If the server is at Aria 2.0, access the Drive Install Utilities menu, then the Enable Drive utility, and enable slot 6.

15. Press ***Ctrl+C*** until offline menu 20 reappears, then select the option to exit offline menu 20.

16. When the ***ENTER BOOT COMMAND:*** prompt appears, restore the server to service.

Adding a Tape Drive

Aria 1.1 and newer software support an optional tape drive. When a tape drive is installed in an Octel 250 at Aria 1.2 or Aria 2.0, you do not need to reboot the server.

A tape backup cannot be performed unless feature option 77 – System Backup & Restore is enabled. Access menu 13.7 and press ***Enter*** to see the second screen. Verify that feature option 77 is enabled. A ***Y*** precedes the name of each enabled feature. Call Octel to order additional software features.

If you are installing the tape drive temporarily to perform a software upgrade from Aria 2.0 to newer software using a software upgrade tape, feature option 77 does not need to be enabled.

Required Tools and Equipment

The following tools and equipment are required to install a tape drive in an Octel 350 server:

- ❑ Tape-drive assembly
- ❑ Pliers or 5/16-inch open-end wrench
- ❑ Head-cleaning tapes
- ❑ DDS-2 4-GB cassette tape

Preparing for Installation

Prepare for the tape-drive installation, as follows:

1. Make sure that you have all required tools and equipment.
2. If you have not already done so, access the second screen of menu 13.7, and verify that feature option 77 – System Backup & Restore is preceded by a ***Y*** to allow you to use the tape backup and restore features. If this feature is not enabled, call the Octel Customer Services Center to have the feature enabled.

Installing the Tape Drive

Install the tape drive, as follows:

1. Open the front door of the server.
2. Open the door to the drive bay.
3. Use pliers or an open-end wrench to remove the nuts that secure the tape-drive access cover to the inside of the drive-bay door, as shown in Figure 12-13. Remove and discard the nuts and cover.



Caution!

Install the tape drive in slot 6. Do not install it in any other slot. Installing the tape drive in a different slot could cause an unexpected server reboot.

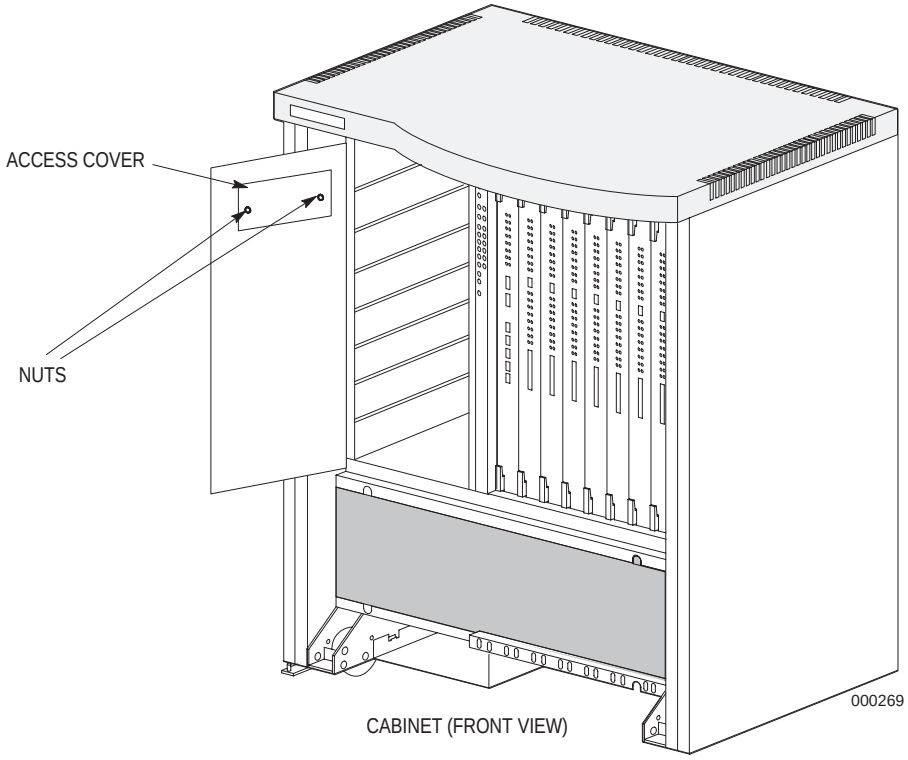


Figure 12-13. Location of Access Cover and Nuts.

4. Slide the tape drive into the top slot, numbered slot 6, as shown in Figure 12-14.

   a. Use the card extractor to push the drive card fully into its connector on the drive backplane.

   b. Make sure that the card extractor is fully closed and locked to the card and that the tape drive is securely installed.

5. Close the drive-bay door.

6. Perform one of the following, based on the level of Aria software:

   - ❑ If the server is at Aria 1.2, access Menu 21 – System Backup, then the Write/Read Diagnostic utility. Run the utility *without* a tape in the tape drive to make the tape drive operable.

   - ❑ If the server is at Aria 2.0, call the Octel Customer Services Center or your Octel distributor and have the service bit enabled. Access Menu 20 – Service Operations, then the Drive Install utilities, then the Enable Drive utility, and enable slot 6. Press ***Ctrl+C*** until the Main Menu reappears.

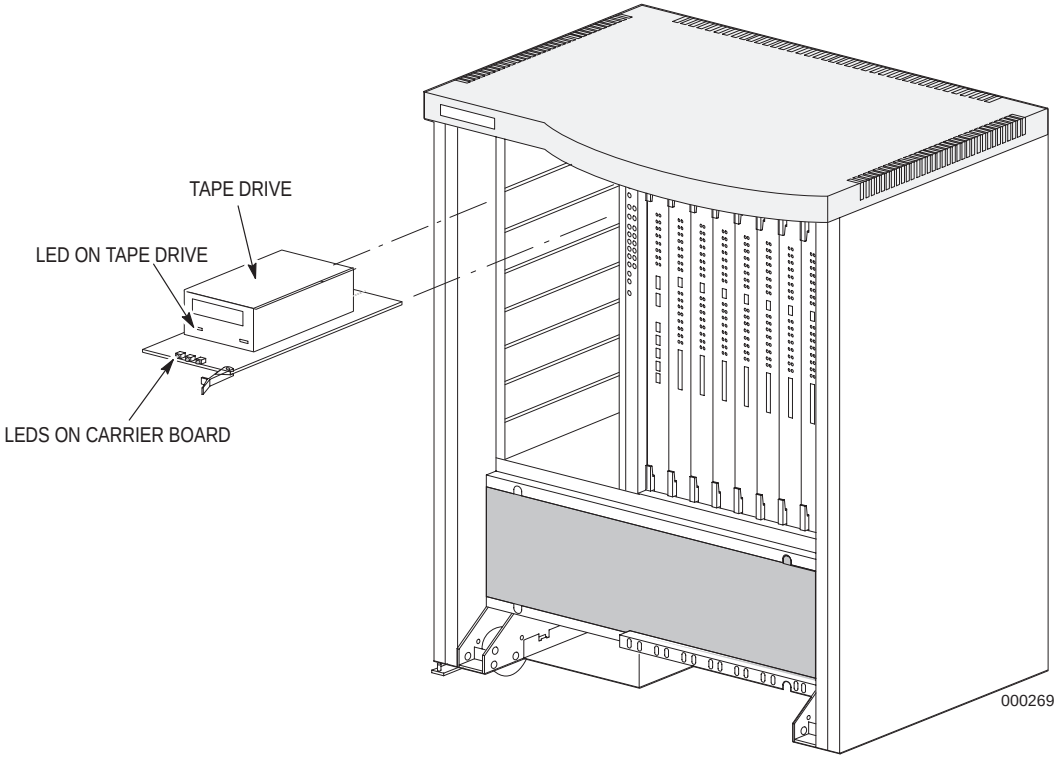


Figure 12-14. Tape-Drive Location.

Verify the Tape-Drive Installation

Verify that the tape drive works correctly, as follows:

1. Insert a DDS-2 4-GB tape that can be overwritten into the tape drive. Wait approximately 10 seconds until the green LED on the tape drive stops blinking and stays on, which indicates that the tape is correctly positioned and ready for testing. If the amber LED blinks, you must clean the tape drive (refer to Chapter 10).
2. Log into the SMT.
3. From the SMT Main Menu, access Menu 21 – System Backup, then the Write/Read Diagnostics utility. The results are shown in Figure 12-15.
4. At the ******WARNING*** YOU WILL OVERWRITE THE BACKUP DEVICE!!! Enter 'Y' to continue, 'N' to cancel:*** prompt, enter ***Y*** to continue the test. If a failure occurs during the test, call the Octel Customer Services Center or your Octel distributor.
5. When the test is finished, press any key to return to menu 21.
6. Press ***Ctrl+C*** to return to the Main Menu.
7. Press the eject button on the tape drive, and remove the tape.
8. Close the server doors.

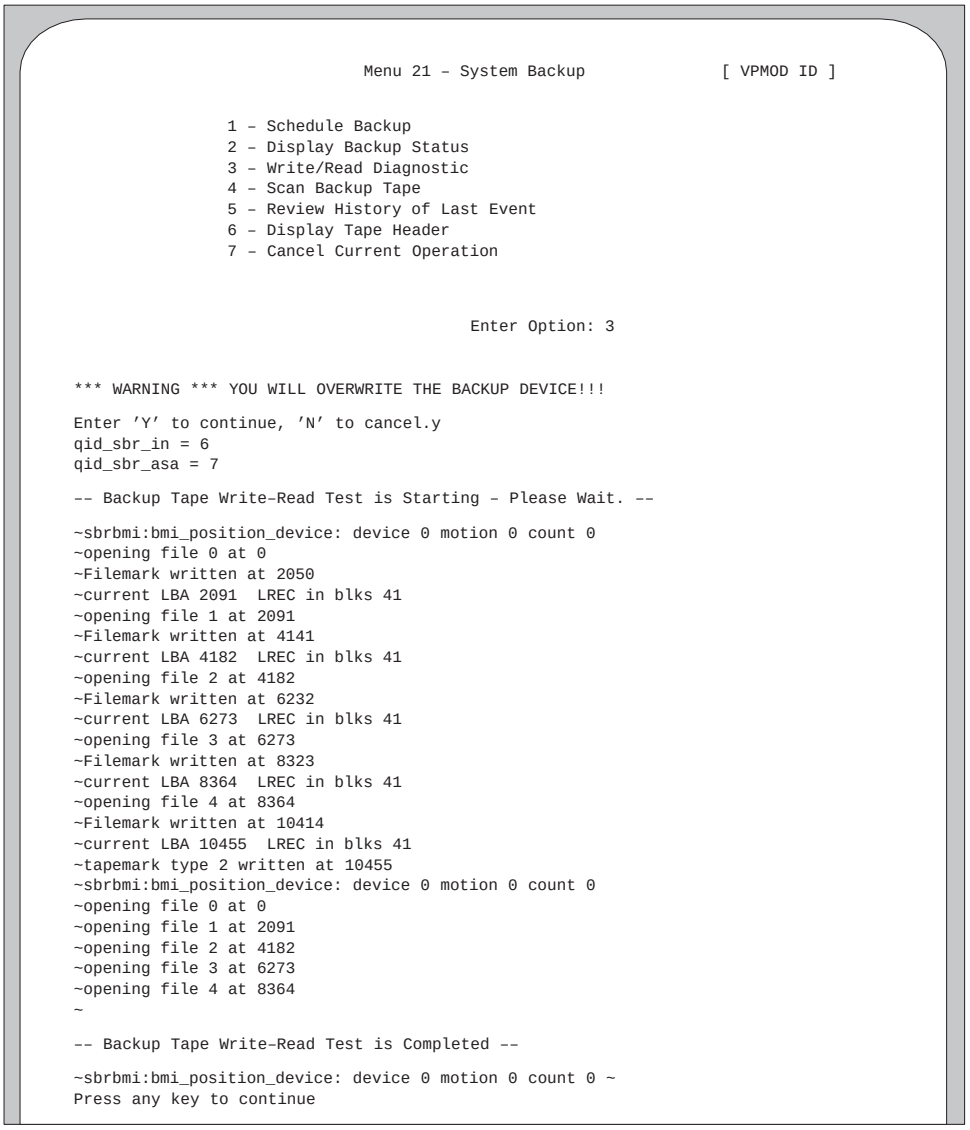


Figure 12-15. Scrolling Write/Read Diagnostic Screen.

Adding a LAN Card

Using a Local Area Network (LAN) card requires Aria 2.0. This section describes how to add a LAN card and configure Aria 2.0 software to use it.

The following hardware is provided:

- ❑ LAN card, P/N 044–2501–020
- ❑ Attachment Unit Interface (AUI) cable, P/N 057–1557–002

The customer provides the network cable to be attached to the AUI cable and, if required, the transceiver to be attached between the network cable and the AUI cable.

If this is a single-cabinet Octel 250 with an FLT card that must remain in slot 8, you must add a second cabinet (refer to the "Adding an Expansion Cabinet" section, page 12-24), then proceed to the following section and install the LAN card in slot 16 in the second cabinet.

Checking Feature Options and Obtaining Required Information

When you configure the server for the LAN interface, check the applicable feature options and obtain other required information before proceeding, as follows:

1. Access menu 13.7 and press ***Enter*** to see the second screen.
    a. Make sure that feature option 73 – Connectivity is enabled for any intended use of the LAN card. Enabled features have a ***Y*** preceding the feature number and name.
    b. If the LAN card is to be used for digital networking, make sure that feature options 44 – Networking and 74 – Digital Networking are also enabled. Digital networking works among correctly configured Octel 250s and Octel 350s, but not with other products. If the LAN card is to be used for other than digital networking, different feature options might be required.
    c. If necessary, call the Octel Customer Services Center to have the required feature options enabled.
2. Obtain values from the network administrator for the fields described in this step. You will enter these values later.
    a. For menu 22.1, obtain the following:
        - ***This Server's IP Address:*** This field identifies the Octel 250 to the network.
        - ***IP Net Mask:*** This subnet mask is used by routers to identify a specific LAN. The router that is connected directly to the LAN sends traffic to the appropriate host within the LAN, in this case, the Octel 250.
    b. For menu 22.2, obtain the following:
        - ***Broadcast Address:*** This address is used by routers to send messages to every host in a network.
        - ***Gateway IP Address:*** This IP address of the gateway/router is used by the Octel 250 to transmit network messages to servers that are not on the same network.

c. If the Octel 250 is installed in an optional simple network-management protocol (SNMP) environment, obtain the following for menu 22.3:

- ***SNMP Manager IP Address:*** This entry is the IP address of the SNMP manager.
- ***Trap Community Name:*** This is the name of the SNMP management community to which trap events should be sent. This field is case-sensitive and must be identical for the SNMP manager and for the Octel 250.
- ***Get Community Name:*** This is the name of the SNMP management community with which the Octel 250 will exchange "Get" messages. This field is case-sensitive and must be identical for the SNMP manager and for the Octel 250.
- ***Set Community Name:*** This is the name of the SNMP management community from which the Octel 250 will receive "Set" messages. This field is case-sensitive and must be identical for the SNMP manager and for the Octel 250.
- ***System Name:*** This is the SNMP manager's name for the Octel 250.
- ***System Location:*** This is the SNMP manager's location name for the Octel 250.
- ***System Contact:*** This is the contact for digital networking on the Octel 250.

d. If digital networking is enabled on this Octel 250 and on any other Octel 250 or 350 in the network, obtain values for the following fields for testing:

- ***Node Number:*** and ***Node Name:*** This node information is for the remote Octel 250 or 350.
- ***IP Address:*** This field is the address of the remote Octel 250 or 350.

You need test mailboxes on the local and remote nodes, including the mailbox passwords and pilot numbers of the nodes.

Entering LAN Parameters

Use menus 22.1, 22.2, and 22.3 to define the LAN interface, as follows:

1. Call the Octel Customer Services Center or your Octel distributor and have the service bit turned on.
2. Log into the SMT.
3. From the Main Menu, access Menu 22 – LAN Interface Management, as shown in Figure 12-16.
4. Select one of the options from menu 22, and proceed, as described in the following sections.

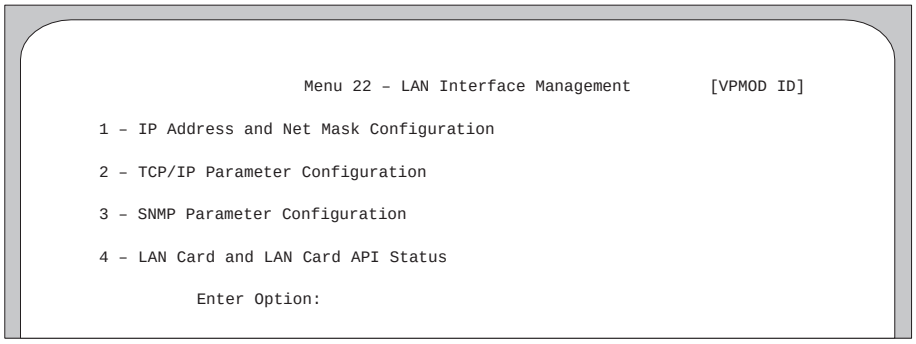


Figure 12-16. Menu 22 – LAN Interface Management.

IP Address and Net Mask Configuration (Menu 22.1)

Use menu 22.1 to define network addressing for the Octel 250, as follows:

1. From menu 22, access menu 22.1, as shown in Figure 12-17. The entry in the ***This Server's Ethernet Address:*** field is preset; it is a unique address assigned during LAN card manufacturing, and it cannot be changed. It is not stored on the system drives.

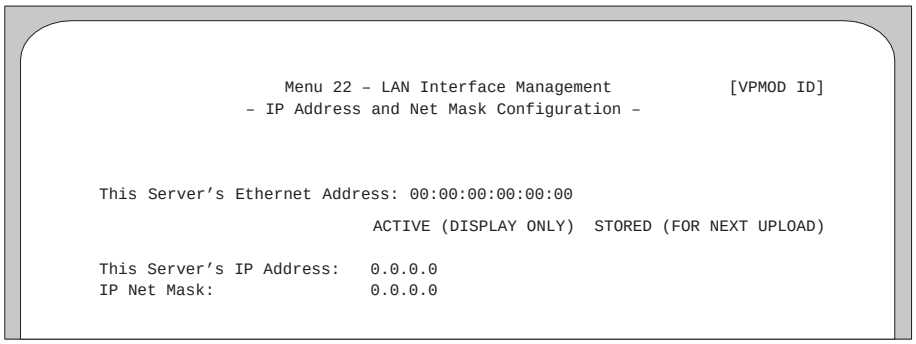


Figure 12-17. Menu 22.1, IP Address and Net Mask Configuration.

   The cursor is in the right column, titled ***STORED (FOR NEXT UPLOAD)***.

2. In the ***This Server's IP Address:*** row, enter the IP address of the LAN connection to be used by the Octel 250.

3. In the ***IP Net Mask:*** row, enter the subnet mask that identifies the subnetwork in which the Octel 250 resides.

4. Press ***Enter*** to store the values. The values you enter in the ***This Server's IP Address:*** and ***IP Net Mask:*** rows do not become active (effective) until the next upload takes place during a system reboot, a LAN card hot-plug, or a LAN card reset, one of which you will perform later during LAN card installation.

TCP/IP Parameters (Menu 22.2)

Use menu 22.2 to define TCP/IP parameters, as follows:

1. From menu 22, access menu 22.2, as shown in Figure 12-18. On this screen, the entries in the ***This Server's Ethernet Address:***, ***This Server's IP Address:***, and ***IP Net Mask:*** fields are for display only; they cannot be changed.

```
                    Menu 22 – LAN Interface Management          [VPMOD ID]
                          – TCP/IP Parameters –


This Server's Ethernet Address:.........00:00:00:00:00:00
This Server's IP Address:...............0.0.0.0
IP Net Mask:............................0.0.0.0

Broadcast Address:......................0.0.0.0
Gateway IP Address:.....................0.0.0.0
```

Figure 12-18. Menu 22.2, TCP/IP Parameters.

2. In the ***Broadcast Address:*** field, enter the broadcast address provided by the network administrator. This address is used by the router to send a message to every host on a network or subnetwork.
3. In the ***Gateway IP Address:*** field, enter the IP address of the router to be used by the Octel 250 to transmit network messages to servers that are not on the same network.
4. Press ***Enter*** to store the values entered.

SNMP Parameters (Menu 22.3)

Enter SNMP information in menu 22.3, if SNMP is used in the customer's network environment. Establish the following SNMP parameters, if necessary:

1. From menu 22, access menu 22.3, as shown in Figure 12-19.

```
                    Menu 22 – LAN Interface Management          [VPMOD ID]
                          – SNMP Parameters –


SNMP Manager IP Address:......0.0.0.0
Trap Community Name:..........
Get Community Name:...........
Set Community Name:...........
System Name:..................
System Location:..............
--->
System Contact:...............
```

Figure 12-19. Menu 22.3, SNMP Parameters.

2. In the ***SNMP Manager IP Address:*** field, enter the IP address of the SNMP manager.

3. In the ***Trap Community Name:*** field, enter the name of the SNMP management community to which trap events should be sent. This field is case-sensitive. The SNMP manager and the message server cannot interact, unless their entries in this field are identical.

4. In the ***Get Community Name:*** field, enter the name of the SNMP management community with which the Octel 250 will exchange "Get" messages. This field is case-sensitive. The SNMP manager and the message server cannot interact unless their entries in this field are identical.

5. In the ***Set Community Name:*** field, enter the name of the SNMP management community from which the Octel 250 will receive "Set" messages. This field is case-sensitive. The SNMP manager and the message server cannot interact unless their entries in this field are identical.

6. In the ***System Name:*** field, enter the system name that the SNMP manager will display for the Octel 250.

7. In the ***System Location:*** field, enter the system location that the SNMP manager will display for the Octel 250.

8. In the ***System Contact:*** field, enter the name of the system manager or network administrator who manages network connectivity for the Octel 250. This field will also be displayed by the SNMP manager for the Octel 250.

9. Press ***Enter***.

10. When all parameters have been entered, access menu 20, then LAN Utilities. Enter the number for the ***Reset LAN Card and LAN Card API*** option and press ***Enter*** to reset the LAN card and activate the parameters entered in menu 22.1.

Installing the LAN Card and Associated Cables

Install the new LAN card, as follows:

1. If this is a single-cabinet Octel 250 with an FLT card in slot 8 that the customer allows you to remove permanently, remove the FLT card from slot 8, as follows:

   a. Use menu 13.1 to shut down the server.

   b. When the ***ENTER BOOT COMMAND:*** prompt appears, power off the server.

   c. Insert the LAN card into slot 8.

   d. Turn on the power to the server and allow it to reboot.

   e. Skip to step 8.

2. From the SMT Main Menu, access Menu 13 – System Maintenance, then Menu 13.11, Review Card Management, as shown in the example in Figure 12-20.

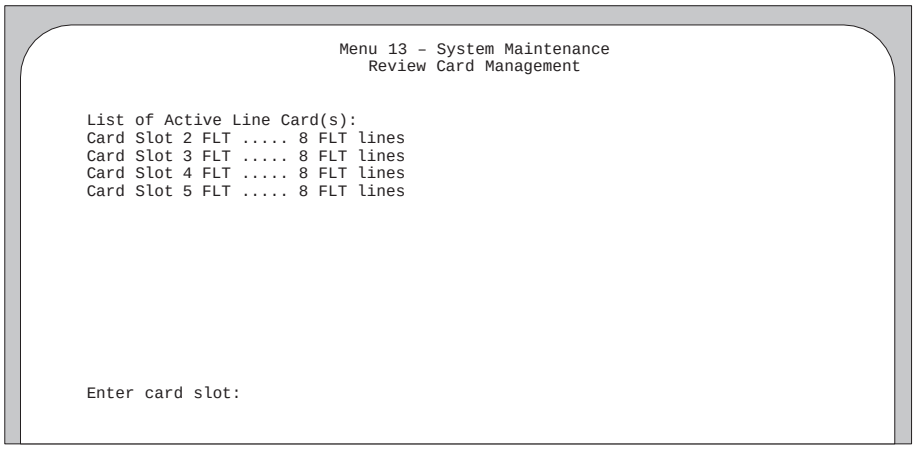


Figure 12-20. Example of Menu 13.11, Review Card Management.

3. At the ***Enter card slot:*** prompt, enter the slot number for the LAN card (enter ***8*** for a single-cabinet server or ***16*** for a dual-cabinet server).
4. Put on an antistatic wrist strap that is correctly grounded.
5. Insert the LAN card as directed by the SMT. When handling a logic card, handle only the sheet-metal stiffener attached to the card. Do *not* touch the components or edge connectors.
   a. Check that the connectors are not damaged.
   b. Slide the new card into its slot with the extractors fully open.
   c. Use the extractors to apply pressure on the outer edges of the card to make sure that the card is correctly seated in the backplane. Do not force the card into the card cage.
   d. Tighten the thumb screws at the top and bottom of the card.
6. Press any key on the SMT to continue. The ***Card upload initiated...*** prompt appears.

   If the replacement LAN card has EPROM firmware that differs from the level on the system drive, the server automatically installs the firmware from the system drive into the flash EPROMs and activates it. This automatic upgrade means that the version of firmware that is actually in the EPROMs might differ from the version printed on the EPROMs themselves.

   Two separate areas are available in the flash EPROMs for two different firmware levels. If you need to revert to the prior level of firmware on the LAN card EPROMs for any reason, use the procedure in the “Reverting to the Prior EPROM Firmware on the LAN Card” section, following.
7. After the upload is completed and the ***LAN Card is UP and running, press any key to continue*** prompt appears, press any key to continue.

8. Plug the AUI cable into the LAN connector on the LAN card, and screw on the cable connector.
9. Plug the other end of the AUI cable into the DB15 connector of a network interface cable or into the DB15 connector of a transceiver that also connects to an RJ45 network cable. Transceivers, if required, and network cables are provided by the customer.
10. Remove the antistatic wrist strap.
11. Close all server doors.
12. Press ***Ctrl+C*** until the Main Menu reappears.
13. Access menu 22.1 to confirm that the new IP address and IP net mask are now active.
14. Press ***Ctrl+C*** until the Main Menu reappears.
15. Close the server doors.

Reverting to the Prior EPROM Firmware on the LAN Card

Two separate areas are available in the LAN card's flash EPROMs for two different firmware levels. If you need to revert to the prior level of firmware on the LAN card EPROMs for any reason, perform the following steps:

1. Using menu 13.11, identify the slot for the LAN card, if you have not done so already.
2. Remove the LAN card.
3. Move switch 3 on the dip switch at location S2 on the LAN card to the ON position.
4. Reinstall the LAN card. This causes the prior level of firmware to be used.

Once you have reverted to the older firmware, the next hot-plug loads the firmware from the system drive into the area for new firmware again. This new firmware does *not* become active unless you perform the following steps:

1. Remove the LAN card.
2. Move switch 3 at location S2 on the LAN card back to the OFF position.
3. Reinstall the LAN card.

Testing the LAN Card

Use the ping utility to verify that the LAN card is operating correctly. If the LAN card is to be used for digital networking and the network has another Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured for digital networking, you also use the echo-test utility. Both utilities are accessed through the LAN Utilities menu.

The ping utility is a standard TCP/IP network utility that uses ICMP protocol to determine whether the host at a specified IP address is responding. It does not test any function within the host that is beyond the host's attachment to the LAN. It does not provide round-trip times or throughput data.

The ping utility can test any IP address; the destination address does not have to be another Octel 250 or 350. It sends 64 data bytes, including an ICMP header, to the specified IP address.

You also use the echo test to check whether servers are active. The server to which the echo test is sent must be an Octel 250 or 350 at Aria 2.0 and with a LAN card installed. The echo-test utility provides round-trip times and throughput data.

Refer to the "Running the Ping Utility" section, following, and the "Running the Echo-Test Utility" section, page 5-47, and perform the following tests:

1. From Menu 20 – Service Operations, access the LAN Utilities menu, then perform the following tests:
   a. Ping the IP address of this LAN card (specify the entry in the ***This Server's IP Address:*** field in menu 22.1), to confirm that it responds.
   b. Ping a different active IP address once, to confirm that it responds.
   c. If the IP address is an Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured, send echo-test messages to it to confirm that the network is not losing data messages and to obtain throughput data.
2. Go to another host to test the Octel 250 you have just installed. Proceed to step 3 or step 4, depending on the type of host.
3. If the host is an Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured, perform the following tests:
   a. Access the LAN Utilities menu at the host, and ping the Octel 250 you have just installed. Ping it once.
   b. Access the LAN Utilities menu at the host, and perform the echo test. Send the data 25 times.
4. If the host is *not* an Octel 250 or 350 at Aria 2.0 with a LAN card installed and configured, perform the following tests:
   a. Use a ping utility, if available, or use the following command:

      ping [250 IP address]

      Ping the Octel 250 you have just installed. Ping it once.
   b. Use a ping utility, if available, or use the following command:

      ping –s [250 IP address] 64 25

      Ping the Octel 250 you have just installed. Ping it 25 times. For additional command options, check the syntax of the ping command on this host. In this example, the ping command can be read as follows: ping sequence [IP address] 64 data bytes, 25 times.

If any of these tests fail, refer to Chapter 7 for problem-isolation procedures. When testing is complete, if the LAN card is to be used for digital networking, go to the "Adding Digital Networking" section, page 12-46.

Running the Ping Utility

To ping an active IP address once, perform the following steps:

1. Log into the SMT. The Main Menu appears.
2. Access Menu 20 – Service Operations, then the LAN Utilities menu, as shown in Figure 12-21.

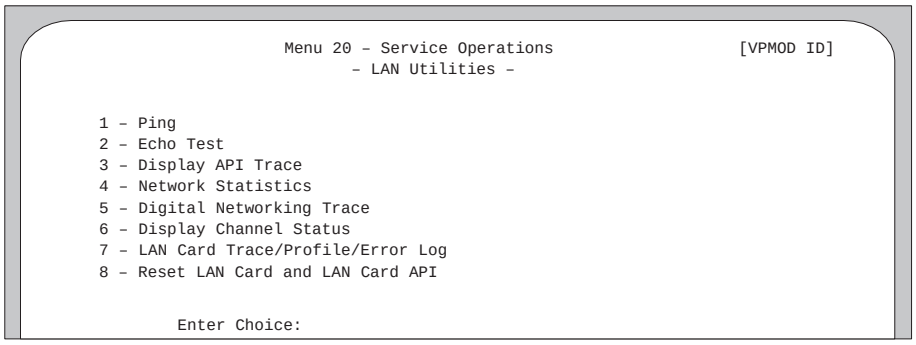


Figure 12-21. LAN Utilities Menu.

3. Select the Ping utility. The Ping Utility screen appears, with only the ***Enter the IP address to Ping (format: n.n.n.n, n=0–255):*** prompt displayed. Figure 12-22 is an example of the Ping Utility screen, with all fields completed.

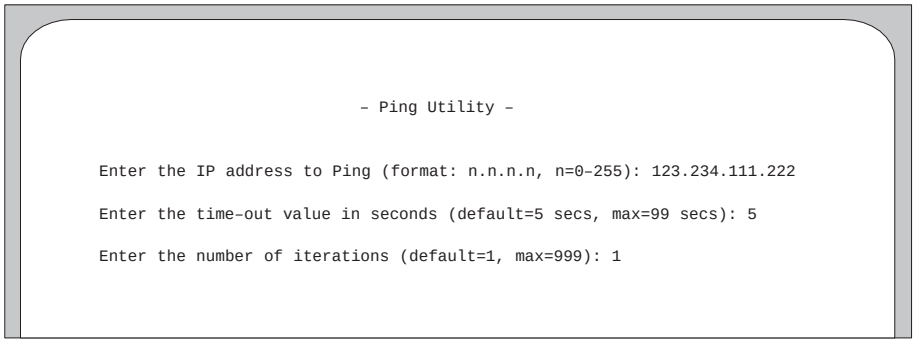


Figure 12-22. Example of Completed Ping Utility Screen.

4. Enter the IP address to which you want to send a ping, and press ***Enter***.

   The ***Enter the time-out value in seconds (default=5 secs, max=99 secs):*** prompt appears.

5. Enter the desired timeout value, and press ***Enter***, or simply press ***Enter*** to accept the default.

   The ***Enter the number of iterations (default=1, max=999):*** prompt appears.

6. Enter ***1*** to ping the IP address once, and press ***Enter***.

   The ping utility sends 64 bytes of data (including ICMP header) to the IP address, and the recipient sends back the same data it received.

   - ❏ If ***Ping Successful*** is displayed, continue to step 7.
   - ❏ If an error message is displayed indicating that the ping failed, refer to Chapter 7 for problem-isolation procedures.

7. Press ***Enter*** until the screen returns to the LAN Utilities menu.

Running the Echo-Test Utility

Run the echo-test utility to determine whether the network is dropping data and to obtain throughput data, as follows:

1. Log into the SMT. The Main Menu appears.
2. Access Menu 20 – Service Operations, then the LAN Utilities menu (Figure 12-21), then the Echo Test utility.

   The Echo Test Utility screen appears, with only the ***Enter the destination IP address (format: n.n.n.n,n=0–255):*** prompt displayed. Figure 12-23 is an example of the Echo Test Utility screen, with all fields completed and the test results shown.

```
                          – Echo Test Utility –


Enter the destination IP address (format: n.n.n.n,n=0–255): 123.234.111.222

Enter the test data length in bytes (default= 1024, max=16384): 10

Enter the number of times to send the data (default= 1, max=999): 50
Enter the max write–read window size (default=max, min= 1, max= 5): 5

Echo Test in progress, Please wait...


Data buffer writes:50                   Data buffer reads:50
(Write–read window high water mark:3)
Total time: 0 minutes, 2 secs, 273 msec
Total bytes transferred:1000            Throughput:0.43 bytes/msec


        Press any key to continue.
```

Figure 12-23. Example of Completed Echo-Test Utility Screen.

3. Enter the IP address to which you want to send the echo command, and press ***Enter***.

   The ***Enter the test data length in bytes (default= 1024, max=16384):*** prompt appears.

4. Enter the desired data length, and press ***Enter***, or simply press ***Enter*** to accept the default.

   The ***Enter the number of times to send the data (default= 1, max=999):*** prompt appears.

5. Enter the desired number of times to send the data, and press ***Enter***, or simply press ***Enter*** to accept the default.

   The ***Enter the max write-read window size (default=max, min= 1, max= 5):*** prompt appears.

6. Enter the desired maximum write-read window size, and press ***Enter***, or simply press ***Enter*** to accept the default. The entry for this prompt is the maximum number of transmissions (***Data buffer writes:***) that can have outstanding (unreceived) replies (***Data buffer reads:***), before the next echo data transmission is permitted.

   The echo test begins, and the results are displayed (Figure 12-23):

   - ❑ The numbers in the ***Data buffer writes:*** and ***Data buffer reads:*** fields should be equal.
   - ❑ The entry in the ***(Write-read window high water mark:)*** field is the highest number of replies that were ever outstanding during the echo test.
   - ❑ The entry in the ***Total time:*** field is the round-trip time for data requests and replies.
   - ❑ The entry in the ***Total bytes transferred:*** field should be double the number of bytes sent in all requests, to account for both requests and replies.
   - ❑ The entry in the ***Throughput:*** field is the number of data bytes sent per millisecond; it does not include the overhead bytes of the ICMP header.

   If the total bytes transferred are fewer than expected or if the total time or throughput is unacceptable, refer to Chapter 7 for problem-isolation procedures.

7. Press ***Enter*** until the screen returns to the LAN Utilities menu.

Adding Digital Networking

Use this section to configure digital networking, if the server has a LAN card that has been installed for this purpose.

Configuring System Parameters for Digital Networking

Use menu 15.1.2 for the following purposes:

- ❑ To enable or disable digital networking system-wide
- ❑ To specify the maximum number of digital connections and the maximum number of simultaneous, outgoing digital connections
- ❑ To define the number of digital retry attempts before the server falls back to Octel **A**nalog **N**etworking

To enable system-wide digital networking, complete menu 15.1.2, as follows:

1. From the Main Menu, access Menu 15 – Network Management, then menu 15.1, Octel Net**working** Administration, then menu 15.1.2, System Parameters for Digital Networking. Figure 12-24 is an example of menu 15.1.2 for an Octel 250.

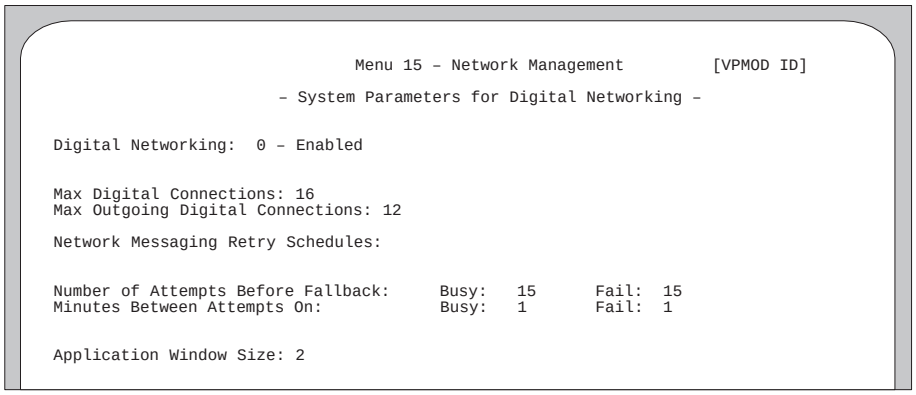


Figure 12-24. Example of Menu 15.1.2, System Parameters for Digital Networking for an Octel 250.

2. Enter ***0*** in the ***Digital Networking:*** field to enable digital networking.

3. For this installation, leave the default values in the remaining fields. The system manager can modify this menu later, if necessary.

Depending on the value chosen for the ***Max Digital Connections:*** field, up to 16 digital connections or tasks can be under way simultaneously, to and from the LAN card. The value in the ***Max Outgoing Digital Connections:*** field can range from ***1*** through ***16***, but must not be greater than the value in the ***Max Digital Connections:*** field. The default is ***12***. The difference between the values in these two fields is the number of digital connections reserved exclusively for incoming transmissions. Any connection can be used, at times, for incoming transmissions and, at other times, for outgoing transmissions, but not for both simultaneously.

Establishing Node Profiles and Testing Digital Networking

You can allow individual nodes to use digital networking by completing two new fields and entering a new option (introduced in Aria 2.0) in each node profile, menu 15.1.3:

- ***Node Type:*** field, new option ***2 – Octel Digital*** **Networking**
- ***IP Address:***
- ***Fallback:***

An example of a node profile for Aria 2.0 is shown in Figure 12-25, with the fields or options for digital networking highlighted. Note that some of the other field names have been revised from previous releases. Have the system manager tell you which remote node to use to test digital networking, or work with the system manager to establish the field entries for a new node profile. You can then enter the pertinent parameters to establish and test digital networking to that node. If digital networking has not been installed on any other nodes within Octel **N**etwork**ing**, then you cannot test message delivery.

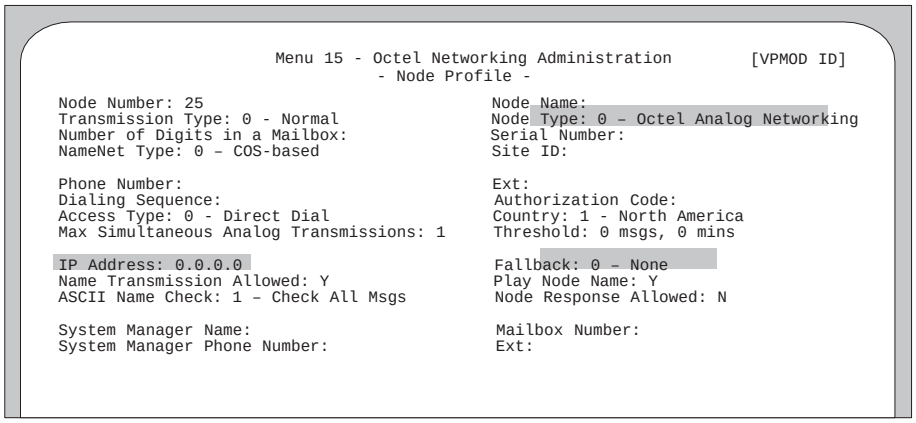


Figure 12-25. Example of Menu 15.1.3, Node Profile (Aria 2.0).

Establish a node profile for digital networking, and send test voice messages between nodes that have digital networking installed, as follows:

1. From the Main Menu, access Menu 15 – Network Management, then menu 15.1, Octel **Networking** Administration.

2. If you know the node number to which you want to send the test message, proceed to step 3. If you do not know the node number, determine it, as follows:

   a. Enter ***5*** to access menu 15.1.5, List Valid Node Numbers on the Network.

   b. In the ***Select Node:*** field, enter ***0*** to select all nodes. In the ***Select Message Queue:*** field, enter ***9*** to display all message queues.

   c. Review the nodes until you find the one to which you want to send the test message, and write down its number.

   d. Press ***Ctrl+C***. The screen returns to menu 15.1, Octel Net**working** Administration.

3. Enter ***3 – Define/Change Node Profile***. Menu 15.1.3, Node Profile, appears, with only the ***Node Number:*** field displayed.

4. Enter the number of the node to which you want to send the test message.

5. The resulting display depends on whether the node has been defined.
   - ❑ If this node was not defined previously, the remaining Node Profile fields appear on the screen (Figure 12-25). Work with the system manager to complete all fields not related to digital networking.
   - ❑ If this node has been defined, a list of options appears. Enter ***1*** for the Change Node Profile option. The Node Profile screen for the selected node appears, with the completed fields for that node displayed.
6. Change the ***Node Type:*** field to ***2 – Octel Digita*****l Networking** to allow messages to be delivered **to the** node through digital networking.
7. In the ***IP Address:*** field, enter the IP address of the node to which your test message will be sent.
8. Note the current entry in the ***Fallback:*** field, and set it to ***0 – None*** to ensure that the test message cannot be sent using analog fallback. The purpose of fallback is to allow messages to be sent using analog networking automatically, if the digital network becomes unavailable.
9. Press ***Send*** or press ***Enter*** repeatedly until the updated node profile is written to disk, and the weekday message-delivery schedule appears on the screen for a new node, or the list of Node Profile update options appears for a previously defined node.
10. Establish a desired weekday or weekend/holiday delivery schedule for the test message.
11. Set up test mailboxes on both the local and destination nodes. Enter ***2*** in the ***Octel Net*****working Priority** ***Level:*** field in a class of service in menu 7 selected for both test mailboxes.
12. Send a voice message from the local test mailbox to the test mailbox residing on the destination node. The server sends the message during the delivery times defined for that node.
13. Monitor the digital networking channels to confirm that the test message was delivered.
    a. At the local server's SMT, display the channel status by accessing menu 20, then the LAN Utilities menu, and then Display Channel Status.
    b. Press ***E*** for an automatic screen update every few seconds.
    c. Because the message might be delivered before you display the channel status, you might want to display digital networking statistics by accessing menu 20, then the LAN Utilities menu, then Network Statistics.

    Refer to Chapter 7 for details about these utilities.
14. Check the receiving mailbox on the remote node, after the time that you expect the message to be delivered.
    - ❑ If the message has been delivered, continue to step 15.
    - ❑ If the message has not been delivered, refer to Chapter 7 for problem-isolation procedures.

15. Leave the ***Fallback:*** field in the node profile set to ***0 – None***, or change it to ***1 – Octel Analo*g Networking**, as required.

16. Repeat this entire procedure from the remote node, sending a test message to the local node in which you have just installed digital networking.

    a. Monitor the digital networking channels at the remote node to confirm that the test message was delivered.

    b. Check the receiving mailbox on the local node, after the time that you expect the message to be delivered.

       ❑ If the message has been delivered, the testing is complete. Continue to step 17.

       ❑ If the message has not been delivered, refer to Chapter 7 for problem-isolation procedures.

17. If the database and messages on this server were transferred or will be transferred from an Aspen, Branch, or Maxum, you must consider the following:

    ❑ Advise the system manager that transferred subscribers must re-record their names. If digital networking is enabled, recorded names transferred from an Aspen, Branch, or Maxum to this server cannot be transmitted *digitally* to any Octel 350 that has any DLC cards (rather than all UDLC cards), according to that Octel 350's menu 15.1.2, System Parameters for Digital Networking. Analog fallback is not invoked in this case, so until the names are re-recorded, the names will not be available for transmission to any Octel 350s that have any DLC cards.

    ❑ If this server has any messages that were transferred during a conversion from an Aspen, Branch, or Maxum voice processor, Aria 2.0 software does not allow those messages to be transmitted *digitally* to any Octel 350 node that has any DLC cards (rather than all UDLC cards), because DLCs can play these converted messages *only* if they are re-recorded during analog transmission. Also, some IVR-generated messages can be sent using analog transmission only. The software automatically uses analog networking to send the messages described here, even if analog fallback is disabled. However, to ensure that analog transmission is possible, you or the system manager must perform these following steps, even if this server is intended for digital connection only:

       a. Configure at least one port for networking in menu 4.1.

       b. Complete the ***Phone Number:*** field in menu 15.1.3, Node Profile, for each remote node.

18. When you have tested digital networking to one remote node, use this procedure to enable and test digital networking to other Octel 250s or 350s at Aria 2.0 and with digital networking installed.

ONLINE UPGRADE USING DISKETTES 13

You can use a PC with Octel-proprietary software and phrases to perform an online upgrade. Equipment required to perform an online upgrade is listed in this chapter.

Consider the following before beginning an online upgrade:

- ❏ You cannot run an online upgrade and a scheduled tape backup at the same time. If you are performing an online upgrade, a scheduled backup can begin only *after* the upgrade is complete. If a scheduled tape backup is running, the online upgrade remains at the System Manager Terminal (SMT) Main Menu until the backup is complete.
- ❏ The Octel 250 server must function correctly at Aria 1.2 or newer software installed on both sides A and B of the system drives. Resolve any errors in the status log or any other problems. If Aria 1.2 is not already installed, refer to the *Aria 1.2 Release Manual*, P/N 101–1477–001, and upgrade the server to Aria 1.2.
- ❏ System-drive 0, area A, must be redundant with system-drive 1, area A. System-drive 0, area B, must be redundant with system-drive 1, area B.
- ❏ If any IVR phrases have been recorded, make the software and phrase areas A and B redundant before performing the online upgrade.
- ❏ If you use the PC's COM 2 port rather than its COM 1 port for the online upgrade, and *only if* the PC has Windows 95 installed, you must install the special utilities described in Product Alert 92.
- ❏ Online Help is available during the upgrade. Press the ***F1*** key from any screen to access Help.

If you are performing an online upgrade remotely, consider the following limitations:

- ❏ Use only Hayes V-series ULTRA Smartmodems, Boca Research Bocamodem 14.4Kbps V.32bis modems, or equivalent modems, running at 9600 baud.

- ❏ Use a good-quality telephone line; if the telephone line is too noisy, you might need to stop and restart the upgrade.
- ❏ Transmission problems could occur during error checking and correction (checksum/receipt) between the PC online tool and the server. For example, the PC and the server might lose synchronization, and you would need to reestablish the connection.
- ❏ Use the SMT port or an ASYNC port on the Octel 250; however, you must reboot the server if you use an ASYNC port that is not already established.
- ❏ A service person at the remote site must connect and configure a PC for the remote capability.
- ❏ You must monitor the upgrade while it is in process. If transmission or error-checking problems cause the upgrade to stop, you must restart the upgrade manually, although the upgrade tool restarts the procedure where it left off.

The following major steps are required to perform an online upgrade:

1. Make sure that the correct equipment is available.
2. Have the engineering bit turned on.
3. Verify the current and next boot areas.
4. Disconnect the SMT, and connect the PC to the server.
5. Install the online-upgrade tool on the PC hard drive.
6. Verify the values in the PC Setup Menu.
7. Load software and phrase diskettes into the PC hard drive.
8. Perform the automatic upgrade.
9. Verify the upgrade.
10. Change the boot area, and boot the new software.
11. If the engineering bit is off, have the service bit turned on. Make the software and phrase areas redundant.

Each of these major steps is detailed in the following sections.



Caution!

If the online upgrade fails at any point during the procedure, call the Octel Customer Services Center or your Octel distributor for assistance. Do not attempt to resolve problems by yourself.

Make Sure That the Correct Equipment Is Available

The hardware, firmware, and software described in the following sections must be available before you perform an online upgrade.

Required Hardware and Firmware

Check that the following hardware and firmware are available before you perform an online upgrade:

- ❑ An Octel 250 message server at Aria 1.2 or newer, with supported languages
- ❑ A PC, preferably an 80386, 80486, or Pentium portable PC with a 33-MHz or faster processor, with at least one serial COM port, 8 MB of RAM, and at least 20 MB of free space available on the hard drive

Direct connections between the PC and the server require the following:

- ❑ One female/female DB25/DB9 gender-changer adapter, P/N 003–1091–000, if the PC COM 1 port has a 9-pin male connector (provided in the online upgrade kit, P/N 278–1193–00X)
- ❑ One female/female DB25/DB25 gender-changer adapter, P/N 003–1092–000, if the PC COM 1 port has a 25-pin male connector (also provided in the online upgrade kit)

Remote connections between the PC and the server require the following:

- ❑ Two modems, Hayes V-series ULTRA 96 Smartmodems, Boca Research Bocamodem 14.4Kbps V.32bis modems, or equivalent, running at 9600 baud; one modem might be internal to the PC
- ❑ One modem cable
- ❑ One null-modem connector, P/N 003–1115–000 (provided in the online upgrade kit, P/N 278–1193–00X)
- ❑ Two 2- or 4-wire modular telephone cords
- ❑ Two telephone lines with an RJ11 jack

The Octel 250 requires the following:

- ❑ One 25-foot (7.6-meter), right-angled, DB25-to-DB9 SMT cable, P/N 057–1335–000
- ❑ One CCF card, P/N 044–2501–008 or newer version, with 20 MB of memory and the following EPROMs:

  Low byte, P/N 039–1553–007, revision 9610 or higher
  High byte, P/N 039–1554–007, revision 9610 or higher

Required Software

The names of the software and phrase diskettes used for the online upgrade depend on the server type, its configuration, and the languages supported. Each ***X*** in a part number in this chapter can be any number from 0 through 9. Each ***X*** in a software or phrase file name can be a letter or a number. Specific diskette part numbers change with each new release of diskettes.

You need the following software to perform an online upgrade:

- ❑ Online-upgrade-tool diskette, P/N 116–XXXX–XXX, at version 1.34 or newer
- ❑ Software diskettes; for example, A0200XXX.SU, P/N 316–XXXX–XXX
- ❑ Phrase diskettes; for example, XXXXXXXX.SPU, P/N 316–XXXX–XXX
- ❑ If the PC has Windows 3.x installed, you need DOS 5.0 or newer, installed on the PC.
- ❑ If the PC has Windows 95 installed and you are going to use the COM 2 port rather than the COM 1 port, you need diskettes with the utilities described in Product Alert 92, if these utilities have not already been installed. (If installed, the Windows 95 desktop has an icon named ***Pcupgrdw***.) Call the Octel Customer Services Center for the diskette that contains these utilities and for a copy of the utilities' installation instructions.

Have the Engineering Bit Turned On

Call the Octel Customer Services Center and have the engineering bit turned on. Be prepared to provide the pilot number of the hunt group assigned to the server. Wait for confirmation that the engineering bit has been turned on.

Verify the Current and Next Boot Areas

Later in this procedure, you will install the new software in the nonboot area of the message server. Before starting the upgrade, make sure that the current and the next system-boot areas are the same. Then, if the upgrade fails for any reason, the server can still be booted, using the software that is currently running.

Verify the current and next boot areas, as follows:

1. From the SMT Main Menu, access Menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the Set System Boot Area option.

   The ***System Boot Area:*** and ***Drive Next Boot Area:*** fields appear.

2. Verify that the software version in both areas A and B is some level of Aria 1.2 or newer software (***01.2X.XX–X***).

3. The entries in the current ***System Boot Area:*** and ***Drive Next Boot Area:*** fields could either be the same or they could be different. When you load the new software, it is loaded into the nonactive area.

   - ❑ If the entries in the ***System Boot Area:*** and ***Drive Next Boot Area:*** fields are the same, continue to the next section.
   - ❑ If the entries in these fields are not the same, do the following:

     a. At the ***Enter area (A or B):*** prompt, enter the area shown in the ***System Boot Area:*** field, then press ***Enter*** to make the current and next boot areas the same.

     b. At the ***Set Boot Area Complete. Press any key to continue.*** prompt, press any key. The Miscellaneous Utilities menu reappears.

     c. Press ***Ctrl+C*** until the Main Menu reappears.

Connect the PC and the Server

You can connect the PC to the server directly, with cables, or remotely, through modems. Use one of the following two sections, depending on the connection you will be using between the PC and the server.

Connecting the PC Directly to the Server

Place the PC next to the server. Figure 13-1 shows direct connections between the PC and an Octel 250.

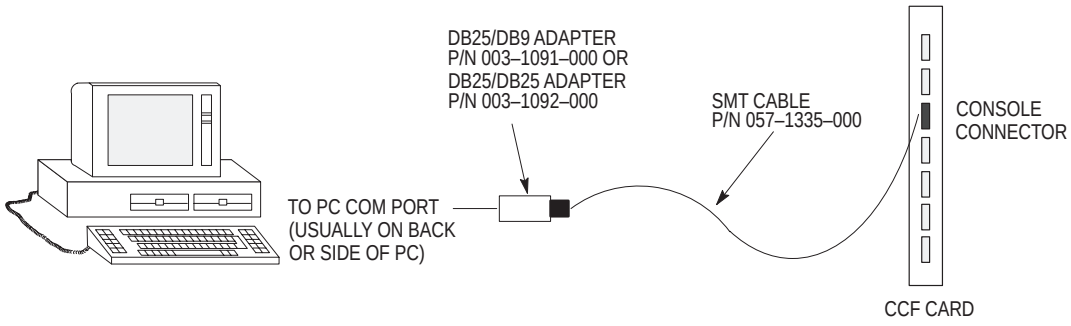


Figure 13-1. PC-to-Octel 250 Direct Connection.

Connect the PC and server, as follows:

1. With the server on line, disconnect the SMT cable, P/N 057–1335–000, from the back of the SMT. Set the SMT aside.

2. The PC COM ports are usually located on the back or side of the PC, and they usually have 9-pin male connectors.

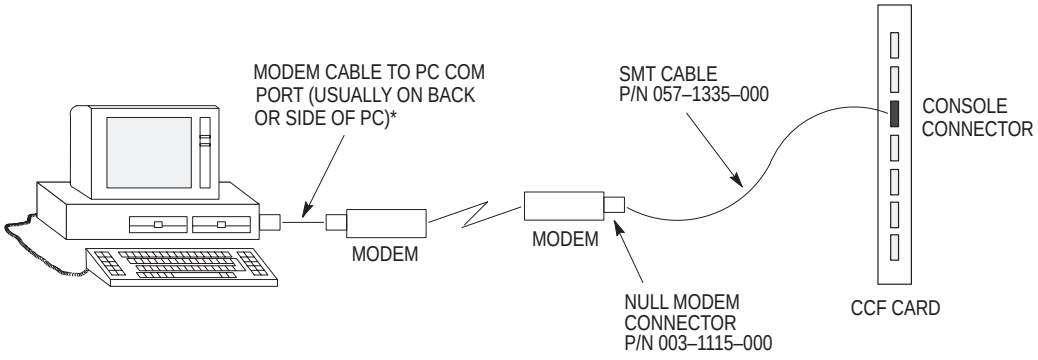
   - ❑ If the PC COM port to be used has a 9-pin male connector, plug the disconnected end of the SMT cable into a female/female DB25/DB9 gender-changer adapter, P/N 003–1091–000.
   - ❑ If the PC COM port to be used has a 25-pin male connector, plug the disconnected end of the SMT cable into a female/female DB25/DB25 gender-changer adapter, P/N 003–1092–000.

3. Plug the cable and adapter into a PC COM port, preferably the COM 1 port.

4. Leave the other end of the SMT cable plugged into the designated SMT port, normally the CONSOLE connector on the CCF card.

Connecting the PC Remotely to the Server

Figure 13-2 shows the remote connections between the PC and an Octel 250.



* USE DB25/DB25 OR DB25/DB9 ADAPTERS AS REQUIRED, DEPENDING ON MODEM CABLE AND PC COM PORT.

Figure 13-2. PC-to-Octel 250 Remote Connection.

If you have difficulty installing either of the two modems, refer to the manual that came with the modems.

Connect one of the modems to the server, as follows:

1. With the server on line, disconnect the SMT cable, P/N 057–1335–000, from the back of the SMT. Set the SMT aside.

2. Plug the disconnected end of the SMT cable into a null-modem connector, P/N 003–1115–000 (Figure 13-2).
3. Plug the cable and connector into the modem's data-terminal-equipment (DTE) interface port.
4. Leave the other end of the SMT cable plugged into the server's designated SMT port, normally the CONSOLE connector on the CCF card.

   You can use an alternative connection method (but one that requires rebooting the server if the flex ports are not already enabled): Plug the other end of the cable into an ASYNC port on the CCF card, then configure that ASYNC port in menu 6.3 as an SMT and reboot the server. Refer to Chapter 5 for information about menu 6 and configuring ASYNC ports.

   Do *not* use the MODEM port on the CCF card.
5. Plug an analog telephone line into the LINE port on the modem.
6. Plug the other end of the analog telephone line into the appropriate RJ11 telephone jack.
7. Plug a power cord into the ac jack on the modem, and plug the other end into a power outlet.
8. Configure the modem parameters, as described in the manual provided with the modem. Refer to the *Peripheral Equipment* manual or Chapter 4 for parameters required by the server for its modem.

Connect the other modem to the PC, as follows:

1. Plug one end of the modem cable into the modem's DTE interface port.
2. Plug the other end of the modem cable into a PC COM port, preferably the COM 1 port. Use DB25/DB9 or DB25/DB25 adapters as required, depending on the modem cable used and the PC's COM port. The PC's COM ports are usually located on the back or side of the PC, and they usually have 9-pin male connectors.
3. Plug an analog telephone line into the LINE port on the modem.
4. Plug the other end of the analog telephone line into the appropriate RJ11 telephone jack.
5. Plug a power cord into the ac jack on the modem, and plug the other end into a power outlet.
6. Configure the modem parameters, as described in the manual provided with the modem. Refer to the *Peripheral Equipment* manual for parameters required by the PC for its modem.

Install the Online Upgrade Tool on the PC Hard Drive

Determine the current level of the online upgrade tool installed on the PC. Refer to the "Required Software" section, page 13-4, for the required online-upgrade-tool level. If the required level has already been installed on the PC, proceed to the next section of this procedure. Otherwise, install the online upgrade tool, as follows:

1. If the PC has Windows 3.x (rather than Windows 95) installed, do the following, as applicable:

   - ❑ Make sure that DOS 5.0 or newer is installed on the PC hard drive. It must be installed before you can load the upgrade tool. For assistance, refer to the DOS software manual.
   - ❑ If screen-saver software is installed in the autoexec.bat file on the PC, disable the software by modifying the file. For assistance, refer to the screen-saver software manual.
   - ❑ For PCs that run screen-saver software installed in Windows 3.1, exit Windows (or do not start it in the first place), so that you do not need to disable the screen-saver.
   - ❑ If power-management or battery-conservation software is installed on the PC, disable the software by modifying the autoexec.bat file on the PC. For assistance, refer to the software manual.



Caution!

Do not run an online upgrade on a laptop PC using a battery. The PC must be plugged into an electrical wall outlet. Otherwise, the conversion might fail because of loss of battery power.

2. If you are using a laptop PC for the upgrade, make sure that the laptop PC is plugged into an electrical wall outlet. *Do not* run an online upgrade when a laptop PC is running on a battery.

3. For a PC with Windows 3.x installed, boot the PC to the ***C:***\> prompt.

   For a PC with Windows 95 installed, click ***Start***, click ***Shut Down***, and click ***Restart the computer in MS-DOS mode***.

4. Place the online-upgrade-tool diskette into diskette drive A: (or drive B:, as appropriate).

5. At the ***C:***\> prompt, type ***a:*** (or ***b:***, as appropriate), then press ***Enter***.

   If no diskette is in the diskette drive when this step is performed, the ***Not ready reading drive A: Abort, Retry, Fail?*** message appears. Insert the diskette into drive A:, type ***a*** (for ***Abort***), and repeat this step.

6. At the ***A:***\> prompt, type ***install a: c:***, and press ***Enter*** to specify the hard drive as the destination for the online-upgrade-tool software. The PC's ONLINE UPGRADE Installation Program screen appears, as shown in Figure 13-3.

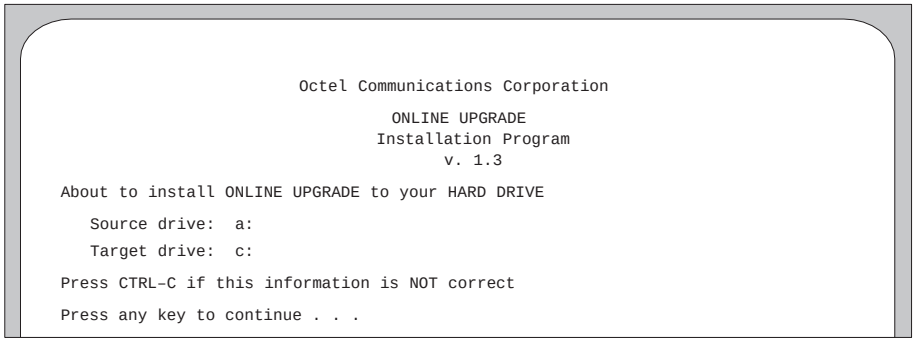


Figure 13-3. The PC's ONLINE UPGRADE Installation Program Screen.

7. Press any key. The names of the upgrade files are displayed on the screen as they are copied onto the PC hard drive. When the upgrade-tool installation is complete, the screen shown in Figure 13-4 appears.

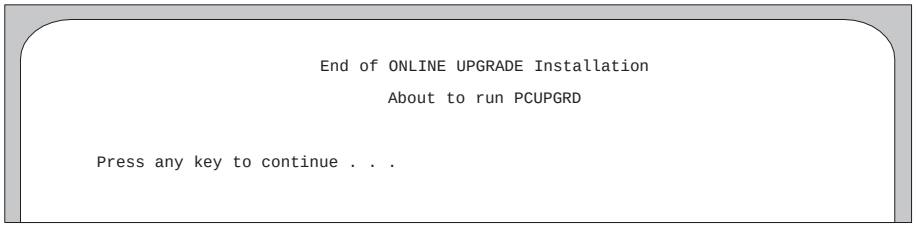


Figure 13-4. Screen for the End of ONLINE UPGRADE Installation.

8. Press any key. Remove the diskette, as prompted on the screen.

9. If the PC has Windows 3.x installed, at the ***C:\PCUPG>*** prompt, type ***pcupgrd*** and press ***Enter*** to run the upgrade procedure from the hard drive. The Online Upgrade Main Menu screen appears, as shown in Figure 13-5. Proceed to the next section of this procedure.

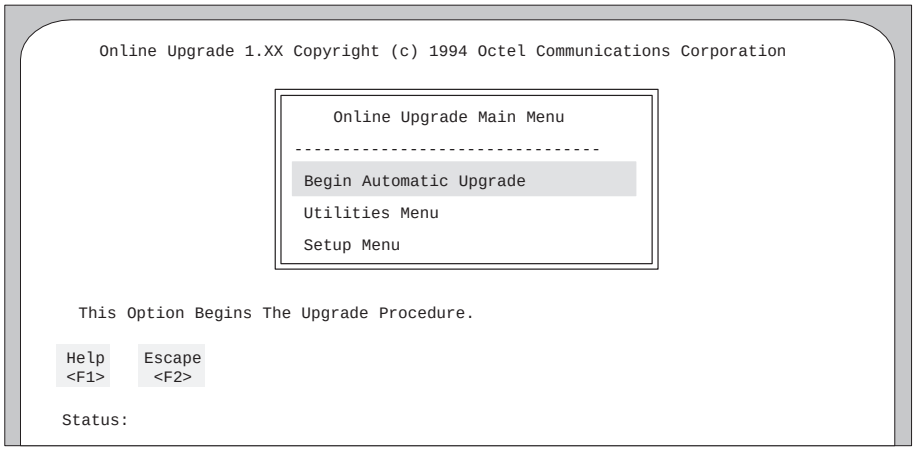


Figure 13-5. Online Upgrade Main Menu.

10. If the PC has Windows 95 installed and you are using the PC's COM 2 port, you *must* install the special utilities described in Product Alert 92. Call the Octel Customer Services Center to obtain the diskette for these utilities, and follow the installation instructions provided with the diskette. Installing these utilities establishes two new icons on the desktop. After you install the utilities, close any open applications, double-click ***Pcupgrdw*** (a new icon) and click ***Yes*** to restart the PC in MS-DOS mode and launch the online upgrade tool. The Online Upgrade Main Menu appears (Figure 13-5).

    Do *not* install the utilities obtained from the Customer Services Center if the PC has Windows 3.x installed.

Verify the Values in the PC Setup Menu

Before copying software and phrases onto the PC, verify that the online upgrade utility is configured to copy the files to the correct directory. Verify the configuration, as follows:

1. From the Online Upgrade Main Menu, select the Setup Menu option, then press ***Enter***. A screen similar to Figure 13-6 appears.

2. Change the setup values, as necessary, so that they match those shown in Figure 13-6. Press ***F1*** for details about each field.

   Whether the SMT is connected to the SMT-allocated port (CONSOLE on the CCF card) or to an ASYNC port, the SMT baud rate is set to 9600; you must also set the PC baud rate to 9600.

3. When all fields are correct, press ***Enter***. The Online Upgrade Main Menu reappears (Figure 13-5).

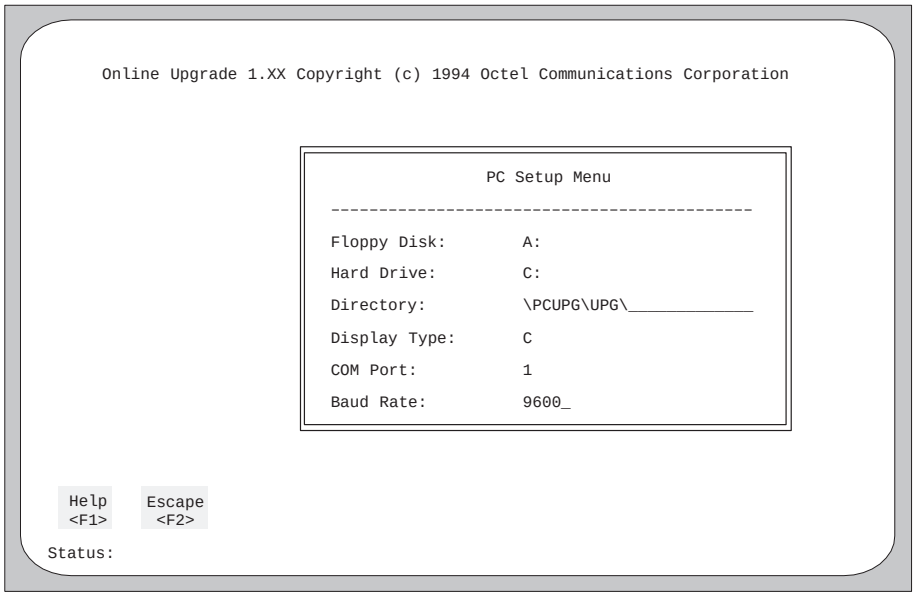


Figure 13-6. Example of PC Configuration Screen.

Load Software and Phrase Diskettes Onto the PC Hard Drive

An online upgrade uses 3½-inch Octel-proprietary software and phrase diskettes. These diskettes contain files to upgrade a server from one software release to another. Phrase diskettes contain language data and phrases specific to a particular language. If a server has multiple languages, phrase diskettes for each language are required. Some upgrades do not require phrase diskettes.

The software and phrase diskettes are labeled with file names, part numbers, and the number of diskettes in each group, if more than one diskette is required.

The procedures for loading software and phrase diskettes onto the PC hard drive are identical. However, each diskette group is loaded independently. Load software or phrase diskettes, as follows:

1. From the Online Upgrade Main Menu, access the Utilities Menu, then press ***Enter***. The Utilities Menu appears, as shown in Figure 13-7.

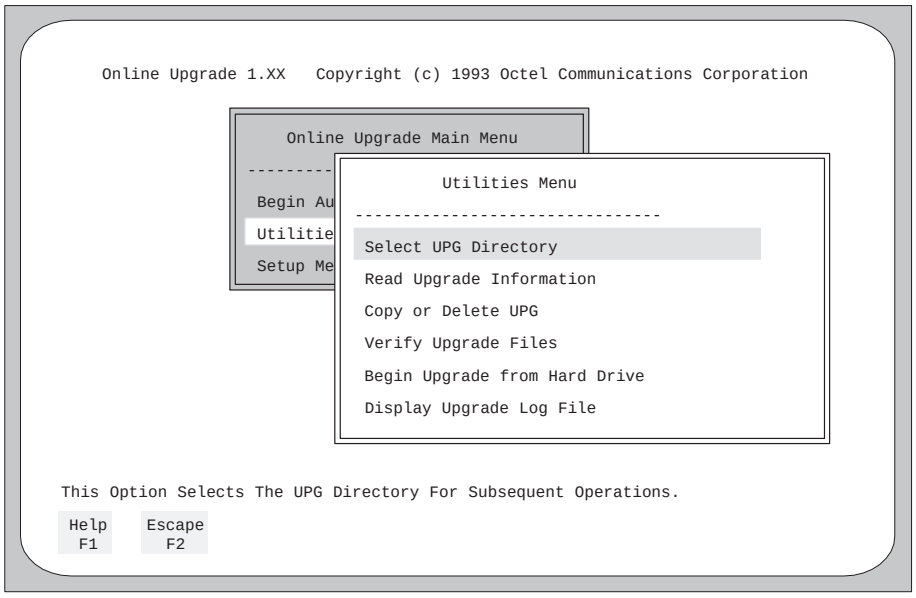


Figure 13-7. Utilities Menu.

2. From the Utilities Menu, select the Copy or Delete UPG option, then press ***Enter***. The Copy / Delete UPG Menu appears, as shown in Figure 13-8.

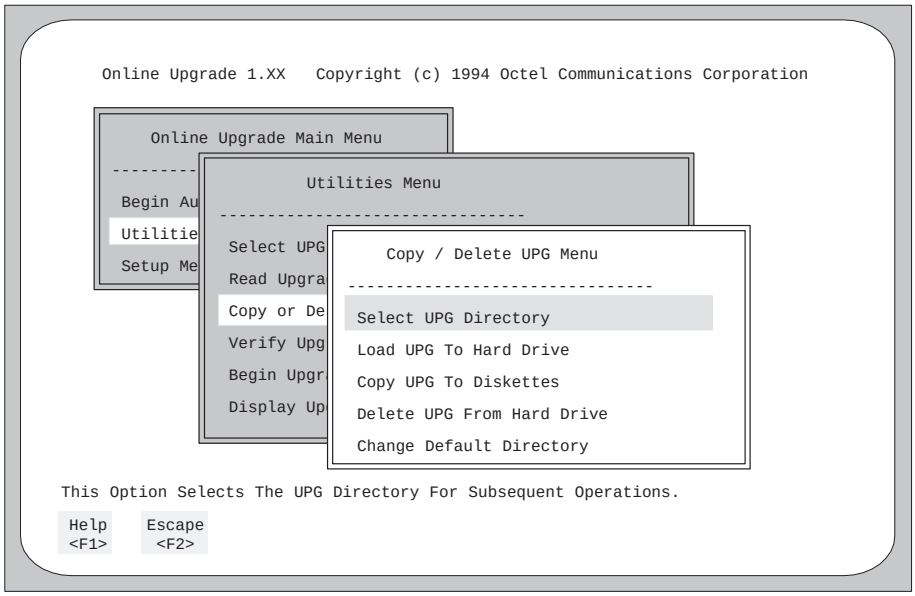


Figure 13-8. Copy / Delete UPG Menu.

3. From the Copy / Delete UPG menu, select the Load UPG To Hard Drive option, then press ***Enter***. Prompts appear in a prompt box near the bottom of the screen, as shown in Figure 13-9.

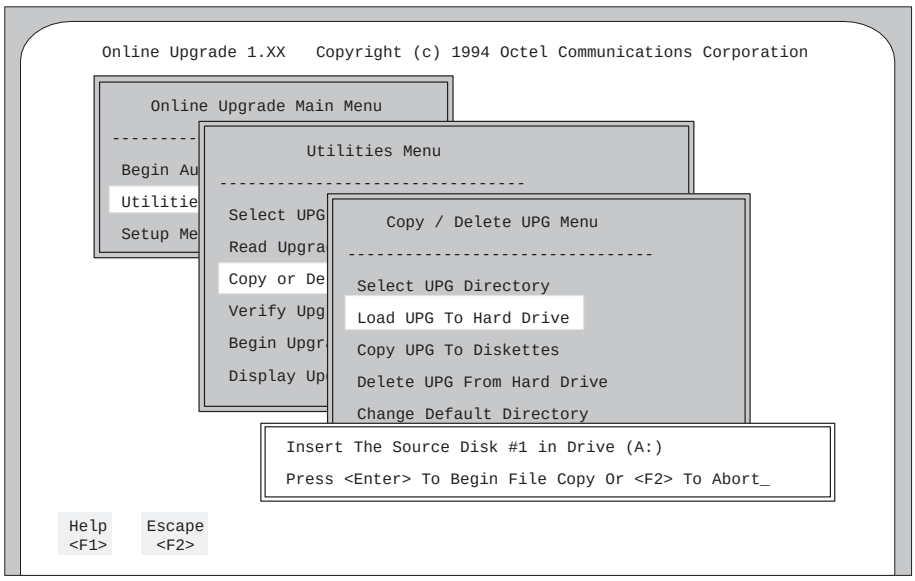


Figure 13-9. Screen Prompts for Beginning the File Copy.

4. At the ***Insert The Source Disk #1 in Drive (A:)*** prompt, insert the first software or phrase diskette into drive A, then press ***Enter*** to begin copying files. Press ***F2*** to abort the copying. A verification prompt, similar to the one shown in Figure 13-10, appears in the prompt box.

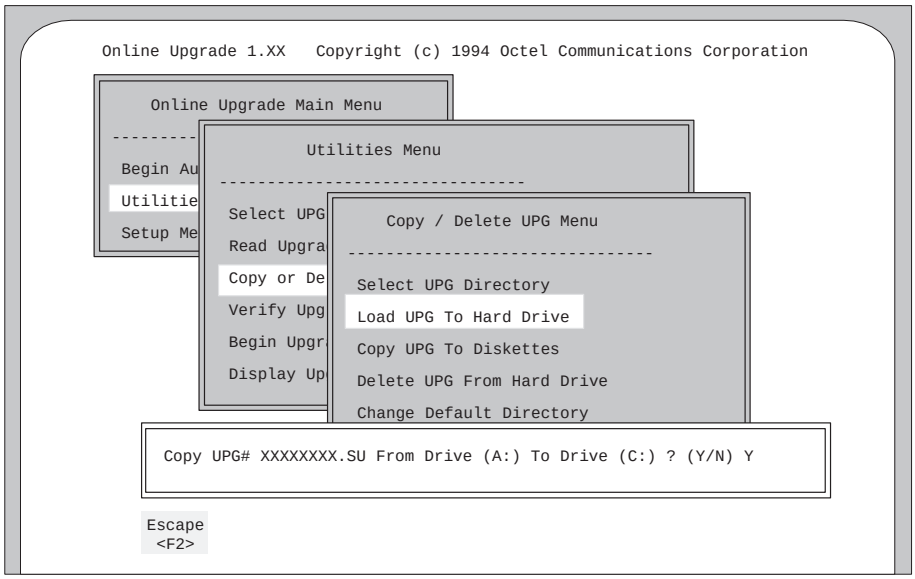


Figure 13-10. Verification Prompt.

5. At the verification prompt, press ***Enter*** to accept the default of ***Y***. Copying then begins. Eventually, the Status Messages screen appears, an example of which is shown in Figure 13-11.

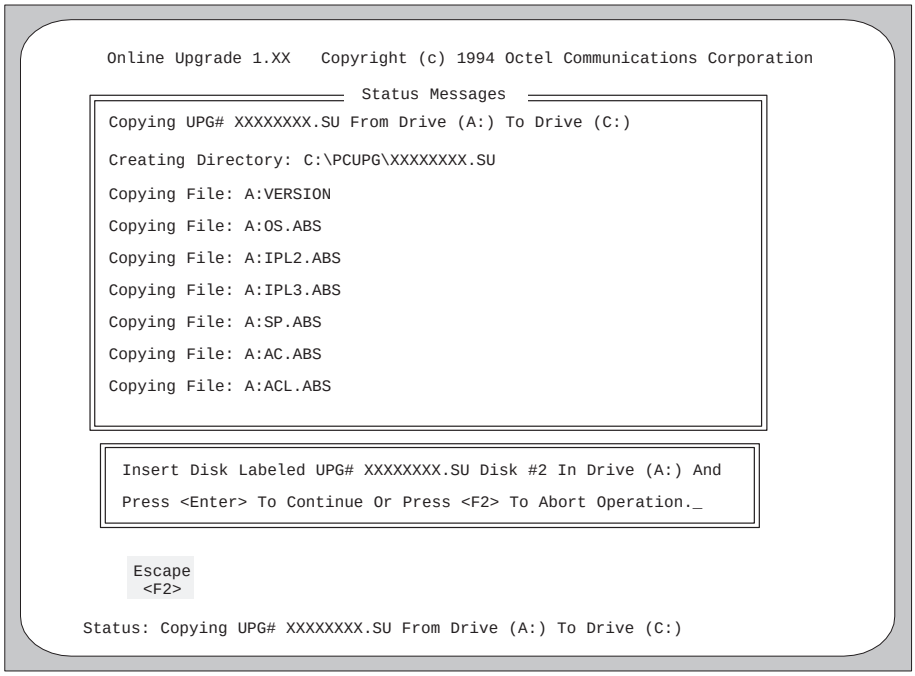


Figure 13-11. Example of Status Messages Screen.

6. Remove disk #1 and insert disk #2 in the diskette drive, and press ***Enter***. Continue copying diskettes, as instructed. After all diskettes have been copied, the ***File Copy Complete, Press <Enter> to Continue.*** prompt appears in the prompt box on the Status Messages screen, as shown in Figure 13-12.

7. Remove the final diskette and press ***Enter*** to return to the Copy / Delete UPG Menu (Figure 13-8).

8. Press ***F2*** twice. The Online Upgrade Main Menu reappears.

9. Repeat steps 1 through 8 to load all sets of diskettes, as required. If there are multiple languages, load each set of phrase diskettes separately.

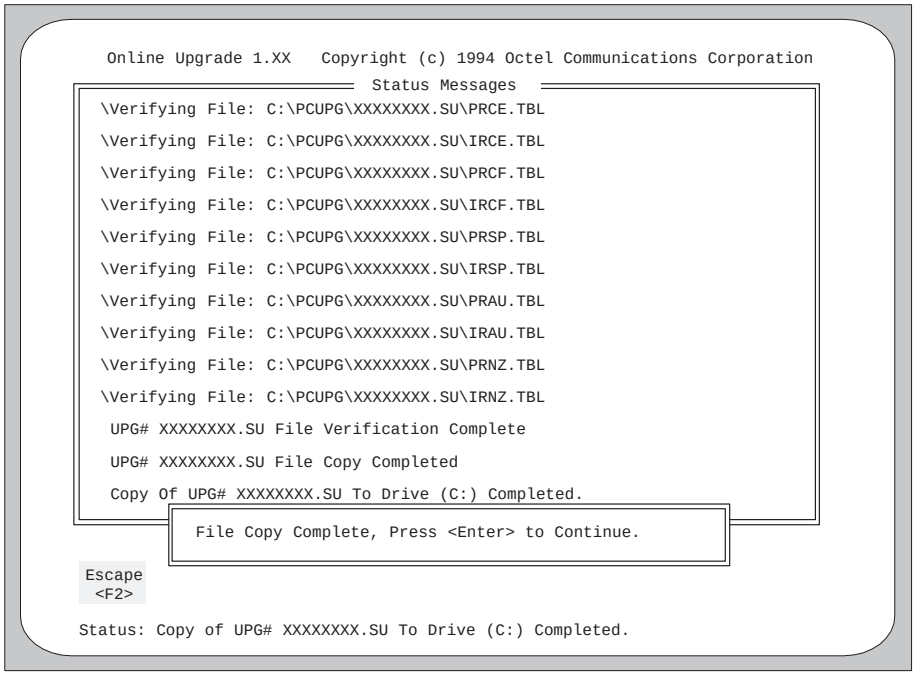


Figure 13-12. Status Messages Screen With File Copy Complete Message.

Perform the Automatic Upgrade

Although the upgrades for software and for phrases are independent of each other, the upgrade processes are identical. The upgrade might not include new phrases. Both upgrade processes require using the Begin Automatic Upgrade option from the Online Upgrade Main Menu.

Caution!

Make sure that you upgrade the phrases *before* you upgrade the software. If the entire upgrade is not completed for any reason, the server can work with new phrases and old software, but it might not work with new software and old phrases.

Upgrade the phrases *before* you upgrade the software. Perform the following steps to upgrade phrases or software:

1. At the Online Upgrade Main Menu, select the Begin Automatic Upgrade option, then press ***Enter*** to display the names of previously loaded software and phrase diskette groups, in the UPG Directories menu, as shown in Figure 13-13.

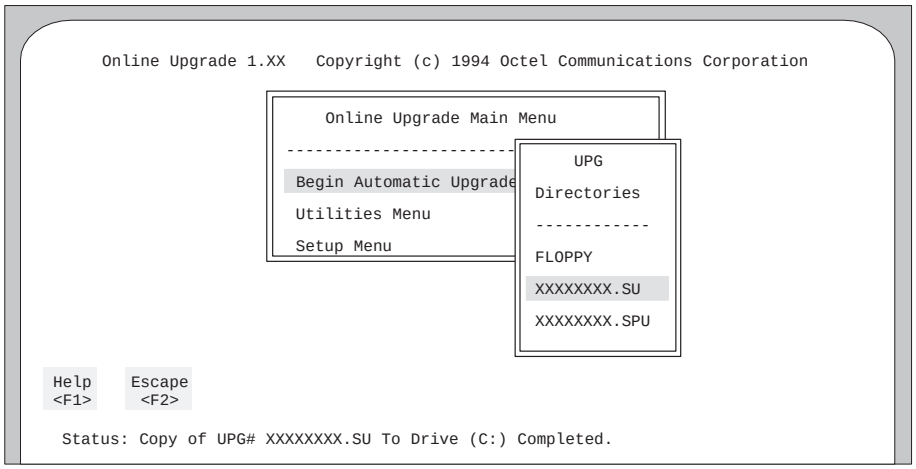


Figure 13-13. UPG Directories Menu.

2. Select the appropriate phrase or software UPG name, XXXXXXXX.SPU or XXXXXXXX.SU. Press ***Enter***.

   If you are unsure which UPG name to select, check the UPG number on the labels of the diskettes that you have loaded on the PC hard drive. If you are still unsure, call the Octel Customer Services Center or your Octel distributor for assistance.

3. The UPG Directories menu disappears and the ***Is This A Remote Upgrade? (Y/N): N*** prompt appears in a prompt box.

   - ❏ If you are performing the upgrade through a direct connection, leave the default of ***N*** and press ***Enter***, then skip to step 5.
   - ❏ If you are performing the upgrade remotely, type ***Y*** and press ***Enter***.

4. If you enter a ***Y***, the Modem Setup Menu appears, as shown in Figure 13-14. In the ***Dial String:*** field, enter the telephone number of the remote modem, and press ***Enter*** twice. The screen returns to the Online Upgrade Main Menu.

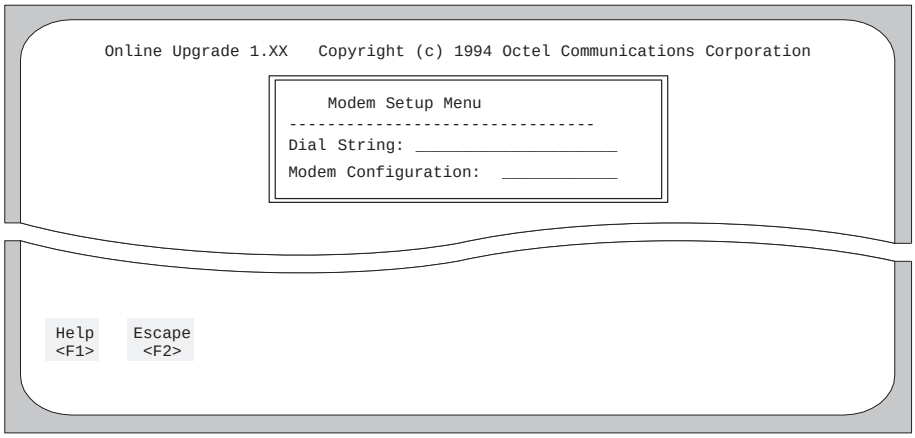


Figure 13-14. Modem Setup Menu.

5. The ***Erase Upgrade Log File? (Y/N): Y*** prompt appears in a prompt box. Leave the default of ***Y*** and press ***Enter*** to delete the current log file, or type ***N*** and press ***Enter*** to maintain and append the current log file.

   The upgrade log file tracks all operations performed by the upgrade tool during an online upgrade. If the log file is erased, a new one is created. If it is not erased, the existing log file continues and is appended with new log file information. The log file can be viewed by selecting the Display Upgrade Log File option from the Utilities Menu.

6. At the ***Enter System Manager Password:*** prompt that appears in a prompt box, enter the system manager password, then press ***Enter***. Status messages appear and scroll until a screen similar to Figure 13-15 appears.

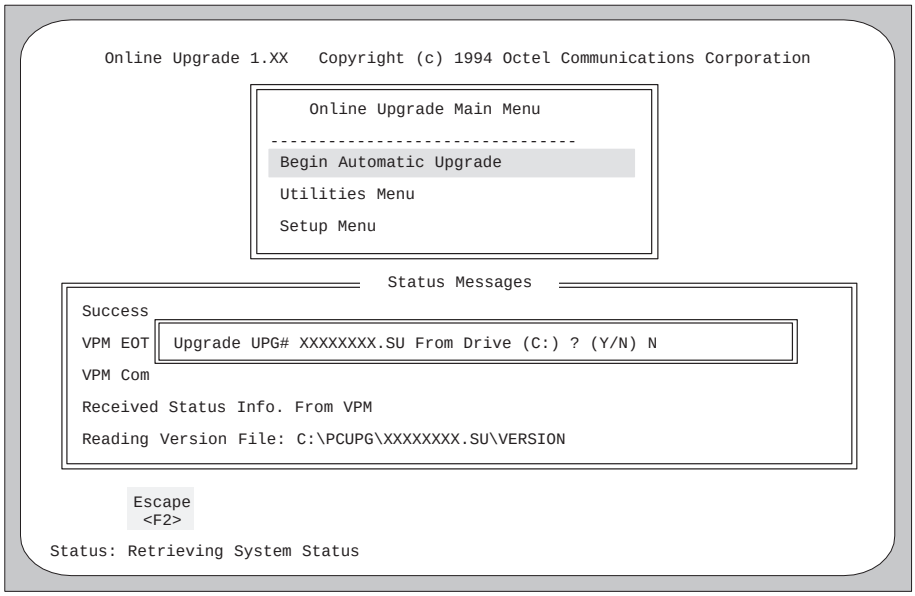


Figure 13-15. Example of Status Messages Box With Confirmation Prompt.

7. At the ***Upgrade UPG# XXXXXXXX.SU From Drive (C:) ? (Y/N) N*** prompt (Figure 13-15), type ***Y*** and press ***Enter*** to continue the upgrade; leave the default of ***N*** and press ***Enter*** to discontinue the upgrade.

   Status messages scroll again, until a detailed Status Messages box appears. Figure 13-16 is an example of the detailed Status Messages box.

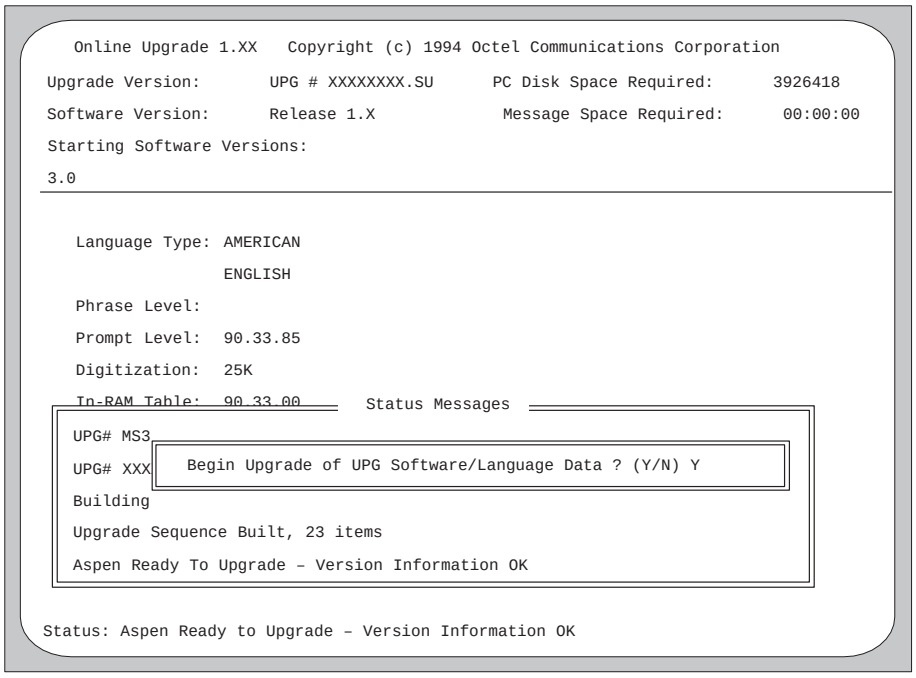


Figure 13-16. Example of Status Messages Box With Begin Automatic Upgrade Prompt.

8. If all displayed information is correct, at the ***Begin Upgrade of UPG Software/Language Data ? (Y/N) Y*** prompt, press ***Enter*** to accept the default of ***Y.*** The Online Upgrade Status screen appears. Figure 13-17 is an example of an upgrade in process.

   - ❑ During an online upgrade, do *not* press ***Ctrl+C*** or ***F2***; the upgrade might not restart correctly.
   - ❑ If you must abort the upgrade, detach the modem cable from the PC. When you resume the upgrade, it will resume at the beginning of the particular file that was loading at the time you detached the cable.

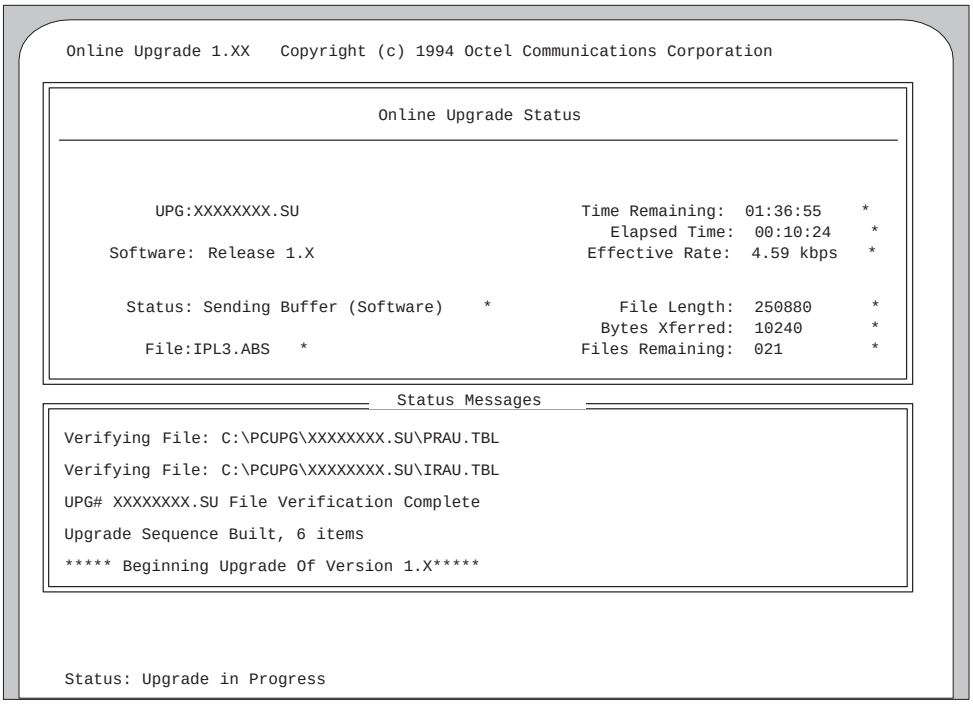


Figure 13-17. Example of Online Upgrade Status Screen Showing Upgrade in Process.

9. For phrases, the upgrade continues for 45 minutes or more; for software, it continues for 2 hours or more. The time depends on parameters such as system size, baud rate, and languages. Status messages scroll as the upgrade processes are performed. The values in the fields identified with an asterisk (*) in Figure 13-17 change as upgrade files are downloaded to the server.

   When the upgrade is complete, the ***Upgrade Complete – Press <Enter> To Continue*** prompt is displayed on the Online Upgrade Status screen, as shown in Figure 13-18.

10. Press ***Enter*** to continue. The ***Delete UPG# XXXXXXXX.SU Files from Drive (C:) ? (Y/N)*** prompt appears. Type ***Y*** to delete the UPG files from the PC hard drive; type ***N*** to retain the UPG files on the PC hard drive.

    The screen returns to the Online Upgrade Main Menu.

11. If additional phrases are to be upgraded, repeat steps 1 through 10 for each of the other phrase sets.

12. Repeat steps 1 through 10 using the software diskettes to upgrade the software.

13. When all upgrades are complete, press ***F2***. The ***Exit Online Upgrade And Return To DOS? (Y/N) Y*** prompt appears. Press ***Enter*** to return to the ***C:\PCUPG>*** prompt.

14. Reactivate the screen-saver software on the PC, if necessary.

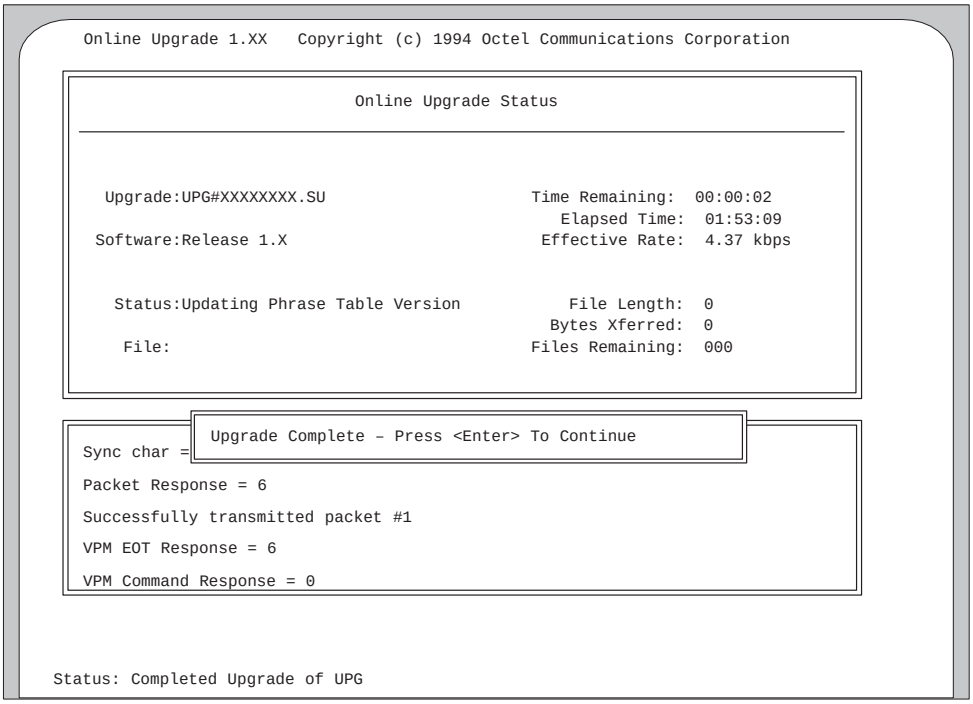


Figure 13-18. Example of Online Upgrade Status Screen Showing Upgrade Complete.

Verify the Upgrade

Verify that the upgrade was successful, as follows:

1. Reconnect the SMT to the server, as it was before the upgrade.
2. From the SMT Main Menu, access Menu 20 – Service Operations, then the Drive Copy Utilities menu, then the Display Drive Info option.
3. At the ***Enter position of source drive [0–1]:*** prompt on the Display Drive Info screen, enter ***0*** to display information about system-drive 0. The ***Drive Serial No:*** field is displayed.
4. Verify that the drive serial number is correct. Then, at the ***Is this the correct drive? (y/n):*** prompt, press ***Y*** and press ***Enter*** to display drive information showing the current software version in the ***System Boot Area:*** field and the new software version in the nonactive area.
5. Press ***Ctrl+C*** and repeat steps 2 through 4 for system-drive 1, if desired.
6. Press ***Ctrl+C*** until the Main Menu reappears.

Change the Boot Area and Boot the New Software

Because the new software is installed in the nonboot area, you must change the boot area and reboot the server for the new software to operate. Change the boot area and reboot the server, as follows:

1. Access the status log (menu 13.2) and make sure that all errors have been corrected.
2. If any patches must be installed on the new software, install them now, before you reboot the server.
3. From the SMT Main Menu, access Menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the Set System Boot Area option.

   The Set System Boot Area screen appears, with ***System Boot Area:***, ***Drive Next Boot Area:***, and other fields displayed.
4. At the ***Enter area (A or B):*** prompt, enter the letter for the area *not currently used* as the system boot area.

5. At the ***Set Boot Area Complete*** message, press any key to continue, then press ***Ctrl+C*** until the Main Menu reappears.

6. From the SMT Main Menu, access Menu 13 – System Maintenance, then option ***1*** to select Shut Down with Dump.

7. At the ***Enter "1" – allow lines to clear, "2" immediate shutdown, "Break" – Cancel:*** prompt, enter ***1*** to allow the lines to clear before the shutdown.

   The shutdown begins. After approximately 1 minute, the SMT displays a ***RESTARTING*** message, then reboot begins.

8. At the prompt for selecting B, ^DB, or ^DD for the type of boot, *do not respond.* When the ***ENTER BOOT COMMAND:*** prompt appears, enter ***A***. The server reboots, using the new software.

   If the upgrade loaded into the system drive includes new firmware for the EPROMs on the CCF card or the LAN card, the EPROMs are automatically updated, immediately after the protected-mode initial program load (PIPL). The upgrade of the EPROMs can take several minutes, and it displays a message on the SMT, informing you of the upgrade. You do not need to take any action. The server then reboots, using the new firmware.

Make Software and Phrase Areas Redundant

Having two software areas on the server allows an upgrade to be performed on line and allows the new software to be tested, with the option of returning to the previous software release.

At this point in the upgrade process, the server should be running with the new software. The old software should still be in the nonboot area. Octel recommends that the server be run with the new software for approximately 1 week, to ensure that the server is running smoothly, before you make the nonboot area redundant with the boot area.



Caution!

If problems arise with the new software, call the Octel Customer Services Center or your Octel distributor immediately. *Do not* attempt to correct the problems by yourself.

If you have entered values or the system manager has entered values for any of the new SMT fields associated with the new software, the server will not operate correctly with the old software.

If the server is running smoothly with the new software, make the software and phrase areas redundant, as follows:

1. If the engineering bit has automatically turned off (1 week after it was turned on), call the Octel Customer Services Center or your Octel distributor, and have the service bit turned on. Be prepared to provide the pilot number of the hunt group assigned to the server. Wait for confirmation that the service bit is on.

2. From the SMT Main Menu, access Menu 20 – Service Operations, then the Drive Copy Utilities menu, then the Make Drive(s) Redundant menu, then the Make Software Areas A and B Redundant option.

   A screen appears that shows the current ***System Boot Area:*** field, the ***Drive Next Boot Area:*** field, and the software versions of these two areas.

3. At the ***Make Software area [destination] a redundant copy of area [source]? (y/n):*** prompt, make sure that the source area contains the newest software, then type ***Y*** and press ***Enter*** to make the software areas redundant.

4. At the ***Software areas now redundant... Press any key to continue*** prompt, press ***Ctrl+C*** to return to the Make Drive(s) Redundant menu.

5. If you did not upgrade any phrases, skip to step 8.

   If you upgraded any phrases, enter the number for the Make Phrase Areas A and B Redundant option.

6. A screen appears, showing the current ***System Boot Area:*** field, the ***Drive Next Boot Area:*** field, and the phrase versions of these two areas. At the ***Make Phrase area [destination] a redundant copy of area [source]? (y/n):*** prompt, make sure that the source area contains the newest phrases, then type ***Y*** and press ***Enter*** to make the phrase areas redundant.

7. At the ***Phrase areas now redundant... Press any key to continue*** prompt, press any key.

8. Press ***Ctrl+C*** until the Main Menu reappears.

9. If the engineering bit is on, call the Octel Customer Services Center and have it turned off. If the service bit is on, it will be turned off automatically at midnight.

ONLINE UPGRADE USING TAPE 14

If the server is already at Aria 2.0 or newer software, you can use the SCSI Media Applications option to upgrade software and phrases quickly from a tape in the tape drive. (This option might have other uses in the future.) The upgrade procedure requires that the service bit be on.

The major steps are as follows:

1. Verify that hardware and firmware requirements are met.
2. Have the service bit enabled.
3. Install a tape drive if the server does not already have one.
4. Verify the current and next boot areas.
5. Use a tape to perform the upgrade.
6. Verify the upgrade.
7. Reset the boot area, and boot the new software.
8. Make software and phrase areas redundant.
9. Remove the tape drive, if it was installed for this upgrade.

These steps are detailed in the following sections.

Verify Hardware and Firmware

Verify that all hardware and firmware requirements to upgrade to the software *newer than* Aria 2.0 are met. Requirements for Aria 2.0 software were met when it was installed in the server.

Have the Service Bit Enabled

Call the Octel Customer Services Center or your Octel distributor and have the service bit turned on. Be prepared to provide the pilot number of the hunt group assigned to the server. Wait for confirmation that the service bit has been enabled. (The service bit automatically turns off at midnight.)

Install a Tape Drive, if Necessary

If the server does not already have a tape drive installed, install one temporarily, using the procedure for adding a tape drive in Chapter 12. If the Octel 250 is at Aria 2.0, after you install the tape drive, use the Enable Drive utility to enable it; use the Disable Drive utility to disable the tape drive before removing it. Refer to Appendix A.

Feature option 77 – System Backup & Restore does *not* have to be enabled to perform a software upgrade from a tape.

Verify the Current and Next Boot Areas

Later in this procedure, you will install the new software in the nonboot area of the message server. Before starting the upgrade, make sure that the current and the next system boot areas are the same. Then, if the upgrade fails for any reason, the server can still boot by using the software that is currently running.

Verify the current and next boot areas, as follows:

1. From the SMT Main Menu, access Menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the Set System Boot Area option.

   The Set System Boot Area screen appears, with the ***System Boot Area:***, ***Drive Next Boot Area:***, and other fields displayed.

2. Verify that the software in both areas A and B is some version of Aria 2.0 (***02.0X.XX–X***) or newer software.

3. The entries in the current ***System Boot Area:*** and ***Drive Next Boot Area:*** fields could either be the same or they could be different. When you load the new software, it is loaded into the nonactive area.

   - If the entries in the ***System Boot Area:*** and ***Drive Next Boot Area:*** fields are the same, press ***Ctrl+C*** repeatedly until the Main Menu reappears, then continue to the next section.
   - If the entries in these fields are not the same, do the following:

     a. At the ***Enter area (A or B):*** prompt, enter the area shown in the ***System Boot Area:*** field, then press ***Enter*** to make the current and next boot areas the same.

     b. At the ***Set Boot Area Complete. Press any key to continue.*** prompt, press any key. The Miscellaneous Utilities menu reappears.

     c. Press ***Ctrl+C*** until the Main Menu reappears.

Perform the Upgrade From a Tape

The server must have Aria 2.0 or newer software already installed to use a tape for software upgrades. Perform the software upgrade, as follows:

1. From the SMT Main Menu, access Menu 20 – Service Operations, then the SCSI Media Applications menu.

2. If there is a tape in the tape drive for another purpose, such as a scheduled backup, remove that tape.

3. Make sure that the tape with the upgrade software is write-protected, in case a backup is scheduled to start soon after the upgrade is completed. Hold the tape in the same position as for inserting it into the tape drive, and slide the write-protect tab, located on the right side at the back of the tape cartridge, to the left.

4. Insert the tape with the new software level into the tape drive. After several seconds, the green LED on the tape drive starts blinking. Wait approximately 10 seconds, until the green LED stays on, which indicates that the tape is loaded. If the amber LED blinks, you must clean the tape drive (refer to Chapter 10).

5. At the ***Enter Choice:*** prompt on the SCSI Media Applications menu, enter the number for the Select Device option. The SCSI Device List menu appears.

6. At the ***Enter Choice:*** prompt, enter the number to select the tape drive. The ***opening device...*** prompt appears.

7. At the ***Press any key to display File Catalog (^C to Exit)*** prompt, press any key. Up to several minutes later, the File Catalog menu appears. Depending on the release to which you are upgrading, a list of choices is displayed.



Caution!

Make sure that you upgrade all phrases *before* you upgrade the software. If the upgrade is not completed for any reason, the server can work with new phrases and old software, but it might not work with new software and old phrases.

8. Upgrade any required phrase files before you upgrade the software.

   Phrase file names in the File Catalog list have .SPU extensions; software file names have .ZSU extensions. The dates and times shown with the file names indicate when the files were created, not when the tape was written.

   At the ***Select file number (x – y) or press RETURN or ^C to exit:*** prompt, enter the number associated with the appropriate phrase or software file to be loaded, and press ***Enter***. After several seconds, the File Content Summary screen appears, with the selected File Name and its Creation Time at the top.

9. At the ***Proceed to download software/phrases (Y/N)?*** prompt, press ***Y*** to proceed with the upgrade. A phrase upgrade takes approximately 5 to 15 minutes. A software upgrade takes approximately 3 to 5 minutes.

   If the upgrade fails for any reason, make notes about the symptoms, and call the Octel Customer Services Center or your Octel distributor. Do not attempt to correct the problem by yourself.

10. At the ***DOWNLOAD COMPLETE. Press any key to return to the File Catalog...*** prompt, press any key. The SMT returns to the File Catalog menu.

11. Repeats steps 8 through 10 for other phrase or software files, if necessary, or press ***Ctrl+C*** to exit.

12. If you have pressed ***Ctrl+C***, the ***If required, please make sure the original media is reinserted. Press any key to continue...*** prompt appears. Do *not* remove the tape from the tape drive at this time.

13. Press any key. The ***Closing device...*** message appears, then the SMT returns to the SCSI Media Applications menu.

14. Press ***Ctrl+C*** until the SMT returns to the Main Menu.

15. Eject the upgrade tape. Wait until the green LED on the tape drive goes out and the tape has been ejected.

16. Reinsert the original tape, if present and removed in step 2, into the tape drive.

Verify the Upgrade

Verify that the upgrade was successful, as follows:

1. From the Main Menu, access Menu 20 – Service Operations, then the Drive Copy Utilities menu, then the Display Drive Info option.

2. At the ***Enter position of source drive [0–1]:*** prompt, enter ***0*** to display drive information about system-drive 0. The ***Drive Serial No:*** field appears.

3. At the ***Is this the correct drive? (y/n):*** prompt, type ***Y*** and press ***Enter*** to display drive information. The screen shows the current software version in the ***System Boot Area:*** field and the new software version in the nonactive area.

4. Press ***Ctrl+C***, and repeat steps 1 through 3 for system-drive 1, if desired.

5. Press ***Ctrl+C*** until Menu 20 reappears on the screen.

6. From menu 20, access the Drive Verify Utilities menu, then select and run the Software Verify utility for each system drive to verify the integrity of the software.

7. If you have upgraded the phrases, from the Drive Verify Utilities menu, select and run the Phrase Verify utility on each system drive to verify the integrity of the phrases.

8. Press ***Ctrl+C*** until the Main Menu reappears.

Change the Boot Area and Boot the New Software

Because the new software is installed in the nonboot area, you must change the boot area and reboot the server for the new software to operate. Change the boot area and reboot the server, as follows:

1. Access the status log (menu 13.2), and make sure that all errors have been corrected.
2. From the SMT Main Menu, access Menu 20 – Service Operations, then the Miscellaneous Utilities menu, then the Set System Boot Area option.

   The Set System Boot Area screen appears, with the ***System Boot Area:***, ***Drive Next Boot Area:***, and other fields displayed.
3. At the ***Enter area (A or B):*** prompt, enter the letter for the area *not* currently used as the system boot area.
4. At the ***Set Boot Area Complete. Press any key to continue*** prompt, press any key to continue, then press ***Ctrl+C*** twice to return to the SMT Main Menu.
5. From the SMT Main Menu, access Menu 13 – System Maintenance.
6. Enter ***1*** to select Shut Down with Dump.
7. At the ***Enter "1" – allow lines to clear, "2" – immediate shutdown, "Break" – Cancel:*** prompt, enter ***1*** to allow the lines to clear before shutdown.

   The shutdown begins. After approximately 1 minute, the SMT displays a ***RESTARTING*** message, then reboot begins.
8. At the prompt for selecting B, ^DB, or ^DD for the type of boot, *do not respond*. The boot will continue after approximately 10 seconds. When the ***ENTER BOOT COMMAND:*** prompt appears, enter ***A***. The server reboots, using the new software.

   If the upgrade loaded into the system drive includes new firmware for the EPROMs on the CCF card or the LAN card, the EPROMs are automatically updated, immediately after the protected-mode initial program load (PIPL). The upgrade of the EPROMs can take several minutes, and it displays a message on the SMT, informing you of the upgrade. You do not need to take any action. The server then reboots, using the new firmware.

Make Software and Phrase Areas Redundant

Having two software areas on the server allows an upgrade to be performed on line and allows the new software to be tested, with the option of returning to the previous software release.

At this point in the upgrade process, the server should be running with the new software. The old software should still be in the nonboot area. Octel recommends that the server be run with the new software for approximately 1 week, to ensure that the server is running smoothly, before you make the nonboot area redundant with the boot area.



Caution!

If problems arise with the new software, call the Octel Customer Services Center or your Octel distributor immediately. Do not attempt to correct the problems yourself.

If you have entered values or the system manager has entered values for any of the new SMT fields associated with the new software, the server will not operate correctly with the old software.

If the server is running smoothly with the new software, make the software and phrase areas redundant, as follows:

1. Call the Octel Octel Customer Services Center or your Octel distributor and have the service bit turned on. Be prepared to provide the pilot number of the hunt group assigned to the server. Wait for confirmation that the service bit is on.

2. From the SMT Main Menu, access Menu 20 – Service Operations, then the Drive Copy Utilities menu, then the Make Drive(s) Redundant menu, then the Make Software Areas A and B Redundant option.

3. The Make Software Areas Redundant screen appears, showing the current ***System Boot Area:*** field, the ***Drive Next Boot Area:*** field, and the software versions of these two areas. At the ***Make Software area [destination] a redundant copy of area [source]? (y/n):*** prompt, make sure that the source area contains the newest software, then type ***Y*** and press ***Enter*** to make the software areas redundant.

4. At the ***Software areas now redundant...Press any key to continue*** prompt, press ***Ctrl+C*** to return to the Make Drive(s) Redundant menu.

5. If you did not upgrade any phrases, press ***Ctrl+C*** until the SMT Main Menu reappears, and skip to the next section of this procedure.

   If you have upgraded any phrases, enter the number for the Make Phrase Areas A and B Redundant option.

6. A screen appears, showing the current ***System Boot Area:*** field, the ***Drive Next Boot Area:*** field, and the phrase versions of these two areas. At the ***Make Phrase area [destination] a redundant copy of area [source]? (y/n):*** prompt, make sure that the source area contains the newest phrases, then type ***Y*** and press ***Enter*** to make the phrase areas redundant.

7. At the ***Phrase areas now redundant...Press any key to continue*** prompt, press ***Ctrl+C*** until the SMT Main Menu reappears.

Remove the Tape Drive, If Installed for This Upgrade

If the tape drive was installed in the server *only* to perform the upgrade, remove it, as follows:

1. If the server is at Aria 2.0, from the SMT Main Menu, access Menu 20 – Service Operations, then the Drive Install Utilities menu, then the Disable Drive utility. Disable slot 6.

2. Remove the tape drive from slot 6. (For servers at Aria 1.2, removing the tape drive can cause CD status-log entries.)

Notes

For your convenience, you can insert service notes, configuration notes, and any additional information in this section.

SYSTEM UTILITIES A

The server software provides system utilities for installing, maintaining, and troubleshooting the server. The system utilities are accessed from and displayed on the system manager terminal (SMT). These utilities are listed in Table A-1. The table indicates for each utility whether it is available (offered on a menu or otherwise accessible) under the following conditions:

- ❑ When the server is on line, the service bit is off, and the engineering bit is off
- ❑ When the server is on line, the service bit is on (enabled), and the engineering bit is off
- ❑ When the server is on line and the engineering bit is on (enabled)
- ❑ When the server is off line, the service bit is on, and the engineering bit is off
- ❑ When the server is off line and the engineering bit is on

Refer to the "Access to the Utilities" section, page A-2, for descriptions of the offline and online modes. Note the following characteristics of utility availability:

- ❑ Some utilities are available only in the online mode, some are available only in the offline mode, and some are available in both modes.
- ❑ The only utilities that are available off line with both the service and engineering bits off are ^DR, Change Terminal Type (accessed by pressing ***Ctrl+D***, then ***R***), and ^DY, Change Console/Download Port Speed (accessed by pressing ***Ctrl+D***, then ***Y***).
- ❑ Whether the server is on line or off line, all the utilities that are available with the service bit off are also available with the service bit on. Many additional utilities are available with the service bit on.
- ❑ Whether the server is on line or off line, all the utilities that are available with the service bit on are also available with the engineering bit on. Additional utilities are available with the engineering bit on.

Call the Customer Services Center or your Octel distributor to have the service bit enabled, if necessary. Call the Customer Services Center to have the engineering bit enabled, if necessary.

Do *not* use these utilities for software older than Aria 1.2. Some utilities, such as LAN utilities, are available for Aria 2.0, but not for Aria 1.2. Some of the utilities use slightly different messages and prompts for Aria 2.0 than for Aria 1.2. Messages and prompts for Aria 2.0 are documented in this appendix.

Each utility is described in a section that starts on the page indicated in Table A-1.



Caution!

Use these utilities only when directed by service documentation or Octel support personnel. Using these utilities incorrectly can cause serious damage to data. Use these procedures *only* with Aria 1.2 or newer software.

Access to the Utilities

Some service-operations utilities are accessed through Menu 20 – Service Operations on the SMT. They are accessed differently, depending on whether the server is in offline or online mode, as follows:

- **Offline mode.** In the offline mode, the server is out of service and is not performing normal voice-messaging functions. To access menu 20 utilities that are available in offline mode, use menu 13.1 to shut down the server, and type ***Ctrl+D,*** then ***U*** when the second ***ENTER BOOT COMMAND:*** prompt appears. The server appears to boot normally, but is actually booting only the service-operations-utility software. After the server boots this software, offline menu 20 appears. You can access other utilities off line by entering ***Ctrl+D,*** then a letter other than ***U*** at the ***ENTER BOOT COMMAND:*** prompt. Refer to Table A-1.

  To exit any prompt or menu choice, type ***Ctrl+C***. To exit offline menu 20, select the ***Exit*** option from the menu. The server shuts down, performs the initial boot process, and returns to the ***ENTER BOOT COMMAND:*** prompt.

- **Online mode.** In online mode, the server is in service and is performing normal voice-messaging functions. To access the utilities that are available in online mode, access Menu 20 – Service Operations or Menu 21 –System Backup from the SMT Main Menu. To exit the utilities at any prompt or menu choice, press ***Ctrl+C*** until the Main Menu reappears.



Caution!

For menu 20, the menu option number for any particular utility can vary, depending on whether the server is off line or on line and depending on whether the service bit, engineering bit, or neither bit is on. Therefore, to select the desired utility, always follow the screen prompts carefully.

Table A-1. System Utilities.

Menu Name or Utility Access Method	Utility	Utility Availability					Reference page
		On Line With Service & Engr. Bits Off	On Line With Service Bit On	On Line With Engr. Bit On	Off Line With Service Bit On	Off Line With Engr. Bit On	
Menu 20 Drive Copy Utilities	Initialize Drive	No	Yes	Yes	Yes	Yes	A-9
	Create Backup Drive	No	No	No	Yes	Yes	A-10
	Copy Software	No	Yes/No[1]	Yes	Yes	Yes	A-10
	Copy Phrases	No	Yes/No[1]	Yes	Yes	Yes	A-12
	Copy Software & Phrases	No	Yes	Yes	Yes	Yes	A-15
	Copy System Data Tables	No	Yes	Yes	Yes	Yes	A-18
	Copy Messages	No	Yes	Yes	Yes	Yes	A-18
	Make Drive(s) Redundant	No	Yes	Yes	Yes	Yes	A-19
	Display Drive Info	No	Yes	Yes	Yes	Yes	A-26
	Fast Phrase Copy	No	No	No	No	Yes	A-27
Menu 20 Drive Replacement Utilities	Replace System Drive	No	Yes	Yes	Yes	Yes	A-27
	Replace Message Drive	No	Yes	Yes	Yes	Yes	A-27
	Upgrade Message Drive	No	Yes	Yes	Yes	Yes	A-27
Menu 20 Drive Install Utilities	Install Drive	No	Yes	Yes	Yes	Yes	A-28
	De-Install Drive	No	Yes	Yes	Yes	Yes	A-28
	Enable Drive	No	Yes	Yes	Yes	Yes	A-29
	Disable Drive	No	Yes	Yes	Yes	Yes	A-31
	Drive Status	No	Yes	Yes	Yes	Yes	A-33
	Initialize System	No	No	No	Yes	Yes	A-33
	Global Message Redundancy	No	Yes	Yes	No	No	A-34
Menu 20 Phrase Table Utilities	Phrase Table Initialization	No	No	No	No	Yes	A-37
	Set Phrase Table Version	No	No	No	No	Yes	A-38
	Set Language Type	No	No	No	No	Yes	A-39
	Set Digitization Rate	No	No	No	No	Yes	A-39

[1] Yes for Aria 2.0, no for Aria 1.2.

Table A-1. System Utilities (Continued).

Menu Name or Utility Access Method	Utility	Utility Availability					Reference page
		On Line With Service & Engr. Bits Off	On Line With Service Bit On	On Line With Engr. Bit On	Off Line With Service Bit On	Off Line With Engr. Bit On	
Menu 20 Phrase Table Utilities (continued)	Set In-RAM Phrase Priority	No	No	Yes	No	Yes	A-40
	Phrase Delete	No	No	No	No	Yes	A-41
	Phrase Copy	No	No	No	No	Yes	A-42
	Reload In-RAM Phrases	No	No	Yes	No	Yes	A-43
	Reset Phrase XREF Table	No	No	Yes	No	Yes	A-43
Menu 20 Miscellaneous Utilities	Initialize Drive	No	Yes	Yes	Yes	Yes	A-44
	Garbage Collect	No	Yes	Yes	Yes	Yes	A-44
	Set System Boot Area	No	Yes	Yes	Yes	Yes	A-46
	Enable/Disable Drive Read Only Mode	No	Yes	Yes	Yes	Yes	A-47
	Configurable Integration Parameters	Yes	Yes	Yes	No	No	A-49
	Visual CIP	No	No	Yes	No	No	A-49
	Reset CDR Pointers	No	No	No	Yes	Yes	A-49
	Message Waiting User Record Conversion	No	No	No	Yes	Yes	A-50
	Initialize System	No	No	No	Yes	Yes	A-50
	Display Drive Information & G-List	No	No	Yes	No	Yes	A-50
	Set Telephone Keypad Type	No	No	No	Yes	Yes	A-51
Menu 20 Drive Verify Utilities	Software Verify	No	Yes	Yes	Yes	Yes	A-51
	Phrase Verify	No	Yes	Yes	Yes	Yes	A-51
	Drive Verify	No	Yes	Yes	Yes	Yes	A-51
Menu 20 Datafile Utilities	Read Datafile Record	No	Yes	Yes	Yes	Yes	A-53
	Write Datafile Record	No	No	Yes	No	Yes	A-54
	Display Record	No	Yes	Yes	Yes	Yes	A-55
	Change Record	No	No	Yes	No	Yes	A-55
	Expand Datafile Size	No	No	No	Yes	Yes	A-56
	Decrease Datafile Size	No	No	No	Yes	Yes	A-57

Table A-1. System Utilities (Continued).

Menu Name or Utility Access Method	Utility	Utility Availability					Reference page
		On Line With Service & Engr. Bits Off	On Line With Service Bit On	On Line With Engr. Bit On	Off Line With Service Bit On	Off Line With Engr. Bit On	
Menu 20 Datafile Utilities (continued)	Patch Software	No	No	Yes	No	Yes	A-58
	Get Physical Address	No	Yes	Yes	Yes	Yes	A-58
	Get Logical Address	No	Yes	Yes	Yes	Yes	A-59
Menu 20 Message Utilities	Display Message Blocks	No	Yes	Yes	Yes	Yes	A-60
	Display Phrase Blocks	No	Yes	Yes	Yes	Yes	A-60
	Message ID to Physical Address	No	Yes	Yes	Yes	Yes	A-61
Menu 20	Display Status Log	No[2]	No[2]	No[2]	Yes	Yes	A-62
Menu 20 SMT Debug Utilities, reformat options	Validity Check User Records (option 0)	No	Yes	Yes	Yes	Yes	A-63
	Collapse Nodes (option 1)	No	Yes	Yes	Yes	Yes	A-67
	Convert Mailboxes to ACP Integration (option 3)	No	Yes	Yes	Yes	Yes	A-69
	Move Company Records & Attendant Schedules to User Records (option 5)	No	Yes	Yes	Yes	Yes	A-69
	Convert Mailbox Length (option 6)	No	Yes	Yes	Yes	Yes	A-70
	Convert Type 52 Mailbox to Type 0 (option 7)	No	Yes	Yes	Yes	Yes	A-72
	AT&T inband message waiting utilities (option 8)	No	Yes	Yes	Yes	Yes	A-72
	Check user records vs. AMT (option 10)	No	Yes	Yes	Yes	Yes	A-73
	Check AMT addresses vs. internal record numbers (option 11)	No	Yes	Yes	Yes	Yes	A-74
	Patch up clobbered user records (with bad lengths) (option 12)	No	Yes	Yes	Yes	Yes	A-74

[2] Use menu 13.2 to display the status log when the server is on line.

Table A-1. System Utilities (Continued).

Menu Name or Utility Access Method	Utility	Utility Availability					Reference page
		On Line With Service & Engr. Bits Off	On Line With Service Bit On	On Line With Engr. Bit On	Off Line With Service Bit On	Off Line With Engr. Bit On	
Menu 20 SMT Debug Utilities, reformat options (continued)	Convert ICMB from COS to MB (option 13)[3]	No	Yes	Yes	Yes	Yes	A-74
Menu 20	Toggle Extended Print	No	Yes	Yes	Yes	Yes	A-75
Menu 20	Software/Phrase Upgrade	No	Yes/No[4]	Yes	Yes/No[4]	Yes	A-75
Menu 20 Port Testing Utilities	Port Testing Administration	Yes	Yes	Yes	No	No	A-76
	Port/Test Status	Yes	Yes	Yes	No	No	A-76
	Review Previous Test Results	Yes	Yes	Yes	No	No	A-76
	Start Port Testing	Yes	Yes	Yes	No	No	A-76
	Port Traffic Statistics	Yes	Yes	Yes	No	No	A-76
Menu 20 Online CDR Utility	Display CDR Event Codes	Yes	Yes	Yes	Yes	Yes	A-76
	Online CDR Utility	Yes	Yes	Yes	Yes	Yes	A-76
	Enable/Disable CDR Buffer Alarms	Yes	Yes	Yes	Yes	Yes	A-76
Menu 20 LAN Utilities[5]	Ping	Yes	Yes	Yes	No	No	A-77
	Echo Test	Yes	Yes	Yes	No	No	A-77
	Display API Trace	Yes	Yes	Yes	No	No	A-77
	Network Statistics	Yes	Yes	Yes	Yes	Yes	A-77
	Digital Networking Trace	Yes	Yes	Yes	No	No	A-77
	Display Channel Status	Yes	Yes	Yes	No	No	A-77
	LAN Card Trace/ Profile/Error Log	Yes	Yes	Yes	No	No	A-77
	Reset LAN Card and LAN Card API	Yes	Yes	Yes	No	No	A-77
Menu 20	SCSI Media Applications[5]	Yes	Yes	Yes	Yes	Yes	A-77

[3] Available for Aria 1.2, but not for Aria 2.0.

[4] Yes for Aria 2.0, no for Aria 1.2; however, the complete upgrade *procedure* requires that the engineering bit be on anyway.

[5] Available for Aria 2.0, but not for Aria 1.2.

Table A-1. System Utilities (Continued).

Menu Name or Utility Access Method	Utility	Utility Availability					Reference page
		On Line With Service & Engr. Bits Off	On Line With Service Bit On	On Line With Engr. Bit On	Off Line With Service Bit On	Off Line With Engr. Bit On	
Menu 21 – System Backup	Schedule Backup	Yes	Yes	Yes	No[6]	No[6]	A-78
	Display Backup Status	Yes	Yes	Yes	No[6]	No[6]	A-78
	Write/Read Diagnostic	Yes	Yes	Yes	No[6]	No[6]	A-78
	Scan Backup Tape	Yes	Yes	Yes	No[6]	No[6]	A-79
	Review History of Last Event	Yes	Yes	Yes	No[6]	No[6]	A-80
	Display Tape Header[5]	Yes	Yes	Yes	No[6]	No[6]	A-83
	Cancel Current Operation	Yes	Yes	Yes	No[6]	No[6]	A-84
^DD, Disk Utilities (press ***Ctrl+D***, then ***D***)	Read Disk Record	No	No	No	Yes	Yes	A-86
	Read Disk Table	No	No	No	Yes	Yes	A-87
	Change Record Buffer	No	No	No	Yes	Yes	A-88
	Display Record Buffer	No	No	No	Yes	Yes	A-89
	Write Disk Record	No	No	No	Yes	Yes	A-89
	Write Disk Table	No	No	No	Yes	Yes	A-90
	Clear User Record Buffer	No	No	No	Yes	Yes	A-91
	Read Datafile Record	No	No	No	Yes	Yes	A-91
	Write Datafile Record	No	No	No	Yes	Yes	A-92
	Patch Software	No	No	No	Yes	Yes	A-92
	Display CB Packet Trace Table	No	No	No	Yes	Yes	A-92
	Compute Check-sum	No	No	No	Yes	Yes	A-92
^DK (press ***Ctrl+D***, then ***K***)	Change Telephone Keypad Type	No	No	No	Yes	Yes	A-93
^DP (press ***Ctrl+D***, then ***P***)	Display Control Bus Buffer	No	No	No	Yes	Yes	A-93
^DR (press ***Ctrl+D***, then ***R***)	Change Terminal Type	No	No	No	Yes[7]	Yes[7]	A-93

[5] Available for Aria 2.0, but not for Aria 1.2.

[6] Menu 21 is not available off line. Refer to ^DS for descriptions of the offline System Backup and Restore options.

[7] Available off line, even if both the service and engineering bits are off.

Table A-1. System Utilities (Continued).

Menu Name or Utility Access Method	Utility	Utility Availability					Reference page
		On Line With Service & Engr. Bits Off	On Line With Service Bit On	On Line With Engr. Bit On	Off Line With Service Bit On	Off Line With Engr. Bit On	
^DS, System Backup and Restore (press ***Ctrl+D***, then ***S***)	Backup	No[8]	No[8]	No[8]	Yes	Yes	A-94
	Restore	No	No	No	Yes	Yes	A-94
	Display Backup/ Restore Status	No[8]	No[8]	No[8]	Yes	Yes	A-94
	Write/Read Diagnostic	No[8]	No[8]	No[8]	Yes	Yes	A-95
	Scan Backup Media	No[8]	No[8]	No[8]	Yes	Yes	A-95
	Display Header of Backup Media[5]	No[8]	No[8]	No[8]	Yes	Yes	A-95
	Cancel Current Operation	No[8]	No[8]	No[8]	Yes	Yes	A-95
^DT (press ***Ctrl+D***, then ***T***)	Drive Test	No	No	No	Yes	Yes	A-96
^DX (press ***Ctrl+D***, then ***X***)	Toggle Next Boot Area	No	No	No	Yes	Yes	A-97
^DY (press ***Ctrl+D***, then ***Y***)	Change Console/ Download Port Speed	No	No	No	Yes[7]	Yes[7]	A-97

[5] Available for Aria 2.0, but not for Aria 1.2.

[7] Available off line, even if both the service and engineering bits are off.

[8] Available on line in Menu 21 – System Backup (with the service and engineering bits off or on).

Special Error Messages

Most errors that occur while utilities are running cause an English message to appear on the SMT. However, some communication problems between cards might cause a status log entry or an SMT message that includes the last control-bus message sent from the CPU (CB OUT) and the last message received by the CPU (CB IN).

Offset 02 in the CB OUT message displays the last command issued. Offset 02 in the CB IN message displays the response to the command. Offset 03 in the CB IN message typically contains a return code that indicates the type of problem that was reported. Refer to Chapter 8 for descriptions of CB messages and status-log entries.

One of the following error messages might be displayed on the SMT:

- **TIMEOUT WAITING FOR CARD TO COME READY**. The destination card did not respond to a command. Control-bus messages are not displayed.
- **NO RESPONSE TO CB MESSAGE**. Only a CB OUT message is displayed, because the CPU did not receive an input message.
- **CHECKSUM ERROR ON RESPONSE PACKET**. CB IN and CB OUT messages are displayed with this message.
- **UNRECOGNIZED ERROR**. In the rare event that an unrecognizable response was received, this message is displayed. CB IN and CB OUT messages are also displayed.

The utility waits 10 minutes for the CB IN message before it times out. If the SMT does not display any activity within 10 minutes, the operation has failed. If the operation failed, turn off the power to the server, turn it on again, and retry the operation.

Menu 20 Drive Copy Utilities

The Drive Copy utilities menu includes the utilities described in the following sections.

Initialize Drive

Use the Initialize Drive utility to set the selected drive to the correct drive type (system drive or message drive). Only drives that are not software-installed can be initialized. Initialize a drive, as follows:



Caution!

Do not use the Initialize Drive utility unless directed to do so by Octel. When a drive is installed, it is automatically initialized. Using this utility deletes all data on the specified drive. Use this utility *only* if the information on the specified drive is not needed.

1. From the ***ENTER BOOT COMMAND:*** prompt, type ***Ctrl+D,*** then ***U*** to access offline menu 20.
2. From menu 20, access the Drive Copy Utilities menu, then the Initialize Drive utility. Figure A-1 is an example of a completed screen for the Initialize Drive utility.

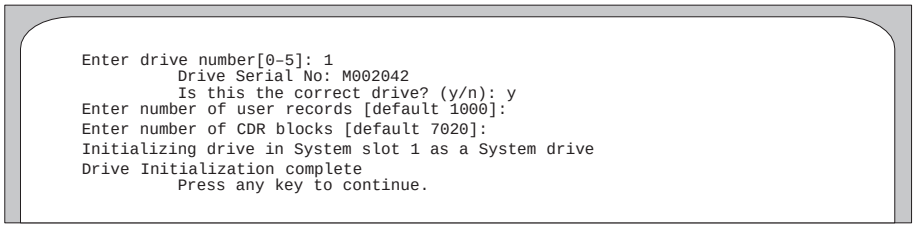


Figure A-1. Example of Prompts and Responses for the Initialize Drive Utility.

3. At the ***Enter drive number [0–5]:*** prompt, enter the number of the drive to be initialized.
4. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
5. If initializing a system drive, at the ***Enter number of user records [default XXXX]:*** prompt, enter the desired number of user records, or press ***Enter*** to retain the default setting.
6. If initializing a system drive, at the ***Enter number of CDR blocks [default XXXX]:*** prompt, enter the desired number of CDR blocks, or press ***Enter*** to retain the default setting. The server initializes the drive.
7. When the initialization is complete, press ***Ctrl+C*** until menu 20 reappears.

Create Backup Drive

Use the Create Backup Drive utility to create an identical copy of a system drive on another disk drive. This utility is available only in offline mode. Refer to Chapter 10, the “Backing Up a System Drive to Another Disk Drive” section, page 10-2, for procedures to create a backup disk drive.

Caution!

When performing a software upgrade, use the Create Backup Drive only to make a backup copy of the existing system drive. *Do not* copy a master drive to an existing system drive, because doing so would destroy the system database and cause messages to be lost.

Copy Software

Use the Copy Software utility to copy software from a selected area (A or B) on a source system drive to a selected area (A or B) on a destination system drive. Usually, you use this utility to copy software to an installed system drive. If the server is on line when you use this utility, the server cannot copy to the software boot area.

Caution!

Using this utility to copy software to a system drive causes the system drives to lose redundancy. If the system drives are not redundant, the server cannot boot. Therefore, after running this utility and before booting the server, make sure that you run the Make System Drives Redundant utility.

Copy software, as follows:

1. From menu 20, access the Drive Copy Utilities menu, then the Copy Software utility. Figure A-2 is an example of a completed software copy when source-drive software areas A and B are redundant.

```
Enter position of source drive[0–1, 6]: 6
        Drive Serial No: O100012
        Is this the correct drive? (y/n): y
Drive Boot Area: A      Drive Next Boot Area: A

Software Versions:      Area A          Area B
                        02.00.35–1      02.00.35–1
Software areas A & B are redundant
System drives Software areas A are redundant
Software redundant. Using Software from boot area A as source.
Enter position of destination drive[0–1, 6]: 0
        Drive Serial No: M002042
        Is this the correct drive? (y/n): y

Using this utility will cause you to lose drive redundancy.
Do you wish to continue(y/n): y

System Boot Area: A             Drive Next Boot Area: A

Software Versions:      Area A          Area B
                        02.00.35–1      02.00.33–1
System drives Software areas A are redundant
System drives Software areas B are redundant
Enter destination area (A or B): A

Verifying files on drive 6 ...
Verifying Software files ...
Copying Software Area: A ....
C O P Y I N G . . . .
Copy complete
        Press any key to continue.
```

Figure A-2. Example of Prompts and Responses for the Copy Software Utility (Source Software Areas A and B Redundant).

2. At the ***Enter position of source drive [0–1, 6]:*** prompt, enter the number of the drive to be copied.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct. The server displays the software versions in areas A and B on the source drive.

4. The next prompt depends on whether software areas A and B are redundant on the source drive:
   - ❑ If areas A and B are not redundant, the ***Enter source area (A or B):*** prompt appears. Specify the area from which software is to be copied.
   - ❑ If areas A and B are redundant, the ***Software redundant. Using Software from boot area [A or B] as source.*** message appears. Software will be copied from the boot area.
5. At the ***Enter position of destination drive [0–1, 6]:*** prompt, enter the number of the drive to which the software is to be copied.
6. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct. The server displays the software versions in areas A and B on the destination drive.
7. If the destination drive is a system drive that is redundant, the ***Using this utility will cause you to lose drive redundancy. Do you wish to continue(y/n):*** prompt appears. Enter ***Y*** to continue.
8. At the ***Enter destination area (A or B):*** prompt, specify the area to which software is to be copied. The server copies the software from the source-drive area to the destination-drive area. (If the server is on line, you cannot copy to the boot area.)
9. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.
10. Make the system drives redundant. Refer to the "Make System Drives Redundant" section, page A-23.

Copy Phrases

If you can take the server off line, the Customer Services Center might recommend that you use the Fast Phrase Copy utility (refer to the "Fast Phrase Copy" section, page A-27) instead of using the Copy Phrases utility. The Fast Phrase Copy utility runs significantly faster than the Copy Phrases utility, and it performs the same function. If you cannot take the server off line or if the Fast Phrase Copy utility fails, use the Copy Phrases utility to copy phrases from a selected area (A or B) on a source system drive to a selected area (A or B) on a destination system drive. Usually, you use this utility to copy phrases to an installed system drive. If the server is on line when you use this utility, the server cannot copy to the software boot area.



Caution!

Using this utility to copy phrases to a system drive causes the system drives to lose redundancy. If the system drives are not redundant, the server cannot boot. Therefore, after running this utility and before booting the server, make sure that you run the Make System Drives Redundant utility.

Run the Copy Phrases utility, as follows:

1. From menu 20, access the Drive Copy Utilities menu, then the Copy Phrases utility. Figure A-3 is an example of a completed phrase copy when source-drive phrase areas A and B are redundant.

```
                                    Copy Phrases

Enter position of source drive[0–1, 6]: 6
        Drive Serial No: O100012
        Is this the correct drive? (y/n): y

Phrases redundant. Using Phrases from boot area A as source.
Select language number:
                1 – American English (Marsha)
                2 – None
                3 – None
                4 – None
                5 – None
                6 – All

                        Enter Choice: 1

Select phrase type:
        1 – System phrases
        2 – IVR Phrases
        3 – Both
                        Enter Choice: 1

Enter position of destination drive[0–1, 6]: 0
        Drive Serial No.: 1212121
        Is this the correct drive? (y/n): y

Using this utility will cause you to lose drive redundancy.
Do you wish to continue(y/n): y

Enter destination area (A or B): b
Select language number:
                1 – American English (Marsha)
                2 – None
                3 – None
                4 – None
                5 – None

                        Enter Choice: 2

Verifying files on drive 6 ...
Verifying phrase files ...

Checking phrases on drive 6 ...
Copying phrases to language 2 area B

Copy complete
        Press any key to continue.
```

Figure A-3. Example of Prompts and Responses for the Copy Phrases Utility (Source Phrase Areas A and B Redundant).

2. At the ***Enter position of source drive [0–1, 6]:*** prompt, enter the number of the drive to be copied.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

4. The next prompt depends on whether phrase areas A and B are redundant to each other on the source drive:

   - If areas A and B are not redundant, the ***Enter source area (A or B):*** prompt appears. Specify the area from which phrases are to be copied.
   - If areas A and B are redundant, the ***Phrases redundant. Using Phrases from boot area [A or B] as source.*** message appears. Phrases will be copied from the boot area.

   The set of installed languages is displayed.

5. At the ***Enter Choice:*** prompt, enter the number of the language whose phrases are to be copied.

6. At the ***Enter Choice:*** prompt, enter the number to select copying of system phrases, IVR phrases, or both. Copy only system phrases (select option ***1***) unless directed otherwise.

7. At the ***Enter position of destination drive [0–1, 6]:*** prompt, enter the number of the drive to which the phrases are to be copied.

8. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

9. If the destination drive is a system drive that is redundant, the ***Using this utility will cause you to lose drive redundancy. Do you wish to continue(y/n):*** prompt appears. Enter ***Y*** to continue.

10. At the ***Enter destination area (A or B):*** prompt, enter the area to which phrases are to be copied. The set of installed languages is displayed.

11. At the ***Enter Choice:*** prompt, enter the language number into which phrases are to be copied.

12. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

13. Make the system drives redundant. Refer to the “Make System Drives Redundant” section, page A-23.

Copy Software & Phrases

Use the Copy Software & Phrases utility to copy software and phrases from a selected area (A or B) on a source system drive to a selected area (A or B) on a destination system drive. Usually, you use this utility to copy software and phrases to an installed system drive. If the server is on line when you use this utility, the server cannot copy to the software boot area.

Caution!

Using this utility to copy software and phrases to a system drive causes the system drives to lose redundancy. If the system drives are not redundant, the server cannot boot. Therefore, after running this utility and before booting the server, make sure that you run the Make System Drives Redundant utility.

Copy software and phrases, as follows:

1. From menu 20, access the Drive Copy Utilities menu, then the Copy Software & Phrases utility. Figure A-4 is an example of a completed software and phrase copy for Aria 2.0, when source-drive areas A and B are redundant.

```
                          Copy Software & Phrases

Enter position of source drive[0–1,6]: 6
        Drive Serial No: 434014G2
        Is this the correct drive? (y/n): y

Drive Boot Area: B              Drive Next Boot Area: B

Software Versions:      Area A                  Area B
                        02.00.35–1              02.00.35–1
Software areas A & B are redundant
System drives Software areas A are redundant
System drives Software areas B are redundant

Phrase Versions: Phrase, Prompt Table, In–RAM Table
   Area A                                   Area B
   1 – AE.50.21   EN.20.00   EN.20.00      1 – AE.50.21   EN.20.00   EN.20.00
   2 – CF.50.08   FR.20.01   FR.20.00      2 – CF.50.08   FR.20.01   FR.20.00
   3 – SP.50.09   SP.20.00   SP.20.00      3 – SP.50.09   SP.20.00   SP.20.00
   4 – BE.50.08   EN.20.00   EN.20.00      4 – BE.50.08   EN.20.00   EN.20.00
   5 – TD.50.04   EN.20.00   EN.20.00      5 – TD.50.04   EN.20.00   EN.20.00
System drives Phrases areas A are redundant

Last UPG Ids:           Area A                  Area B
                         SP500951                SP500951
This utility will make an exact copy of the source drive software and phrases.
Existing languages on destination drive will be lost.
Continue (y/n): y

Software redundant. Using Software from boot area B as source.
Select phrase type:

        1 – System Phrases
        2 – IVR Phrases
        3 – Both

               Enter Choice: 1
Enter position of destination drive[0–1,6]: 0
        Drive Serial No.: 1212121
        Is this the correct drive? (y/n): y

Using this utility will cause you to lose drive redundancy.
Do you wish to continue(y/n): y

System Boot Area: B             Drive Next Boot Area: B

Software Versions:      Area A                  Area B
                        02.00.35–1              02.00.35–1
System drives Software areas A are redundant
System drives Software areas B are redundant

Phrase Versions: Phrase, Prompt Table, In–RAM Table
   Area A                                   Area B
   1 – AE.50.21   EN.20.00   EN.20.00      1 – AE.50.21   EN.20.00   EN.20.00
   2 – AE.50.21   EN.20.00   EN.20.00      2 – AE.50.21   EN.20.00   EN.20.00
   3 – TD.50.06   EN.20.00   EN.20.00    * 3 –
 * 4 –                                   * 4 –
 * 5 –                                   * 5 –

 * indicates Invalid Language area
System drives Phrases areas A are redundant
System drives Phrases areas B are redundant

Last UPG Ids:           Area A                  Area B
                        a0202020                a0202030
Enter destination area (A or B): b
Verifying files on drive 6 ...
Verifying Software files ...
Verifying files on drive 6 ...
Verifying Phrase files ...

Checking phrases on drive 6 ...
Copying Software Area: B ....

C O P Y I N G . . . .
Copying Phrases to language 1 area A
Copying Phrases to language 2 area A
Copying Phrases to language 3 area A
Copying Phrases to language 4 area A
Copying Phrases to language 5 area A

Copy complete
        Press any key to continue.
```

Figure A-4. Example of Prompts and Responses for the Copy Software & Phrases Utility (Source Areas A and B Redundant, Aria 2.0).

2. At the ***Enter position of source drive [0–1, 6]:*** prompt, enter the number of the drive to be copied.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

   If software areas A and B are redundant on the source drive, the ***Software areas A and B are redundant*** message appears. The software and phrases will be copied from the boot area of the source drive.

   For Aria 2.0, the server displays the phrase versions for the phrases, the prompt table, and the in-RAM table in areas A and B on the source drive. For Aria 1.2, the phrase versions for the prompt table and in-RAM table are not displayed.
4. At the ***This utility will make an exact copy of the source drive software and phrases. Existing languages on destination drive will be lost. Continue (y/n):*** prompt, enter ***Y*** to continue.
5. The next prompt depends on whether software areas A and B are redundant on the source drive.
   - ❑ If areas A and B are not redundant, the ***Enter source area (A or B):*** prompt appears. Specify the area from which software and phrases are to be copied.
   - ❑ If areas A and B are redundant, the ***Software redundant. Using Software from boot area [A or B] as source.*** message appears. Software and phrases will be copied from the boot area.
6. At the ***Enter Choice:*** prompt, enter the number to select copying of system phrases, IVR phrases, or both. Copy only system phrases (select option ***1***), unless directed otherwise.
7. At the ***Enter position of destination drive [0–1, 6]:*** prompt, enter the number of the drive to which the software and phrases are to be copied. Existing software and languages on the destination drive will be overwritten.
8. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
9. If the destination drive is a redundant system drive, the ***Using this utility will cause you to lose drive redundancy. Do you wish to continue(y/n):*** prompt appears. Enter ***Y*** to continue.

   For Aria 2.0, the server displays the phrase versions for the phrases, the prompt table, and the in-RAM table in areas A and B on the destination drive. For Aria 1.2, the phrase versions for the prompt table and in-RAM table are not displayed.
10. At the ***Enter destination area (A or B):*** prompt, specify the area to which software and phrases are to be copied. The server copies the software and phrases from the source-drive area to the destination-drive area.
11. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.
12. Make the system drives redundant. Refer to the “Make System Drives Redundant” section, page A-23.

Copy System Data Tables

Use the Copy System Data Tables utility to copy user records, SST, CDR, COS, and port-configuration records from one drive to another. Copy system data tables, as follows:



Caution!

If CB messages pertaining to the system data tables are encountered, do *not* proceed with the copy procedure. Call the Octel Customer Services Center or your Octel distributor immediately.

1. From menu 20, access the Drive Copy Utilities menu, then the Copy System Data Tables utility.
2. At the ***Enter position of source drive [0–1, 6]:*** prompt, enter the number of the source drive.
3. At the ***Is this the correct drive? (y/n):*** prompt, type ***Y*** if the serial number of the drive is correct.
4. At the ***Enter position of destination drive [0–1, 6]:*** prompt, enter the number of the destination drive.
5. At the ***Is this the correct drive? (y/n):*** prompt, type ***Y*** if the serial number of the drive is correct. The server copies system data tables from the specified source drive to the specified destination drive.
6. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

Copy Messages

Use the Copy Messages utility to copy messages from a source message drive to a destination message drive. Copy messages, as follows:



Caution!

If CB messages pertaining to the messages are encountered, do *not* proceed with the copy procedure. Call the Octel Customer Services Center or your Octel distributor immediately.

1. From menu 20, access the Drive Copy Utilities menu, then the Copy Messages utility.
2. At the ***Enter position of source drive [0–5]:*** prompt for non-GMR servers or the ***Enter position of source drive [2, 4]:*** prompt for GMR servers, enter the number of the drive to be copied.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the source drive is correct.

4. At the ***Enter position of destination drive [0–5] or 'A' for all drives:*** prompt for non-GMR servers or the ***Enter position of destination drive [2,4] or 'A' for all drives:*** prompt for GMR servers, enter the number of the drive to which the messages are to be copied, or enter ***A*** to distribute messages among all other message drives.

5. If you specify copying messages to all drives, the ***Copy from [System or Message] drive X to all drives(y/n):*** prompt appears. Type ***Y*** to proceed.

6. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the destination drive is correct.

7. At the confirmation prompt, answer ***Y*** to proceed with the copy. The server copies the messages from the source drive to the destination drive or drives.

8. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

Make Drive(s) Redundant

Use the Redundancy Utilities menu to select utilities for making software areas, phrase areas, and system drives (both software and phrases) redundant. From menu 20, access the Drive Copy utilities, then the Make Drive(s) Redundant Utilities option. The Redundancy Utilities menu appears, as shown in Figure A-5.

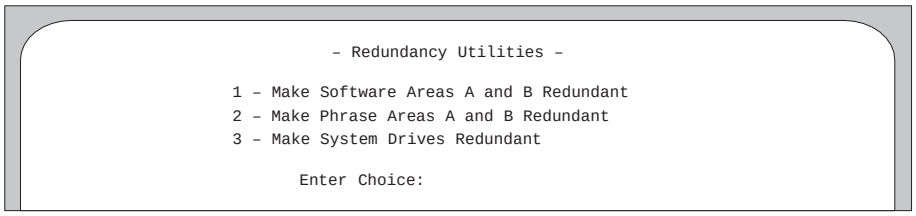
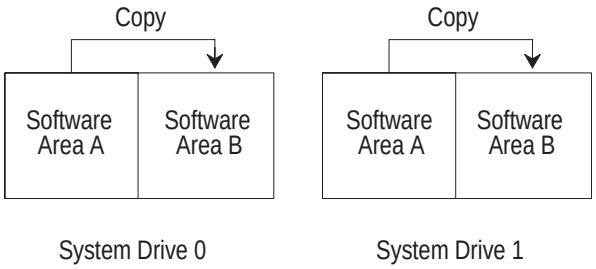


Figure A-5. Redundancy Utilities Menu.

The following sections contain procedures for each of the options on the Redundancy Utilities menu.

Make Software Areas A and B Redundant

Use the Make Software Areas A and B Redundant utility to copy software from a source area to a destination area on the installed drive or drives. Following is a representation of using this utility to make the software on area B on both system drives a redundant copy of area A:



When this utility is run in the offline mode, the server prompts for the source area; when this utility is run in the online mode, the current boot area must be used as the source area.

Make software areas A and B redundant, as follows:

1. From the Redundancy Utilities menu, access the Make Software Areas A and B Redundant utility. Figure A-6 is an example of a completed utility for making software areas A and B redundant.

```
                    Make Software Areas Redundant
System Boot Area: A              Drive Next Boot Area: A
Software Versions:      Area A          Area B
                        02.00.35–1      02.00.34–1
Enter source area (A or B): A
Installed drive 0 ...
Make Software area B a redundant copy of area A? (y/n): Y
Verifying files on drive 0 ...
Verifying Software files ...
Copying Software Area: A ....
C O P Y I N G . . . .
Software areas now redundant
        Press any key to continue.
```

Figure A-6. Example of Prompts and Responses for the Offline Make Software Areas A and B Redundant Utility.

   The server displays the software versions currently in areas A and B. If the software areas A or areas B on the drives are already redundant, a message to that effect appears on the screen.

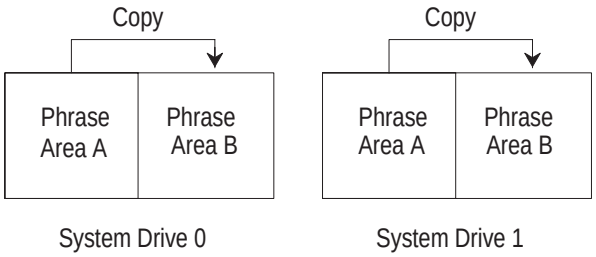
2. If the utility is being performed in the online mode, proceed to step 3. If the utility is being performed in the offline mode, at the ***Enter the source area (A or B):*** prompt, enter the source area from which software is to be copied.

3. When the ***Make software area [destination] a redundant copy of area [source]? (y/n):*** prompt appears, enter ***Y*** to confirm the copy or ***N*** to cancel the copy. If you enter ***Y,*** the server copies the software from the source area to the destination area.

4. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

Make Phrase Areas A and B Redundant

Use the Make Phrase Areas A and B Redundant utility to copy phrases from a source area to a destination area on the installed drive or drives. Following is a representation of using this utility to make area B on both system drives a redundant copy of area A:



When this utility is run in offline mode, the server prompts for the source area; when this utility is run in online mode, the current boot area must be used as the source area.

Make phrase areas A and B redundant, as follows:

1. From the Redundancy Utilities menu, access the Make Phrase Areas A and B Redundant utility. Figure A-7 is an example of a completed utility for making phrase areas A and B redundant, for Aria 2.0.

   For Aria 2.0, the server displays the phrase versions for the phrases, the prompt table, and the in-RAM table currently in areas A and B. For Aria 1.2, the phrase versions for the prompt table and in-RAM table are not displayed.

   If the phrases areas A or areas B on the drives are already redundant, a message to that effect appears on the screen.

2. If the utility is being performed in the online mode, proceed to step 3. If the utility is being performed in the offline mode, at the ***Enter source area (A or B):*** prompt, enter the source area from which phrases are to be copied.

3. When the ***Make phrase area [destination] a redundant copy of area [source]? (y/n):*** prompt appears, enter ***Y*** to confirm the copy or ***N*** to cancel the copy. If you enter ***Y,*** the server copies the phrases from the source area to the destination area.

4. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

```
                          Make Phrase Areas Redundant

System Boot Area: A                    Drive Next Boot Area: A

Phrases Versions: Phrase, Prompt Table, In-RAM Table
   Area A                                  Area B
   1 – AE.50.21    EN.20.00    EN.20.00     1 – AE.50.21   EN.20.00    EN.20.00
 * 2 –                                    * 2 –
 * 3 –                                    * 3 –
 * 4 –                                    * 4 –
 * 5 –                                    * 5 –

 * indicated Invalid Language Area
System drives Phrases areas B are redundant

Last UPG Ids:           Area A                  Area B
                        a0200350                a0200340
Enter source area (A or B): b
Make Phrase area A a redundant copy of area B? (y/n): y

Verifying files on drive 0 ...

Verifying Phrase files ...

Checking phrases on drive 0 ...
Verifying files on drive 1 ...

Verifying phrase files ...

Checking phrases on drive 1 ...
Making phrases redundant on drive 0
Copying Phrases to language 1 area A

Copying Phrases to language 2 area A

Copying Phrases to language 3 area A

Copying Phrases to language 4 area A

Copying Phrases to language 5 area A

Making phrases redundant on drive 1
Copying Phrases to language 1 area A

Copying Phrases to language 2 area A

Copying Phrases to language 3 area A

Copying Phrases to language 4 area A

Copying Phrases to language 5 area A

Copying to redundant area
Phrase areas now redundant

        Press any key to continue.
```

Figure A-7. Example of Prompts and Responses for the Offline Make Phrase Areas A and B Redundant Utility (Aria 2.0).

Make System Drives Redundant

Use the Make System Drives Redundant utility to copy both software and phrases from a source drive to a destination drive on installed system drives. From the Redundancy Utilities menu, access the Make System Drives Redundant utility menu, shown in Figure A-8. The options are explained in the following sections.

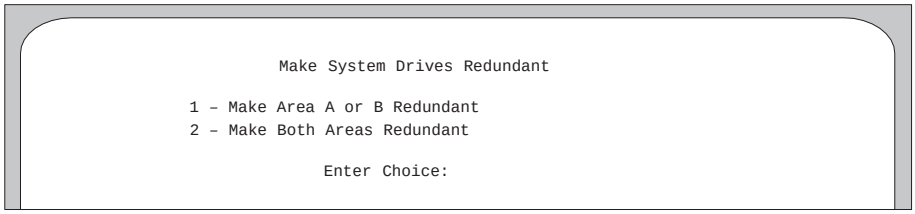
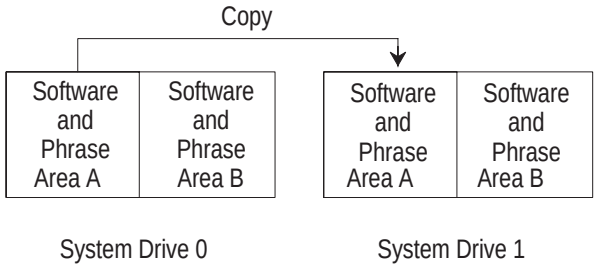


Figure A-8. Make System Drives Redundant Menu.

Make Area A or B Redundant. Use the Make Area A or B Redundant utility to make only one area redundant at a time. Following is a representation of only area A of system drive 1 being made a redundant copy of area A on system drive 0:



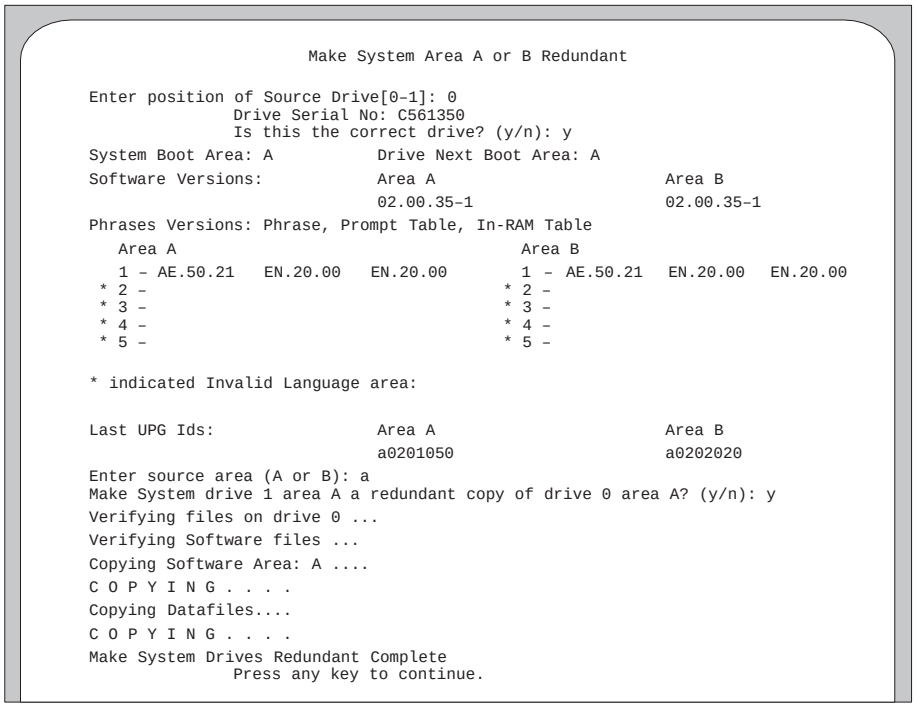
Make area A or B redundant, as follows:

1. From the Make System Drives Redundant menu, access the Make Area A or B Redundant option. Figure A-9 is an example of a completed utility for making area A or B redundant, for Aria 2.0.

2. At the ***Enter position of Source Drive [0–1]:*** prompt, enter the number of the drive (0 or 1) from which software and phrases are to be copied.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the source drive is correct.

4. For Aria 2.0, the server displays the software versions and the phrase versions for the phrases, the prompt table, and the in-RAM table currently in areas A and B. For Aria 1.2, the phrase versions for the prompt table and in-RAM table are not displayed. At the ***Enter source area (A or B):*** prompt, enter the area from which software and phrases are to be copied.



```
                    Make System Area A or B Redundant

Enter position of Source Drive[0–1]: 0
              Drive Serial No: C561350
              Is this the correct drive? (y/n): y
System Boot Area: A          Drive Next Boot Area: A
Software Versions:           Area A                    Area B
                             02.00.35–1                02.00.35–1
Phrases Versions: Phrase, Prompt Table, In-RAM Table
   Area A                                  Area B
   1 – AE.50.21   EN.20.00   EN.20.00      1 – AE.50.21   EN.20.00   EN.20.00
 * 2 –                                   * 2 –
 * 3 –                                   * 3 –
 * 4 –                                   * 4 –
 * 5 –                                   * 5 –

* indicated Invalid Language area:

Last UPG Ids:                Area A                    Area B
                             a0201050                  a0202020
Enter source area (A or B): a
Make System drive 1 area A a redundant copy of drive 0 area A? (y/n): y
Verifying files on drive 0 ...
Verifying Software files ...
Copying Software Area: A ....
C O P Y I N G . . . .
Copying Datafiles....
C O P Y I N G . . . .
Make System Drives Redundant Complete
              Press any key to continue.
```

Figure A-9. Example of Prompts and Responses for the Make Area A or B Redundant Utility (Aria 2.0).

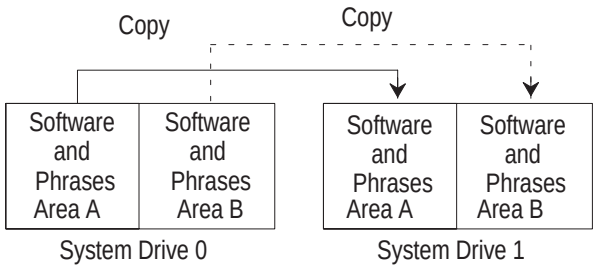
5. When the ***Make System drive [number] area [destination] a redundant copy of drive [number] area [source]? (y/n):*** prompt appears, enter ***Y*** to confirm the copy or ***N*** to cancel the copy.

   If the phrases are already redundant, the ***Phrases already redundant*** message appears. At the ***Do you wish to recopy? (y/n)*** prompt, type ***Y*** to recopy or ***N*** to cancel the phrase copy. If you enter ***Y***, the server recopies the phrases.

   If the software is already redundant, the ***Software already redundant*** message appears. At the ***Do you wish to recopy? (y/n)*** prompt, type ***Y*** to recopy or ***N*** to cancel the software copy. If you enter ***Y***, the server recopies the software.

6. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

Make Both Areas Redundant. Use the Make Both Areas Redundant utility to make both areas redundant simultaneously. Following is a representation of using this utility to make both areas A and B on system drive 1 into redundant copies of areas A and B on system drive 0:



Make both areas redundant at one time, as follows:

1. From the Make System Drives Redundant menu, access the Make Both Areas Redundant option. Figure A-10 is an example of a completed utility for making both areas redundant.

```
                    Make System Area A and B Redundant

Enter position of Source Drive[0–1]: 0
              Drive Serial No: C561350
              Is this the correct drive? (y/n): y
Make System drive 1 a redundant copy of drive 0? (y/n): Y
Copying Datafiles ....
C O P Y I N G . . . .
Make System Drives Redundant Complete
              Press any key to continue.
```

Figure A-10. Example of Prompts and Responses for the Make Both Areas Redundant Utility.

2. At the ***Enter position of Source Drive [0–1]:*** prompt, enter the number of the drive (0 or 1) from which software and phrases are to be copied.

3. At the ***Is this the correct drive (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

4. At the ***Make System drive [destination] a redundant copy of drive [source]? (y/n):*** prompt, enter ***Y*** to confirm the copy or ***N*** to cancel the copy.

   If the phrases are already redundant, the ***Phrases already redundant*** message appears. At the ***Do you wish to recopy? (y/n)*** prompt, type ***Y*** to recopy or ***N*** to cancel the phrase copy. If you enter ***Y,*** the server recopies the phrases.

   If the software is already redundant, the ***Software already redundant*** message appears. At the ***Do you wish to recopy? (y/n)*** prompt, type ***Y*** to recopy or ***N*** to cancel the software copy. If you enter ***Y,*** the server recopies the software.

5. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

Display Drive Info

Use the Display Drive Info utility to display a system drive's boot areas, software versions, phrase versions, and upgrade IDs (if any) of the last conversion or upgrade performed. Display drive information, as follows:

1. From menu 20, access the Drive Copy Utilities menu, then the Display Drive Info utility. Figure A-11 is an example of a completed utility for displaying drive information, for Aria 2.0.

```
                              Display Drive Info

Enter position of source drive[0–1]: 0
        Drive Serial No: O100012
        Is this the correct drive? (y/n): y

System Boot Area: A             Drive Next Boot Area: A & B
Software Versions:      Area A                  Area B
                        02.00.35–1              02.00.35–1
Software areas A & B are redundant
System drives Software areas A are redundant
System drives Software areas B are redundant
Phrases Versions: Phrase, Prompt Table, In-RAM Table
   Area A                               Area B
   1 – AE.50.21   EN.20.00  EN.20.00    1 – AE.50.21  EN.20.00  EN.20.00
 * 2 –                                * 2 –
 * 3 –                                * 3 –
 * 4 –                                * 4 –
 * 5 –                                * 5 –


 * indicated Invalid Language area
Phrases areas A & B are redundant
System drives Phrases areas A are redundant
System drives Phrases areas B are redundant

Last UPG Ids:           Area A                  Area B
                        a0200350                a0200350
Display Drive Info complete.
        Press any key to continue.
```

Figure A-11. Example of Prompts and Responses for the Display Drive Info Utility (Aria 2.0).

2. At the ***Enter position of source drive [0–1]:*** prompt, enter the number of the drive for which information is to be displayed.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number of the drive is correct.

   For Aria 2.0, the server displays the software versions and the phrase versions for the phrases, the prompt table, and the in-RAM table in areas A and B. For Aria 1.2, the phrase versions for the prompt table and in-RAM table are not displayed.

4. When complete, press ***Ctrl+C*** until menu 20 reappears.

Fast Phrase Copy

The Octel Customer Services Center might recommend that you run the Fast Phrase Copy utility, which is available only in the offline mode. It copies phrases faster than the Copy Phrases utility in the Drive Copy Utilities menu. The destination drive must be physically installed in the server, but it *must not* be configured as an installed drive. Perform a fast phrase copy, as follows:

1. From menu 20, access the Drive Copy Utilities menu, then the Fast Phrase Copy utility.
2. At the ***Enter position of source drive [0–1]:*** prompt, enter the number of the drive from which phrases are to be copied.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number of the drive is correct.
4. At the ***Enter position of destination drive [0–1]:*** prompt, enter the number of the drive to which phrases are to be copied.
5. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number of the drive is correct.
6. When the copy is complete, press ***Ctrl+C*** until menu 20 reappears.

Menu 20 Drive Replacement Utilities

Use the Drive Replacement Utilities to replace and upgrade drives. From menu 20, access the Drive Replacement Utilities menu. The Replace System Drive, Replace Message Drive, and Upgrade Message Drive options appear.

To use the Replace System Drive or Replace Message Drive utility to replace a system drive or message drive, refer to Chapter 11, the “Replacing Drive Modules” section, page 11-13. Make sure that you use the correct subsection, based on the server configuration and the procedure you need to perform.

To use the Upgrade Message Drive utility to upgrade message drives to drives of higher capacity, refer to Chapter 12, the “Upgrading Message Drives to Drives with Higher Capacity” section, page 12-6. Make sure that you use the correct subsection, based on whether the server is GMR or non-GMR.

Menu 20 Drive Install Utilities

The Drive Install utilities provide options for installing drives, deinstalling drives, and initializing the system. From menu 20, access the Drive Install Utilities menu. The options are described in the following sections.

Install Drive

To use the Install Drive utility to add a second system drive, refer to Chapter 12, the "Adding a Second System Drive" section, page 12-3.

To use the Install Drive utility to add a message drive or message-drive pair, refer to Chapter 12, the "Adding Message Drives" section, page 12-4. Make sure that you use the correct subsection, based on whether the server is non-GMR or GMR.

You can also use the Install Drive utility to install drives after reinitializing a server, because the initialization process deinstalls the drives.

To *replace* a drive, refer to Chapter 11, the "Replacing Drive Modules" section, page 11-13. Make sure that you use the correct subsection, based on the server configuration and the procedure you need to perform.

De-Install Drive

The De-Install Drive utility removes a drive from the system database. If the only drive installed in the server is the system drive, it cannot be deinstalled. A GMR server must be off line to deinstall any of its drives. Deinstalling any message drive in a GMR server deinstalls both drives in the GMR pair. The messages on deinstalled drives in any server are inaccessible. Consider copying messages to another drive or drives before deinstalling a drive in either a GMR or non-GMR server.

The file system performs the following:

- ❑ Removes the serial number of the selected drive from the install table on all installed drives.
- ❑ Decreases the amount of free space in the server.



Caution!

Using the De-Install Drive utility results in the loss of access to messages on the specified drive. Do *not* use this utility unless specifically instructed to do so by Octel Communications.

Deinstall a drive, as follows:

1. If this is a GMR server, use menu 13.1 to shut down the server.
2. Press ***Ctrl+D***, then ***U*** at the ***ENTER BOOT COMMAND:*** prompt to access offline menu 20.
3. Disable the drive before deinstalling it. Refer to the "Disable Drive" section, page A-31.
4. From the Drive Install Utilities menu, access the De-Install Drive utility. Figure A-12 is an example of a completed utility for deinstalling a system drive in a non-GMR server.

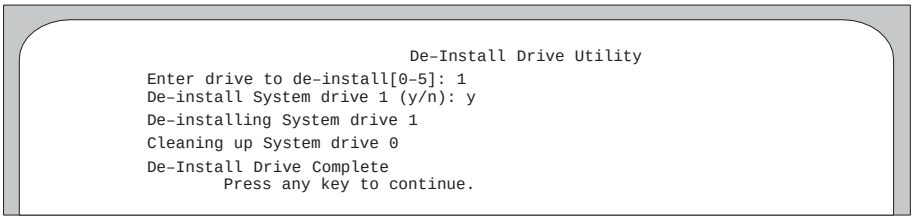


Figure A-12. Prompts and Responses for the De-Install Drive Utility (System Drive in Non-GMR Server).

5. At the ***Enter drive to de-install [0–5]:*** prompt for a non-GMR server or the ***Enter drive to de-install [0–1,2,4]:*** prompt for a GMR server, enter the number of the drive to be deinstalled.
6. When the ***De-install [System or Message] drive [number] (y/n):*** prompt appears for a non-GMR server or the ***De-install Message drive pair. Drive X and Drive Y (y/n):*** prompt appears for a GMR server, enter ***Y*** if the correct drive is displayed or ***N*** if the incorrect drive is displayed. If you enter ***Y***, the server deinstalls the drive.
7. When the operation is complete, press ***Ctrl+C*** until menu 20 reappears.
8. If you did not copy messages from the drive before deinstalling it, you *must* run garbage collect on all the remaining drives in the server (refer to the "Garbage Collect" section, page A-44). Even if you copied messages before deinstalling the drive, Octel recommends that you run garbage collect on all the remaining drives.

Enable Drive

You can use the Enable Drive and Disable Drive utilities to enable and disable system or message drives. You *cannot* use these utilities on the system drive in a single-system-drive server.

The following sections describe using the Enable Drive utility for a system drive, for a message drive in a non-GMR server, and for a message drive in a GMR server.

Enabling a System Drive

Enable a system drive, as follows:

1. Insert a system drive into the desired system drive slot. The red LED on the front of the drive lights.

2. From menu 20, access the Drive Install Utilities menu, then the Enable Drive utility.

3. At the ***Enter drive to be enabled [0–6]:*** prompt, enter the number of the drive to be enabled. The green LED on the drive should light. If the drive was installed previously, the server copies data files and software from the other system drive to the one being enabled.

4. To prevent the possibility of making both system drives unusable, if you try to enable a system drive when the other system drive is not running, the copy is *not* attempted and the following prompt appears:

   Can't enable drive... No valid system drive available.
   Press any key to continue.

   If this prompt appears and the server is offline, press ***Ctrl+C*** until menu 20 reappears, select the option to exit, and reboot the server. If the server is online, press ***Ctrl+C*** until the Main Menu reappears, then attempt to shut down and reboot the server.

5. At the ***Enable drive complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until menu 20 reappears.

Enabling a Message Drive in a Non-GMR Server

If you disabled an installed drive, the only drive you can enable in that slot using the Enable Drive utility is the same drive that you disabled. To enable any other drive in this slot you must use the Drive Replacement utility. There are no restrictions for enabling a drive in a slot when nothing has been previously installed in that slot.

If a drive was physically removed from a slot without deinstalling it, you must run the De-Install Drive utility for that slot before you can enable or install a different drive in that slot.

Enable a message drive in a non-GMR server, as follows:

1. If the drive slot is empty, insert a drive into it. The red LED on the front of the drive lights.

2. From menu 20, access the Drive Install Utilities menu, then the Enable Drive utility.

3. At the ***Enter drive to be enabled [0–6]:*** prompt, enter the number of the drive to be enabled. The green LED on the drive should light.

4. At the ***Enable drive complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until menu 20 reappears.

Enabling a Message Drive in a GMR Server

When you enable a drive in a GMR pair, messages are copied from the other running drive in the pair. In a GMR server, if both message drives in a pair are disabled, enable the one that was disabled last. When the server enables that drive, it also enables the other drive in the pair, if necessary, and reestablishes redundancy. The server enables drives in this manner to ensure that the most current messages are copied to the older drive.

If you disabled an installed drive, the only drive you can enable in that slot using the Enable Drive utility is the same drive that you disabled. To enable any other drive in this slot you must use the Drive Replacement utility. There are no restrictions for enabling a drive in a slot when nothing has been previously installed in that slot.

If a drive was physically removed from a slot without deinstalling it, you must run the De-Install Drive utility offline for that slot (which deinstalls both drives in the GMR pair) before you can enable or install a different drive in that slot.

Enable a message drive in a GMR server, as follows:

1. Insert a message drive into an empty drive slot. The red LED on the front of the drive lights.
2. From menu 20, access the Drive Install Utilities menu, then the Enable Drive utility.
3. At the ***Enter drive to be enabled [0–6]:*** prompt, enter the number of the drive to be enabled. The green LED on the drive should light. If this drive was previously installed in this slot, the server copies the messages from the other message drive in the pair to this message drive.
4. At the ***Enable drive complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until menu 20 reappears.

Disable Drive

You can use the Enable Drive and Disable Drive utilities to enable and disable system or message drives, but the server must have two system drives running before you can disable a system drive. You cannot use these utilities on the system drive in a single-system-drive server.



Caution!

Using the Disable Drive utility results in the loss of access to messages on the specified drive. Do *not* use this utility unless specifically instructed to do so by Octel Communications.

The following sections describe using the Disable Drive utility for a system drive, for a message drive in a non-GMR server, and for a message drive in a GMR server.

Disabling a System Drive

You cannot disable the system drive in a single-system-drive server. Messages on a disabled system drive in a non-GMR server are unavailable.

Disable a system drive, as follows:

1. From menu 20, access the Drive Install Utilities menu, then the Disable Drive utility.
2. At the ***Enter drive to be disabled [0–6]:*** prompt, enter the number of the drive to be disabled.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. At the ***Disable drive complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until menu 20 reappears.

Disabling a Message Drive in a Non-GMR Server

Messages on a disabled message drive in a non-GMR server are not available. If a disabled drive contains a message to a mailbox that triggers an outcall schedule, the subscriber might still get the outcall notification, although the message is unavailable.

Disable a message drive in a non-GMR server, as follows:

1. From menu 20, access the Drive Install Utilities menu, then the Disable Drive utility.
2. At the ***Enter drive to be disabled [0–6]:*** prompt, enter the number of the drive to be disabled.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. The ***Do you wish to wait for Line Tasks to cycle? (y/n):*** prompt might appear for Aria 1.2 or the ***Do you wish to wait for Line Tasks and Mail Tasks to cycle? (y/n):*** prompt might appear for Aria 2.0. Enter ***Y*** to wait for callers or subscribers (and, with Aria 2.0, for digital-networking tasks) to complete their operations, or enter ***N*** to disable the drive immediately.
   - ❑ Selecting ***N*** could cause errors, if subscribers or digital networking are accessing the drive at this time.
   - ❑ If you enter ***Y***, you can stop the waiting period for the line tasks by pressing ***Ctrl+C*** (with the same risk of causing errors as initially entering ***N***).
5. At the ***Disable drive complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until menu 20 reappears.

Disabling a Message Drive in a GMR Server

In an online GMR server, you can disable only one of the drives in a pair. Off line, you can disable both drives in a pair. Disable a message drive in a GMR server, as follows:

1. From menu 20, access the Drive Install Utilities menu, then the Disable Drive utility.
2. At the ***Enter drive to be disabled [0–6]:*** prompt, enter the number of the drive to be disabled.

3. The server shows the serial numbers for both drives in the pair. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial numbers shown for the drives are correct.

4. At the ***Disable drive complete. Press any key to continue.*** prompt, press ***Ctrl+C*** until menu 20 reappears.

Drive Status

Check the drive status, as follows:

1. From the Drive Install Utilities menu, access the Drive Status utility. The Drive Status screen appears, as shown in Figure A-13. The ***6T*** column represents the tape drive; the tape drive, if present, is never shown as installed or running. A ***Y*** entry in the ***SW Enabled:*** row indicates that the software enabled the drive specified in that column.

2. Press ***Ctrl+C*** until menu 20 reappears.

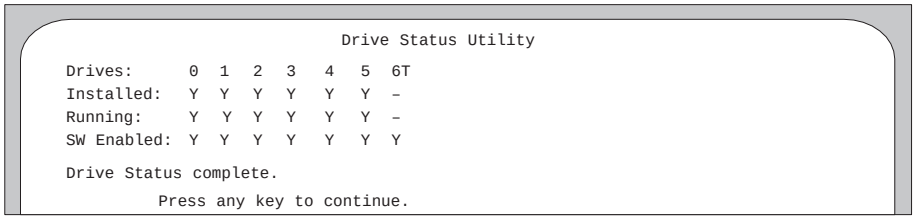


Figure A-13. Drive Status Utility.

Initialize System

Use the Initialize System utility to reinitialize the server, which erases all mailboxes and messages on the server. This utility is available only in the offline mode.



Caution!

The Initialize System utility deletes all mailboxes and messages on the server. Do *not* perform this utility unless the entire database is to be rebuilt.

Initialize a server, as follows:

1. From the Drive Install Utilities menu, access the Initialize System utility. Figure A-14 is an example of a completed utility for initializing the system.

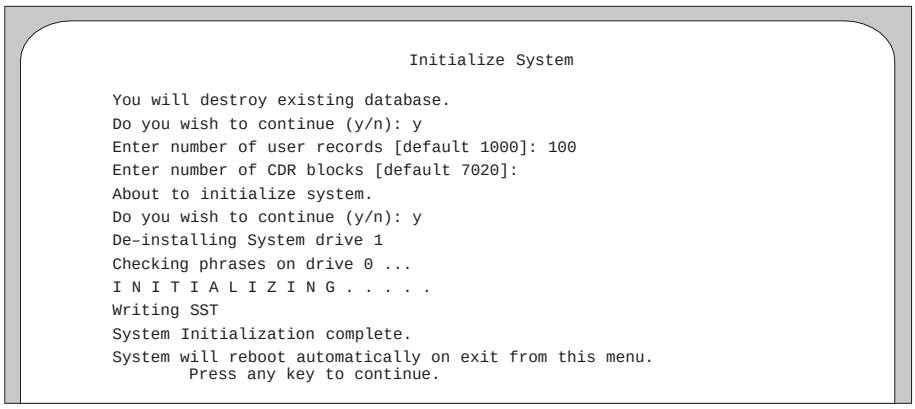


Figure A-14. Example of Prompts and Responses for the Initialize System Utility.

2. At the ***Do you wish to continue (y/n):*** prompt, enter ***Y*** to continue with the initialization or ***N*** to cancel the initialization.
3. At the ***Enter number of user records [default XXXX]:*** prompt, enter the desired number of user records, or press ***Enter*** to retain the default setting.
4. At the ***Enter number of CDR blocks [default XXXX]:*** prompt, enter the desired number of CDR blocks, or press ***Enter*** to retain the default setting.
5. At the ***Do you wish to continue (y/n):*** prompt, enter ***Y*** to continue with the initialization or ***N*** to cancel the initialization.
6. When the initialization is complete, press any key to exit the utility. The server reboots automatically.

Global Message Redundancy (GMR) Utilities

The available GMR utilities are shown in Figure A-15.

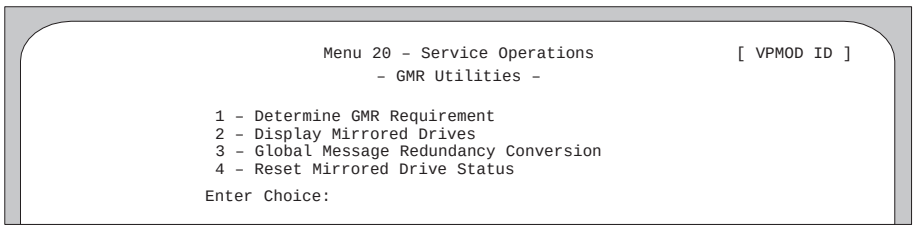


Figure A-15. GMR Utilities Screen.

If the service bit is not enabled, you can view GMR status by accessing Menu 12 – Disk Management from the Main Menu. A screen similar to Figure A-16 appears. If the screen displays the ***THIS SYSTEM HAS REDUNDANT MESSAGE DRIVES.*** message, the server has GMR enabled. If this message does not appear, GMR is not enabled on the server.

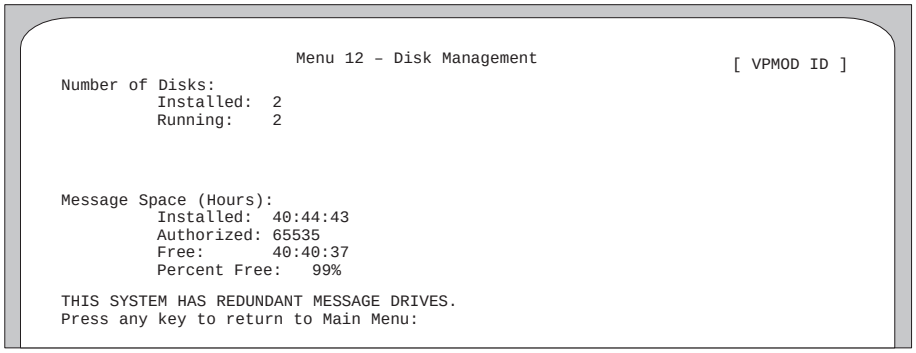


Figure A-16. Disk Management Screen.

The following sections contain procedures for each of the GMR utilities.

Determine GMR Requirement

Use the Determine GMR Requirement utility to check whether the server has enough free space to allow a conversion to GMR:

1. From menu 20, access the Drive Install Utilities, then the Global Message Redundancy utilities, then the Determine GMR Requirement option. The utility checks and displays the used and free message space, as shown in Figure A-17.

   If the message ***This system has met the minimum requirement for GMR conversion.*** is displayed, the server can be converted to GMR. If the server does not meet the minimum requirement for GMR conversion, message space must be added to the server. Call Octel and have the amount of authorized message space increased.

2. Press ***Ctrl+C*** until menu 20 reappears.

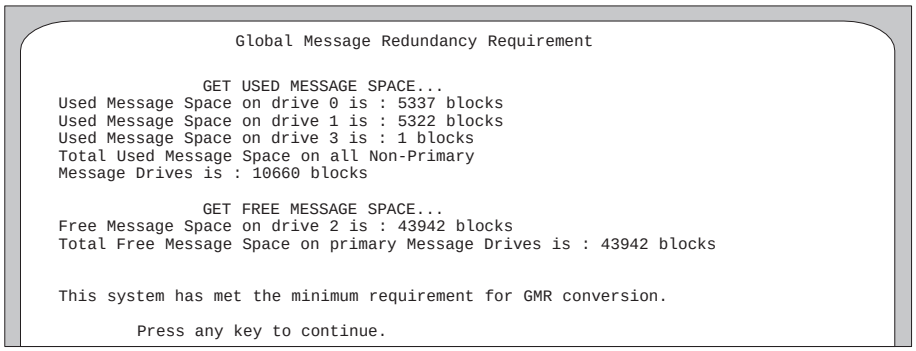


Figure A-17. Determine GMR Requirement Screen.

Display Mirrored Drives

Use the Display Mirrored Drives utility to check the drive status on a system with GMR:

1. From menu 20, access the Drive Install Utilities, then the Global Message Redundancy utilities, then the Display Mirrored Drives option. The Set Mirrored Drive Status screen appears, as shown in Figure A-18.

   If no similar screen appears, make sure that all installed drives are enabled (refer to the "Enabling a Message Drive in a GMR Server" section, page A-31); if enabling the drives does not allow the Display Mirrored Drives option to work, call the Octel Customer Services Center or your Octel distributor for assistance.

2. Press ***Ctrl+C*** until menu 20 reappears.

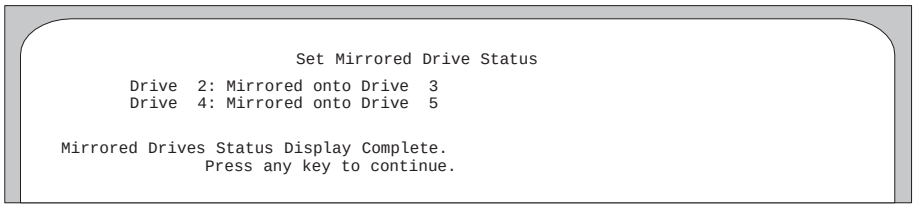


Figure A-18. Set Mirrored Drive Status Screen.

Global Message Redundancy Conversion

This utility converts a server to global message redundancy. Refer to the *Converting an Octel 250 to Global Message Redundancy* Installation Instructions, P/N 181–1177–001, for information about the conversion.

Reset Mirrored Drive Status

The Reset Mirrored Drive Status utility converts a GMR server to a non-GMR server.

Note that, if you have converted a GMR server to a non-GMR server, reestablishing GMR requires a complete reinstallation of GMR, using the appropriate installation instructions.

Disable GMR, as follows:

1. From menu 20, access the Drive Install Utilities, then the Global Message Redundancy utilities, then the Reset Mirrored Drive Status utility.

   The utility checks that the primary drives in the GMR pairs are running, then disables and deinstalls all the secondary (mirrored) drives, resets the GMR flag, and reminds you to reboot the server.

2. Reboot the server, so that the disabling of GMR takes effect.

3. Use the Drive Install Utilities to enable and reinstall the drives that were secondary drives, as necessary. Refer to the "Enabling a Message Drive in a Non-GMR Server" section, page A-30, and the appropriate message drive installation procedure for a non-GMR server in Chapter 12.

4. Enter ***Ctrl+C*** until the menu 20 reappears.

Menu 20 Phrase Table Utilities

Most of the Phrase Table Utilities are available only in offline mode. From menu 20, access the Phrase Table Utilities menu. The options are described in the following sections.

Phrase Table Initialization

Initialize the phrase table, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Phrase Table Initialization utility.

2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that requires the phrase table to be initialized.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

4. At the ***Enter area (A or B):*** prompt, specify the area that is to have the phrase table initialized. The server displays the phrase versions on the source drive.

5. At the ***Enter Choice:*** prompt, enter the number for the phrase set to be initialized.

6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. At the ***You will destroy existing phrases. Do you wish to continue (y/n):*** prompt, enter ***Y*** to continue. A list of possible language types appears.
8. At the ***Enter Choice:*** prompt, enter the number for the language type for the selected phrase set. To erase the selected phrase set, enter ***0***.
9. Unless you enter ***0***, you are prompted to select a digitization rate. At the ***Enter Choice:*** prompt, enter ***1*** to select a 16K digitization rate.
10. When the phrase table initialization completes, press ***Ctrl+C*** until menu 20 reappears.

Set Phrase Table Version

Set the phrase table version, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Set Phrase Table Version utility.
2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that requires the phrase table version to be set.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. At the ***Enter area (A or B):*** prompt, specify the area that is to have the phrase table version set. The server displays the phrase set on the source drive.
5. At the ***Enter Choice:*** prompt, enter the number for the selected phrase set.
6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. In the screen that shows the current phrase table version, at the ***Enter Phrase Table Version:*** prompt, enter the 8-character value for the desired phrase table version, for example, ***90.33.77***. Press ***Enter***.
8. When the phrase version has been set, press ***Ctrl+C*** until menu 20 reappears.

Set Language Type

Set the language type, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Set Language Type utility.
2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that requires the language type to be set.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. At the ***Enter area (A or B):*** prompt, specify the area that is to have the language type set. The server displays the phrase set on the source drive.
5. At the ***Enter Choice:*** prompt, enter the number for the desired phrase set.
6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. In the screen that shows all of the current language types, at the ***Enter Choice:*** prompt, enter the language type for the desired phrases. Press ***Enter***.
8. When the language type has been set, press ***Ctrl+C*** until menu 20 reappears.

Set Digitization Rate

Set the digitization rate, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Set Digitization Rate utility.
2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that requires the digitization rate to be set.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

4. At the ***Enter area (A or B):*** prompt, specify the area that is to have the digitization rate set. The server displays the phrase set on the source drive.

5. At the ***Enter Choice:*** prompt, enter the number for the selected phrase set.

6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. In the screen that shows the available digitization rates, at the ***Enter Choice:*** prompt, enter the number for the desired digitization rate for the selected phrases. Press ***Enter***.

8. When the digitization rate has been set, press ***Ctrl+C*** until menu 20 reappears.

Set In-RAM Phrase Priority

Each language on the server has a priority you can set for using RAM to store the most frequently used phrases for quick retrieval. Set the in-RAM phrase priority for a language, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Set In-RAM Phrase Priority utility.

2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that requires the in-RAM phrase priority to be set.

3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.

4. At the ***Enter area (A or B):*** prompt, specify the area that is to have the in-RAM phrase priority set. The server displays the set of languages on the source drive.

5. At the ***Enter Choice:*** prompt, enter the number for the desired phrase set.

6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. In the screen that shows the current setup of the selected phrase set, at the ***Enter In-RAM Phrase Priority (1–9):*** prompt, enter the number for the desired in-RAM phrase priority. Press ***Enter***.
8. When the in-RAM phrase priority has been set, press ***Ctrl+C*** until menu 20 reappears.

Phrase Delete

Delete a set of phrases, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Phrase Delete utility.
2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that contains the phrases to be deleted.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. At the ***Enter area (A or B):*** prompt, specify the area that contains the phrases to be deleted. The server displays the phrase set on the source drive.
5. At the ***Enter Choice:*** prompt, enter the number for the desired phrase set.
6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. In the screen that shows the current setup of the selected phrase set, at the ***Enter start phrase number:*** prompt, enter the number for the first phrase to be deleted. Press ***Enter***.
8. At the ***Enter end phrase number:*** prompt, enter the number for the last phrase to be deleted. Press ***Enter***.
9. When the ***Phrase Delete Complete*** message appears, press ***Ctrl+C*** until menu 20 reappears.

Phrase Copy

Copy a range of phrase numbers, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Phrase Copy utility.
2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the source drive from which the phrases are to be copied.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. At the ***Enter area (A or B):*** prompt, specify the area from which the phrases to be copied. The server displays the languages (phrase sets) on the source drive.
5. At the ***Enter Choice:*** prompt, enter the number for the desired language. A screen appears that shows the current setup of the selected language on the source drive.
6. At the ***Enter start phrase number:*** prompt, enter the number for the first phrase in the range to be copied. Press ***Enter***.
7. At the ***Enter end phrase number:*** prompt, enter the number for the last phrase in the range to be copied. Press ***Enter***.
8. At the ***Enter drive number [0–1]:*** prompt, enter the number of the destination drive to which the phrases are to be copied.
9. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
10. At the ***Enter area (A or B):*** prompt, specify the area to which the phrases are to be copied. The server displays the languages (phrase sets) on the destination drive.
11. At the ***Enter Choice:*** prompt, enter the number for the desired language.
12. If the area you selected in step 10 is the current boot area and the language you selected in step 11 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

13. A screen appears that shows the current setup of the selected language on the destination and source drives.

14. At the ***Copy phrase(s) x – y (y/n):*** prompt, where x–y is the range of phrase numbers you specified, enter ***Y*** to proceed or ***N*** to cancel the utility.
15. When the ***Phrase Copy Complete*** message appears, press ***Ctrl+C*** until menu 20 reappears.

Reload In-RAM Phrases

Reload the in-RAM phrases, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Reload In-RAM Phrase utility.
2. At the ***Reload In-RAM Phrases (y/n):*** prompt, enter ***Y*** to reload the selected in-RAM phrases. Press ***Enter***.
3. When the ***Reload In-RAM Phrases complete*** message appears, press ***Ctrl+C*** until menu 20 reappears.

Reset Phrase XREF Table

Reset the phrase cross-reference table, as follows:

1. From menu 20, access the Phrase Table Utilities menu, then the Reset Phrase XREF Table utility.
2. At the ***Enter drive number [0–1]:*** prompt, enter the number of the drive that requires the phrase-table cross references to be reset.
3. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the serial number shown for the drive is correct.
4. At the ***Enter area (A or B):*** prompt, specify the area that is to have the phrase table cross-references reset. The server displays the phrase set on the source drive.
5. At the ***Enter Choice:*** prompt, enter the number for the desired phrase set.
6. If the area you selected in step 4 is the current boot area and the language you selected in step 5 is one of the three system languages specified in the ***System Language:*** field in menu 1.2, the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt appears.



Caution!

If you reply ***Y*** to the ***About to change a selected system language phrase table. Do you wish to continue (y/n):*** prompt, phrases that are used in call processing could be damaged.

Enter ***Y*** to proceed or ***N*** to cancel the utility.

7. In the screen that shows the current setup of the selected phrase set, at the ***Reset Phrase XREF Table (y/n):*** prompt, enter a ***Y*** to reset the phrase cross-reference table. Press ***Enter***.

8. When the ***Reset Phrase XREF Table complete*** message appears, press ***Ctrl+C*** until menu 20 reappears.

Menu 20 Miscellaneous Utilities

Use the Miscellaneous Utilities menu to select utilities for performing various functions related to system maintenance. Access the Miscellaneous Utilities menu from menu 20. The options are described in the following sections.

Initialize Drive

The Initialize Drive utility accessed from the Miscellaneous Utilities menu is identical to the Initialize Drive utility accessed from the Drive Copy Utilities menu. For a description, refer to the “Initialize Drive” section, page A-9.

Garbage Collect

Use the Garbage Collect utility to check user records for errors, to report errors, and to update the record-allocation table. This utility is used primarily during software upgrades and drive replacements.

Run garbage collect whenever message drives are replaced. Using this utility is optional for system drives, although Octel recommends it.



Caution!

Do not run garbage collect when any special drive (such as a master drive) is in slot 0 or 1. If garbage collect is run with an inappropriate drive in slot 0 or 1, all messages are lost.

The Garbage Collect utility runs in two passes. During the first pass, the server checks each user record for the locations of messages belonging to each mailbox. After finding a message and checking its validity, the system flags the message as valid. If the user record contains a message location but the system cannot locate the message (or the message is not in a readable format), the result is reported on the screen during the procedure.

The second pass, if chosen, purges damaged messages, updates the record allocation table, and lists the affected user records.

Two types of garbage collect can be selected:

- **Long**. A long garbage collect verifies that all segments of each message for each user record are good.
- **Short**. A short garbage collect checks only the first segment of each message for each user record.

Run garbage collect, as follows:

1. From menu 20, access the Miscellaneous Utilities menu, then the Garbage Collect utility.
2. When the following prompt appears, run garbage collect by pressing the appropriate key:

   Enter drive to garbage collect [0–5]
   or 'A' for all drives:

3. At the ***Do you want a long garbage collect (y/n):*** prompt, enter ***Y*** for a long garbage collect or ***N*** for a short garbage collect.
4. After the first pass is complete, the numbers of scramble code errors, I/O errors, and other errors are reported on a screen similar to Figure A-19. If any errors are shown for the first pass, call the Octel Customer Services Center or your Octel distributor. *Do not* continue.

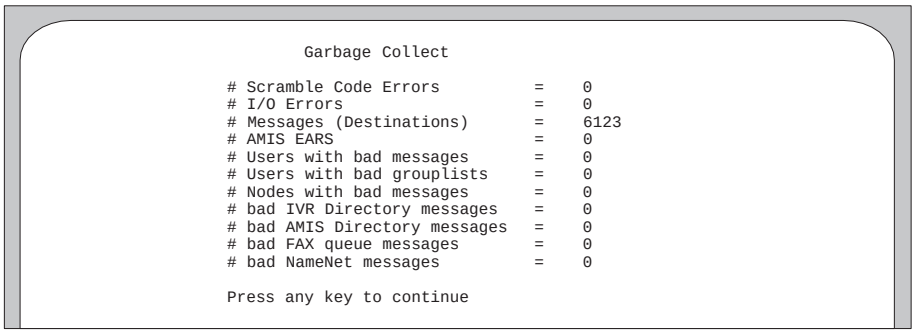


Figure A-19. Example of First Screen of the Garbage Collect First Pass, Showing No Damaged Records.

The sum of the entries in the ***# Scramble Code Errors*** and ***# I/O Errors*** fields equals the total number of damaged messages, names, or greetings flagged during the first pass. The entry in the ***# Messages (Destinations)*** field is the total number of messages remaining in the server.

The entry in the ***# Users with bad messages*** field is the number of user records that will lose messages, names, or greetings when garbage collect is completed. If this number is not zero, call the Octel Customer Services Center or your Octel distributor before proceeding with the second pass.

- ❏ If 50 or more bad messages are found, you must have the engineering bit turned on before you can update the drives. Call the Octel Customer Services Center or your Octel distributor immediately.
- ❏ If *no* errors are shown for the first screen of the first pass, press any key to continue. The second screen of the first pass, similar to Figure A-20, appears.

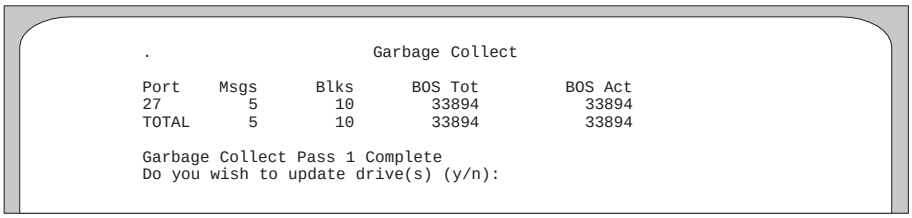


Figure A-20. Example of the Second Screen of the Garbage Collect First Pass.

5. When the ***Do you wish to update drive(s) (y/n):*** prompt appears, enter ***Y*** to change user records and update record-allocation tables or ***N*** to leave system unchanged. *Do not* update drives if any errors were found. If you enter ***Y,*** the second pass begins.
6. If the second pass detects mailboxes with errors, the ***Messages/names/group list members deleted from the following users:*** message appears, followed by a list of the mailboxes of subscribers who lost messages, names, or group-list members. Record these mailbox numbers and report the loss to the system manager so that affected subscribers can be notified.
7. When the ***Garbage Collect Complete*** message appears, press ***Ctrl+C*** until menu 20 reappears.

Set System Boot Area

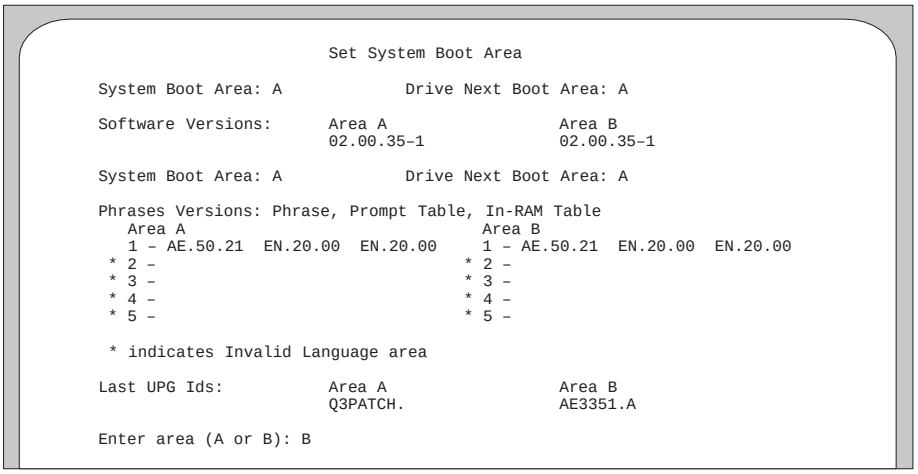
Each system drive has two areas, A and B, with software and phrases in each area. Normally, the software and phrases are redundant between the two areas. Only one area is active (booted) at a time. During a software or phrase upgrade, new software or phrases are automatically loaded into only the *nonactive* software or phrase areas (A or B) on both system drives.

Use the Set System Boot Area utility to specify which area of the software and phrases on a system drive is to become active when the server is rebooted. After setting the boot area as desired, you must reboot the server for it to run using the software on the boot side specified.

Set the system-boot area to A or B, as follows:

1. From menu 20, access the Miscellaneous Utilities menu, then the Set System Boot Area utility.

   The current settings appear on the screen, as shown in the example in Figure A-21. For Aria 2.0, the server displays the software versions and the phrase versions for the phrases, the prompt table, and the in-RAM table in areas A and B. For Aria 1.2, the phrase versions for the prompt table and in-RAM table are not displayed.



```
                          Set System Boot Area

System Boot Area: A             Drive Next Boot Area: A

Software Versions:      Area A                  Area B
                        02.00.35–1              02.00.35–1

System Boot Area: A             Drive Next Boot Area: A

Phrases Versions: Phrase, Prompt Table, In-RAM Table
   Area A                                   Area B
   1 – AE.50.21  EN.20.00  EN.20.00        1 – AE.50.21  EN.20.00  EN.20.00
 * 2 –                                    * 2 –
 * 3 –                                    * 3 –
 * 4 –                                    * 4 –
 * 5 –                                    * 5 –

 * indicates Invalid Language area

Last UPG Ids:           Area A                  Area B
                        Q3PATCH.                AE3351.A

Enter area (A or B): B
```

Figure A-21. Example of Set System Boot Area Utility (Aria 2.0).

2. At the ***Enter Area (A or B):*** prompt, enter ***A*** and press ***Enter*** to set the boot area to area A, or enter ***B*** and press ***Enter*** to set the boot area to area B. If you shut down and reboot the server (or if a power outage occurs), the server will boot from the area specified. The entry in the ***Drive Next Boot Area:*** field does not change to reflect a new boot area, unless you exit and reenter the Set System Boot Area utility.

3. Press ***Ctrl+C*** until menu 20 reappears.

Enable/Disable Drive Read Only Mode

Use the Enable/Disable Drive Read Only Mode utility to control the use of read-only mode. When a drive is in read-only mode, stored messages can be retrieved, but no new messages can be recorded on the specified drive in a non-GMR server or on either drive in the specified drive pair in a GMR server. If a message drive (or one of a GMR pair) is malfunctioning, you can use the read-only mode until the drive can be replaced.

Use the appropriate procedure in one of the following sections, depending on whether the server is a non-GMR or a GMR server.

Non-GMR Server Enable/Disable Drive Read Only Mode

Enable or disable the read-only mode in a non-GMR server, as follows:

1. From menu 20, access the Miscellaneous Utilities menu, then the Enable/Disable Drive Read Only Mode utility.
2. Check the status of all the drives on the Enable/Disable Drive Read Only Mode screen, as shown in the example in Figure A-22. Determine which drives to put in or take out of read-only mode.

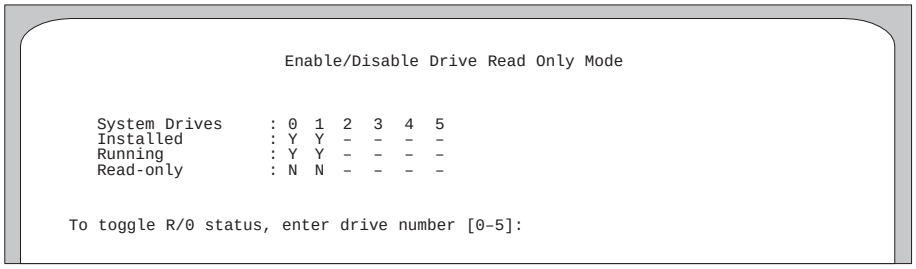


Figure A-22. Example of the Enable/Disable Drive Read Only Mode Screen for a Non-GMR Server.

3. At the ***To toggle R/O status, enter drive number [0–5]:*** prompt, enter the drive number for which you want to enable or disable read-only mode. The drive changes from read-only mode to not read-only mode or from not read-only mode to read-only mode.
4. Press ***Ctrl+C*** until menu 20 reappears.

GMR Server Enable/Disable Drive Read Only Mode

Enable or disable the read-only mode in a GMR server, as follows:

1. From menu 20, access the Miscellaneous Utilities menu, then the Enable/Disable Drive Read Only Mode utility.
2. Check the status of all the drives on the Enable/Disable Drive Read Only Mode screen, as shown in the example in Figure A-23. Determine which drives to put in or take out of read-only mode.

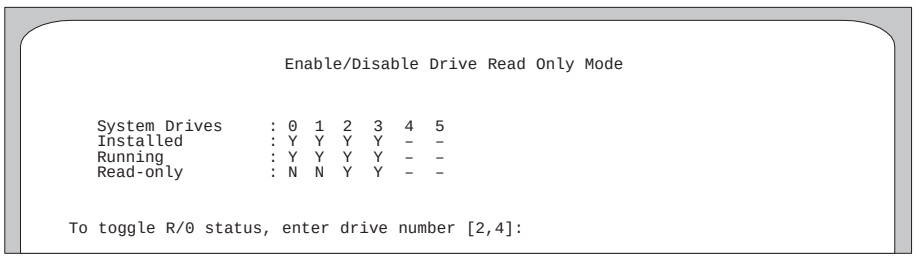


Figure A-23. Example of the Enable/Disable Drive Read Only Mode Screen for a GMR Server.

3. At the ***To toggle R/O status, enter drive number [2,4]:*** prompt, enter the drive number of the primary drive in the GMR pair for which you want to change the read-only status. The drives in the GMR pair (2 and 3, or 4 and 5) change from read-only mode to not read-only mode or from not read-only mode to read-only mode.

4. Press ***Ctrl+C*** until menu 20 reappears.

Configurable Integration Parameters



Caution!

The Configurable Integration Parameters utility allows Octel support personnel to customize integration parameters. If this utility is used incorrectly, severe damage can occur to the server's database.

This utility allows the Octel Customer Services Center to customize the integration parameters without having to use new software or EPROMs. No special hardware or software is needed to change the integration parameters, and the configuration change in the server is permanent.

Call the Octel Customer Services Center or your Octel distributor to use this utility to customize the server's integration parameters.

Visual CIP

This utility is not currently used.

Reset CDR Pointers

Use the Reset CDR Pointers utility only when encountering problems with the CDR buffer or when the CDR buffer has been expanded. This utility causes the next CDR data to be written at the beginning of the CDR buffer, erasing the current data. It can be run only in the offline mode. Reset the CDR pointers, as follows:



Caution!

Make sure that you download any CDR data in the buffer to a PC before running the Reset CDR Pointers utility. Running this utility erases all data in the CDR buffer.

1. Download the current CDR buffer to a PC.

2. From offline menu 20, access the Miscellaneous Utilities menu, then the Reset CDR Pointers utility.

3. When the ***Reset CDR Pointers (y/n):*** prompt appears, enter ***Y*** to reset the CDR pointers or ***N*** to cancel the reset and return to the Miscellaneous Utilities menu.

4. When the CDR pointers have been cleared, press ***Ctrl+C*** until menu 20 reappears.

Message Waiting User Record Conversion

Use this utility *only* under direction from the Octel Customer Services Center (CSC) or your Octel distributor. If necessary, the CSC or your distributor will provide the required procedure.

Initialize System

The Initialize System utility accessed from the Miscellaneous Utilities menu is identical to the Initialize System utility accessed from the Drive Install Utilities menu. For a description, refer to the “Initialize System” section, page A-33.

Display Drive Information & G-List

Display the drive and G-list information, as follows:

1. From menu 20, access the Miscellaneous Utilities menu, then the Display Drive Information & G-List utility.

2. At the ***Enter position of source drive [0–5]:*** prompt, select a drive, and press ***Enter***. Drive information appears on the screen, as shown in the example in Figure A-24.

3. At the ***Display Drive Information complete*** prompt, press ***Ctrl+C*** until menu 20 reappears.

```
                    Display Drive Information and G-List
Enter position of source drive [0–5]:0

VENDOR NAME: QUANTUM
PRODUCT NAME: EMPIRE_1080S
FIRMWARE VERSION: 120J
SERIAL NUMBER: 108AB7
DRIVE CAPACITY: 935MB

Display drive information complete.
   Press any key to continue.
```

Figure A-24. Example of Display Drive Information and G-List Screen.

Set Telephone Keypad Type

Set the telephone keypad type, as follows:

1. From menu 20, access the Miscellaneous Utilities menu, then the Set Telephone Keypad Type utility.
2. At the ***Enter keypad type:*** prompt, select ***0*** for U.S. telephone keypad types, or select ***1*** for CCITT telephone-keypad types. Press ***Enter***. The keypad type is set and the Miscellaneous Utilities menu reappears.
3. Press ***Ctrl+C*** until menu 20 reappears.

Menu 20 Drive Verify Utilities

The Drive Verify Utilities allow software, phrases, system files, utility files, and data records on system drives to be checked. The utility is useful before a copy is performed or after an unsuccessful copy. Three types of drive verification can be performed:

- **Software Verify**. Verifies that all files on a system drive can be read.
- **Phrase Verify**. Verifies that all phrases on a system drive can be read.
- **Drive Verify**. Verifies that all files and phrases on a system drive can be read.

Use the Drive Verify utility, as follows:

1. From menu 20, access the Drive Verify Utilities menu, then enter the number for the desired verify option.
2. If the server has two system drives, the ***Verify Both drives (y/n):*** prompt appears. Enter ***Y*** to verify both drives or ***N*** to verify one of the drives.
3. If only one of the drives is to be verified, at the ***Enter position of drive to be verified [0–1]:*** prompt, enter the number of the drive to be verified.
4. At the ***Is this the correct drive? (y/n):*** prompt, enter ***Y*** if the drive serial number shown for the drive is correct. The server begins to verify the drive.
5. When the verification is complete, press ***Ctrl+C*** until menu 20 reappears.

Menu 20 Datafile Utilities

Use the Datafile Utilities to have the server read and display datafiles, expand and decrease datafile sizes, and obtain physical and logical addresses. Access the Datafile Utilities menu from menu 20. The options are described in the following sections. To assist in selecting the desired datafile, Table A-2 lists the datafile types and subtypes.

Table A-2. Datafile Types and Subtypes.

Datafile Types	Datafile Subtypes
00 – Software	0 – Filecard
	1 – IPL
	2 – System
	3 – Miscellaneous
	4 – VRTX
	5 – S_IPL1
	6 – Not Available
	7 – Not Available
	8 – PIPL
01 – Phrase	0 – Phrase Table
	1 – Prompt Table
	2 – In-RAM Phrase Table
02 – System	0 – SST
	1 – COS
	2 – Report Parameters
	3 – Statistic
	4 – User
	5 – CDR
	6 – CPU Data
	7 – Not Available
	8 – Port Configuration
	9 – Bad Mailboxes
03 – Utility	0 – Dump Records
	1 – Drive Parameters
	2 – Filecard Config
	3 – Disk Info
	80 – 386 RAT (Record Allocation Table) File
	81 – 386 RAT Backup File
	82 – 386 Filecard Error Log
	83 – 386 Network Error Log

Read Datafile Record

Use the Read Datafile Record utility to have the server read a datafile record, as follows:

1. From the Datafile Utilities menu, access the Read Datafile Record option. Press ***Ctrl+C*** at any time to cancel the operation.

2. At the ***Enter position of source drive [0–5]:*** prompt, enter the number of the drive from which the record is to be read. The types of datafile records are displayed on the screen, as shown in Figure A-25.

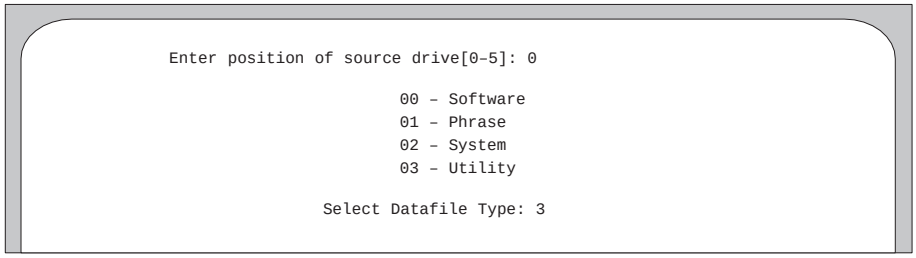


Figure A-25. Example of Screen Showing Datafile Types.

3. At the ***Select Datafile Type:*** prompt, enter the number of the datafile type from which the record is to be read. The subtypes of the chosen type are displayed on the screen, as shown in Figure A-26 for a type 3 datafile type.

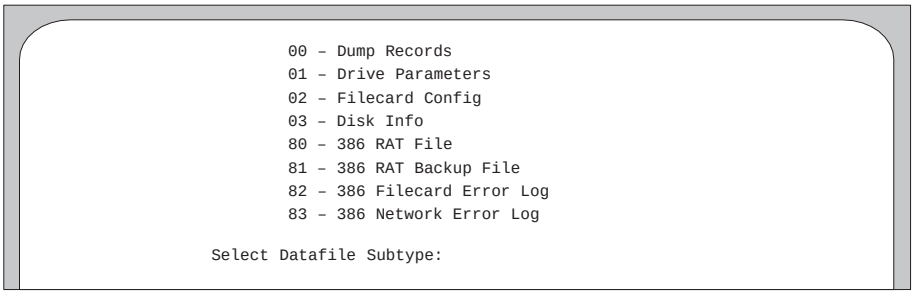


Figure A-26. Example of Screen Showing Subtypes for Datafile Type 3.

4. At the ***Select Datafile Subtype:*** prompt, enter the number of the subtype from which to read the record.

5. At the ***Enter record number (hex):*** prompt, enter the number of the record, in hexadecimal, from which to begin reading the datafile. If the record number is beyond the range for the datafile, the server displays a message to that effect. When the selected datafile has been read, the server returns to the Datafile Utilities menu.

6. Press ***Ctrl+C*** until menu 20 reappears.

Write Datafile Record

Use the Write Datafile Record utility to have the server write the contents of the record buffer to the designated drive. Some software areas are write-protected to prevent accidental write operations that might destroy the system software.



Caution!

Use this utility carefully. Inappropriate entries can damage the server database irreparably. Always write to the same record that was read using the Read Datafile Record utility. If the data is to be updated on a system drive, update the data on both system drives. If the data is to be updated on a message drive in a GMR server, update the data on both message drives in the GMR pair.

Have the server write the last datafile record that was read to the desired drive, as follows:

1. From the Datafile Utilities menu, access the Write Datafile Record utility. Perform a write to a drive, *only* if one of the following has occurred:

   - ❑ The data was changed and both copies of the data must be updated.
   - ❑ A record was damaged on one drive and must be repaired by copying a record from a second drive.

   Press ***Ctrl+C*** at any time to cancel the operation.

2. At the ***ENTER POSITION OF THE DESTINATION DRIVE[0–1]:*** prompt, enter the appropriate drive number. The drive, file, and record numbers are displayed for your confirmation.

3. Verify that the drive, file, and record numbers are correct, then type ***Y*** at the ***CONTINUE (Y OR N)?*** prompt to execute the write operation. If any of the numbers are incorrect, type ***N*** to cancel the operation.

4. If you updated data on a system drive, update the same data on the other system drive. If you updated data on a message drive in a GMR server, update the same data on the other drive in the GMR pair.

5. Press ***Ctrl+C*** until menu 20 reappears.

Display Record

Use the Display Record utility to display a datafile record on the screen. Before you can display a datafile record, you must have it read by using the Read Datafile Record utility (refer to the "Read Datafile Record" section, page A-53). Display a datafile record, as follows:

1. From the Datafile Utilities menu, access the Display Datafile Record utility.

2. At the ***Enter start address(0–27FF)[hex]:*** prompt, enter the offset from which to begin displaying the datafile. If the starting address is beyond the range for the datafile, the server displays a message to that effect. Otherwise, the server displays the record, as shown in the example in Figure A-27. Press the space bar to pause or resume the scrolling of data. Press ***Ctrl+C*** to stop the display of the datafile.

3. When finished, press ***Ctrl+C*** until menu 20 reappears.

```
Enter start address(0–27FF)[hex]: 0
00000000  01 00 00 00 70 00 00 00 19 8D 07 24 23 42 31 00   *....p......$#B1.*
00000010  AD DE 00 00 B7 0F 40 00 A8 02 00 00 E8 0E 00 00   *......@.........*
00000020  C0 00 00 00 C4 05 00 00 AE 05 00 00 C4 05 00 00   *................*
00000030  94 00 00 00 64 00 00 00 64 00 00 00 B8 00 00 00   *....d...d.......*
00000040  94 00 00 00 67 2E 00 00 60 00 00 00 86 30 00 00   *....g...‘....0..*
00000050  00 00 00 00 78 03 00 00 80 03 00 00 95 00 00 00   *....x...........*
00000060  01 00 00 00 0C 00 00 00 0C 00 00 00 0A 00 00 00   *................*
        Press any key to continue.
```

Figure A-27. Example of Datafile Record.

Change Record

Use the Change Record utility to change a datafile record. Before you can change a datafile record, you must have it read by using the Read Datafile Record utility (refer to the "Read Datafile Record" section, page A-53). Change a datafile record, as follows:

1. From the Datafile Utilities menu, access the Change Datafile Record utility.

2. At the ***Enter start address(0–27FF)[hex]:*** prompt, enter the offset from which to start changing the datafile. If the starting address is beyond the range for the datafile, the server displays a message to that effect. Otherwise, the server displays the record change. Press the space bar to pause or resume the scrolling of data. Press ***Ctrl+C*** to stop the display of the datafile.

3. When finished, press ***Ctrl+C*** until menu 20 reappears.

Expand Datafile Size

Use the Expand Datafile Size utility to increase the number of user records or CDR blocks. The server displays the original file size, the new file size, and the space available. Depending on the amount of data stored on the disk, the available size varies. For example, if software, phrases, and database information have filled the disk, no space is available for expansion. In this case, the expansion utility cannot be run. This utility is available only in the offline mode. Before expanding a datafile, consider the following:

- ❑ If you plan to increase the number of user records, make sure that the increase is necessary. Once the number of user records is increased, it cannot be decreased.



Caution!

Make sure that you download CDR data before running the Expand Datafile Size utility. Running this utility erases *all* data in the CDR buffer.

- ❑ Before running this utility to expand the CDR buffer space, download all data in the CDR buffer to a PC. Running this utility erases the data in the CDR buffer.

To expand CDR storage space, refer to Chapter 12, the “Expanding CDR Storage Space” section, page 12-22.

Increase the number of user records, as follows:

1. Run the Garbage Collect utility. Refer to the “Garbage Collect” section, page A-44.
2. From the Datafile Utilities menu, access the Expand Datafile Size menu, as shown in Figure A-28.

```
                    Expand Datafile Size

                1 – CDR Blocks
                2 – User Records

          Select Datafile Subtype:
```

Figure A-28. Expand Datafile Size Menu.

3. At the ***Select Datafile Subtype:*** prompt, enter option ***2*** to increase the number of user records. The screen displays the file’s original size, the new size (at this time, the same as the original size), and the maximum size available.
4. At the ***Enter New Size:*** prompt, enter the new size of the file. The screen is cleared, and the Expand Datafile Size menu reappears.

5. To expand another datafile, repeat steps 3 and 4. To proceed with the expansion, press ***Enter*** at the ***Select Datafile Subtype:*** prompt.

6. At the ***Apply all filesize changes? (y/n):*** prompt, enter ***Y*** to proceed with the expansion, or enter ***N*** to cancel the expansion.

   If you enter ***Y***, the server proceeds with the expansion. If the AMT and NMT have not already been built, the server builds them. The screen displays the processing that expands the datafile. This processing varies, depending on the information in the area into which the datafile is expanding.

7. When the expansion is complete, press ***Ctrl+C*** until menu 20 reappears.

Decrease Datafile Size

Use the Decrease Datafile Size utility to decrease the size of the CDR buffer. (The number of user records cannot be decreased.)

Caution!

Make sure that you download CDR data *before* running the Decrease Datafile Size utility. Running this utility erases *all* data in the CDR buffer.

Before running this utility to decrease the CDR buffer space, download all data in the CDR buffer to a PC. Running this utility erases the data in the CDR buffer.

Decrease the number of CDR blocks, as follows:

1. From the Datafile Utilities menu, access the Decrease Datafile Size utility. The Decrease Datafile Size menu appears, as shown in Figure A-29.

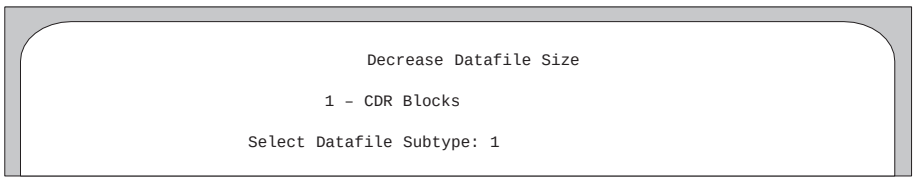


Figure A-29. Decrease Datafile Size Menu.

2. At the ***Select Datafile Subtype:*** prompt, enter option ***1***. The screen displays the file's original size and the new size (at this time, the same as the original size).

3. At the ***Enter New Size:*** prompt, enter the new size of the file. The screen is cleared, and the Decrease Datafile Size menu reappears.

4. At the ***Select Datafile Subtype:*** prompt, press ***Enter***.
5. At the ***You will lose all your CDR!! Do you wish to continue (y/n):*** prompt, enter ***Y*** to continue the operation or ***N*** to cancel the operation.
6. At the ***Apply all filesize changes? (y/n):*** prompt, enter ***Y*** to proceed with the change or enter ***N*** to cancel the change. If you enter ***Y***, the server proceeds to decrease the size of the datafile.
7. When the decrease of the datafile size is complete, press ***Ctrl+C*** until menu 20 reappears.

Patch Software

Use this utility *only* under direction from the Octel Customer Services Center (CSC) or your Octel distributor and *only* if you have the appropriate training. If necessary, the CSC or your distributor will provide the required procedure.

Get Physical Address

Use the Get Physical Address utility to display the physical address of a chosen datafile. The utility prompts for the datafile type, subtype, and record number and displays the logical block address. Display the physical address, as follows:

1. From the Datafile Utilities menu, access the Get Physical Address utility.
2. At the ***Enter drive number [0–5]:*** prompt, enter the number of the drive from which to obtain the physical address. The types of datafile records are displayed (Figure A-25).
3. At the ***Select Datafile Type:*** prompt, enter the number of the type from which to obtain the physical address. The subtypes of the chosen type are displayed (Figure A-26).
4. At the ***Select Datafile Subtype:*** prompt, enter the number of the subtype from which to obtain the physical address of the record.
5. At the ***Enter record number (hex):*** prompt, enter the number of the record from which to begin getting the physical address of the datafile. If the record number is beyond the range for the datafile, the server displays a message to that effect. If the record number is valid for the datafile, the server displays the logical block address, as shown in the example in Figure A-30.
6. When the physical address display is complete, press ***Ctrl+C*** until menu 20 reappears.

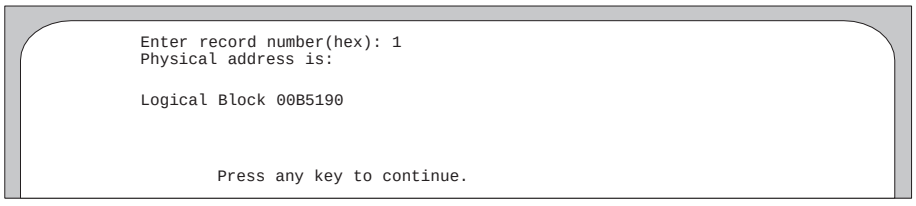


Figure A-30. Example of Physical Address Displayed by Get Physical Address Utility.

Get Logical Address

Use the Get Logical Address utility to display the logical address of a chosen datafile. After you enter the logical block address, the utility displays the datafile type, subtype, and record numbers. Display the logical address, as follows:

1. From the Datafile Utilities menu, access the Get Logical Address utility.
2. At the ***Enter drive number [0–5]:*** prompt, enter the number of the drive from which to obtain the logical address.
3. At the ***Enter Logical Block Address (HEX):*** prompt, enter the hexadecimal number of the logical block address. The screen displays the logical address, which contains the datafile subtype, area, and record numbers, as shown in the example in Figure A-31.
4. When the logical address display is complete, press ***Ctrl+C*** until menu 20 reappears.

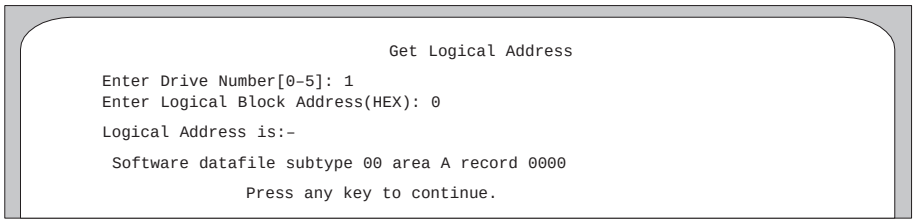


Figure A-31. Example of the Prompts and Responses for the Get Logical Address Utility.

Menu 20 Message Utilities

The Message Utilities allow you to display message and phrase blocks and to convert a message ID to a physical address. From menu 20, access the Message Utilities menu. The options are described in the following sections.

Display Message Blocks

Use the Display Message Blocks utility to display the contents of a selected message, as follows:

1. From the Message Utilities menu, access the Display Message Blocks utility. Figure A-32 is an example of a completed screen for the Display Message Blocks utility.

```
Enter Message ID(Hex): c243
Enter Scramble Code(Hex): c668
Enter start address(0–4FFF)[hex]: 0
00000000  01 00 E4 76 00 00 43 02 43 C2 6F C6 3A 21 43 02   *...v..C.C.o.:!C.*
00000010  00 00 00 00 00 08 03 FF 04 00 02 00 20 4F 3A 21   *............ O:!*
00000020  00 00 F0 59 00 00 00 00 00 00 00 00 00 00 00 00   *...Y............*
00000030  00 00 00 00 00 00 00 00 F0 59 00 00 20 4D 37 00   *.........Y.. M7.*
00000040  02 05 F2 1D 9A 06 05 B2 33 36 06 00 00 00 00 00   *........36......*
00000050  THRU 000001EF CONTAIN 00
```

Figure A-32. Example of Prompts and Responses for the Display Message Blocks Utility.

2. At the ***Enter Message ID(Hex):*** prompt, enter the message ID, in hexadecimal.
3. At the ***Scramble Code(Hex):*** prompt, enter the scramble code, in hexadecimal.
4. At the ***Enter start address(0–4FFF)[hex]:*** prompt, enter the start address, in hexadecimal. The server displays the contents of the selected message.
5. Press ***Ctrl+C***. The ***Press any key to continue*** prompt appears.
6. Press ***Ctrl+C*** until menu 20 reappears.

Display Phrase Blocks

Use the Display Phrase Blocks utility to display the contents of a selected phrase, as follows:

1. From the Message Utilities menu, access the Display Phrase Blocks utility. Figure A-33 is an example of a completed screen for the Display Phrase Blocks utility.

```
Enter position of source drive[0–1]: 0
Enter Message ID(Hex): 0a
Enter start address(0–4FFF)[hex]: 0
00000000  02 00 64 80 00 00 0A 00 0A 00 00 00 13 00 0A 00   *..d.............*
00000010  00 00 00 00 00 23 01 FF 04 00 02 00 18 4F 13 00   *.....#.......O..*
00000020  00 00 12 4D 00 00 00 00 00 00 00 00 00 00 00 00   *...M............*
00000030  00 00 00 00 00 00 00 00 12 4D 00 00 12 4D 16 00   *.........M...M..*
00000040  THRU 000001EF CONTAIN 00
000001F0  00 00 00 00 00 00 00 00 00 00 00 00 00 00 F6 F4   *................*
00000200  51 55 55 32 AA 95 52 A4 A6 49 52 49 49 52 49 49   *QUU2..R..IRIIRII*
```

Figure A-33. Example of Prompts and Responses for the Display Phrase Blocks Utility.

2. At the ***Enter Position of Source drive[0–1]:*** prompt, enter the number of the drive on which the phrase of interest resides.

3. At the ***Enter Message ID(Hex):*** prompt, enter the number, in hexadecimal, of the message ID for the phrase.

4. At the ***Enter start address(0–4FFF)[hex]:*** prompt, enter the address, in hexadecimal, from which to begin displaying the phrase. The server displays the selected phrase blocks on the screen.

5. Press ***Ctrl+C***. The ***Press any key to continue*** prompt appears.

6. Press ***Ctrl+C*** until menu 20 reappears.

Message ID to Physical Address

Use the Message ID to Physical Address utility to display the physical address of a message, based on the message ID. The utility requires that the message ID and scramble code be entered, after which the logical block address is displayed.

Display the physical address, as follows:

1. From the Message Utilities menu, access the Message ID to Physical Address utility. Figure A-34 is an example of a completed screen for the Message ID to Physical Address utility.

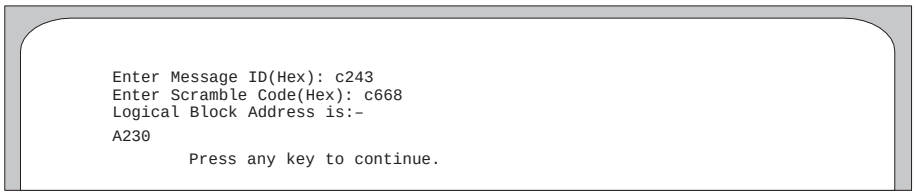


Figure A-34. Example of Prompts and Responses for the Message Id to Physical Address Utility.

2. At the ***Enter Message ID(Hex):*** prompt, enter the message ID, in hexadecimal.

3. At the ***Scramble Code(Hex):*** prompt, enter the scramble code, in hexadecimal. The server displays the logical block address.

4. Press ***Ctrl+C*** until menu 20 reappears.

Menu 20 Display Status Log

Use the Display Status Log utility to display the status log in offline mode. This utility functions the same as when you select option 2 from menu 13, on line. It displays the software releases and scrolls through the status-log entries. Refer to Chapter 8 for information about displaying and interpreting the status log.

Menu 20 SMT Debug Utilities (Reformat Menu)

Use the SMT Debug utility to access the reformat menu, as follows:



Caution!

Running a reformat option at an inappropriate time can cause loss of data or damage to the database. Use the reformat options only when directed to do so.

1. From menu 20, access the SMT Debug Utilities option. The > prompt appears.
2. Type ***reformat*** and press ***Enter*** to access the reformat menu. Reformat menu options appear, as shown in Figure A-35 for Aria 2.0. Aria 1.2 also offers an option 13, Convert ICMB from COS to MB. The options are described in the following sections.

Validity Check User Records (Reformat Menu Option 0)

Use reformat menu option 0 to check for errors in the user records during upgrades and drive replacements. You should usually run reformat menu options 0, 10, and 11 together. Run a validity check on the user records, as follows:

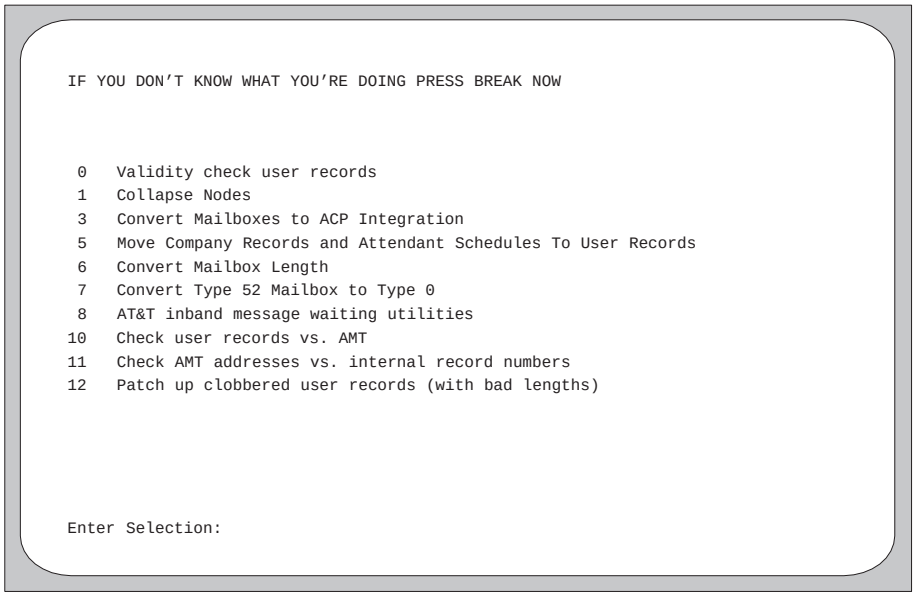


Figure A-35. Reformat Menu (Aria 2.0).

Caution!

If the SMT is an HP 700/43, *do not* press the ***Copy Pr*** key while the Main Menu is displayed. Pressing the ***Copy Pr*** key at the Main Menu causes the printer to stop working. If this occurs, turn the printer power off and back on.

1. Make sure that the printer is loaded with at least 100 pages of paper, then turn on continuous printing at the printer, as described in the printer manual. The printer will provide a printout of user records and any validity-check errors found by the validity-check utility.

2. From the reformat menu, type ***0*** and press ***Enter*** to select Validity check user records.

3. When the ***ENTER "Y" TO CONFIRM USER RECORD VALIDITY CHECK*** prompt appears, type ***Y***, and press ***Enter***.

   The SMT displays all user-record numbers and the name of the user assigned to the mailbox. When the server completes the validity check, the total number of all user records assigned and the numbers of user records with discrepancies appear.

   If any user record has a discrepancy, an error code appears on the same row as the user-record number, in the ***ERR*** column. Refer to the printouts and to Table A-3 for descriptions of the validity-check codes. Call the Octel Customer Service Center or your Octel distributor for assistance to correct any damaged user records.

4. When the ***CHECK DONE—PRESS ANY KEY TO CONTINUE*** prompt appears, press ***Ctrl+C*** until menu 20 reappears.

Table A-3. Validity-Check Error Codes.

Validity-Check Code	Description
	Mailbox Record
0001	Invalid user-record length
0002	Unassigned user record
0003	Wrong user-record number
0004	Bad prompt level
0005	Bad class of service
0006	Bad mailbox length
0007	Bad name length
0008	Bad extension length
0009	Bad password length
000A	Bad group-member count
000B	Bad total-member count
000C	Bad message-structure length
000D	Bad record level
000E	Bad outcall-telephone-number length
000F	Bad department length
0010	Bad attendant number
0011	Invalid sender or destination value in message-directory entry
0012	Out-of-order message-directory entries
0013	Bad company number
0014	Bad department number
0015	Bad abbreviated address length
0016	Bad mailbox alias length
0017	Invalid mailbox forwarding address
0018	Invalid facsimile printer extension number
00A0	Bad network-node alias
00B0	Bad digit in mailbox number
00B1	Bad digit in mailbox name
00B2	Bad digit in mailbox alias
00B3	Bad digit in abbreviated address
00B4	Bad abbreviated-address length
00B6	Duplicate mailbox number in AMT (address management table)
00B7	Duplicate mailbox name in name table
00B8	Full AMT
00B9	Full NMT (name management table)
00BE	Damaged user record

Table A-3. Validity-Check Error Codes (Continued).

Validity-Check Code	Description
	Community Record
0001	Bad community-record length
0002	Bad community-record level
0003	Bad internal community number
0004	Bad community-number length
0005	Bad community-name length
0006	Bad contact-number length
0007	Bad telephone-number length
0008	Bad bulletin IUN (internal user number)
0009	Bad after-hours IUN
000A	Bad attendant schedule
000B	Bad attendant extension number
000C	Bad attendant telephone number
000D	Bad password length
000E	Bad department name
000F	Bad department-bulletin IUN
0010	Bad department-after-hours IUN
0011	Bad department-extension number
0012	Bad department-attendant number
0013	Bad department-attendant schedule
0029	Bad community-record length
002A	Bad community-record level
002B	Bad internal company number
002C	Bad community-number length
002D	Bad community-name length
002E	Bad contact-number length
002F	Bad telephone-number length
0030	Bad bulletin IUN
0031	Bad after-hours IUN
0032	Bad attendant schedule
0033	Bad attendant extension
0034	Bad attendant number
0035	Bad password length
0036	Bad group name
0037	Bad group bulletin IUN

Table A-3. Validity-Check Error Codes (Continued).

Validity-Check Code	Description
Community Record (Continued)	
0038	Bad group after-hours IUN
0039	Bad group-extension number
003A	Bad group-attendant number
003B	Bad group-attendant schedule
Attendant Record	
003C	Bad group-record level
0051	Bad attendant-record length
0052	Bad attendant-record level
0053	Bad IUN
0054	Bad value for attendant number

Collapse Nodes (Reformat Menu Option 1)

Some customers establish and use multiple node profiles for a server to speed up network messaging to a remote server. The multiline networking feature, introduced in Aria 1.2, makes this unnecessary. The Collapse Nodes utility allows you to consolidate multiple Octel Net**working** (non-AMIS) nodes that have the same node serial number and number of mailbox digits into one master node, if the total number of prefixes in the master node and the nodes to be collapsed is 200 or fewer.

Collapse nodes, as follows:

1. The Collapse Nodes utility returns to senders any outbound network messages left in the queues of nodes that are to be collapsed.

   If you know which nodes are to be collapsed, make sure that the networking queues on all nodes to be collapsed are empty, as follows:

   a. From the SMT Main Menu, access Menu 15 – Network Management, then the Octel **Networking** Administration menu, then the List Valid Node Numbers on the Network option.

   b. If any node to be collapsed shows messages awaiting transmission, wait until those messages are transmitted before you collapse that node, or use menu 15.1.3, Node Profile, to change the ***Type of Transmission:*** field to ***2 – Temporarily Disabled/Messages Returned*** for Aria 1.2 or the ***Transmission Type:*** field to ***2 – Disabled/Messages Returned*** for Aria 2.0.

c. Use the List Valid Node Numbers on the Network option again to verify that the queue is empty. Call the Octel Customer Services Center or your Octel distributor if you cannot make the queue empty.

d. Press ***Ctrl+C*** until the Main Menu reappears.

2. Access Menu 20 – Service Operations, then the SMT Debug Utilities menu.

3. At the > prompt, type ***reformat***, and press ***Enter***.

4. From the reformat menu, enter ***1*** to select the Collapse Nodes utility. The screen shown in Figure A-36 appears, with only the ***Master Node Number:*** field displayed.

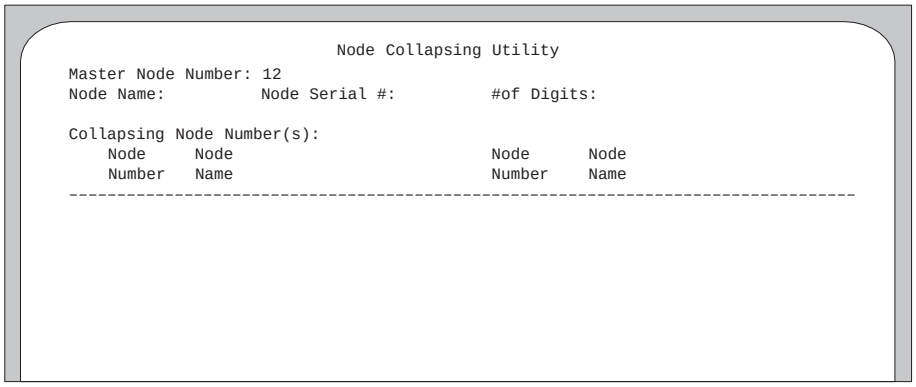


Figure A-36. Example of the Node Collapsing Utility Screen.

5. In the ***Master Node Number:*** field, enter the number for the master node that is to remain after the utility is run. The server displays the following:

   - The ***Node Name:***, ***Node Serial #:***, and ***# of Digits:*** fields appear, with entries for the master node and its mailboxes.
   - Then, under the ***Collapsing Node Number(s):*** heading, in the ***Node Number*** and ***Node Name*** columns, up to 20 potentially collapsible nodes appear that have the same serial number and number of mailbox digits as the master node. (If there are more than 20 such nodes, you need to run the utility again later.)
   - To the left of each entry in the ***Node Number*** column, a default ***Y*** appears, indicating that this node is to be collapsed.

   The server checks that the total number of prefixes in the master node and all nodes to be collapsed is 200 or fewer. If more than 200 prefixes would be consolidated into the master node, an ***N*** appears to the left of those node numbers that cause the total to exceed 200. If you specify node collapse (***Y***) for a set of nodes that would cause a total of more than 200 different prefixes to be consolidated, the utility will not run.

6. Change ***Y*** to ***N*** for any particular node or nodes that you do not want to collapse into the master node, and press ***Enter***.

   If any node to be collapsed has messages in its network queue, a warning is displayed on the SMT, indicating that the messages will be returned to their senders when the Collapse Nodes utility is run.

7. Answer ***Y*** to the prompt that allows the utility to proceed. The server collapses the nodes that have the same serial number and the same number of digits for their mailboxes as the master node.

   The utility performs the following:

   a. The prefixes for the collapsing nodes are moved to the master node.

   b. Addresses of NameNet entries in the collapsing nodes are changed to reflect the master node.

   c. System and personal-group distribution-list members having node numbers for collapsing nodes are changed to reflect the master node.

   d. In voice mailboxes, all networked, returned network, and fax network messages that include node numbers from collapsing nodes are updated.

   e. Follow-me-forward mailboxes that forward to collapsing nodes have their node numbers updated.

8. When the Node Collapse utility is complete, the SMT displays a completion message and goes blank. Press any key and reenter the system manager password.

9. Repeat steps 2 through 8, as necessary, if more nodes remain to be collapsed into the same master node.

10. Press ***Ctrl+C*** until the menu 20 reappears.

11. Remove any network diagnostic messages in the primary system manager mailbox to delete any associated collapsed nodes from the server.

12. Remind the system manager to establish multiline networking parameters to allow multiple lines to be used for network messaging.

Convert Mailboxes to ACP Integration (Reformat Menu Option 3)

The Octel 250 does not use this utility.

Move Company Records and Attendant Schedules to User Records (Reformat Menu Option 5)

This option is not currently used.

Convert Mailbox Length (Reformat Menu Option 6)

Use reformat menu option 6 to change the number of digits for mailboxes on the server. Convert the mailbox length, as follows:

1. Coordinate with the system manager before running this utility, because both the X.25 link, if installed, and the server must be taken out of service.



Caution!

Back up the server database before converting the mailbox length. If a backup is not performed and the mailbox-length conversion fails, mailboxes and messages could be lost.

2. Back up the server database. Refer to Chapter 10, the "Backing Up the Database and Messages to Tape" section, page 10-4.

3. If a data module is connected to the server, the X.25 link must be stopped before running this utility. From the Main Menu, access menu 18.3, X.25 Interface Operations.

4. In the ***Physical Interface Number:*** field, enter ***0*** for the number of the server DB25 connector to which the X.25 link is connected, and press ***Enter***.

5. At the ***Enter "1" – Start, "2" – Immediate Stop*** prompt, type ***2*** for Immediate Stop and press ***Enter***.

6. Press ***Ctrl+C*** until the Main Menu reappears.

7. From the Main Menu, access Menu 20 – Service Operations, then the SMT Debug Utilities menu.

8. At the > prompt, type ***reformat***, and press ***Enter***.



Caution!

If the SMT is an HP 700/43, *do not* press the ***Copy Pr*** key while the Main Menu is displayed. Pressing the ***Copy Pr*** key at the Main Menu causes the printer to stop working. If this occurs, turn the printer power off and back on.

9. Make sure that the printer is loaded with at least 100 pages of paper, then turn on continuous printing at the printer, as described in the printer manual. The printer will provide a printout of the results of running reformat menu option 11.

10. From the reformat menu, run option 11, as described in the "Check AMT Addresses vs. Internal Record Numbers (Reformat Menu Option 11)" section, page A-74. This utility provides the range of the mailboxes to be converted.

11. Make sure that the printer is printing the screens. The > prompt appears when the utility is finished.

12. At the > prompt, type ***reformat***, and press ***Enter***.

13. When the reformat menu reappears, type ***6*** and press ***Enter*** to select the Convert Mailbox Length option.

14. At the ***ENTER "Y" TO CONFIRM MAILBOX LENGTH CONVERSION*** prompt, enter ***Y***. The MAILBOX LENGTH CONVERSION UTILITY screen appears, as shown in Figure A-37.

```
                    MAILBOX LENGTH CONVERSION UTILITY


Current Mailbox Length (number of digits):
New Mailbox Length (number of digits):
```

Figure A-37. MAILBOX LENGTH CONVERSION UTILITY Screen.

15. In the ***Current Mailbox Length (number of digits):*** field, the current number of digits for the selected mailboxes is displayed.

16. In the ***New Mailbox Length (number of digits):*** field, enter the new number of digits for the selected mailboxes. The prefix matrix appears on the screen, as shown in Figure A-38.

```
                    MAILBOX LENGTH CONVERSION UTILITY


Current Mailbox Length (number of digits):
New Mailbox Length (number of digits):

Prefix to be Added          Mailbox Ranges
------------------          ----------------------------------------------
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
Prefix:                             From                To:
```

Figure A-38. Prefix Matrix on the MAILBOX LENGTH CONVERSION UTILITY Screen.

17. Using the printout made when reformat menu option 11 was run, enter the prefix that is to be added to each range of mailboxes. Press ***Enter*** to skip any unnecessary fields.

18. After the last field has been filled or skipped, the ***Proceed with Conversion (Y/N):*** prompt appears. Enter ***Y.*** The amount of time the conversion takes depends on how many mailboxes are in the server and the ranges of mailboxes specified in step 17. When the conversion is complete, the following prompt appears:

    MAILBOX LENGTH CONVERSION COMPLETE.
    YOU MUST REBOOT THE SYSTEM NOW.

    Press Enter to continue.

19. Press ***Enter.*** The > prompt reappears.

20. Turn off continuous-printing mode on the printer.

21. Press ***Ctrl+C*** until the Main Menu reappears.

22. Reboot the server.

23. If you stopped the X.25 link in step 5, use menu 18.3 to restart the link.

Convert Type 52 Mailbox to Type 0 (Reformat Menu Option 7)

This option is not currently used.

AT&T Inband Message Waiting Utilities (Reformat Menu Option 8)

Use reformat menu option 8 utilities for AT&T in-band integrations. From the reformat menu, type ***8*** and press ***Enter*** to select AT&T in-band message waiting utilities. The following menu appears:

1. Validate message waiting port table.
2. Fix invalid entries in message waiting port table
3. Turn off all message waiting indicators.

Use the options as follows:

- ❑ Select option ***1*** to validate the message-waiting port table. Make sure that the ports shown are all valid message-waiting ports, as assigned in menu 4.1.

- ❑ Select option ***2*** to correct any invalid entries shown. This option allows you to fix invalid entries by substituting valid ports in the message-waiting port table. However, this option does not fix message-waiting inconsistencies on the PBX. (Consult the PBX technician to correct PBX inconsistencies.)

- ❑ Select option ***3*** to turn off all message-waiting indicators. The ***NUMBER OF INDICATORS TO TURN OFF:*** field appears. Continue as follows:

  1. Make a note of the value in this field.

  2. At the ***ENTER "Y" TO BEGIN TURNING OFF INDICATORS:*** prompt, enter ***Y*** and press ***Enter*** to begin turning off indicators. At this point, the message-waiting ports go off hook and dial the message-waiting cancel code, followed by the extension number of all mailboxes with new unheard messages.

  3. You can use option ***3*** repeatedly, and you can view the number of indicators still on, as it decrements. Type ***Ctrl+C*** to exit the option, and then reenter it to view the progress.

  4. When the count reaches 0, the server has completed sending requests to the PBX to turn message waiting off. Access option ***1***. No ports should be shown in the message-waiting port table.

Check User Records vs. AMT (Reformat Menu Option 10)

Use reformat menu option 10 to check the user records against the address-management table (AMT), primarily during upgrades and drive replacements. You should usually run reformat menu options 0, 10, and 11 together. Check the user records against the AMT, as follows:



Caution!

If the SMT is an HP 700/43, *do not* press the ***Copy Pr*** key while the Main Menu is displayed. Pressing the ***Copy Pr*** key at the Main Menu causes the printer to stop working. If this occurs, turn the printer power off and back on.

1. Make sure that the printer is loaded with at least 100 pages of paper, then turn on continuous printing at the printer, as described in the printer manual. The printer will provide a printout of user records and any validity-check errors found by reformat option 10.

2. From the reformat menu, type ***10*** and press ***Enter*** to select Check user records vs. AMT.

3. When the ***ENTER "Y" TO CONFIRM UR/AMT CROSS CHECK*** prompt appears, type ***Y,*** and press ***Enter.***

4. When the ***CHECK DONE – PRESS ANY KEY TO CONTINUE*** prompt appears, press any key.

5. Use the printouts to verify that no errors were reported for any mailbox. Call the Octel Customer Service Center or your Octel distributor for assistance to correct any damaged user records.

Check AMT Addresses vs. Internal Record Numbers (Reformat Menu Option 11)

Use reformat-option 11 to check the address-management table (AMT) against the user records, primarily during upgrades and drive replacements. You should usually run reformat menu options 0, 10, and 11 together. Check the AMT against the user records, as follows:



Caution!

If the SMT is an HP 700/43, *do not* press the ***Copy Pr*** key while the Main Menu is displayed. Pressing the ***Copy Pr*** key at the Main Menu causes the printer to stop working. If this occurs, turn the printer power off and back on.

1. Make sure that the printer is loaded with at least 100 pages of paper, then turn on continuous printing at the printer, as described in the printer manual. The printer will provide a printout of user records and any validity-check errors found by reformat option 11.

2. From the reformat menu, type ***11*** and press ***Enter*** to select Check AMT addresses vs. internal record numbers.

3. When the ***ENTER "Y" TO CONFIRM AMT/UR CROSS CHECK*** prompt appears, type ***Y,*** and press ***Enter***.

4. When the ***CHECK DONE – PRESS ANY KEY TO CONTINUE*** prompt appears, press any key.

5. Use the printouts to verify that no errors were reported for any mailbox. Call the Octel Customer Service Center or your Octel distributor for assistance to correct any damaged user records.

Patch Up Clobbered User Records (with Bad Lengths) (Reformat Menu Option 12)

Do not use this utility.

Convert ICMB from COS to MB (Reformat Menu Option 13)

This utility is available for Aria 1.2, but not for Aria 2.0. *Do not* use this utility.

Menu 20 Toggle Extended Print

If a printer is attached to the SMT and is on line and enabled for continuous printing, all information displayed on the screen is sent to the printer. Use the Toggle Extended Print utility to enable or disable the display of data on the SMT and the printing of details when certain utilities are run. Extended print refers to the variable information displayed on the screen while certain utilities are running. For example, when the Make Phrase Areas A and B Redundant utility runs, phrases are checked. If extended print is on, the server displays the message IDs as they are processed. If extended print is off, the server does not display the message IDs.

The variable information sent to the printer is continuously overwritten and is unreadable on the printout. It is recommended that extended print be turned off whenever a printer is printing the results of a utility that displays variable information.

Toggle extended print, as follows:

1. From menu 20, access the Toggle Extended Print utility.
2. If extended print is on, the ***Extended print is ON. Change to OFF (y/n):*** prompt appears. Enter ***Y*** to turn extended print off or ***N*** to leave extended print on. Menu 20 reappears automatically.

   If extended print is off, the ***Extended print is OFF. Change to ON (y/n):*** prompt appears. Enter ***Y*** to turn extended print on or ***N*** to leave extended print off. Menu 20 reappears automatically.

Menu 20 Software/Phrase Upgrade

The online upgrade tool uses this utility automatically. *Do not* select this utility from menu 20.

Menu 20 Port Testing Utilities

The Port Testing Utilities, shown in Figure A-39, are described in Chapter 10, Routine Maintenance, the “Testing Ports” section, page 10-7.

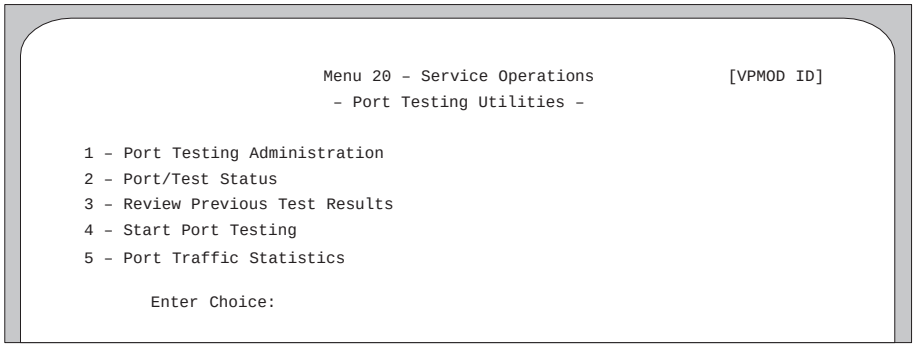


Figure A-39. Port Testing Utilities Menu.

Menu 20 Online CDR Utility

The Online CDR Utility, shown in Figure A-40, is described in Chapter 7, the “Online CDR Utility” section, page 7-5.

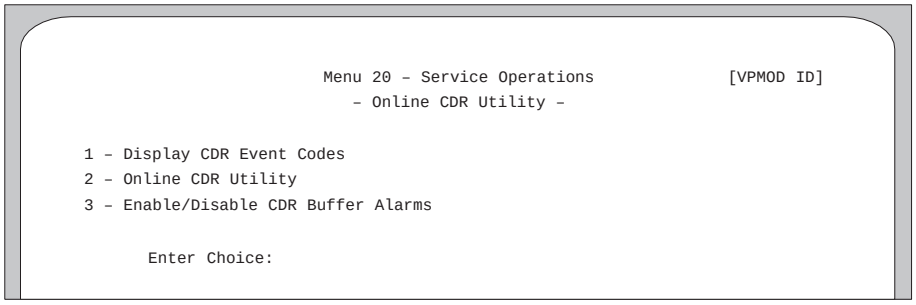


Figure A-40. Online CDR Utilities Menu.

Menu 20 LAN Utilities

Use the LAN Utilities, shown in Figure A-41, to test the LAN and digital networking and to display network statistics. These procedures are described in Chapter 7, the “LAN Utilities” section, page 7-32.

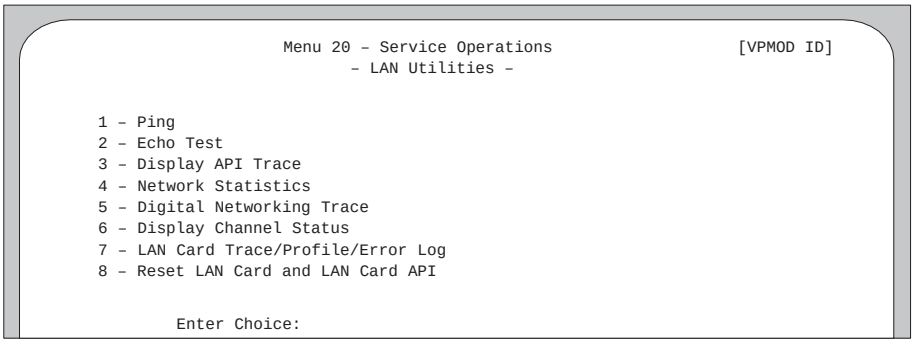


Figure A-41. LAN Utilities Menu.

Menu 20 SCSI Media Applications

Use the SCSI Media Applications menu to perform a software upgrade from Aria 2.0 to newer software, using an upgrade tape in the server’s tape drive. These procedures are described in Chapter 14.

Menu 21 – System Backup

The online Menu 21 – System Backup menu is shown in Figure A-42, with all the options that are available in Aria 2.0. The following sections describe these options.

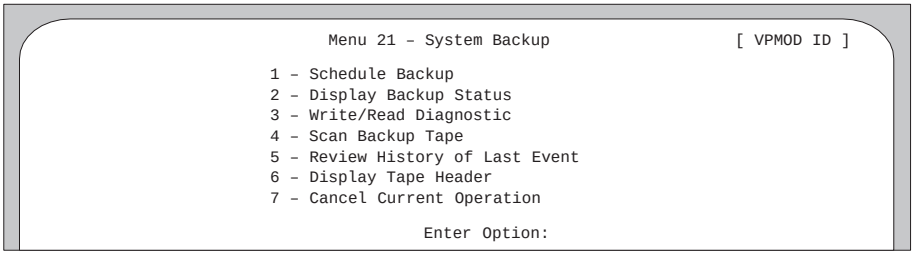


Figure A-42. Online Menu 21 – System Backup (Aria 2.0).

Schedule Backup

Use the Schedule Backup option to define the time at which a backup to tape will automatically be performed. For a description, refer to Chapter 10, the “Backing Up the Database and Messages to Tape” section, page 10-4.

Display Backup Status

When on line, the Display Backup Status option displays the status of a backup operation. During an online backup, menu 21 is on the screen (Figure A-42).

Display backup status, as follows:

1. Select option ***2*** to display the status of the backup, as shown in Figure A-43.
2. Press any key to refresh the status screen.
3. Press ***Break*** to return to menu 21. Pressing ***Break*** does not abort a backup.

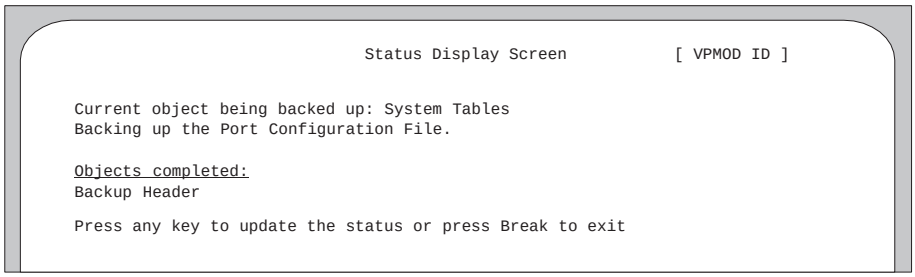


Figure A-43. Online Status Display Screen for Backup.

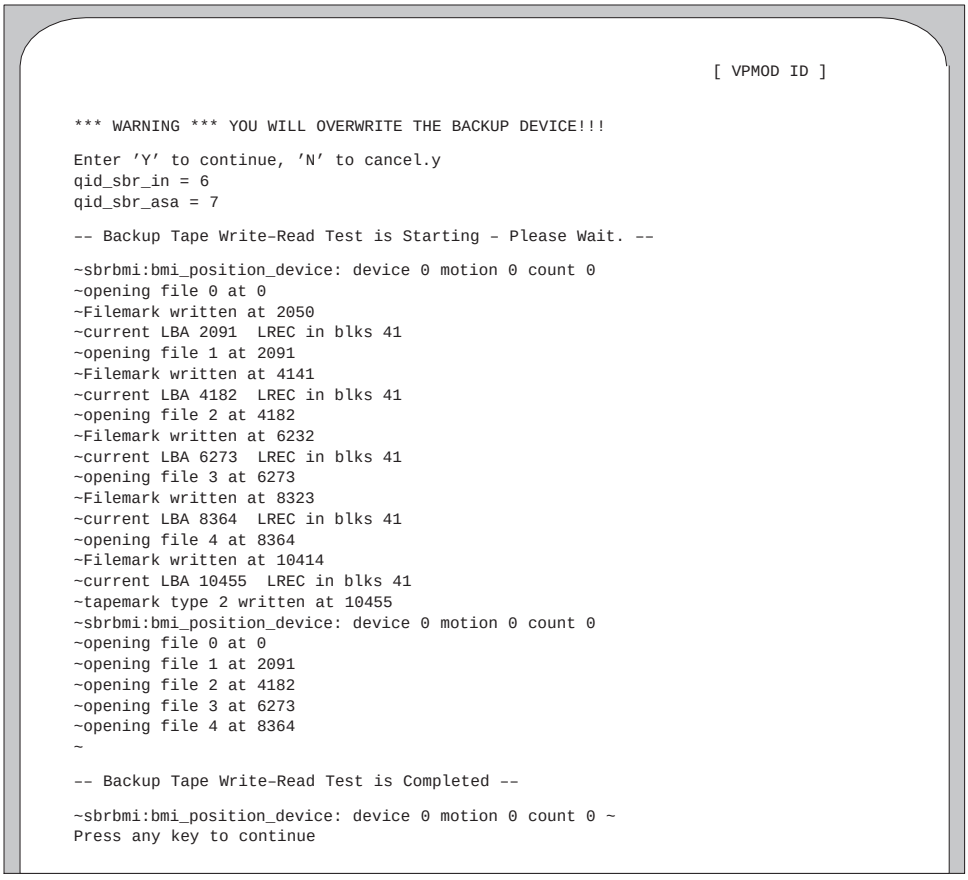
Write/Read Diagnostic

Use the Write/Read Diagnostic utility to test operation of the tape drive, as follows:

1. Insert a DDS-2 4-GB tape that you can overwrite into the tape drive. Wait approximately 10 seconds, until the green LED on the tape drive stops blinking and stays on. This indicates that the tape is loaded. If the amber LED on the tape drive blinks, you must clean the tape drive (refer to Chapter 10).
2. Access the Write/Read Diagnostic utility. The results are shown in Figure A-44.
3. At the *******WARNING**** YOU WILL OVERWRITE THE BACKUP DEVICE!!! Enter ‘Y’ to continue, ‘N’ to cancel:*** prompt, enter ***Y*** to continue the test. If a failure occurs during this test, call the Octel Customer Services Center or your Octel distributor.
4. When the test is finished, press ***Ctrl+C*** until the Main Menu reappears (or until the Offline System Backup and Restore menu reappears, if the server is off line).

5. Press the eject button on the tape drive, and remove the tape.

6. Close the server doors.



```
                                                                [ VPMOD ID ]


*** WARNING *** YOU WILL OVERWRITE THE BACKUP DEVICE!!!

Enter 'Y' to continue, 'N' to cancel.y
qid_sbr_in = 6
qid_sbr_asa = 7

-- Backup Tape Write-Read Test is Starting - Please Wait. --

~sbrbmi:bmi_position_device: device 0 motion 0 count 0
~opening file 0 at 0
~Filemark written at 2050
~current LBA 2091  LREC in blks 41
~opening file 1 at 2091
~Filemark written at 4141
~current LBA 4182  LREC in blks 41
~opening file 2 at 4182
~Filemark written at 6232
~current LBA 6273  LREC in blks 41
~opening file 3 at 6273
~Filemark written at 8323
~current LBA 8364  LREC in blks 41
~opening file 4 at 8364
~Filemark written at 10414
~current LBA 10455  LREC in blks 41
~tapemark type 2 written at 10455
~sbrbmi:bmi_position_device: device 0 motion 0 count 0
~opening file 0 at 0
~opening file 1 at 2091
~opening file 2 at 4182
~opening file 3 at 6273
~opening file 4 at 8364
~

-- Backup Tape Write-Read Test is Completed --

~sbrbmi:bmi_position_device: device 0 motion 0 count 0 ~
Press any key to continue
```

Figure A-44. Write/Read Diagnostic Screen.

Scan Backup Tape

Use this option to display the contents of the backup tape, as follows:

1. Insert the DDS-2 4-GB tape that is to be scanned into the tape drive. Wait approximately 10 seconds, until the green LED on the tape drive stops blinking and stays on. This indicates that the tape is loaded. If the amber LED on the tape drive blinks, you must clean the tape drive (refer to Chapter 10).

2. If you want hard copies of all the displayed screens, which can be several hundred pages long, perform the following steps:

   a. From the SMT Main Menu, access Menu 20 – Service Operations, then the Toggle Extended Print utility.

   b. At the ***Extended print is OFF. Change to ON (y/n):*** prompt, enter ***Y*** to turn extended print on. Menu 20 reappears automatically.

   c. Press ***Ctrl+C*** to return to the Main Menu.

3. From online Menu 21 – System Backup, access the Scan Backup Tape utility, or from the Offline System Backup and Restore menu, access the Scan Backup Media option.

4. At the ****WARNING* ONLY RUN THIS UTILITY IF INSTRUCTED BY AN OCTEL SERVICE REP! Enter 'Y' to continue, 'N' to cancel:*** prompt, enter ***Y*** to continue.

5. At the ***Scan Backup Tape Completed*** message, press any key to continue.

6. When the test is finished, press ***Ctrl+C*** until the Main Menu reappears (or until the Offline System Backup and Restore menu reappears, if the server is off line).

7. Remove the tape from the tape drive.

8. If you turned on extended printing in step 2b., turn it off, as follows:

   a. From the SMT Main Menu, access Menu 20 – Service Operations, then the Toggle Extended Print utility.

   b. At the ***Extended print is ON. Change to OFF (y/n):*** prompt, enter ***Y*** to turn extended print off. Menu 20 reappears automatically.

   c. Press ***Ctrl+C*** to return to the Main Menu.

Review History of Last Event

This option displays information about the last backup or restore operation performed using the tape drive; the information is stored on and retrieved from the system drive, not from any tape. This option is only available on line. Octel recommends that a printed copy of this information be kept with the backup tape. Use this option, as follows:

1. From online Menu 21 – System Backup, access the Review History of Last Event option to display the History of Last Event screen, as shown in Figure A-45. The fields on this screen are described following this procedure.

2. Print this screen and put it with the backup tape.

3. Press ***Ctrl+C*** until the Main Menu reappears.

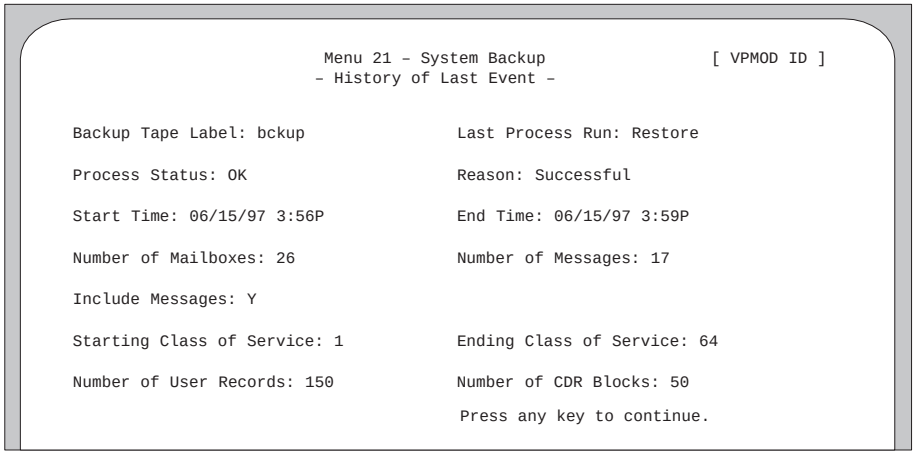


Figure A-45. Example History of Last Event Screen (Aria 2.0).

The History of Last Event screen contains the following fields:

- **Backup Tape Label:** Contains the name of the tape.
- **Last Process Run:** Displays either ***Backup*** or ***Restore***.
- **Process Status:** Displays the status of the last operation; it should show ***OK***, ***Failed***, ***Cancelled***, or ***Never Completed***.
- **Reason:** Contains the reason for the status message. One of the following reasons, listed alphabetically, is displayed:
  - **App Internal Error.** This reason can appear for either a backup or a restore. Start the operation over; if this reason reappears, call the Octel Customer Services Center or your Octel distributor immediately.
  - **Device in Use.** The tape drive is otherwise in use. Reschedule the backup.
  - **No Tape Drive.** No tape drive is installed.
  - **No Tape in Device.** This reason can appear for either a backup or a restore. If the tape drive was empty during the backup, no data was backed up, and the operation must be run again. If the tape drive was empty during a restore, the restore operation must be run again.
  - **Not Enough Storage.** Too little buffer storage is available on the server. Try the backup again (and, for system managers, if it fails, call Octel for service).
  - **Successful.** This reason appears with a process status of ***OK***. The operation was successful. No further action is necessary.
  - **Tape Drive Error.** This reason can appear for either a backup or a restore. Start the operation over; if this reason reappears, call the Octel Customer Services Center or your Octel distributor immediately.

- **Tape Drive Offline.** The tape drive was pulled out during a backup or a restore operation, or the tape drive cannot be brought on line.
- **Tape Drive Reset.** The tape drive caused or received a reset. Retry the operation.
- **Tape Ejected.** This reason can appear for either a backup or a restore. If the tape was ejected during the backup, the backup was incomplete and must be run again. If the tape was ejected during a restore, the restore operation must be run again, including initialization.
- **Tape Internal Error.** This reason can appear for either a backup or a restore. Start the operation over; if this reason reappears, call the Octel Customer Services Center or your Octel distributor immediately.
- **Tape is Full.** This reason appears for a backup only. Octel Communications supports using a single tape, not multiple tapes, for backup. If this reason appears, the tape in the drive cannot contain the complete backup. Try the backup again, but specify fewer classes of service or do not back up subscriber messages.
- **Tape is Unusable.** This reason can appear for either a backup or restore. If the tape did not work during the backup, no data was backed up and the backup must be run again with a new tape. If the tape did not work during a restore, call the Octel Customer Services Center or your Octel distributor immediately.
- **Tape or Device Problem.** This reason can appear for either a backup or a restore. Start the operation over. If this reason reappears, call the Octel Customer Services Center or your Octel distributor immediately.
- **Tape Write Protected.** The tape cannot be recorded on, because its tab is set to write-protect the tape.

- **Start Time:** Contains the time the operation was started.
- **End Time:** Contains the time the operation ended.
- **Number of Mailboxes:** Contains the number of mailboxes that were backed up or restored. (This is *not necessarily* the same as the number of subscribers on the server.)
- **Number of Messages:** Contains the number of subscriber and application messages that were backed up or restored.
- **Include Messages:** Indicates whether any voice messages in mailboxes were backed up or restored during the last operation.
- **Starting Class of Service:** If an entry is present, contains the first (lowest numbered) class of service whose subscriber messages were backed up or restored.
- **Ending Class of Service:** If an entry is present, contains the last (highest numbered) class of service whose subscriber messages were backed up or restored.

- **Number of User Records:** Contains the number of user records defined for the server. Displayed for Aria 2.0, but not for Aria 1.2.
- **Number of CDR Blocks:** Contains the number of CDR blocks defined for the server. Displayed for Aria 2.0, but not for Aria 1.2.

Display Tape Header

Every backup tape made (written) since the tape-drive feature was introduced in Aria 1.1 contains a tape header. If the server has Aria 2.0 or newer software, you can display the tape header. Figure A-46 shows the screen for a tape header that was recorded on a server at Aria 1.2; messages for classes of service 3 through 8 were backed up. Backup tapes made on servers at Aria 1.1 do not have the ***Backup Date:*** and ***Backup Time:*** fields in the headers.

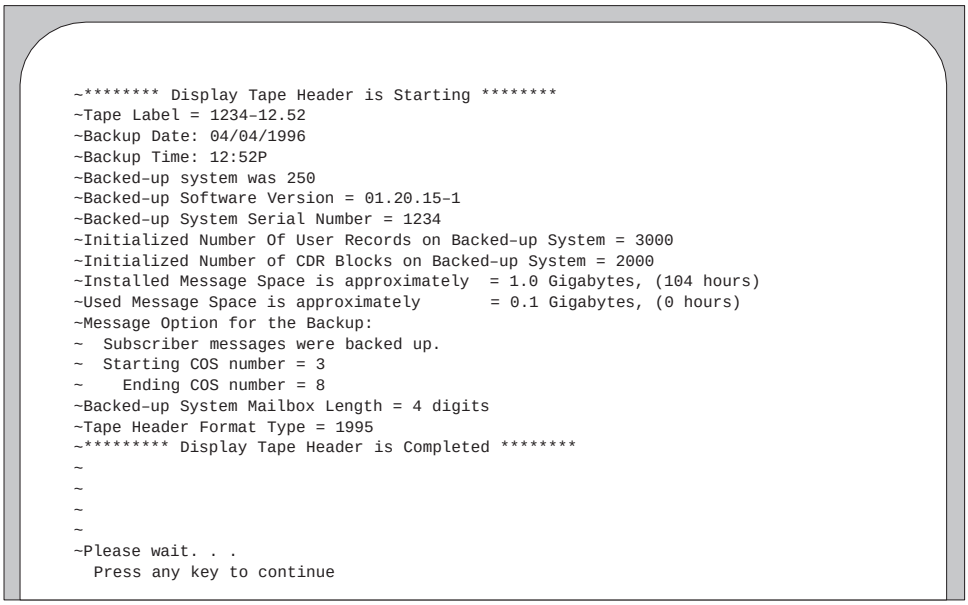


Figure A-46. Example Display Tape Header Screen.

Display the tape header as follows:

1. Insert the DDS-2 4 GB tape that is to be scanned into the tape drive. Wait approximately 10 seconds, until the green LED on the tape drive stops blinking and stays on. This indicates that the tape is loaded. If the amber LED on the tape drive blinks, you must clean the tape drive (refer to Chapter 10).
2. From the online Menu 21 – System Backup, access option ***6 – Display Tape Header***, or from the Offline System Backup and Restore menu, access option ***6 – Display Header of Backup Media***.

If the Display Tape Header operation detects a problem, an error message is displayed. The set of error messages is the same as the set of reasons for the display of the last event; refer to the “Review History of Last Event” section, page A-80.

During a restore operation, the destination server must have at least as many user records and CDR blocks as shown in the ***~Initialized Number of User Records on Backed-up System =*** and the ***~Initialized Number of CDR Blocks on Backed-up System =*** fields of the tape header on the backup tape. The destination server must also have at least as much installed message space as shown in the ***~Used Message Space is approximately =*** field.

Cancel Current Operation

Use this option to cancel a backup that is in process. To use the Schedule Backup option to reschedule a backup, refer to Chapter 10, the "Backing Up the Database and Messages to Tape" section, page 10-4.

Disk Utilities (^DD)



Caution!

Use the disk utility options only when directed by service documentation or Octel engineers. Using these utility options incorrectly can cause serious damage to data.

The server file system is used in several disk utility options. It consists of tables and files, including the following:

- ❑ Bad-write table
- ❑ Boot table
- ❑ Directory
- ❑ File-allocation table
- ❑ Record-allocation table (free-sector table)
- ❑ Install table

The system tables can be read and displayed when using the system utilities. Other data and message records are contained in files on the drives. To read or write records in these files, the system utilities require that you enter the file number in addition to the data-record number. Use Table A-4 to select the file number in which a record is located.

Table A-4. Record File Numbers.

File Name	File Number	Drive
Users in system	00	0, 1
SST (system-status table)	04	0, 1
COS (class-of-service) table	05	0, 1
Statistics	06	0, 1
CDR	07	0, 1
System dump	2D	0, 1
File-system status log	2F	0, 1
RAT (record-allocation table)	31	All
Messages	32	All

Access the offline disk utilities, as follows:

1. Use menu 13.1 to shut down the server.
2. At the ***ENTER BOOT COMMAND:*** prompt, type ***Ctrl+D***, then ***D***. The DISK UTILITY OPTIONS: menu appears, as shown in Figure A-47. Refer to the following sections for details about each option.

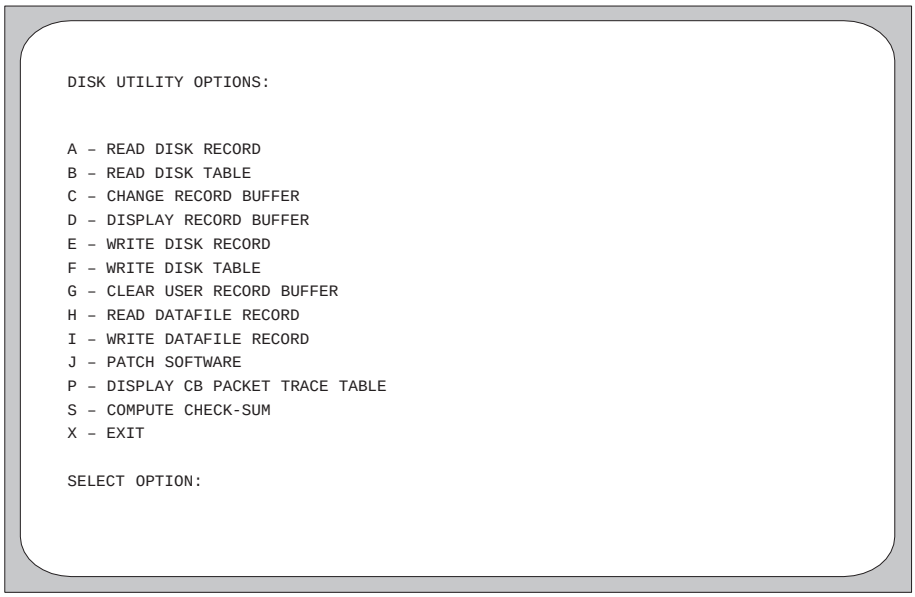


Figure A-47. Reformat Menu.

Read Disk Record

Use disk utility option A – READ DISK RECORD to read a record from the disk drive into a 10-kilobyte buffer in the CPU. If a disk record is corrupted, you can read the record, display it using option D – DISPLAY RECORD BUFFER, correct it using option C – CHANGE RECORD BUFFER, and write the change to the record using option E – WRITE DISK RECORD.

Read a disk record, as follows:

1. Select option ***A*** to read a disk record. Press ***Ctrl+C*** at any time to cancel the operation.
2. At the ***ENTER READ DRIVE NUMBER (0–6):*** prompt, enter a drive number.
3. At the ***ENTER FILE NUMBER (HEX):*** prompt, enter a file number. Refer to Table A-4.
4. At the ***ENTER RECORD NUMBER (HEX):*** prompt, enter the record number of interest.
5. At the ***ENTER NUMBER OF RECORDS (HEX):*** prompt, enter the number of records to be read into the buffer. Depending on the size of the record, more than one record can be read into the buffer.

   If you enter an invalid record number or if the read operation is unsuccessful, the screen displays a control-bus message. After the file system reads and copies the specified record to the buffer in the CPU, the following prompt appears:

   READ DISK DRIVE x, FILE x RECORD x (y RECORDS) COMPLETE
   PRESS ANY KEY TO CONTINUE

6. After the operation is completed, press ***Ctrl+C*** until the DISK UTILITY OPTIONS menu reappears.
7. Select option ***D*** to view the record-buffer information. Refer to the “Display Record Buffer” section, page A-89, for information about using utility option D.

Read Disk Table

Use disk utility option B – READ DISK TABLE to read a disk table into a 10-kilobyte buffer in the CPU. If a disk table is corrupted, you can read the table, display it using option D – DISPLAY RECORD BUFFER, correct it using option C – CHANGE RECORD BUFFER, and write the change to the table using option F – WRITE DISK TABLE.

Read a disk table, as follows:

1. Select option ***B*** to read a disk table. The DISK TABLE READ OPTIONS: menu appears on the screen, indicating the types of database tables that you can read (and change), as shown in Figure A-48. Press ***Ctrl+C*** at any time to cancel the operation.

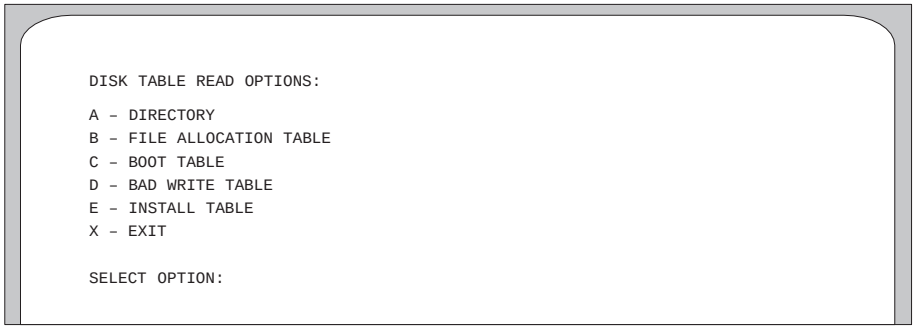


Figure A-48. DISK TABLE READ OPTIONS: Menu.

2. In the ***SELECT OPTION:*** field, enter the option for the type of table you want to read.
3. At the ***ENTER READ DRIVE NUMBER (0–6):*** prompt, enter a drive number.
4. At the ***ENTER COPY NUMBER (0–1):*** prompt, enter ***0*** or ***1*** to select one of the two copies of the table on the drive. The following prompt appears:

   READ SUCCESSFUL
   READ DISK DRIVE x, TABLE y COMPLETE.
   PRESS ANY KEY TO CONTINUE

5. After the operation is completed, press ***Ctrl+C*** until the DISK UTILITY OPTIONS menu reappears.
6. Select option ***D*** to view the record-buffer information. Refer to the “Display Record Buffer” section, page A-89, for information about using utility option D.

Change Record Buffer



Caution!

Use this utility carefully. If you later write inappropriate changes to disk records or disk tables, the server database can be damaged irreparably. Always change the same record you read into the buffer using the Read Disk Record or Read Disk Table utility.

Use disk utility option C – CHANGE RECORD BUFFER to change the value of any byte in a disk record or disk table in the buffer, as follows:

1. Before changing the buffer, use disk utility option ***A*** to read a record (refer to the "Read Disk Record" section, page A-86) or option ***B*** to read a table (refer to the "Read Disk Table" section, page A-87). Use option ***D*** (refer to the "Display Record Buffer" section, page A-89) to view the record-buffer information.

2. Select option ***C*** to change the disk record or disk table in the buffer. Press ***Ctrl+C*** at any time to cancel the operation.

   The following prompts appear:

   CHANGE RECORD FUNCTION
   (TYPE CTRL-C TO ABORT OR OPTIONAL HEX VALUE FOLLOWED BY CR OR ' ' TO OPTIONALLY CHANGE AND DISPLAY NEXT VALUE)
   ENTER RECORD DISPLACEMENT (0-0x27FF):

3. At the ***ENTER RECORD DISPLACEMENT (0–0x27FF)*** prompt, enter a hexadecimal number from ***0*** through ***27FF***. Record displacement refers to the location of the byte in the 10-kilobyte buffer that is to be changed.

4. Press ***Enter*** or the space bar to display and change the bytes in the displayed offsets. The changes are stored in the CPU buffer.

5. When you have entered all the desired changes, press ***Ctrl+C*** until the DISK UTILITY OPTIONS menu reappears.

6. Use option ***E*** (refer to the "Write Disk Record" section, page A-89) or option ***F*** (refer to the "Write Disk Table" section, page A-90) to write the changes to the drive.

Display Record Buffer

Use disk utility option D – DISPLAY RECORD BUFFER to display the contents of the CPU buffer, as follows:

1. Before displaying the buffer, use disk utility option ***A*** to read a disk record (refer to the "Read Disk Record" section, page A-86) or option ***B*** to read a disk table (refer to the "Read Disk Table" section, page A-87).

2. Select option ***D*** to display the contents of the buffer. Press ***Ctrl+C*** at any time to cancel the operation.

   The following prompts appear:

   DISPLAY RECORD FUNCTION
   (TYPE CTRL-C TO ABORT OR ANY OTHER TO FREEZE/CONTINUE DISPLAY)
   ENTER RECORD DISPLACEMENT (0-0x27FF):

3. At the ***ENTER RECORD DISPLACEMENT (0–027FF):*** prompt, enter a hexadecimal number, from ***0*** through ***27FF***. The display starts at the selected displacement and scrolls to the end of the buffer. Press the space bar to pause or resume scrolling.

4. When the display is complete, press ***Ctrl+C*** until the DISK UTILITY OPTIONS menu reappears.

Write Disk Record

Note that some software areas are write-protected to prevent accidental damage to the system software.



Caution!

Use this utility carefully. Inappropriate entries can damage the server database irreparably. Always update the same record that was read using the Read Disk Record utility. If the data is to be updated on a system drive, update the data on both system drives. If the data is to be updated on a message drive in a GMR server, update the data on both message drives in the GMR pair.

Use disk utility option E – WRITE DISK RECORD to write the contents of the record buffer to the desired drive, as follows:

1. Before writing a disk record, use disk utility option ***A*** to read it into the buffer (refer to the "Read Disk Record" section, page A-86), and use option ***C*** to change the buffer (refer to the "Change Record Buffer" section, page A-88).

2. Select option ***E*** to write the contents of the record buffer to a disk record on a drive. Press ***Ctrl+C*** at any time to cancel the operation.

3. At the ***ENTER WRITE DRIVE NUMBER (0–6):*** prompt, enter the number of the drive to which the record is to be written.
4. At the ***ENTER FILE NUMBER (HEX):*** prompt, enter the file number to which the record is to be written.
5. At the ***ENTER RECORD NUMBER (HEX):*** prompt, enter the record number to which the record is to be written.
6. At the ***ENTER NUMBER OF RECORDS (HEX):*** prompt, enter the number of records to be written. A confirmation prompt appears.
7. Verify that the drive, file, and record numbers are correct, then type ***Y*** at the ***CONTINUE (Y OR N)?*** prompt to execute the write operation. If any of the numbers are incorrect, type ***N*** to cancel the operation.

   When the operation is completed, the following prompt is displayed:

   WRITE DISK DRIVE x, FILE x RECORD x (y RECORDS) COMPLETE
   PRESS ANY KEY TO CONTINUE
8. Press ***Ctrl+C*** until the DISK UTILITY OPTIONS menu reappears.
9. If you updated data on a system drive, update the same data on the other system drive. If you updated data on a message drive in a GMR server, update the same data on the other drive in the GMR pair.

Write Disk Table

Note that some software areas are write-protected to prevent accidental damage to the system software.



Caution!

Use this utility carefully. Inappropriate entries can damage the server database irreparably. Always update the same table that was read using the Read Disk Table utility. If the data is to be updated on a system drive, update the data on both system drives. If the data is to be updated on a message drive in a GMR server, update the data on both message drives in the GMR pair.

Use disk utility option F – WRITE DISK TABLE to write the contents of the record buffer to both copies of the disk table on a drive, as follows:

1. Before writing a disk table, use disk utility option ***B*** to read it into the buffer (refer to the "Read Disk Table" section, page A-87), and use option ***C*** to change the buffer (refer to the "Change Record Buffer" section, page A-88)
2. Select option ***F*** to write the contents of the record buffer to both copies of the disk table on the drive. The ***ENTER DRIVE NUMBER (0-6):*** prompt appears.

3. Enter the drive to which the buffer is to be written.
4. Press ***Enter*** to write the buffer to the disk tables.

   When the operation is completed, the screen returns to the DISK UTILITY OPTIONS menu.
5. If you updated data on a system drive, update the same data on the other system drive. If you updated data on a message drive in a GMR server, update the same data on the other drive in the GMR pair.

Clear User Record Buffer

Use disk utility option G – CLEAR USER RECORD BUFFER to clear a user record in the buffer. You can then write the cleared data to the user record, using option E– WRITE DISK RECORD.

Clear a user record, as follows:

1. Before clearing a user record in the buffer, use disk utility option ***A*** to read the record into the buffer (refer to the "Read Disk Record" section, page A-86).
2. Select option ***G*** to clear the user-record buffer. The following options appear on the screen:

   CLEAR RECORD BUFFER OPTIONS
   0 – CLEAR 1ST USER RECORD IN BUFFER
   1 – CLEAR 2ND USER RECORD IN BUFFER
   A – CLEAR ALL USER RECORDS IN BUFFER

   Press ***Ctrl+C*** at any time to cancel the operation.
3. Octel recommends that you choose option ***A – CLEAR ALL USER RECORDS IN BUFFER***. Choose an option and press ***Enter*** to perform the selected function.

   The ***RECORD CLEARED, PRESS ANY KEY TO CONTINUE.*** prompt appears.

   If the selected record is not a user record, the message ***MUST BE USER RECORD!!*** appears, and the clear operation fails.
4. The set of options shown in step 2 appears again. If no more changes are needed, press ***Ctrl+C*** until the DISK UTILITY OPTIONS menu reappears.
5. If you want to write the cleared buffer to a record on a drive, use disk utility option ***E*** (refer to the "Write Disk Record" section, page A-89).

Read Datafile Record

Option H – READ DATAFILE RECORD on the DISK UTILITY OPTIONS menu is identical to the Read Datafile Record utility accessed from the Menu 20 Datafile Utilities menu. For a description, refer to the "Read Datafile Record" section, page A-53.

Write Datafile Record

Option I – WRITE DATAFILE RECORD on the DISK UTILITY OPTIONS menu is identical to the Write Datafile Record utility accessed from the Menu 20 Datafile Utilities menu. For a description, refer to the “Write Datafile Record” section, page A-54.

Patch Software

Option J – PATCH SOFTWARE on the DISK UTILITY OPTIONS menu is identical to the Patch Software utility accessed from the Menu 20 Datafile Utilities menu. Use this utility *only* under direction from the Octel Customer Services Center or your Octel distributor and *only* if you have the appropriate training.

Display CB Packet Trace Table

Use disk utility option P – DISPLAY CB PACKET TRACE TABLE to display the control-bus-packet trace table, as follows:

1. Select option ***P.*** The last 32 control-bus messages are displayed, the oldest entry first. Both CB IN and CB OUT messages are displayed. Press ***Ctrl+C*** at any time to cancel the operation.

2. When a full screen of messages is displayed, the display process stops. To continue to the next screen, press any key.

   The following is an example of control-bus messages that can be displayed:

   CB PACKET TRACE BUFFER (OLDEST ENTRY FIRST):
   CARD 0 O:00 00 28 00 0C 00 00 00 28 00 00 00 00 94 53 80
   CARD 0 I: 00 00 29 00 00 28 14 E0 D0 FD 00 00 00 A6 28 00
   CARD 0 O:00 00 5A 02 01 00 00 00 28 00 00 00 00 96 48 80
   CARD 0 I: 00 00 5B 00 00 28 49 99 F5 6A FF FF 00 49 47 00

   TRACE BUFFER DISPLAY COMPLETE
   PRESS ANY KEY TO CONTINUE

   If no messages are in the buffer, the message ***TRACE BUFFER EMPTY*** is displayed.

Compute Check-sum



Caution!

Changing checksums incorrectly can cause irreparable damage to the system. *Do not* use this utility.

Disk utility option S – COMPUTE CHECK-SUM is used by Octel support personnel only. *Do not use this utility.*

Change Telephone Keypad Type (^DK)

The Change Telephone Keypad Type utility accessed by pressing ***Ctrl+D,*** then ***K*** is similar in operation to the Set Telephone Keypad Type utility accessed from the Menu 20 Miscellaneous Utilities menu (refer to the "Set Telephone Keypad Type" section, page A-51). Use this utility to change the telephone keypad type, as follows:

1. From the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D,*** then ***K***. The current telephone keypad type is displayed.
2. At the ***SELECT OPTION:*** prompt, type ***0*** for U.S. telephone-keypad types, or type ***1*** for CCITT telephone-keypad types. Press ***Enter***.
3. Type ***X*** and press ***Enter*** to return to the ***ENTER BOOT COMMAND:*** prompt.

Display Control Bus Buffer (^DP)

The Display Control Bus Buffer utility accessed by pressing ***Ctrl+D,*** then ***P*** is identical to the Display CB Packet Trace Table utility accessed from the DISK UTILITY OPTIONS menu. For a description, refer to the "Display CB Packet Trace Table" section, page A-92.

Change Terminal Type (^DR)

You can configure one of three terminal types for the server: the Wyse 50 or HP 700/43 (also used for the Wyse 55), the AT&T Teletype 4425/5425, or the DEC VT102 or 220. This utility displays the terminal type that is currently selected and allows you to change the selection. Display or change the terminal type, as follows:

1. From the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D,*** then ***R***. The following messages are displayed:

   CURRENT TERMINAL TYPE: 1
   TERMINAL SELECT OPTIONS:
   1 – WYSE 50 (or HP 700/43)
   2 – AT&T TELETYPE 4425/5425
   3 – DEC VT102/220
   X – EXIT

   SELECT TERMINAL TYPE:

2. Enter ***1***, ***2***, or ***3***, as necessary, then press ***X*** to return to ***ENTER BOOT COMMAND:*** prompt. If you do not want to change the terminal type, just press ***X*** to return to ***ENTER BOOT COMMAND:*** prompt.

System Backup and Restore (^DS)

The Offline System Backup and Restore menu is shown in Figure A-49, with all the options that are available in Aria 2.0. The following sections describe these options.

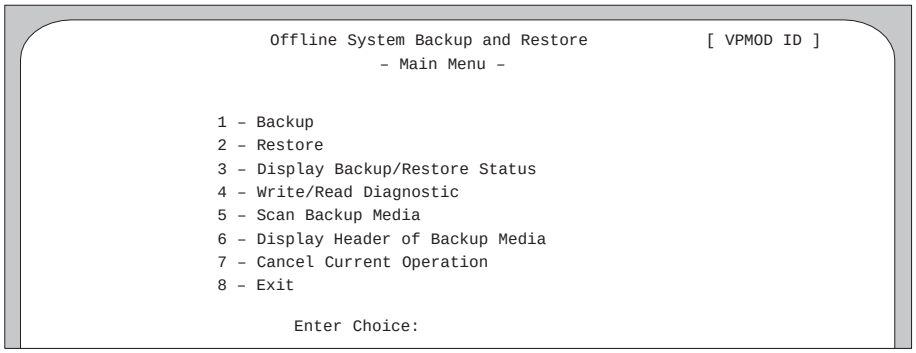


Figure A-49. Offline System Backup and Restore Menu (Aria 2.0).

Backup

Use the Backup option to back up a database to tape. For a description, refer to Chapter 10, the "Backing Up the Database and Messages to Tape" section, page 10-4.

Restore

Use the Restore option to install a database onto a new server from a backup tape. For a description, refer to Chapter 11, the "Restoring Database and Messages from Tape to a Server" section, page 11-51.

Display Backup/Restore Status

Use the Display Backup/Restore Status option to display the status of a backup or a restore operation.

During a restore (which must be performed off line) or during an offline backup, the Main Menu for offline System Backup and Restore is on the screen (Figure A-49). Select option ***3*** to display the status of the backup or restore, as shown in Figure A-50.

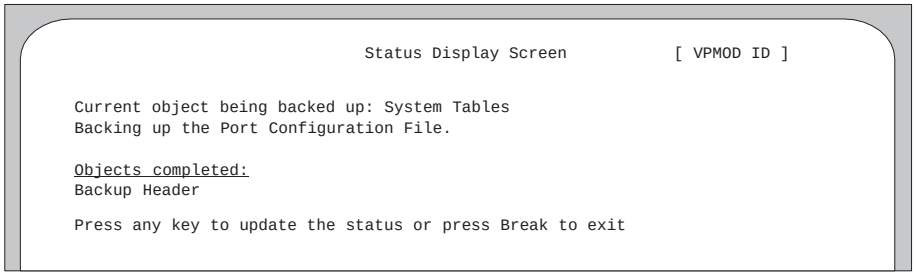


Figure A-50. Online Status Display Screen for Backup Operation.

Write/Read Diagnostic

The Write/Read Diagnostic utility accessed from the Offline System Backup and Restore menu is identical to Write/Read Diagnostic utility accessed from online Menu 21 – System Backup. For a description, refer to the “Write/Read Diagnostic” section, page A-78.

Scan Backup Media

The Scan Backup Media utility accessed from the Offline System Backup and Restore menu is identical to Scan Backup Tape utility accessed from online Menu 21 – System Backup. For a description, refer to the “Scan Backup Tape” section, page A-79.

Display Header of Backup Media

The Display Header of Backup Media utility accessed from the Offline System Backup and Restore menu is identical to Display Tape Header utility accessed from online Menu 21 – System Backup. For a description, refer to the “Display Tape Header” section, page A-83.

Cancel Current Operation

Use this option to cancel a backup or a restore that is in process.

If you cancel a restore, you must restart it from the beginning. Refer to Chapter 11, the “Restoring Database and Messages from Tape to a Server” section, page 11-51.

To use the Schedule Backup option to reschedule a backup, refer to Chapter 10, the “Backing Up the Database and Messages to Tape” section, page 10-4.

Drive Test (^DT)

The drive-test utility performs a read test on all sectors and a read-write test on reserved diagnostic sectors. Drive tests do not write over existing data or messages.

Run a drive test, as follows:

1. From the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D,*** then ***T***. The following prompt is displayed:

   DRIVE TEST: ENTER TYPE (S, M, OR L):

2. Enter an ***S, M***, or ***L***.

   - ❏ Enter ***S*** for a short test, which executes a read-write test on reserved diagnostic sectors only.
   - ❏ Enter ***M*** for a medium test, which performs read-write tests on reserved diagnostic sectors and 512 read tests with a long seek between each read.
   - ❏ Enter ***L*** for a long test, which performs read tests on all sectors and read-write tests on reserved diagnostic sectors.

   The following prompt appears:

   SINGLE OR CONTINUOUS (S OR C):

3. Enter ***S*** or ***C***.

   - ❏ Enter ***S*** to run a single pass of the tests.
   - ❏ Enter ***C*** to run a continuous test until you abort the test.
   - ❏ Abort a continuous test by pressing ***Ctrl+C***. The IPL completes the current pass of tests before aborting the continuous test.

   The following prompt appears:

   NOTE: DRIVE NUMBERS SHOULD BE SEPARATED BY COMMA (,) OR HYPHEN (-)
   SELECT DRIVE LIST (0-6):

4. Enter the number or numbers of the drives on which to run drive tests, in the format ***X,X,X*** or ***X-X***, where ***X*** is a drive number.

   When successfully completed, the utility displays the drive-test results, including the drive type, serial number, size, number of defects found, and a copy of the drive's Grown Defect List (G-list).

   If the drive test fails, the utility displays a CB message. Offset 03 in the CB IN message shows the reason for the failure. Refer to Chapter 8 for a description of CB IN and CB OUT messages.

5. After running the drive test, *always* refresh the RAM by booting the server with a ***B*** before booting with an ***A***.

Toggle Next Boot Area (^DX)

Toggle the next boot area, as follows:

1. From the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D,*** then ***X***. The following prompt appears:

   !!!SETTING NEXT BOOT AREA TO [A or B]!!!
   !!! PLEASE REBOOT SYSTEM WITH A 'B' !!!
   ENTER BOOT COMMAND:

2. Boot the server with a ***B*** to change the boot area.

Change Console/Download Port Speed (^DY)

Change the console or download port speed options, as follows:

1. From the ***ENTER BOOT COMMAND:*** prompt, press ***Ctrl+D,*** then ***Y***. The CHANGE SPEED OPTIONS menu appears.

2. Select ***A*** to change the console port speed or select ***B*** to change the download port speed, and press ***Enter***.

3. The current speed appears on the screen, along with a set of options. Select the desired speed and press ***Enter***. For the console port speed, a confirmation prompt appears. The CHANGE SPEED OPTIONS menu reappears.

4. Select option ***X – Exit*** to return to the ***ENTER BOOT COMMAND:*** prompt.

LINE TYPES B

The following line types are supported by the Octel 250 message server at Aria 1.2 and Aria 2.0:

1 – In-band plain-old-telephone service (POTS), analog FLT (FLT8), loop start, dial-tone and fast-busy disconnects

2 – In-band POTS, analog FLT (FLT8), loop start, fast-busy disconnect

3 – In-band POTS, analog FLT (FLT8), loop start, dial-tone disconnect

4 – Generic POTS, analog FLT (FLT8), loop start, dial-tone and fast-busy disconnect

5 – Generic POTS, analog FLT (FLT8), loop start, fast-busy disconnect

6 – Generic POTS, analog FLT (FLT8), loop start, dial-tone disconnect

29 – POTS, analog FLT (FLT8), loop start, Rolm station line

31 – Mitel SX100/200/2000, no retries on forwarded calls

32 – Mitel SX100/200/2000, retries on forwarded calls

35 – POTS, analog FLT (FLT8), Centrex 1AESS integration, loop start

37 – POTS, Australian Central Office

38 – NEC 1200, Australian

39 – NEC 2400 integration

40 – WooBox, POTS, analog FLT (FLT8), loop start, dial-tone and fast-busy disconnects, no Autovon

41 – WooBox, POTS, analog FLT (FLT8), loop start, dial-tone and fast-busy disconnects, message waiting, no Autovon

42 – POTS, analog FLT (FLT8), Rolm PID, loop start

44 – In-band, ground start, dial-tone and fast-busy disconnects

45 – In-band, ground start, fast-busy disconnect

46 – In-band, ground start, dial-tone disconnect

47 – Generic, ground start, dial-tone and fast-busy disconnects

48 – Generic, ground start, fast-busy disconnect

49 – Generic, ground start, dial-tone disconnect

50 – Generic, CO trunk, ground start, one ring

51 – Generic, CO trunk, ground start, two rings

52 – POTS, analog FLT (FLT8), Centrex 1AESS integration, ground start

57 – POTS, analog FLT (FLT8), Intecom, with voice-messaging protocol (VMP) interface, loop start

58 – In-band, Australian

59 – Rolm PID, Australian

60 – AT&T 75 PID

61 – AT&T 85 PID

62 – Ericsson MD110, Australian integration, 1200 baud

63 – WooBox, POTS, analog FLT (FLT8) loop start, dial-tone and fast-busy disconnects, Autovon

64 – WooBox, POTS, analog FLT (FLT8) loop start, dial-tone and fast-busy disconnects, in-band, message waiting, Autovon

66 – DID, DTMF, immediate start, transfer capability (Startel only)

67 – DID, DTMF, wink start, transfer capability (Startel only)

69 – In-band, United Kingdom, LCGC, dial-tone disconnect

70 – In-band, DTMF, wink start, transfer capability

71 – Generic, United Kingdom, LCGC, loop start, dial-tone disconnect

72 – Generic, United Kingdom, LCGC, dial-tone disconnect, ER mode

73 – Ericsson MD110, United Kingdom integration, 2400 baud

75 – Ericsson MD110, United States (based on NEC 2400 integration)

76 – DID, DTMF, immediate start (TASCOM PBX only)

77 – DID, DTMF, wink start (TASCOM PBX only)

78 – DID, DTMF, immediate start, transfer capability (TASCOM PBX only)

79 – Digital Meridian integration device (DMID)

80 – In-band POTS, loop start, 900 ohm, dial-tone disconnect

81 – Generic POTS, loop start, 900 ohm, dial-tone disconnect

82 – POTS, Centrex 1AESS integration, 900 ohm, loop start

83 – Generic, 900 ohm, ground start, dial-tone disconnect

84 – Generic, Centrex 1AESS integration, 900 ohm, ground start

115 – Analog Meridian integration device (AMID)

131 – Rolm 9006I, POTS, Rolm PID, loop start

132 – In-band POTS, dial tone, fast-busy, loop start

145 – FLT-A, when using U.S. standard of PCM encoding

149 – FLT–A, when using European standard of PCM encoding

Glossary

A

AA (automated attendant). *See Automated attendant.*

ACD (automatic call distribution). Calls distributed equally to all members in a hunt group on a PBX or Centrex. *See also Hunt group.*

Active. In the capacity-on-demand feature, the actual number of ports, hours, mailboxes, or fax-capable mailboxes the server is using. *See also Capacity on demand.*

Address. The label, name, or number that designates a location where information is stored.

Address-Mapping Table. *See AMT.*

Alarm. A warning of a condition identified by the server's hardware or software that requires investigation, usually by service personnel. In order of decreasing severity, there are out-of-service (OOS) alarms, service-affecting (SA) alarms, and non-service-affecting (NSA) alarms. *See also OOS alarm, SA alarm, and NSA alarm.*

Alias address. Allows a mailbox to be addressed by an alternate address that, like the mailbox number, must be unique within the server.

Alphanumeric. (1) Refers to either the entire set of 128 ASCII characters or the subset of ASCII characters that includes the 26 alphabetic characters and the 10 numeric characters. (2) Pertains to a character set that contains both letters and numerals and, usually, other characters.

American National Standards Institution. *See ANSI.*

American Standard Code for Information Interchange. *See ASCII.*

AMIS (Audio message interchange specification) analog networking. Capability that allows subscribers with mailboxes on an Octel server to exchange messages with subscribers on other, non-Octel voice-messaging systems. The AMIS protocol does not accept such Octel options as private and urgent delivery of messages, but AMIS network addresses can be added to system and personal-group distribution lists.

Amphenol connectors. 25-pair (50-pin) connectors attached to the cables used to connect server ports to the PBX.

AMT (address-mapping table). Table in the server database used to convert mailbox numbers, alias addresses, community profiles, and network-node profiles into internal user records.

Analog. Information in the form of continuously varying physical quantities. *See also Digital.*

Analog lines. Telephone lines that transmit information using analog signals. *See also Analog signal.*

Analog signal. Any signal, such as voltage, current, or voice, that varies smoothly and continuously. *See also Digital signal.*

Analog-to-digital converter. A circuit that converts analog signals into digital signals. *See also Digital-to-analog converter.*

ANI (automatic number identification). Information provided by the Central Office (CO) or InterExchange Carrier (IXC) that identifies the telephone number of the person placing a call.

ANSI (American National Standards Institute). A nongovernmental organization that sets, develops, and publishes standards for the data-processing industry in the United States. *See also CCITT.*

Antistatic bag. A container Octel provides to protect a part from static during shipping and handling.

Antistatic wrist strap. A device designed to protect service personnel and equipment from accidental static discharge or shock hazard. The antistatic wrist strap has a loop that is worn around the wrist; a cord connects this loop to a clamp to be connected to a grounded metal object. The antistatic wrist strap should always be worn when working within the server.

AOI (area of interest). An area of interest to the system manager. The AOI error prompt states, "You have reached a portion of system software of interest to the system manager. Please record all details of how you got to this point and report as soon as possible to mailbox XX." The server plays this prompt after recording an unrecoverable error and then returns the subscriber to the mailbox Main Menu. If the error is recorded twice in the same session, the subscriber is disconnected.

Application. (1) A practical use of a product within a defined environment. The application solves specific problems. (2) One of several software programs that reside on the data module. Examples are InfoTex and FaxCall. (3) A software program, such as a database or spreadsheet, that performs a task. (4) Refers to ECP mailboxes and other features of the server.

Application mailbox. ECP mailboxes or other event-producing server mailboxes.

Area of interest. *See AOI.*

Aria. The software that runs on Octel 250 and Octel 350 servers to provide their capabilities and user interface.

Aria Domain. A feature that allows up to six Octel 250 or Octel 350 servers to be configured to appear to subscribers as one server.

ASCII (American Standard Code for Information Interchange). Consists of 128 seven-bit binary codes for upper- and lower-case letters, numbers, punctuation, and special communication-control characters.

Asynchronous. A mode in which an operation is started by a signal that is generated by the completion of the previous operation. When referring to hardware devices, the method in which each character is sent with its own synchronizing information. Hardware operations are scheduled by start and stop signals, rather than by time intervals; a second operation can begin before the first operation is completed. (A clock is not needed to synchronize the start and stop signals.) *See also Synchronous.*

Asynchronous (ASYNC) ports. Ports on the CCF card that can be used for additional system manager terminals or for integration.

Asynchronous transmission. A method of communication that allows data to be sent at irregular intervals by preceding each character with a start bit and following it with a stop bit.

Attendant. Person who assists callers who reach the server. Callers can be forwarded to an attendant upon request or they can wait for assistance.

Authorized. In the capacity-on-demand feature, the number of hours available for message recording, the total number of mailboxes a system manager can create, the number of mailboxes that can have fax functionality, and the number of ports the system manager can activate, as determined by the number configured in the software. *See also Capacity on demand.*

Automated attendant. A feature of the server that prompts callers to enter an extension number or spell a name. After the caller enters the extension number or name, the automated attendant transfers the call.

Automatic Call Distribution. *See ACD.*

Automatic number identification. *See ANI.*

Automatic transfer. A voice-processing feature that routes a caller to an attendant under certain conditions. For example, a caller has placed a call from a rotary-dial telephone and cannot respond to prompts from the server. The transfer can be supervised or unsupervised.

AWG (American wire gauge). A measure of the thickness of wires. A low AWG number represents a thicker wire than a high AWG number and can carry signals farther.

B

Backplane. (1) A fixed-wire network board that connects logic cards to the system data and control buses, provides interconnections among printed-circuit logic cards, and distributes power to all logic cards. (2) A fixed-wire network board that connects disk drives and the optional tape drive to the system data and control buses, and distributes power to the drives.

Backup. A copy of a program or data to be used in case the original is lost, damaged, or otherwise inaccessible.*

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* *WEBSTER'S Ninth New Collegiate Dictionary,* 9th ed., Springfield, Merriam-Webster Inc., 1989.

Baud rate. (1) The speed of signal transmission over a communication channel, in bits per second. The system manager terminal operates at 1200 or 9600 baud, and the printer operates at 9600 baud. (2) Commonly used to mean bits per second, baud is officially defined as the pulse width in a data-communication stream.

Binary. Numbering system with a base of two. A binary code uses only two distinct characters, usually the numerals 0 and 1. A binary digit is a character used to represent one of the two digits in the binary numbering system.

Bit. An acronym for binary digit. A bit is the smallest unit of data a computer handles. "Bit" is more commonly used than "binary digit."

Bits per second. *See Baud.*

Board. A flat, thin rectangular server component that can include connectors, test points, switches, and LEDs. *See also Card.*

Boot. (1) To start up and load a computer. (2) The set of instructions that reside in ROM and instruct the server to load software from some medium to RAM, which enables the applications program to be used.

Boot table. Table on each drive that contains drive-specific information. This information is written to the boot table when the drive is formatted at the factory, and it cannot be altered. Offset 00 of the file-card status reports any discrepancy found by the CCF card while reading the install and boot tables on each drive. The CCF card uses the data in these tables to locate the drives during server startup.

Byte. Group of eight bits of binary information in the octal (base-eight) numbering system. A byte is usually shown as two hexadecimal characters. A byte consists of two nibbles. *See also nibble.*

C

Cache. A high-speed memory buffer generally used for storing intermediate results of larger operations or making frequently used information available more quickly.

Call. An event, beginning when the server port goes off-hook and ending when the port goes on-hook.

Call detail records. *See CDR.*

Called party. Person to whom a call has been placed.

Caller. (1) A person placing a call. (2) Anyone who accesses the server, either by direct dialing or by sending a message.

Call processing. Expands the capabilities of the server; includes Enhanced Call Processing, automated attendant, and Information Center mailboxes.

Capacity on demand (COD). Allows system managers to monitor capacity requirements and purchase the specific amount of message-storage hours, mailboxes, and fax-capable mailboxes required.

Card. A thin board on which electrical components such as integrated circuits, resistors, EPROMs, and switches are affixed. *See also Board.*

Card cage. A section in the server where the logic cards reside.

Carrier tone. A continuous-frequency signal capable of being modified to carry information.

CCF (combination CPU/file) card. A logic card that performs CPU and file-system functions.

CCITT (International Consultative Committee for Telephone and Telegraph). An advisory committee established in 1959 to study and recommend answers to questions about technical operation and tariffs. The organization is attempting to establish standards for worldwide intercountry operation.

CDR (call detail records). CDR information is recorded in the server about events that occur during call processing or when data is retrieved from the server. This information can be processed by the PC/CDR software package that resides on an external PC. The data can provide detailed billing data and individual-port traffic statistics.

CDR buffer. Special area in the server memory where CDR events are collected and stored.

Cellular provider. A communications company that transmits and receives telephone signals from mobile telephones. The geographic area served by the provider or providers is divided into cells, which can be as small as a few city blocks. A master computer “hands off” mobile telephone calls from one cell to another.

Central office. *See CO.*

Centrex. The software and hardware located in the central office (CO) to provide PBX service to a customer, eliminating the need for PBX equipment on the customer site.

Certified service personnel. People who have successfully completed Octel’s training program for service personnel. By passing an examination, they become certified to service Octel products. *See also Service personnel.*

Character. A single letter, numeral, or symbol used to represent information.

Checksum. A standard error-detection technique for messages. Both the sender and the receiver add up the bit values in a message. If the sums do not match, there has been an error in transmission. The system responds by sending the message again.

Class of service. There are 64 classes of service available that define how subscribers can use the server. Parameters that can be set for each class of service include personal greetings, maximum message length, call restrictions for outcalling, maximum number of messages, and maximum length of time that a message can be archived. These are set in menu 7.

CO (central office). Telephone-company term for its switching office. It is the connection point for public telephones and switching equipment for trunks that provide the necessary talk-path connections.

Combination CPU/file card. *See CCF card.*

Command. (1) A word, mnemonic, or character that, by virtue of its syntax in a line entry, causes a predefined operation in a computer system. (2) A word or phrase, usually in a menu, describing an action to be performed by the server.

Configuration. (1) Manner in which a computer and peripheral equipment are interconnected and programmed to operate as a system. (2) A particular selection of hardware devices or software routines or programs that function together.

Configuration notes. Documents produced by Octel that contain details pertaining to the different integrations of the server and the telephone system.

Configuration parameters. The parameters that define several system-wide variables, including system manager mailboxes, mailboxes designated general message mailboxes, number of digits in a password, and bad-password-attempts before disconnect.

Copy. (1) To reproduce data in a new location or other destination, leaving the source data unchanged. The physical form of the result can differ from that of the source, for example, to copy diskette data to a hard drive. (2) To send a copy of a received message to another subscriber on the server.

CRC (cyclical redundancy check). A method of detecting data-transmission errors.

Customer Services Center. An Octel location that provides telephone support to local field service personnel. *See also TAC.*

Cyclical redundancy check. *See CRC.*

D

Database. (1) A collection of data residing on a computer, with easy access to the information it contains. (2) Collection of interrelated data items organized by a consistent scheme that allows data items to be processed without regard to physical storage locations.

Data circuit-terminating equipment. *See DCE.*

Data-link integration. Data-link integration uses data-link, or RS-232, ports to transmit call data to and from the server. *See also RS-232 integration.*

Data-link port. A port that supports an RS-232 integration. *See also RS-232 integration.*

Data module. A personal computer (PC) that supports a variety of software applications and management packages, such as CSA, InfoTex, and FaxCall. The data module is a separate system, connected to the server. The data module acts as a communication coordinator, linking external applications to the server.

Data set. Alternative term for a modem. *See also Modem.*

Data-terminating equipment. *See DTE.*

DB9 connector. A connector with either 9 pins (male) or 9 slots (female).

DB25 connector. A connector with either 25 pins (male) or 25 slots (female). Most commonly used with an EIA-232D interface connection.

DCE (data circuit-terminating equipment). Equipment that provides the signal conversion and coding between data-terminal equipment (DTE) and the transmission line. The DCE can perform other functions that are normally performed at the network end of the user-to-network interface.

Default. Value assigned by the program or the server when the user has not specified another value.

Diagnostics. A computer program that attempts to detect faults in various parts of the server when it is first started. Diagnostic messages are often automatically recorded as status codes in a status log, which contains information about conditions that occur in the server.

Dial-by-name option. A feature of the server that allows callers to access a subscriber's mailbox by using the telephone keypad to dial the name of the subscriber.

Dialing sequences. Sequence of alphanumeric characters required by the server to transfer calls to an attendant or specific extension or to place a message-notification outcall.

DID (direct inward dial). (1) Trunk from the CO that provides direct access to a telephone extension. DIDs are generally purchased from the telephone company in blocks of 100 extension numbers. (2) Method for a caller to reach an extension on a PBX or Centrex without operator assistance.

Digital. Pertains to quantities with discrete or discontinuous values. *See also Analog.*

Digital networking. An optional feature that allows customers to send voice and fax messages through a data network. Can be used with multiple local servers in an Aria Domain.

Digital signal. A series of pulses or rapidly changing voltage levels that vary in discrete steps or increments. *See also Analog signal.*

Digital Signal Processor. *See DSP.*

Digital-to-analog converter. Circuitry that changes digitally encoded data into an analog signal. *See also Analog-to-digital converter.*

Digitization. Process of converting voice signals into digital data (that is, information coded in the form of binary digits) for storage on a disk drive or other mass-storage device.

DIP or dip (dual in-line package) switch. Set of microswitches built as a unit and mounted on logic cards or boards, used to configure equipment. Most dip switches have from two to ten microswitches. Each microswitch can be set to ON or OFF. The combination of microswitches that are ON and those that are OFF determines the configuration.

Direct connection. A physical communication link that is permanently connected and used for data communication. The physical link usually cannot be longer than 50 feet. *See also Remote Connection.*

Direct inward dial. *See DID.*

Direct Memory Access. *See DMA.*

Directory. (1) Table that contains the names of and pointers to files on a mass-storage device. (2) System-maintained structure.

Directory mailbox. A mailbox to which callers are referred when they do not know the extension numbers of the people they are trying to call. The directory mailbox is a type 30 automated-attendant mailbox established in menu 0.

Disk drive. *See Message drive or System drive.*

Distributed architecture. System in which printed circuit boards contain individual microprocessors, contributing to the speed and efficiency of the server to process calls and messages.

DMA (direct memory access). A method by which data is transferred between peripheral devices and internal memory without intervention by the CCF card.

DSP (digital signal processing). Method of compressing digital signals using complex algorithms at lower digitization rates. On a server, DSP compresses 64-Kbit digitized voice samples to 16-Kbit samples.

DSP cell. A cell that enhances, analyzes, or manipulates data that has been converted to digital signals. It is used to compress digitized voice samples on the FLT card.

DTE (data-terminal equipment). Equipment that consists of digital end instruments. These end instruments convert user information into data signals for transmission or reconvert the received data signals into user information.

DTMF (dual-tone multifrequency). Allows the sending of numerical information from a touch-tone telephone by transmitting specific pairs of tones. Each key on the touch-tone telephone produces a unique combination of tones. DTMF is a nationally accepted abbreviation for dual-tone multifrequency.

Dual in-line package switch. *See DIP switch.*

Dual-tone multifrequency. *See DTMF.*

Dump. (1) To copy the contents of all or part of a database, usually from an internal storage medium to an external storage medium. (2) The data resulting from the copy process.

Duplex. In communications, a simultaneous, two-way independent transmission. *See also Full-duplex and Half-duplex.*

E

ECP (Enhanced Call Processing). Software feature that allows callers to an ECP mailbox to route their own calls to specified extensions on the PBX or Centrex or to other server mailboxes. The routing does not require operator assistance.

ECP mailboxes. Mailbox types 31, 32, and 33, each of which includes a caller's menu.

EIA-232D. Electronic Industries Association (EIA) standard that defines the physical and electrical specifications of the 25-pin connector used in data communications. This standard is a revision of RS-232-C, which brings it in line with international standards CCITT V.24, V.28, and ISO IS2110.

Electrostatic discharge. *See ESD.*

EMI (electromagnetic interference). Disruption of the normal operation of a piece of equipment, caused by emission of electrical or magnetic fields from another piece of equipment.

Engineering bit. Enabled only by the Octel Customer Services Center to allow access to special utilities used by service personnel to maintain the server.

Enhanced Call Processing. *See ECP.*

EPROM (erasable, programmable, read-only memory). A device on logic cards that contains firmware.

ESD (electrostatic discharge). A surge of static electricity that results from the static-charge buildup on two nonconductive surfaces that can cause damage to sensitive electronic equipment.

Exit. Option that allows users to leave the current operation and return to the previous menu.

Extension. (1) A telephone accessed through to a PBX. (2) An additional telephone connected to a line that allows the line to serve two or more locations.

F

Facsimile machine. *See Fax.*

Fallback. A feature available with digital networking. If fallback is enabled in the node profile (menu 15.1.3) for a node and if a message cannot be delivered to that node through digital networking, the server falls back (reverts) to Octel **A**nalog **N**etworking to deliver the message.

FAT (file-allocation table). The file-allocation table (FAT) works in conjunction with the directory entry to define the physical location of a file and to allocate the appropriate amount of space for it to reside on the disk.

Fatal error. Software or hardware problem that will not permit the server to boot.

Fax. An acronym for facsimile. (1) Equipment that facilitates the transmission of images over a common carrier network. The image is scanned at the transmitter, reconstructed at the receiving station, and duplicated on paper immediately, or later. (2) A precise reproduction of an original document.

Fax-capable, line/telephone interface card. *See FLT card.*

Field. (1) In a record or on a screen, a specified area used for particular data; for example, the locations of the various parameters to be entered in the system-manager menus. (2) The smallest logical unit of data. It can have any length, determined by the programmer who defined the field.

File. (1) A logical collection of data that occupies one or more blocks on a mass-storage device, such as a disk. (2) Logical unit of data that can be referenced by a logical name the server recognizes. (3) Group of similar or related records.

File-allocation table. *See FAT.*

File system. A distinct division of the operating system, consisting of files, directories, and the information needed to locate the files and directories. A structure from which directories and files are constructed.

Firmware. Programs residing in EPROMs.

Flash. A flash is generated by momentarily pressing and releasing the switch-hook on a standard telephone set. Computerized PBX and Centrex systems interpret a switch-hook flash as a signal that a request is forthcoming.

Flash EPROM. An EPROM on the CCF or LAN card that can have its firmware updated without replacing the EPROM.

FLT card. A logic card that contains 8 ports, is fax-capable, and performs telephone-interface and line-task functions.

FLT8 card. A standard FLT card.

FLT-A card. A type of FLT card that allows the server to integrate directly with a Lucent Technologies PBX, without using a separate integration device.

FLT-M card. A type of FLT card that allows the server to integrate directly with a Mitel PBX, without using a separate integration device.

Format. Arrangement of the elements comprising any field, record, file, or volume.

Full-duplex. A communications channel capable of simultaneous, independent, two-way transmission and reception. *See also Duplex and Half-duplex.*

G

Garbage collect. A two-pass function. The first pass identifies mailboxes with damaged messages, names, or greetings. The second pass, if run, purges damaged messages, updates the free-space table, and lists the affected mailboxes.

Gateway. *See Router.*

GMR (global message redundancy). An optional feature that duplicates messages on both drives in message-drive pairs. If one drive fails, no messages are lost.

Greeting. Recorded message identifying the location the caller reached. A greeting is the first announcement callers hear when they access the server, if there was no answer from the number dialed. Mailbox greetings can be personal or system greetings.

Ground start. Signaling protocol in which, when requesting a dial tone, the PBX, Centrex, or server sends a momentary ground on the line. The ground is removed when the dial tone is received. The ring ground returns on the tip. *See also Tip and ring.*

H

Half-duplex. A communication system in which two-way communication is possible, but only one way at a time; for example, a ham radio or radio-telephone with a pushbutton on the mouthpiece. *See also Duplex and Full-duplex.*

Handset. The telephone part containing the receiver (speaker) and transmitter (microphone).

Handshake. Exchange of signals between a CPU and a peripheral device. Each device must inform the other if it is ready or busy when information transfer is requested.

Hard-disk errors. Errors that cause a disk drive to fail, necessitating its replacement.

Hardware. The physical equipment and components in a server.

Hayes-compatible modem. Specific type of asynchronous modem that can be used for establishing communication between remote system manager terminals and the server.

Help message. A message that provides additional information; for example, the allowed range of values for a field, found for menu fields on the system manager terminal and displayed by pressing a function key.

Hex (hexadecimal). A numbering system used to condense binary numbers into a more readable format. Hexadecimal digits 0–9, A, B, C, D E, and F have equivalent decimal values from 0 to 15. A hexadecimal digit represents four bits, and one byte consists of two hexadecimal digits.

Hex digit. A hexadecimal value (0–9, A, B, C, D E, or F), representing four bits.

High-order nibble. The leftmost character in a hexadecimal byte.

Hunt group. A group of lines or trunks all addressed by the same lead number. The switch, beginning at the first line in the group, hunts through the stations or trunks in that group, routing the call to the first idle line it finds in the group.

I, J, K

ICMB (Information Center mailboxes). These mailboxes store recorded information or announcements that can be accessed by subscribers or callers dialing the mailbox number. These mailboxes can be configured for simple voice announcements (listen only), or they can allow callers to record replies to announcements (listen and reply).

Immediate start. A signaling protocol used between switches, in which the receiving end must be ready to receive the dialed digits immediately (within 70 ms) after seizure.

In-band integration. Form of integration in which calling-party ID, called-party ID, and message-waiting indication can be obtained by sending DTMF tones between the PBX or switch and the server, over the same channel (or band) as the voice.

In-band signaling. Signaling made up of tones that are carried within the voice-frequency band and carried along the same channel as the voice path.

Information Center mailbox. *See ICMB.*

Initialize. (1) To set counters, switches, or addresses to starting values at prescribed points in the execution of a program, particularly in preparation for executing a code sequence. (2) To format a volume in a particular file-structured format in preparation for use by an operating system.

Initial password. The temporary, randomly generated, 6-digit password assigned to each new subscriber at the time a mailbox is created in menu 8. This password is required to access the mailbox for the first time. When subscribers initialize their mailboxes, they replace initial passwords with passwords they choose. *See also Password.*

Initial Program Load. *See IPL.*

Input/output device. *See I/O device.*

Install tables. Tables that are duplicated on each drive and that contain information about all the server's drives. The install tables are all updated when a drive is installed or deinstalled. *See also Boot table.*

Integrated server. A configuration that allows the server to receive call identification and status information from the PBX or switch on forwarded calls. Callers to subscribers on the server can leave messages in subscriber mailboxes without having to enter the mailbox numbers of the called parties. Integrated servers can also provide message-waiting indication to subscribers when new messages are delivered to their mailboxes. *See also Interfaced server and Configuration notes.*

Interfaced server. A configuration that does not allow the server to receive call identification and status information from the PBX or switch on forwarded calls. To leave messages in subscriber mailboxes, callers must enter more keystrokes than for an integrated server. Interfaced servers cannot provide message-waiting indication to subscribers when new messages are delivered to their mailboxes. *See also Integrated server.*

Internal User Number. *See IUN.*

International Consultive Committee for Telephone and Telegraph. *See CCITT.*

International Standards Organization. *See ISO.*

I/O device (input/output device). A device external to the CCF card that transmits or receives data.

IPL (initial program load). (1) The process of loading the first program into the server memory during initialization. (2) The portions of software used to boot the server. IPL1 is in the EPROM on the CCF card; PIPL is on the system drives.

ISO (International Standards Organization). An international agency that is responsible for developing standards for information exchange. This agency has a function similar to that of ANSI in the United States.*

IUN (internal user number). A 16-bit data value the server uses internally to represent a subscriber mailbox.

L

LAN (local area network) card. A logic card that permits attachment of the server to a LAN. Required for digital networking and other purposes that use digital communication.

Least significant digit. The rightmost digit of a number.

LED (light-emitting diode). A semiconductor diode that emits light when electrical current is passed through it.

Line. Channel or path for communications between a station and a switch or PBX. A general term often used to describe any type of link or port in a system.

Link. (1) Connection between two or more devices or servers. (2) Connection between specific stages within the same switching system. (3) Address pointer to the next element of a list or to the next block of a file.

Log. *See Status log.*

Logic card. *See card.*

Logical terminal number. *See LTN.*

Loop current. Current in the circuit that connects the subscriber's set with the local switching equipment.

Loop start. Signaling protocol used by PBXs or Centrexes to request dial tone from the CO by closing the loop (placing a short across the tip and ring).

Low-order nibble. The rightmost character in a hexadecimal byte.

LTN. Identifies the actual trunk in a hunt group chosen by the PBX in response to a hunt request.

M

Mailbox. Repository of messages for a subscriber on the server from outside callers or other subscribers. Allows subscribers to exchange messages or information without being in direct telephone contact. Special mailbox types allow various functions to be performed.

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* *Webster's Dictionary of Computer Terms*, 3rd ed., New York, Simon & Schuster, Inc., 1988.

Mailbox type. Type of mailbox, established by the system manager in menu 8, that determines the function of the mailbox.

Main distribution frame. *See MDF.*

Main Menu. (1) The first set of voice prompts subscribers hear when they access their mailboxes in voice-mail mode. (2) The first screen on the system manager terminal presented after the correct password has been entered. This menu is a directory for all terminal-based system-management and maintenance functions.

MDF (main distribution frame). A distributing frame that, in one part, terminates the outside lines entering the PBX or Centrex and also terminates the subscriber-line cabling, trunk cabling, and other cabling from the switching system. Used for associating any outside line with any desired terminal on the switching system or with any other outside line.

Menu. (1) Selections available to callers or subscribers through their touch-tone telephones. (2) System-manager-terminal display that lists various options from which the system manager or service technician can choose, to perform operations or establish parameters.

Menu option. A choice listed in a menu.

Menu 0. Menu that appears on the system-manager-terminal screen only once, when the server is initialized. Many of its parameters can be reset in menu 1.

Message drive. Disk drive where digitized voice messages, faxes, recorded names, and greetings are stored. *See also System drive.*

Message server. *See Octel 250 server or Octel 350 server.*

Message waiting. Feature that allows subscribers to know whether messages have been left in their mailboxes, indicated by a light on the telephone or a stutter dial tone.

Mode. *See Telephone-answering mode or Voice-messaging mode.*

Modem. Acronym for modulator/demodulator. A device that converts digital signals into analog for transmission across telephone lines and converts received analog signals into digital signals. Used, for example, to connect the server with a telephone line for remote system management.

Most significant digit. The leftmost, nonzero digit.

Multiplexing. (1) The division of a transmission facility into two or more channels, sharing a system resource between users, or channeling two signals to one source. (2) The transmission of two or more signals over a single communications circuit by a multiplexer.

N

Name-management table. *See NMT.*

Networking. Software that enables servers at remote locations to transmit messages to each other at scheduled times. The sender of the message enters a network address that identifies the remote server and mailbox number. *See also Digital networking.*

Nibble. One half of a byte. Usually shown as one hexadecimal digit.

NMT (name-management table). Used for the dial-by-name feature. The name-management table matches the DTMF digits dialed to the unique numeric equivalent of the mailbox name entered in menu 8.

Nonpeak traffic. A time when the usage of the server is relatively low. System backups should be performed during nonpeak-traffic periods.

Non-service-affecting alarm. *See NSA alarm.*

NSA (non-service-affecting) alarm. An alarm that warns the system manager of a condition that could degrade service if left uncorrected. *See also Alarm.*

Null modem. A connector that emulates a modem, allowing a DTE device and a DCE device to communicate.

O

Octel 250 server. An Octel product that provides subscribers with telephone answering and allows exchange of information in voice-messaging mode. It can have up to 56 ports in a single cabinet or 72 ports in dual attached cabinets, 15,000 mailboxes, and 900 message hours in a GMR configuration or 945 message hours in a non-GMR configuration.

Octel 350 server. An Octel product that provides subscribers with telephone answering and allows exchange of information in voice-messaging mode. It can have up to 72 ports in a single cabinet or 144 ports in dual attached cabinets, 30,000 mailboxes, and 1350 message hours in a GMR configuration or 1530 message hours in a non-GMR configuration.

Octel standard system phrases. Prerecorded phrases heard when a caller accesses the server, either as a subscriber or as a nonsubscriber.

Off-hook. Term that indicates a piece of telephone equipment is in use. This term originated with the handset or earpiece of early telephones, which was suspended from a hook until picked up, producing a loop current.

Offline. (1) Pertains to equipment or devices not under control of the CCF card. (2) Mode of server operation intentionally established by service personnel or by the machine itself, in which certain circuits, units, or areas are not available for normal operation.

Offset. The position of a hexadecimal byte, based on the number of bytes counted from byte zero. Pertinent to the server's status log, it is expressed in two hexadecimal bytes; for example, offset 2B for the byte in line 00020 of a status-log entry, at the 11th (B) column.

On-hook. Term that indicates a piece of telephone equipment is not in use. No loop current flows when a telephone is on-hook, and the switch recognizes that this telephone is available for incoming calls.

Online. (1) Pertaining to equipment or devices directly connected and under control of the CCF card. (2) Mode of server operation intentionally established by service personnel or by the machine itself, in which certain circuits, units, or areas are made available for normal operation.

OOS (out-of-service) alarm. An alarm indicating that the server has shut down and is not processing messages. The OOS alarm indicator appears *after* the server has rebooted. *See also Alarm.*

Open trees. The entry point of a call to the server, where callers have the option of dialing an extension number or identifying themselves as subscribers. At this point, they are not in a subscriber's mailbox. *See also System greeting.*

Outband signaling. Signaling that is transmitted on a separate channel from the channel carrying information (voice, image, or data).

Outcalls. Method of message-waiting notification. Subscribers can set a notification schedule so that the server calls the subscriber at a specified number (telephone extension, home telephone number, pager, and so on) to inform the subscriber of new messages.

Out-of-service alarm. *See OOS alarm.*

Outside caller. (1) A nonsubscriber who accesses the server. (2) A person who accesses the server in such a manner that the server does not recognize the person as a subscriber; for example, in telephone-answering mode.

P, Q

Packet. A group of binary digits, including data and control elements, that is switched and transmitted as a composite whole. The data and control elements and possible error-control information are arranged in a specific format. A packet includes various blocks of data.

Parallel transmission. In data communications, a method of data transfer in which all bits representing a character are sent simultaneously. *See also Serial transmission.*

Parity. Method of detecting errors in data transmission whereby an extra bit is appended to each character to make the sum of all bits in the character always odd or always even.

Password. (1) Access numbers from 3 to 15 digits long used for access to the primary system manager mailbox and to the secondary system manager mailbox. These same passwords allow access to the system manager terminal. (2) An access number, 3 to 15 digits long, associated with each mailbox. Subscribers set their own confidential, personal passwords. No one else (including the system manager) knows or has access to subscribers' passwords.

Patch. (1) To modify a program by changing the binary code instead of the source code. (2) The modification itself.

PBX (private branch exchange). The telephone switching equipment located in a business office designed to process incoming, outgoing, and internal telephone calls for that office.

PCM (pulse code modulation). Method of sampling information signals at regular intervals and transmitting the samples as a series of pulses in coded form, each of which represents the amplitude of the information signal at that time.

PDN (public or private data network). A network available for the transmission of data, usually using packet switching under the CCITT X.25 packet-switching protocol.

Personal greeting. A customized greeting recorded by a subscriber. When a caller reaches a subscriber's mailbox in telephone-answering mode, the caller hears the personal greeting, informing the caller that the subscriber is not currently available. *See also Greeting.*

Personal-group distribution list. Distribution list created by subscribers in their individual mailboxes for their personal use. These lists allow a message to be recorded once and sent to multiple, predefined destinations.

Personal password. On the server, a 3- to 15-digit access number associated with each mailbox. Subscribers set their own confidential, personal passwords.

Phrase table. One of the software components located on the system drives. The phrase tables direct the CCF card to phrases stored on the system drives.

Phrases. Digitized speech fragments combined to form voice prompts that are played in response to caller and subscriber actions. *See also System phrases.*

Pilot number. PBX or Centrex number dialed to access a hunt or distribution group. Also the server access number, which subscribers call to access the server.

Port. (1) Point of entrance or exit for a communications channel to a telephone system or server. (2) Any input or output channel on a voice or data-switching system. In a server or PBX, a port is required for each connected line, trunk, or peripheral device.

Port assignments. Defines functional characteristics for each server port in menu 4, consisting of extensions, incoming and outgoing ports, telephone answering, message waiting, network access, pager outcalling, fax outcalling, port line types, digits in a forwarded call, and port groups.

Port group. A functional block of ports. Port-group designations allow a selective return to an attendant when a subscriber or outside caller requires help. Port groups are also used in statistical reports.

Port monitoring. Certain mailboxes are designated to answer incoming calls on specific server ports. All calls to that port are sent to the designated mailbox, bypassing the standard system greeting.

POTS (plain old telephone service). Nothing fancy, just regular service from the CO.

Private branch exchange. *See PBX.*

Prompts. (1) Voice messages that lead subscribers and outside callers through the various options. Each subscriber can select from three levels of prompts in the voice-mail mode (standard, extended, and rapid). (2) Phrase, sentence, or word group, presented on the system manager terminal, that outlines a system manager's choices at any given point or provides helpful information about the screen's fields or the server.

Protocol. Those procedures relating to the format and timing of transmitting data between two devices. A protocol defines the capability of two devices to use the same procedures and understand each other.*

Public data network. *See PDN.*

Pulse code modulation. *See PCM.*

R

Radio-frequency interference. *See RFI.*

RAM (random-access memory). The working area of the computer, where applications programs can be loaded and executed.

Random access memory (RAM). *See RAM.*

RAT (record-allocation table). A bit-oriented table that keeps track of the records on the drive that are being allocated for data, such as messages or user records. The record-allocation table determines whether there is space available to use for new data.

Read-only memory. *See ROM.*

Reboot. Turn on or reset the telephone system, PC, or server.

Record-allocation table. *See RAT.*

Record buffer. RAM buffer residing on the CCF card that is used with disk utilities. A single disk record can be loaded into the record buffer to perform read/write operations.

Remote connection. A communication link using modems that is used for data communication. Because modems are used, the distance between the end devices can be more than 50 feet. See also *Direct connection.*

Reports. Statistical data that contains all the information related to one subject needed for a given purpose. Reports can be viewed on the terminal or printed.

Restart. To resume execution of a program or operation of a server. To reboot.

Return code. Used to determine the success or failure of an operation. A return code is contained in the fourth byte (offset 03) of a control-bus (CB) message in a status-log entry. The return code is unique to the CB IN message (response from the destination). The meaning of the value in a return code varies with different status-code entries.

Return material authorization. *See RMA.*

Review. Process of listening to a message or messages.

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* Newton, Harry. *Newton's Telecom Dictionary,* 2nd ed., New York, Telecom Library Inc., 1989 .

RFI (radio-frequency interference). The disruption of radio signals caused by any source that generates radio waves at the same frequency and along the same path.

Ringback tone. Standard tone indicating that the telephone dialed is ringing.

Ring-no-answer. Caller hears ringback tone, but the call is not answered.

RMA (return material authorization) number. Number that Octel assigns to a part or product that a customer is returning to Octel. An RMA tag must accompany all returned parts.

ROM (read-only memory). A random-access memory device that is programmed at the factory and whose contents cannot be altered thereafter by a power breakdown, by being overwritten, or by any other action.

Rotary telephone. Telephone that uses a rotary dial. Dialing produces pulses corresponding to the number dialed. Rotary dialing does not produce DTMF tones.

Router. A computer that directs information among networks to the correct addresses. Also called *gateway.*

RS-232 integration. Form of integration in which an RS-232 data link is used to transmit caller ID, called-party ID, and message-waiting indications. RS-232 cables connect the server and the PBX or Centrex.

RS-232 link. *See RS-232 integration.*

RS-232C. An Electronic Industries Association (EIA) standard defining exactly how ones and zeroes are transmitted, including voltage levels needed and other electronic signals necessary for communication.

S

SA (service-affecting) alarm. An alarm that warns the system manager of an existing condition that could cause data and messages to be lost. *See also Alarm.*

Scrolling. (1) The movement of data on a video display. A new line appears at the bottom of the screen as an old one disappears at the top. (2) Advancing or returning a specified number of lines in a displayed file or menu.

SCSI (Small Computer Systems Interface). High-speed, 8-bit parallel bus used on the drive modules in the server.

Serial-bus terminator. A terminator that eliminates echoes on the main backplane.

Serial channel. A single-wire data channel that transmits (Tx) or receives (Rx) data in a bit-by-bit stream. The server uses serial channels for connecting the system manager terminal, modem, and integrations.

Serial number. (1) Unique number assigned to each server, located on a label near the main power switch of the server. (2) Unique number assigned to each disk drive, written in its unalterable boot table.

Serial transmission. In data communications, a method of data transfer in which bits are transmitted one at a time. *See also Parallel transmission.*

Server. *See Octel 250 server or Octel 350 server.*

Service-affecting alarm. *See SA alarm.*

Service bit. Enabled only by the Octel Customer Services Center or authorized distributors to allow access to menus that service personnel use to maintain the server.

Service option. *See Service bit.*

Service personnel. Octel or customer service technicians. In this manual, service personnel are those who have successfully completed Octel's training program to become certified service personnel.

Service technicians. *See Service personnel.*

Shutdown. A process used to terminate activity on the server in an orderly manner for troubleshooting, upgrading software or hardware, or adding applications.

Significant digit. (1) A digit that contributes to the accuracy or precision of a numeral. The number of significant digits is counted beginning with the digit contributing the most value, called the most significant digit and ending with the one contributing the least value, called the least significant digit. (2) A digit that is needed for a certain purpose; for example, to identify all numbers above or below a certain value.

Simplified Message Desk Interface. *See SMDI.*

Single-point ground. Single, continuous, untapped conductor that connects to a ground rod, ground grid, or ground-bus window with no other equipment or device attached to it.

SMDI (Simplified Message Desk Interface). Interface protocol that uses a data-communication link to permit transfer of information over the RS-232 link to the server.*

SMT (system manager terminal). The terminal (Wyse 50, Wyse 55, HP 700/43, or other) used to access the server Main Menu and other server menus. The terminal allows the system manager and service personnel to set up and change operational parameters, monitor the server's performance, and access special maintenance menus.

Software. Programs, languages, or routines that control the operation of a computer. Software includes two major types of programs: system programs and application programs.

SST (system status table). A table that contains server-specific data entered in system-manager menus 0 through 6. The SST also contains the status log.

Startup. Process of bringing the server into operation from a totally inoperative condition. Occurs when installing a new server or following total power loss or other catastrophic failure. *See also Online.*

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* Newton, Harry. *Newton's Telecom Dictionary,* 2nd ed., New York, Telecom Library Inc., 1989.

Station lines. Wires that provide voice paths between telephone sets and the PBX or Centrex.

Status code. Shown in bytes (offsets) 04–05 of a status-log entry. The meanings of the entry and the other bytes in the entry depend on the value of the status code.

Status log. A record that contains entries generated by the server. The entries are useful for troubleshooting, tracking inconsistencies, and monitoring server activity. The status log can be viewed or printed using menu 13, option 2 or 3.

Subscriber. Person who has been assigned a voice mailbox on the server. Subscribers can be located on or off the premises and are not required to have a telephone extension on the premises. Subscribers have access to server features, as determined by their classes of service.

Switch. Another name for the telephone company central office (CO) or for a PBX.

Switched virtual circuit. A temporary, logical association between two DTE devices that exists only for the duration of the data transfer. Octel servers support two-way switched virtual circuits.

Switching system. System for connecting telephone calls. It links the caller with the called party or with a trunk going to other switches to complete the connection. These calls are usually voice (telephone), but can also be data (computer communications) or digitized voice (binary applications).

Synchronous. (1) Performance of a sequence of operations controlled by an external clocking device. Implies that no operation can take place until the previous operation is complete. (2) In step or in phase, as applied to two devices or machines.

Synchronous transmission. Data transmission in which the bits are transmitted at a fixed rate. The transmitter and receiver are both synchronized to the same clock signals.

System-access number. Also known as the pilot number, the number that a subscriber calls to access the server. This number can be a PBX or Centrex telephone number that identifies a hunt or distribution group. It can also be a separate, outside telephone number when the server is connected directly to a switch with a business line.

System drive. Octel servers use disk drives to store and retrieve data. System-operating software is stored on system drives. In non-GMR Octel 250 servers, system drives also contain messages. *See also Message drive.*

System greeting. Server greeting that asks callers to dial the number of the person they are calling or, if the callers have their own mailboxes on the server, to press the # key to access their mailboxes.

System manager. Person responsible for operating and maintaining the server and its database.

System manager mailbox. Special voice-messaging mailbox that offers access to certain system manager functions; for example, creating and deleting a system broadcast message, recording a customized opening greeting or server sign-off message, recording names for system distribution lists, and hearing network-error messages.

System manager passwords. The two number sequences that can be entered on the keyboard of the system manager terminal to gain access to the system manager Main Menu and other system manager functions. The same number sequences can be entered on the telephone keypad to allow access to the system manager mailboxes.

System manager terminal. *See SMT.*

System phrases. Phrases that provide a foundation of basic terms such as numbers, letters, and months used in prompts. These phrases are prerecorded in the standard system voice and reside on the server.

System shutdown. The termination of all processes running on the server.

System status table. *See SST.*

System utilities. Programs that allow certain maintenance functions to be performed.

T

TAC (Technical Assistance Center). An Octel support location for resolving service problems, from which service engineers provide telephone and on-site support for Octel distributors, Octel service personnel, and those customers who maintain their own servers.

Technical Assistance Center. *See TAC.*

Telco cables. Cables between the CO or PBX and the server FLT cards, with wires for multiple voice ports. *See also Trunk.*

Telephone-answering mode. Mode of operation in which the server performs a telephone-answering function that (1) answers telephone calls forwarded to the server; (2) plays a personal greeting from the mailbox subscriber (or a standard system greeting generated by the server); and (3) records and stores the caller's message for later review by the subscriber.

Terminal. (1) Point at which information can enter or leave a communication network. (2) I/O device associated with a particular program; usually one capable of two-way communication. (3) I/O device that includes a keyboard and a display screen. A terminal is used as the primary device for communication between the server and the system manager.

Terminal type. Terminals supported by Octel servers include the HP 700/43, Wyse 50, Wyse 55, AT&T Teletype 4425/5425, and DEC VT102 and VT220.

Tie trunk/tie line. Telephone trunk, line, or channel directly connecting two switches.

Tip and ring. Generic term used when defining the voice-pair on a telephone line. The *ring* is the side providing battery. The *tip* is the return or ground side.

Tip-and-ring wires. Pair of conductors associated with the transmission portion of circuits and apparatus.

Tone detection. Capability of the server to detect and recognize DTMF tones. *See also DTMF.*

Touch-tone. An industry-accepted term that describes the different DTMF tones that are generated when the keys of a DTMF telephone keypad are pressed. *See also DTMF.*

Traffic. The number of calls placed on a server or line. Servers or lines can handle some maximum amount of traffic within a certain period of time before the server is blocked.

Transmit speed. *See Baud rate.*

Transpose. To interchange two items of data, for example, hexadecimal bytes.

Tree. An Octel term for software that provides an interface between a caller and the server. *See also Open trees.*

Trunk. Telephone circuit that connects two switching systems, such as central offices (COs), PBXs, and special-purpose computer systems such as servers.

U

Uninterruptible power supply. *See UPS.*

Update. (1) Command option that enables users to change the server information in existing data records. (2) Change within an existing major release.

Upgrade. Change to a new, major software release.

UPS (uninterruptible power supply). Provides continuous electrical power to equipment from batteries, when the conventional power source is interrupted, as during a power failure. A UPS also protects critical equipment from power surges, sags, brownouts, and spikes.

User interface. (1) Prompts the server plays for a subscriber or outside caller. (2) Method of accessing a piece of equipment such as a telephone or a system manager terminal.

User record. Record located on system drives and that contains all information pertinent to a mailbox.

Utility. Any general-purpose program included in an operating system to perform common maintenance functions.

V

Validity checks. Checks performed on subscriber mailboxes by the purge task. Each mailbox (user record) contains checkpoints, with each checkpoint having a defined range of values. The purge task verifies that each of the values is within the correct range. When running option 0, Validity check user records, from the reformat menu, validity-check codes appear that are associated with the user record in question.

Voice mailbox. *See Voice-messaging mailbox.*

Voice-mail mode. Mode of operation in which subscribers access their mailboxes for the purpose of reviewing messages, sending messages, checking receipt of messages they have sent, or changing their personal options. Only subscribers can access their own mailboxes in the voice-mail mode.

Voice messaging. A technology that provides a communication link between subscribers who can access a voice mailbox and send messages to and receive messages from other subscribers on the voice-messaging system. Voice messaging provides message-routing options not available in telephone-answering systems.

Voice-messaging mailbox. Delivery location within the server where pointers to voice messages are stored. A voice mailbox can be accessed and a message sent to a person or a group of people. This differs from an answering machine, because the one recorded message can be duplicated for distribution to many people. The voice message is typically digitized and stored as hard-disk data, so that it can be accessed and distributed under computer control.

Voice-messaging mode. A voice-mail-mode feature used by server subscribers to exchange messages or information with other subscribers without being in direct telephone contact with one another. In a single call, subscribers can send messages, listen to messages sent by other subscribers or left by outside callers, reply to messages, and send copies of messages to other subscribers.

Voice processing. A technology used for recording and storing audio messages for later retrieval. Voice processing uses an established telephone network as the communication medium to exchange information among users of the system. In voice processing, the telephone is the entry point to the system. *See also Voice messaging.*

Voice-processing application. *See Application.*

VPMOD. Abbreviation for voice-processing module, used on some system manager menus. The term “server” is now used instead of voice-processing module or voice processor.

W, X, Y, Z

Wink start. Signaling protocol used between switches, in which the receiving end reverses polarity (winks) momentarily as a signal to the transmitting end that it is ready to receive the dialed digits. A wink start occurs between tip and ring, a DID, or two WATS trunks.

Word. Two hexadecimal bytes of information that contain one piece of information.

X.25 link. The physical connection used for transmitting data between a data module and the server, using X.25 protocol. Octel uses the EIA-232D standard for this connection.

X.25 protocol. In data communications, X.25 is a set of rules defined by the CCITT to govern data communications over a packet-switching network.

Index

NUMERALS and SYMBOLS

A

AC power
- protection devices, 3-5
- requirements, 3-6

Access to utilities, A-2

Adding expansion cabinet
- configure cabinet, 12-27 to 12-28
- connect interconnect cable, 12-26 to 12-27
- connecting the cabinets, 12-24 to 12-28
- move terminator board, 12-26 to 12-27
- procedures, 12-24 to 12-28
- tools required, 12-24

Adding message space, 12-10

Address mapping table (AMT), described, 1-27

Administered AMIS analog networking, function
  described, 1-19

Air–conditioning requirements, 3-4 to 3-5

Alarm conditions
- disk space critically low, 9-14
- NSA alarms
  - CDR–buffer space low, 9-17
  - disk space low, 9-17
  - fan failure, 9-19
  - frame sync error, 9-17 to 9-18
  - non–critical entry in status log, 9-17
  - status–log space low, 9-17
  - system backup/restore error, 9-17
  - yellow–line temperature, 9-18 to 9-19
- OOS alarms
  - auxiliary–power board failure, 9-13 to 9-14
  - intentional shutdown, 9-11
  - listed, 9-11
  - red–line temperature, 9-12
  - system software failure, 9-11
  - total +24–volt power loss, 9-13
  - total power loss, 9-12 to 9-13
- partial power failure, 9-16
- SA alarms
  - blown fuse, 9-16
  - CDR–buffer space critically low, 9-15
  - critical entry in status log, 9-15
  - disk–drive failure, 9-15
  - LAN card/API failure, 9-16
  - listed, 9-14
  - logic–card failure, 9-16
  - NSA alarms listed, 9-16
  - RS–232 integration–link failure, 9-15
- status–log space critically low, 9-14
- using remote alarm relays, 9-19

Alarm panel
- described, 2-16 to 2-18
- LEDs
  - described, 9-8 to 9-10
  - illustrated, 2-17 to 2-18
  - listed, 2-18
- logic board
  - location illustrated, 11-13
  - switch S3 settings, 11-13
- reset switch, 2-16 to 2-17
- test points, 2-17 to 2-18

Alarm panel illustrated, 6-3

Alarms
- alarm panel
  - illustrated, 2-17
  - LEDs described, 9-8 to 9-10
  - listed, 2-18
- conditions
  - checking menu 13.8 and LEDs, 9-10
  - NSA alarms, 9-16 to 9-20
  - OOS alarms, 9-11 to 9-13
  - SA alarms, 9-13 to 9-16
- correcting
  - NSA alarms, 9-16 to 9-19

Alarms, correcting (continued)
OOS alarms, 9-11 to 9-13
SA alarms, 9-13 to 9-16
drive modules, 2-14 to 2-15
FLT cards
illustrated, 2-9
listed, 2-10
LAN card
illustrated, 2-12
listed, 2-13
listed, 9-1
logic–card LEDs, 9-6 to 9-8
CCF card, illustrated, 2-5
on CCF card, 2-3, 2-4 to 2-6
remote alarm relays, 9-19 to 9-20
status menu (menu 13.8)
described, 9-1
illustrated, 9-2
interpreting, 9-3 to 9-6
printing, 9-2 to 9-3

AMID integration, 7-22

AMIS analog networking, function described, 1-19

AMT (address mapping table), described, 1-27

Analog network statistics
columns and fields described, 7-52 to 7-54
Error Counter screen
described, 7-52
illustrated, 7-52 to 7-54
General screen, 7-50 to 7-51
columns and fields described, 7-50 to 7-51
illustrated, 7-50 to 7-52

Analog networking
described, 1-19
reviewing statistics
described, 7-49
displaying Aria 1.2 screens, 7-49
displaying Aria 2.0 screens, 7-50
general screen fields described, 7-50 to 7-51

Anti–tilt bracket installation, 4-16

APID integration, locked–up voice channels, 7-21 to 7-22

Application layer , file card software, 1-21

Applications
integration, 1-20
networking, 1-19
notification, 1-18 to 1-19
server applications, 1-20
on CPU, 1-18 to 1-20
line task, 1-18
system manager task, 1-16 to 1-17
purge–task application, 1-17

Architecture
bus subsystem
control bus, 1-24 to 1-28
data bus, 1-24
handshakes, 1-24
central–processing subsystem
description, 1-16
hardware, 1-16
components described
alarm panel, 2-16 to 2-18
drive backplane, 2-15
drive modules, 2-14 to 2-15
global message redundancy, 2-15
logic cards, 2-2 to 2-13
main backplane, 2-14
overview, 2-1 to 2-2
power supplies, 2-13 to 2-14
system manager terminal, 2-18
tape drive, 2-15 to 2-16
data structures
listed, 1-24 to 1-25
memory–resident tables, 1-27 to 1-28
message database, 1-26 to 1-27
message–delivery system, 1-26
record 50, 1-28
system–status table, 1-28
user records, 1-25 to 1-26
described, 1-1
file–storage subsystem
message files, 1-21
software layers, 1-21
system files, 1-21

Architecture (continued)
hardware components, 1-4 to 1-5
illustrated, 1-5
integrations
in–band, 1-14
listed, 1-13
PID, 1-14 to 1-15
set emulation, 1-14
SMDI, 1-13
drive modules, 1-9
logic cards, 1-8 to 1-9
power supplies, 1-9
message files, 1-21
server capacities, 1-1 to 1-2
server functions
call processing, 1-3 to 1-4
integrated telephone answering, 1-3
voice messaging, 1-3
server illustrated
front view, 1-6, 2-1
rear view, 1-7, 2-2
software
applications, 1-16 to 1-20
components, 1-10
features, 1-10
file–card layers, 1-21
layers, 1-16
types of, 1-15
status log, 1-28
telephone–interface subsystem
DLC subsystem, 1-22 to 1-23
TIC subsystem, 1-22

Aria 1.2 software
differences with Aria 2.0, viii to ix
line types, B-1 to B-4

Aria 2.0 software
differences with Aria 1.2, viii to ix
line types, B-1 to B-4
Screen and Prompt Summary, xi
upgrade software and phrases, using tape, 14-1 to 14-7

Aria 2.0 System Manager Manual, *xi*

Automated attendant, function described, 1-3

Automated–attendant, problems, 7-14 to 7-15
call to operator goes to server, 7-17
correct greeting not played, 7-15
greeting played after “please hold” prompt, 7-15 to 7-16
greeting played after caller enters extension, 7-16
incorrect transfer after “please hold” prompt, 7-17
mailbox not in service, 7-17
symptoms, 7-14 to 7-17

Auxiliary power board
illustrated, 11-36
reinserting power distribution tray, 11-37
replacement of, 11-36 to 11-37

B

Backplanes
drive, 2-15
main, 2-14

Backplanes
bus–terminator boards, illustrated, 11-44
drives, 11-46 to 11-49
replacing fuses, 11-45 to 11-46
replacing fuses, 11-38 to 11-39

Backup Media Contents Display screen, 11-54

Batch networking, 1-19

Boot process
completing, 5-5 to 5-6
testing, 5-44

Bus subsystem
control bus, 1-24
data bus, 1-24
Octel packet interface (OPI), 1-23

Bytes
defined, 8-2
transposing, 8-2 to 8-3

C

Cabinet, 2-16 to 2-18
  alarm–panel LEDs, 2-18
  covers, 11-50 to 11-56

Cabinet field, in IORB header, 8-11

Cable connections
  LAN card, 2-12
  CCF card, 2-6
  FLT cards, 2-10

Call control, FLT card function, 2-7

Call flow, normal, 1-10

Call ID
  PID integration, 1-14 to 1-15
  set emulation, 1-14
  in–band integration, 1-14
  SMDI, 1-13

Call processing
  described, 1-3
  methods, 1-3 to 1-4
    automated attendant, 1-3 to 1-4
    information–center mailboxes, 1-4
    single–digit menus, 1-4

Call–flow sequence
  CCF card participation, 1-11 to 1-12
    in–band integration, 1-12
    SMDI integration, 1-12
  FLT card participation, 1-10
    digitized voice compression, 1-12
    in–band integration, 1-11
    SMDI integration, 1-11, 1-12
  illustrated, 1-11

Capacities in Octel 250, 1-2

Card–configuration–test failure (aria 1.2), 6-10

Logic cards, CCF, 13-3

CB (control–bus) messages. *See* Control–bus (CB) messages

CCF card, 13-3
  alarm LEDs, 9-6 to 9-8
  alarms, 2-3
    described, 2-4 to 2-6
    illustrated, 2-5
  application code, 1-16
  ASYNC1–ASYNC3 serial ports, 2-18
  cable connections, 2-3, 2-5, 2-6
  central processing unit (CPU)
    battery, 2-4
    control bus, 2-4
    data bus, 2-4
    described, 2-3 to 2-4
  central processor unit (CPU), 2-3
    described, 2-3 to 2-4
  components listed, 2-3
  configuration–test failure (Aria 1.2), 6-10
  connecting cables, 4-7 to 4-9
  control bus (CB) messages, 8-11 to 8-13
  CPU channel connectors, 5-32
    configuring ports, 5-33 to 5-34
  defined, 1-1, 1-8 to 1-9
  drive backplane, 2-15
  ensuring correct cabling
    data–link connections, 3-10
    modem connection, 3-10 to 3-11
    SMT connections, 3-9
  EPROM upgrade, 11-5
  EPROMS, 13-3
  file–system processor, 2-3, 2-4
  front edge illustrated, 2-5, 9-7
  handshaking, 1-23 to 1-24
  in call–flow sequence, 1-10
  in hardware configuration, 1-5
  logic–bay configuration, 2-2 to 2-3
  LEDs, listed, 2-6
  listed, 2-6
  main backplane connections, 2-14
  replacing, 11-4 to 11-5
  requirerd for online upgrade, 13-3
  reverting to prior EPROMs, 11-6
  startup problems, 6-5 to 6-6
  startup tasks
    CPU diagnostic self–tests, 5-3
    overview, 5-2
  system file status, 6-6
  X.25 connections, 3-8 to 3-12, 4-9

CDR buffer, expanding storage space, 12-21 to 12-23

CDR event 118 (GEN_ERR), 11-9

Central proceesor unit (CPU), startup problems, 6-5 to 6-6

Central processor unit (CPU)
- 80486 DX microprocessor, 2-3 to 2-4
- application programs, 1-18 to 1-20
- battery, 2-4
- clock, 2-4
- control buses, 2-4
- CP subsystem, application programs, 1-18
- initial program load (IPL), 1-16
- data buses, 2-4
- described, 2-3 to 2-4
- in CCF card, 2-3 to 2-4

Central–processing (CP) subsystem
- application programs, 1-18 to 1-20
- applications
  - integrations, 1-20
  - line tasks, 1-18
  - networking, 1-19
  - notification, 1-18 to 1-19
  - purge task, 1-17
  - server applications, 1-20
  - system–manager task, 1-16 to 1-17
- description, 1-16
- hardware, 1-16
- initial program local (IPL), 1-16
- software layers, 1-16

Change Console/Download Port Speed utility, A-8, A-93

Change Telephone Keypad Type utility, A-7, A-89

Change Terminal Type utility, A-7, A-89 to A-90

Channel field, in IORB header, 8-11

Connect PC, online upgrade using diskettes
- direct connection, 13-5
- remote connection, 13-6

Connecting modem
- to PC, 13-7
- to server, 13-6 to 13-7

CONSOLE connector
- on CCF card, 2-5, 2-6
- for system manger terminal, 2-18

Control bus (CB)
- in hardware configuration, 1-5
- main backplane connection, 1-9

Control buses
- communication role, 2-4, 2-7
- disk drivs, 2-15
- on main backplane, 2-14

Control–bus (CB) messages, 8-11 to 8-13

Controlling calls, FLT card functions, 2-7 to 2-8

Conventions used, ix

Cooling–fan problems, 6-2 to 6-5
- assemby illustrated, installing new fan assembly, 11-31
- replacing
  - fan power plugs illustrated, 11-30
  - installing new assembly, 11-31
  - removing fan assembly, 11-29 to 11-32

Covers, replacing, 11-50 to 11-56

CP subsystem. *See* Central–processing subsystem

CPU. *See Central processor unit (CPU)*

CPU serial channels
- configuring, 5-32
- configuring direct integration, 5-34
- configuring secondary SMTs, 5-33

Critical entries in menu 0
- Type of telephone system VPMOD is connected to: field, 5-11
- VPMOD serial number: field, 5-10

D

Data buses
- data transfer, 2-4
- described, 1-24

Data buses (continued)
on CCF card, 2-6
main backplane connection, 1-9
on main backplane, 2-14
to disk drives, 2-14

Data connections, on CCF card, 2-5

Data structures
listed, 1-24 to 1-25
memory–resident table
address mapping table, 1-27
notification tables, 1-28
message database, 1-26 to 1-27
message–delivery system (MDS), 1-26
record 50, 1-28
status log, function described, 1-28
system status table (SST), 1-28
user records, 1-25 to 1-26

Data–bus cables, for disk drives, 2-15

Data–buses, direct–memory–access starting problems, 6-10

Databases, for messages, 1-26 to 1-27

Databases
data restored, 11-52
guidelines for restoring, 11-51
restoring from tape, 11-51 to 11-56
tape header, 11-52

Datafile Utilities
Change Record, A-4, A-54
datafile types and subtypes, A-51
Decrease Datafile Size, A-55 to A-56
Display Record, A-4, A-53
Expand Datafile Size, A-4, A-54
Get Logical Address, A-5, A-57
Get Physical Address, A-5, A-56 to A-57
Patch Software, A-4, A-5, A-56
Read Datafile Record, A-4, A-51 to A-52
Write Datafile Record, A-4, A-52 to A-53

Datafiles, information storage, 1-10

DB9 connectors, 4-9

DCM (disk–control–module) layer of file–card software, 1-21

DecisionPro, 7-7 to 7-8

Defining network addressing, 5-40 to 5-41

Delayed messages
actual problems, 7-9 to 7-10
subscriber perceptions, 7-8 to 7-9

Diagnostic tools
DecisionPro, 7-7
Octel PC/CDR, 7-6
Online CDR Utility, 7-5 to 7-6
remote access, 7-5

Dialing Sequence for AMIS International Calls: field in menu 6.1, 5-27

Dialing Sequence for Local Calls: field in menu 6.1: field in menu 6.1, 5-27

Dialing Sequence for Long–Distance Calls: field in menu 6.1, 5-27

Dialing Sequence for On–PBX Calls (if VPMOD is on a PBX): ffield in menu 6.1, 5-26

Dialing Sequence for Private Network Calls: field in menu 6.1, 5-27

Dialing Sequence to Activate Message Waiting: field in menu 6.2, 5-31

Dialing Sequence to Deactivate Message Waiting: field in menu 6.2, 5-31

Dialing Sequence to Reconnect with a Call: field in menu 6.1
Busy: subfield, 5-26
Ring/No answer: subfield, 5-26

Dialing Sequence to Transfer a Call: field in menu 6.1, 5-26

Digit Sequence for Direct Calls: field in menu 6.2, 5-31

Digit Sequence for Forward: fields in menu 6.2, 5-31

Digital networking
accessing node 0 differences first screen fields described , 7-38 to 7-41
advantages, 2-11
configuring system parameters, 12-45 to 12-46

Digital networking (continued)
described, 1-19
establishing node profiles, 12-46
failure cause, 7-30 to 7-32
guidelines for assistance, 7-27 to 7-28
LAN card, 2-11
LAN Utilities, 7-33
digital–networking statistics, 7-38 to 7-45
echo test utility, 7-35 to 7-37
reset LAN Card and LAN Card API utility, 7-48
server configuration, configuring system parameters, 5-49
statistics screens, 7-38
fifth screen fields described, 7-45 to 7-46
fourth screen fields described, 7-44
second screen fields described, 7-41
third screen fields described, 7-42 to 7-44
testing, 5-52
testing network, 12-46
typical problems, 7-29 to 7-30
valid node numbers and message queries
described, 7-48 to 7-49
illustrated, 7-49 to 7-50

Direct connection, PC to server
illustrated, 13-5
procedures, 13-6

Disk drive backplane, 2-15

Disk drives
adding message drives
caution about, 12-4
to GMR server, 12-5 to 12-6
to non–GMR server, 12-4 to 12-5
adding system drive, 12-3
alarm LEDs, 2-15
capacities, 1-1
described, 2-14 to 2-16
described, 1-9
global message redundancy, 2-15
handling, 10-24, 11-14 to 11-16, 11-46, 12-2
hexadecimal to–binary conversion, 6-8
higher capacity message drives
capacities illustrated, 12-6
in GMR server, 12-9 to 12-10
upgrading non–GMR server, 12-7 to 12-9
in hardware configuration, 1-5
replacing, 11-14 to 11-27
replacing message drives
in GMR server, 11-24 to 11-25
in non–GMR server, 11-22
replacing system drive
in single–drive server, 11-15
in two–system drive server, 11-19 to 11-22
storing, 11-14 to 11-16
troubleshooting nonzero status codes at startup, 6-6 to 6-8

Disk Utilities
A – READ DISK BUFFER, A-82 to A-83
accessing, A-81 to A-82
B – READ DISK TABLE, A-83
C – CHANGE RECORD BUFFER, A-84
Change Record Buffer, A-7
Clear User Record Buffer, A-7
Compute Check–sum, A-7
D – DISPLAY RECORD BUFFER, A-85
Display CB Packet Trace Table, A-7
Display Record Buffer, A-7
E – WRITE DISK RECORD, A-85 to A-86
G – CLEAR USER RECORD BUFFER, A-87
H – READ DATAFILE RECORD, A-87
i WRITE DATAFILE RECORD, A-88
J – PATCH SOFTWARE, A-88
P – DISPLAY CB PACKET TRACE TABLE, A-88
Patch Software, A-7
Read Datafile Record, A-7
Read Disk Record, A-7
Read Disk Table, A-7
S – COMPUTE CHECK–SUM, A-88
Write Datafile Record, A-7
Write Disk Record, A-7
F – WRITE DISK TABLE, A-86 to A-87
Write Disk Table, A-7

Disk–drive problems, 6-2 to 6-5
drive status and hardware, 7-26
list of symptoms, 7-25 to 7-26

Diskettes required for online upgrade, 13-4

Display channel–status utility
described, 7-47 to 7-48
illustrated, 7-47

Display Control Bus Buffer, A-7, A-89
Display Status Log, A-5
reference to chapter 8, A-60

Display tape header, 11-52

DLC (digital line card) subsystem of FLT card
described, 1-22 to 1-23
functions, 1-22 to 1-23

DMA channel, 1-24

Documents, related, x to xii

DRAM (dynamic RAM), 1-15

Drive backplane, 2-15
front view illustrated, 11-47
fuse locations illustrated, 11-46
power connections illustrated, 11-48
replacing, 11-46 to 11-49

Drive Copy Utilities
Copy Software, A-10
Create Backup Drive, reference to chapter 10, A-10
Initialize Drive, A-9

Drive Copy utilities
Copy Messages, A-3, A-18 to A-19
Copy Phrases, A-3, A-12 to A-14
Copy Software, A-3
Copy Software & Phrases, A-3, A-14 to A-17
Copy System Data Tables, A-3, A-18
Create Backup Drive, A-3
Display Drive Info, A-3
Display drive info, A-25 to A-26
Fast Phrase Copy, A-3, A-26 to A-27
Initialize Drive, A-3
Make Drive(s) Redundant, A-19 to A-25
Make Phrase Areas A and B Redundant, A-21 to A-22
Make System Drives Redundant, A-22 to A-25
Make Drives Redundant, A-3
Make Software Areas A and B Redundant, A-20

Drive Install utilities
De–Install Drive, A-3, A-28 to A-29
Disable Drive, A-3
disabling message drive, A-31
disabling message drive in GMR server, A-32
disabling system drive, A-31 to A-32
disabling system drive in non–GMR server, A-31
Drive Status, A-3, A-32
Enable Drive, A-3, A-29
enabling a system drive, A-29
enabling message drive in GMR server, A-30
enabling message drive in non–GMR server, A-30
GMR Utilities, A-34 to A-36
Determine GMR Requirement, A-34 to A-35
Display Mirrored Drives, A-35
GMR conversion, A-35
Reset Mirrored Drive Status, A-35 to A-36
Initialize System, A-3, A-33
Install Drive, A-3, A-27 to A-28
global message redundancy, A-3

Drive modules
alarm LEDs, 2-14 to 2-15
described, 1-4, 2-14 to 2-15
handling drives, 11-46
replacement guidelines, 11-14 to 11-27
replacing message drive
in GMR server, 11-24
in non–GMR server, 11-22
replacing system drive
in single–drive server, 11-15
in two–system drive server, 11-19

Drive Replacement Utilities
Replace Message Drive, reference to chapter 11, A-27
Replace System Drive, reference to chapter 11, A-27
Replace System Drive, A-3

Drive Replacement Utilities (continued)
Upgrade Message Drive, A-3
Upgrade Message Drive, reference to chapter 12, A-27

Drive Test, A-8

Drive Test Utility, A-92

Drive Verify Utilities, A-50
Drive Verify, A-4
Phrase Verify, A-4
Software Verify, A-4

Drive–backplane, fuses, replacing, 11-45 to 11-46

DS0–DS5 LEDs (internal diagnostics)
on CCF card, 2-5 to 2-6
on FLT card, 2-9 to 2-10
on LAN card, 2-13

DS0–DS5 LEDs (internal diagnostics), on CCF card, 2-6

DS0–DS7 LED (internal diagnostics), on FLT card, 2-10

DTMF (dual–tone multifrequency) tones, in call–flow sequence, 1-12

Dynamic RAM (DRAM), 1-15

E

Echo–test utility
described, 7-35
screen error messages, 7-36

Electrostatic discharge (ESD) reduction
disk–drive handling, 11-49
in disk drive handling, 11-14

Engineering bit
requirement for utilities, A-3
requirements for online upgrade, 13-2, 13-4

Enhanced Call Processing (ECP), described, 1-4

Entry header, in status log, 8-9 to 8-10

EPROM firmware
CCF card
EPROM upgrade, 11-5
revert to prior level, 11-11
LAN card, revert to prior level, 11-11
logic cards, 11-11
reverting to prior level on CCF card, 11-6

ERR LED (fault)
CCF card
illustrated, 2-5
listed, 2-6
FLT card, illustrated, 2-9
on FLT card, listed, 2-10
LAN card
illustrated, 2-12
listed, 2-13

Error Messages, CB IN and CB OUT messages, A-8

Error messages, SMT display, A-9

External alarms, connecting cable for , 4-18

External–alarm connections, 3-14

F

Fan replacement
fan assemblyand grill illustrated, 11-31
fan power plugs illustrated, 11-30
installing new fan assembly, 11-31
removing fan assembly, 11-29 to 11-32

FANS LED (power tray fans), on alarm panel, 2-18

Fault (card out of service) alarm
CCF card, 2-6
FLT card, 2-10
LAN card, 2-13

Feature option 77–System Backup & Restore, 14-2

File cards
file–storage subsystem, 1-21
software layers, 1-21
tasks, 1-21

File–system status codes. *See* System–file status codes

File–card software layers
application layers, 1-21
disk–driver layer, 1-21
disk–control–module layer, 1-21
message layer, 1-21

File–storage subsystem
described, 1-21
global message redundancy, 1-21
message files, 1-21
phase storage, 1-21
software layers, 1-21
system files, 1-21

File–system processor, 2-3
on CCF card, 2-4

Firmware requirements for online upgrade, 13-3

“Flash” On–hook Time: field in menu 6.1, 5-25

FLT – A cards, replacing, 11-6 to 11-9

FLT card
adding ports, 12-10
FLT–A card, 12-13 to 12-16
FLT8 or FLT–M card, 12-11 to 12-13
in slot 8 replacing LAN card, 12-16 to 12-18
alarm LEDs, 9-6 to 9-8
configuration, 4-6
connecting telephone cables, 4-7
cable connections , described, 3-10 to 3-11
FLT 8 port pin assignment, 3-12
illustrated, 9-7
TELCO connector illustrated, 4-8
cable connections, 2-10
changing to FLT–A card, 12-18 to 12-21
defined, 1-1, 1-8 to 1-9
DLC subsystem described, 1-22 to 1-23
DMA data–bus tests, 6-10
fuses, 2-7
in call–flow sequence, 1-1, 1-10
in hardware configuration, 1-5
logic–bay illustration, 2-2 to 2-3
LEDs, 2-7
illustrated, 2-9
listed, 2-10
line circuits, 2-7 to 2-8
main backplane connections, 2-14
replacement, 11-6 to 11-9
telephone interface circuits, 2-7
telephone–interface circuits, 2-7
TIC subsystem described, 1-22

FLT–A card,

FLT– A cards
adding, 12-13 to 12-16
changing to, 12-18 to 12-21
CDR event 118 (GEN ERR) generated, 11-9
LEDs, 11-8
normal startup, 11-8

FLT–M cards
adding, 12-11 to 12-13
replacement, 11-6 to 11-9

FLT8 cards, adding, 12-11 to 12-13

format listed, 6-7

FUSE LED, on alarm panel, 2-18

Fuse replacement, main backplane, 11-38 to 11-39

Fuses
main backplane, 2-14
FLT card, 2-7
LED on alarm panel, 2-17 to 2-18
replacing, drive backplane, 11-45 to 11-46

G

Garbage collect, passes described, 1-17

GEN_ERR. *See* CDR event 118

Global message redundancy, 1-21
described, 2-15
redundant drives, 2-15

GMR server
adding message drive, 12-5 to 12-6
upgrading message drives, 12-9 to 12-10

Green LEDs
CCF card
illustrated, 2-5
listed, 2-6
drive module, 2-14 to 2-15
LAN card
illustrated, 2-12
listed, 2-13
alarm panel
illustrated, 2-17 to 2-18
listed, 2-18
FLT card, 2-10
on FLT card, 2-10

Greeting problems
correct greeting not played, 7-15
data message garbled, 7-21
greeting inconsistencies, 7-19
greeting played after “please hold” prompt, 7-15 to 7-16
greeting played after caller enters extension, 7-16
incoming calls, 7-19 to 7-20
incorrect transfer after “please hold” prompt, 7-17
link message but no ring, 7-20
personal greetings, 7-11
SMDI, 7-20, 7-21
ring but no link message, 7-20

Grounding requirements, 3-5

Guides and manuals, x to xii

H

Handshaking, control bus, 1-24

Hardware
architecture illustrated, 1-5
components, 1-1, 1-4
drive modules, function described, 1-4 to 1-5
component descriptions, 2-1 to 2-18
i/o connectors
described, 1-4 to 1-5
illustrated, 1-5
logic cards
architecture, 1-4 to 1-5
card types, 1-8 to 1-9
location illustrated, 1-8
power supplies, described, 1-4 to 1-5

Hardware requirements for online upgrade, 13-3

Hexadecimal digit, defined, 8-2

High–order nibble, defined, 8-2

I, J

I/O connections, 1-4

ICMBs (Information Center mailboxes), function described, 1-4

IN LED (incoming to modem port) on CCF card, 2-6
call–flow sequence, 1-10 to 1-12
summarized, 1-14

In–band integration parameters in menu 6.2
illustrated, 5-30
procedures to establish, 5-30

Inband message – waiting dialing codes (include steps 3 thru 8), 5-31

Information Center mailboxes (ICMBs), function described, 1-4

INFORMATION ONLY status–log entry, 8-9

Initial program load, at startup, IPL1 and PIPL illustrated, 5-4

Initial program load (IPL), troubleshooting, 6-6

IPL (initial program load). *See* Initial program load (IPL)

Initialization, IPL sequence summarized, 1-16

Input–power problems at startup, 6-2

Input/output connection, 1-4

Input/output request block (IORB) header, in status log, 8-10 to 8-11

Installation, peripheral equipment, xi

Installation information
accessing menu 1.1, 5-22
completing menu 1.1, 5-23 to 5-24
Menu 1.1, illustrated, 5-23

Installation tasks
CCF card connections, 4-7 to 4-9
checking connections, 4-19
checking logic–card configuration, 4-6
checking system ID dip switch, 4-17
connecting–external alarm cable, 4-18
connecting modem to server, 4-15 to 4-16
connecting telephone cables, 4-7
connecting the power, 4-6
installing anti–tilt bracket, 4-16 to 4-33
LAN card, cable connector, 4-10
modem installation
components required, 4-12 to 4-14
modem configuration, 4-12 to 4-14
Hayes configuration as a dumb modem, 4-14
security caution, 4-11
on terminator board, 4-17
positioning the cabinet, 4-4
primary SMT, 4-11
modem installation, security caution, 4-11
task flow described, 4-1
terminator boards illustrated, 4-18
tools required, 4-4
unpacking the server, 4-4

Integrated telephone answering, 1-3

Integration problems
APID, 7-21 to 7-22
Rolm
DTMF tones, 7-22
no dial tone for outcalls, 7-22
PID/R not operational, 7-22
RS–232, 7-17
SMDI, 7-20
communication types, 7-18
connecting message–waiting problems, 7-18 to 7-19
data links, 7-21 to 7-22
greeting inconsistencies, 7-19
greeting problems, 7-19 to 7-20

Integrations
described, 1-12 to 1-13
in–band, 1-14
PID, 1-14 to 1-15
set emulation, 1-14
simplified message desk interface (SMDI), 1-13
telephone answering, 1-3 to 1-4

Intel order, defined, 8-2

Interfaced telephone answering, 1-2

Interfacing of switch and server, 1-12 to 1-13

Internal diagnostics LEDs
CCF card, 2-6
on CCF card, 2-6
FLT card, 2-10
LAN card, 2-13

Internal user numbers (IUN), in ATM, 1-27

Interpreting alarms
alarm conditions
NSA alarms, 9-16 to 9-19
OOS alarms, 9-11 to 9-13
SA alarms, 9-13 to 9-16
alarm status (menu 13.8)
alarm types, 9-3 to 9-4
described, 9-1
hardware alarms, 9-5 to 9-6
illustrated, 9-2
printing, 9-2 to 9-3
software alarms, 9-4 to 9-5
alarm–panel LEDs, 9-8 to 9-10
correcting alarm conditions
NSA alarms, 9-16 to 9-19
OOS alarms, 9-11 to 9-13
SA alarms, 9-13 to 9-16
determining alarm condition, 9-10
logic–card LEDs, 9-6 to 9-8
remote alarm relays, 9-19 to 9-20

Introducing this manual, vii to xii

INVESTIGATE SYSTEM ENVIRONMENT
status–log entry, 8-10

IORB (input/output request block) header, in status log, 8-10 to 8-11

IPL sequence
- on CPU, 1-16
- summarized, 1-16

L

LAN card
- adding to server
  - accessing menu 22, 12-36 to 12-37
  - cable installation, 12-41
  - defining network addresses, 12-37 to 12-39
  - feature options required, 12-35 to 12-36
  - hardware required, 12-34
  - installation, 12-39 to 12-41
  - pinging IP address, 12-43 to 12-44
  - required information, 12-35 to 12-36
  - reverting to prior EPROMs, 12-41
  - running echo test, 12-44 to 12-45
  - SNMP parameters, 12-38 to 12-39
  - TCP/IP parameters, 12-38 to 12-39
  - testing card, 12-41 to 12-42
- cable connections, 2-12, 2-13, 4-10
- configuring digital networking
  - node profiles, 12-46
  - system parameters, 12-45 to 12-46
  - testing network, 12-46
- defined, 1-1, 1-8 to 1-9
- described, 2-11
- ensuring correct cabling, 3-13 to 3-14
- LEDs
  - illustrated, 2-12
  - listed, 2-13
- replacing, 11-9 to 11-10
- resetting, 5-42
- testing, 5-44 to 5-46

LAN connector
- on CCF card, 2-5 to 2-6
- on LAN card, 2-12 to 2-13

LAN interface configuration
- IP address and net mask configuration, 5-40 to 5-41
- preliminary tasks, 5-38 to 5-39
- SNMP parameters (menu 22.3), 5-42
- TCP/IP parameters (menu 22.2), 5-41

LAN Utilities
- Digital Networking Trace, A-6
- Display API Trace, A-6
- Display Channel Status, A-6
- Echo Test, A-6
- LAN Card Trace/Profile/Error Log, A-6
- Network Statistics, A-6
- Ping, A-6
- reference to chapter 7, A-73
- Reset LAN Card and LAN Card API, A-6

LAN utilities
- analog network statistics
  - Error Counters screen columns and fields described, 7-52 to 7-54
  - Error Counters screen described, 7-52
  - Error Counters screen illustrated, 7-52
  - General screen columns and fields described, 7-50 to 7-51
  - General screen described, 7-50 to 7-51
  - General screen illustrated, 7-50
- described, 2-11
- digital networking, statistics, 7-38 to 7-45
- display channel–status utility
  - described, 7-47 to 7-48
  - illustrated, 7-47
  - MLT states, 7-47
  - network states, 7-48
- echo–test utility
  - described, 7-35
  - example, 7-35
  - illustrated, 7-35
  - screen error messages, 7-36
- menu illistrated, 7-33
- ping utility
  - described, 7-33 to 7-34
  - illustrated, 7-33
  - screen results, 7-34
- reset LAN card and LAN card API utility, 7-48

Laptop PC requirement, 13-8

LEDs
alarm panel, 2-16 to 2-18, 9-8 to 9-10
illustrated, 2-17
listed, 2-18
disk drives, 9-6 to 9-8
FLT cards
illustrated, 2-9
listed, 2-10
LAN card
illustrated, 2-12
listed, 2-13
logic cards, 9-6 to 9-8
CCF card, listed, 2-6
on CCF card, 9-7
drive modules, 2-15
on FLT card, 9-7
tape drive, 2-16

Line circuits
functions, 2-7 to 2-8
FLT cards, 2-7 to 2-9
on FLT cards, 2-7 to 2-8

Line types, B-1 to B-4

Line–task application, 1-18

Load–application–test troubleshooting, 6-10

Loading software and phrases diskettes, for online upgrade, 13-11 to 13-15

Logic bay, 2-1
access utility, 2-3
components, 1-8
configuration, 1-8
configuration illustrated, 2-3
illustrated, 1-6

Logic cards, 2-2
adding FLT–A card, 12-13 to 12-16
adding FLT8 or FLT–M card, 12-11 to 12-13
alarm LEDs, 9-6 to 9-8
architecture, 1-4 to 1-5
card extractors illustrated, 11-4
card types, 1-8 to 1-9
CCF card
central processing unit (CPU), 2-3 to 2-4
components listed, 2-3 to 2-6
file–system processor, 2-4
illustrated, 9-7
LEDs, 2-4 to 2-6
reverting to prior EPROMs, 11-6
CCF cards, replacing, 11-4
changing FLT card type to FLT–A card, 12-18 to 12-21
communication among, 1-23 to 1-24
described, 1-4, 2-2 to 2-13
FLT, 2-7 to 2-13
FLT card, illustrated, 9-7
FLT cards
components listed, 2-7
described, 2-7
front edge illustrated, 2-9
in slot 8 replacing LAN card, 12-16 to 12-18
L:EDs listed, 2-10
LEDs, 2-8 to 2-9
LEDs illustrated, 2-9
line circuits, 2-7 to 2-8
replacing, 11-6
telephone–interface circuits, 2-7
guidelines for replacement, 11-2
LAN card, 2-11 to 2-14
replacing, 11-9
reverting to prior EPROMs, 11-11
location illustrated, 1-8
locations illustrated, 2-3
main backplane connections, 2-14
removal illustrated, 11-3
replacement procedures, 11-2
replacing, 11-2 to 11-11
replacing EPROMs, 11-11

Logic–card problems, 6-2 to 6-5

Low–order nibble, defined, 8-2

LPE LED (problem with large packet bus), on FLT card, 2-10

M

Mailboxes
adding, 12-21
authorized, 12-21
call processing, 1-3 to 1-4
maximum allowed, 1-1
telephone answering, 1-2 to 1-3
voice messaging, 1-3

Main backplane
front view illustrated, 11-41
fuse locations illustrated, 11-39
power connections illustrated, 11-40
replacing, 11-37 to 11-44

Main backplane fuses, replacing, 11-38 to 11-39

Main Menu
displaying task–oriented menus, 5-21 to 5-22
illustrated, 5-21

Menu 20 – Service Operations, LAN Utilities
illustrated, 5-46
running the ping utilities, 5-46 to 5-47
running the echo–test utility, 5-47 to 5-48

Maintenance, checking status log, 8-3

Manual conventions, ix

Manuals and guides, x to xii

Maximum Time Before First Digit Received: field in menu 6.2 , 5-30

Memory–resident tables
address mapping table, 1-27 to 1-28
name mapping tables, 1-28

Menu 0.1, server information
critical entries
AT&T system 85 special message waiting: field, 5-13
SMDI/Inband Special Message Waiting: field, 5-14
Type of telephone system VPMOD is connected to: field, 5-11
VPMOD Serial Number: field, 5-10
illustrated, 5-10

Menu 0.2, system manager information
creating directory mailbox, 5-16
illustrated, 5-14
primary system manager, 5-15
secondary system manager, 5-15

Menu 0.3, current date and time, completing, 5-16 to 5-17

Menu 0, First–Time Startup
entering current date and time, 5-16 to 5-17
fourth screen illustrated, 5-16

Menu 1, changing installation information, 5-22

Menu 1 – System Parameters, illustrated, 5-22

Menu 1.1, Installation Information
duplicate fields from menu 0, 5-23
entering information, 5-23
illustrated, 5-23

Menu 12 – Disk Management, 12-10

Menu 13 (System Maintenance), displaying status log, 8-4 to 8-5

Menu 13.2 (status log display), 8-4 to 8-5

Menu 13.5, mailboxes authorized, 12-21

Menu 13.7, feature options, 12-31

Menu 13.8 Review Current Alarm Status, 2-4

Menu 13.8, Review Current Alarm Status, 11-9
check alarm conditions, 9-10
illustrated, 9-2
interpreting, 9-3 to 9-4
hardware alarms, 9-5 to 9-6
software alarms, 9-4 to 9-5
printing, 9-2 to 9-3

Menu 15.1.2, System Parameters for Digital Networking
configuring system parameters, 5-49
illustrated, 5-50

Menu 15.1.3, Node Profile
establishing digital networking node profiles, 5-50 to 5-53
illustrated, 5-51
testing node profiles for digital networking, 5-52

Menu 20 – Service Operations. *See* individual menus by name

Menu 20 – Service Utilities, LAN Utilities
- pinging IP address, 12-43 to 12-44
- running echo test, 12-44 to 12-45

Menu 20.9 (offline status log display), 8-5 to 8-6

Menu 20, LAN utilities
- digital networking statistics, 7-38 to 7-46
- display channel–status utility
  - described, 7-47
  - illustrated, 7-47
  - MLT states, 7-47
  - network states, 7-48
- echo–test utility
  - described, 7-35
  - example, 7-35
  - illustrated, 7-35
  - screen error messages, 7-36
- menu illustrated, 7-33
- ping utility, screen results, 7-34
- ping utility
  - described, 7-33 to 7-34
  - illustrated, 7-33
- reset LAN card and LAN card API utility, 7-48

Menu 21 – System Backup
- Cancel Current Operation, reference to chapter 10, A-80
- Dispaly Tape Header, A-79 to A-80
- Display Backup Status, A-75
- illustrated, 12-34
- Review History of Last Event, A-77 to A-79
- Scan Backup Tape, A-76 to A-77
- Schedule Backup, reference to chapter 10, A-74
- Write/Read Diagnostic Utility, A-75 to A-76
- Write/Read Diagnostics utility, verifying tape–drive installation, 12-33 to 12-34

Menu 22.1, IP Address and Net Mask Configuration
- entering information, 5-40 to 5-41
- illustrated, 5-40

Menu 22.2, TCP/IP Parameters
- entering information, 5-41
- illustrated, 5-41

Menu 22, LAN Interface Management
- illustrated, 5-40
- LAN parameters, 5-40
  - IP address and net mask configuration (menu 22.1), 5-40 to 5-41
  - SNMP parameters (menu 22.3), 5-42
  - TCP/IP parameters (menu 22.2), 5-41

Menu 22.3, SNMP Parameters, entering information, 5-42
- illustrated, 5-42

Menu 4.1, port assignments
- described, 5-17 to 5-18
- illustrated, 5-18

Menu 6 – Dialing and Serial Channel Parameters, illustrated, 5-25

Menu 6.1, Transfer, Outcall, Fax, and Pager Sequences
- entering information, 5-25 to 5-30
- illustrated, 5-26

Menu 6.2, In–band Integration
- establishing parameters, 5-30
- illustrated, 5-30

Menu 6.3, Define CPU Seerial Channel, illustrated, 5-32

Menu 6.3, Define CPU Serial Channel
- configure direct integration, 5-34
- configure secondary SMTs, 5-33

Menu 6.5.1, Add Integration Link
- illustrated, 5-35
- procedure to add link, 5-35 to 5-37

Menu 6.5.2, Change Integration Link, 5-37

Menu 6.5.3, Review Integration Link, 5-37

Menu 6.5.4, Delete Integration Link, 5-37

Menu 6.5.5, Reset Integration Link, 5-38

Menu 6.5.6, Integration Link Status, 5-38 to 5-40

Menu 6.5, Integration Link Management
accessing the menu, 5-34 to 5-35
changing a link (menu 6.5.2), 5-37
reviewing a link a link (menu 6.5.3), 5-37
deleting a link (menu 6.5.4), 5-37
illustrated, procedures, 5-35
managing integration links (menu 6.5), resetting a link, 5-38
resetting a link (menu 6.5.5), viewing link status, 5-38
procedures, 5-35 to 5-37

Menu–0 First–Time Setup
assigning system–manager information
primary system manager, 5-15
secondary system manager, 5-15
critical fields, 5-8
entering company information, 5-8 to 5-9
entering server information, 5-9 to 5-14
AT&T System 85 Special Message Waiting: field, 5-13
SMDI/Inband Special Message Waiting: field , 5-14
third screen illustrated, 5-14
Type of telephone system VPMOD is cconnected to: field, 5-11
VPMOD Serial Number: field, 5-10
first screen illustrated, 5-9
second screen illustrated, 5-10

Menus 4.1.1 thru 4.1.6, menu 4.1.1 illustrated, 5-18

Messages
addresses, 1-10
database, 1-26 to 1-27
drives described, 1-9
layer in file–card–software, 1-21
Message–delivery system (MDS), 1-26
number of message–hours supported, 1-1

Message database, notification tables, 1-28

Message delivery system (MDS), 1-26

Message drives
adding
caution about, 12-4
to GMR server, 12-5 to 12-6
to non–GMR server, 12-4 to 12-5
adding message space, 12-10
global message redundancy, 2-15
handling, 11-14 to 11-16, 12-2
in drive modules, 2-14
replacing
GMR servers, 11-24
non–GMR server, 11-22
storing, 11-14 to 11-16
upgrading to higher capacity
drive capacities, 12-6
in GMR server, 12-9 to 12-10
in non–GMR server, 12-7 to 12-9

Message server. *See* Server

Message type, in CB message, 8-13

Message Utilities
Display Message Blocks, A-5, A-58
Display Phrase Blocks, A-5, A-58 to A-59
Message ID to Physical Address, A-5, A-59 to A-60
in–band integration, 1-14
PID integration, 1-15
RS–232 link, 1-13
set emulation, 1-14
telephone answering, 1-3

Message Waiting Timeout: field in menu 6.2, 5-31

Message–storage sequence, 1-26

Message–waiting problems
actual MWI problems, 7-9 to 7-11
correcting, 7-7 to 7-8
RS–232 , 7-17
SMDI
communication types, 7-18
procedures to correct, 7-18 to 7-19
subscriber perceptions, 7-8 to 7-9

Microprocessor, in CPU, 2-3

Miscellaneous Utilities
Configurable Integration Parameters, A-4, A-48
Display Drive Information & G–List, A-4, A-49

Miscellaneous Utilities (continued)
Enable/Disable Drive Read Only Mode, A-4
enabling or disabling, A-46 to A-47
GMR server read–only mode, A-47
non–GMR server read–only mode, A-46
Garbage Collect, A-4, A-43 to A-45
Initialize Drive, A-4, A-43
Initialize System, A-4, A-49
Message Waiting User Record Conversation, A-4, A-49
Reset CDR Pointers, A-4, A-48
Set System Boot Area, A-4, A-45 to A-46
Set Telephone Keypad Type, A-4, A-49
Visual CIP, A-4

Modem, replacing, 11-27 to 11-28

Modems
cable, 2-18
connecting SMT to server, 2-18
MODEM connector, CCF card, 2-5 to 2-6

MODEM connector, on CCF card, 2-6

Modem requirements for remote online upgrade, 13-3

Modems, 7-5
as peripheral equipment, xi
configuring Hayes modem as dumb modem, 4-14
configuring modems, 4-12 to 4-14
connection to CCF card, 3-10 to 3-11
connection to server, 4-15 to 4-16
connector on CCF card, 4-9
described, 4-12
installing
components required, 4-12
security caution, 4-11

modems
connecting to PC, 13-7
connecting to server, 13-6 to 13-7

MONITOR CLOSELY status–log entry, 8-9

N

Name mapping table (NMT), 1-28
memory–resident tables, name mapping tables, 1-28

Networking
digital, 1-19
functions, 1-19
types of, 1-19

Nibble, defined, 8-2

NMI OFF LED (nonmaskable interrupt disabled), on FLT card, 2-10

NMT (name mapping table), 1-28

Non–GMR server
adding message drive, 12-4 to 12-5
upgrading message drives, 12-7 to 12-9

Notification
application described, 1-18 to 1-19
notification tables , 1-28

Notification tables, 1-28

NOTIFY SUPPORT REPRESENTATIVE status–log entry, 8-10

NSA alarms
disk space low, 9-17
fan failure, 9-19
frame sync error, 9-17 to 9-18
listed, 9-16
non–critical entry in status log, 9-17
status–log space low, 9-17
system backup/restore error, 9-17
yellow–line temperature, 9-18 to 9-19

NSA LED (non–service–affecting alarm), on CCF card, 2-6

Number of Digits in Called Party ID (”N”): field in menu 6.2, 5-31

Number of Message Waiting Retry Attempts: field in menu 6.2, 5-31

Number of Rings for Local and Long–Distance Calls (Used for Outcalls): field in Menu 1.1, 5-23

Number of Rings for On–PBX Calls (Used for Outcalling): field in menu 1.1, 5-23

Number of Rings On–PBX Calls (Used for ECP): field in menu 1.1, 5-24

Numbers of Digits in Calling Party ID (”E”): field in menu 6.2, 5-31

O

Octel 250. *See* 250

Octel 250 message server. *See* Server

Manual organization, vii to viii

Octel packet interface (OPI)
- control bus, 1-23 to 1-24
- data bus, 1-24
- described, 1-23 to 1-24
- handshaking, 1-24

Octel PC/CDR, 7-6 to 7-7

Octel Net**working**, described, 1-19

Offline System Backup and Restore
- Backup, reference to chapter 10, A-90
- Cancel Current Operation
  - reference to chapter 10, A-91
  - reference to chapter11, A-91
- Dispaly Header of Backup Media, A-91
- Display Backup/Restore Status, A-90 to A-91
- Restore, reference to chapter 11, A-90
- Scan Backup Media, A-91
- Write/Read Diagnostic, A-91

Offline System Backup and Restore Menu, 11-53

Offline utilities, requirements for, A-2 to A-8

Offset, defined, 8-2

Online CDR, 7-5 to 7-6

Online CDR Utility, A-6
- Display CDR Event Codes, A-6
- Enable/Disable CDR Buffer Alarms, A-6
- reference to chapter 7, A-73

Online helps, 13-1

Online Menu 21– System backup, illustrated, 10-5

Online upgrade, using tape, 14-1

Online upgrade procedures
- changing boot area, 14-5 to 14-6
- using tape
  - having service bit enabled, 14-2
  - installing tape drive, 14-2
  - making software and phrases redundant, 14-6 to 14-7
  - performing upgrade, 14-3 to 14-4
  - removing tape drive, 14-7
  - verifying hardware and software, 14-2
  - verifying upgrade, 14-5
- using tape , majore steps, 14-1
- verifying boot areas, 14-2 to 14-3

Online upgrade tool
- installing in PC
  - at Windows 3.x, 13-8 to 13-9
  - at Windows 95, 13-10
- part number, 13-4

Online upgrade procedure
- remotely connecting PC and server, 13-6 to 13-7
- verifying firmware, 13-3
- installing upgrade tool, 13-8 to 13-10
- using diskettes
  - having engineering bit turned on, 13-4
  - verifying boot areas, 13-4 to 13-5

Online upgrade procedures
- directly connecting PC and server , 13-5
- verifying hardware, 13-3
- remote connections, 13-3
- remote upgrade, 13-1 to 13-2
- verifying software, 13-4
- major steps, 13-2
- using diskettes, 13-1 to 13-2, 13-5 to 13-6
  - booting the server, 13-22
  - changing boot area, 13-22
  - loading software and phrase diskettes, 13-11 to 13-15
  - making software and phrases redundant, 13-23 to 13-24
  - performing automatic upgrade, 13-15 to 13-21
  - prerequisites, 13-1

Online upgrade procedures, using diskettes, (continued)
remote–access limitations, 13-1 to 13-2
verifying the upgrade, 13-21
verifying values in PC Setup Menu, 13-10 to 13-11

Online upgrade, using diskettes, modem requirements, 13-3

Online utilities, requirements for, A-2 to A-8

OOS alarms
auxiliary–power board failure, 9-13 to 9-14
intentional shutdown, 9-11
listed, 9-11
red–line temperature, 9-12
total power loss, 9-12 to 9-13
system software failure, 9-11
total +24–volt power loss, 9-13

Operating voltage LEDs, on FLT card, 2-10

OPI (Octel packet interface)
control bus, 1-23 to 1-24
data bus, 1-24
described, 1-23 to 1-24
handshaking, 1-24

Organization of this manual, vii to viii

Other related documents, x to xii

OUT LED (call connected), on CCF card, 2-6

Out–of–service alarm (OOS), on CCF card, 2-6

Menu 13.8, current alarm status, 10-2

250
adding a language, 12-28 to 12-30
adding capacity, CDR storage space, 12-21
adding digital networking
configure system parameters, 12-45 to 12-46
node profiles, 12-46
testing network, 12-46
adding expansion cabinet
procedures, 12-24
tools required, 12-24
adding FLT card, in slot 8, 12-16 to 12-18
adding LAN card
accessing menu 22, 12-36 to 12-37
cable installation, 12-41
defining network addressing, 12-37 to 12-39
feature options required, 12-35 to 12-36
hardware required, 12-34 to 12-35
installation, 12-39 to 12-41
pinging IP address, 12-43 to 12-44
required information, 12-35 to 12-36
reverting to prior EPROMs, 12-41
running echo test, 12-44 to 12-45
SNMP parameters, 12-38 to 12-39
TCP/IP parameters, 12-38
testing card, 12-41 to 12-42
adding message drives
caution about, 12-4
to GMR server, 12-5 to 12-6
to non–GMR server, 12-4 to 12-5
adding message space, adding ports, 12-10
adding optional features, 12-23
adding ports, 12-10
FLT–A card, 12-13 to 12-16
adding system drive, 12-3
adding tape drive
preparation, 12-31
tools required, 12-31
verifying installation, 12-33 to 12-34
alarm status (menu 13.8), 9-1
illustrated, 9-2
interpreting, 9-3 to 9-6
printing, 9-2 to 9-3
alarm–panel LEDs, 9-8 to 9-10
alarms listed, 9-1
cabinet and carton dimensions, 3-3 to 3-4
cable connections illustrated, 3-7 to 3-8
cabling requirements, 3-3 to 3-4
CCF card connections, 4-7 to 4-9
changing FLT card type to FLT–A card, 12-18 to 12-21
checking connections to, 4-19
checking logic–card configuration, 4-6
configuring digital networking, node profiles (menu 15.1.3), testing the configuration, 5-50 to 5-53
configuring server for LAN interface

250, configuring server for LAN
interface (continued)
IP address and net mask configuration (menu 22.1), 5-40 to 5-41
preliminary tasks, 5-38 to 5-39
SNMP parameters interface (menu 22.3), 5-42
TCP/IP parameters (menu 22.2), 5-41
connecting external alarm cable, 4-18
connecting modem, 4-15 to 4-16
connecting telephone cables, 4-7
connecting the power, 4-6
correct cabling , description of, 3-6 to 3-7
correcting alarm conditions
NSA alarms, 9-16 to 9-19
OOS alarms, 9-11 to 9-13
SA alarms, 9-13 to 9-16
determining alarm conditions
checking menu 13.8 and LEDs, 9-10
NSA alarms, 9-16 to 9-20
OOS alarms, 9-11 to 9-13
SA alarms, 9-13 to 9-16
dimensions and weight, 3-2
electrical requirements, description of, 3-6
electrical safety, 4-2
ensuring correct cabling
data–link connections, 3-10
external–alarm connections, 3-14
LAN card, 3-13 to 3-14
modem connection, 3-10 to 3-11
SMT connections, 3-9
X.25 connection, 3-8 to 3-12
environmental safety, 4-3
expansion methods listed, 12-1
FLT 8 port pin assignments, 3-12
FLT card connections, described, 3-10 to 3-13
handling drives, 12-2
handling safety, 4-3
higher capacity message drives
capacities illustrated, 12-6
upgrading GMR server, 12-9 to 12-10
upgrading non–GMR server, 12-7 to 12-9
installation, 12-31 to 12-33
installation tasks, 4-1
installation tools, 4-4
installing the anti–tilt bracket, 4-16 to 4-17
LAN card, cable connections, 4-10
logic–card alarm LEDs, 9-6 to 9-8
modem installation
component required, 4-12
Hayes configuration, 4-14
modem configuration, 4-12 to 4-14
security caution, 4-11
positioning the cabinet, 4-4
preinstallation tasks, 3-1
remote alarm relays for external alarms, 9-19
required clearances illustrated, 3-4 to 3-7
scheduled maintenence
alarm–status review, 10-2
backing up, 10-4 to 10-7
database messages, 10-4 to 10-7
disk–drive handling, 10-24
inspection and cleaning, 10-21 to 10-23
measuring power and ground, 10-20 to 10-21
recommended frequency of maintenance, 10-1
status–log review, 10-2
system–drive backup, 10-2 to 10-4
tape–drive cleaning, 10-23 to 10-24
testing ports, 10-7 to 10-20
server clearance, 3-3
SMT installation, 4-11
startup tasks
accessing the Main Menu, 5-21 to 5-22
completing menu 0, 5-8 to 5-17
completing the boot process, 5-5 to 5-6
configuring SMT and printer, 5-2
illustrated, 5-1
monitoring diagnostics, 5-2 to 5-5
terminator board, checking system ID dip switch , 4-17
unpacking, 4-4
verifying operation
configuring digital networking, system parameters (menu 15.1.2), 5-49
LAN card tests, 5-44 to 5-46
operations test, 5-43 to 5-44
printer tests, 5-43
printing screens, 5-48

250, verifying operation (continued)
running the echo–test utility, 5-47 to 5-48
running the ping utility, 5-46 to 5-47
testing boot process, 5-44

250 message server. *See* Server

P, Q

Pager
BBL–type dialing sequences, 5-29
dialing sequence codes, 5-28
entering sequence codes in menu 6.1, 5-27
Sky Pager dialing sequences, 5-29
Spectrum–type dialing sequences, 5-29

Pager – dialing – sequence codes, 5-28

Pager Dialing Sequences fields, 1: thru 6:, in menu 6.1, 5-27

Pager problems, message notification, 7-10 to 7-11

Part replacement
See also Replacing server parts
alarm panel
logic board location, 11-13
replacing logic board, 11-11 to 11-13
switch S3 settings, 11-13
CCF cards, 11-4
drive backplane
front view illustrated, 11-47
fuse locations illustrated, 11-46
replacing fuses, 11-45
drive modules
handling disk drives, 11-13
message drive in GMR server, 11-24 to 11-25
message drive in non–GMR server, 11-22 to 11-24
replacement guidelines, 11-13
system drive in single–drive server, 11-14
cooling fans
assembly illustrated, 11-31
fan power plugs illustrated, 11-30
installing new fan assembly, 11-31
removing fan ssembly, 11-29 to 11-32
FLT cards, 11-6
illustrated, 11-35
LAN card
procedures, 11-9
reverting to prior EPROMs, 11-11
main backplane, 11-37
bus terminator boards, 11-44
fuses, 11-39
illustrated, 11-41
power connections illustrated, 11-40
replacing terminator boards, 11-43
modem, 11-27
power–distribution tray , 11-37
external connections illustrated, 11-34
removing from server, 11-32
replacing power supplies, 11-34
tools required, 11-32
server covers, 11-50
illustrated, 11-51
SMT. *See* SMT
tape drives, 11-26

"Pause" Time: field in menu 6.1, 5-25

PBX/server integrations, 1-12 to 1-15
described, 1-12 to 1-13
in–band, 1-14
PID, 1-14 to 1-15
set emulation, 1-14
SMDI, 1-13
telephone answering, 1-3 to 1-4

PC requirements for online upgrade
direct connection, 13-5 to 13-6
direct connections, 13-3
hardware required, 13-3
software required, 13-4
installing upgrade tool
Windows 3.x, 13-8 to 13-10
Windows 95, 13-10
remote connection, 13-6 to 13-7

PCM highway, 1-23

Peripheral address, in CB message, 8-13

Personal safety
electrical procedures, 4-2 to 4-3
handling equipment, 4-3

Phrase diskettes, 13-4

Phrase Table Utilities
Phrase Copy, A-4, A-41 to A-42
Phrase Delete, A-4, A-40
Phrase Table Initialization, A-3, A-36 to A-37
Reload In–RAM Phrases, A-4, A-42
Reset Phrase XREF Table, A-4
Reset XREF Table, A-42 to A-43
Set Digitization Rate, A-3, A-38
Set In–RAM Phrase Priority, A-4, A-39
Set Language Type, A-3, A-38
Set Phrase Table Version, A-3, A-37 to A-38

PID integration, 1-14 to 1-15

PID or MID application, ring–no–answer problems, 7-24

Ping utility, screen results, 7-34
described, 7-33 to 7-34
illustrated, 7-33

Port problems
all ports busy, 7-23
ring–no–answer, 7-24
too few ports, 7-10

Port Testing Utilities
Port Testing Administration, A-6
Port Traffic Statistics, A-6
Port/Test Status, A-6
reference to chapter 10, A-72 to A-73
Review Previous Test Results, A-6
Start Port Testing, A-6

Port–testing status
when test in process, 10-13 to 10-14
when test not in process, 10-12 to 10-13

Ports
adding, described, 12-10
adding FLT–A card, 12-13 to 12-16
adding FLT8 or FLT–M card, 12-11 to 12-13
testing
accessing administration option, 10-8
alarms specified, 10-9
dial–tone–detect parameter, 10-10 to 10-11
loopback–testing parameters, 10-11 to 10-12
procedures, 10-17 to 10-18
reviewing test results, 10-14 to 10-17
scheduling, 10-9
status when test in process, 10-13 to 10-14
status when test not in process, 10-12 to 10-13
using traffic statistics, 10-19 to 10-20

Ports available, 1-1

Ports testing, accessing port–testing utilities, 10-7 to 10-8

power and ground measurements, 10-20 to 10-21

Power distribution
disk–drive backplane, 2-15
drive modules, 2-15
main backplane, 2-14

Power distribution tray, 2-13 to 2-14
described, 1-9
illustrated, 11-35
located, 1-4, 1-7
power–cable cover illustrated, 11-33

Power failure
alarm panel LED indicators, 2-18
alarm panel LEDs, 2-17

Power problems at startup, 6-2

Power supplies
described, 1-4, 2-13 to 2-14
location illustrated, 11-35
replacing, 11-34 to 11-35

Power tray fans LED (FANS), on alarm panel, 2-18

Power–distribution tray
external connectors illustated, 11-34
reinserting in server, 11-37
removing, 11-32
replacing the auxiliary power board, 11-35

Power–distribution tray components, replacement procedures, 11-32 to 11-37

Power–supply alarm LEDs, 2-17

Power–supply LEDs (PS1–PS3), on alarm panel, 2-18

Preinstallation
- entry clearances, 3-2
- space and location requirements, 3-2 to 3-4

Preinstallation tasks
- air–conditioning requirements, 3-4 to 3-5
- clearances required, carton and cabinet dimensions, 3-3 to 3-4
- clearances required , described, 3-2
- electrical requirements, description of, 3-6
- ensuring correct cabling
  - FLT card connection, 3-10 to 3-13
  - LAN card connections, 3-13 to 3-14
  - modem connection, 3-10 to 3-11
  - SMT connections, 3-9
  - X.25 connection, 3-8 to 3-12
- ensuring correct cabling description of, 3-6 to 3-7
- ensuring correct cabling
  - data–link connections, 3-10
  - external–alarm connections, 3-14
- ensuring correct grounding, 3-5
- tools required , described, 3-2
- ESD reduction, 3-5
- space and location requirements, described, 3-2 to 3-4
- task flow described, 3-1

Printer–SMT connection, 2-18

Printer tests, 5-43

Problem areas
- analog networking, reviewing statistics, 7-49 to 7-50
- automated attendant
  - correct greeting not played, 7-15
  - greeting played after caller enters extension, 7-16
  - incorrect transfer after “please hold” prompt, 7-17
  - mailbox not in service, 7-17
  - operator call goes to server, 7-17
  - SMDI, 7-18 to 7-21
  - symptoms, 7-14 to 7-15
- delayed messages
  - actual, 7-9 to 7-10
  - perceived, 7-8 to 7-9
- deleting network nodes, 7-25
- digital networking
  - failure cause, 7-30 to 7-32
  - guidelines for assistance, 7-27 to 7-28
  - typical problems, 7-29 to 7-30
  - using LAN utilities, 7-32 to 7-38
  - valid node numbers and message queries, 7-48 to 7-49
- disk drives
  - check file card status, 7-26 to 7-27
  - drive status and hardware, 7-26
- during startup
  - card–configuration tests (aria 1.2), 6-10
  - cooling fans, 6-2 to 6-5
  - CPU test failures, 6-5 to 6-6
  - data–bus DMA–test failure, 6-10
  - disk drives, 6-2 to 6-5
  - file–system status, 6-6 to 6-9
  - input power, 6-2
  - listed, 6-1
  - logic cards, 6-2 to 6-5
  - SMT, 6-5
  - SST loading, 6-9
- greeting played after “please hold” prompt, 7-15 to 7-16
- integrations
  - AMID, 7-22
  - APID, 7-21 to 7-22
  - RS–232 message waiting, 7-17
- list of symptoms
  - Rolm, 7-22
  - TIC and port causes, 7-24
- listed, 7-1
- load–application–test failure, 6-10
- message waiting, 7-7 to 7-8
- personal greetings, 7-11
- ring–no–answer problems, 7-23
  - caused by server conditions, 7-23
  - PID or MID application cause, 7-24
  - TIC and port causes, 7-25
- symptoms, 7-2

Problem areas, (continued)
talk–off
described, 7-14
reasons for, 7-14
steps to correct, 7-14
tape drives, 7-27
transfer to operator
caller cut off, 7-12
one extension or a group, 7-13
system wide, 7-12 to 7-13
to wrong extension, 7-12

Procedures for replacing parts
See also Replacing server parts
alarm–panel
logic board location, 11-13
logic–board, 11-11 to 11-13
CCF cards, 11-4
cooling fans
assembly illustrated, 11-31
fan power plugs illustrated, 11-30
installing new assembly, 11-31
removing fan assembly, 11-29
drive backplane
front view illustrated, 11-47
fuse locations illustrated, 11-46
replaceable components listed, 11-44
replacing fuses, 11-45 to 11-46
drive modules
handling disk drives, 11-13
message drive in GMR server, 11-24 to 11-25
message drive in non–GMR server, 11-22 to 11-24
replacement guidelines, 11-13 to 11-15
system drive in single–drive server, 11-14
EPROMs on logic cards, 11-11
FLT cards, 11-6
LAN card, 11-9
logic cards
guidelines for replacement, 11-2
replacing any logic card, 11-2
main backplane
bus–terminator boards, illustrated, 11-44
front view illustrated, 11-41
fuse locations illustrated, 11-38
power connections illustrated, 11-40
replaceable components listed, 11-37 to 11-44
replacing fuses, 11-39
replacing terminator boards, 11-43
steps to replace, 11-39 to 11-42
modem, 11-27
power–distribution tray
auxiliary power board located, 11-36
external connections illustrated, 11-34
illustrated, 11-34, 11-35
reinserting in server, 11-37
removing from server, 11-32
replacing power supplies, 11-34
tools required, 11-32
replacing the auxiliary power board, 11-35
server covers, 11-50
illustrated, 11-51
SMT, 11-28 to 11-29
switch S3 settings, 11-13
tape drive, 11-26

Product Alert 92, 13-1, 13-4, 13-10

PS1–PS3 LEDs (power supplies), on alarm panel, 2-18

Pulse–code–modulation (PCM) highway, 1-23

Purge task, minute task, 1-17

Purge–task, described, 1-17

PWR FAIL LEDs, on alarm panel, 2-18

Power–on LED (card receiving power)
CCF card, 2-5
FLT card, 2-9
LAN card, 2-12

PWR LED (card receiving power)
on CCF card, 2-6
on FLT card, 2-10
on LAN card, 2-13

R

RAM (random access memory), in CPU, 2-3, 2-4

Random access memory (RAM), in CPU, 2-3, 2-4

Rebooting, MASTER RESET switch, 2-16

Recommended actions, in status–log entries, 8-9 to 8-10

Record 50, 1-28

RED LED (in–cabinet temperature alarm), on CCF card, 2-6

Red LEDs
- alarm panel
  - illustrated, 2-17 to 2-18
  - listed, 2-18
- CCF card
  - illustrated, 2-5 to 2-6
  - listed, 2-6
- drive modules, 2-15
- LAN card, illustrated, 2-12
- FLT card, 2-9 to 2-10

Redundant message drives, 2-15

Reference documents, x to xii

Reformat Options
- 1 Collapse Nodes, A-64
- 10 check user records vs. AMT, A-70
- 11 check AMT adresses vs. internal record numbers, A-71
- 6 Convert Mailbox Length, A-66 to A-69
- 8 AT&T Inband Message Waiting Utilities, A-69 to A-70
- ATT&T inband message waiting utilities (option 8), A-5
- Check AMT addresses vs. internal record numbers (option 11), A-5
- Check user records AMT (option 10), A-5
- Collapse Nodes (option 1), A-5
- Convert Mailbox Length (option 6), A-5
- Convert Mailboxes to ACP Integration (option 3), A-5
- Convert Type 52 Mailbox to Type 0 (option 7), A-5
- Move Company Records & Attendant Schedules to User Records (option 5), A-5
- Patch up clobbered user records (with bad lengths) (option 12), A-5
- Validity check user records, A-60 to A-64
- Validity Check User Records (option 0), A-5

Related documents, x to xii

Release manuals, x

Remote–access diagnoses, 7-5

Remote connection, PC to server
- illustrated, 13-6
- procedures, 13-6 to 13-7

Remote–access online upgrade
- connecting PC to server
  - illustrated, 13-6
  - procedures, 13-6 to 13-7
- limitations, 13-1 to 13-2
- modem requirements, 13-3

Replacement
- disk drives, 11-14 to 11-27
- FLT cards, 11-6 to 11-9
- FLT–A cards, 11-6 to 11-9
- FLT–M cards, 11-6 to 11-9
- fuses, main backplane, 11-39
- LAN card, 11-9 to 11-10
- main backplane, 11-39 to 11-44
- main–backplane fuses, 11-38 to 11-39
- modem, 11-27 to 11-28
- power supplies, 11-34 to 11-35
- power–distribution tray components, 11-32 to 11-37
- system drive in single–drive servers, 11-15 to 11-19

Replacement procedures
- alarm panel
  - logic board, 11-2 to 11-11
  - logic board location, 11-13
  - switch S3 settings, 11-13
- backplane, drive, 11-46 to 11-49
- cabinet covers, 11-50 to 11-56
- CCF card, 11-4 to 11-5
- drive modules, 11-14 to 11-27
  - system drive in two–system drive server, 11-19 to 11-22
- drive–backplane fuses, 11-45 to 11-46
- fuses, drive backplane, 11-45 to 11-46
- logic board, replacement procedures, 11-11 to 11-13
- power components, auxiliary power board, 11-36 to 11-37

Replacement procedures, (continued)
server covers, 11-50 to 11-56
terminator boards, 11-43 to 11-44

Replacing server parts
CCF cards, 11-4
cooling fans
assembly illustrated, 11-31
fan power plugs illustrated, 11-30
installing new fan assembly, 11-31
removing fan assembly, 11-29 to 11-32
drive backplane
front view illustrated, 11-47
fuse locations illustrated, 11-46
replacing fuses, 11-45 to 11-46
drive modules
handling disk drives, 11-13 to 11-15
message drive in GMR server, 11-24
message drive in non–GMR server, 11-22
replacement guidelines, 11-13 to 11-15
system drive in single–drive server, 11-19
FLT cards, 11-6
illustrated, 11-35, 11-41
LAN card, procedures, 11-9
logic board location, 11-13
main backplane
bus–terminator boards, 11-44
fuses, 11-39
power connections illustrated, 11-40
replacing terminator boards, 11-43 to 11-44
modem, 11-27
parts listed, 11-1

Replacing server parts
power–distribution tray, 11-37
removing from server, 11-32
replacing power supplies, 11-34
tools required, 11-32
replacing fuses, 11-38
replacing logic board, 11-11 to 11-13
reverting to prior EPROMs, 11-11
server covers, 11-50
illustrated, 11-51
SMT, 11-28 to 11-29
system drive in single–drive server, 11-14
tape drive, 11-26 to 11-27

Reset LAN Card and LAN Card API utility, 7-48

Reset Message Waiting on System Boot: field in menu 6.2, 5-31

Response Time for Message Waiting Confirmation: field in menu 6.2, 5-31

Restore the database
from tape, 11-51 to 11-56
guidelines, 11-51

Restoring database and messages onto server from tape, 11-51 to 11-56

Retry Message Waiting on Failed Attempt: field in menu 6.2, 5-31

Return code, in CB message, 8-13

Review Current Alarm Status (Menu 13.8), 2-4

Ring–no–answer problems
caused by sever conditions, 7-23
SMDI integration, 7-21

Rolm integration
DTMF tone problems, 7-22
no dial tone for outcalls, 7-22
PID/R not operatinal, 7-22

RS–232 connections, 2-5 to 2-6
on CCF card, 2-6

RS–232 links
message waiting, 1-13
SMDI integration, 1-13

RST LEDs
FLT card
illustrated, 2-9
listed, 2-10
CCF card, 2-5 to 2-6
LAN card, 2-12 to 2-13

S

SA alarms
blown fuse, 9-16
CDR–buffer space critically low, 9-15

SA alarms, (continued)
critical entry in status log, 9-15
disk space critically low, 9-14
disk–drive failure, 9-15
LAN card/API failure, 9-16
listed, 9-14
logic–card failure, 9-16
partial power failure, 9-16
RS–232 integration link failure, 9-15
status–log space critically low, 9-14

SA LED (service–affecting alarm), on CCF card, 2-6

Safety considerations, changing fuses, 2-7

Safety procedures
electrical safety, 4-2
environmental safety, 4-3
equipment handling safety, 4-3

Scheduled maintenance
alarm–status review, 10-2
backing up database and messages, described, 10-4 to 10-7
handling disk drives, 10-24
inspecting and cleaning server, 10-21 to 10-23
measuring power and ground, 10-20 to 10-21
recommended frequency, 10-1
status–log review, 10-2
system–drive backup, 10-2 to 10-4
tape–drive cleaning, 10-23 to 10-24
testing ports
accessing port–testing utilities, 10-7 to 10-8
alarms specified, 10-9
dial–tone–detect parameters, 10-10 to 10-11
loopback–testing parameters, 10-11 to 10-12
procedures, 10-17 to 10-18
reviewing test reports, 10-14 to 10-17
scheduling, 10-9
status when test in process, 10-13 to 10-14
status when test not in process, 10-12 to 10-13
using traffic statistics, 10-19 to 10-20

SCSI disk drives, described, 1-9

SCSI drives, 2-14

SCSI Media Applications option, 14-1

SCSI Media Applications Utility
reference to chapter 12, A-74
SCSI Media Applications, A-6

SCSI Medial Applications options, 14-3

Sender ID Used for Telephone Answering Messages: field in menu 1.1, 5-24
CPU, 2-4
main backplane, 2-14

Serial ports, secondary SMT, connections, 2-18

Server
applications, 1-20
architecture, 2-1
capacities, 1-2
described, 1-1
functions, 1-1 to 1-4
illustrated, 1-5
communication among components, 1-5
components described, 2-13 to 2-14
alarm panel, 2-16 to 2-18
drive backplane, 2-15
drive modules, 2-14 to 2-15
global message redundancy, 2-15
logic cards, 2-2 to 2-13
main backplane, 2-14
overview, 2-1 to 2-2
sytem manager terminal, 2-18
tape drive, 2-15 to 2-16
ESD reduction, 3-5
front view illustrated, 1-6, 2-1
grounding, 3-5
hardware components, 1-4
integrations, 1-12 to 1-15
in–band, 1-14 to 1-15
methods listed, 1-13
PID, 1-14 to 1-15
set emulation, 1-14
SMDI, 1-13
logic–bay configuration illustrated, 1-8
operating software, 1-10
rear view illustrated, 1-7, 2-2

Server, (continued)
server capacities, 1-1 to 1-28
storing software, 1-10
users, 1-1

Server inspection and cleaning, 10-21 to 10-23

Server operation tests, 5-43

Server requirements for online upgrade, 13-3

Server software, at system terminal, 2-18

Server startup
accessing the Main Menu, 5-21 to 5-22
assigning line types, 5-18 to 5-19
assigning number of digits in forwarded call, 5-19 to 5-21
completing boot process
card configuration (Aria 1.2), 5-6
DMA data bus, 5-6
load operating system, 5-6 to 5-7
system–status table, 5-6
valid boot commands, 5-5 to 5-6
configuring digital networking, node profiles (menu 15.1.3), testing the configuration, 5-50 to 5-53
configuring SMT and printer, 5-2
entering port parameters, 5-19 to 5-21
first–time setup (menu 0), entering server information, 5-9 to 5-14
first–time setup (menu 0)
assigning system–manager information, 5-14
critical entries, 5-8
entering company information, 5-8 to 5-9
illustrated, 5-1
monitoring diagnostics
caution, 5-2
CPU diagnostic self–tests, 5-3
system–file status, 5-4
selecting terminal type and speed, 5-4 to 5-5
verifying operation
configuring digital networking, system parameters (menu 15.1.2), 5-49
printing screens, 5-48
running the ping utility, 5-46 to 5-47
verifying server operation
LAN card tests, 5-44 to 5-46
printer tests, 5-43 to 5-44
running the echo–test utility , 5-47 to 5-48
testing boot routine, 5-44

Service bit, requirement for utilities, A-3

Service bit enabling, 11-26, 13-23, 14-2, 14-6 to 14-7

Service manual, organization, vii to viii

Set–emulation integration, 1-14

SI LED (receive signal), on FLT card, 2-10

Simple Network Management Protocol. *See* SNMP

Simplified message desk interface (SMDI) integration, 1-13

Single digit mailboxes, described, 1-4

Site preparation
ensuring correct cabling
data–link connections, 3-10
external–alarm connections, 3-14
FLT card connections, 3-10 to 3-13
LAN card connections, 3-13 to 3-14
modem connection, 3-10 to 3-11
SMT connections, 3-9
ensuring correct cabling , X.25 connection, 3-8 to 3-12

Site requirements
air conditioning, 3-4 to 3-5
clearances required
cabling, 3-3 to 3-4
described, 3-2
electrical requirements , description of, 3-6
ensuring correct cabling description of, 3-6 to 3-7
space and location , described, 3-2 to 3-4
tasks, 3-1

Site requirements , tools required , described, 3-2

Site requirments, clearances required, carton and cabinet dimensions, 3-3 to 3-4

Slot field, in IORB header, 8-11

SMDI
greeting problems, ring but no link message link message but no ring data message garbled, 7-20
data links, 7-21
data–link problems, 7-21

SMDI integration, 1-13
call–flow sequence, 1-10 to 1-12
greeting inconsistencies, 7-19
greeting problems, 7-19, 7-20 to 7-21
incoming calls, 7-19 to 7-20
link message but no ring data message garbled, 7-21
message–waiting problems, 7-18 to 7-19
ring–no–answer problems, 7-21

SMT. *See System Manager Terminial (SMT)*

SMT cable
CONSOLE connector, 2-18
described, 2-18

SMT cable, CONSOLE connector, 2-6

SMT Debug Utilities
1 Collapse Nodes, A-64
10 check user records vs. AMT, A-70
11 check AMT addresses vs. internal record numbers, A-71
6 Convert Mailbox Length, A-66 to A-69
8 AT&T Inband Message Waiting Utilities, A-69 to A-70
AT&T inband message waiting utilities (option 8), A-5
Check AMT addresses vs. internal record numbers (option 11), A-5
Check user records vs. AMT (option 10), A-5
Collapse Nodes (option 0), A-5
Convert ICMB from COS to MB (option 13), A-6
Convert Mailbox Length (option 6), A-5
Convert Mailboxes to ACP Integration (option 1), A-5
Convert Type 52 Mailbox to Type 0 (option 7), A-5
Move Company Records & Attendant Schedules to User Records (option 5), A-5
Patch up clobbered user records (with bad lengths) (option 12), A-5
Validity check user records, A-60 to A-64
Validity Check User Records (option 0), A-5

SMT problems, 6-5

SNMP
digital, 2-11
networking, 2-11

SO LED (transmit signal), on FLT card, 2-10

Software
adding mailboxes, 12-21
adding optional features, 12-23
applications, 1-16
integrations, 1-20
line task, 1-18
networking, 1-19
notification, 1-18 to 1-19
purge task, 1-17
server applications, 1-20
components, 1-10
CP subsystem layers, 1-16 to 1-20
data structures
listed, 1-24 to 1-25
memory–resident tables, 1-27 to 1-28
message database, 1-26 to 1-27
message–delivery system, 1-26
record 50, 1-28
system–status table, 1-28
user records, 1-25
features, 1-10
file–card–software, layers, 1-21
file–card–software layers
application layer, 1-21
message layer, 1-21
disk–control–module (DMC) layer, 1-21
disk–driver layer, 1-21
file–storage subsystem layers, 1-21
types of, 1-15

Software and phrases , making redundant, 14-6 to 14-7

Software levels, displayed in status log, 8-6

Software phrases, making redundant, 13-23 to 13-24

Software requirements for online upgrade, 13-4

SPE LED (problem with small packet bus), on FLT card, 2-10

Speech–cache memory, 2-4

SRAM (static RAM), 1-15

SST (system–status table), 1-28

SST–loading failure, 6-9

Startup and initialization problems, 6-1

Startup tasks
- accessing the Main Menu, 5-21 to 5-22
- assigning number of digits in forwarded call, 5-19
- completing boot process
  - card configuration, 5-6
  - DMA data bus, 5-6
  - load operating system, 5-6 to 5-7
  - system–status table, 5-6
  - valid boot commands, 5-5 to 5-6
- configuring digital networking, node profiles (menu 15.1.3), testing the configuration, 5-50 to 5-53
- configuring SMT and printer, 5-2
- entering port parameters, 5-19 to 5-21
- first–time setup (menu 0)
  - critical entries, 5-8
  - entering company information, 5-8 to 5-9
  - entering server information, 5-9 to 5-14
- first–time setup (menu 0), assigning system–manager information, 5-14 to 5-16
- illustrated, 5-1
- monitoring diagnostics, 5-2
  - CPU diagnostic self–tests, 5-3
  - caution, 5-2
  - system–file status, 5-4
- selecting terminal type and speed, 5-4 to 5-5
- setting line types, 5-18 to 5-19
- verifying server operation
  - configuring digital networking, system parameters (menu 15.1.2), 5-49
  - LAN card tests, 5-44 to 5-46
  - operations test, 5-43 to 5-44
  - printer tests, 5-43
  - printing screens, 5-48
  - running the echo–test utility, 5-47 to 5-48
  - running the ping utility, 5-46 to 5-47
  - testing boot routine, 5-44

Static buildup, disk drive–handling precautions, 11-14

Static RAM (SRAM), 1-15

Status code
- 00, 8-14 to 8-15
- 03, 8-15
- 05, 8-16
- 08, 8-16
- 21, 8-16 to 8-17
- 24, 8-17 to 8-20
- 50 through 58, 8-20 to 8-21
- 5D, 8-20 to 8-21
- 60, 8-21 to 8-23
- 64, 8-23
- 65, 8-23 to 8-24
- 6C through 6E, 8-25
- 70, 8-25 to 8-27
- 72, 8-25 to 8-27
- 75, 8-27 to 8-28
- 84, 8-28 to 8-29
- 85, 8-29
- 86, 8-30
- 90, 8-31
- 98 through 9A, 8-31 to 8-32
- CD, 8-32 to 8-33
- CE, 8-33 to 8-34
- E9, 8-34 to 8-35
- F9, 8-36 to 8-51
- FA, 8-51 to 8-53
- FB, 8-53 to 8-54
- 141, 8-54 to 8-55
- 148, 8-55
- 165, 8-56
- 1C0 through 1C2, 8-56 to 8-57
- 1E5, 8-57
- 1E6, 8-58 to 8-59

Status code, (continued)
200, 8-59 to 8-68
complete list, 8-60 to 8-68
defined, 8-10

status–code 20 status–code 22, 6-9

Status log, 8-1 to 8-68
common entries. *See* Status code
complete list of status codes, 8-60 to 8-68
described, 1-28
displaying, 8-4 to 8-6
entry header, 8-9 to 8-10
format, 8-8 to 8-13
interpretation steps, 8-7 to 8-8
related documents, x to xii
structure, 8-3
terminology, 8-2 to 8-3
when to check, 8-3 to 8-4

Subcode (of status code), defined, 8-10

Subscriber, defined, 1-1

Switch and server interface, 1-12 to 1-13

Cable connections, on FLT cards, 2-10

SYNC connector, on CCF card, 2-6

System architecture
basic functions
call processing, 1-3 to 1-4
telephone answering, 1-2 to 1-3
voice messaging, 1-3
bus subsystem, 1-23 to 1-24
central–processing (CP) subsystem
application programs, 1-18
described, 1-16
initial program load (IPL), 1-16
software layers, 1-16
data structures
memory–resident tables, 1-27 to 1-28
message database, 1-26 to 1-27
message delivery system (MDS), 1-26
record 50, 1-28
status log, 1-28
system–status table (SST), 1-28
user records, 1-25 to 1-26
file–storage subsystem
described, 1-20
in–RAM phrase table, 1-21
integration methods, simplified message desk interface (SMDI), 1-13
integrations
described, 1-14
in–band integration, 1-14
PID, 1-14
set emulation, 1-14
telephone answering, 1-3
telephone interface subsystem, TIC subsystem of FLT card, 1-22
telephone–interface subsystem, DLC subsystem of FLT card, 1-22 to 1-23

System Backup
Cancel Current Operation, A-7
Cancel Current Operation, reference to chapter 10, A-80
Display Backup Status, A-7
Write/Read Diagnostic Utility, A-75
Write/Read Diagnostic Utility, A-75 to A-76
Display Tape Header, A-7, A-79
Review History of Last Event, A-7, A-77 to A-79
Scan Backup Tape, A-7, A-76 to A-77
Schedule Backup, A-7
Schedule Backup, reference to chapter 10, A-74
Write/Read Diagnostic, A-7

System Backup and Restore
Backup, A-8
Backup, reference to chapter 10, A-90
Cancel Current Operation, A-8
reference to chapter 10, A-91
reference to chapter 11, A-91
Display Backup/Restore Status, A-8, A-90 to A-91
Display Header of Backup Media, A-8, A-91
Restore, A-8
Restore, reference to chapter 11, A-90
Scan Backup Media, A-8, A-91
Write/Read Diagnostic, A-8, A-91

System drives
adding, 12-3
described, 1-9
handling, 11-14 to 11-16, 12-2
replacing in single–system–drive servers, 11-15 to 11-19
storing, 11-14 to 11-16

System ID dip switch, checking terminator board, 4-17

System Maintenance (Menu 13), displaying status log, 8-4 to 8-5

System manager terminal
connections, 3-9
installation, 4-11
primary connector on CCF card, 4-9

System Manager Terminal (SMT)
configure CPU serial channels (menu 6.3), direct integration, 5-34
configuring CPU serial channels (menu 6.3), secondary SMTs , 5-33
managing integration links (menu 6.5)
adding a link, 5-35 to 5-37
changing a link, 5-37
deleting a link, 5-37
menu 6.5 illustrated, 5-35
resetting a link, 5-38
reviewing a link, 5-37
viewing link status, 5-38

System manager terminal (SMT), 2-18
peripheral equipment, xi
configuring, 5-2

System Manager Terminal (SMT)
configuring CPU serial channels (menu 6.3), 5-32
illustrated, 5-32
managing integration links (menu 6.5), accessing menu 6.5, 5-34 to 5-35

System manager terminal (SMT) , selecting terminal type and speed, 5-4 to 5-5

System utilities. *See* Utilities
described, 6-6 to 6-9
format listed, 6-7
identifying disk drives running, 6-8
Status–code 03, 6-8 to 6-9
status–code 20 status–code 22, 6-9

System–manager task, 1-16 to 1-17
described, 1-16
garbage collect, 1-17

System–status table (SST), 1-28

T

Talk–off
described, 7-14
reasons for steps to correct, 7-14

Tape, restoring database from, performing port tests, 11-56

Tape backup, database and messages
described, 10-4 to 10-7
procedure, 10-5 to 10-7

Tape drive
cleaning, 10-23 to 10-24
contents of backup , 2-16
installing, 2-15 to 2-16
installation, 12-31 to 12-33, 14-2
LEDs, 2-16
performing upgrade, 14-3 to 14-4
preparation for installation, 12-31
removing, 14-7
replacement, diagnostics illustrated, 11-27
replacing, 11-26 to 11-27
restoring server database
guidelines, 11-51
procedures, 11-51
tools to install, 12-31
used in upgrades, 2-16
verification of installation, 12-33 to 12-34

Tape–drive problems, 7-27

Tape header, 11-52

Tape upgrade. *See* Online upgrade procedures

Tape, restoring database from
guidelines, 11-51
procedures, 11-51
tape contents displayed, 11-54
tape header, 11-52

Task ID
defined, 8-10
in CB message, 8-12 to 8-13

TELCO (telephony) connector, on FLT cards, 2-10

Telephone answering
described, 1-2 to 1-3
integrated, 1-3
interfaced, 1-2
overview, 1-2
server functions, interfaced telephone answering, 1-2

Telephone interface cards (TICs), ring–no–answer problems, 7-24

Telephone interface circuits, on FLT cards, 2-7

Telephone interface–circuits, 2-7

Telephone–interface subsystem
described, 1-22
DLC subsystem of FLT card, 1-22 to 1-25
TIC subsystem of FLT card, 1-22

Telephony connector, on FLT card, 2-10

TEMP LEDs, on alarm panel, 2-18

Overemperature alarms, CCF card, 2-6

Overtemperature alarms, alarm panel, 2-18

Temperature alarms
on alarm panel, 2-18
on CCF card, 2-6

Terminator boards
locations illustrated, 11-44
replacing, 11-43 to 11-44

Test points, on alarm panel, 2-16

Test points, on alarm panel, 2-17

TIC (telephone interface card) subsystem of FLT card
described, 1-22
functions, 1-22

Time–of–day clock, 2-4

Toggle Extended Print Utility, A-72

Toggle Extended Printability, A-6

Toggle Next Boot Area, A-8, A-93
caller cut off, 7-12
one extension group, 7-13
one extension or group, 7-13
system wide, 7-12 to 7-13
to wrong extension, 7-12

Transposing bytes, 8-2 to 8-3

Troubleshooting
analog networking reviewing statistics, 7-49 to 7-54
automated attendant problems, operator call goes to server , 7-17
automated–attendant problems
correct greeting not played, 7-15
greeting played after caller enters extension, 7-16
incorrect transfer after “please hold” prompt, 7-17
mailbox not in service, 7-17
symptoms, 7-14 to 7-15
delayed messages, 7-8
actual delays, 7-9 to 7-12
subscriber perceptions, 7-8 to 7-9
deleting network nodes, 7-25
diagnostic tools, 7-5 to 7-7
DecisionPro, 7-7
Octel PC/CDR, 7-6 to 7-7
online CDR utility, 7-5
remote access, 7-5
digital networking
failure cause, 7-30 to 7-32
guidelines for assistance, 7-27 to 7-28
statistics screens, 7-38 to 7-39
typical problems, 7-29 to 7-30
using LAN utilities, 7-32 to 7-38
valid node numbers and message queries, 7-48 to 7-49

Troubleshooting, (continued)
disk drives
check file card status, 7-26 to 7-27
drive status and hardware, 7-26
list of symptoms, 7-25 to 7-27
during startup
card–configuration (aria 1.2), 6-10
cooling fans, 6-2 to 6-5
CPU test failures, 6-5 to 6-6
data–bus DMA–test failure, 6-10
disk drives, 6-2 to 6-5
File–system status, 6-6 to 6-9
input–power problems, 6-2
load–application–test failure, 6-10
logic cards, 6-2 to 6-5
problem areas listed, 6-1
SMT problems, 6-5
SST loading failure, 6-9
greeting played after “please hold” prompt, 7-15 to 7-16
guidelines, 7-2
integration problems
AMID, 7-22 to 7-23
APID, 7-21 to 7-22
Rolm, 7-22
RS–232 message waiting, 7-17
message waiting, 7-7 to 7-8
personal greeting problems, 7-11
problem areas listed, 7-1
remote access, 7-5
ring–no–answer problems
caused by server conditions, 7-23
PID or MID application cause, 7-24
TIC and port causes, 7-24
service notes for, x
SMDI, 7-18 to 7-21
symptoms of problems, 7-2
talk–off
described, 7-14
reasons for, 7-14
steps to correct, 7-14
tape drives, 7-27
transfer–to–operator problems
caller cut off, 7-12
one extension or group, 7-13
system wide, 7-12 to 7-13
to wrong extension, 7-12

U

Upgrade software, tape method. *See* Online upgrade procedures

Upgrading software and phrases
changing boot area, 14-5 to 14-6
using diskettes
booting the server, 13-22
changing boot area, 13-22
directly connecting PC and server, 13-5 to 13-6
having engineering bit turned on, 13-4
installing online upgrade tool, 13-8 to 13-10
loading software and phrase diskettes, 13-11 to 13-15
major steps, 13-2
making software and phrases redundant, 13-23 to 13-24
PC requirements, 13-3
performing automatic upgrade, 13-15 to 13-21
prerequisites, 13-1
remote–access limitations, 13-1 to 13-2
remotely connecting PC to server, 13-6 to 13-7
verifying boot areas, 13-4 to 13-5
verifying the upgrade, 13-21
verifying values in PC Setup Menu, 13-10 to 13-11
using tape
having service bit enabled, 14-2
installing tape drive, 14-2
making software and phrases redundant, 14-6 to 14-7
majore steps, 14-1
performing upgrade, 14-3 to 14-4
removing tape drive, 14-7
verifying upgrade, 14-5
verifying boot areas, 14-2 to 14-3
verifying hardware and software, 14-2

User record, defined, 8-25, 8-31

User records
described, 1-25
fields identified, 1-25 to 1-26

Using the echo–test utility
illustrated, 5-47
procedures, 5-47 to 5-48

Using the Ping Utility
illustrated, 5-46
Procedures, 5-46 to 5-47

Utilities
See also utilities by name
required reading, A-1 to A-8
availability off line, A-2 to A-8
availability on line, A-2 to A-8
engineering bit requirement, A-3
LAN card. *See* LAN utilities
service bit requirement, A-3

Utility access, A-2

Utility availability
characteristics, A-1
conditions, A-1

V

V1 LED, on alarm panel, 2-18

V2 LED, on alarm panel, 2-18

Valid boot commands, 5-5 to 5-7

Voice compression, FLT card function, 2-7 to 2-8

Voice expansion, FLT card function, 2-7 to 2-8

Voice messaging
customizing mailboxes, 1-3
described, 1-3

W

Windows 3.x on PC for online upgrade, 13-4, 13-8

Windows 95 on PC for online upgrade, 13-4, 13-10

Wink Response Duration (”R”): field in menu 6.2, 5-30

Word, defined, 8-2

X

X.25 connections, 3-8 to 3-12

X.25 connector, 4-9

Y, Z

YEL LED (in–cabinet temperature alarm), on CCF card, 2-6

Yellow LEDs
drive modules, 2-15
LAN card
illustrated, 2-12
listed, 2-13
alarm panel
illustrated, 2-17 to 2-18
listed, 2-18
CCF card
illustrated, 2-5
listed, 2-6
FLT card
illustrated, 2-9
listed, 2-10