



Installation

NetLink Open Applications Interface (OAI) Gateway

Part Number: 72-0078-07
Issue A

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DECLARATION OF CONFORMITY

We

Spectralink Corporation
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Boulder, CO 80301

declare under sole responsibility that the Wireless Business Telephone System Components:

Wireless Telephone Handset Models; PTB-500/510, 600/610, 800/810

System Controller Models; TGA-116, TGU-116, TGH-116, THB-116, TGP-116, TGX-116,

TGA-108, TGU-108, TGA-104, TGU-104, TGB-104, TGP-104, TGH-104, SCA-416, SCA-516

Battery Charger Models; PTC-400

conform to Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the official Journal of the European Communities:

EN 50081-1:1992 Emissions:

EN 55022 Radiated, Class A

EN 55024 Emissions

EN 50082-1:1997 Immunity:

IEC 801-2 Electrostatic Discharge

IEC 801-3 RF Radiated

IEC 801-4 Fast Transients

Additionally, all models comply to EN60950/ IEC950 with CB certificates & reports.



Mark R. Angliss, Manager; Quality & Process Engineering, For the SpectraLink Corporation

February 21, 2002

CE

Note concerning the NetLink Telephony Gateway:

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 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 own expense.

Note concerning shielded cable:

SpectraLink recommends the use of shielded cable for all external signal connections in order to maintain FCC Part 15 emissions requirements.

Note concerning the Wireless Telephones:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING Changes or modifications to this equipment not approved by SpectraLink Corporation may cause this equipment to not comply with part 15 of the FCC rules and void the user's authority to operate this equipment.

WARNING SpectraLink products contain no user-serviceable parts inside. Refer servicing to qualified service personnel.

Important Safety Information

Follow these general precautions while installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

FCC Information

The NetLink 150 Telephony Gateway complies with Part 68, FCC Rules

FCC Registration Number IYGUSA-33816-PX-E

Ringer Equivalence 0.3B

SpectraLink Corporation

NetLink WTS

Made in the USA

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 given to the telephone company.

This equipment uses RJ-21 connectors.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If your telephone equipment causes harm to the telephone network, the telephone service may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact SpectraLink Corporation for information on obtaining service or repairs.

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The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning. There are no user serviceable parts in this equipment.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Industry Canada (IC) Notice

Notice:

The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure 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. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

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.

Notice: The Ringer Equivalence Number (REN) assigned to each terminal device provides as indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination of an interface may consist of any combination of devices.

REN 0.3B

Approval Numbers:

2128-9760 A

Warranty and Repair Service Center:

SpectraLink Corporation
5755 Central Avenue
Boulder, CO 80301
303-440-5330

DOC Spread Spectrum certification

Wireless Telephone	Cert. No.	2128-K1374
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1. About This Document

SpectraLink's Open Application Interface (OAI) enables third-party computer applications to communicate with SpectraLink's Wireless Telephones. This document explains installation of the NetLink OAI Gateway manufactured for the NetLink Wireless Telephones by SpectraLink Corporation. The NetLink OAI Gateway provides an interface with an application server on the local area network (LAN) or RS-232 port. The installation process connects the NetLink OAI Gateway to an existing LAN.

1.1 Contacting SpectraLink

SpectraLink wants you to have a successful installation. If you have questions please contact our **Customer Support Hotline at (800) 775-5330**. The Hotline is open Monday through Friday, 6:00 AM to 6:00 PM Mountain Time.

1.2 Icons and Conventions

This manual uses the following icons and conventions.



Caution! Follow these instructions carefully to avoid danger.



Note these instructions carefully.

NORM This typeface indicates a key, label, or button on the OAI Gateway or Wireless Telephone.

1.3 Installation Overview

Installation has three phases. In some cases, a separate person is responsible for each phase. It is important to coordinate the activities among the persons involved.

1. **Site Preparation** – done by the customer or a wire technician/contractor.
2. **NetLink OAI Gateway Installation** – done by the customer or SpectraLink.
3. **System Certification** – done after installation to confirm the system is working properly.

2. The NetLink OAI Gateway

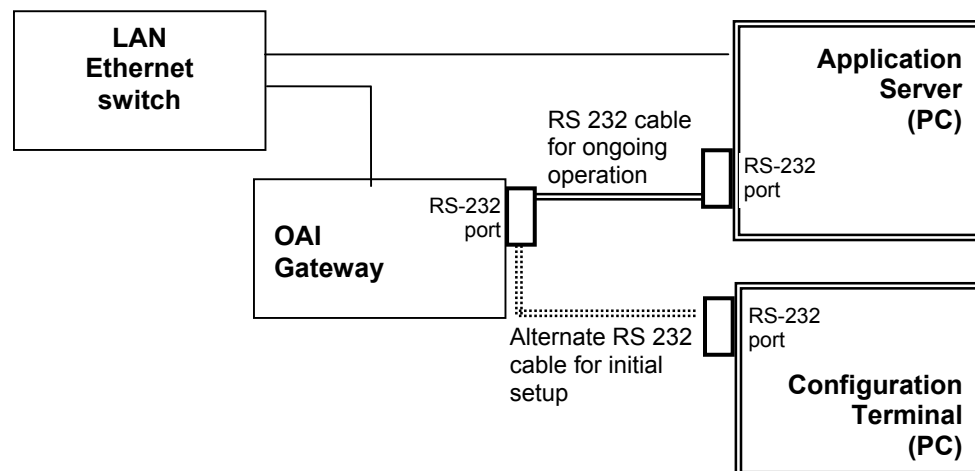
The NetLink OAI Gateway enables third-party applications to communicate directly with up to 10,000 NetLink Wireless Telephones, allowing users to retrieve and respond to information using their Wireless Telephones.

The NetLink OAI Gateway is available in two models and several scaled capacity levels, please be sure that the OAI Gateway being configured has the appropriate capacity for your implementation.

SpectraLink Model Number	Maximum Number of Users
MOG600	64
MOG710	128
MOG720	256
MOG730	512
MOG740	1,024
MOG750	10,000

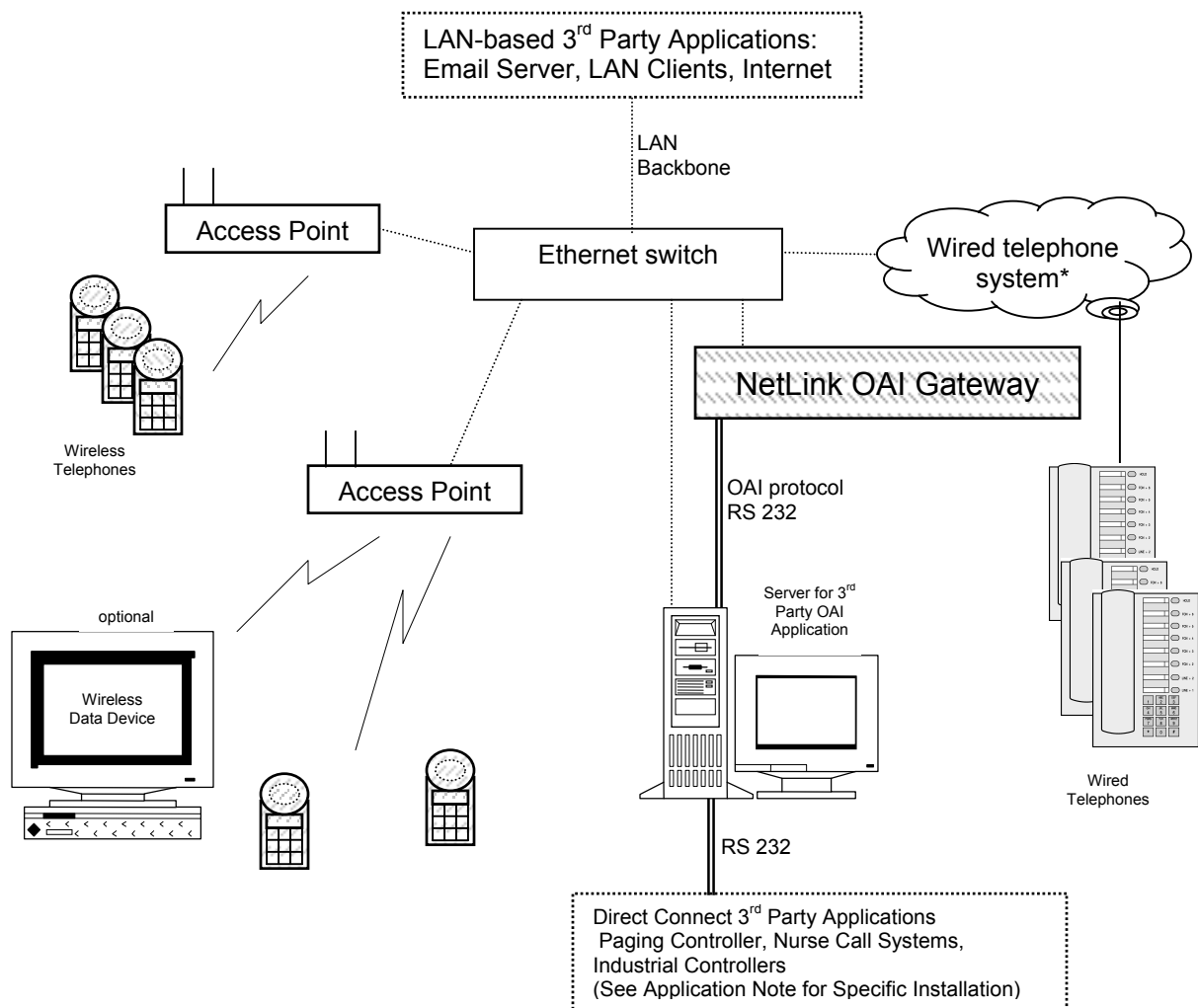
As shown in the diagram below, a single NetLink OAI Gateway is connected to the site's Local Area Network (LAN) via an Ethernet switch. The connection to the OAI Application Server can be accomplished by a direct connect (RS-232) or through the Ethernet connection, but may run only via one connection at a time.

During setup, the IP address of the NetLink OAI Gateway must be set. Once the IP address is established, the Gateway can be accessed by the application server via the RS-232 port or the LAN via telnet.



2.1 System Overview

At a typical site, the NetLink OAI Gateway is connected to the Ethernet switch via an RJ-45/Category 5 cable and the application server via the RS-232 port. The client system may include a LAN and its application server with a TAP connection to a communications device such as a paging controller.



Device supplied by SpectraLink

* Note that the wired telephone system may include a NetLink Telephony Gateway Supplied by SpectraLink

..... Ethernet cable
 ————— Phone cabling
 = = = RS-232 cable

2.2 The NetLink OAI Gateway Front Panel

There are two different models with similar front panel indicators

Network Link LEDs –

(L)NKOK – lit when there is a network connection, i.e. LINK OK.

(A)CT – lit if there is system activity.

(C)OL – lit if there are network collisions.

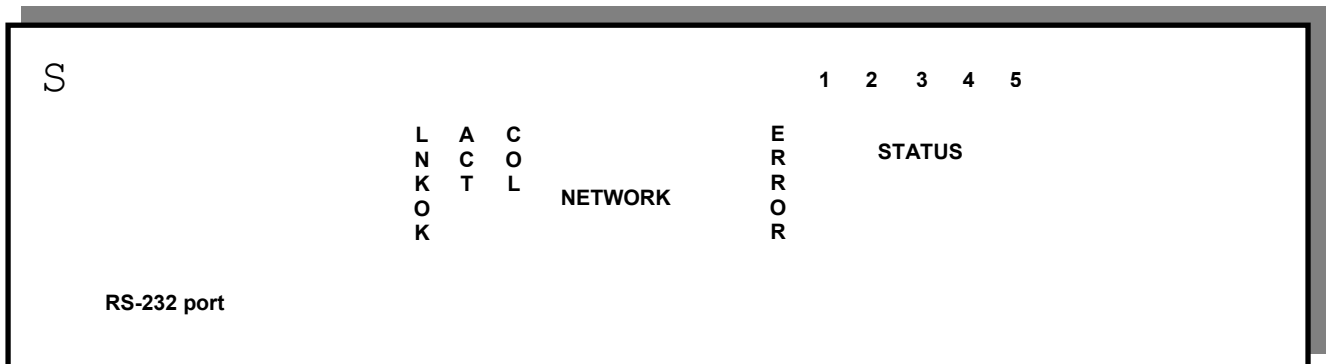
(E)rror LED – lit when the system has detected an error.

Status LEDs – indicate system messages and status.

1 – heartbeat, indicates NetLink OAI Gateway is running.

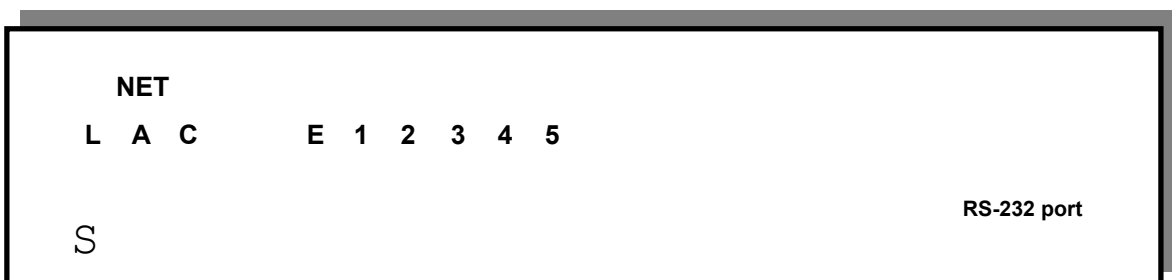
2, 3, and 4 – currently unused

5 – System master



Model MOG7xx.

Offered in scaled increments to support up to 10,000 users.



Model MOG6xx

Supports up to 64 users.

The power jack and network port are located on the back of this model.

3. Install the NetLink OAI Gateway

Place the NetLink OAI Gateway on a shelf or other predetermined location. The Gateway is only physically connected to the Ethernet switch and may be placed in any convenient location.

3.1 Perform Initial Test

1. Connect the power plug from the NetLink OAI Gateway's power adapter to the power jack on the front (or rear) of the Gateway box.



Use only the adapter ordered from SpectraLink.

2. Plug the power adapter into an outlet or outlet strip.
3. Apply power to the Gateway.
 - The error LED should be off.
 - LED 1 should be blinking.

New System Installation

If this is a new system installation, place, power up and test the OAI Gateway when the rest of the system is tested. See the *Setup and Maintenance: NetLink Wireless Telephone* document for your system for more information.

Installing in an Existing System

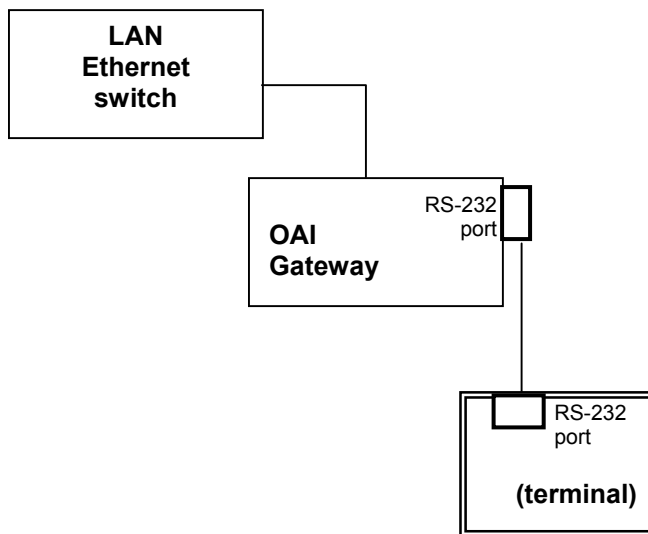
If you are adding OAI to an existing system, the entire system will need to be reset before the NetLink OAI Gateway can be used. See the *Setup and Maintenance: NetLink Wireless Telephone* document for your system for more information.

3.2 Assign the NetLink OAI Gateway's IP Address

You can administer the NetLink OAI Gateway via Telnet connection from the NetLink Administration Console. However, as with the Telephony Gateways, the NetLink OAI Gateway must be assigned an IP address before you can connect using Telnet.

The following steps outline the procedure to assign the IP address to the NetLink OAI Gateway.

1. Connect a terminal or PC to the Gateway's serial port using a cable that conforms to RS-232 standards for DTE to DTE connections (known as a null modem cable).



2. Reset the system. The following OAI command will display on the terminal:
04830130.
3. Type the following command on the terminal or PC keyboard:
0255CC [CTRL-M] [CTRL-J].
Note that this command will not display on the screen as it is typed.
4. The **Login** prompt should display. If you made an error entering the command string, the message for "Ill Formed Packet" will display (a series of numbers followed by some version of the command you typed.) Repeat Steps 2 and 3 until you see the Login prompt.
5. At the **Login** prompt, enter the default login: **admin** and default password: **admin**. These are case sensitive.
6. You can now configure the NetLink OAI Gateway (including IP address) following the procedure explained in the next section.

Changing the IP Address

When utilizing the serial port as the primary communication link with the application server, the OAI command described in step two above must be entered to free the port and allow it to be used for administrative purposes.

The procedure for entering/changing the IP address of the NetLink OAI Gateway is described below in section 4.2.

When the NetLink OAI Gateway has been configured, disconnect the terminal or PC from the serial port, reconnect the communication cable between the NetLink OAI Gateway and the application server, and reset the system. Normal communication between the application server and OAI Gateway will resume.

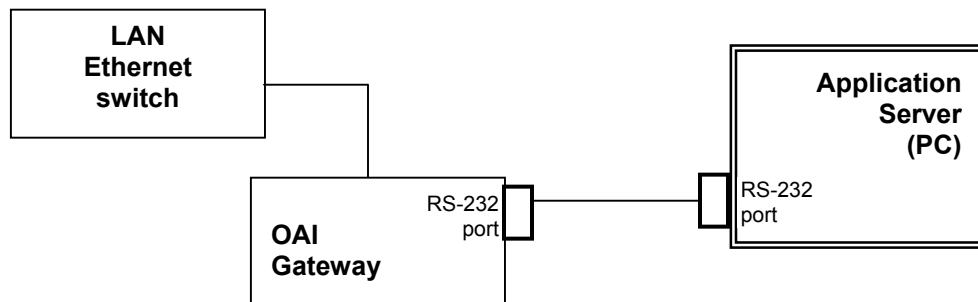
3.3 Connect the NetLink OAI Gateway to the LAN

1. Using an RJ-45 cable, connect the **NETWORK** port of the Gateway to the connecting port on the Ethernet switch.
2. Power up the entire system. Any components should go through their usual diagnostic routine.

3.4 Connect the NetLink OAI Gateway Application Server via RS-232 port

Some applications or systems may require an RS-232 connection between the application server and the NetLink OAI Gateway. If your applications have the ability to communicate OAI messages over TCP/IP, and do not require a serial connection, the RS-232 cabling is not required and you may use the LAN connection (port 5456) via the Ethernet switch for your applications.

Connect the application server to the Gateway's serial port using a cable that conforms to RS-232 standards for DTE to DTE connections (sometimes called a null modem cable).



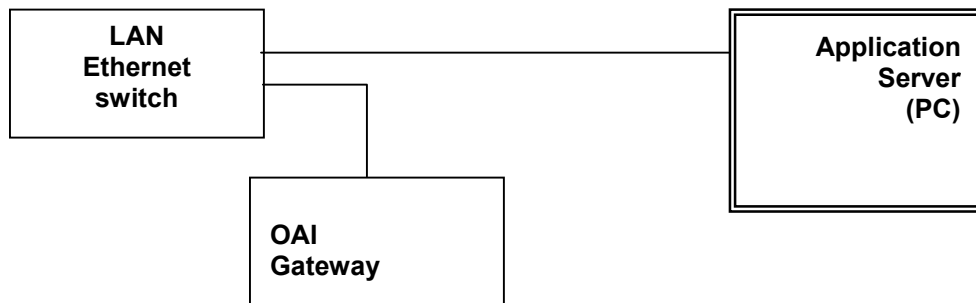
The NetLink OAI Gateway uses the following pins on the connector:

Pin	Function
1	Carrier Detect
2	Data OAI Receives
3	Data OAI Transmits
5	Ground
7	Ready To Send
8	Clear to Send

3.5 Connect the NetLink OAI Gateway to Application Server via the LAN

Some applications or systems may require a LAN connection between the application server and the NetLink OAI Gateway. If your applications do not require a LAN connection, you may use the RS-232.

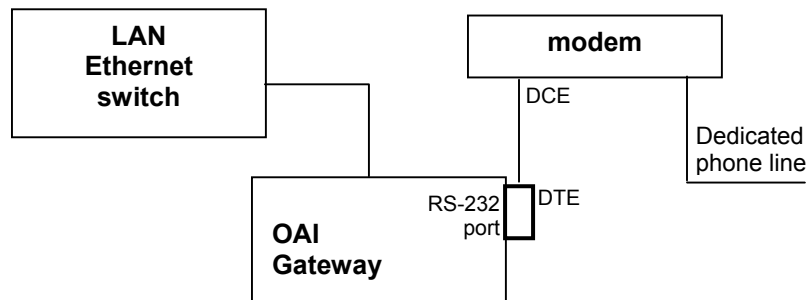
The IP address must be set for the NetLink OAI Gateway to function on the LAN. Follow the application's instructions to identify the Gateway to the application.



3.6 Connect the NetLink OAI Gateway to Application Server via a modem

In some situations, a modem is used for remote administration of the NetLink OAI Gateway.

Connect the modem to the Gateway's serial port using a cable that conforms to RS-232 standards for DTE to DCE connections.

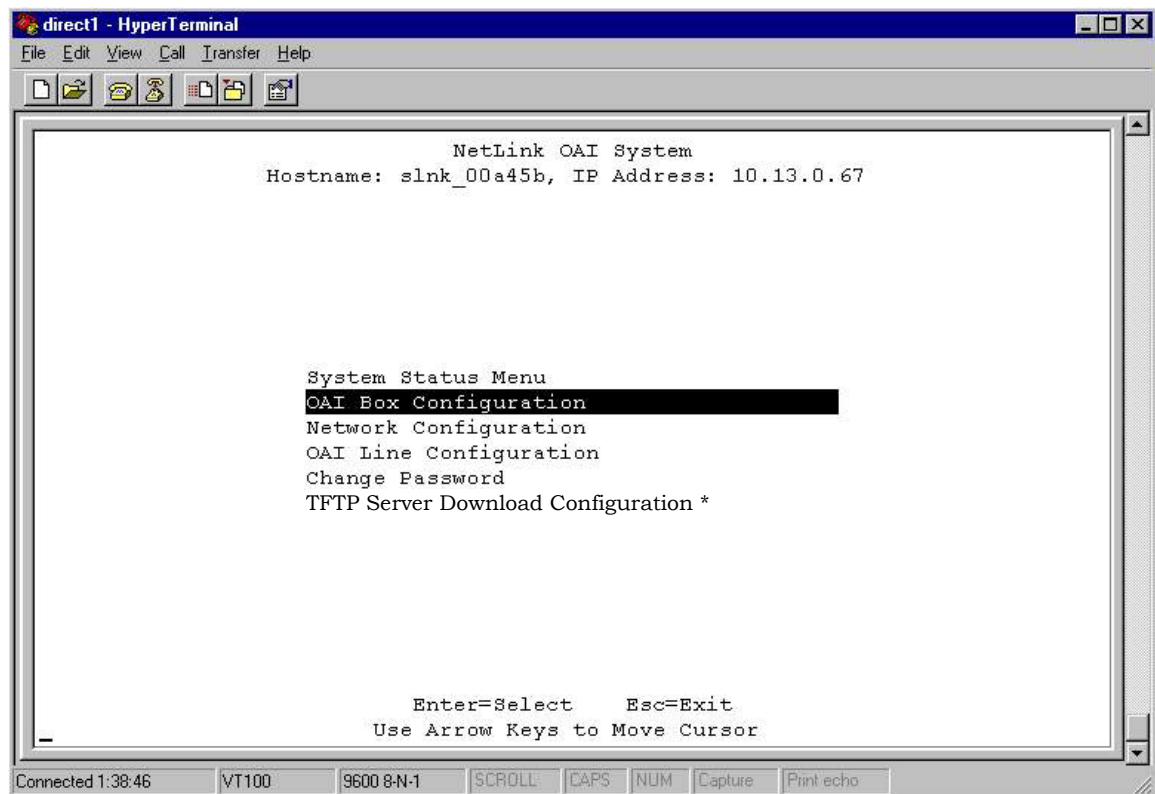


4. The Main Menu

To connect to the NetLink OAI Gateway, select the host name or IP address of the Gateway from the **Gateway Connection Selection** screen.

The **NetLink OAI System** menu displays:

4.1 NetLink OAI System Main Menu



This is the default main menu of the OAI Administration console. This menu may change when the configuration procedure is completed, depending on the OAI Gateway and the type of system. See following page for the IP systems main menu.

* Note that if the OAI Gateway is a MOG6xx model, the TFTP Server Download Configuration option appears on the default main menu.

4.2 IP Systems Main Menu

Once the configuration procedure is completed; the IP System menu adds a Feature Programming option. Additionally, the OAI Line Configuration option is replaced by a Telephone Line Configuration option.



5. Configuration Procedures

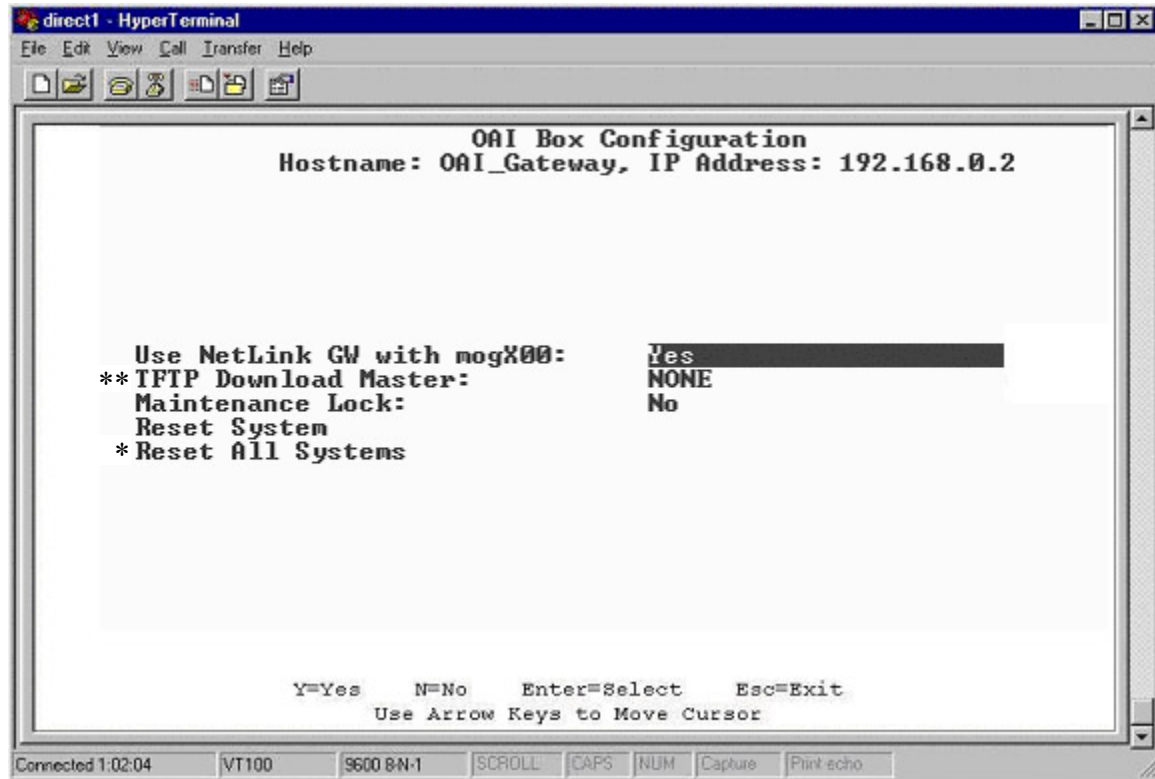
The OAI Gateway must be configured according to the type of system in use: NetLink Telephony Gateway system or IP system. If the NetLink OAI Gateway is being used in an IP phone system, the configuration proceeds independently of the IP system. If the system is using one or more NetLink Telephony Gateways, the OAI Gateway will communicate with them during configuration and operation. These configuration procedures should be done after the Wireless Telephones have been configured in the NetLink Telephony Gateway.

Generally, configuration follows these steps:

1. Establish type of system through **OAI Box Configuration** option,
2. Establish Network settings through **Network Configuration** option,
3. Configure the Wireless Telephones through either **OAI Line Configuration** for NetLink Gateway systems or through **Telephone Line Configuration** option for IP systems.
4. (IP systems) Use the **Feature Programming** option to configure the function sequence that activates the OAI feature. (In NetLink Telephony Gateway systems, the OAI function sequence is programmed in the Telephony Gateway).

5.1 OAI Box Configuration

From the **NetLink OAI System** menu, select **OAI Box Configuration**. The following screen displays.



** Option appears only on MOG6xx model.

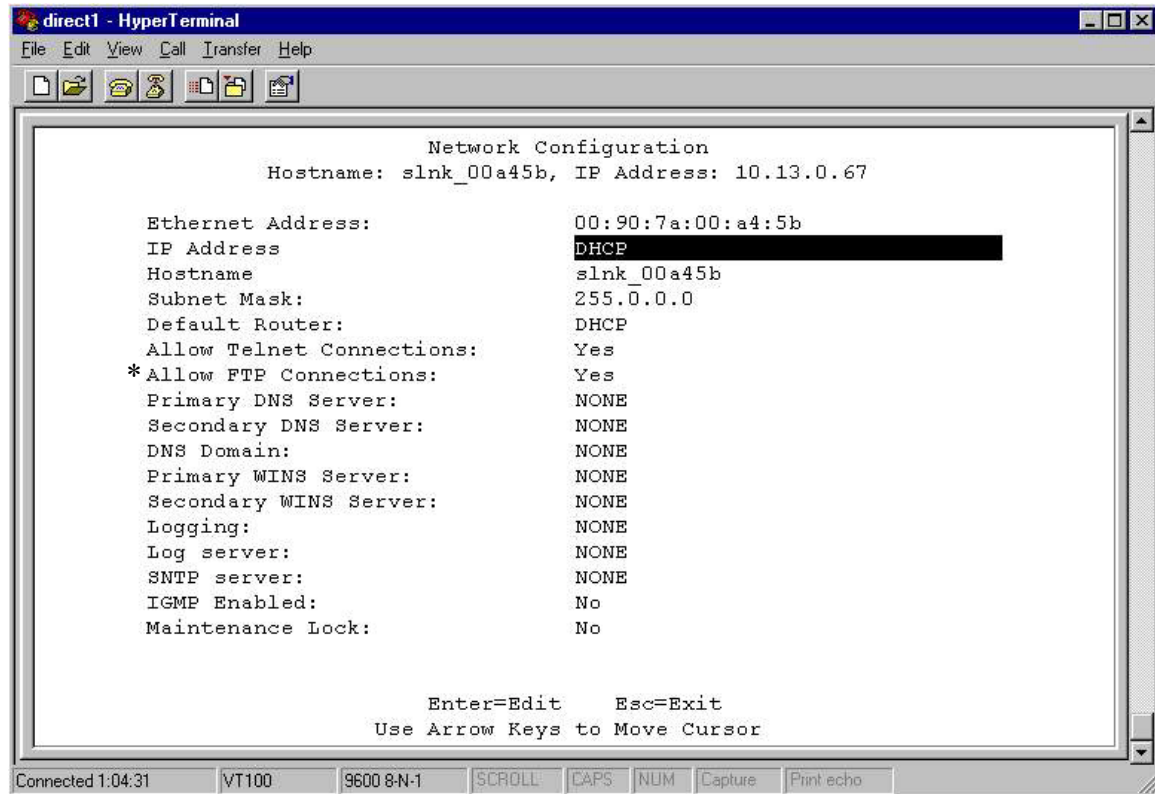
* Option appears only on NetLink Telephony Gateway systems (when “Use NetLink GW with mogX00” is set to Yes).

Enter configuration information for the NetLink OAI Gateway. Your LAN administrator should provide this information.

- **Use NetLink GW with mogX00** – If you are using NetLink Telephony Gateway(s) in your system, change this option to **Yes**.
Note: mogX00 is a model designation for the OAI Gateway.
- **TFTP Download Master** – enter the IP address of the TFTP server.
- **Maintenance Lock** – the system sets this option to **Yes** when the system needs to be reset. Note that the administrator cannot change this option. It is automatically set by the system after certain maintenance activities that require reset, and will not return to **No** until the system is reset. During **Yes**, OAI is inoperable by users.
- **Reset System** – if this option is set to **Yes**, the NetLink OAI Gateway will be reset after pressing ENTER.
- **Reset All Systems** – if this option is set to **Yes**, all system NetLink Telephony Gateways will be reset after pressing ENTER.

5.2 Network Configuration

From the **NetLink OAI System** menu, select **Network Configuration**. A screen similar to the following displays:



* Allow FTP Connections option appears on MOG 7xx model only

Enter configuration information for the NetLink OAI Gateway. Your LAN administrator should provide this information.

- **Ethernet Address** – this is the MAC address of the gateway, set at the factory and not user configurable.
- **IP Address** – Established in the initial serial connection and may be changed as needed. The IP address of the NetLink OAI Gateway, defined by your network administrator. Enter the complete address including digits and periods. DHCP should not be used with IP OAI.
- **Hostname** – change the default host name, if desired. This is the name of the gateway to which you are connected, for identification purposes only. You cannot enter spaces in this field.
- **Subnet Mask** – enter the subnet mask defined by the Network Administrator.
- **Default Router** – DHCP or static IP address

- **Allow Telnet Connections** – enter Y (yes) to allow connection to the NetLink OAI Gateway via Telnet; enter N (no) if you do not want to allow Telnet connection.
- **Allow FTP Connections** – Yes/No * (MOG 7xx only)
- **DNS server and DNS domain** – These settings are used to configure Domain Name services. Consult your system administrator for the correct settings. These can also be set to DHCP. This will cause the DHCP client in the Gateway to attempt to automatically get the correct setting from the DHCP server. The DHCP setting is only valid when the IP address is also acquired using DHCP.
- **WINS servers** – These setting are used for Windows Internet Name Services. Consult your system administrator for the correct settings. These can also be set to DHCP. This will cause the DHCP client in the gateway to attempt to automatically get the correct setting from the DHCP server. The DHCP setting is only valid when the IP address is also acquired using DHCP.



When the name services are set up correctly, the NetLink OAI Gateway can translate hostnames to IP addresses. When using Telnet, it is also possible to access the OAI Gateway using its hostname instead of the IP address.

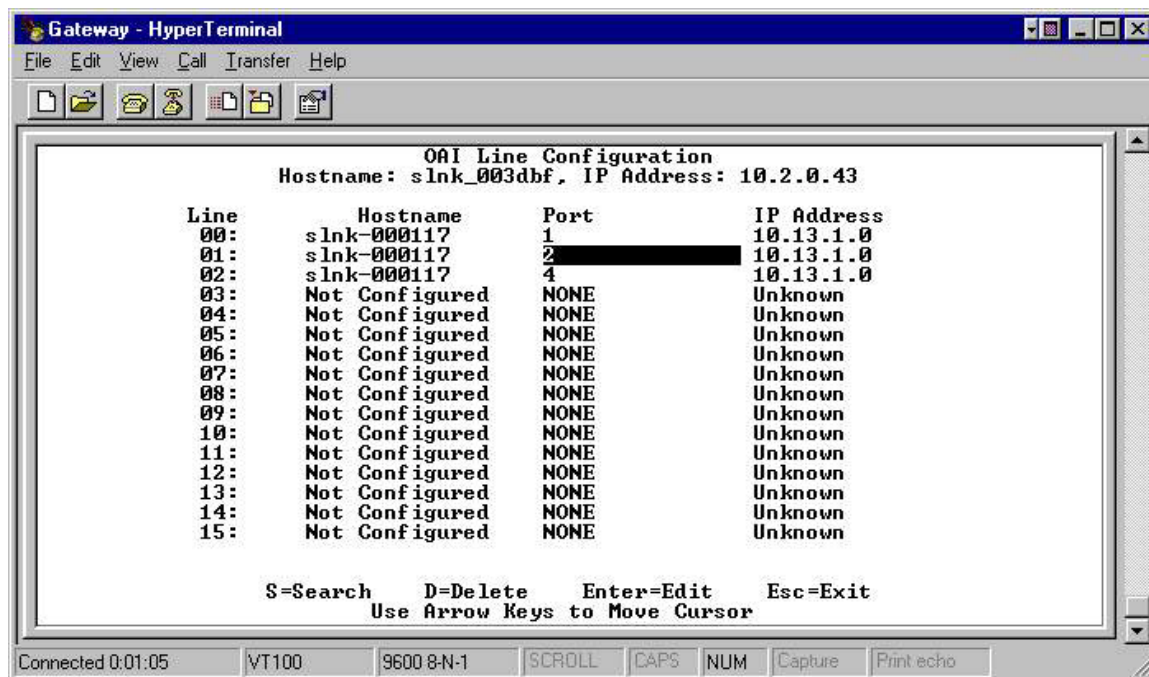
- **Logging and Log server** – Logging can be set to **Syslog** or **NONE**. The log server is the IP address or hostname of the syslog server on the network. The gateway will output syslog format diagnostic messages. This is usually not needed.
- **SNTP server** – can be set to a hostname, IP address or **NONE**. The SNTP server is a simple network time server. The OAI Gateway will get the current date and time from the SNTP server. It will tag syslog messages with the date.
- **IGMP Enabled** – Yes/No. IGMP is the Internet Group Routing Protocol. IGMP Enabled allows the OAI Gateway to join multicast groups. If the network switch connected to the OAI Gateway requires IGMP for multicast traffic to be forwarded this should be enabled.
- **Maintenance Lock** – The system automatically sets this option to **Yes** after certain maintenance activities that require reset. These are indicated in this list with an arrow bullet. Maintenance Lock prevents any new calls from starting. Note that the administrator cannot change this option. It is automatically set by the system. Reset the system at exit to clear Maintenance Lock.

Press **ESC** to return to the **NetLink OAI System** menu.

5.3 OAI Line Configuration

In a NetLink Telephony Gateway system, each telephone line using OAI must be associated with the line and port of its NetLink Telephony Gateway. This procedure tells the OAI Gateway which Wireless Telephone lines are associated with each NetLink Telephony Gateway. Any changes made to telephone line configurations on the NetLink Telephony Gateway, must also be made here on the OAI Gateway.

From the **NetLink OAI System** menu, select **OAI Line Configuration**. A screen similar to the following displays:



Enter the Hostname of the NetLink Telephony Gateway. The OAI Gateway will fill in the hostname and port number based on the last entry. Simply press Enter to accept the default port number and Hostname as you continue to the next line. If the Telephony Gateway is active on the network, the IP address field will be updated automatically.

Configure all the lines in your system. Use the arrow keys to move the cursor. Note that the lines will wrap at the top and bottom.

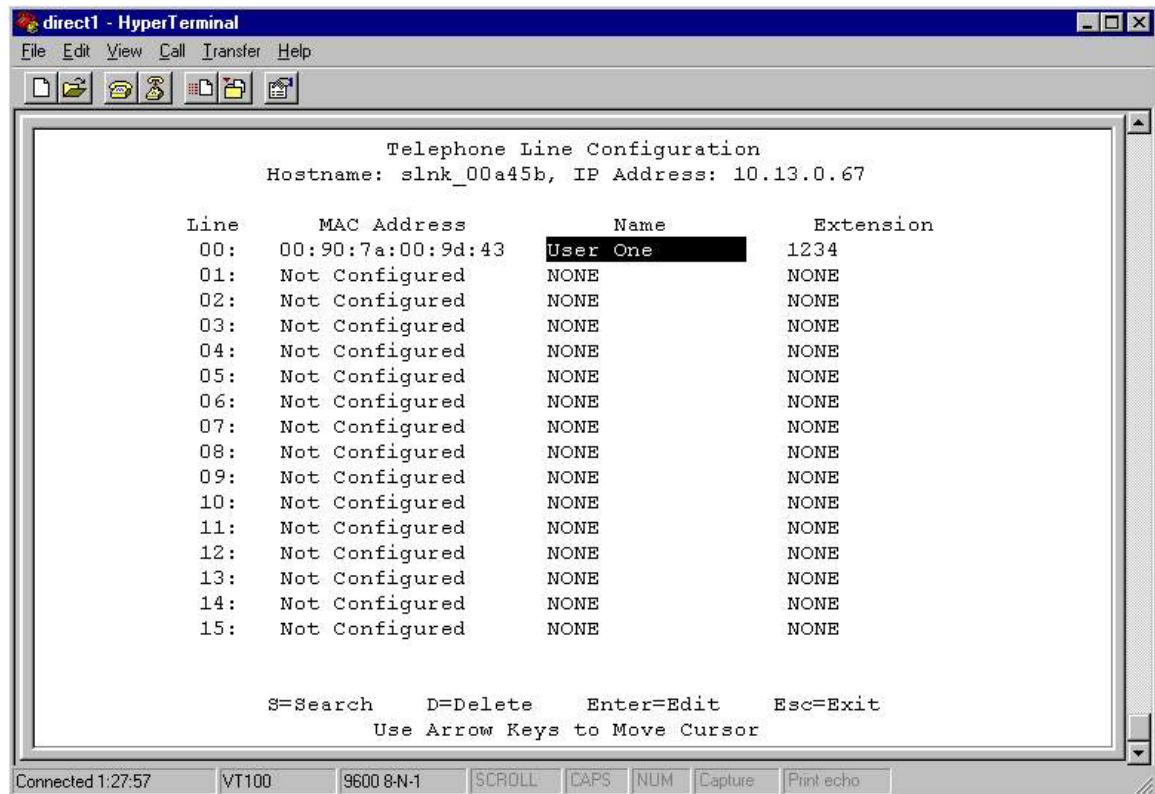
Press Esc to return to the **NetLink OAI System** menu.

Use S=Search to find boxes in the OAI line configuration.

5.4 Telephone Line Configuration

In an IP system, each Wireless Telephone that is to use OAI features must be configured with its line number and MAC address. Optionally the name and extension number of the Wireless Telephone user may be entered.

The system will not allow you to register the same Wireless Telephone to two different lines. Use Esc to cancel out of any unwanted transaction.



- Use the arrow keys to navigate to the name and extension fields and enter the associated data.
 - MAC Address** - the MAC address is printed on the sticker underneath the battery on the Wireless Telephone. It can also be displayed on the Wireless Telephone by turning off the Wireless Telephone, and then pressing and holding the **Pwr** (power) button. The MAC address appears on the first line of the display (12 characters).
The MAC address must be manually entered by typing the entire address including digits and colons.
 - Name** - enter the user name assigned to the telephone. This is for record keeping only; it does not communicate the name to the PBX or the Wireless Telephone.
 - Extension** - enter the extension assigned to this telephone. This is for record keeping only; it does not communicate the extension to the PBX or the Wireless Telephone.

2. Write the MAC address on the *Wireless Planning Device Worksheet*.
3. Repeat steps 2, 3, and 4 for each Wireless Telephone to be added or changed.
4. Press Esc to return to the **NetLink OAI System** menu.



A Wireless Telephone may be associated with one and only one telephone line. The same MAC address may not be assigned to two or more telephone lines.



The Wireless Telephone requires special setup which may include setting options on the DHCP server or on the Wireless Telephone to allow it to communicate with the NetLink OAI Gateway. Be sure these settings are correct. Refer to the IP Interface document for your system.

5.5 Deleting a Wireless Telephone

To delete a Wireless Telephone from the NetLink OAI Gateway configuration:

1. Use the arrow keys to highlight the line to be deleted.
2. Press **D** to delete the Wireless Telephone information.
3. Press **Y** to accept changes.
4. Press Esc to return to the **NetLink OAI System** menu.

5.6 Searching for a Wireless Phone

While in the **Telephone Line Configuration** or the **Telephone Line Status** screens, a search hotkey is available. To search any field:

1. Select the field to use as the search key (MAC address, Name, or Extension),
2. Press **S** to display a search screen dialog box,
3. Type an appropriate search string and then press Enter.

The success or failure of the search will be displayed at the bottom of the screen.

4. The user can either continue to change the search string for different search criteria or escape (by pressing the Esc key) out of the search screen.

The first line of the Telephone Line Configuration (or Telephone Line Status) screen will then display the line in which the search match was found, if any.

Successful searches always result in the first found match to show at the top of the list, and subsequent searches will continue from that point in the list.

Note that partial strings will match for beginnings of strings, such that a search for extension 10 will match extension 10, 100, 1000, etc., but will not match 010.

5.7 Feature Programming*

The OAI function is accessed in the Wireless Telephone by pressing the **FCN** button plus a second button. In IP systems, the button used to access the OAI feature from the Wireless Telephone is configured through the Feature Programming option.



This setting will override any other programming.

Navigate to the **NetLink OAI System** menu for the NetLink OAI Gateway and select **Feature Programming**. A screen similar to the following displays:

```
direct1 - HyperTerminal
File Edit View Call Transfer Help

Feature Programming
Hostname: slnk_00a45b, IP Address: 10.13.0.67

1 :
2 :
3 :
4 :
5 :
6 :
7 :
8 :
9 :
* : 
0 : 
# : PhonBk

D=Delete Enter=Edit Esc=Exit
Use Arrow Keys to Move Cursor

Connected 1:25:09 VT100 9600 8-N-1 SCROLL CAPS NUM Capture Print echo
```

Use the arrow keys to select the function number to associate with OAI and type any label up to six characters. What you type here will be displayed on the Wireless Telephone menu.

In the example screen above, the **FCN + #** key sequence will display **PhonBk** on the Wireless Telephone function menu. The OAI application in this case is a phone book enabling speed dialing to those listed.

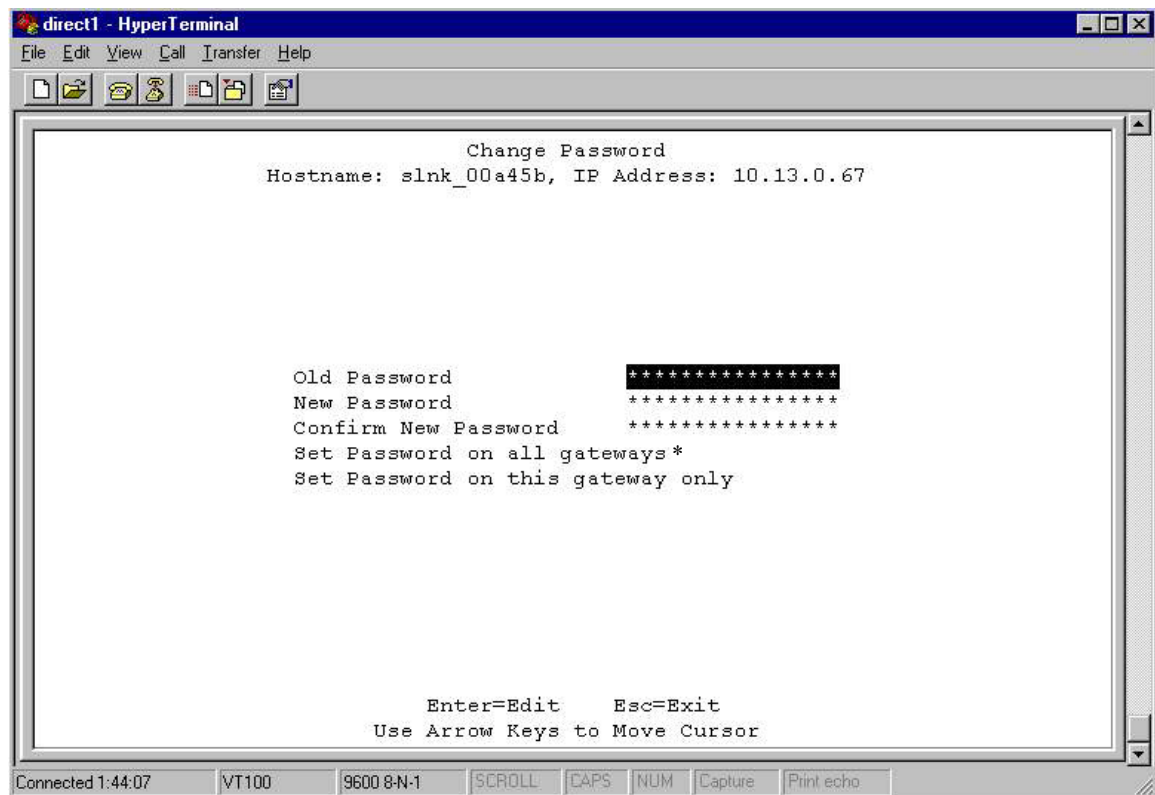
* In NetLink Telephony Systems, the OAI key is programmed on each NetLink Gateway. See the instructions for setting up the NetLink Gateway for specific configuration information.

6. Set or Change Password

A unique password may be set for the NetLink OAI Gateway, which restricts access to the administrative functions.

If the OAI Gateway is part of a NetLink Telephony Gateway system, the Change Password screen has an option to change the password for every NetLink Gateway so that the NetLink OAI and Telephony Gateways all have the same password.

To set or change the password, select the **Change Password** option from the **NetLink OAI System** menu.



* This option is on NetLink Telephony Gateway systems only. It allows you to set the password established here on all NetLink Gateways in the system. Using this option overrides any password already established on the NetLink Telephony Gateways.

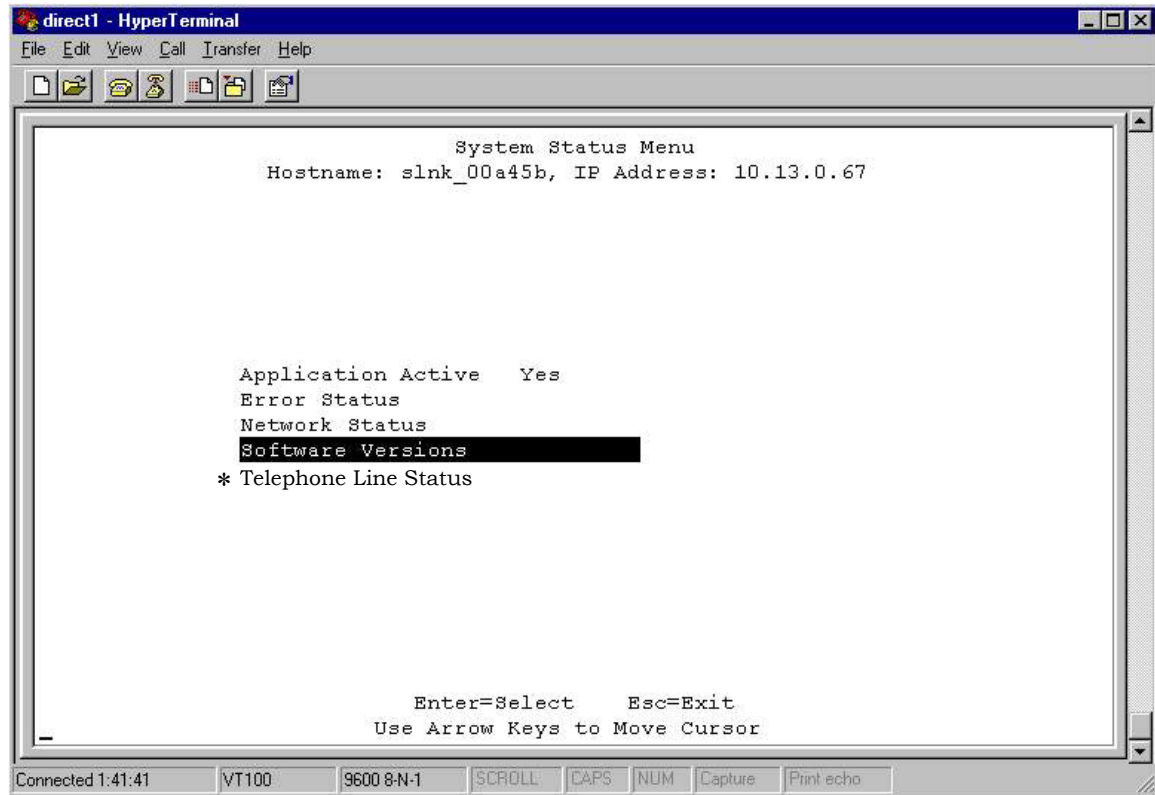
The default password is **admin**.

Follow the prompts to set a new password.

If you forget a password, call SpectraLink Customer Service for assistance.

7. System Status Menu

To view the status of the system, select the **System Status Menu** option from the **NetLink OAI System** menu.



* Telephone Line Status option appears only on IP systems.

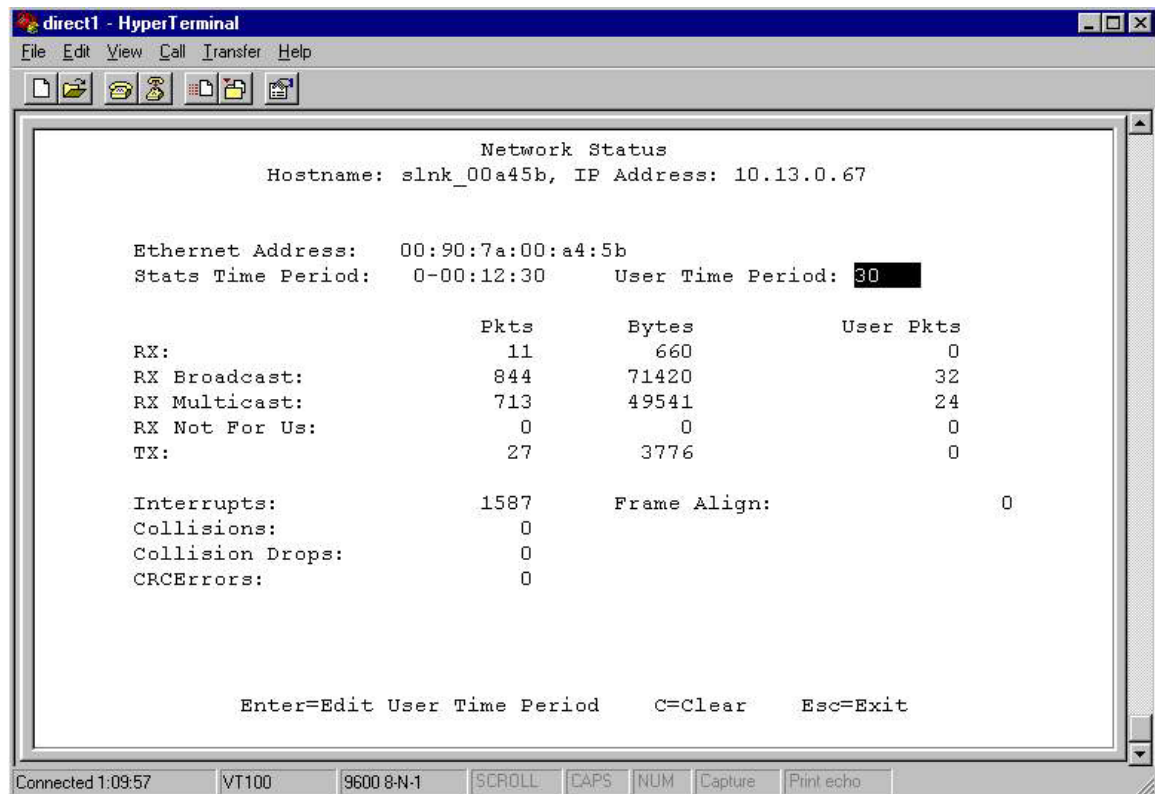
Additional information on Error Status and Network Status options is available in the *NetLink Telephony Gateway: Setup and Maintenance* document.

- **Application Active** – This will be **Yes** when the application is communicating correctly with the NetLink OAI Gateway. It will be **No** when the application is not connected. This will change dynamically.
- **Error Status** – The only OAI specific error is “No ECP heartbeat” which means the application failed to send a heartbeat to the Gateway.
- **Network Status** – Information about the connection to the Local Area Network (LAN).
- **Software Versions** – lists the software versions currently running on the NetLink OAI Gateway.
- *** Telephone Line Status** – information about the functioning of each Wireless Telephone registered to the NetLink OAI Gateway. (This option is only included in IP systems.)

7.1 Network Status

The NetLink OAI Gateway is connected to the Ethernet network, referred to as the LAN or Local Area Network. The information about that connection is provided through the **Network Status** screen.

From the **System Status Menu**, select **Network Status**. The screen displays information about the Ethernet network. This information can help troubleshoot network problems. A sample screen is displayed here.



Three items display at the top of the screen:

Ethernet Address – MAC address of the NetLink OAI Gateway (hexadecimal).

Stats Time Period – the length of time the statistics have been accumulating in the **Pkts** and **Bytes** columns. This is either the system uptime, or the time since a user pressed **C=Clear** while viewing this display.

User Time Period – the length of time (in seconds) statistics will accumulate in the **UserPkts** column before resetting to zero. When troubleshooting a problem, use this setting to isolate statistics for a given time period (for example, one hour). This is the only field in this screen that can be changed by the user.

The rest of the display is a table of Ethernet statistics. The **Pkts** and **User Pkts** columns list the count of Ethernet packets received or transmitted. The **Bytes** column is the count of bytes received or transmitted during the amount of time indicated by Stats Time.

RX – number of packets and bytes received addressed to the NetLink OAI Gateway.

RX Broadcast – the number of broadcast packets and bytes received.

RX Multicast – the number of packets and bytes received with the SpectraLink multicast address. (A “multicast” message is sent to more than one destination on the network.)

RX Not For Us – the number of multicast packets and bytes received that were not for the NetLink OAI Gateway.

TX – the total number of packets and bytes transmitted.

Interrupts – the number of times the Ethernet controller has signaled the microprocessor that it has received or sent a packet.

Collisions – the number of times the Ethernet controller has attempted to send a packet, but another device on the network transmitted at the same time, corrupting the transmission.

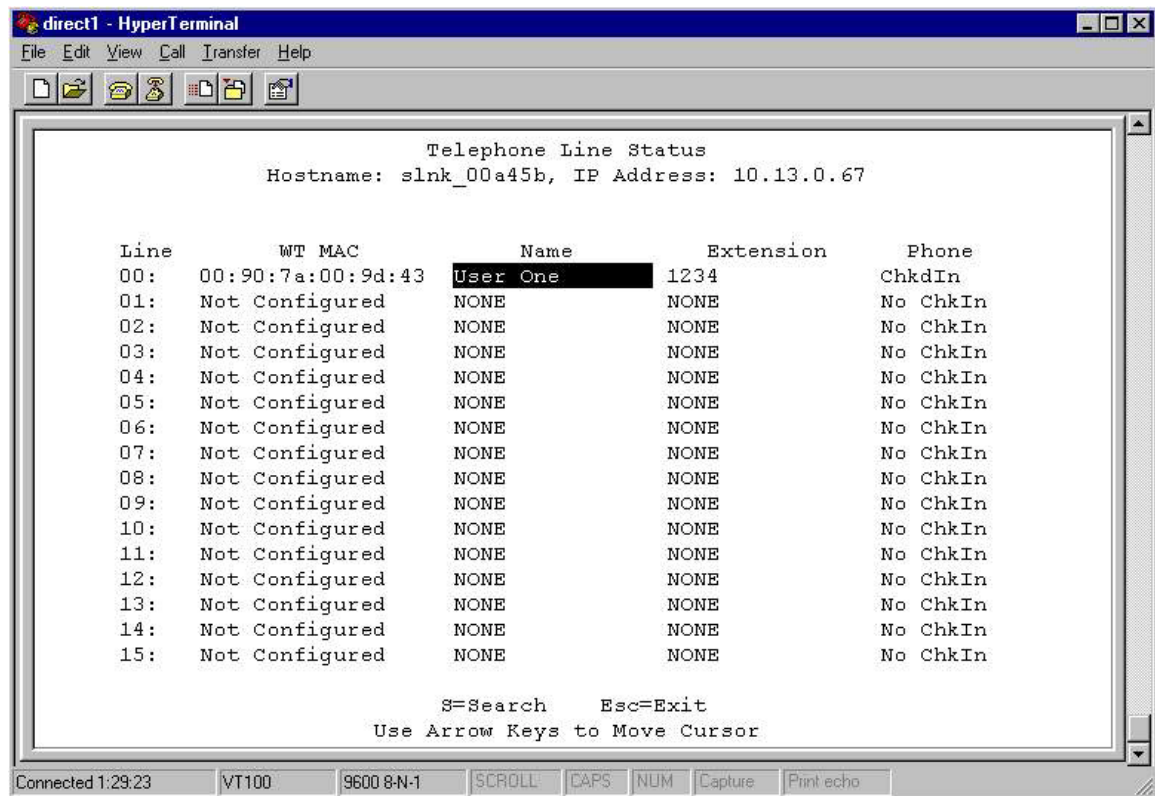
Collision Drops – the number of packets the Ethernet controller has discarded because there were over sixteen collisions. After sixteen collisions the Ethernet controller hardware discards the current packet and attempts to send the next packet in its buffer.

CRC Errors – the number of packets discarded by the Ethernet controller because of a CRC (Cyclic Redundancy Check) error.

7.2 Telephone Line Status*

In IP systems, the **Telephone Line Status** screen allows you to see which phones are actively communicating with the OAI gateway.

From the **System Status Menu**, select **Telephone Line Status**. The NetLink OAI Gateway displays up to 16 lines. A sample screen is displayed here. Move to the next group of 16 by using the arrow keys.



WT MAC – the MAC address of the Wireless Telephone, entered at configuration.

Name/Extension – these fields contain the data entered at configuration.

Phone – No ChkIn indicates the Wireless Telephone is not currently using the OAI function. ChkIn indicates the Wireless Telephone is currently communicating with the Gateway.

The functioning of the **S=Search** hotkey is described under *Telephone Line Configuration*.

* In NetLink Telephony Gateway systems, this feature is accessed through the NetLink Telephony Gateway.

7.3 Software Versions

Each NetLink OAI Gateway and Wireless Telephone runs SpectraLink's proprietary software that is controlled and maintained through versioning. The **Software Version** screen provides information about the version currently running on the components. This information will help you determine if you are running the most recent version and will assist SpectraLink engineering and/or customer support in troubleshooting software problems.

There are two separate methods of downloading new software – one for the IP system and one for the NetLink Telephony Gateway system. See the *Software Maintenance* section for information about upgrading or downloading your software.

From the **System Status Menu**, select **Software Version**. A sample NetLink OAI Gateway screen for IP systems is displayed below:

```
direct1 - HyperTerminal
File Edit View Call Transfer Help

Software Versions
Hostname: slnk_000117, IP Address: 10.13.0.28

Hardware Versions:      05/81
Boot Code:              001.007 (0415)
Factory Page:           234.015 (0836)
Flash1 Downloader:      031.007 (0233)
Functional Code:         251.001 (0999)
fnctla.bin              251.001 (0999)

Esc=Exit

Connected 0:00:33  VT100  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```


8. Certification Test

When the NetLink OAI Gateway is properly connected to the application server, **LED 1** will blink.

To test the Wireless Telephones:

- If this is a new installation, continue with Wireless Telephone registration and PBX programming, and perform the usual voice and coverage tests when Wireless Telephone installation is complete.
- If you added the NetLink OAI Gateway to an existing system, place a call and test the features on each Wireless Telephone to be sure the system is working properly.
- Test the application on each Wireless Telephone. Consult your application provider for specific test procedures.

9. Software Maintenance

The NetLink OAI Gateway and the NetLink Wireless Telephones use proprietary software programs written and maintained by SpectraLink Corporation. The software versions that are running on the system components can be displayed via the **System Status** screen.

SpectraLink or its authorized dealer will provide information about software updates and how to obtain the software (for example, downloading from a web site).

9.1 Software Updates for MOG700 Systems

After software updates are obtained from SpectraLink, they must be transferred to the appropriate location in the LAN to update the code used by the corresponding component. The FTP (File Transfer Protocol) method of transfer is used.

In the NetLink OAI Gateway, the flash file system has the following files:

File name	Description
config.bin	The OAI box configuraton
fncctl.a.bin	The functional code
oaip1st.bin	The phone list configuration
oaip1stb.bin	The redundant phone list configuration.

The fncctl.a.bin file is upgraded periodically by SpectraLink engineering and is the only file that you will download. The other files are configuration files and their names are provided here for your information and backing up purposes.



Navigate to the **OAI Box Configuration** screen and place the system in Maintenance Lock before proceeding with the FTP procedure. Note that this will prevent new calls from starting. No calls may be in progress during the FTP procedure.

FTP Procedure

When using FTP, you use a host system to connect to a remote system. In this example, the host is the client and the server is the OAI Gateway. The “put” command means to copy the files from the host to the remote system. The “get” command means to copy the files from the remote system to the host.



Note that FTP commands vary with the program being used. Use the following steps as a general guide but be aware that your FTP program may use different terms to describe the procedure.

To transfer the software using FTP:

1. Connect to the NetLink OAI Gateway using the command: **FTP <hostname>** or **FTP <IP address>**.
2. Log in using the administrator login (“admin”) and password (default is “admin”). A login confirmation message will display, followed by the **FTP>** prompt.
3. At the **FTP** prompt, type **binary**. A confirmation message will display.
4. At the FTP prompt, use the put command to transfer the functional code file to the client server or OAI Gateway. It must be renamed before being loaded into the OAI Gateway. The download file is named MOG700.bin. Rename it fnc1a.bin. Example: put mog700.bin fnc1a.bin
5. After files are transferred, use the **Quit** command to quit FTP.
6. Navigate to the main menu for the OAI Gateway and select **System Status**. Then select **Software Versions** to verify that software versions for the OAI Gateway are correct.
7. Reset the system via the **OAI Box Configuration** screen in order to restore Maintenance Lock to “N”



Note: A graphical user interface FTP client may be utilized in lieu of the aforementioned command line FTP procedure.

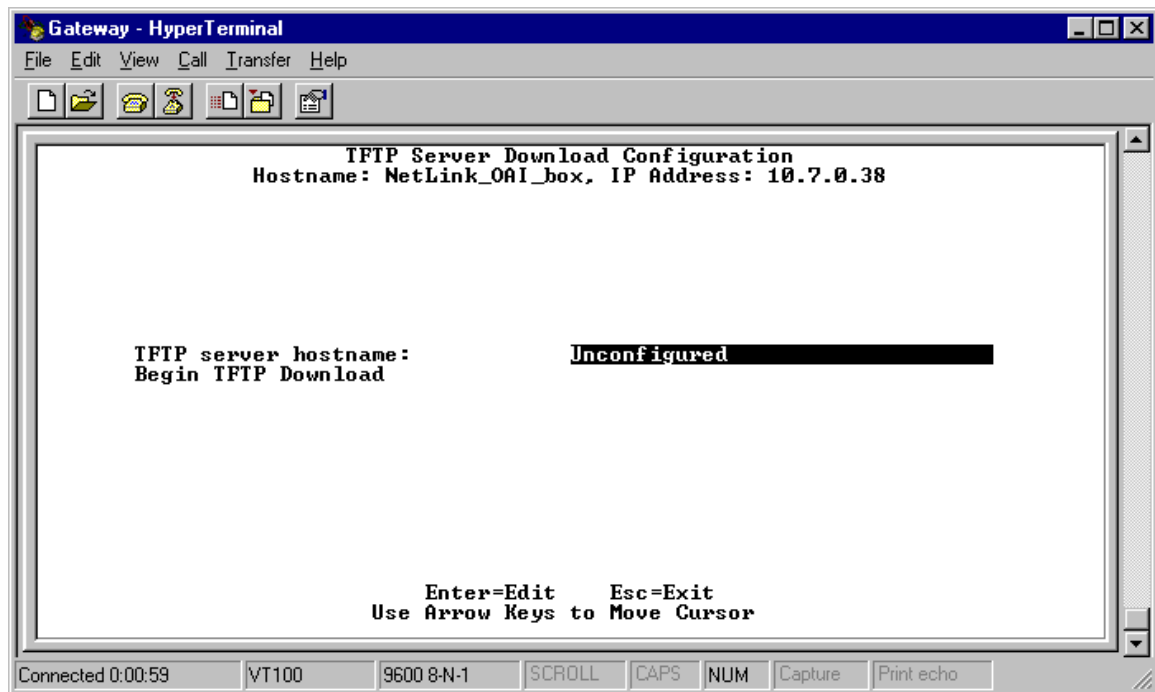
9.2 TFTP Software Updates for MOG600 Systems

The OAI Gateway uses proprietary software programs written and maintained by SpectraLink Corporation. The software versions that are running on the system components can be displayed via the NetLink Telephony Gateway's **System Status** screen. SpectraLink or its authorized dealer will provide information about software updates and how to obtain the software (for example, downloading from a web site).

Obtain and load a TFTP server on a LAN connected system. Consult your server vendor's documentation for information about TFTP.

Once the update is obtained from SpectraLink, load it in a location that is accessible by the TFTP program.

To configure the host and start the download, select the **TFTP Server Download Configuration** option from the **NetLink OAI System** menu.



Enter the TFTP server hostname then use the arrow keys to move the cursor to the **Begin TFTP Download** option and press Enter to begin the download.

The MOG600.bin code will be downloaded into the OAI Gateway.

10. Wireless Device Planning Worksheet

Copy and complete this worksheet to track parameters for each NetLink Wireless Telephone.

OAI Port	MAC Address	User Name	Dialing Ext.	IP Address
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
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