



Passport 4400

Low-speed Data Services

Manual

Part Number 800-1961-20, Rev. B

July 1998

Notice of Filing

Declaration of CE Conformance (for International sales)

A Declaration of CE Conformance is on file at the Nortel addresses shown below. The declaration lists the models described in this manual. If the unit carries the CE mark, this declaration certifies that it meets the specific EMC standards and safety (LVD) standards required for CE marking. If the product is a module, the module is CE-compliant only if it is placed in a CE-marked base unit.

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Any units not carrying the CE approval are not CE-compliant. Modules placed in these units may not meet emission standards for CE compliance.

Notice

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Notice

Specifications, tolerances, and design characteristics described in this manual are subject to change without notice.

Safety Warnings and Cautions

Various safety agencies request statements of warning or caution to help you in the safe operation of the unit. These statements also apply to any and all modules installed within the unit.

To ensure adequate cooling of the equipment a 2.0 inch unobstructed space must be maintained around all sides of the unit.

The ac power socket shall be installed near the equipment and shall be easily accessible.

Installation and access to the interior of this unit shall be made only by a qualified technician.

Connection to the network is to be disconnected before the (mains) plug is removed.

Warning

Remove power plug from the power socket before performing any service work on the unit.

The power supply is auto-ranging in this model.

The power supply cordset to be supplied in Europe must have 0.75²mm, 3 conductor "HAR" cord type H05VV-F, terminated in a grounding type Shucko plug on one end and a molded-on IEC 320 connector on the other end.

Technical Data

Passport 4400 Series
ac units

Input Voltage:	100-240 Vac -5%, +10%
Input Current:	3A/1.5A
Frequency:	47-63 Hz

dc units

Input Voltage:	36-72 Vdc
Input Current:	5A

Um die Kühlung des Gerätes nicht zu beschränken, ist es notwendig um das Gerät herum an allen Seiten ca 5 cm Raum zu lassen.

Stellen Sie das Gerät in der Nähe einer geerdeten Schutzkontakt- steckdose so auf, dass diese leicht erreichbar und zugänglich ist.

Die Montage und der Zugang ins Innere des Gerätes sind nur einem qualifizierten Techniker gestattet.

Ehe der Netzstecker aus der Steckdose gezogen wird, müssen sämtliche äusserliche Verbindungen vom Gerät getrennt werden.

Warnung

Vor öffnen des Gerätes, muss der Netzstecker aus der Steckdose gezogen werden.

Netzteil ist mit automatischer Umschaltung entsprechend der Versorgungsspannung versorgt.

Die Netzleitung sollte ein harmonisierter Typ (HAR) sein, mit der Bezeichnung H05VV-F oder H05VVH2-F, 3G 0.75²mm, mit einem Schutzkontakt - und einem Kaltgerätestecker (IEC 320).

Technische Daten

Passport 4400 Series
ac Geraete

Nennspannung:	100-240 V~ -5%, +10%
Nennstrom:	3A/1.5A
Frequenz:	47-63 Hz

dc Geraete

Nennspannung:	36-72 V
Nennstrom:	5A

Pour assurer un refroidissement adéquat, maintenir un espace libre de 5 cm (2 pouces) tout autour de l'appareil.

Installer la prise AC à proximité de l'appareil, dans un rayon d'accès facile.

L'installation et l'ouverture de cet appareil est permise par un technicien autorisé seulement.

Avant de débrancher la prise de courant, assurer que toutes les connexions externes ont été déconnecté de l'appareil.

Avertissement

Débrancher la prise de courant avant d'entreprendre aucun travail de réparation de l'appareil.

Ce modèle s'adapte automatiquement au courant électrique ou voltage de la prise murale.

En Europe, brancher l'appareil à la prise murale au moyen d'un fil "HAR" comprenant 3 cables H05VV-F ou H05VVH2-F de 0.75²mm chacun, avec à une extrémité une prise de terre genre SHUCKO et à l'autre une prise IEC 320.

Donnees Techniques

Passport 4400 Series
ac appareils

Voltage d'Accès:	100-240 V~ -5%, +10%
Courant d'Accès:	3A/1.5A
Fréquence:	47-63 Hz

dc appareils

Voltage d'Accès:	36-72 V
Courant d'Accès:	5A

Notification of FCC Requirements

NOTE: 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.

Changes or modifications to this product, that could increase the amount of Radio Frequency Emissions from this product, without the expressed written approval of Nortel/Micom could cause the product and the user to violate the FCC's Rules and Regulations, thus requiring the product to be turned off or disconnected.

If this unit is used on a DTE which requires use of shielded cables for compliance with FCC Part 15, then use of a filtered pin connector may be required to maintain FCC compliance. See the Installation section for specific applications.

Notification of Canadian Requirements

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Government of Canada Department of Industry.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Industry du Canada.

United Kingdom Requirement: Interconnection of Ports Warning

Interconnection directly, or by way of other apparatus, of ports marked "SAFETY WARNING. See instructions for use", with ports marked or not so marked may produce hazardous conditions on the network. The advice of a competent engineer must be obtained before such a connection is made. None of the ports provide isolation sufficient to satisfy the relevant parts of BS 6301. Apparatus connected to the ports, must either have been approved to the relevant parts of BS 6301 or to have been previously evaluated against BS 6301 British Telecom Technical Guides 2 or 26, and given permission to attach. Other usage will invalidate any approval given to this apparatus.

Any or all of the ports on the following modules may be configured as non-network ports:

- Base Module: Multiple Configuration Ports
- Up to 4 Voice Modules: Up to 2 Ports
- Legacy Data Module (LDM) and Legacy Data Expansion Modules (LEM)
- High Speed Data Modules (HDM): 4 or 8 Ports

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Before You Begin 1

This document explains how to provision nine low-speed data services on Passport 4400 Legacy Data Module (LDM)/Legacy Expansion Module (LEM) units. The services are as follows:

- PANL
- Frame Relay
- SNA XPAD
- BTDS
- Token Ring
- ITI
- X.25
- HTDS
- the network control system (NCS) operations agent (OA)

The document is organized as follows:

- This section, “Before You Begin,” presents some background information that will help you use this document effectively. It covers the main technical features of Passport 4400 LDM/LEM units, including some key concepts you will encounter when provisioning services on Passport 4400 LDM/LEM units.
- The next section, “Getting Started,” describes how to start and use Architect for DPN, the software used to provision Passport 4400 LDM/LEM units.
- Each of the next nine sections presents background information and step-by-step instructions on provisioning a specific service on Passport 4400 LDM/LEM units. The sections and the services they cover are as follows:
 - “Provisioning PANL” covers PANL
 - “Provisioning Frame Relay” covers Frame Relay
 - “Provisioning SNA XPAD” covers SNA XPAD
 - “Provisioning BTDS” covers BTDS
 - “Provisioning Token Ring” covers Token Ring
 - “Provisioning Asynchronous ITI” covers asynchronous ITI
 - “Provisioning X.25” covers X.25
 - “Provisioning HTDS” covers HTDS
 - “Provisioning the NCS OA” covers NCS
- The final section, “Service Functionality,” highlights the functionality of the services offered on Passport 4400 LDM/LEM units.

Technical Features of Passport 4400 LDM/LEM Units

Passport 4400 units are multimedia Frame Relay access devices (FRAD) that allow small branch sites to consolidate multimedia traffic, such as voice, LAN, and legacy data, over a single low-speed network link (operating at speeds such as 56 or 64K) and to a WAN supporting Magellan Passport.

The Passport 4400 LDM is a hardware card residing in a Passport 4400 unit that provides access for legacy data traffic to a Magellan Passport WAN. The LDM allows traffic from supported legacy services to be carried across the Passport WAN to remote sites served by Passport 4400 units equipped with LDM cards. The services supported by the LDM can be extended through the use of a Legacy Expansion Module (LEM).

To reach the Passport WAN, traffic from the LDM essentially “tunnels through” the Passport 4400 connection. It is then passed through to other Passport 4400 units equipped with LDMs. Connectivity among the LDM, Passport 4400, and the Passport WAN is provided by a service referred to as PANL.

Network management for Passport 4400 legacy data traffic is provided through a proprietary system called Network Control System (NCS). NCS makes it possible to use Magellan NMS (Network Management System) to manage Passport 4400 LDM/LEMs.

An NCS OA is deployed on one or more of the Passport 4400 LDM nodes, with other nodes or OAs reporting to it. With this configuration, NMS has an X.25 connection to the network with a virtual circuit (VC) established to each of the NCS operations agents (OAs). For NMS, communicating with Passport 4400 LDM units involves receiving information from NCS OAs and sending information to them.

NCS provides the following management functions for the network:

- sending alarm information when outages occur within nodes
- allowing remote access to the nodes and security for the remote nodes
- routing commands to nodes
- creating performance and accounting records
- passing data to NMS
- interfacing with NMS

Note: Local spooling of statistics is not supported. Remote spooling of statistics requires a DPN-100 spooling site.

For More Information . . .

For LDM/LEM hardware information, including installation and cabling, reference the following document:

- 800-1951-xx, *Passport 4400 Hardware Installation Manual*

The following Northern Telecom publications contain more information on the products and services related to LDM/LEM:

- 241-1001-120, *DPN-100 Frame Relay Service User Guide and Specification*
- 241-1001-161, *DPN-100 T2.1 Router User Guide*
- 241-1001-162, *DPN-100 T2.1 Router Specification*
- 241-1001-158, *HDLN Transparent Data Service User Guide*
- 241-1001-160, *SNA Transparent PAD (XPAD) User Guide*
- 241-1001-164, *DPN-100 Token-Ring Intelligent Source Routing Bridge Service User Guide*
- 241-1001-174, *DPN-100 Token-Ring SNA PAD Specification*
- 241-1001-175, *DPN-100 Token-Ring Intelligent Source Routing Bridge Specification*
- 241-1001-184, *DPN-100 LAPB/X.25 Specification*
- 241-1001-186, *ITI User Terminal Operation Procedures and Specification*
- 241-2001-102, *DPN-100 Network Control System User Guide*
- 241-2001-351, *DPN-100 Network Control System Operations and Maintenance*
- 241-1001-303, *DPN-100 Operator Commands and Responses*
- 241-6001-012, *NMS Architect for DPN User Guide*
- 241-1001-125, *SNA Multihost and LU Multiplexing User Guide*
- 241-1001-018, *DPN-100 Asynchronous Service Provisioning User Guide*

For information on alarms associated with these services, see the following:

- 241-1001-506, *DPN-100 Alarm Console Indications - Volume 1*
- 241-1001-506, *DPN-100 Alarm Console Indications - Volume 2*
- 241-1001-506, *DPN-100 Alarm Console Indications - Volume 3*

Getting Started 2

You use software called Architect for DPN to do *all* the service provisioning described in this document. Using this software, you provision components — ports and services, for example — by changing, deleting, or adding service data. This section shows how to access Architect for DPN.

Accessing Architect for DPN

1. Log into a server from which you can access Architect for DPN.
2. From the command line, type `nmstool`.

Note: You may have to indicate the IP address of your display in this step, for example, `nmstool -display <IP address of display>:0&`.

A window similar to the following appears.



3. Click OK.

A window similar to the following appears.



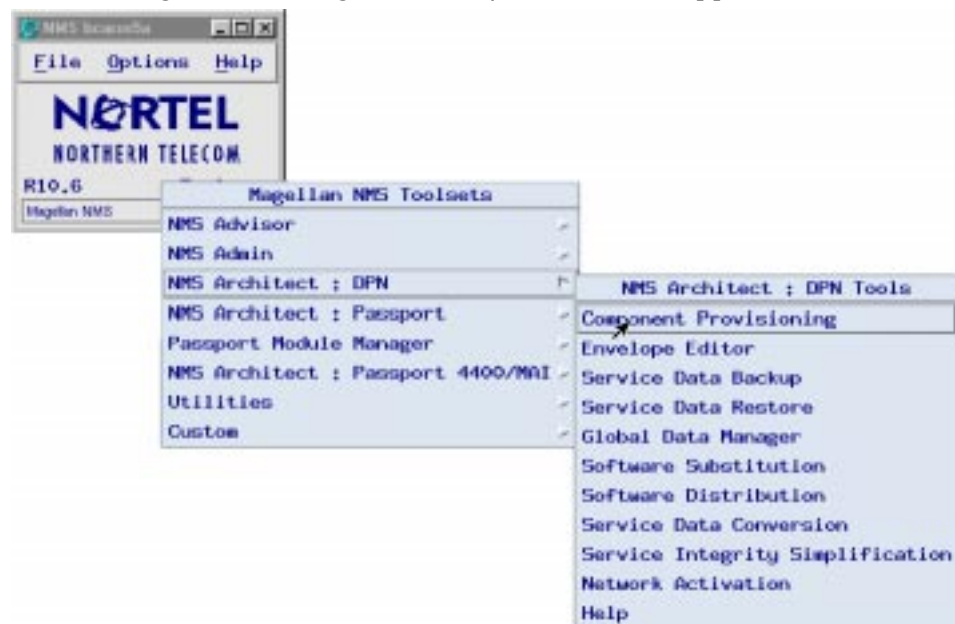
4. Click anywhere in this window.

A submenu of available toolsets appears.



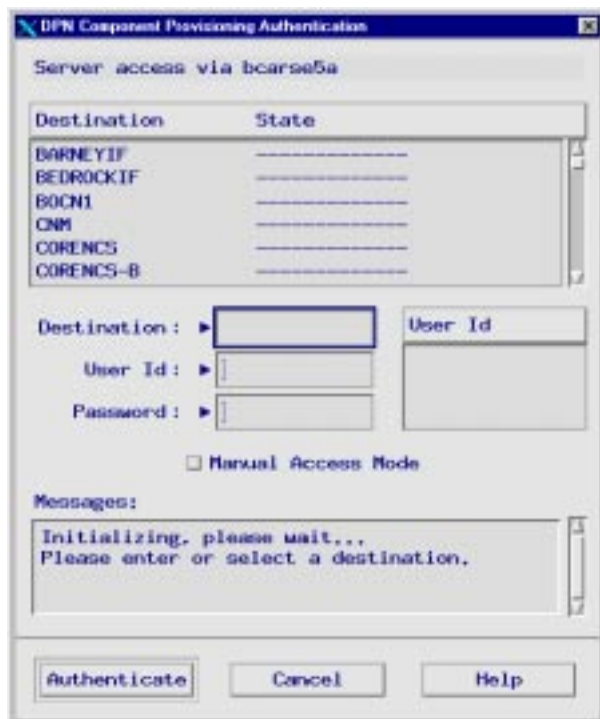
5. Click *NMS Architect : DPN*.

A cascading menu listing Architect for DPN tools appears.



6. Click *Component Provisioning*.

The DPN Component Provisioning Authentication window appears.



7. Select a destination (CORENCS, for example), enter your NCS User ID and Password, and click *Authenticate*.

A window similar to the following appears.



Note: To change your uploading or downloading options, click *Options* at any time and make any necessary changes.

8. In the *Component* dialog, enter the name of the packet module (PM) you want to access. Enter this name in the form PM/<module name>.

A window similar to the following appears.



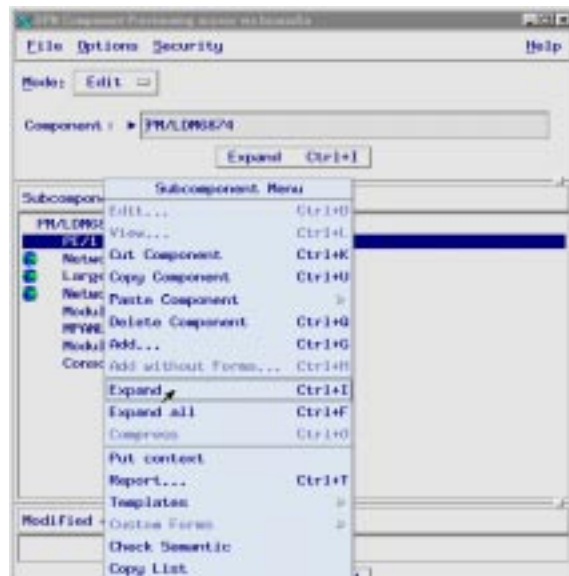
9. Click the *Expand* button to see all the components associated with the PM specified in the previous step.

A window similar to the following appears.



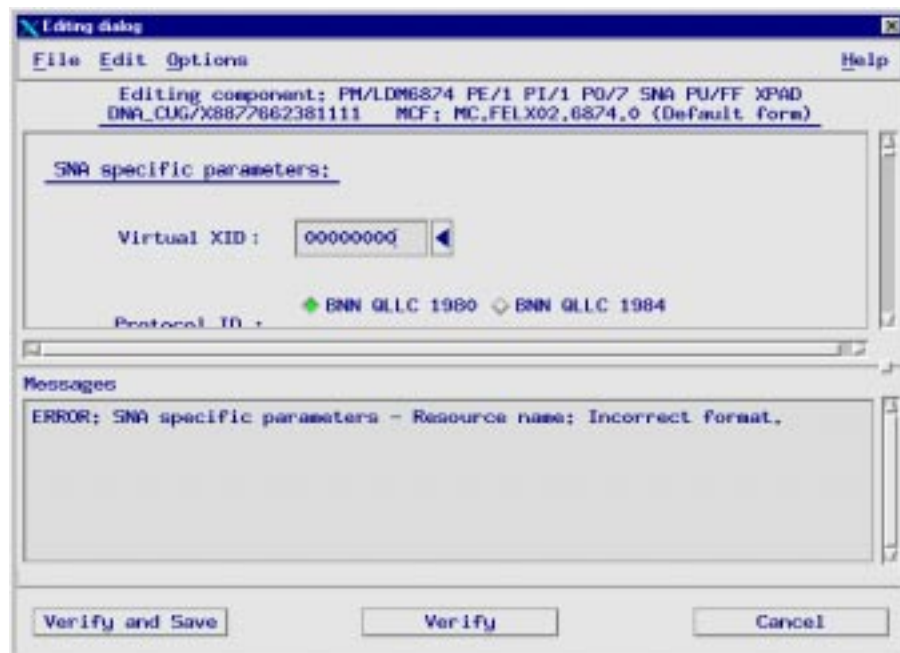
10. To see what options are available for a specific component, right-click the component.

A Subcomponent Menu similar to the following appears.



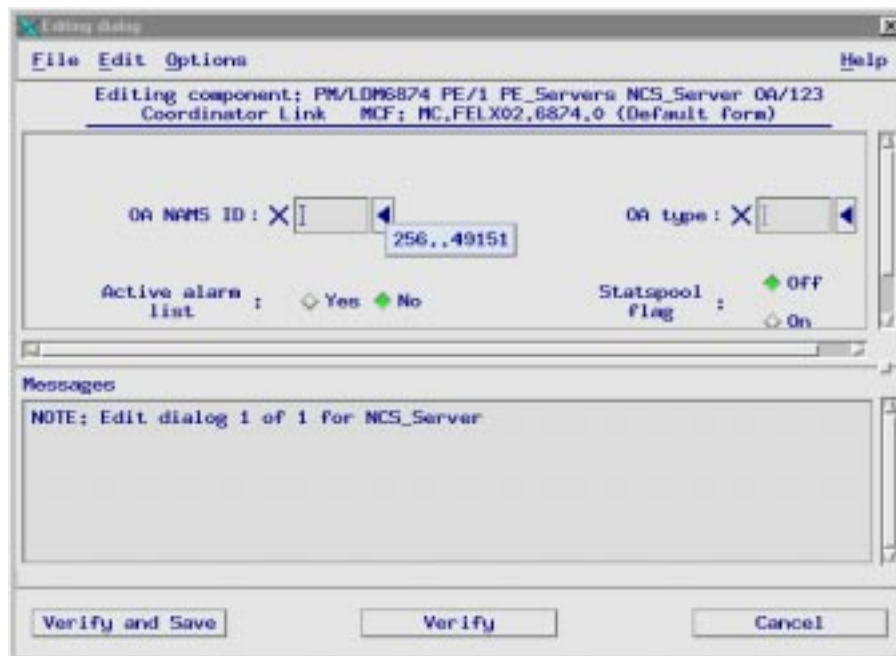
11. To change a specific component, right-click one of the available options, and edit the resulting screens as needed.

If you make a mistake, a message appears saying where the mistake occurred.



Note: • When you are editing screens in Architect for DPN, don't change any of the defaults unless you have a very good reason for doing so!

- If you are unsure what values to enter in a field, right-click the arrow at the right of the dialog box and read the context-sensitive help that appears.



Provisioning the Upper Layer

The service data on a packet module is hierarchical. One layer, the upper layer of the hierarchy, is structured to reflect the hardware view of the module. The upper layer consists of the following:

- PE level
- PI level
- port level

You must provision these three components before you can add a service such as Frame Relay to a module, and you must do so with Architect for DPN.

Provisioning PANL 3

PANL is a Nortel proprietary signaling protocol connecting a Passport 4400 unit or a Passport 4400 LDM unit to a Passport backbone network. This protocol allows end devices attached to the Passport 4400 unit to interwork with end devices of a similar type on the Magellan Passport network.

PANL is primarily the Frame Relay X.36 protocol, extended to carry additional proprietary information for connecting either a Passport 4400 unit or a Passport 4400 LDM/LEM unit to a Passport.

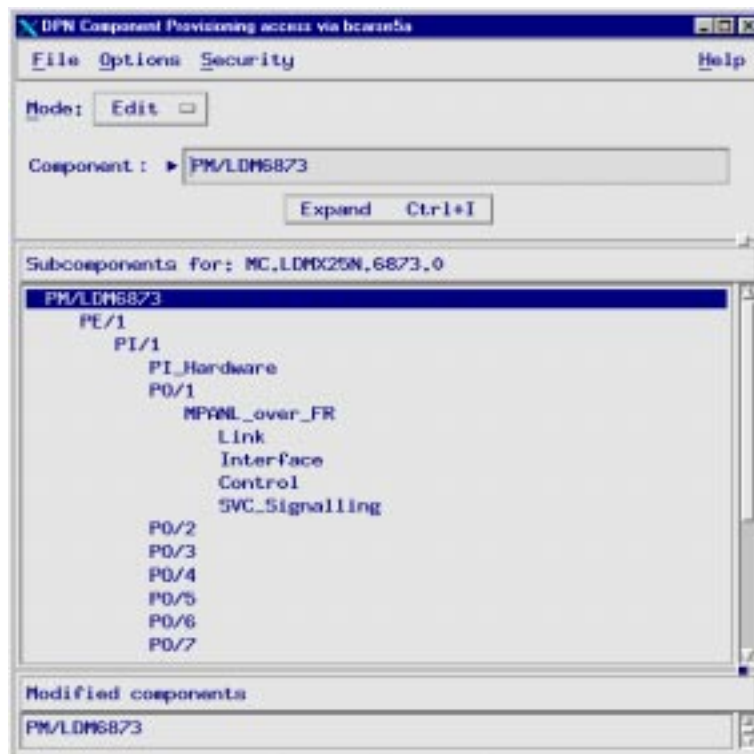
This section gives you the following information about PANL on Passport 4400 LDM/LEM units:

- standards supported
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

As a proprietary signaling protocol based on Frame Relay X.36, PANL supports no standards.

Component Hierarchy



Below the service in the hierarchy, four components are mandatory:

- Link
- Interface
- Control
- SVC_Signalling

Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See "Getting Started," in this document, for more information on these issues.)

Provisioning PANL on Passport 4400 LDM/LEM Units

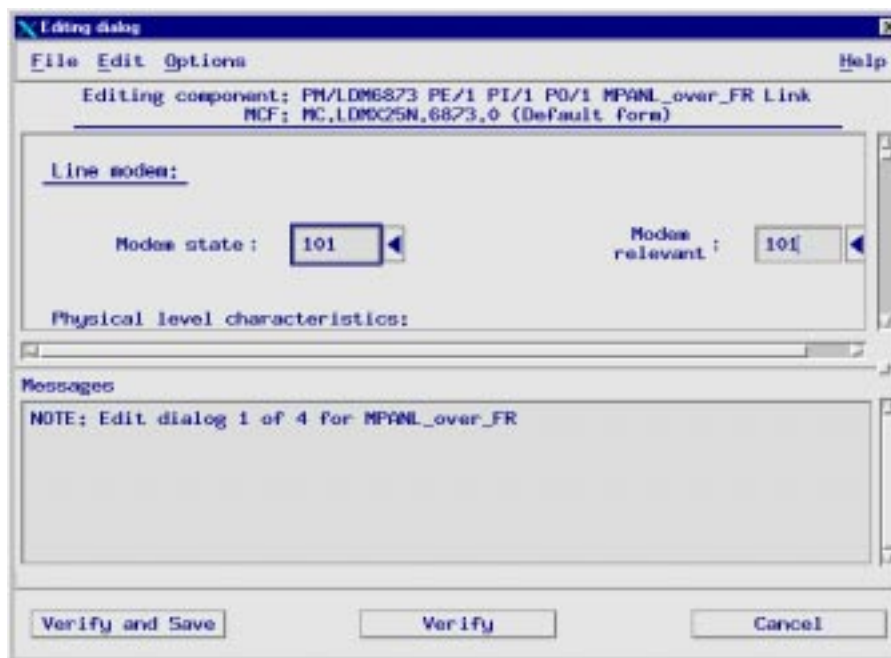
1. Select the port where PANL is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.

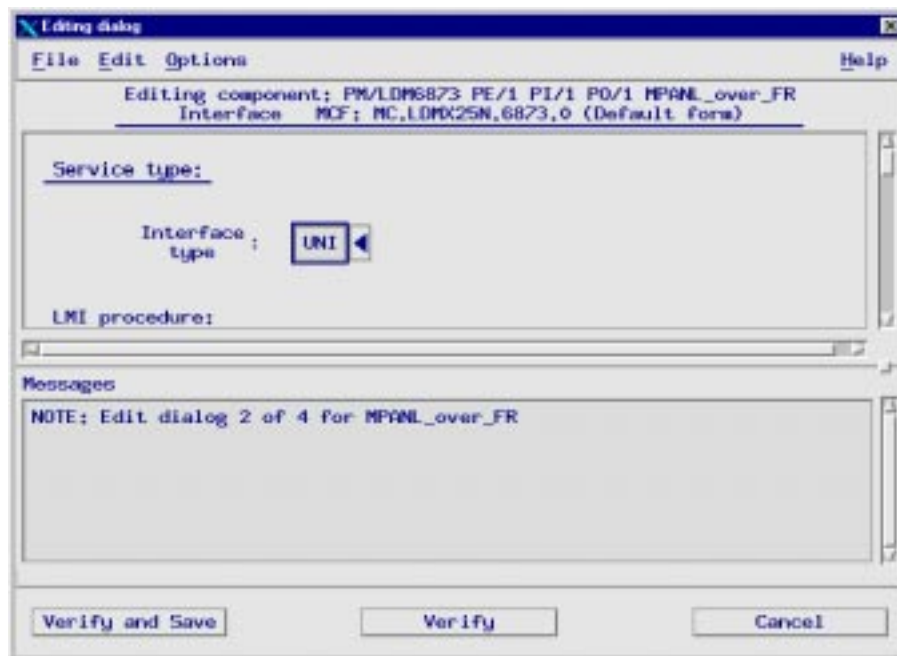


2. Select *MPANL_over_FR*, and click *OK*.

The Editing dialog for the MPANL_over_FR Link component appears.

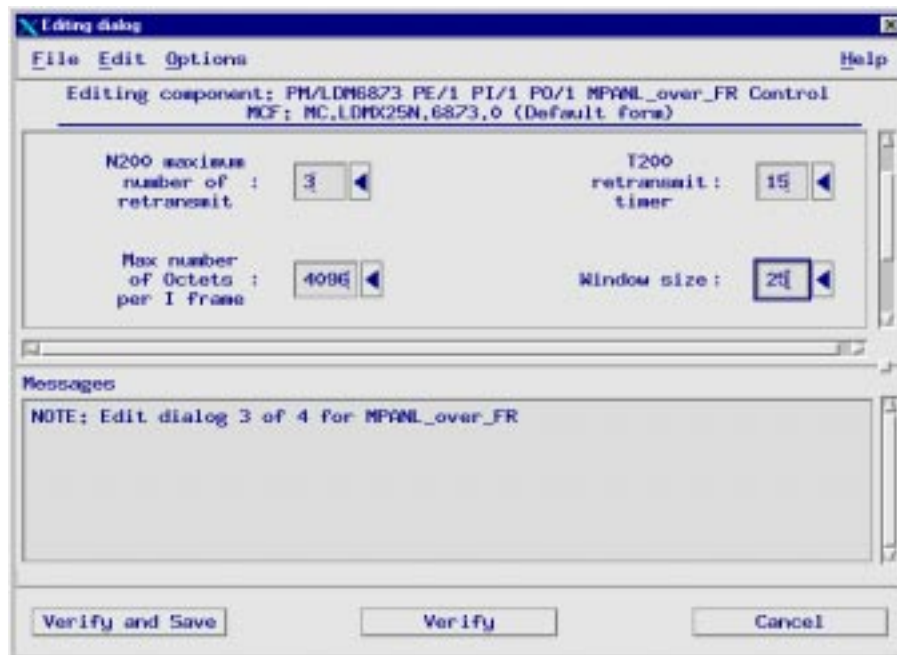


3. Complete the fields in the *Link* component, and click *Verify and Save*.
The Editing dialog for the MPANL_over_FR Interface component appears.



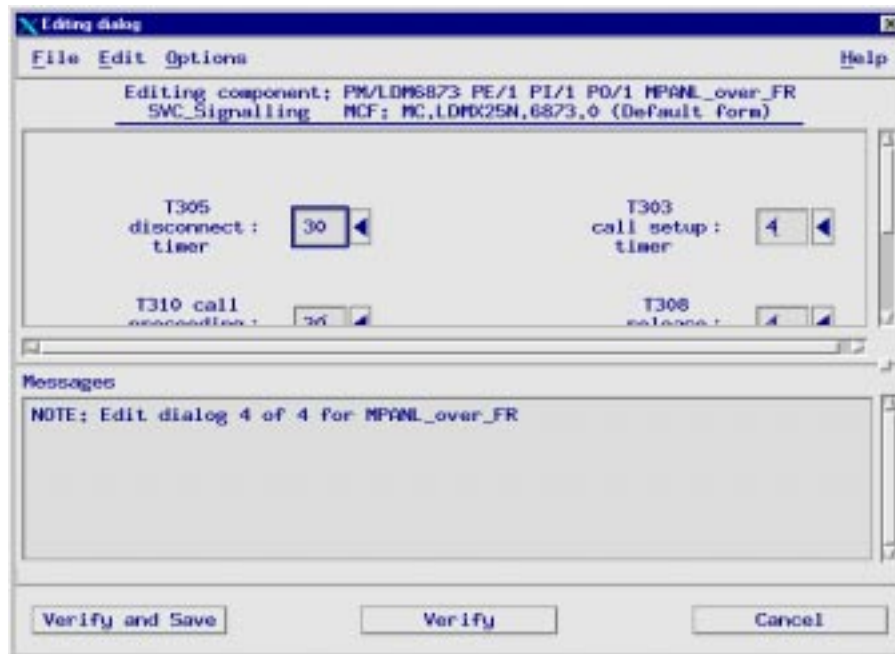
The screenshot shows the 'Editing dialog' window for the 'MPANL_over_FR Interface' component. The title bar reads 'Editing dialog'. The menu bar includes 'File', 'Edit', 'Options', and 'Help'. The main text area displays 'Editing component: PM/LDM6873 PE/1 PI/1 PO/1 MPANL_over_FR Interface MCF: MC.LDMX25N,6873,0 (Default form)'. Below this, there is a 'Service type:' label. Underneath, 'Interface type:' is followed by a dropdown menu showing 'UNI'. Below that is a label 'LMI procedure:' followed by a text input field. At the bottom, there is a 'Messages' section with a text area containing 'NOTE: Edit dialog 2 of 4 for MPANL_over_FR'. At the very bottom are three buttons: 'Verify and Save', 'Verify', and 'Cancel'.

4. Complete the fields in the *Interface* component, and click *Verify and Save*.
The Editing dialog for the Control component appears.



The screenshot shows the 'Editing dialog' window for the 'MPANL_over_FR Control' component. The title bar reads 'Editing dialog'. The menu bar includes 'File', 'Edit', 'Options', and 'Help'. The main text area displays 'Editing component: PM/LDM6873 PE/1 PI/1 PO/1 MPANL_over_FR Control MCF: MC.LDMX25N,6873,0 (Default form)'. Below this, there are four fields with spinners: 'N200 maximum number of retransmit' with a value of 3, 'T200 retransmit timer' with a value of 15, 'Max number of Octets per I frame' with a value of 4096, and 'Window size' with a value of 25. At the bottom, there is a 'Messages' section with a text area containing 'NOTE: Edit dialog 3 of 4 for MPANL_over_FR'. At the very bottom are three buttons: 'Verify and Save', 'Verify', and 'Cancel'.

5. Complete the fields in the *Control* component, and click *Verify and Save*.
The Editing dialog for the SVC_Signalling component appears.



6. Complete the fields in the *SVC_Signalling* component, and click *Verify and Save*.
7. Provision any optional components, for example, *Translation_Validation*, *Charge_Transfer*, *Call_Tariff*, *Direct_Call*, *NUI_And_Translation_Options*, *Custom_Modem_Profile*, and *DNA* under *MPANL_over_FR*.
8. Download and activate the new service data for both ends of the logical connection.

Provisioning Frame Relay 4

Frame Relay is a high-speed access service that provides high-throughput connectivity for such applications as wide-area LAN interconnections via routers.

This section gives you the following information about Frame Relay on Passport 4400 LDM/LEM units:

- standards supported
- sample deployment
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

Frame Relay on Passport 4400 LDM/LEM units complies with these standards:

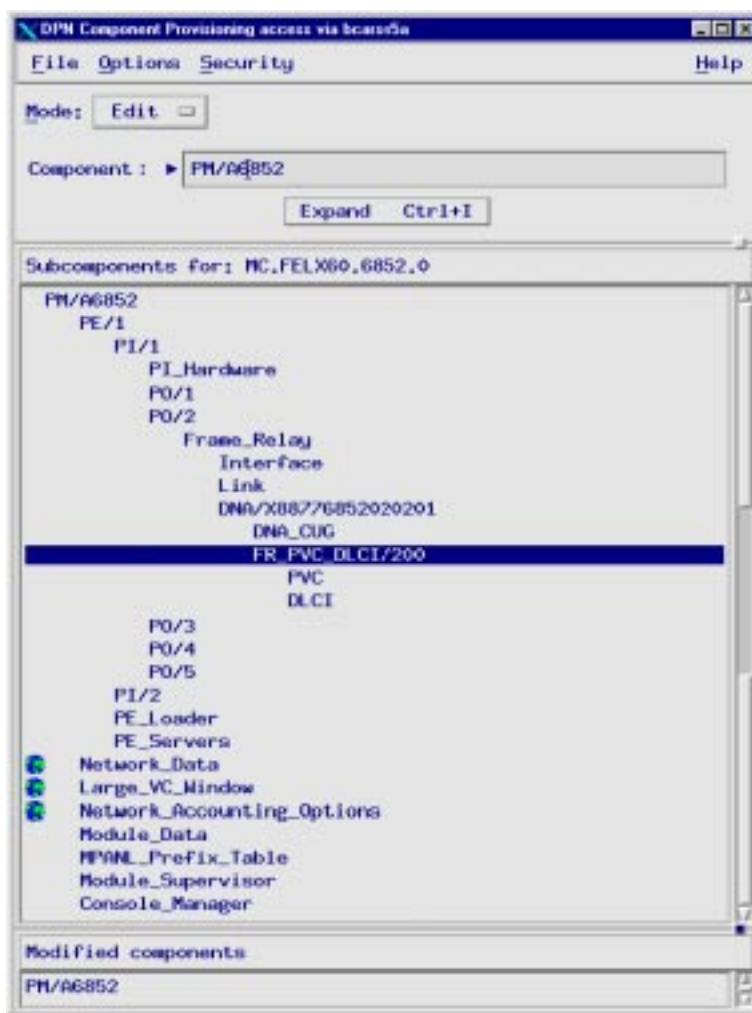
- network-side procedures of the User-to-Network Interface (UNI) based on *The Frame Relay User-to-Network Interface With Extensions, First Issue of Joint Specifications*, Rev 1.0, September 1990, document number 001208966 (Vendor Forum offering). The specification was produced jointly by Northern Telecom Inc., Stratacom Inc., Digital Equipment Corporation, and CISCO.
- network-side and user-side procedures of the Network-to-Network Interface (NNI) based on *The Frame Relay Network-to-Network Interface, Phase 1 Implementation Agreement*, Frame Relay Forum Technical Committee FRF.2, August 26, 1992.
- The CCITT Recommendations Q.933 (03/93), Annex A, "Additional Procedures for Permanent Virtual Connections (PVCs) Using Unnumbered Information Frames."
- The ANSI T1.617-1991, Annex D, "Additional Procedures for Permanent Virtual Connections (PVCs) Using Unnumbered Information Frames."

Sample Deployment

A Frame Relay PVC defined on a Passport 4400 LDM/LEM unit can terminate on another Passport 4400 LDM unit, a Passport or DPN switch, or a Passport 4400 unit. These Frame Relay PVCs can be backed up under the following conditions:

- The DPN Call Redirection System must be available in the network.
- The master end of the PVC must be on the Passport 4400 LDM unit.
- The slave end of the PVC must be on a Passport or DPN port.

Component Hierarchy



Of the components in the hierarchy, only FR_PVC_DLCI is optional; all others are mandatory.

Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961-20 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning Frame Relay on Passport 4400 LDM/LEM Units

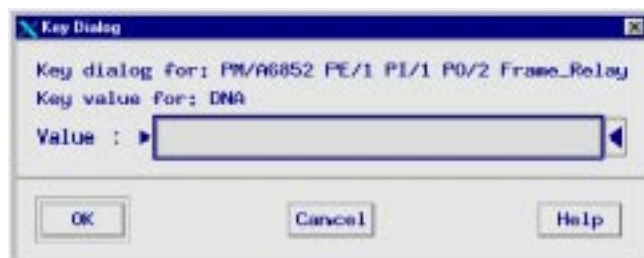
1. Select the PO where Frame Relay is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



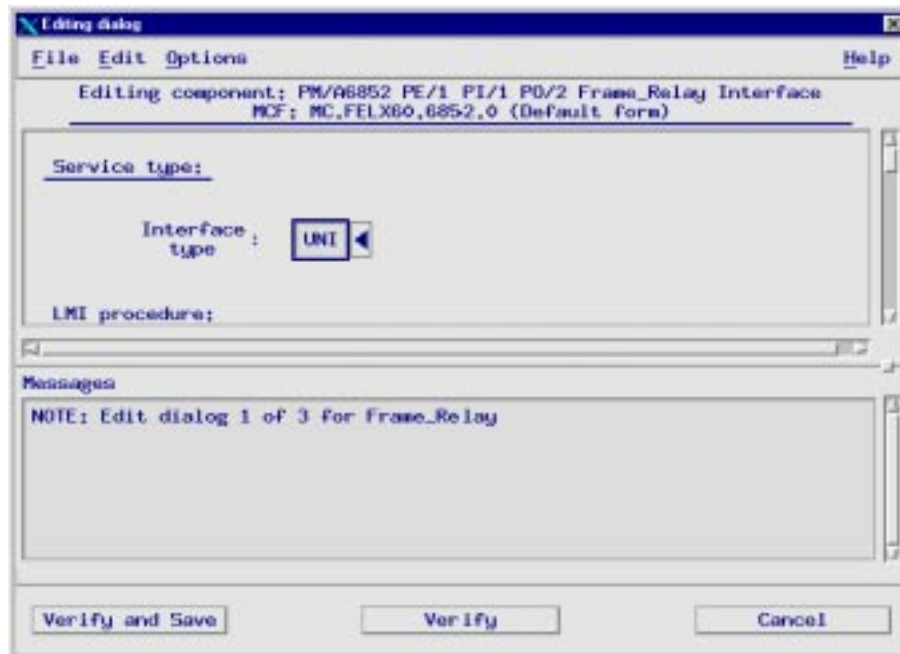
2. Select *Frame_Relay*, and click *OK*.

The Key Dialog for the DNA component appears.



3. Enter the DCA as the key value, and click OK.

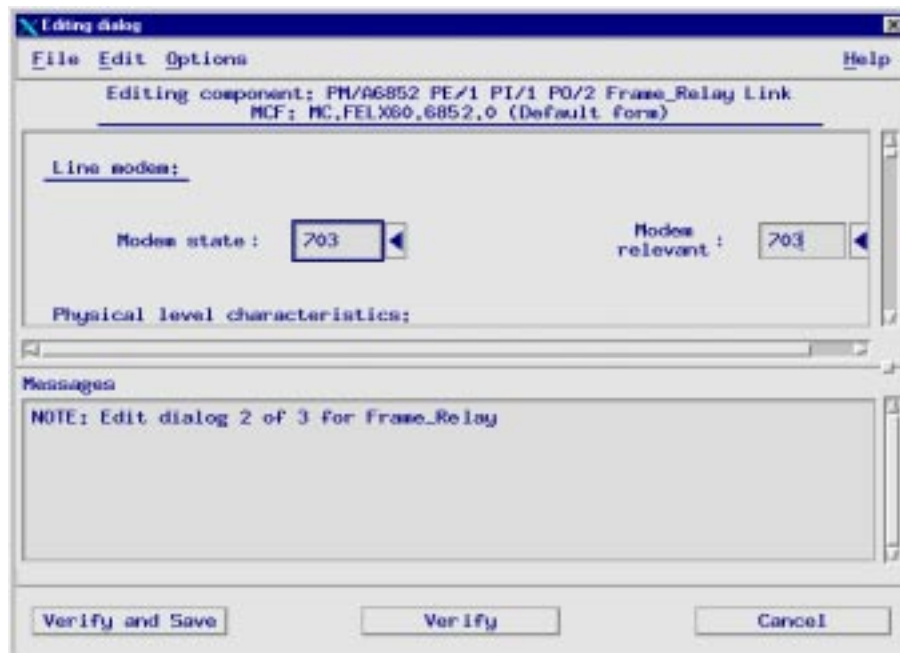
The Editing dialog for the Frame_Relay Interface component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/A6852 PE/1 PI/1 PO/2 Frame_Relay Interface" and "MCF: MC,FELX80,6852,0 (Default form)". Below this, there is a section labeled "Service type:" containing a label "Interface type:" and a dropdown menu showing "UNI". Another label "LMI procedure:" is present but its dropdown is not visible. A "Messages" section at the bottom contains the text "NOTE: Edit dialog 1 of 3 for Frame_Relay". At the very bottom are three buttons: "Verify and Save", "Verify", and "Cancel".

4. Complete the fields in the *Interface* component, and click *Verify and Save*.

The Editing dialog for the Frame_Relay Link component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/A6852 PE/1 PI/1 PO/2 Frame_Relay Link" and "MCF: MC,FELX80,6852,0 (Default form)". Below this, there is a section labeled "Link modem:" containing two labels: "Modem state:" and "Modem relevant:". Both labels have dropdown menus showing the value "703". A label "Physical level characteristics:" is present but its dropdown is not visible. A "Messages" section at the bottom contains the text "NOTE: Edit dialog 2 of 3 for Frame_Relay". At the very bottom are three buttons: "Verify and Save", "Verify", and "Cancel".

5. Complete the fields in the *Link* component, and click *Verify and Save*.
The *Editing dialog* for the *DNA_CUG* component appears.

Editing dialog

File Edit Options Help

Editing component: PM/A6852 PE/1 PI/1 PO/2 Frame_Relay
DNA/X887/68540102 DNA_CUG MCF: MC,FELX80,6852,0 (Default form)

Accounting:

Accounting: class: 38 DSE: q

Forward Disable Pack water

Messages

NOTE: Edit dialog 3 of 3 for Frame_Relay

Verify and Save Verify Cancel

6. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
7. If you are NOT provisioning the *Egress Accounting* component, go to Step 10. Otherwise, select the *Network_Accounting_Options* component, and choose *Edit* from the *Subcomponent Menu*.

The *Editing dialog* for the *Network_Accounting_Options* component appears.

Editing dialog

File Edit Options Help

Editing component: PM/A6852 Network_Accounting_Options
MCF: MC,FELX80,6852,0 (Default form)

Accounting options:

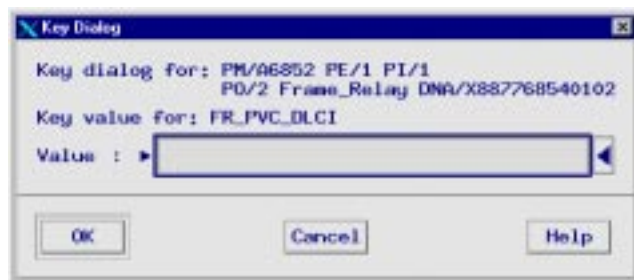
☒ NUI ☒ International
☒ Original called address ☒ GAS
☒ National CUG ☒ International CUG

Messages

Verify and Save Verify Cancel

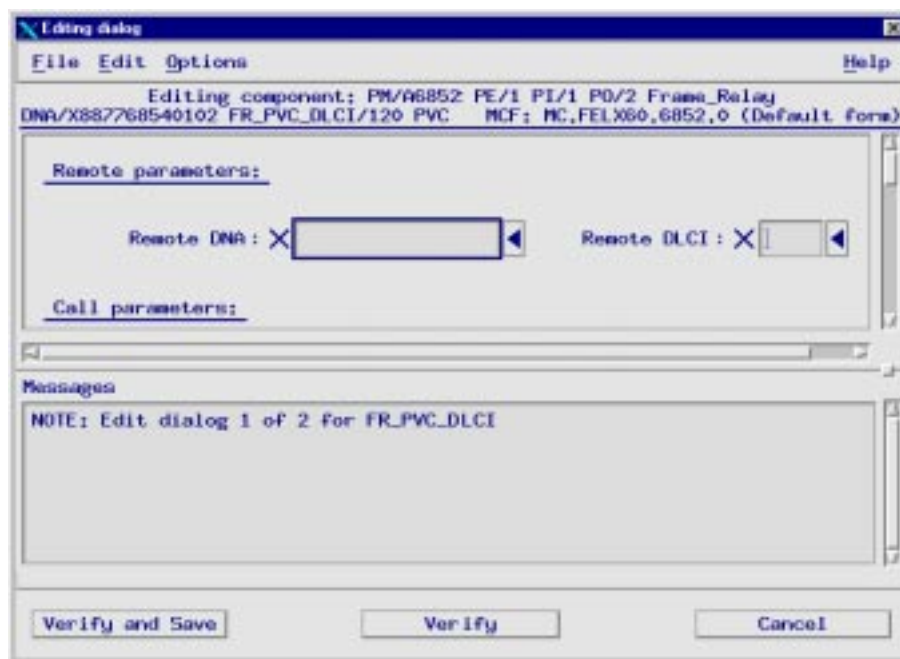
8. Specify the *Network_Accounting_Options*, and click *Verify and Save*.
9. If you are NOT provisioning a FR_PVC_DLCI component, go to Step 15. Otherwise, go to the next step.
10. Return to the Frame Relay port you are provisioning, select the DNA where the PVC is to be provisioned, and add a *FR_PVC_DLCI* component under the DNA.

The Key Dialog for the FR_PVC_DLCI component appears.



11. Enter the data link connection identifier (DLCI) as the key value, and click OK.

The Editing dialog for the PVC component appears.

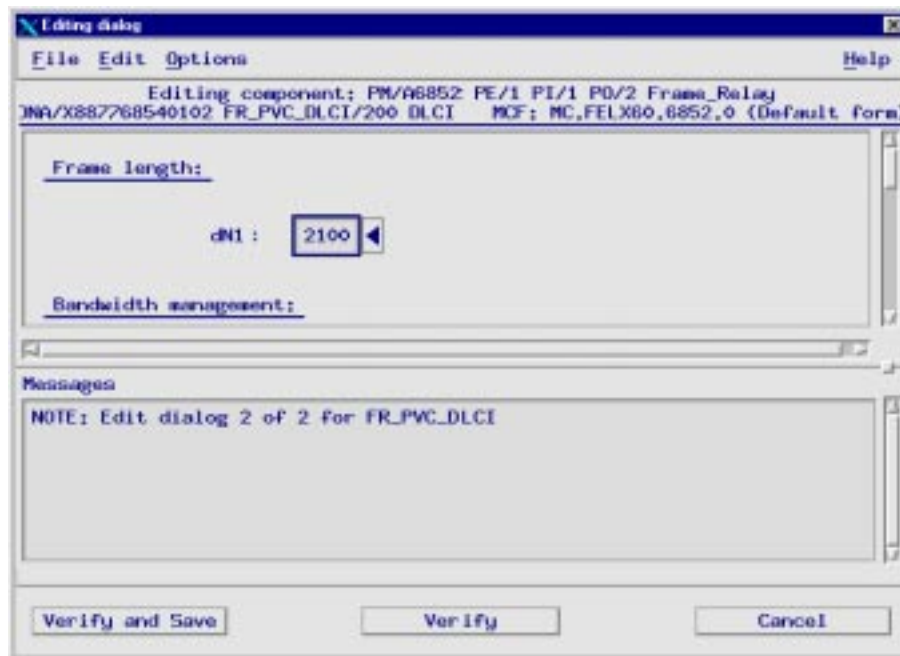


12. Complete the fields for the *PVC* component.

Note: If you are going to provision backup PVCs, do so *after* provisioning the Frame Relay service. See "Provisioning Backup PVCs" on page 4-7 for step-by-step instructions on how to provision such PVCs.

13. Once you have completed the fields for the PVC component, click *Verify and Save*.

The Editing dialog for the DLCI component appears.



14. Complete the fields in the *DLCI* component, and click *Verify and Save*.
15. Download and activate the new service data for both ends of the logical connection.

Provisioning Backup PVCs

Before you start to provision backup PVCs,

- make sure that the DNA of the primary slave end (P) exists and is listed as a primary DNA within the DPN Call Redirection System
- make sure that the DNA of the secondary (backup) slave end (S) exists and is listed as a secondary DNA within the DPN Call Redirection System

If you want to provision the master end (M), do the following:

1. Locate the Frame Relay port where the primary PVC is to originate.
2. Under the *Frame_Relay DNA* component, select the *FR_PVC_DLCI* component for the master end.
3. Edit the *PVC* component, and set the fields in the *PVC* component as follows:
 - Set the *Remote DNA* field to the DNA of the primary slave end (P).
 - Set the *Remote DLCI* field to the DLCI of the primary slave end (P).
 - Set the *Master End* field to *Local*.

- Set the *Slave Calls Master* field to *Yes*.
- Set the *PVC backup* field to *No*.

If you want to provision the primary slave (P), do the following:

1. Locate the Frame Relay port where the primary PVC is to be terminated.
2. Under the *Frame_Relay DNA* component, select the *FR_PVC_DLCI* component for the primary slave.
3. Edit the PVC component, and set the fields as follows:
 - Set the *Remote DNA* field to the DNA of the master end (M).
 - Set the *Remote DLCI* to the DLCI of the master end (M).
 - Set the *Master End* field to *Remote*.
 - Set the *Slave Calls Master* field to *Yes*.
 - Set the field *PVC Backup* field to *Yes*.

If you want to provision the secondary (backup) slave (S), do the following:

1. Locate the Frame Relay port where the backup PVC is to be terminated.
2. Under the *Frame_Relay DNA* component, add a *FR_PVC_DLCI* component for the secondary (backup) slave PVC (S).
3. Edit the PVC component, and set the fields as follows:
 - Set the *Remote DNA* field to the DNA of the master end (M).
 - Set the *Remote DLCI* field to the DLCI of the master end (M).
 - Set the *Master end* field to *Remote*.
 - Set the *Slave calls master* field to *No*.
 - Set the *PVC backup* field to *Yes*.

Provisioning SNA XPAD 5

Passport 4400 LDM/LEM devices support two flavors of the SNA service: SNA Transparent PAD (XPAD) and Token Ring SNA. This chapter focuses on SNA XPAD, “Provisioning Token Ring” on the Token Ring variant.

SNA XPAD provides a number of SDLC link connection options for both Host Packet Assembler/Disassemblers (HPADs) and Terminal Packet Assembler/Disassemblers (TPADs):

- dedicated point-to-point connections in half-duplex and full-duplex modes
- multipoint links in TPAD mode
- SDLC dial-in support for transparent and multi-host modes
- SDLC dial-out support for both transparent and multi-host modes

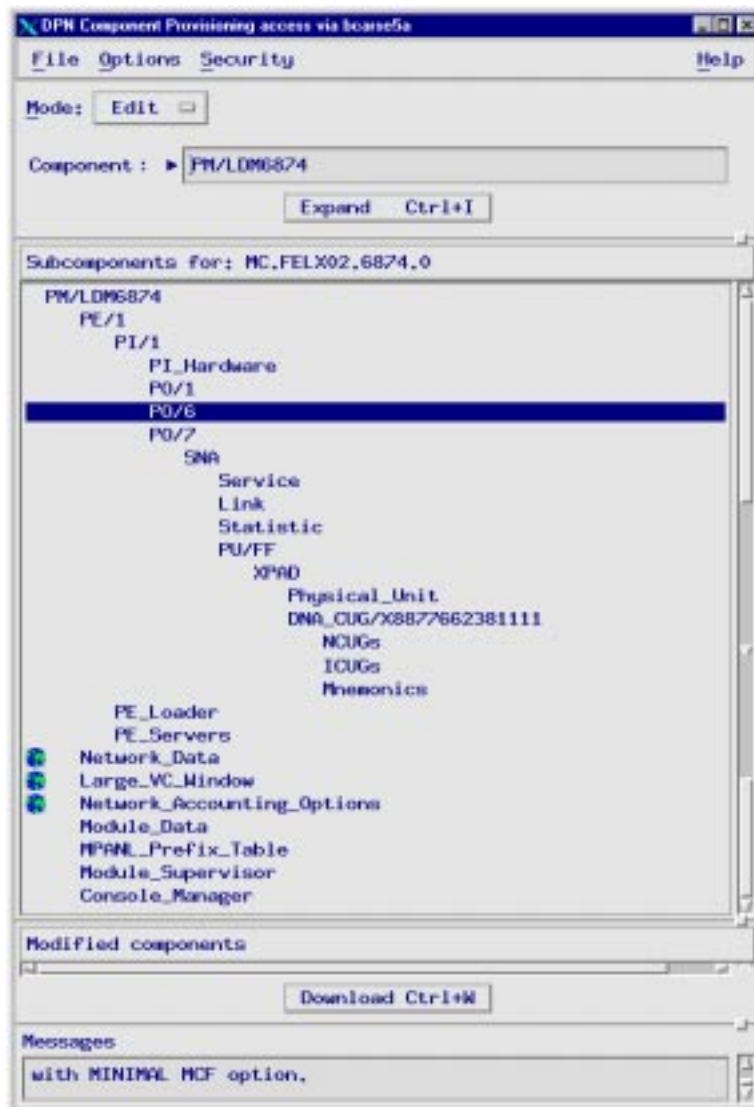
This section covers the following aspects of SNA XPAD on Passport 4400 LDM/LEM units:

- standards supported
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

The SNA XPAD service uses IBM's qualified logical link control (QLLC) protocol for internal communication between TPAD and HPAD.

Component Hierarchy



Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning SNA XPAD on Passport 4400 LDM/LEM Units

1. Select the port where SNA XPAD is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



2. Select *SNA*, and click *OK*.

The Key Dialog for the PU component appears.



3. Enter the station address of the PU as the key value, and click OK.

Note: If the Service Mode is *Configurable*, the key value for the PU must be FF.

The Editing dialog for the SNA Service component appears.

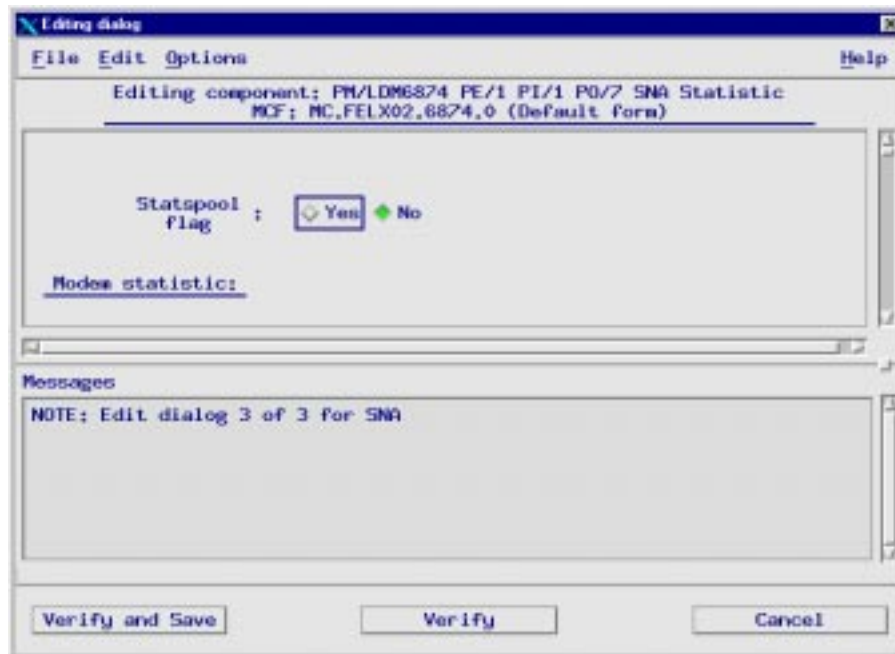
The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PI/1 PO/7 SNA Service" and "MCF: MC,FELX02,6874,0 (Default form)". Below this, there are four spin controls: "Max retransmits:" set to 15, "Max retry:" set to 3, "Max queued data:" set to 50, and "Maximum RU allowed:" set to 4096. At the bottom, there is a "Messages" section with the text "NOTE: Edit dialog 1 of 3 for SNA". The bottom of the dialog features three buttons: "Verify and Save", "Verify", and "Cancel".

4. Complete the fields in the *Service* component, and click *Verify and Save*.

The Editing dialog for the SNA Link component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PI/1 PO/7 SNA Link" and "MCF: MC,FELX02,6874,0 (Default form)". Below this, there is a section labeled "Alarms:" with two spin controls: "OOS alarm:" set to "Minor" and "Modem alarm:" set to "Minor". At the bottom, there is a "Messages" section with the text "NOTE: Edit dialog 2 of 3 for SNA". The bottom of the dialog features three buttons: "Verify and Save", "Verify", and "Cancel".

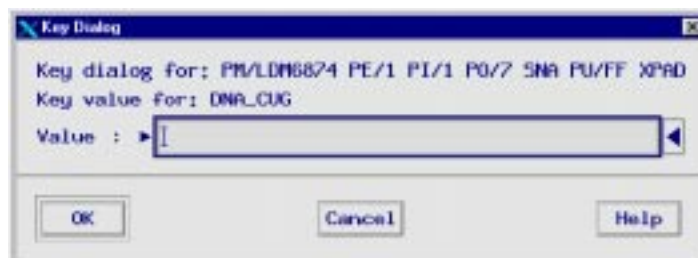
5. Complete the fields in the *Link* component, and click *Verify and Save*.
The Editing dialog for the SNA Statistic component appears.



6. Complete the fields in the *Statistic* component, and click *Verify and Save*.
You are returned to the main provisioning window.
7. Select the PU component, and choose *Add...* from the *Subcomponent Menu*.
The Add Dialog appears.



8. Select the *XPAD* component, and click *OK*.
The Key Dialog for XPAD appears.



9. Enter the DNA associated with this PU as the key value for the DNA_CUG.

The Editing dialog for the Physical_Unit component appears.

The screenshot shows a window titled "Editing dialog" with a menu bar (File, Edit, Options, Help). The title bar also contains a close button. The main area displays the following text:

Editing component: PM/LDM6874 PE/1 PI/1 PO/7 SNA PU/FF XPAD
Physical_Unit MCF: MC,FELX02,6874,0 (Default form)

Below this, there is a section for "SSCP ID:" with a text box containing "00000000" and a dropdown arrow. To the right, there is a "Contact polling:" section with two radio buttons: "XID" (selected) and "SNRM". Below this, there is a "Host:" section with two radio buttons: "Yes" (selected) and "No".

At the bottom, there is a "Messages" section with a text box containing the text: "NOTE: Edit dialog 1 of 2 for XPAD".

At the very bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel".

10. Complete the fields in the *Physical_Unit* component, and click *Verify and Save*.

The Editing dialog for the DNA_CUG component appears.

The screenshot shows a window titled "Editing dialog" with a menu bar (File, Edit, Options, Help). The title bar also contains a close button. The main area displays the following text:

Editing component: PM/LDM6874 PE/1 PI/1 PO/7 SNA PU/FF XPAD
DNA_CUG/X8877662381111 MCF: MC,FELX02,6874,0 (Default form)

Below this, there is a section for "SNA specific parameters:" with a text box containing "Virtual XID:" and a dropdown arrow. To the right, there is a "Protocol ID:" section with two radio buttons: "BNN QLLC 1980" (selected) and "BNN QLLC 1984".

At the bottom, there is a "Messages" section with a text box containing the text: "NOTE: Edit dialog 2 of 2 for XPAD".

At the very bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel".

- 11.** Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
- 12.** Provision any optional components.
- 13.** Download and activate the new service data for both ends of the logical connection.

Provisioning BTDS 6

The Bit Transparent Data Service (BTDS) is a proprietary method of transmitting data. Developed by Northern Telecom, BTDS makes it possible to transport continuous, synchronous, bit-rate data of unknown protocol over a backbone network. (Some vendors call this kind of service constant bit rate (CBR) service.)

BTDS allows for transmission of data at speeds up to 19.2 kbps in point-to-point mode only. BTDS is most effective for transporting data that is not delay sensitive, and it is much more cost-effective than dedicated leased lines.

There are different implementations of BTDS, each unique to the hardware on which it runs. In most cases, the service must link two similar devices: two Passport 4400 LDM/LEM units, for instance, or two Passport switches. The only exception is that BTDS on Passport 4400 LDM/LEM units is compatible with BTDS on MAS-6X units.

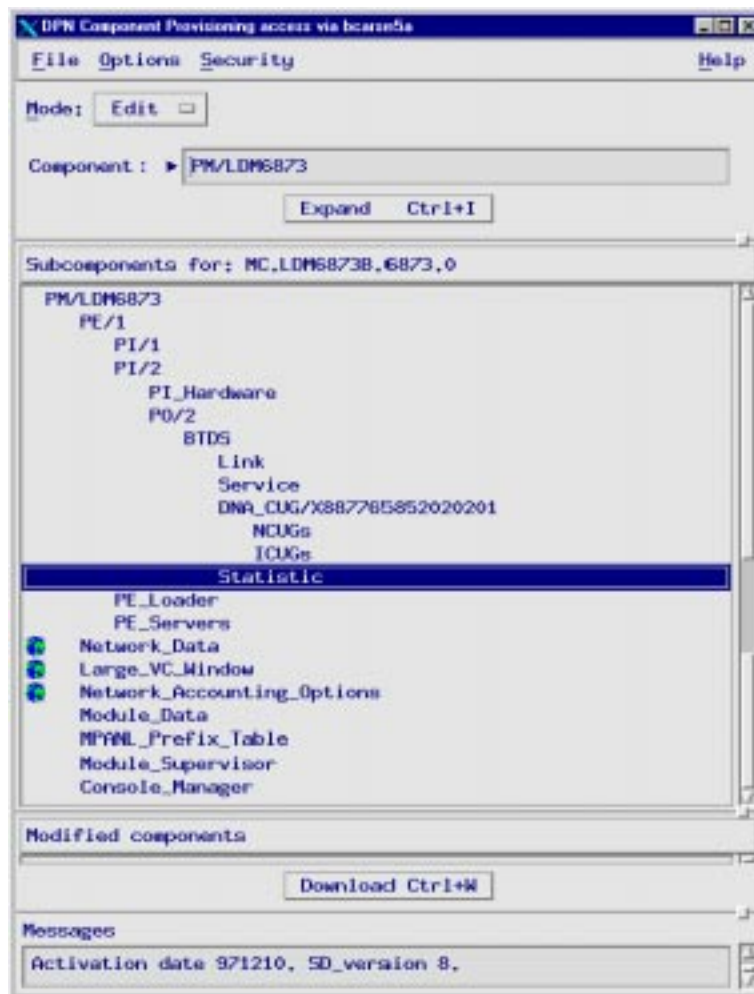
This section covers the following aspects of BTDS on Passport 4400 LDM/LEM units:

- standards supported
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

As a proprietary method of transmitting data, BTDS supports no standards.

Component Hierarchy



Of the components below the BTDS service, these are mandatory:

- DNA_CUG
- Link
- Service
- Statistic

Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).

- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning BTDS on Passport 4400 LDM/LEM Units

1. Select the port where BTDS is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



2. Select *BTDS*, and click *OK*.

The Key Dialog for the DNA_CUG component appears.



3. Enter the DNA_CUG as the key value, and OK.

The Editing dialog for the BTDS Link component appears.

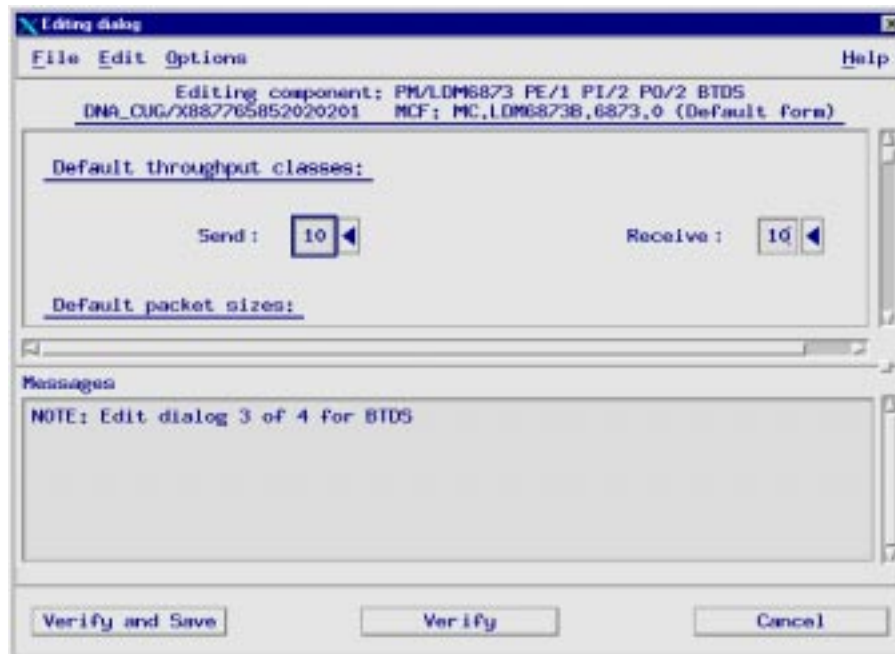
The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area says "Editing component: PM/LDM6873 PE/1 PI/2 PO/2 BTDS Link" and "MCF: MC,LDM6873B,6873,0 (Default form)". Below this is a section labeled "Modes interface:". It contains four spin boxes: "Hardware DTE rel:" with value 303, "Hardware DCE rel:" with value 602, "Hardware" with value 303, and "Hardware" with value 602. Below the spin boxes is a "Messages" section with the text "NOTE: Edit dialog 1 of 4 for BTDS". At the bottom are three buttons: "Verify and Save", "Verify", and "Cancel".

4. Complete the fields in the *Link* component, and click *Verify and Save*.

The Editing dialog for the BTDS Service component appears.

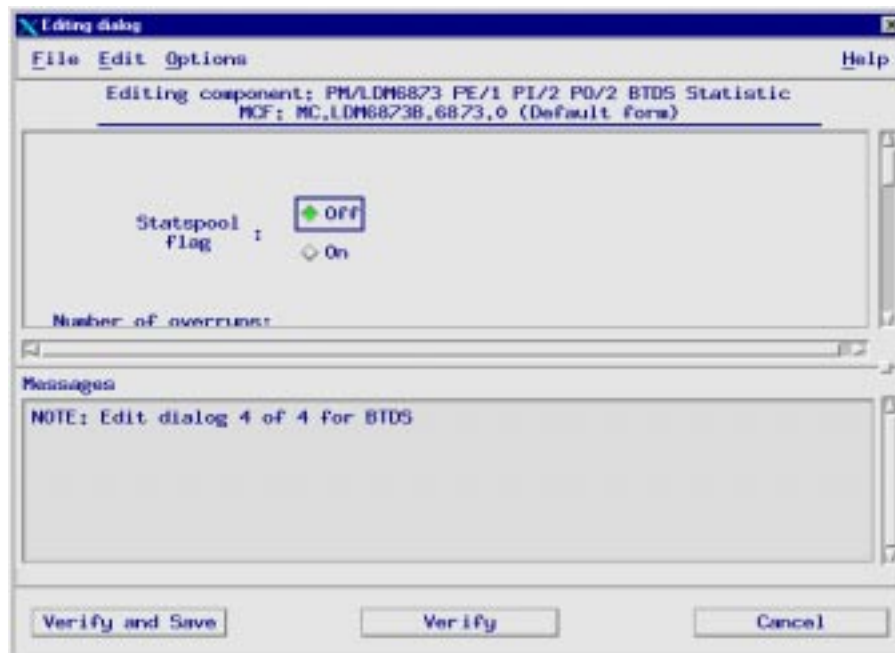
The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area says "Editing component: PM/LDM6873 PE/1 PI/2 PO/2 BTDS Service" and "MCF: MC,LDM6873B,6873,0 (Default form)". Below this is a section with four spin boxes: "Link speed tolerance:" with value 1, "Call retry timeout:" with value 60, "Call retry limit:" with value 2, and "Idle Char:" with value FF. Below the spin boxes is a "Messages" section with the text "NOTE: Edit dialog 2 of 4 for BTDS". At the bottom are three buttons: "Verify and Save", "Verify", and "Cancel".

5. Complete the fields in the *Service* component, and click *Verify and Save*.
The Editing dialog for the BTDS DNA_CUG component appears.



The screenshot shows the 'Editing dialog' window for the BTDS DNA_CUG component. The title bar reads 'Editing dialog'. The menu bar includes 'File', 'Edit', 'Options', and 'Help'. The main text area displays 'Editing component: PM/LDM6873 PE/1 PI/2 PO/2 BTDS DNA_CUG/X882765852020201 MCF: MC,LDM6873B,6873,0 (Default form)'. Below this, there are two sections: 'Default throughput classes:' and 'Default packet sizes:'. Under 'Default throughput classes:', there are two spin boxes: 'Send:' with a value of '10' and 'Receive:' with a value of '10'. Under 'Default packet sizes:', there is a text input field. Below these sections is a 'Messages' pane containing the text 'NOTE: Edit dialog 3 of 4 for BTDS'. At the bottom of the dialog are three buttons: 'Verify and Save', 'Verify', and 'Cancel'.

6. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
The Editing dialog for the BTDS Statistic component appears.



The screenshot shows the 'Editing dialog' window for the BTDS Statistic component. The title bar reads 'Editing dialog'. The menu bar includes 'File', 'Edit', 'Options', and 'Help'. The main text area displays 'Editing component: PM/LDM6873 PE/1 PI/2 PO/2 BTDS Statistic MCF: MC,LDM6873B,6873,0 (Default form)'. Below this, there are two sections: 'Statspool Flag' and 'Number of overruns:'. Under 'Statspool Flag', there is a radio button labeled 'Off' which is selected, and a radio button labeled 'On' which is unselected. Under 'Number of overruns:', there is a text input field. Below these sections is a 'Messages' pane containing the text 'NOTE: Edit dialog 4 of 4 for BTDS'. At the bottom of the dialog are three buttons: 'Verify and Save', 'Verify', and 'Cancel'.

7. Provision any optional components.
8. Download and activate the new service data for both ends of the logical connection.

Provisioning Token Ring 7

In a Token-Ring network, transmission flows in a single direction. Frames are passed from one LAN station to the next in physical sequence along the ring. Access to the ring is controlled by a predefined pattern called a token that continuously circles the ring.

This section gives you the following information about Token Ring on Passport 4400 LDM/LEM units:

- standards supported
- component hierarchy
- step-by-step provisioning instructions

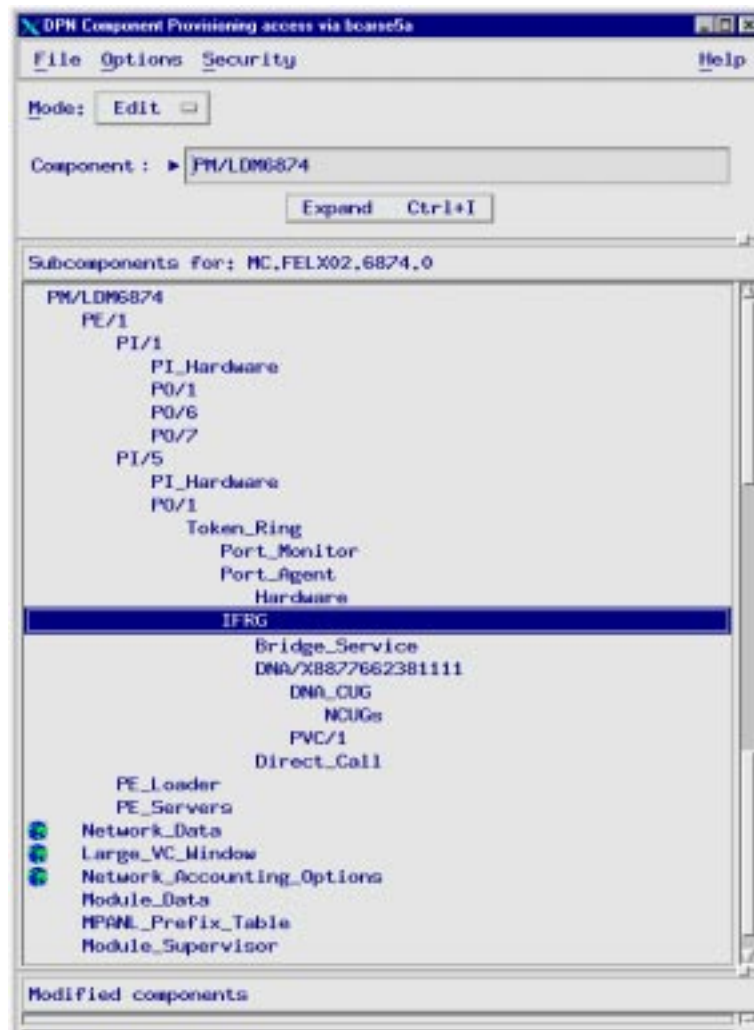
Note: Once you have provisioned the Token-Ring service on a Passport 4400 LDM/LEM unit, you have the option of adding Token Ring IFRG, Token Ring ISRB, or Token Ring SNA PAD. This section presents provisioning instructions for each of these versions of the Token-Ring service.

Standards Supported

The IBM Token-Ring network is a layered protocol that spans two well-defined layers: the data link control layer and the physical layer. The data link control layer is further divided into two sublayers: the logical link control (LLC) sublayer and the medium access control (MAC) sublayer. The LLC sublayer, which is the top sublayer of the data link control layer, is responsible for medium-independent data link functions. This sublayer complies with the IEEE 802.2 standard.

The MAC sublayer defines the procedures for accessing the physical transmission medium. The IBM Token-Ring network MAC sublayer complies with the IEEE 802.5 standard.

Component Hierarchy



Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See "Getting Started," in this document, for more information on these issues.)

Provisioning Token Ring on Passport 4400 LDM/LEM Units

1. Select the port where Token Ring is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.

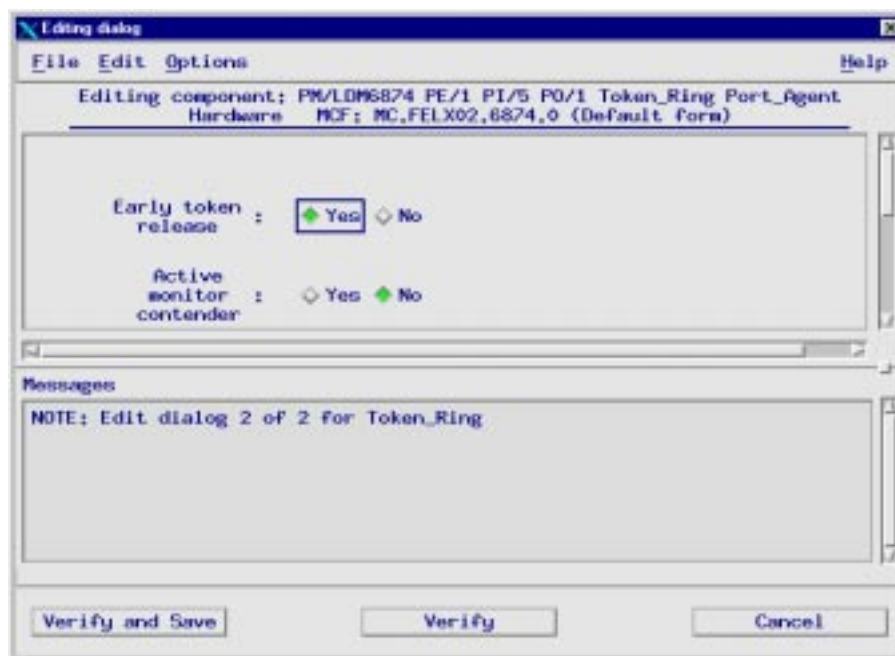


2. Select *Token_Ring*, and click OK.

The Editing dialog for the Token_Ring Port_Monitor component appears.



3. Complete the fields in the *Port_Monitor* component, and click *Verify and Save*.
The *Editing dialog* for the *Token_Ring Port_Agent Hardware* component appears.



4. Complete the fields in the *Port_Agent Hardware* component, and click *Verify and Save*.
5. Provision any optional components.
Note: You may provision any of IFRG, ISRB, and SNA_PAD now OR after provisioning the Token Ring service.
6. Download and activate the new service data for both ends of the logical connection.

Token Ring ISRB

The intelligent source routing bridge (ISRB) provides wide-area connectivity for non-SNA traffic to Token-Ring LANs. The service, which can share the same access port as the Token-Ring SNA PAD, connects Token-Ring Local Area Networks (LAN) to each other over a Wide Area Network (WAN), thus allowing sites that are geographically remote to interconnect.

ISRB implements the source routing algorithm and can be used to handle a variety of protocols, for example, TCP/IP, DECnet, SNA, NETBIOS, and IPX/SPX. However, ISRB is not responsible for error recovery or frame acknowledgments.

ISRB complies with these standards:

- IEEE 802.5, Token-Ring Access Method and Physical Layer Specifications
- IBM Token-Ring Network Architecture (publication SC30-3374-02) for the LAN access method and for the Source Routing bridge protocol

Step-by-Step Provisioning Instructions

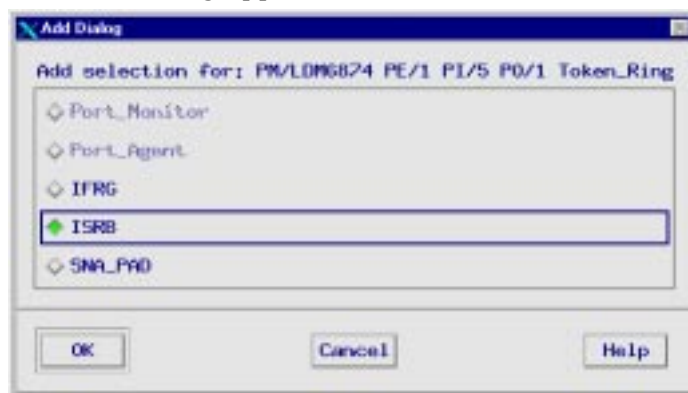
Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning Token Ring ISRB on Passport 4400 LDM/LEM Units

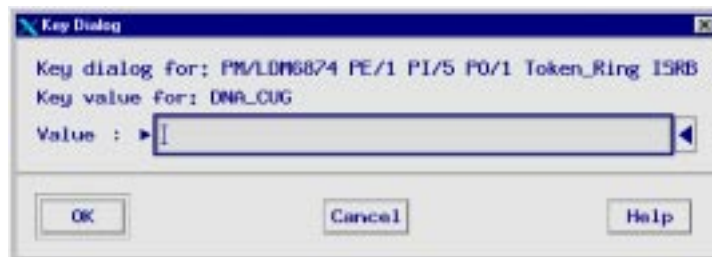
1. Select Token_Ring in the main provisioning window, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



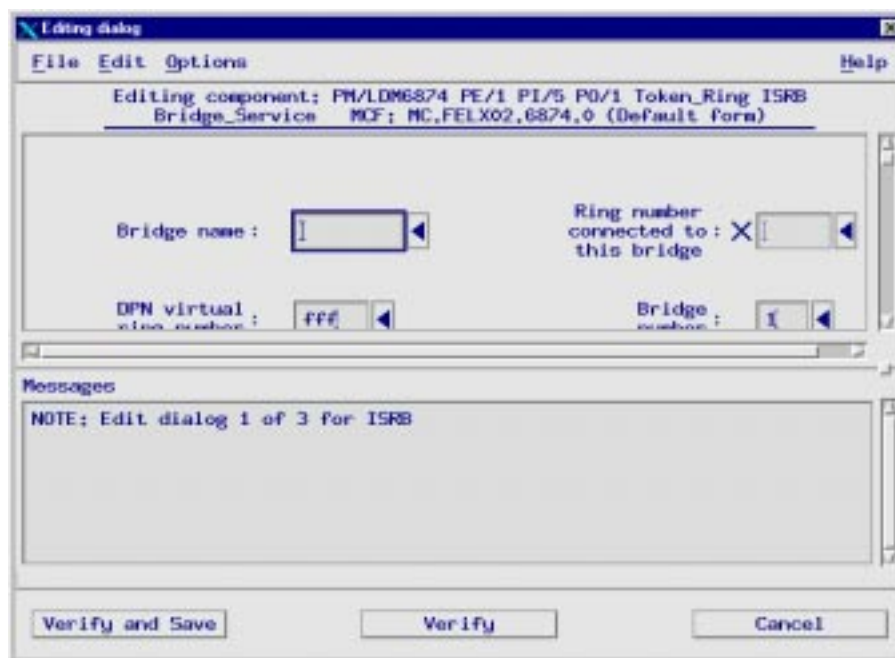
2. Select *ISRB*, and click *OK*.

The Key Dialog for the Token_Ring ISRB DNA_CUG component appears.



3. Enter the DNA_CUG as the key value, and click OK.

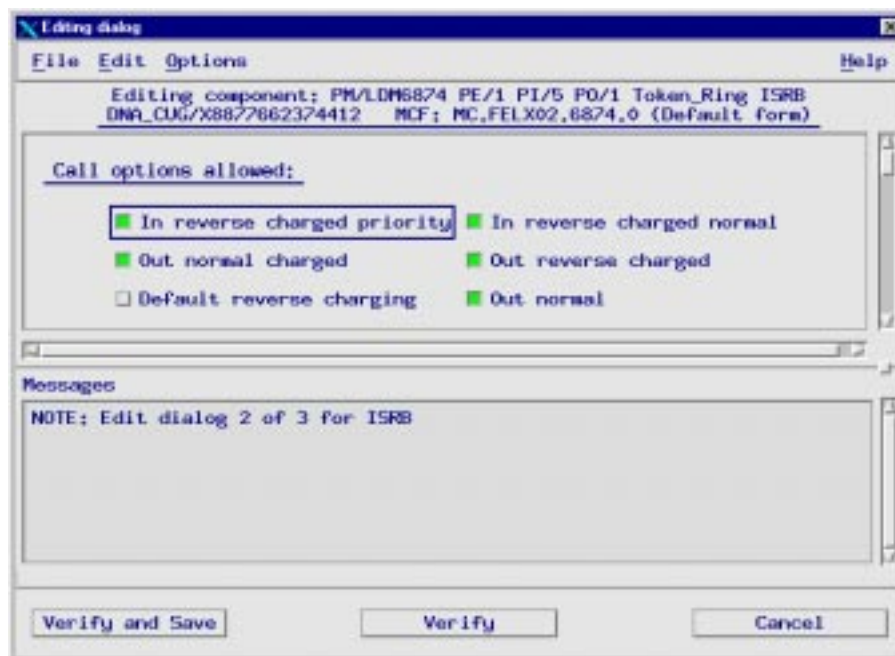
The Editing dialog for the Token_Ring ISRB Bridge_Service component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PI/5 PO/1 Token_Ring ISRB Bridge_Service MCF: MC,FELX02,6874,0 (Default form)". Below this, there are four input fields: "Bridge name:" with a text box containing "1", "Ring number connected to: X" with a text box containing "1", "DPN virtual" with a text box containing "fff", and "Bridge" with a text box containing "1". At the bottom, there is a "Messages" section with the text "NOTE: Edit dialog 1 of 3 for ISRB". The bottom of the dialog features three buttons: "Verify and Save", "Verify", and "Cancel".

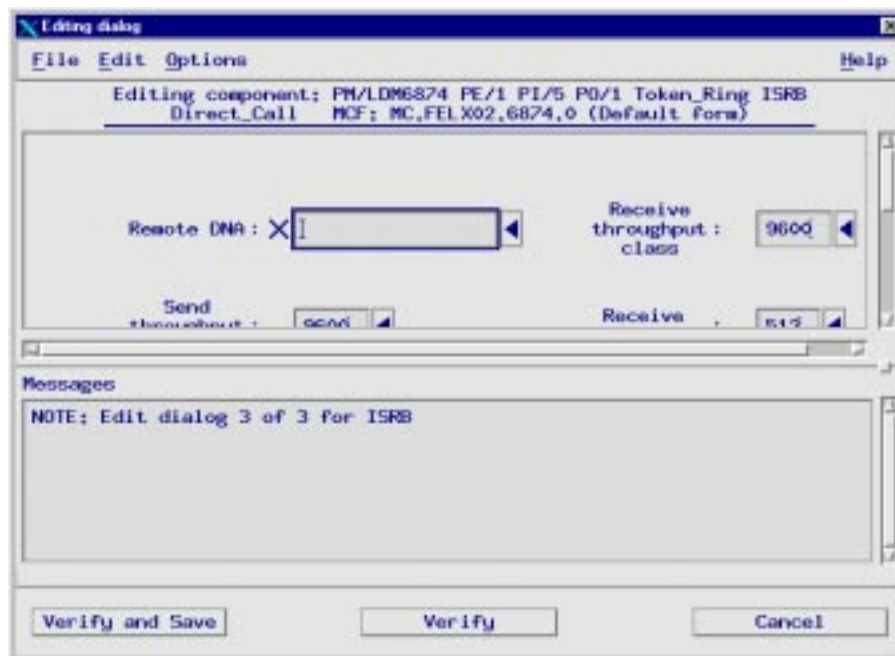
4. Complete the fields in the *Bridge_Service* component, and click *Verify and Save*.

The Editing dialog for the Token_Ring ISRB DNA_CUG component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PI/5 PO/1 Token_Ring ISRB DNA_CUG/X8872662374412 MCF: MC,FELX02,6874,0 (Default form)". Below this, there is a section titled "Call options allowed:" with a list of six options, each with a checkbox: "In reverse charged priority" (checked), "In reverse charged normal" (unchecked), "Out normal charged" (checked), "Out reverse charged" (unchecked), "Default reverse charging" (unchecked), and "Out normal" (checked). At the bottom, there is a "Messages" section with the text "NOTE: Edit dialog 2 of 3 for ISRB". The bottom of the dialog features three buttons: "Verify and Save", "Verify", and "Cancel".

5. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*. The *Editing dialog* for the *Token_Ring ISRB Direct_Call* component appears.



6. Complete the fields in the *Direct_Call* component, and click *Verify and Save*.
7. Provision any optional components.
8. Download and activate the new service data for both ends of the logical connection.

Token Ring IFRG

The ISRB Frame Relay gateway (IFRG) service connects other source-routing bridge implementations to ISRB over a Frame Relay link. IFRG is the same as ISRB except that a mandatory Frame Relay (FR) Permanent Virtual Circuit (PVC) envelope replaces the Token-Ring LAN interface in basic ISRB service.

IFRG complies with IEEE 802.5, Token-Ring Access Method and Physical Layer Specifications.

LAN traffic can be transported between two WAN networks using IFRG services. Both ISRB and IFRG on the same virtual ring report to the same broadcast server. Connections between IFRGs and broadcast servers are through general SVCs. They are established using a direct call mechanism, as in basic ISRB service. Broadcast traffic destined for stations attached to another network is sent using the FR PVC. The IFRG service uses the FR VC to transfer both broadcast and specifically routed frames.

Step-by-Step Provisioning Instructions

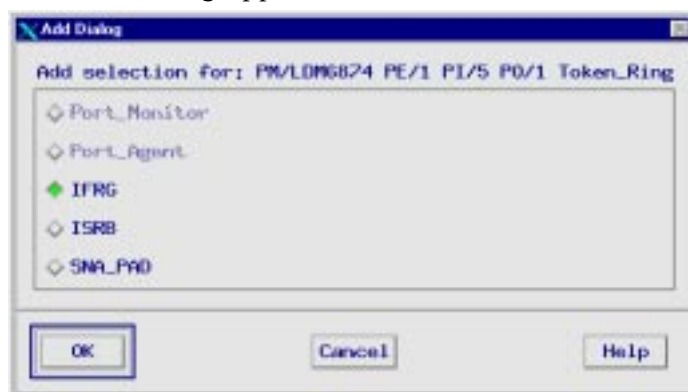
Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning Token Ring IFRG on Passport 4400 LDM/LEM Units

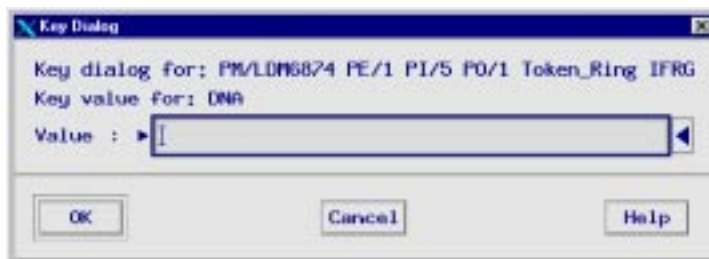
1. Select Token_Ring in the main provisioning window, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



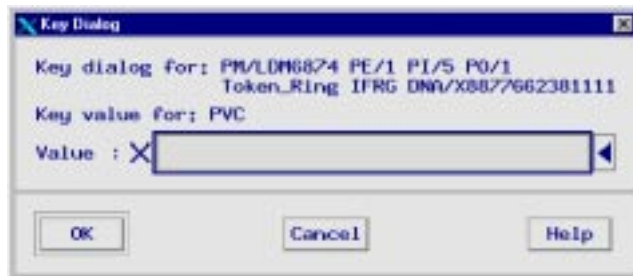
2. Select *IFRG*, and click *OK*.

The Key Dialog for the Token_Ring IFRG DNA component appears.



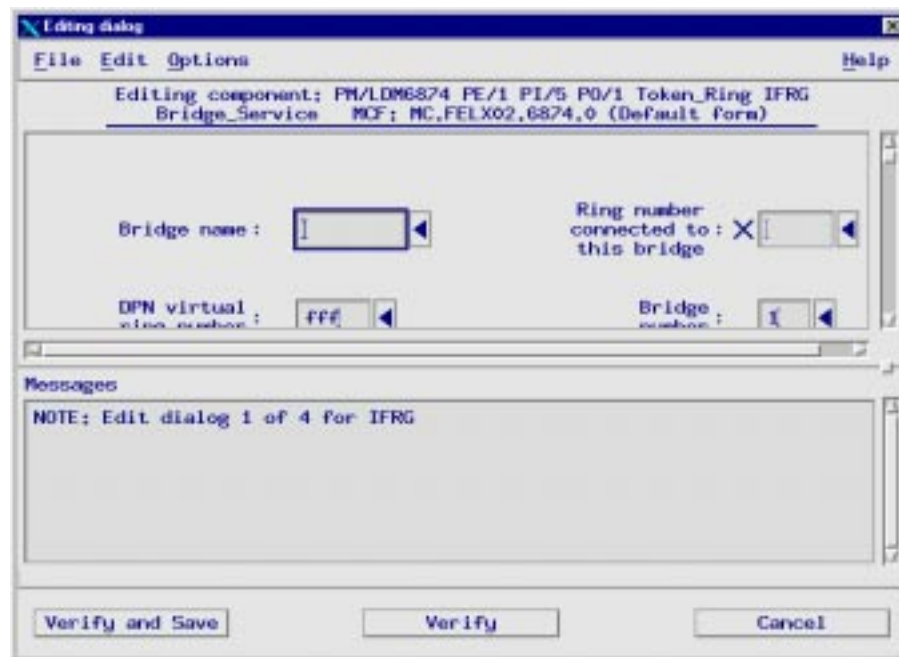
3. Enter the DNA as the key value, and click OK.

The Key Dialog for the Token_Ring IFRG PVC component appears.

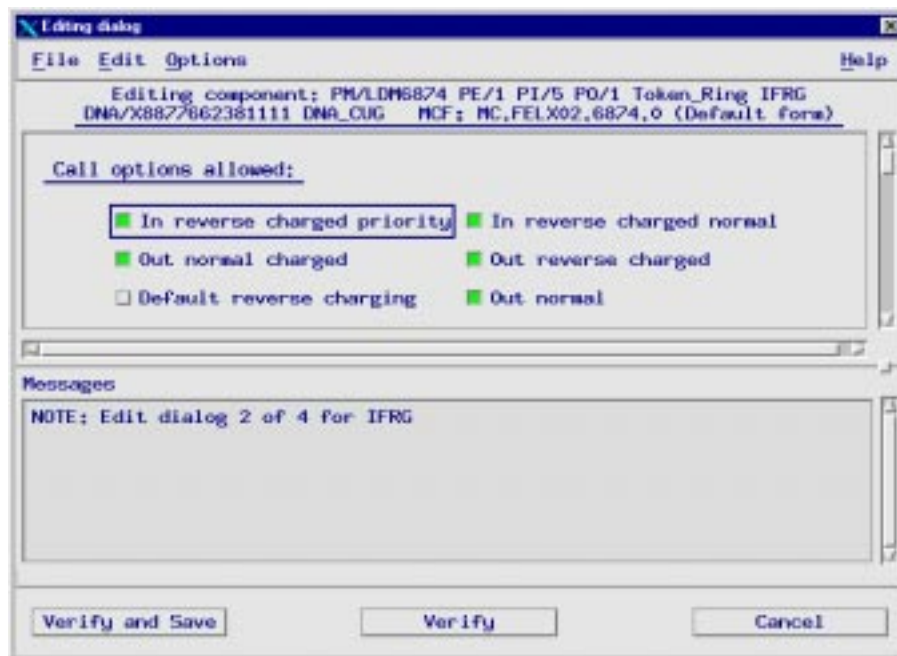


4. Enter the key value, and click OK.

The Editing dialog for the Token_Ring IFRG Bridge_Service component appears.

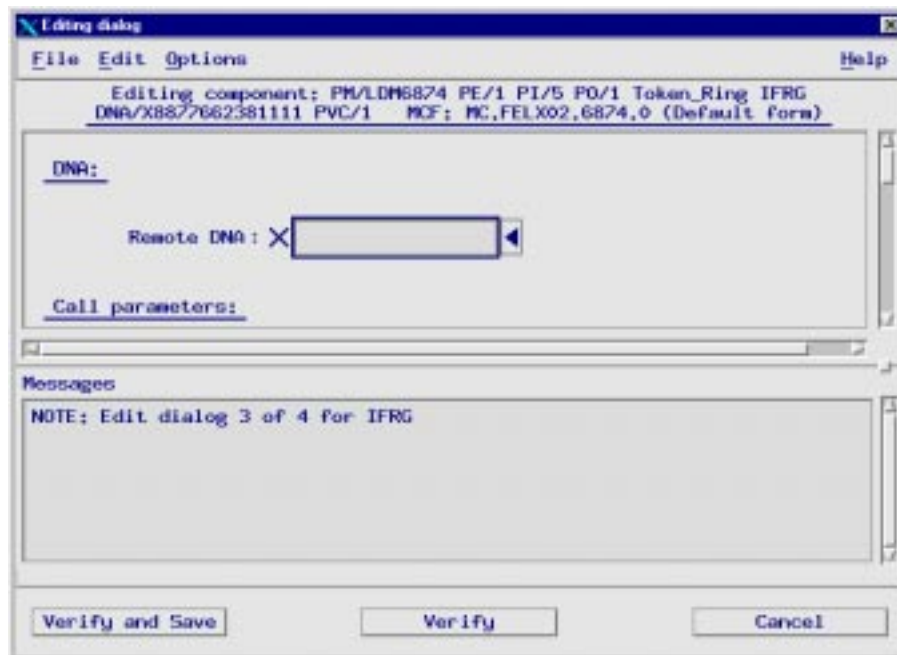


5. Complete the fields in the *Bridge_Service* component, and click *Verify and Save*.
The Editing dialog for the Token_Ring IFRG DNA_CUG component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays: "Editing component: PM/LDM6874 PE/1 PI/5 PO/1 Token_Ring IFRG DNA/X8827662381111 DNA_CUG MCF: MC,FELX02,6874,0 (Default form)". Below this, under the heading "Call options allowed:", there are six checkboxes arranged in two columns. The first column contains "In reverse charged priority" (checked), "Out normal charged" (checked), and "Default reverse charging" (unchecked). The second column contains "In reverse charged normal" (checked), "Out reverse charged" (checked), and "Out normal" (checked). At the bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel". A "Messages" pane at the bottom left shows the text: "NOTE: Edit dialog 2 of 4 for IFRG".

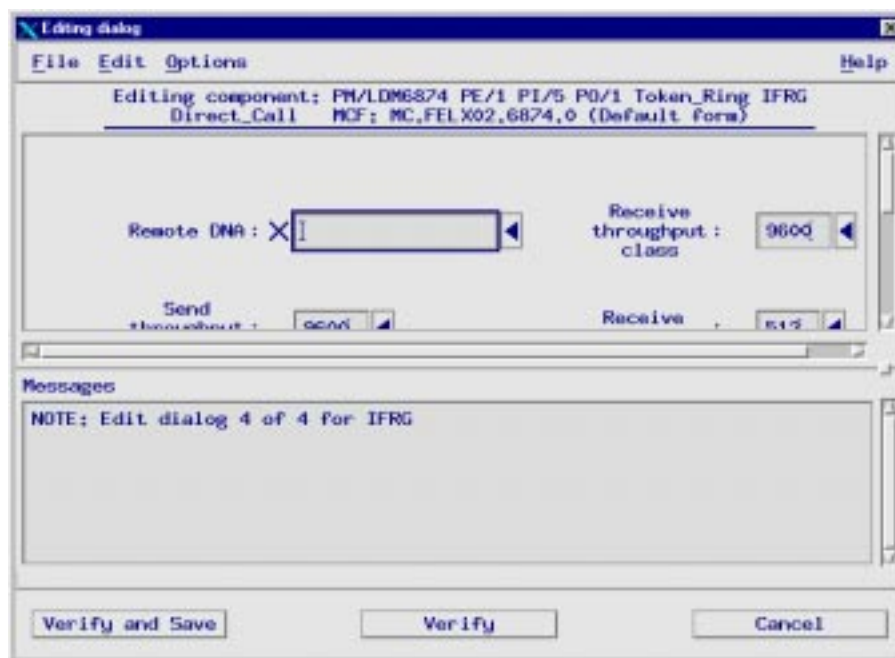
6. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
The Editing dialog for the Token_Ring IFRG PVC component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays: "Editing component: PM/LDM6874 PE/1 PI/5 PO/1 Token_Ring IFRG DNA/X8827662381111 PVC/1 MCF: MC,FELX02,6874,0 (Default form)". Below this, under the heading "DNA:", there is a label "Remote DNA:" followed by a text input field. Under the heading "Call parameters:", there is a large empty text area. At the bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel". A "Messages" pane at the bottom left shows the text: "NOTE: Edit dialog 3 of 4 for IFRG".

7. Complete the fields in the PVC component, and click *Verify and Save*.

The Editing dialog for the Token_Ring IFRG Direct_Call component appears.



8. Complete the fields in the *Direct_Call* component, and click *Verify and Save*.
9. Provision any optional components.
10. Download and activate the new service data for both ends of the logical connection.

Token Ring SNA PAD

The Token-Ring SNA PAD service provides a high-speed medium for interfacing with a host so that traffic from several far-side terminals can be concentrated on a few Token-Ring connections.

In the context of Passport 4400 LDM/LEM units, Token-Ring SNA PAD appears on the ring as a single LAN station, looking like multiple switched physical units (PUs) to the host.

Step-by-Step Provisioning Instructions

Before you begin . . .

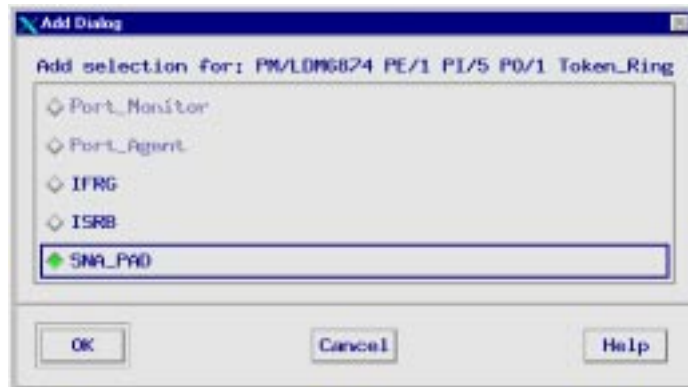
- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that

Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning Token Ring SNA PAD on Passport 4400 LDM/LEM units

1. Select Token_Ring in the main provisioning window, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



2. Select *SNA_PAD*, and click *OK*.

The Key Dialog for the Token_Ring SNA_PAD Device component appears.



3. Enter the key value, and click *OK*.

The Key Dialog for the Token_Ring SNA_PAD DNA component appears.



4. Enter the DNA as the key value, and click OK.

The Editing dialog for the Token_Ring SNA_PAD SNA_PAD_Service component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PI/5 PO/1 Token_Ring SNA_PAD SNA_PAD_Service MCF: MC,FELX02,6874,0 (Default form)". Below this, there are two spin boxes: "Max number of link : 255" and "Access priority : 4". A text field labeled "Customer network management identifier (CID):" is empty. At the bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel". A "Messages" pane at the bottom left contains the text "NOTE: Edit dialog 1 of 3 for SNA_PAD".

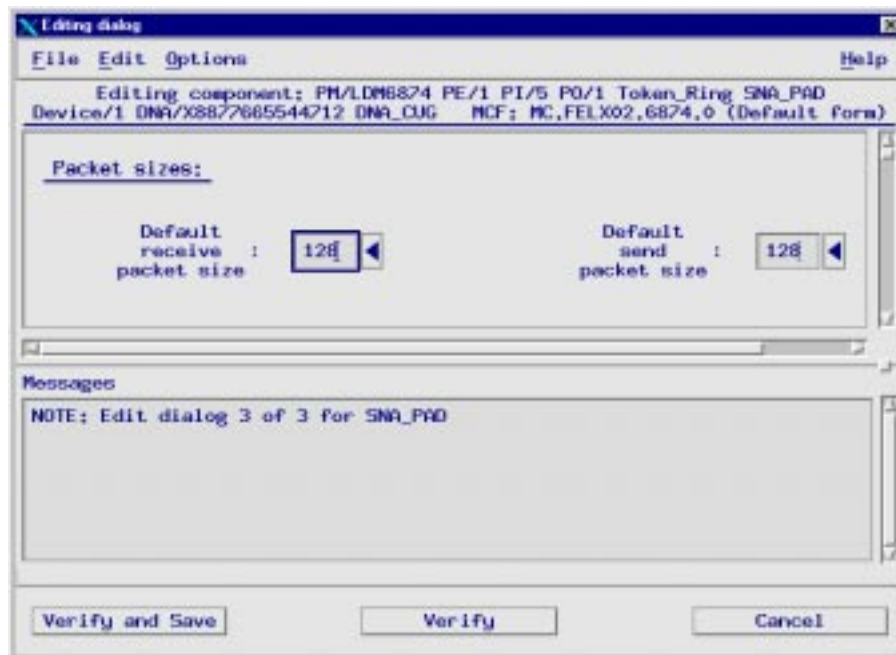
5. Complete the fields in the SNA_PAD_Service component, and click *Verify and Save*.

The Editing dialog for the Token_Ring SNA_PAD SNA_PAD_Device component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PI/5 PO/1 Token_Ring SNA_PAD Device/1 SNA_PAD_Device MCF: MC,FELX02,6874,0 (Default form)". Below this, there are two spin boxes: "Device type: Host PU" and "Max number of link : 255". A text field labeled "Device name:" is empty. At the bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel". A "Messages" pane at the bottom left contains the text "NOTE: Edit dialog 2 of 3 for SNA_PAD".

6. Complete the fields in the *SNA_PAD_Device* component, and click *Verify and Save*.

The Editing dialog for the Token_Ring SNA_PAD DNA_CUG component appears.



7. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
8. Provision any optional components.
9. Download and activate the new service data for both ends of the logical connection.

Provisioning Asynchronous ITI **8**

Interactive terminal interface (ITI) services make possible asynchronous terminal-to-terminal or terminal-to-destination computer communication. ITI services provide network access through a packet assembler/disassembler (PAD) for devices over dial-up or dedicated lines.

Typical applications include the following:

- data collection systems for order entry, job control and process control
- systems for inventory control, accounts receivable/payable, inquiry/response, purchase order control and reservation systems
- development, business systems, and scientific time-sharing for program computation
- PC access to the Internet (point-to-point over ITI)
- T3 point of sale

This section covers the following aspects of ITI on Passport 4400 LDM/LEM units:

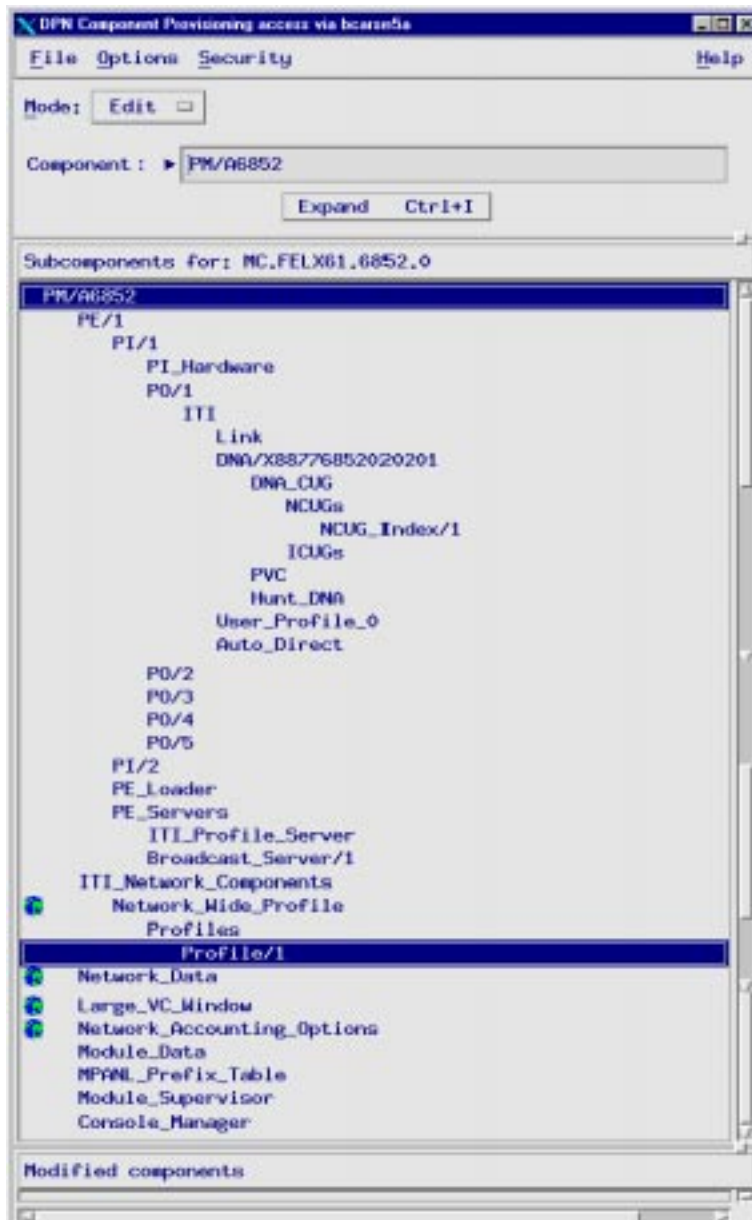
- standards supported
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

The ITI service is compatible with ITU-T Recommendation X.3, X.28, and X.29 (1984) and is backward compatible with 1976 standards. ITI provides network access for low-speed, asynchronous start-stop devices over dial-up or dedicated access lines. ("Low speed" refers to speeds up to 38,400 bps.)

Dial-in on ITI and dial-out on host ITI (ITHI) are supported.

Component Hierarchy



Of the components below the service in the hierarchy, only three are mandatory: Link, DNA, and DNA_CUG.

Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning ITI on Passport 4400 LDM/LEM Units

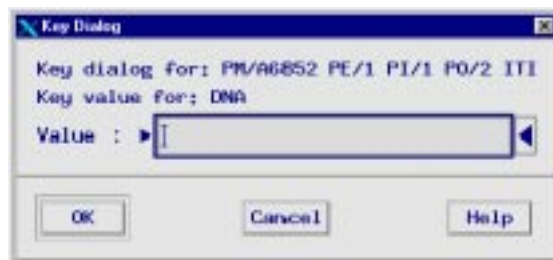
1. Select the port where ITI is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



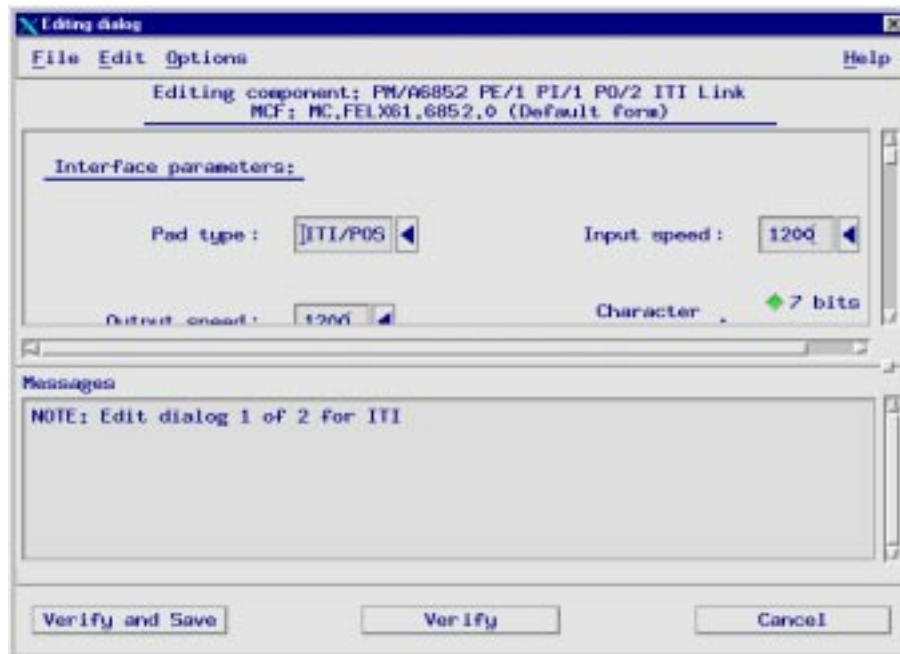
2. Select *ITI*, and click *OK*.

The Key Dialog for the DNA component appears.



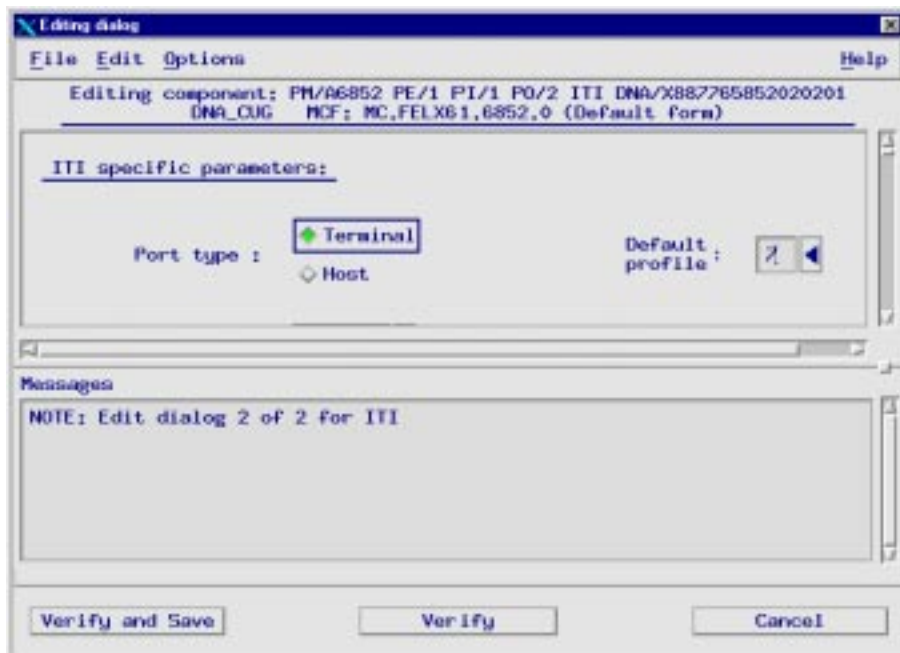
3. Enter the DNA as the key value, and click OK.

The Editing dialog for the ITI Link component appears.



4. Complete the fields in the *Link* component, and click *Verify and Save*.

The Editing dialog for the DNA_CUG component appears.



5. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.

6. Provision any optional components.

- Notes:**
- If you have entered a zero in the *Default profile* field of the *DNA_CUG* component, then you may add either the *User_Profile_0* component or the *ITI_Network_Profile* component.
 - You may add either the *Auto_Direct* component or the *PVC* component, but not both.

7. Download and activate the new service data for both ends of the logical connection.

Provisioning X.25 9

The X.25 service handles customer DTEs that are connected to the PP4400 LDM/LEM unit. The PP4400 LDM/LEM ports use the standard high-level data link control (HDLC) line protocol for DTE communications.

This section gives you the following information about X.25 on Passport 4400 LDM/LEM units:

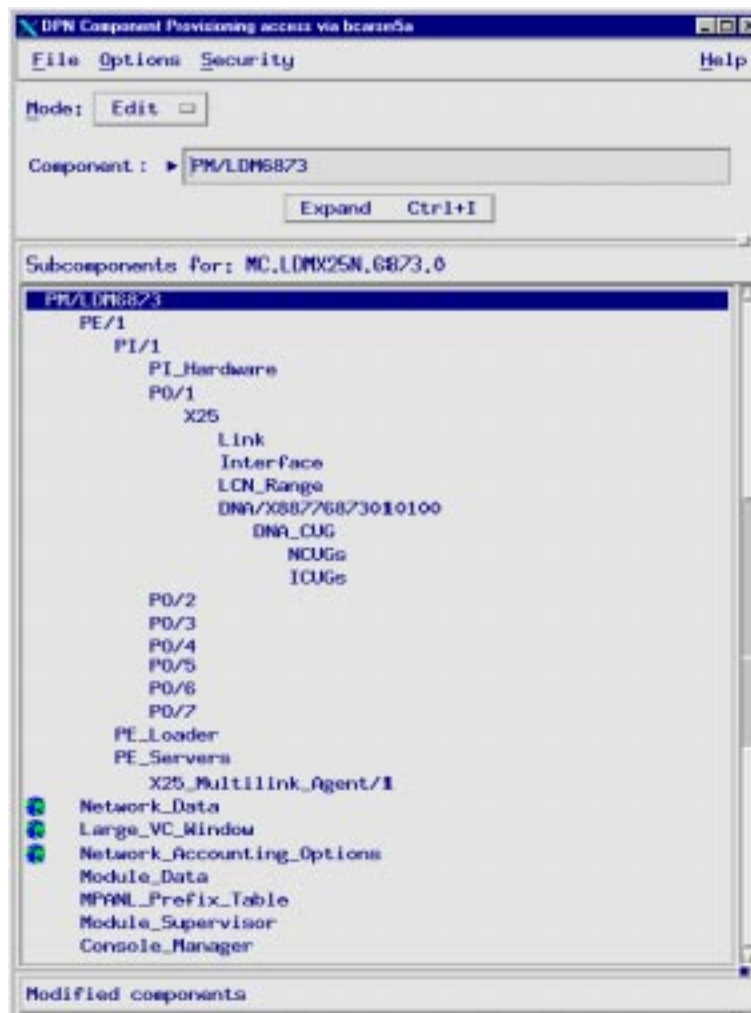
- standards supported
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

Of the X.25 services available (X.25, X.25_DEB, X.25_Multilink, X.25_Gateway, and X.25_Multilink_Gateway), only X.25 is supported on Passport 4400 LDM/LEM units.

The X.25 service on Passport 4400 LDM/LEM units complies with ITU-T Recommendation X.25 (1992) and is backward compatible with 1988 and 1984 standards.

Component Hierarchy



Of the components below the service, these five are mandatory:

- Link
- Interface
- LCN_Range
- DNA
- DNA_CUG

Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1951-xx *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning X.25 on Passport 4400 LDM/LEM Units

1. Select the port where X.25 is to be provisioned, and choose *Add...* from the *Subcomponent*

The Add Dialog appears.



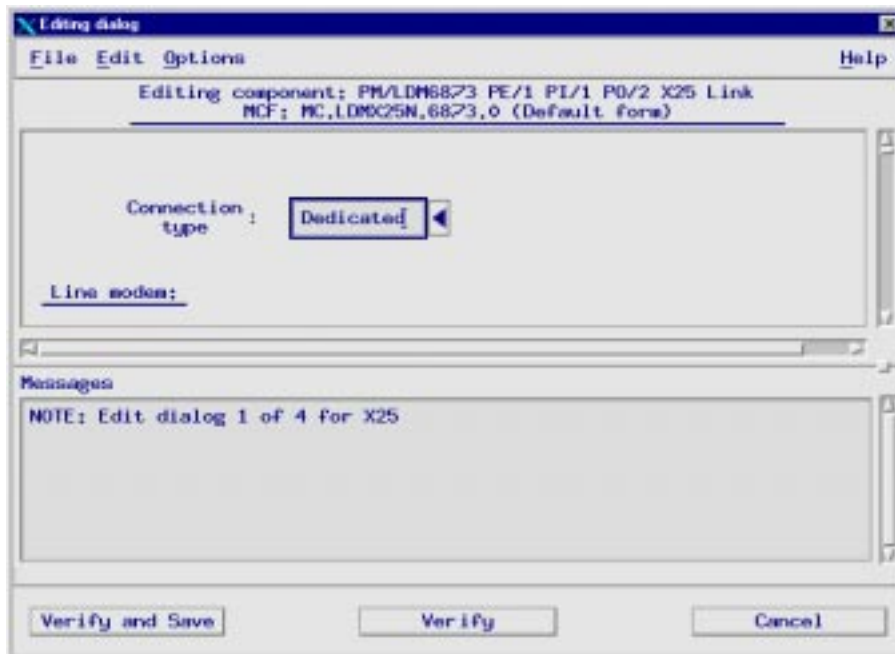
2. Select X25, and click OK.

The Key Dialog for the DNA component appears.



3. Enter the DNA as the key value, and click OK.

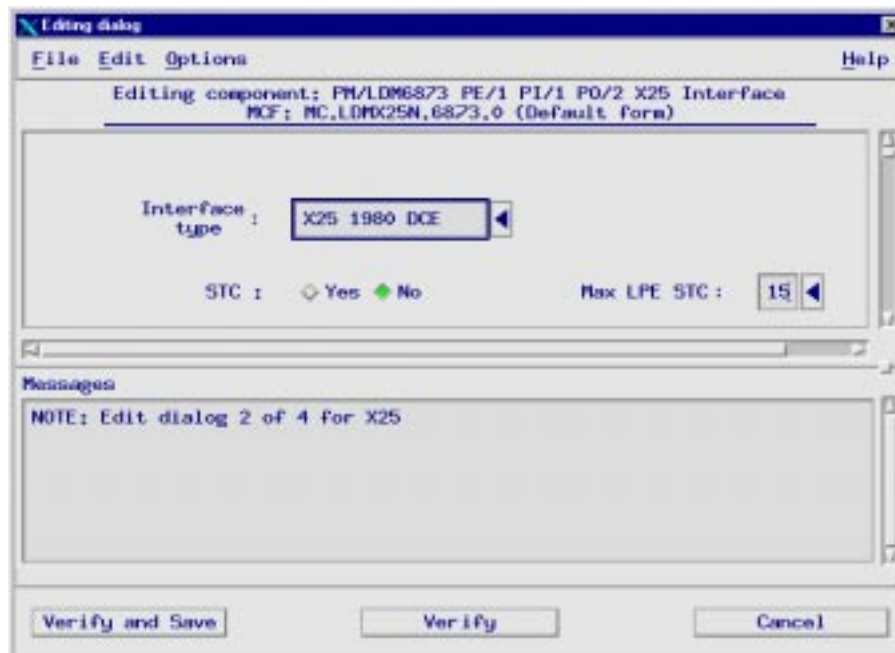
The Editing dialog for the X25 Link component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6873 PE/1 PI/1 PO/2 X25 Link" and "MCF: MC,LDMC25N,6873,0 (Default form)". Below this, the "Connection type" is set to "Dedicated" in a dropdown menu. The "Line modem:" field is empty. A "Messages" section at the bottom contains the text "NOTE: Edit dialog 1 of 4 for X25". At the very bottom are three buttons: "Verify and Save", "Verify", and "Cancel".

4. Complete the fields in the *Link* component, and click *Verify and Save*.

The Editing dialog for the X25 Interface component appears.



The dialog box is titled "Editing dialog" and has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6873 PE/1 PI/1 PO/2 X25 Interface" and "MCF: MC,LDMX25N,6873,0 (Default form)". Below this, the "Interface type" is set to "X25 1980 DCE" in a dropdown menu. The "STC 1" field has radio buttons for "Yes" and "No", with "No" selected. The "Max LPE STC" field is set to "15" in a dropdown menu. A "Messages" section at the bottom contains the text "NOTE: Edit dialog 2 of 4 for X25". At the very bottom are three buttons: "Verify and Save", "Verify", and "Cancel".

5. Complete the fields in the *Interface* component, and click *Verify and Save*.
The *Editing dialog* for the *X25 LCN_Range* component appears.

6. Complete the fields in the *LCN_Range* component, and click *Verify and Save*.
The *Editing dialog* for the *DNA_CUG* component appears.

7. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
8. Provision any optional components.
9. Download and activate the new service data for both ends of the logical connection.

Provisioning HTDS 10

The HDLC transparent data service (HTDS) transmits high-level data link control (HDLC) frames across a network, regardless of the specific HDLC-based protocol used to create the frames. Moreover, HTDS routes these frames unchanged, or *transparently*. (The HDLC protocol is a set of ISO-defined procedures for carrying data over a link, usually with error detection and flow control.)

This section gives you the following information about HTDS on Passport 4400 LDM/LEM units:

- standards supported
- component hierarchy
- step-by-step provisioning instructions

Standards Supported

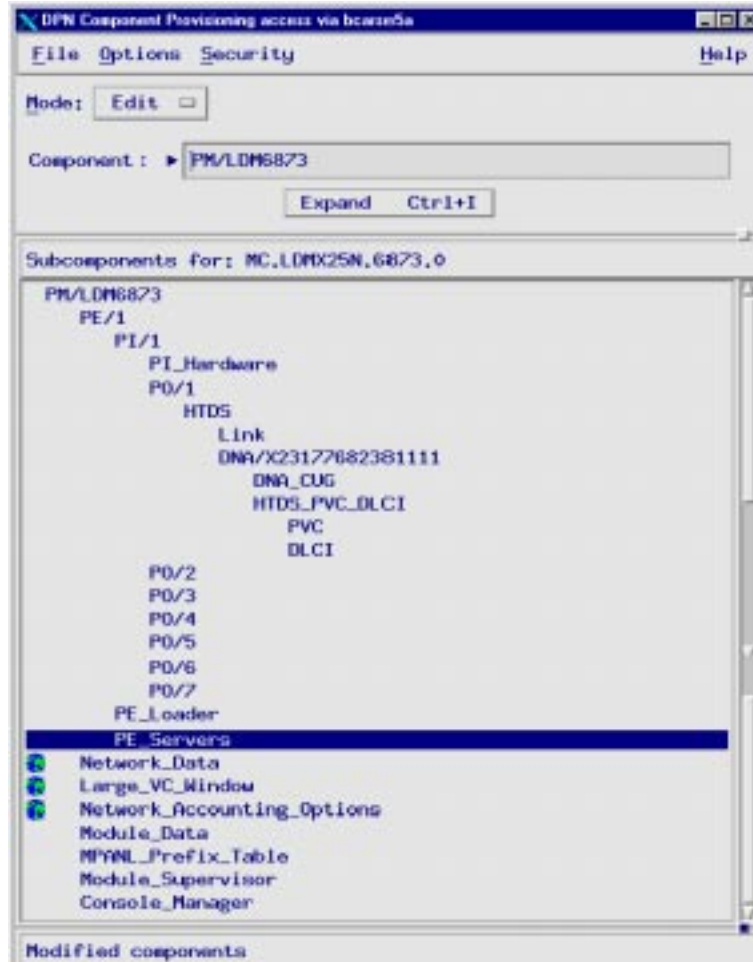
HTDS on Passport 4400 LDM/LEM complies with the standard HDLC protocol standards (ISO 3309 and ISO 4335) in the following respects:

- the framing of data between the standard HDLC flags (binary 01111110)
- the generation and checking of CRC

HTDS also supports the following aspects of the HDLC protocol standard:

- octet-aligned user data
- a minimum of 1 octet user data in any frame
- a maximum of 2102 octets user data in any frame
- standard HDLC CRC-16
- standard HDLC flag (binary 01111110) used as idle time-fill

Component Hierarchy



The following six components are mandatory:

- Link
- DNA
- DNA_CUG
- HTDS_PVC_DLCI
- PVC
- DLCI

Step-by-Step Provisioning Instructions

Before you begin . . .

- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1961 *Passport 4400 Hardware Installation Manual*).
- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning HTDS on Passport 4400 LDM/LEM Units

1. Select the port where HTDS is to be provisioned, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



2. Select *HTDS*, and click *OK*.

The Key Dialog for the DNA component appears.



3. Enter the DNA as the key value, and click OK.

The Editing dialog for the HTDS Link component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6873 PE/1 PI/1 PO/1 HTDS Link" and "MCF: MC,LDMX25N,6873,0 (Default form)". Below this, there is a section labeled "Line modem:" with two spin boxes: "Modem state:" set to "101" and "Modem relevant:" set to "101". Underneath is a section labeled "Physical level characteristics:". At the bottom, there is a "Messages" pane containing the text "NOTE: Edit dialog 1 of 4 for HTDS". The dialog has three buttons at the bottom: "Verify and Save", "Verify", and "Cancel".

4. Complete the fields in the *Link* component, and click *Verify and Save*.

The Editing dialog for the HTDS DNA_CUG component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6873 PE/1 PI/1 PO/1 HTDS DNA/X2317/682381111" and "DNA_CUG MCF: MC,LDMX25N,6873,0 (Default form)". Below this, there is a section labeled "Accounting:" with two spin boxes: "Accounting class:" set to "38" and "DSE:" set to "0". Underneath is a section labeled "Record collecting reasons:". At the bottom, there is a "Messages" pane containing the text "NOTE: Edit dialog 2 of 4 for HTDS". The dialog has three buttons at the bottom: "Verify and Save", "Verify", and "Cancel".

5. Complete the fields in the *DNA_CUG* component, and click *Verify and Save*.
The Editing dialog for the PVC component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6873 PE/1 PI/1 PO/1 HTDS DNA/X23177682381111" and "HTDS_PVC_DLCI PVC MCF: MC.LDMX25N,6873,0 (Default form)". Below this, there is a section labeled "Remote parameter:" with a sub-label "Remote DNA:" followed by a text input field containing "X". Below that is a section labeled "Call parameters:". At the bottom of the dialog, there is a "Messages" section with the text "NOTE: Edit dialog 3 of 4 for HTDS". At the very bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel".

6. Complete the fields in the *PVC* component, and click *Verify and Save*.
The Editing dialog for the DLCI component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6873 PE/1 PI/1 PO/1 HTDS DNA/X23177682381111" and "HTDS_PVC_DLCI DLCI MCF: MC.LDMX25N,6873,0 (Default form)". Below this, there is a section labeled "Frame length:" with a sub-label "dNI:" followed by a text input field containing "2102". Below that is a section labeled "Messages" with the text "NOTE: Edit dialog 4 of 4 for HTDS". At the very bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel".

7. Complete the fields in the *DLCI* component, and click *Verify and Save*.
8. Provision any optional components.
9. Download and activate the new service data for both ends of the logical connection.

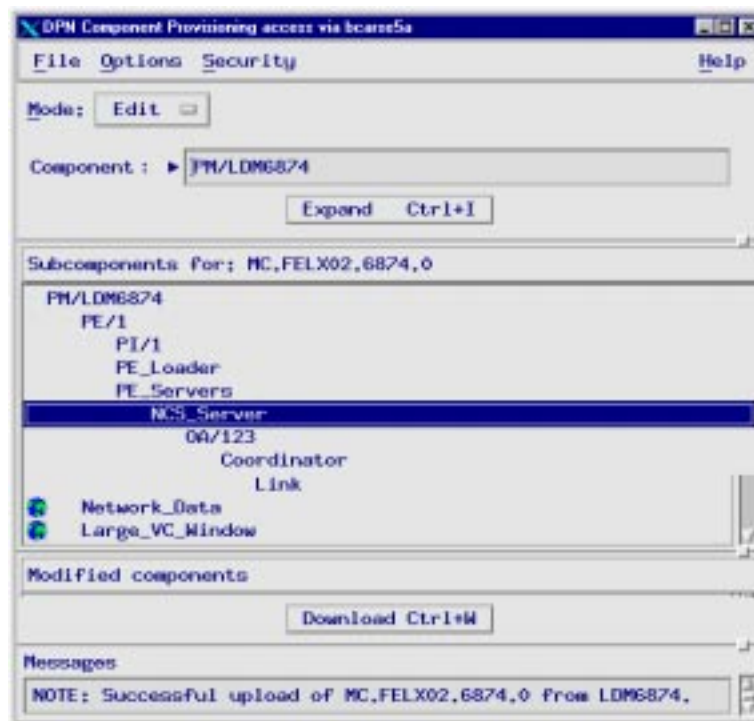
Provisioning the NCS OA 11

Every Passport 4400 LDM unit must report to an Network Control System (NCS) operations agent (OA).

This section provides the following information on NCS on Passport 4400 LDM/LEM units:

- component hierarchy
- step-by-step provisioning instructions

Component Hierarchy



Step-by-Step Provisioning Instructions

Before you begin . . .

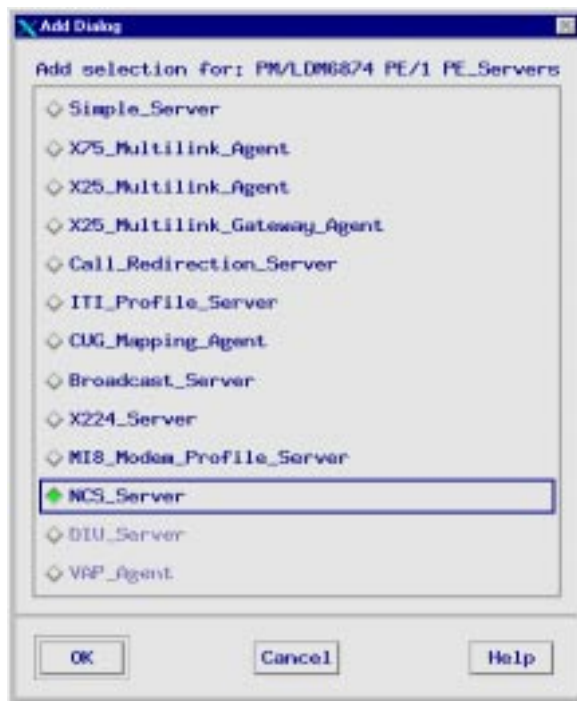
- Make sure that the LDM/LEM is installed in the correct slot in the Passport 4400 unit and that appropriate hardware connections have been made (see 800-1951-xx *Passport 4400 Hardware Installation Manual*).

- Verify that hardware components have been provisioned, that a bundle of service data with those components already exists for LDM/LEM, and that Architect for DPN is running. (See “Getting Started,” in this document, for more information on these issues.)

Provisioning NCS on Passport 4400 LDM/LEM Units

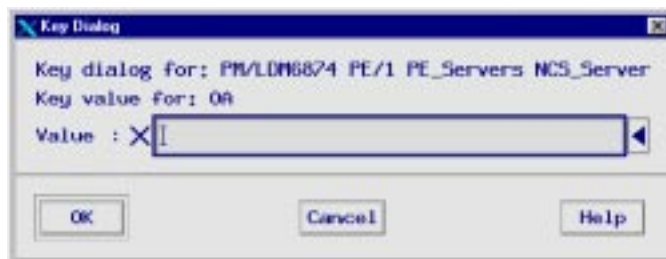
1. Select PE_Server, and choose *Add...* from the *Subcomponent Menu*.

The Add Dialog appears.



2. Select *NCS_Server*, and click *OK*.

The Key Dialog for the operations agent (OA) component appears.



3. Enter the key value for the OA, and click OK.

The Editing dialog for the Coordinator Link component appears.

The screenshot shows a Windows-style dialog box titled "Editing dialog". It has a menu bar with "File", "Edit", "Options", and "Help". The main text area displays "Editing component: PM/LDM6874 PE/1 PE_Server NCS_Server OA/123" and "Coordinator Link MCF: MC,FELX02,6874,0 (Default form)". Below this, there are two input fields: "OA NAME ID:" and "OA type:", each followed by a small icon and a text box. Under "OA NAME ID:", there is a radio button for "Active alarm list" with options "Yes" and "No". Under "OA type:", there is a radio button for "Statspool Flag" with options "OFF" and "On". At the bottom, there is a "Messages" section with a text box containing "NOTE: Edit dialog 1 of 1 for NCS_Server". At the very bottom, there are three buttons: "Verify and Save", "Verify", and "Cancel".

4. Complete the fields in the *Coordinator Link* component, and click *Verify and Save*.
5. Download and activate the new service data for both ends of the logical connection.

Service Functionality 12

There are many similarities between the software on Passport 4400 LDM/LEM units and that on DPN. The fundamental difference is the change of the network access from UTP to PANL. As a result of this change, some functionality changes. This section summarizes those changes.

Network-level Changes

- Hunt Group. This service is not supported for calls *terminating* on Passport 4400 LDM/LEM units. However, it is supported for calls *initiating* on Passport 4400 LDM/LEM units and terminating on DPN.
- Call Redirection. This service is not supported for calls terminating on Passport 4400 LDM/LEM units. However, is is supported for calls initiating on Passport 4400 LDM/LEM units and terminating on DPN.
- Network Links. Load sharing on network links is not supported, mainly because only one PANL link is supported. VC recovery on network links is not supported. If the PANL fails and restarts, all existing connections are lost. PANL does not support any type of hot or warm standby.

Protocol-level Changes

- X.32 is not supported (there is no support for the DORS server on Passport 4400 LDM/LEM units).
- NUI/GMS is not supported on any protocol (calls to the NDI server are not supported).
- X.25 Gateway and Gateway access services are not supported.
- In X.25 and ITI, reverse charging and RPOA are not supported.

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Low-speed Data Services

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