

Passport 7400, 15000, 20000

Network Management Connectivity

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Passport 7400, 15000, 20000

Network Management Connectivity

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About this document

NTP 241-5701-271 *Passport 7400, 15000, 20000 Network Management Connectivity* describes the StartUp utility and provides procedures for connecting a newly-installed Passport node to the network as well as starting the basic configuration of a Passport node.

The following topics are discussed in this section:

- “Who should read this document and why” (page 21)
- “What you need to know” (page 21)
- “How this document is organized” (page 22)
- “What’s new in this document” (page 22)
- “Text conventions” (page 23)
- “Related documents” (page 24)
- “How to get more help” (page 24)

Who should read this document and why

This document is intended for personnel who are performing basic configuration using StartUp, and who want to manually configure a connection between a management device and a Passport node.

What you need to know

This guide assumes that you have a basic understanding of Passport architecture and operation. In addition, you need to understand network topologies, and Passport software and configuration. Some experience with Preside Multiservice Data Manager and a basic knowledge of Unix is also beneficial.

How this document is organized

This guide contains the following sections:

- “Network management connectivity” (page 25)
- “Network management connectivity configuration using StartUp” (page 29)
- “Configuring Passport 7400 IPIVC” (page 33)
- “IPIFR network connection configuration” (page 37)
- “VRIP network connectivity through native Ethernet configuration” (page 51)
- “VRIP network connectivity through OAM Ethernet configuration” (page 67)
- “Configuring a Passport 7400 direct frame relay network connection” (page 75)
- “IP services over ATM MPE configuration” (page 79)
- “Passport 7400 IPIVC to IPIFR upgrade” (page 165)
- “Connecting Passport to the network using StartUp reference” (page 95)
- “StartUp fundamentals” (page 127)
- “Network management connectivity fundamentals” (page 133)
- “Troubleshooting a Passport node” (page 153)
- “IPIFR connection options” (page 175)
- “Passport network topologies” (page 189)

What’s new in this document

There were no new features added to this document.

Other changes made to this document include the following:

- For CR Q00782179, the sections “Configuring Passport to access an indirectly connected management device” (page 45) and “Configuring a default route for path redundancy” (page 48) were updated with information about static routes.

- For CR Q00702850, the prerequisites section for the procedure “Configuring a Passport 7400 direct frame relay network connection” (page 75) and “Configuring a Passport 7400 node to access a directly connected management device” (page 143) were updated with information about setting the transfer priority for the connection.

Text conventions

This document uses the following text conventions:

- `nonproportional spaced plain type`

Nonproportional spaced plain type represents system generated text or text that appears on your screen.

- **`nonproportional spaced bold type`**

Nonproportional spaced bold type represents words that you should type or that you should select on the screen.

- *italics*

Statements that appear in italics in a procedure explain the results of a particular step and appear immediately following the step.

Words that appear in italics in text are for naming.

- `[optional_parameter]`

Words in square brackets represent optional parameters. The command can be entered with or without the words in the square brackets.

- `<general_term>`

Words in angle brackets represent variables which are to be replaced with specific values.

- `UPPERCASE,lowercase`

Passport commands are not case-sensitive and do not have to match commands and parameters exactly as shown in this document, with the exception of string options values (for example, file and directory names) and string attribute values.

- |
This symbol separates items from which you may select one; for example, ON|OFF indicates that you may specify ON or OFF. If you do not make a choice, a default ON is assumed.
- ...
Three dots in a command indicate that the parameter may be repeated more than once in succession.

The term absolute pathname refers to the full specification of a path starting from the root directory. Absolute pathnames always begin with the slash (/) symbol. A relative pathname takes the current directory as its starting point, and starts with any alphanumeric character (other than /).

Related documents

See the following documents for related information:

- 241-5701-270 *Passport 7400, 15000, 20000 Software Installation Guide*
- 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*
- 241-1501-240 *Passport 15000, 20000 Hardware Installation, Maintenance and Upgrade*
- 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade*

How to get more help

For information on training, problem reporting, and technical support, see the “Nortel Networks support services” section in the *241-5701-030 Passport 7400, 15000, 20000 Overview*.

Chapter 1

Network management connectivity

The local operator terminal provides a text interface with the Passport node. During a software installation, you must have a local operator terminal to run the StartUp software which connects the node to the network and does basic configuration.

Preside MDM is a graphical user interface and is the most common method of managing your Passport node. You must activate the Preside MDM workstation first, then you can run the StartUp software from the local operator terminal to connect Preside MDM to your node, or you can connect Preside MDM to your node manually.

- “Prerequisites to network management connectivity” (page 25)
- “Network management connectivity tasks” (page 25)

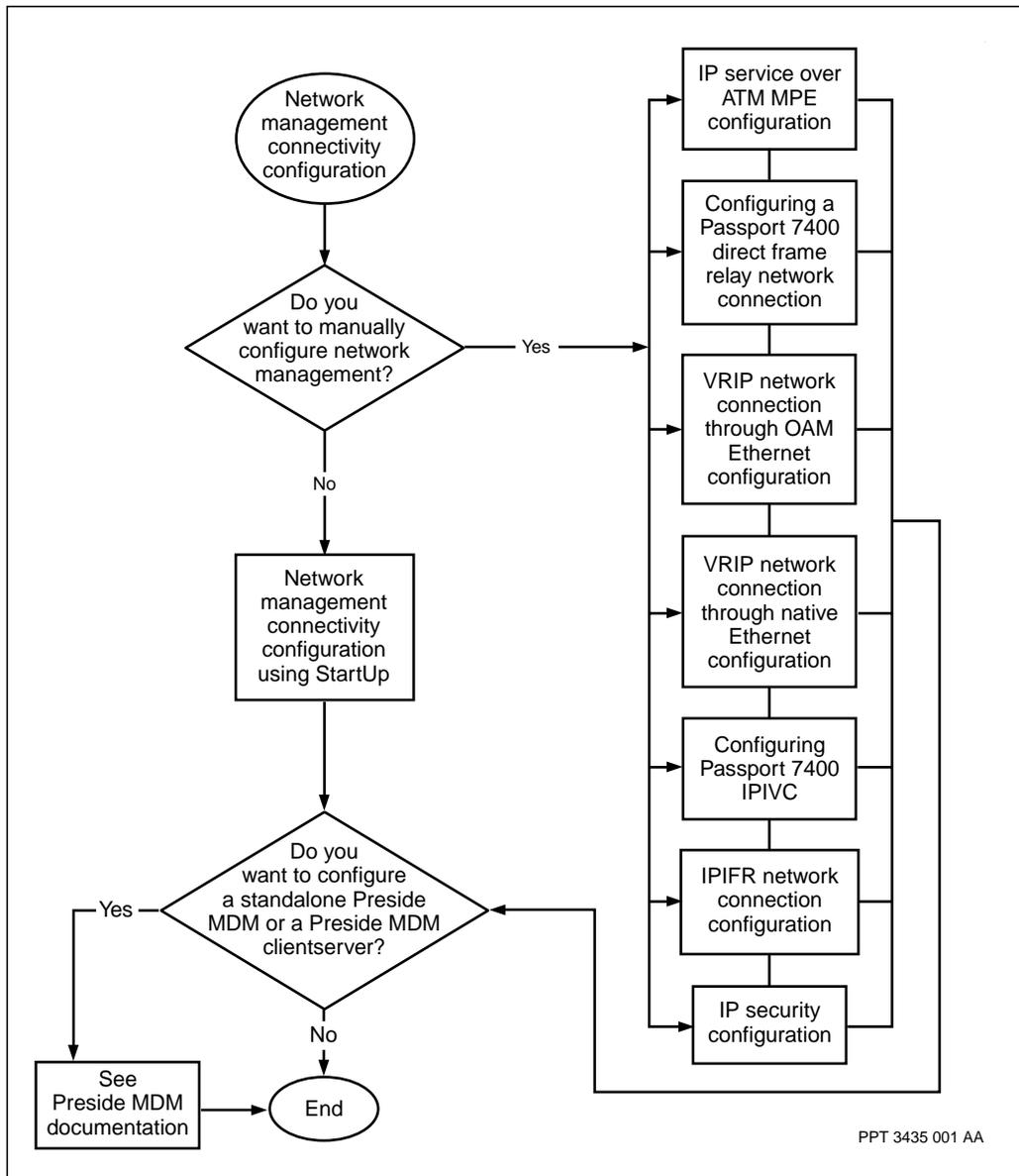
Prerequisites to network management connectivity

- In some cases, the IP address of the workstation you are using must be on the valid IP address list for the node. For more information, see NN10600-605 *Passport - MDM Network Security: Operations*.

Network management connectivity tasks

“Network management connectivity task flow” (page 26) shows you the sequence of tasks and procedures you perform to configure network management connectivity. To link to any task or procedure, go to “Task navigation” (page 27).

Figure 1
Network management connectivity task flow



PPT 3435 001 AA

Task navigation

- “Network management connectivity configuration using StartUp” (page 29)
- “Configuring Passport 7400 IPIVC” (page 33)
- “IPIFR network connection configuration” (page 37)
- “VRIP network connectivity through native Ethernet configuration” (page 51)
- “VRIP network connectivity through OAM Ethernet configuration” (page 67)
- “Configuring a Passport 7400 direct frame relay network connection” (page 75)
- “IP services over ATM MPE configuration” (page 79)
- “IP security configuration”. See NN10600-605 *Passport - MDM Network Security: Operations*.

Chapter 2

Network management connectivity configuration using StartUp

To control and monitor your new node, you need to choose and set up a method of network management. Once you have chosen a method, you must complete the initial software installation. Do this by first connecting the Preside MDM workstation to your Passport node using a local operator terminal. Then run StartUp from the local operator terminal to establish network connectivity. Once you have established network connectivity, then you can use Preside MDM to manage the node.

- “Prerequisites to network management connectivity configuration using StartUp” (page 29)
- “Network management connectivity configuration using StartUp tasks” (page 30)

Prerequisites to network management connectivity configuration using StartUp

- The local operator terminal you log into must be connected to the V.24 DCE port of your control processor (CP).
- For more information about how to install a local operator terminal for Passport 15000 and 20000, see 241-1501-240 *Passport 15000, 20000 Hardware Installation, Maintenance and Upgrade*.
- For more information on how to install a local operator terminal for Passport 7400, see 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade*.

- For more information on logging into a local operator terminal when you are not configuring a new node, see 241-5701-045 *Passport 7400, 15000, 20000 Management System User Interface Guide*.
- A spare control or function processor(s) must not be physically installed in the shelf. If a spare control or function processor (FP) is configured, unseat it so that it remains in the slot and cabled but does not connect to the backplane. To unlatch and unseat a card, see 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade* or 241-1501-240 *Passport 15000, 20000 Hardware Installation, Maintenance and Upgrade*.
- A sparing panel must not be connected to the switch. For any sparing panel connected to FPs, disconnect its cables at the Main FPs, and leave the cables hanging. The spare FP can remain cabled because it should already have been unseated. To disconnect FP cables, see 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade* or 241-1501-240 *Passport 15000, 20000 Hardware Installation, Maintenance and Upgrade*.

Note: For 32-port multi-service access (MSA32) sparing panels, the FP cables can remain connected.

- The Preside MDM workstation that you plan to connect to the node must be active and functioning.
- Connect to the Preside MDM workstation using a local operator terminal.
- Know what type of link you plan to use to connect the Preside MDM to the Passport node. Understand the resulting network topology. For more information on the types of links and possible network topologies, see the section “Passport network topologies” (page 189).
- Know which version of the base software you need to load onto the node.

Network management connectivity configuration using StartUp tasks

- “Logging in to a local operator terminal” (page 31)
- “Quitting StartUp” (page 32)

Logging in to a local operator terminal

Log in to a local operator terminal to run the StartUp utility when you are configuring a new Passport node.

Note 1: When you connect to a new node, no network security has been configured, so you can use any userid and password combination.

Note 2: From the time you log into the node until you run StartUp, alarms will appear on the screen. Many of these alarms are normal since the node is not configured. There can, however, be other alarms that indicate problems. The alarms that appear on-screen scroll by very quickly and can be difficult to read. To print a copy of the alarms, perform a screen dump to your local terminal's printer.

Procedure steps

- 1 Enter a userid.
- 2 Enter a password.
- 3 Run StartUp.

Quitting StartUp

Quit StartUp and return to the local operator terminal at any time.

Procedure steps

- 1 Type `quit`.

Chapter 3

Configuring Passport 7400 IPIVC

Configuring Passport 7400 IPIVC to provide an X.25 connection between a management device and a Passport node using a Passport virtual circuit (VC).

Prerequisites

- For conceptual information, refer to “Configuring IP interface over virtual circuit for Passport 7400” (page 138).

Procedure steps

- 1 If you have not already done so using the StartUp utility, add the Ipivc component.

```
add Ipivc
```

- 2 Set the IP address of the IPIVC interface.

```
set Ipivc ipAddress <address1>
```

- 3 Set the data network address (DNA) of the IPIVC interface.

```
set Ipivc Dna dataNetworkAddress <address2>
```

- 4 Set the numbering plan indicator (NPI) of the DNA.

```
set Ipivc Dna npi <plan>
```

- 5 Set the CUG type.

```
set Ipivc Dna Cug type <cugtype>
```

- 6 Set the data network code ID (DNIC) of the CUG.

```
set Ipivc Dna Cug dnic <dnic>
```

- 7 Set the CUG interlock code.

- ```
set I pivc Dna Cug interlockCode <code>
```
- 8 Add a DefaultRoute component to represent the default route.

```
add I pivc Dr
```
  - 9 Set the remote IP address for the default route.

```
set I pivc Dr callingIpAddress <address3>
```
  - 10 Set the remote DNA for the default route.

```
set I pivc Dr callingDataNetworkAddress <address4>
```
  - 11 Set the remote numbering plan indicator (NPI) for the default route.

```
set I pivc Dr callingNumberingPlanIndicator <plan>
```

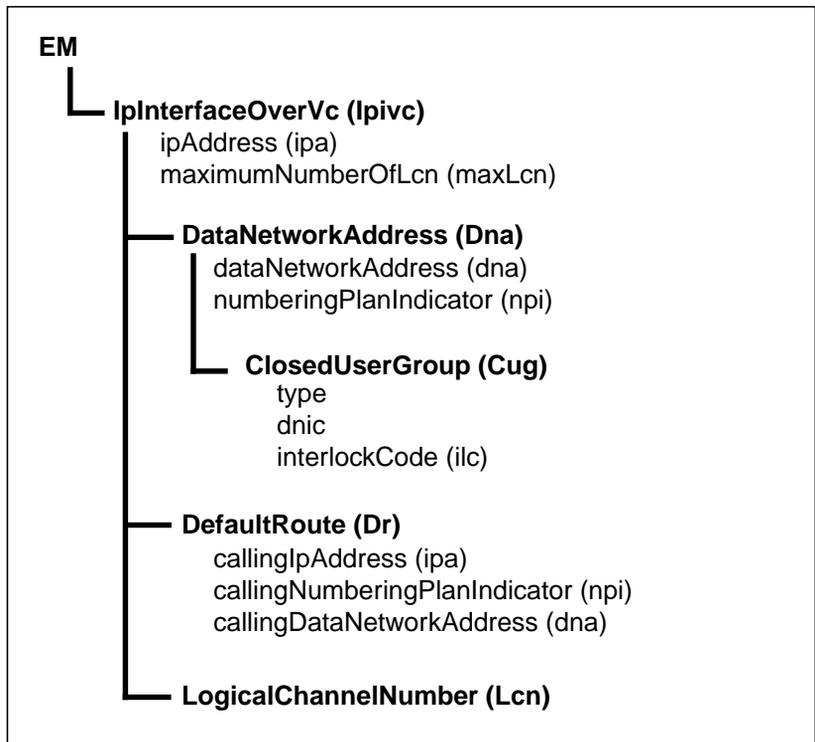
## Variable definitions

| Variable       | Value                                                                                                                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <address1>     | A unique IP address for the IPIVC interface.<br><br>The IP address cannot be the same as the IP address of IPIVC interface on other nodes or the IP address of a remote device.                                   |
| <address2>     | A unique DNA in the network (up to 14 digits long).                                                                                                                                                               |
| <address3>     | The IP address of the remote device (where the X.25 call originated). This IP address must be unique.                                                                                                             |
| <address4>     | The DNA of the remote device (up to 14 digits long).<br><br>This DNA cannot be the same as the DNA of the IPIVC.                                                                                                  |
| <code>         | The interlock code of a national or international CUG call (any number between 0 and 65535).<br><br>The code must be the same as the code assigned to the group of Preside MDMs authorized to access the node.    |
| <cugtype>      | Either national or international.<br><br>International CUGs are usually set for DTEs that have an X.75 gateway between them. National CUGs are usually set for DTEs that don't have an X.75 Gateway between them. |
| (Sheet 1 of 2) |                                                                                                                                                                                                                   |

| Variable       | Value                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <dnic>         | A four-digit binary coded decimal identifier.<br><br>National CUGs do not use DNICs, so you set the attribute to 0000 for a national CUG. For an international CUG, set the DNIC to the internationally assigned DNIC for the CUG. |
| <plan>         | Either x121 or e164.                                                                                                                                                                                                               |
| (Sheet 2 of 2) |                                                                                                                                                                                                                                    |

## Procedure job aid

**Figure 2**  
**Configuring Passport 7400 IPIVC component hierarchy**





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## Chapter 4

# IPIFR network connection configuration

---

Configure the IPIFR network connection to manually configure the IP interface over frame relay (IPIFR) to connect management devices to a Passport node using Passport frame relay permanent virtual circuits (PVC).

- “Prerequisites to IPIFR network connection configuration” (page 37)
- “IPIFR network connection configuration task” (page 38)

### Prerequisites to IPIFR network connection configuration

- For conceptual information, refer to “Configuring IP interface over frame relay” (page 141).

**CAUTION****CP Ethernet port can interfere with IPIFR routing**

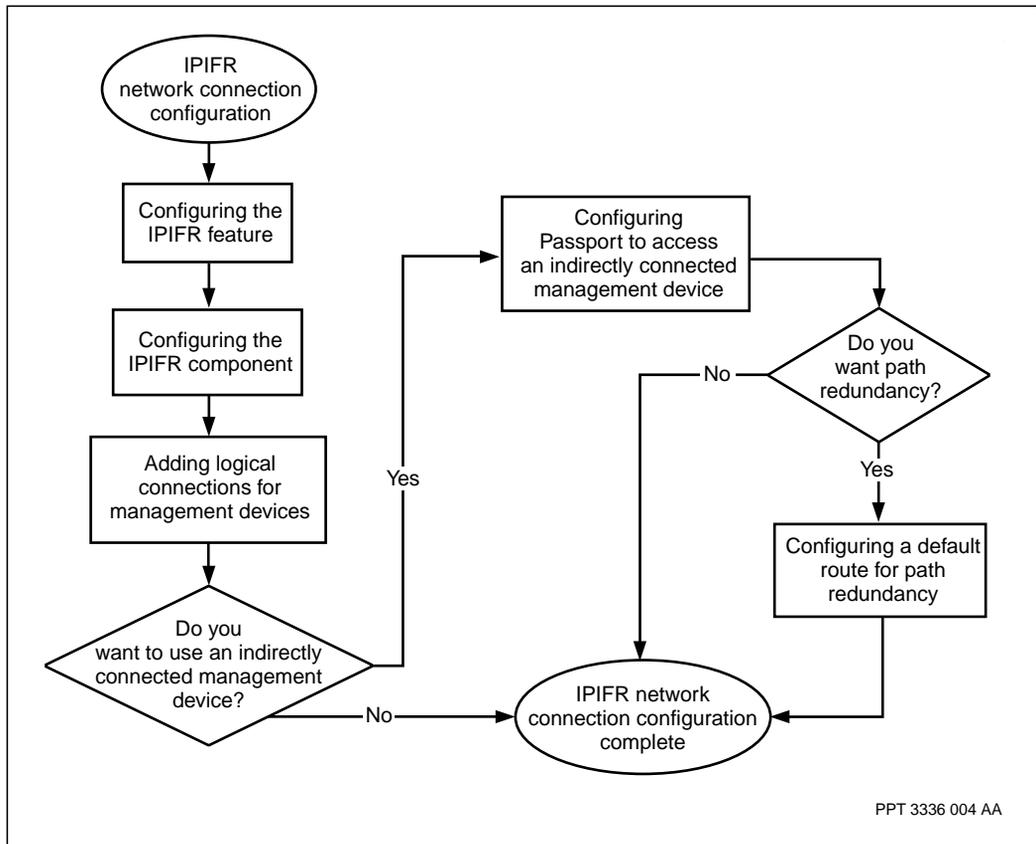
If you configure the Ethernet port on the CP, it can interfere with IPIFR routing.

If the CP Ethernet port is in the same IP network as IPIFR, then the Ethernet interface must have the same subnet mask. In addition, the direct IP route associated with the Ethernet interface does not work if provisioned as a static route under IPIFR.

## IPIFR network connection configuration task

“IPIFR network connection configuration task flow” (page 38) shows you the sequence of tasks and procedures you perform to manually configure an IPIFR network connection. To link to any task or procedure, go to “Task navigation” (page 38).

**Figure 3**  
IPIFR network connection configuration task flow



### Task navigation

- “Configuring the IPIFR feature” (page 40)
- “Configuring the IPIFR component” (page 41)

- “Adding logical connections for management devices” (page 43)
- “Configuring Passport to access an indirectly connected management device” (page 45)
- “Configuring a default route for path redundancy” (page 48)

## Configuring the IPIFR feature

Configure the IPIFR feature to add IPIFR to the feature list of the CP logical processor type.

### Prerequisites

- Unless some other management connection exists, configure IPIFR using a local terminal directly connected to the Passport node.

### Procedure steps

- 1 Add the IPIFR feature to the feature list of the CP logical processor type.

```
set Sw Lpt/CP featureList ipiFr
```

## Configuring the IPIFR component

Configure the IPIFR component to add the IPIFR component and create the *DataNetworkAddress (Dna)* subcomponent.

### Prerequisites

- If you added the IPIFR component during startup, it is not necessary to perform this procedure.
- You must add the module-wide virtual-circuit system and set the network ID code before you can provision the initial IPIFR. For information on setting these values, see NN10600-605 *Passport - MDM Network Security: Operations*.

### Procedure steps

- 1 If you have not already done so using the StartUp utility, add the *IpiFr* component.

```
add IpiFr
```

- 2 Set the IP address of the IPIFR interface.

```
set IpiFr ipAddress <address1>
```

- 3 Set the subnetMask attribute.

```
set IpiFr subnetMask <address2>
```

- 4 Add the DNA to the IPIFR.

```
add IpiFr Dna
```

- 5 Set the data network address (DNA) of the IPIFR interface.

```
set IpiFr Dna dataNetworkAddress <address3>
```

- 6 Set the *numberingPlanIndicator* (npi) attribute.

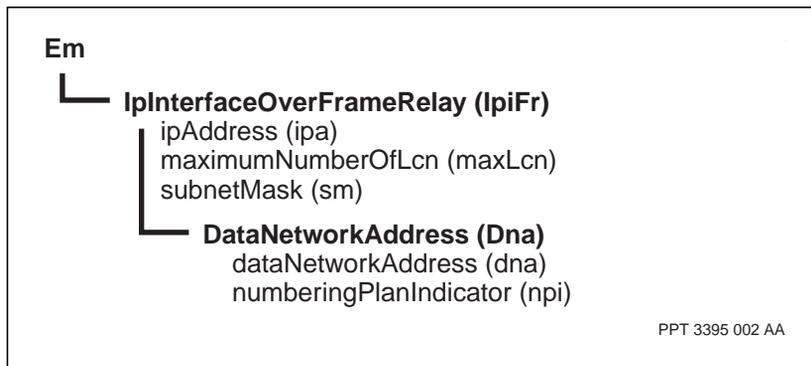
```
set IpiFr Dna npi <plan>
```

## Variable definitions

| Variable   | Value                                                                                                                                                             |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <address1> | A unique IP address for the IPIFR. The IP address cannot be the same as the IP address of an IPIFR interface on other nodes or the IP address of a remote device. |
| <address2> | The subnetwork mask.                                                                                                                                              |
| <address3> | A unique DNA in the network (up to 15 digits long).                                                                                                               |
| <plan>     | Either e164 or x121 (packet-switched data networks use x121).                                                                                                     |

## Procedure job aid

**Figure 4**  
Configuring the IPIFR component hierarchy



## Adding logical connections for management devices

Add a logical connection (identified by its logical channel number) for each directly connected management device you want to IPIFR to access.

### Prerequisites

- If you have already added the initial LCN during startup, it is not necessary to perform this procedure.

### Procedure steps

- 1 Add the *Lcn* subcomponent to the IPIFR.  

```
add IpiFr Lcn/<number>
```
- 2 Set the *remoteIpAddress* attribute (effectively the static ARP entry).



#### CAUTION

##### IPIFR provisioning rule

Set the *remoteIpAddress* attribute if you are connecting to an IP-routing-capable device.

```
set IpiFr Lcn/<number> remoteIpAddress <address1>
```

- 3 Set the remote data network address (DNA) for the *DirectCall* component.

```
set IpiFr Lcn/<number> DirectCall remoteDna <address2>
```

- 4 Set the remote data link connection identifier (DLCI) for the *DirectCall* component. (Leave the *type* attribute set to its default value *permanentSlave*.)

```
set IpiFr Lcn/<number> DirectCall remoteDlci <DLCI>
```

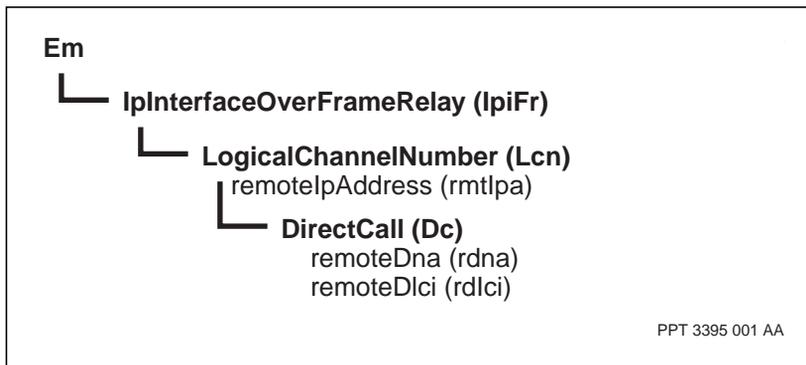
### Variable definitions

| Variable       | Value                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------------|
| <address1>     | The IP address of the management device or IP-routing-capable device connected to this LCN interface. |
| <address2>     | The specified DNA of the remote-end link (the DNA of the FRUNI on the edge Passport node).            |
| (Sheet 1 of 2) |                                                                                                       |

| Variable       | Value                                                                                   |
|----------------|-----------------------------------------------------------------------------------------|
| <DLCI>         | The DLCI of the remote-end link (the DLCI of the FRUNI on the edge Passport 7400 node). |
| <number>       | The instance number for the logical channel (between 16 and 39).                        |
| (Sheet 2 of 2) |                                                                                         |

### Procedure job aid

**Figure 5**  
**Adding logical connections for management devices component hierarchy**



## Configuring Passport to access an indirectly connected management device

Configure Passport to access an indirectly connected management device by configuring a static route using a directly connected IP-routing-capable device as a gateway.

### Prerequisites

- To ensure proper address resolution, make sure you have set *remotelpAddress* for the *Lcn* component of IPIFR.
- For more information on using static routes, see “Routing to indirectly connected devices using static routes” (page 181).
- This procedure shows you how to configure both Passport 1 and Passport 2 to access the indirectly connected MDs as illustrated in the figure “Example of indirectly connected management devices” (page 47). Change the values to those appropriate for your own network.

The figure illustrates the connections between two edge nodes, two directly connected management devices (MD 1 and 2), and two indirectly connected management devices (MD 3 and 4). Once you configure the directly connected devices, you can establish access to the indirectly connected devices through the IP-routing-capable MD 1 (it is running, for example, and IP routing application). Since both MD 3 and MD 4 are on the same subnetwork, you can configure a static route to reach both of them.

### Procedure steps

- 1 On Passport 1, add a static route to the 1.2.0.0 network.  

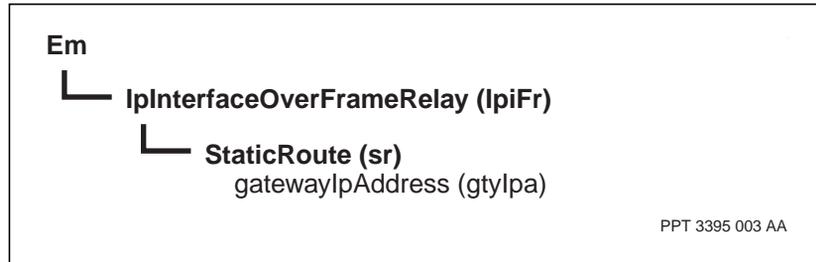
```
add IpiFr Sr/1.2.0.0
```
- 2 On Passport 1, set the gateway IP address (next hop) to the IP address of MD 1 (1.2.3.4).  

```
set IpiFr Sr/1.2.0.0 gatewayIpAddress 1.2.3.4
```
- 3 Repeat above steps on Passport 2.

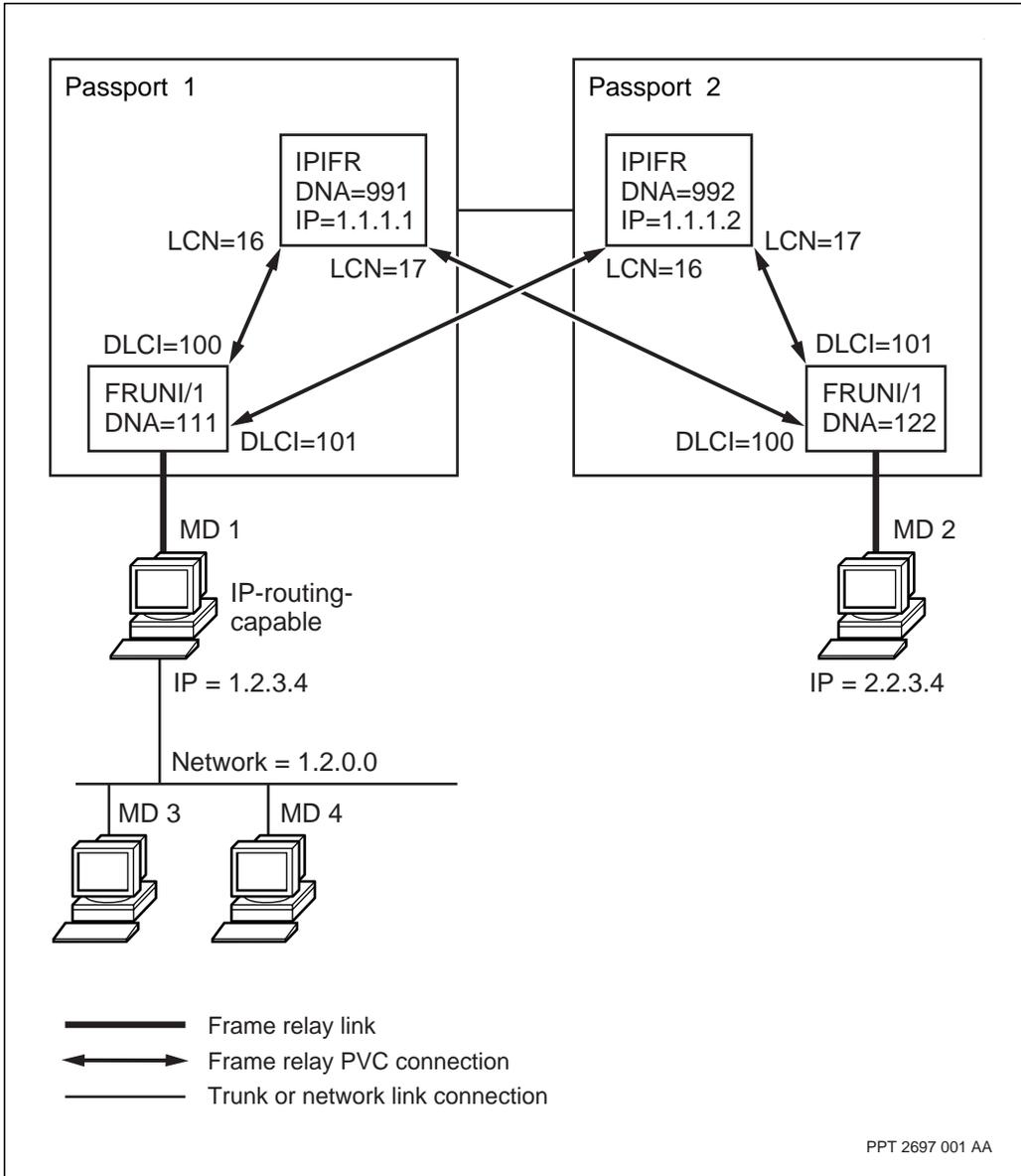
## Procedure job aid

Figure 6

Configuring Passport to access an indirectly connected management device component hierarchy



**Figure 7**  
**Example of indirectly connected management devices**



## Configuring a default route for path redundancy

Configure a default route for path redundancy if you have indirectly connected devices on multiple LANs that interconnect.

### Prerequisites

- To ensure proper address resolution, make sure you have set *remoteIpAddress* for the *Lcn* component of IPIFR.
- For more information on using the default for path redundancy, see “Providing path redundancy to indirectly connected devices using a default route” (page 185).
- This procedure shows you how to configure a default route for path redundancy on both Passport 1 and Passport 2 as illustrated in the figure “Example of path redundancy to indirectly connected devices” (page 50). Change the values to those appropriate for your own network.

The figure illustrates the connections between two edge nodes, two directly connected management devices (MD 1 and 2), and two indirectly connected management devices (MD 3 and 4). To reach this configuration, you must first set up the direct connections on both edge nodes.

Because both MD 1 and MD 2 are IP-routing-capable and their subnetworks interconnect using IP-routing-capable devices, you can configure a default route to MD 3 and 4 through MD 1 and a backup default route through MD 2. This configuration allows IPIFR connections to MD 3 and 4 even if the link to MD 1 fails.

### Procedure steps

- 1 On Passport 1, add a default route (0.0.0.0).  

```
add IpiFr Sr/0.0.0.0
```
- 2 On Passport 1, set the gateway IP address (next hop) of the default route to the IP address of MD 1 (1.2.3.4).  

```
set IpiFr Sr/0.0.0.0 gatewayIpAddress 1.2.3.4
```
- 3 Clear all old values for the *backupGatewayIpAddress* attribute.  

```
set IpiFr Sr/0.0.0.0 backupGatewayIpAddress !
```

- 4 On Passport 1, set the backup gateway IP address (next hop) of the default route to the IP address of MD 2 (2.2.3.4)
 

```
set IpiFr Sr/0.0.0.0 backupGatewayIpAddress <index>
2.2.3.4
```
- 5 If the network has additional backup routes, repeat step 4 for the IP address of those gateways. Increment by 1 the index for each subsequent backup gateway IP address.
- 6 Repeat steps step 1 through step 5 on Passport 2.

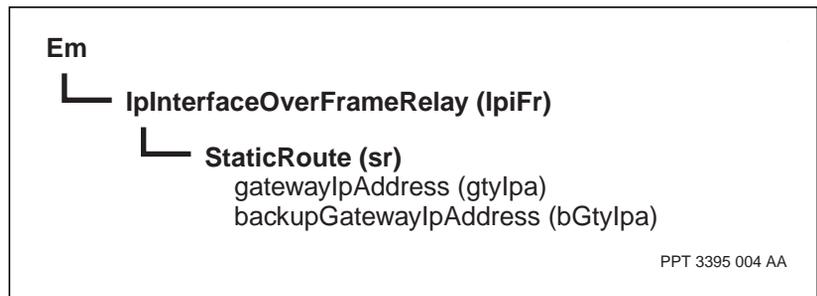
## Variable definitions

| Variable | Value                                                                                                                                                                                                                                                                                                                                        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <index>  | The index number of the backup gateway IP address (1 to 23).<br><br>The <i>backupGatewayIpAddress</i> attribute accepts an indexed list of up to 23 gateway IP addresses. The index number typically begins at 1, and defines the order in which the switch attempts a connection through the backup gateways in the event of route failure. |
|          |                                                                                                                                                                                                                                                                                                                                              |

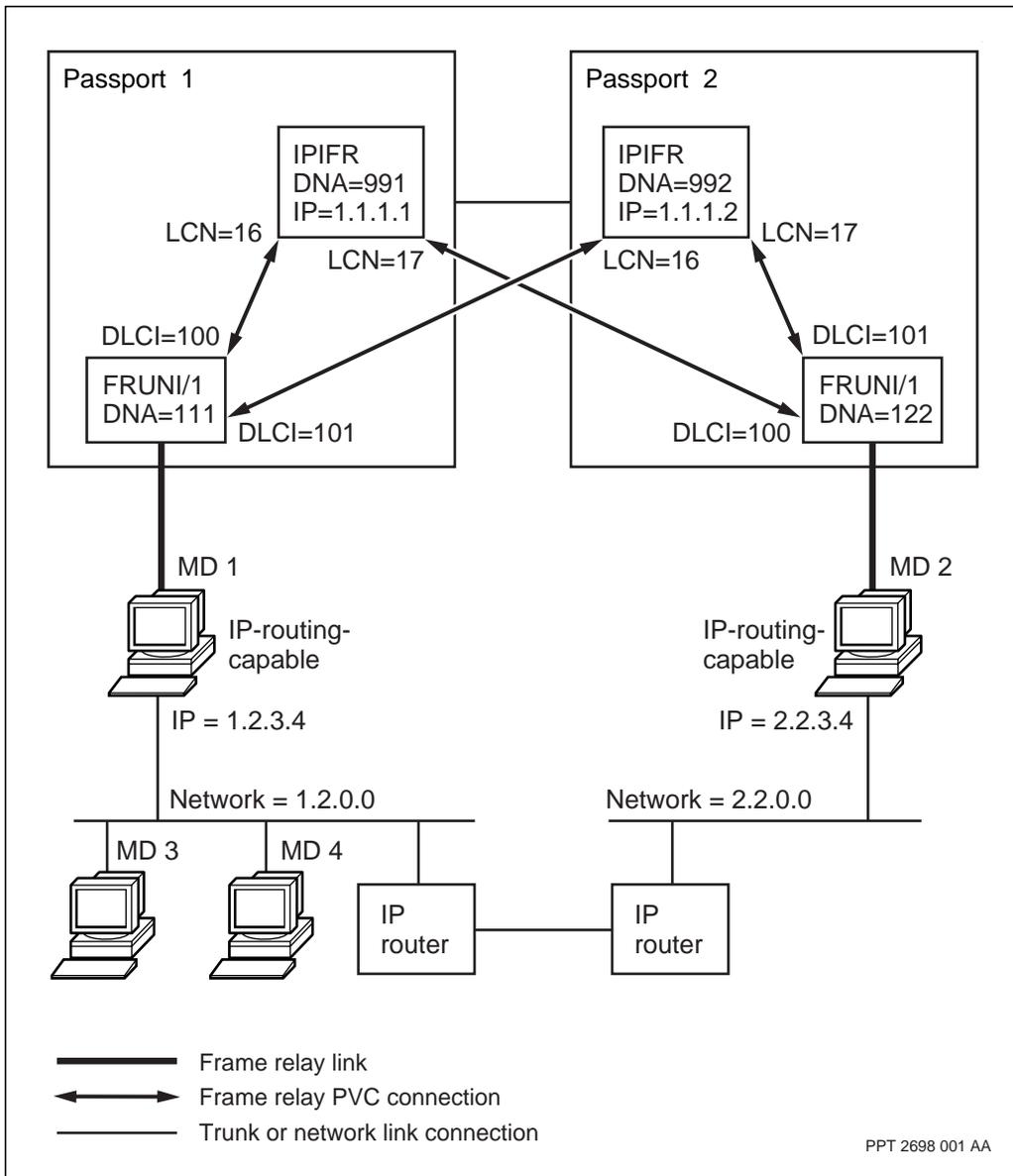
## Procedure job aid

Figure 8

Configuring a default route for path redundancy component hierarchy



**Figure 9**  
**Example of path redundancy to indirectly connected devices**



## Chapter 5

# VRIP network connectivity through native Ethernet configuration

---

Configure VRIP network connectivity through native Ethernet to manually configure a port on a Passport Ethernet FP as a standard Ethernet protocol port to connect a management device directly to a Passport network with IP services only.

- “Prerequisites to VRIP connectivity through native Ethernet configuration” (page 51)
- “VRIP connectivity through native Ethernet configuration task” (page 52)

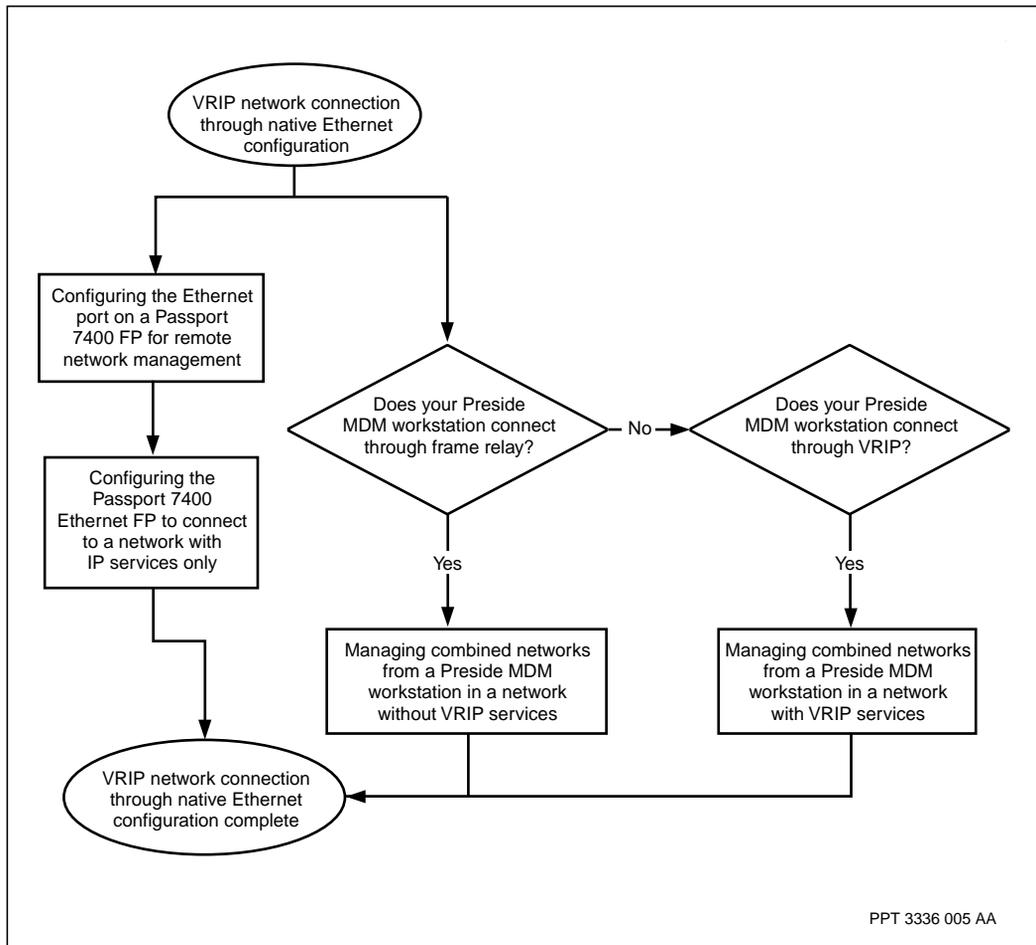
## Prerequisites to VRIP connectivity through native Ethernet configuration

- For conceptual information, refer to “Configuring IP services networking through Ethernet” (page 150).

## VRIP connectivity through native Ethernet configuration task

“VRIP connectivity through native Ethernet configuration task flow” (page 52) shows you the sequence of tasks and procedures you perform to set up VRIP connectivity through native Ethernet configuration. To link to any task or procedure, go to “Task navigation” (page 53).

**Figure 10**  
VRIP connectivity through native Ethernet configuration task flow



## Task navigation

- “Configuring the Ethernet port on a Passport 7400 FP for remote network management” (page 54)
- “Configuring the Passport 7400 Ethernet FP to connect to a network with IP services only” (page 56)
- “Managing combined networks from a Preside MDM workstation in a network without VRIP services” (page 59)
- “Managing combined networks from a Preside MDM workstation in a network with VRIP services” (page 62)

## Configuring the Ethernet port on a Passport 7400 FP for remote network management

Configure the Ethernet port on a Passport 7400 for remote network management as a standard Ethernet protocol port to connect a management device directly to a Passport network with IP services only.

### Prerequisites

- The local Passport 7400 node must be connected to the remote Passport using IP.

### Procedure steps

- 1 Add the routing information protocol (RIP) under the *Ip* subcomponent.

```
add VirtualRouter/<vr_instance> Ip Rip
```

- 2 Add a RIP interface under the *IpLogicalInterface* component.

```
add VirtualRouter/<vr_instance> ProtocolPort/
<Pp_instance> IpPort IpLogicalInterface/<ipAddress>
RipInterface
```

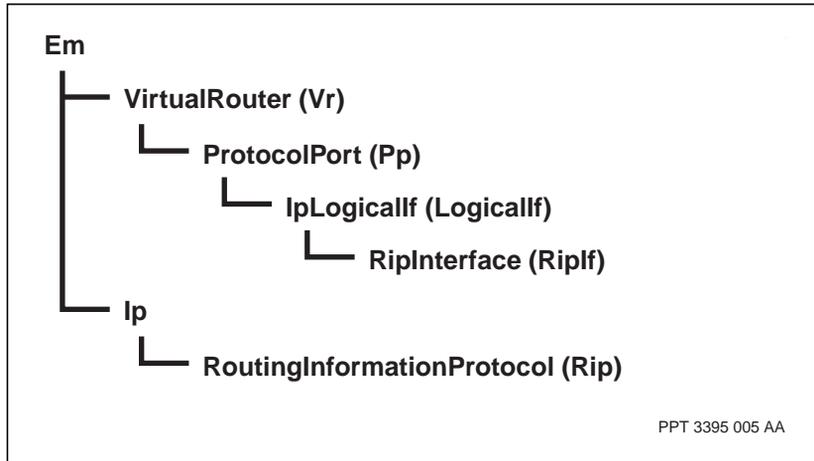
### Variable definitions

| Variable      | Value                                                 |
|---------------|-------------------------------------------------------|
| <ipAddress>   | The IP address of the Ethernet port.                  |
| <Pp_instance> | The instance of the <i>ProtocolPort</i> subcomponent. |
| <vr_instance> | The instance of the <i>VirtualRouter</i> component    |
|               |                                                       |

## Procedure job aid

Figure 11

Configuring the Ethernet port on a Passport 7400 FP for remote network management component hierarchy



## Configuring the Passport 7400 Ethernet FP to connect to a network with IP services only

Connect a management device directly to a Passport network with IP services only by configuring a port on a Passport Ethernet FP as a standard Ethernet protocol port.

### Prerequisites



#### CAUTION

##### IP services provisioning rule

All IP services FPs in a node must be provisioned with the same combination of IP and SRES features, whether or not each FP has a physical port associated with those features. Failure to follow this rule results in a software alarm “Potential error in feature list provisioning” and can cause packets to be lost or misrouted. This restriction does not apply to the WAN features X25 DTE, PPP or frame relay DTE.

For example, if Lp/1 has an associated sw lpt/xx feature list provisioned with IP, and we add Lp/2 which needs to support just IP, then Lp/2 must have IP provisioned. If Lp/3 which needs to support just SRES is added, then Lp/1, Lp/2 and Lp/3 must have IP and SRES provisioned.

- A network with IP services only treats management traffic as normal data traffic. Since the management traffic is IP-based, IP routing must be provisioned or already running on each virtual router.

### Procedure steps

- 1 Provision a virtual router with an IP port on Passport 1.

```
add Vr/<vr_instance>
```

```
set Vr/<vr_instance> vrp lp/<Lp_instance>
```

```
add Vr/<vr_instance> Pp/<Pp_instance>
```

```
add Vr/<vr_instance> Pp/<Pp_instance> IpPort
```

- 2 Provision the IP addresses.

```
add Vr/<vr_instance> Pp/<Pp_instance> IpPort
LogicalIf/<ip_address>
```

```
set Vr/<vr_instance> Pp/<Pp_instance> IpPort
LogicalIf/<ip_address> netMask <ip_address>,
broadcastAddress <ip_address>
```

- 3 Provision an Ethernet port on Passport 1.

```
add Lp/<Lp_instance> Enet/<Enet_instance>
```

- 4 Provision a LAN application.

```
add La/<La_instance>
```

```
set La/<La_instance> Framer interfaceName Lp/
<Lp_instance> Enet/<Enet_instance>
```

- 5 Link the Ethernet port to the virtual router.

```
set Vr/<vr_instance> Pp/<Pp_instance> linkToMedia La/
<La_instance>
```

- 6 Activate and commit the changes, and then on the Preside MDM workstation, use the passport.config program to add the IP address of the protocol port (which manages the Passport node) to the file /opt/MagellanNMS/cfg/HGDS.cfg. See 241-6001-303 *Preside MDM Administrator Guide*.

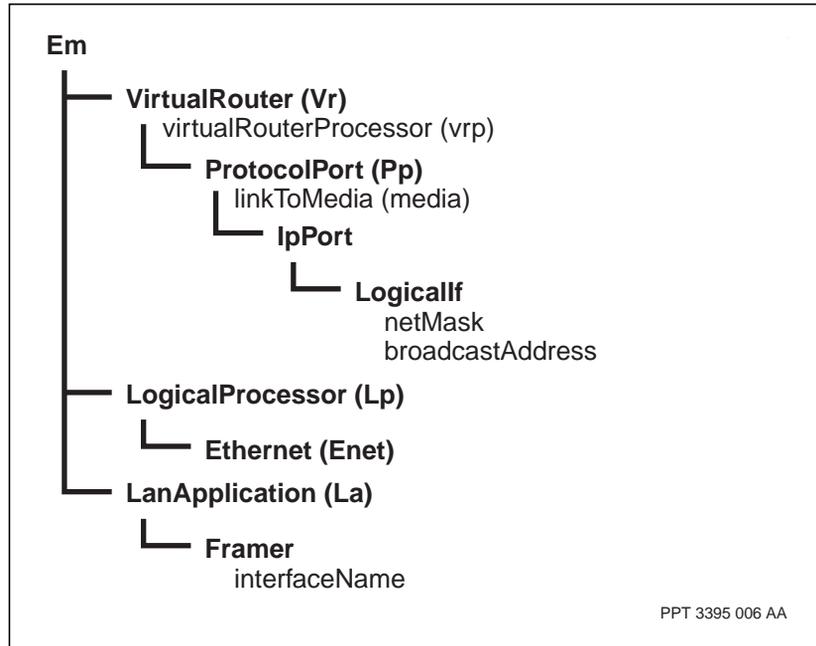
## Variable definitions

| Variable        | Value                                                 |
|-----------------|-------------------------------------------------------|
| <Enet_instance> | The instance of the <i>Enet</i> subcomponent.         |
| <ipAddress>     | The values of the IP addresses.                       |
| <La_instance>   | The instance of the <i>La</i> component.              |
| <Lp_instance>   | The instance of the <i>Lp</i> component.              |
| <Pp_instance>   | The instance of the <i>ProtocolPort</i> subcomponent. |
| <vr_instance>   | The instance of the <i>VirtualRouter</i> component    |
|                 |                                                       |

## Procedure job aid

Figure 12

Configuring the Passport 7400 Ethernet FP to connect to a network with IP services only component hierarchy



PPT 3395 006 AA

## Managing combined networks from a Preside MDM workstation in a network without VRIP services

Configure a Preside MDM workstation connected to and managing a network without IP services to also manage a network with IP services only.

This procedure shows how to configure the network shown in the figure “Connection between a network with IP services only and a Preside MDM workstation on a network without IP services” (page 61) so that Preside MDM workstation 2 can manage Passport 1, 2, 3, and 4.

In this scenario the network without IP services looks like a WAN to the Preside MDM workstation, providing connectivity to the network with IP services only.

### Prerequisites

- To provision the connections between Preside MDM workstation 2 and each Passport node in the network without IP services, see “IPIFR network connection configuration” (page 37).

### Procedure steps

- Provision the VC labeled “c” between Passports 3 and 4 (that is, the WAN connection through the network without IP services). In the FRUNI to FRUNI VC setup, define one side (it does not matter which one) as a slave and the other side as a master.
- Add a *FrDte* component, a protocol port and a remote group on Passport 2 to be used for connectivity to the Passport 7400 nodes without IP services. See 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP* for provisioning details. The IP address of the Preside MDM workstation must be in the same subnet as the FR DTE protocol port.
- Provision a *StaticDlci* component under the *FrDte* component on Passport 2 for the Preside MDM workstation. The static DLCI number under the FR DTE must match the corresponding DLCI number under the FRUNI on Passport 7400 3.
- Provision a static ARP table entry to map the Preside MDM workstation’s IP address to the static DLCI that is associated with the VC labelled “c”.

```
add Vr/1 ip arp hostEntry/<Preside MDM 2 IP address>
set Vr/1 ip arp hostEntry/<Preside MDM 2 IP address>
permanent <dlci>
```

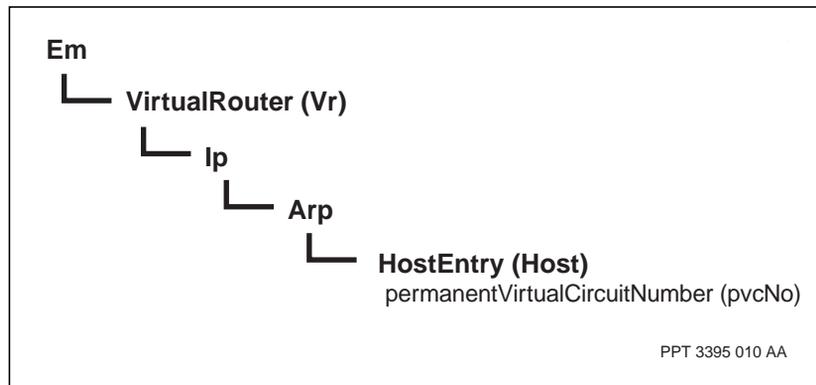
- 5 On the Preside MDM workstation, use the passport.frconfig program to provision a new DLCI for the VC labeled "c" to file /opt/MagellanNMS/cfg/HGDS.cfg. See 241-6001-303 *Preside MDM Administrator Guide*.
- 6 Provision the routing table for Preside MDM workstation 2 to forward traffic destined for Passports 1 and 2 out the frame relay port of Passport 7400 3 (through the DLCI that is associated with the VC labelled "c").

### Variable definitions

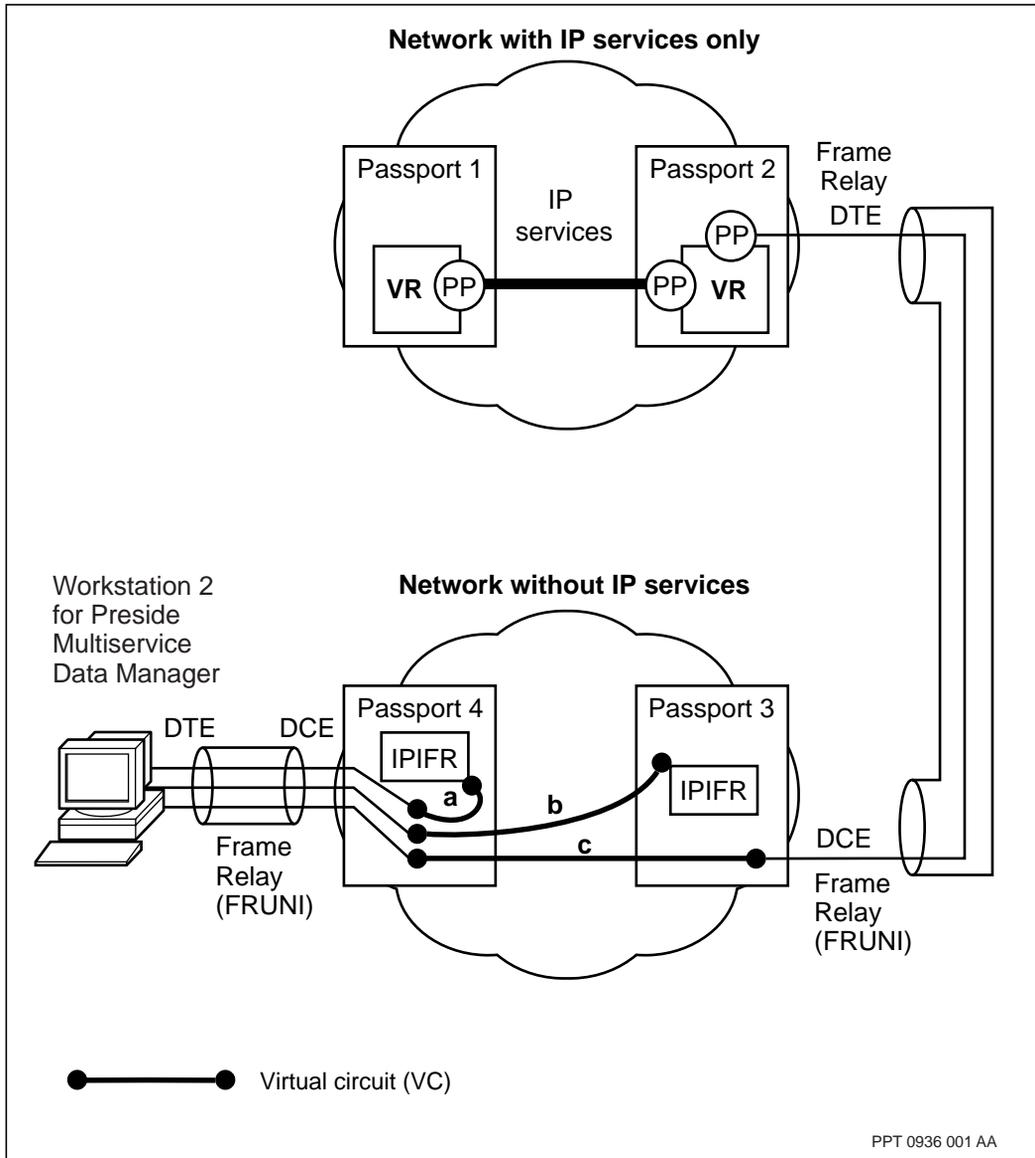
| Variable                   | Value                                                |
|----------------------------|------------------------------------------------------|
| <dlci>                     | The static DLCI associated with the VC labelled "c". |
| <Preside MDM 2 IP address> | The IP address of Preside MDM 2.                     |
|                            |                                                      |

### Procedure job aid

**Figure 13**  
**Managing combined networks from a Preside MDM workstation in a network without VRIP services component hierarchy**



**Figure 14**  
**Connection between a network with IP services only and a Preside MDM workstation on a network without IP services**



## Managing combined networks from a Preside MDM workstation in a network with VRIP services

Configure a Preside MDM workstation connected to (and managing) a network with IP services only to also manage a network without IP services.

This section describes how to create the example configuration shown in the figure “Connection between a Preside MDM workstation on a network with IP services only and a network without IP services” (page 66).

The nodes without IP services can be managed only through IPIFR. IPIFR supports an indirect connection between a Preside MDM workstation and IPIFR through an IP-routing-capable device. In this scenario, the IP-routing-capable device is the Passport 2 node’s IP router, VR IP.

**Note:** The IP addresses to be used must all be from the same IP subnet since the frame relay connections appear as a single network.

### Prerequisites

- Provision Preside MDM workstation 1 to manage the network with IP services by provisioning an Ethernet connection to the adjacent Passport 7400 node, as described in “Configuring the Passport 7400 Ethernet FP to connect to a network with IP services only” (page 56).

Passport 2 requires

- a virtual router
- an FR DTE protocol port on the virtual router
- (optionally) the disabling of ARP and routing protocols on the FR DTE protocol port

**Note:** This condition is not necessary if the *remoteIpAddress* attribute (that is, static ARP) of the IPIFR LCN is provisioned.

- physical connectivity to the FRUNI on Passport 3
- multiple static DLCIs (one for each Passport without IP services)
- static ARP table entries to associate the remote IPIFR’s IP address with the appropriate static DLCI

- linkage of the static DLCI into the *RemoteGroup* component (under the *FrDte* component)
- linkage of the *RemoteGroup* component to the protocol port

Passport 3 requires

- a FRUNI physically connected to the FR DTE on Passport 2
- DLCIs for the IPIFRs of each Passport node without IP services (Passport nodes 3 and 4) where the DLCI number matches that of the FR DTE's static DLCI

Passport 3 and Passport 4 require

- an IPIFR to connect with the FRUNI in Passport 3
- the IP address and subnetwork mask of the IPIFR to be in the same subnetwork as that of the FR DTE protocol port in Passport 2
- provision the logical channel number and remote IP address of the IPIFR
- an IPIFR static Route to Preside MDM 1, referencing Passport 2's FR DTE logical interface in the *gatewayIpAddress* attribute

## Procedure steps

- 1 Provision a *FrUni* component on Passport 3.

Provision VCs d and e from the FRUNI on Passport 3 to the IPIFR service on Passport 4 and Passport 3 respectively. See "IPIFR network connection configuration" (page 37) for additional information.

- 2 Add a *FrDte* component, a protocol port, and a remote group on Passport 2 to be used for connectivity to Passport nodes that do not have IP services. See 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP* for provisioning details.
- 3 If the *remoteIpAddress* attribute of the IPIFR LCN is not provisioned, disable inverse-arp and ensure that no routing protocols (for example, RIP or OSPF) are running on the FR DTE protocol port.

```
set Vr/<vr_instance> Pp/FrDte6070000 IpPort arpStatus disabled
```

- 4 Provision a *StaticDlci* component under the *FrDte* component on Passport 2 for each of the IPIFRs that will be managed. The static DLCI

number under the *FrDte* component must match the corresponding DLCI number under the *FrUni* component on Passport 3.

- 5 Add static ARP table entries on Passport 2 to map each IP address of the IPIFR to the corresponding StaticDlci number for each node without IP services.

```
add Vr/<vr_instance> ip arp hostentry/<ipifr
ipaddress>
```

```
set Vr/<vr_instance> ip arp hostentry/<ipifr
ipaddress> permanentVirtualCircuitNumber <DlciNumber>
```

- 6 Configure an IPIFR static route using the address of Preside MDM 1 and the IP address of the adjacent Passport node in the network with IP services (Passport 2). See the procedure “Configuring Passport to access an indirectly connected management device” (page 45).
- 7 Alternatively, configure an IPIFR default route (for routing to Preside MDM. See “Configuring a default route for path redundancy” (page 48).

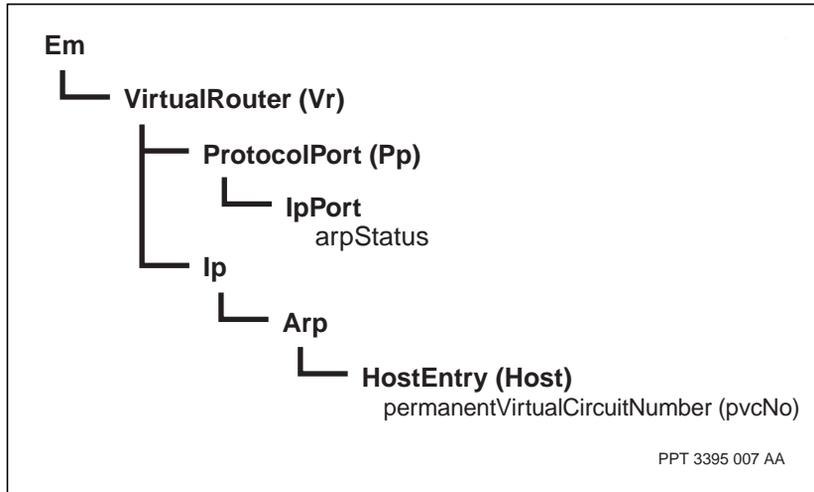
## Variable definitions

| Variable          | Value                                                     |
|-------------------|-----------------------------------------------------------|
| <DlciNumber>      | The static DLCI number for the node.                      |
| <ipifr ipaddress> | The IP address of the IPIFR.                              |
| <vr_instance>     | The instance value of the <i>VirtualRouter</i> component. |
|                   |                                                           |

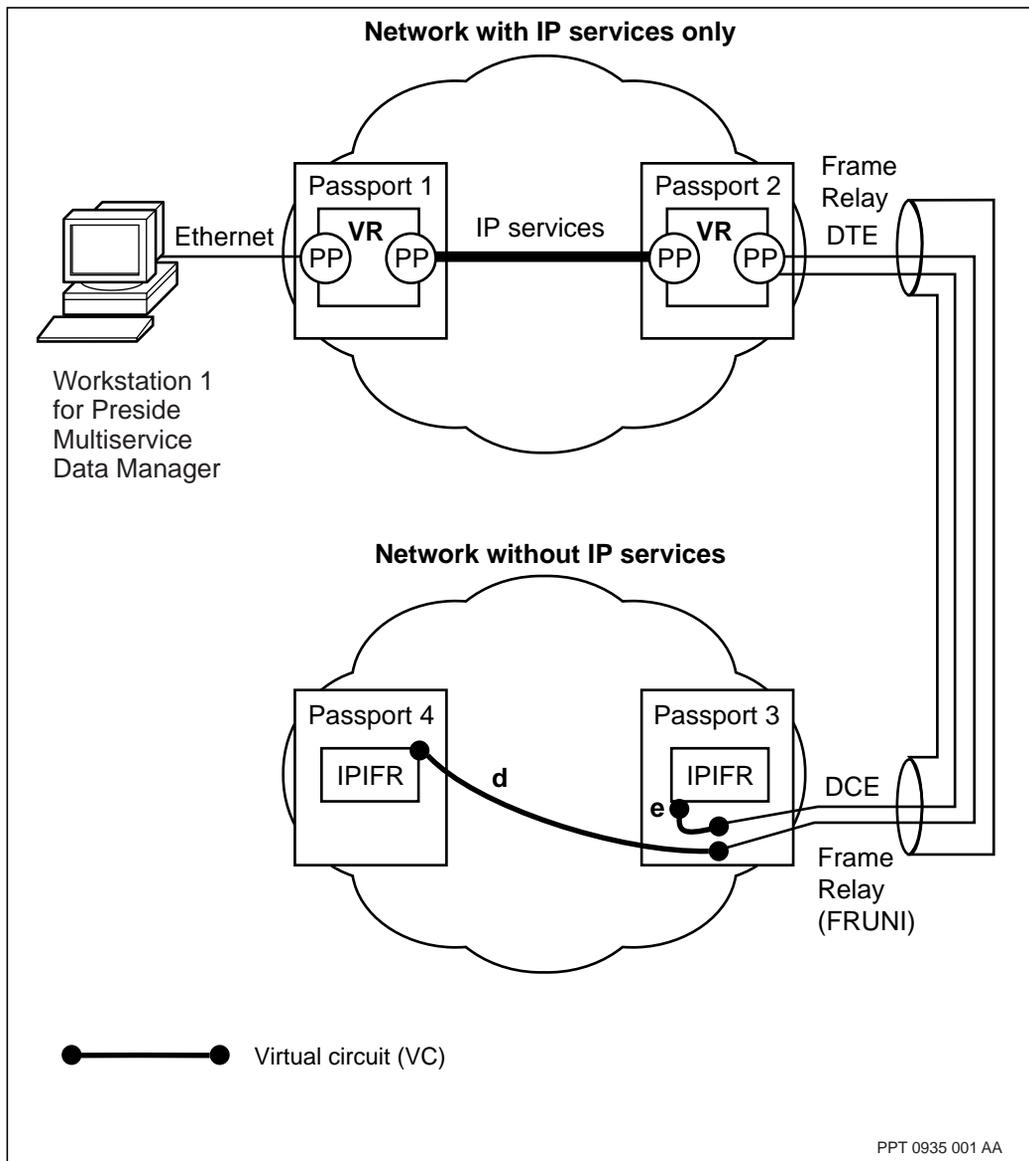
## Procedure job aid

Figure 15

Managing combined networks from a Preside MDM workstation in a network with VRIP services component hierarchy



**Figure 16**  
**Connection between a Preside MDM workstation on a network with IP services only and a network without IP services**



## Chapter 6

# VRIP network connectivity through OAM Ethernet configuration

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Instead of using StartUp, manually configure the OAM Ethernet port on the CP to connect to a Passport network.

- “Prerequisites to VRIP network connectivity through OAM Ethernet configuration” (page 67)
- “VRIP network connectivity through OAM Ethernet configuration task” (page 67)

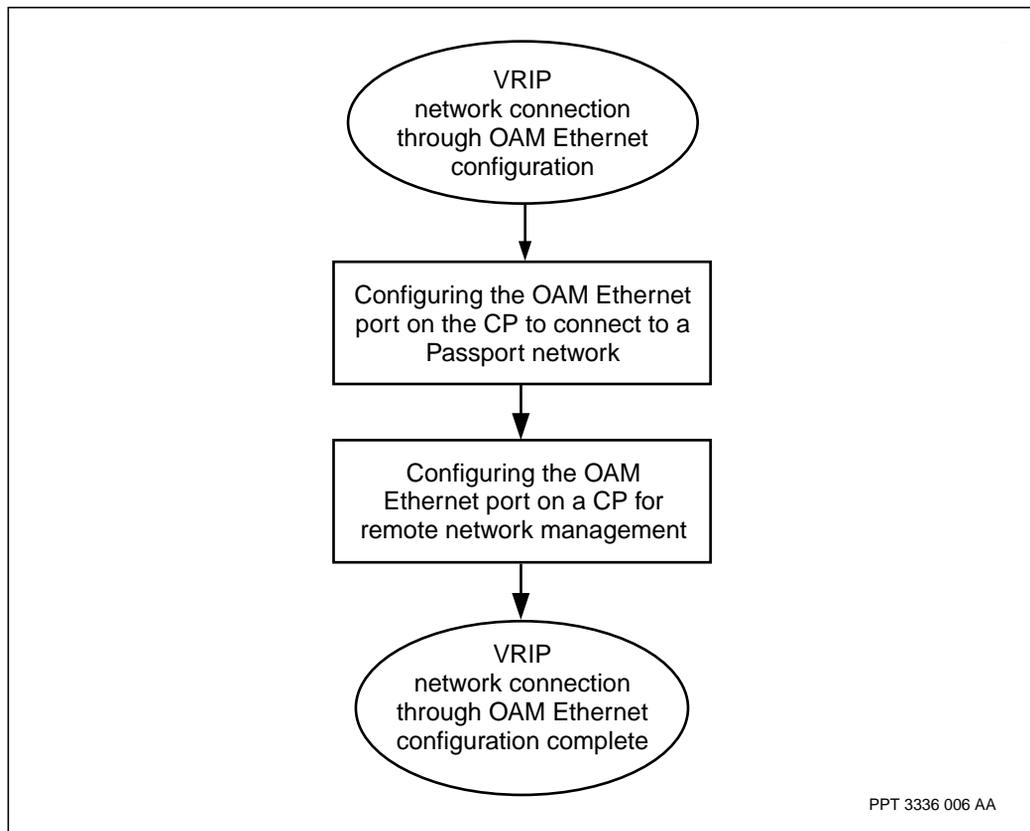
## Prerequisites to VRIP network connectivity through OAM Ethernet configuration

- For conceptual information, refer to “Configuring IP services networking through Ethernet” (page 150).

## VRIP network connectivity through OAM Ethernet configuration task

“VRIP network connectivity through OAM Ethernet configuration task flow” (page 68) shows you the sequence of tasks and procedures you perform to configure VRIP network connectivity through OAM Ethernet. To link to any task or procedure, go to “Task navigation” (page 68).

**Figure 17**  
**VRIP network connectivity through OAM Ethernet configuration task flow**



### **Task navigation**

- “Configuring the OAM Ethernet port on the CP to connect to a Passport network” (page 69)
- “Configuring the OAM Ethernet port on a CP for remote network management” (page 73)

## Configuring the OAM Ethernet port on the CP to connect to a Passport network

Manually configure the OAM Ethernet port on the CP to connect to a Passport network.

### Prerequisites

- For more information on the OAM Ethernet port, see 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*.
- The `oamEnet` and `ip` features must be part of the software application version list. For more information on adding features to the application version list, see 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*.

### Procedure steps

- 1 Add the `oamEnet` and `ip` features to the feature list of the control processor.  

```
set Software LogicalProcessorType/CP featureList
oamEnet ip
```
- 2 Check and activate the feature list configuration by entering the following commands.  

```
check prov
activate prov
```
- 3 Add the `OamEthernet` component to the control processor's logical processor.  

```
add LogicalProcessor/0 oamEnet/0
```
- 4 If you want to gather and report extended statistics, enable the `extendedStatistics` attribute.  

```
set LogicalProcessor/0 oamEnet/0 extendedStatistics
enabled
```
- 5 Create a LAN media application by adding a `LanApplication` component.  

```
add LanApplication/0
```
- 6 Associate the LAN media application with the OAM Ethernet port by setting the `interfaceName` attribute of the `Framer` subcomponent to the `OamEthernet` component.

```
set LanApplication/0 Framer interfaceName
LogicalProcessor/0 oamEnet/0
```

- 7 If you do not want the OAM Ethernet port to switch over to the port on the spare control processor when the test process detects a hardware or link failure, disable the `switchoverOnFailure` attribute.

```
set LogicalProcessor/0 oamEnet/0 switchoverOnFailure
disabled
```

- 8 Add a virtual router.

```
add VirtualRouter/0
```

- 9 Specify where the virtual router resides.

```
set VirtualRouter/0 vrp/<vr_lp>
```

- 10 Enable IP under the `VirtualRouter` component.

```
add VirtualRouter/0 Ip
```

- 11 Add a protocol port under the `VirtualRouter` component.

```
add VirtualRouter/0 ProtocolPort/oam0
```

- 12 Map the `LanApplication` component to the `ProtocolPort` component by setting the `linkToProtocolPort` attribute.

```
set LanApplication/0 linkToProtocolPort
VirtualRouter/0 ProtocolPort/oam0
```

- 13 Enable IP under the `ProtocolPort` component.

```
add VirtualRouter/0 ProtocolPort/oam0 IpPort
```

- 14 Add a logical IP interface under the `IpPort` component.

```
add VirtualRouter/0 ProtocolPort/oam0 IpPort
IpLogicalInterface/<ipAddress>
```

- 15 Set the `netmask` attribute of the `IpLogicalInterface` component to an appropriate IP address.

```
set VirtualRouter/0 ProtocolPort/oam0 IpPort
IpLogicalInterface/<ipAddress> netmask
<netmaskAddress>
```

- 16 Set the `broadcastAddress` attribute of the `IpLogicalInterface` component to an appropriate IP address.

```
set VirtualRouter/0 ProtocolPort/oam0 IpPort
IpLogicalInterface/<ipAddress> broadcastAddress
<broadcastAddress>
```

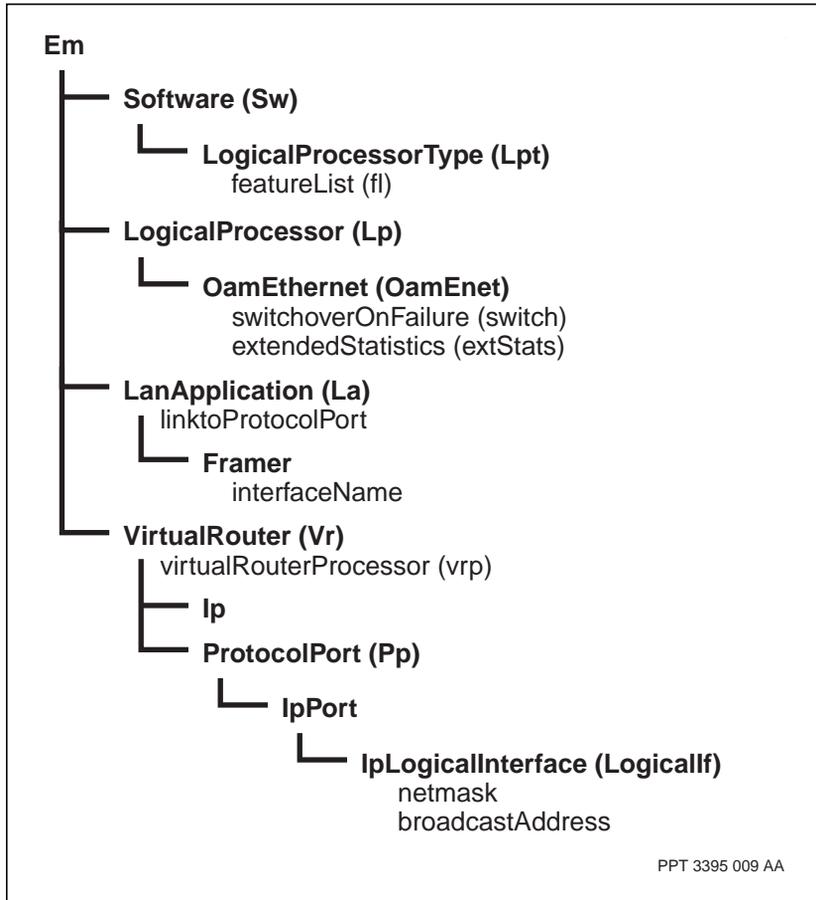
## Variable definitions

| Variable           | Value                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------|
| <broadcastAddress> | The broadcast address.                                                                                            |
| <ipAddress>        | The IP address of the OAM Ethernet port.                                                                          |
| <netmaskAddress>   | The netmask address.                                                                                              |
| <vr_lp>            | The instance value of the logical processor that is linked to the shelf card on which the virtual router resides. |
|                    |                                                                                                                   |

## Procedure job aid

Figure 18

Configuring the OAM Ethernet port on the CP to connect to a Passport network component hierarchy



## Configuring the OAM Ethernet port on a CP for remote network management

Configure the OAM Ethernet port on a CP for remote network management to add a RIP interface under the virtual router.

### Prerequisites

- Complete the procedure “Configuring the OAM Ethernet port on the CP to connect to a Passport network” (page 69).
- The local Passport 7400 node must be connected to the remote Passport using IP.
- For more information on the OAM Ethernet port, see 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*.

### Procedure steps

- 1 Add the routing information protocol (RIP) under the *Ip* component.

```
add VirtualRouter/0 Ip Rip
```

- 2 Add a RIP interface under the *IpLogicalInterface* component.

```
add VirtualRouter/0 ProtocolPort/oam0 IpPort
IpLogicalInterface/<ipAddress> RipInterface
```

### Variable definitions

| Variable    | Value                                    |
|-------------|------------------------------------------|
| <ipAddress> | The IP address of the OAM Ethernet port. |
|             |                                          |



---

## Chapter 7

# Configuring a Passport 7400 direct frame relay network connection

---

Configure a Passport 7400 direct frame relay network connection so the edge node can communicate with the physically connected device. An edge node is a Passport node that has a direct physical connection to a management device or an IP-routing-capable device.

### Prerequisites

- Ensure that the frame relay UNI feature is configured and activated on the logical processor that connects to the management device.
- For information on the values for the *Lmi* component, see 241-5701-901 *Passport 7400, 15000, 20000 Frame Relay Fundamentals*.
- See “Configuring a Passport 7400 node to access a directly connected management device” (page 143) for additional information about direct frame relay network connections.

### Procedure steps

- 1 Add the *FrUni* component that will connect to the IPIFR.  

```
add FrUni/<fruniNumber>
```
- 2 Link the *Framer* component to the logical processor.  

```
set FrUni/<fruniNumber> Framer interfaceName Lp/
<lpNumber> <port>/<portNumber>
```
- 3 Set the numbering plan indicator.  

```
set FrUni/<fruniNumber> Dna npi <plan>
```

- 4 Set the data network address (DNA) of the FrUni interface.  

```
set FrUni/<fruniNumber> Dna dataNetworkAddress <address1>
```
- 5 Set the default priority to high.  

```
set FrUni/<fruniNumber> Dna outDefaultPriority High
```
- 6 Set the default transfer priority to delay.  

```
set FrUni/<fruniNumber> Dna defaultTransferPriority 11
```
- 7 Set the procedures attribute of the *LocalManagementInterface (Lmi)* component.  

```
set FrUni/<fruniNumber> Lmi proc <type>
```
- 8 Set the remainder of the attributes for the *Lmi* component. The default values for the attributes in this step are for the purpose of illustration.  

```
set FrUni/<fruniNumber> Lmi asyncStatusReport off
set FrUni/<fruniNumber> Lmi errorEventThreshold 3
set FrUni/<fruniNumber> Lmi eventCount 4
set FrUni/<fruniNumber> Lmi checkPointTimer 15
set FrUni/<fruniNumber> Lmi messageCountTimer 20
set FrUni/<fruniNumber> Lmi pvcAlarmsReporting external
```
- 9 Add the frame relay *DataLinkConnectionIdentifier (Dlci)* component:  

```
add FrUni/<fruniNumber> Dlci/<dlciNumber>
```
- 10 Set the rate enforcement to off.  

```
set FrUni/<fruniNumber> Dlci/<dlciNumber> Sp rateEnforcement off
```
- 11 Set the maximum frame size to 1600.  

```
set FrUni/<fruniNumber> Dlci/<dlciNumber> Sp maximumFrameSize 1600
```
- 12 Set the attributes for the *DirectCall (Dc)* component.  

```
set FrUni/<fruniNumber> Dlci/<dlciNumber> Dc remoteDlci <remoteDLCI>
```

```
set FrUni/<fruniNumber> Dlci/<dlciNumber> Dc type
permanentMaster
```

```
set FrUni/<fruniNumber> Dlci/<dlciNumber> Dc remoteDna
<address2>
```

13 Repeat step 9 to step 12 for each DLCI to each internal Passport node.

14 To suppress accounting records generation for all *Dlci* components provisioned on the frame relay service port.

```
set FrUni/<fruniNumber> Dna accountCollection ~bill
```

15 To suppress accounting records generation on the frame relay service *Dlci* component which is originating the call to IPIFR, set the *accounting* attribute to off.

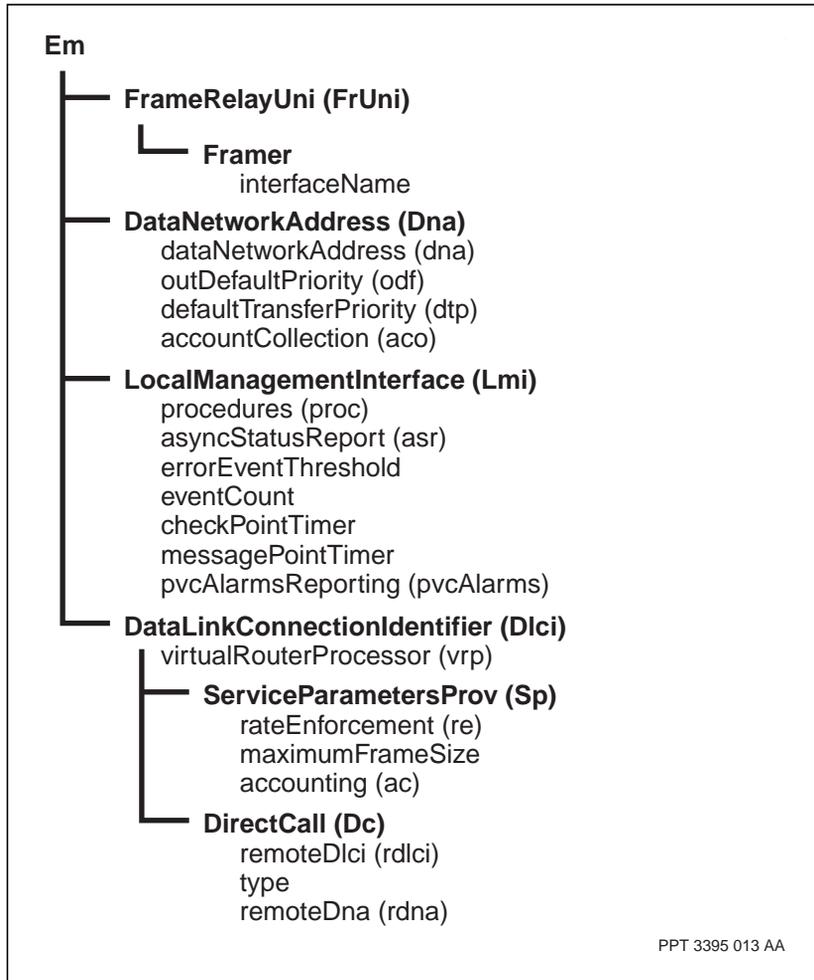
```
set FrUni/<fruniNumber> Dlci/<dlciNumber> Sp
accounting off
```

## Variable definitions

| Variable      | Value                                                                                |
|---------------|--------------------------------------------------------------------------------------|
| <address1>    | A unique DNA in the network (up to 15 digits long).                                  |
| <address2>    | The DNA of the remote-end DNA link (the DNA of the internal Passport node's IPIFR).  |
| <dlciNumber>  | The instance number for the <i>Dlci</i> component.                                   |
| <fruniNumber> | The instance number for the <i>FrUni</i> component.                                  |
| <lpNumber>    | The instance number of the logical processor.                                        |
| <plan>        | e164 or x121<br>Packet-switched data networks use x121.                              |
| <port>        | X21 or V35                                                                           |
| <portNumber>  | The instance number of the port that connects to the management device.              |
| <remoteDLCI>  | The LCN at the remote end of the VC (the LCN of the internal Passport node's IPIFR). |
| <type>        | The type of LMI procedure used (none, vendorForum, ansi, itu, or autoConfigure).     |

## Procedure job aid

**Figure 19**  
**Configuring FRUNI access on an edge node component hierarchy**



PPT 3395 013 AA

## Chapter 8

# IP services over ATM MPE configuration

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Configure IP services over ATM MPE instead of using StartUp.

- “Prerequisites to IP services over ATM MPE configuration” (page 79)
- “IP services over ATM MPE configuration task” (page 79)

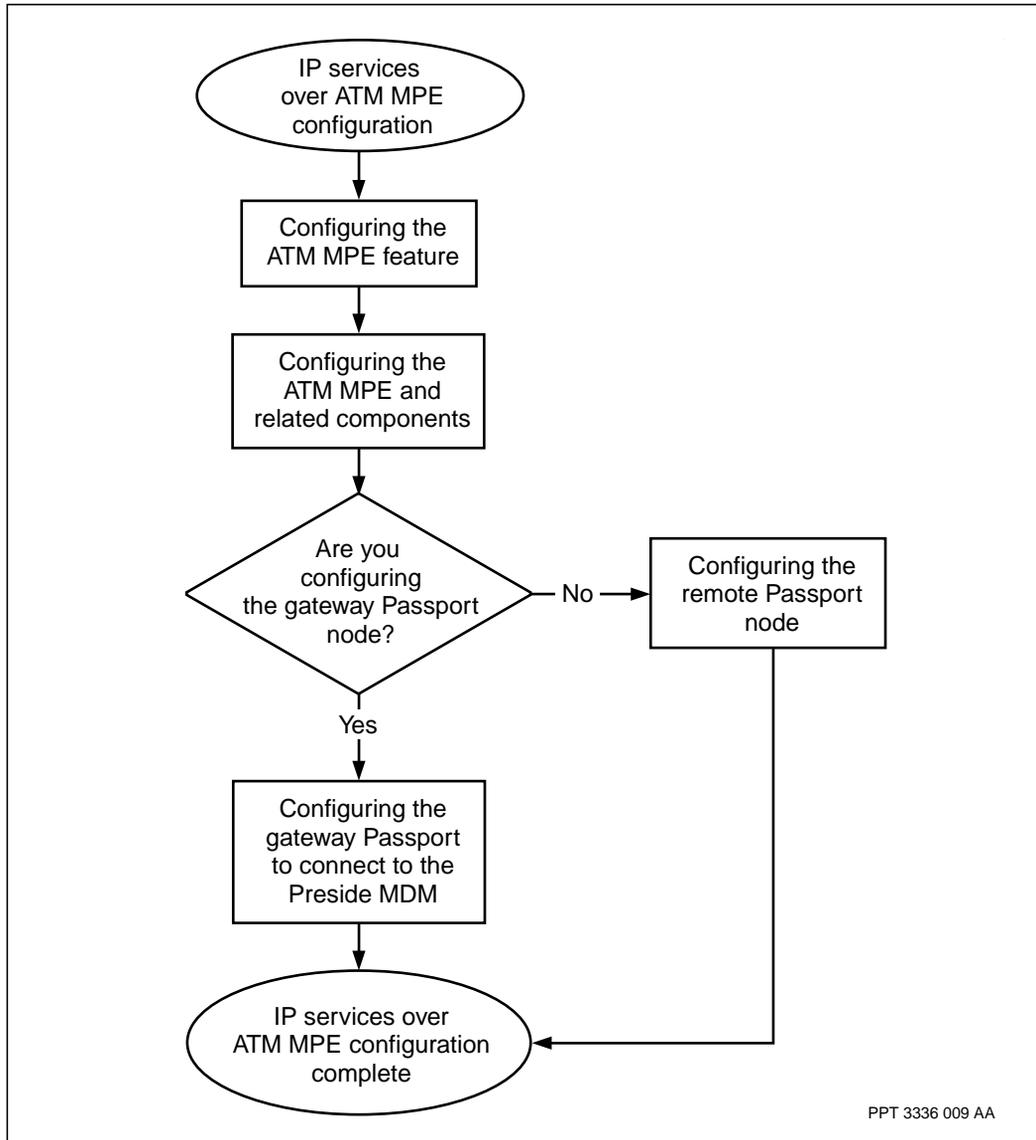
### Prerequisites to IP services over ATM MPE configuration

- For more details on configuring IP over ATM MPE, refer to *241-5701-810 Passport 7400, 15000, 20000 Configuring IP*.

### IP services over ATM MPE configuration task

“IP services over ATM MPE configuration task flow” (page 80) shows you the sequence of tasks and procedures you perform to configure IP services over ATM MPE. To link to any task or procedure, go to “Task navigation” (page 81).

**Figure 20**  
**IP services over ATM MPE configuration task flow**



## Task navigation

- “Configuring the ATM MPE feature” (page 82)
- “Configuring the ATM MPE and related components” (page 83)
- “Configuring the remote Passport node” (page 87)
- “Configuring the gateway Passport to connect to the Preside MDM” (page 93)

## Configuring the ATM MPE feature

Configure the ATM MPE feature to create a logical processor type (LPT) for your ATM feature list requirements.

### Procedure steps

- 1 Create a software LPT component.  
`add sw lpt/ATMMPE`
- 2 Add the ATM MPE and IP features for all Passport nodes to the software LogicalProcessorType component.  
`set sw lpt/ATMMPE featurelist atmMpe ip`
- 3 Link the LP to the card.  
`set Lp/<number> mainCard Shelf Card/<card>`
- 4 Link the LP to a logical processor type.  
`set Lp/<number> Lpt Sw Lpt/<name>`

### Variable definitions

| Variable | Value                                                |
|----------|------------------------------------------------------|
| <card>   | The instance number of the card.                     |
| <name>   | The name of the LPT defined for the ATM MPE service. |
| <number> | The instance number of the logical processor.        |
|          |                                                      |

## Configuring the ATM MPE and related components

Configure the ATM MPE to set an ATM MPE interface for IP traffic and an ATM PVC for the ATM MPE interface.

### Prerequisites

- Refer to 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP* for more information.

### Procedure steps

- 1 Configure the ATM FP port. If you are configuring an OC-3 ATM FP, define the SONET sub-component for the OC-3 port on the Lp (sts for Passport 15000 and 20000, path for Passport 7400).

```
add -s lp/<number> Sonet/<port number> sts/<sts>
```

or

```
add -s lp/<number> Sonet/<port number> path/<path>
```

- 2 Create an instance of the ATM MPE service.

```
add AtmMpe/<atmMpeNumber>
```

- 3 Specify the maximum transmission unit (MTU) size to be used for ATM connections on this interface.

```
set AtmMpe/<atmMpeNumber> mtu <size>
```

- 4 Specify the encapsulation type to be used for ATM connections on this interface.

```
set AtmMpe/<atmMpeNumber> encapType <type>
```

- 5 Configure a VCC under an ATM interface. This VCC is directly associated with the ATM MPE service and resides on the same Passport node.

```
add AtmIf/<atmIfNumber> Vcc/<vc>
```

- 6 Associate the AtmIf attribute interfaceName with the appropriate logical processor port to link the port component to the ATM interface.

```
set AtmIf/<atmIfNumber> interfaceName lp/<number>
sonet/<port_number> sts/<sts>
```

- 7 Create a nailed-up endpoint (NEP) for the VCC.

```
add AtmIf/<atmIfNumber> Vcc/<vc> Nep
```

- 8 Set the atmServiceCategory to real time variable bit rate (rtvbr).

```
set atmif/<atmIfNumber> vcc/<vc> vcd tm
atmServiceCategory rtvbr
```

- 9 Link the ATM MPE service to the ATM VCC.

```
set AtmMpe/<atmMpeNumber> Ac/<conn> atmConnection
AtmIf/<atmIfNumber> Vcc/<vc> Nep
```

- 10 Add a protocol port to the management virtual router.

```
add Vr/<vr_name> ProtocolPort/<pp_id>
```

- 11 Add an IpPort component as a subcomponent of the protocol port component to enable IP routing on that port.

```
add Vr/<vr_name> ProtocolPort/<pp_id> IpPort
```

- 12 Add a LogicalIf component as a subcomponent of the IpPort component. Specify at least one IP address for the protocol port through the Logical interface subcomponent so that IP can function.

```
add Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress>
```

- 13 Configure a network mask for the protocol port to identify the IP subnet to which the interface belongs.

```
set Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress> netMask <netmask>
```

- 14 Configure a broadcast address for the protocol port component.

```
set Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress> broadcastAddress
<broadcast_address>
```

- 15 Configure other attributes of the LogicalIf component as necessary. Refer to 241-5701-060 *Passport 7400, 15000, 20000 Components* for more information.

## Variable definitions

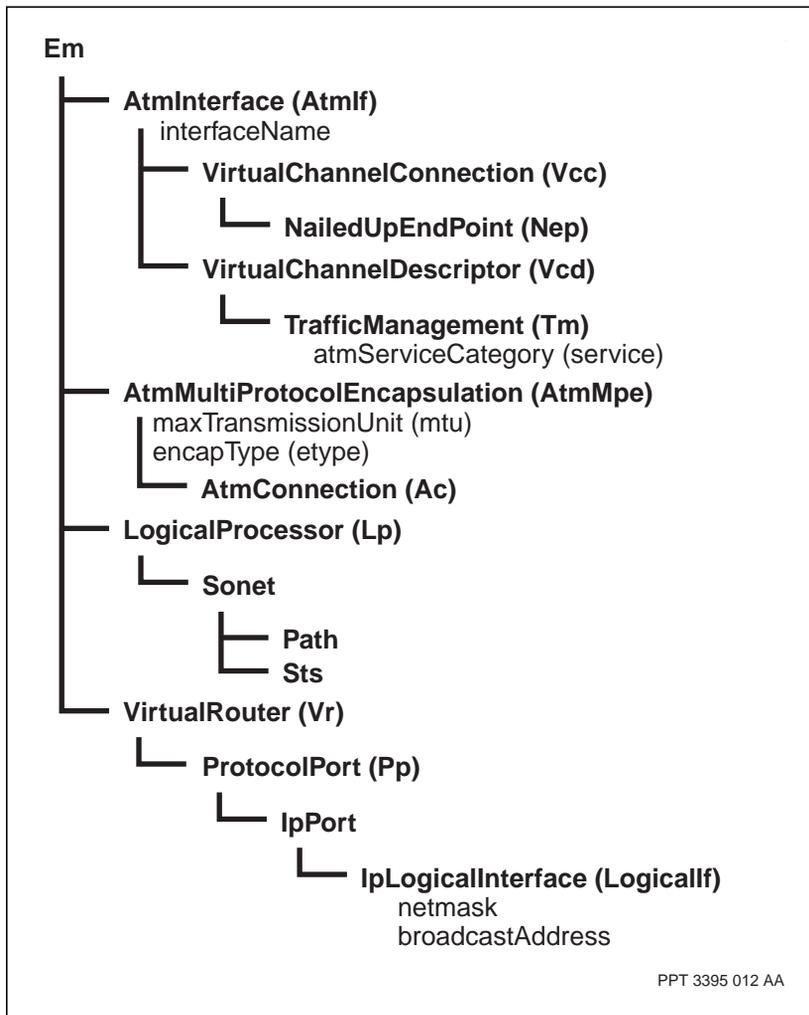
| Variable       | Value                                         |
|----------------|-----------------------------------------------|
| <atmIfNumber>  | The instance number of the ATM interface.     |
| <atmMpeNumber> | The instance number of the ATM MPE interface. |
| (Sheet 1 of 2) |                                               |

| Variable            | Value                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <broadcast_address> | The broadcast address of the attached IP network or subnetwork.<br><br>This address is usually the last or highest (the host address is all ones) address available in the subnet.                                                        |
| <ipAddress>         | The 32-bit IP address assigned to this logical interface.                                                                                                                                                                                 |
| <number>            | An instance number (usually the slot number of card to which you are linking this LP).                                                                                                                                                    |
| <netmask>           | The network mask to be used with the IP address.                                                                                                                                                                                          |
| <path>              | The instance number of the path.                                                                                                                                                                                                          |
| <port_number>       | The port number on the ATM FP card that your connection plugs into. For example, a 4pOC3MmATM card has a valid range of 0 to 3.                                                                                                           |
| <pp_id>             | The instance value assigned to the protocol port.                                                                                                                                                                                         |
| <size>              | The size of the largest datagram that can be sent on the interface.<br><br>The minimum value required for IP is 576 (9180 is generally used for ATM MPE connections).                                                                     |
| <sts>               | The instance number of the sts.                                                                                                                                                                                                           |
| <type>              | The encapsulation type defined for ATM connections on the interface.<br><br>The default value is llcEncap encapsulation.                                                                                                                  |
| <vc>                | The instance value of the VCC.<br><br>If the virtual channel is associated with a VPT, this value is the VCI value.<br><br>The VCC instance must be the same on the port on the gateway Passport as configured in the ATM NIC on the MDM. |
| <vr_name>           | The name assigned to the virtual router.                                                                                                                                                                                                  |
| (Sheet 2 of 2)      |                                                                                                                                                                                                                                           |

## Procedure job aid

Figure 21

Configuring the ATM MPE and related components component hierarchy



PPT 3395 012 AA

## Configuring the remote Passport node

Configure the remote Passport node to connect, through in-band signalling, to the Preside MDM workstation.

### Prerequisites

- Ensure that you have completed the startup steps (setting the card type, adding LPs, creating LPTs and linking them together) required to set up a remote Passport.
- Ensure that the outgoing ATM port on the gateway Passport is on the same ATM card as the ATM port that connects to the MDM.
- Decide whether to use static routes (if you have only two or three Passport nodes, static routes are acceptable) or a routing protocol.

*Note:* This procedure shows how to configure the Open Shortest Path First (OSPF) routing protocol for the protocol port that you have linked to the ATM MPE application. Refer to 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP* for further details on routing protocols.

- Refer to 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP* for more details on assigning the ATM MPE application to a protocol port (Pp) on the management virtual router (VR).

### Procedure steps

- 1 Configure a VCC under an ATM interface. This VCC is directly associated with the ATM MPE service and resides on the same Passport node.

```
add -s AtmIf/<atmIfNumber> Vcc/<vc>
```

- 2 Associate the AtmIf attribute interfaceName with the appropriate logical processor port to link the port component to the ATM interface.

```
set AtmIf/<atmIfNumber> interfaceName lp/<number>
sonet/<port_number> sts/<sts>
```

- 3 Create a nailed-up end point (NEP) for the VCC.

```
add AtmIf/<atmIfNumber> Vcc/<vc> Nep
```

- 4 Set the atmServiceCategory to real time variable bit rate (rtvbr).

```
set atmif/<atmIfNumber> vcc/<vc> vcd tm
atmServiceCategory rtvbr
```

- 5 Link the ATM MPE service to the ATM VCC.

```
set AtmMpe/<atmMpeNumber> Ac/<conn> atmConnection
AtmIf/<atmIfNumber> Vcc/<vc> Nep
```

- 6 Add a protocol port to the management virtual router to manage the Passport you are currently provisioning.

```
add Vr/<vr_name> ProtocolPort/<pp_id>
```

- 7 Add an IpPort component as a subcomponent of the protocol port component to enable IP routing on that port.

```
add Vr/<vr_name> ProtocolPort/<pp_id> IpPort
```

- 8 Add a LogicalIf component as a subcomponent of the IpPort component. Specify at least one IP address for the protocol port through the Logical interface subcomponent so that IP can function.

```
add Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress>
```

- 9 Configure a network mask for the protocol port to identify the IP subnet to which the interface belongs.

```
set Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress> netMask <netmask>
```

- 10 Configure a broadcast address for the protocol port component.

```
set Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress> broadcastAddress
<broadcast_address>
```

- 11 Configure other attributes of the LogicalIf component as necessary. Refer to 241-5701-060 *Passport 7400, 15000, 20000 Components* for more information.

- 12 Add an Ospf component as a subcomponent of the Ip component.

```
add Vr/<vr_name> Ip Ospf
```

- 13 Add at least one AreaEntry component as a subcomponent of the Ospf component.

```
add Vr/<vr_name> Ip Ospf AreaEntry/<area_id>
```

- 14 To enable OSPF on Passport, add the Ospfif component to each logical interface that is using in the OSPF process.

```
add Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress> Ospfif
```

- 15 Add a neighbor component for each OSPF neighbor if the interface type is point-to-multipoint non-broadcast or NBMA.

```
add Vr/<vr_name> ProtocolPort/<pp_id> IpPort
LogicalIf/<ipAddress> Ospfif neighbor/
<neighbor_ipAddress>
```

- 16 Add an Export component to the Ospf component.

```
add Vr/<vr_name> Ip Ospf Export/<export_policy_number>
```

- 17 Set the asBdrRtrStatus attribute to enable the OSPF export policy. If you set this attribute to the default value of false, OSPF uses the default export policy, blocking the export of all non-OSPF learned routes.

```
set Vr/<vr_name> Ip Ospf asBdrRtrStatus true
```

## Variable definitions

| Variable            | Value                                                                                                                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <area_id>           | A 32-bit IP address for the OSPF area in which this router is located. 0.0.0.0 is often used for this value and should be used in this case.                                                                                                                                                                                         |
| <atmIfNumber>       | The instance number of the ATM interface.                                                                                                                                                                                                                                                                                            |
| <atmMpeNumber>      | The instance number of the ATM MPE interface.                                                                                                                                                                                                                                                                                        |
| <broadcast_address> | The broadcast address of the attached IP network or subnetwork.<br><br>This address is usually the last or highest address available in the subnet. For example, if the subnet is the range from 200.10.10.8 to 200.10.10.15, then the first valid address is 200.10.10.9 and the broadcast address is 200.10.10.15 for this subnet. |
| (Sheet 1 of 2)      |                                                                                                                                                                                                                                                                                                                                      |

| Variable               | Value                                                                                                                                                                                                                           |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <conn>                 | Specifies the PVC for the static hostEntry, and is the instance number of the AtmConnection component on the ATM MPE interface.                                                                                                 |
| <export_policy_number> | The numeric designation assigned to this export policy. The Inband connectivity uses 1 here.                                                                                                                                    |
| <ipAddress>            | The 32-bit IP address assigned to this logical interface. This is the IP of the outgoing port to the remote Passport.                                                                                                           |
| <neighbor_ipAddress>   | The 32-bit address assigned to the OSPF neighbor, which is the IP address of the ATM FP port on the other end of the ATM.<br><br>For broadcast networks, the OSPF neighbors are discovered automatically by the Hello protocol. |
| <netmask>              | The network mask to be used with the IP address. This subnet must be different than the one between the MDM and the gateway Passport.                                                                                           |
| <number>               | An instance number (usually the slot number of card to which you are linking this LP).                                                                                                                                          |
| <pp_id>                | The instance value assigned to the protocol port.                                                                                                                                                                               |
| <sts>                  | The instance number of the sts.                                                                                                                                                                                                 |
| <vc>                   | The instance value of the VCC (for example, Vcc/0.32).<br><br>The VCC instance must be the same on the outgoing port on the gateway PP as the VCC instance on the incoming port on the remote Passport.                         |
| <vr_name>              | The name assigned to the virtual router.                                                                                                                                                                                        |
| (Sheet 2 of 2)         |                                                                                                                                                                                                                                 |

### Example of configuring the remote Passport node

Following is an example of how to configure a gateway Passport to a SunATM NIC on a MDM with the following settings:

- IP of ATM NIC card: 200.10.10.1
- IP of Gateway Passport ATM Port: 200.10.10.2
- Subnet mask of WS to gateway Passport: 255.255.255.248
- VCI used: 32

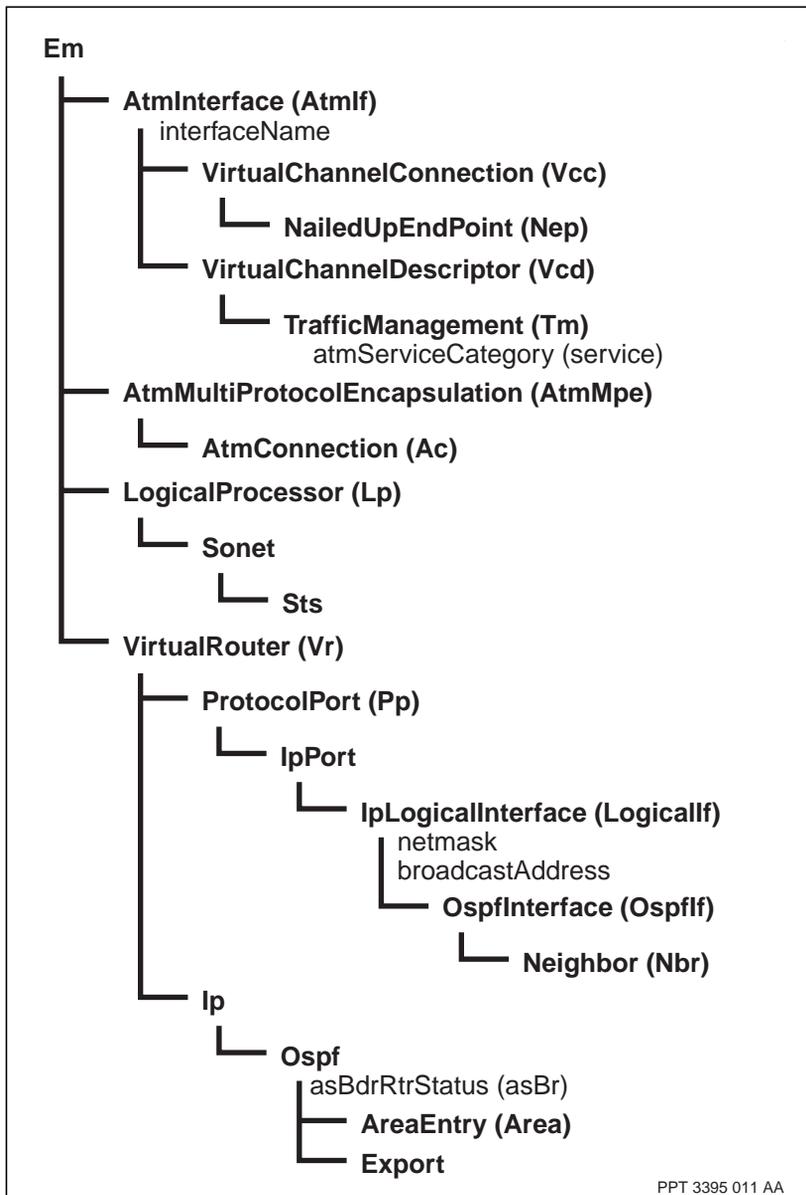
- ATM FP Type: 4pOC3MmATM
- Slot of ATM FP on gateway Passport: 8
- Port of fiber connection in ATM FP: 2
- Passport Shelf Type: 15000

```
1 add -s AtmIf/82 Vcc/0.32
2 set AtmIf/82 interfaceName Lp/8 Sonet/2 sts/0
3 add -s AtmIf/82 Vcc/0.32 Nep
4 set AtmIf/82 Vcc/0.32 vcd tm atmServiceCategory rtvbr
5 set AtmMpe/82 Ac/1 atmConnection AtmIf/82 Vcc/0.32 Nep
6 add Vr/Manag0 ProtocolPort/MPEPP
7 add Vr/Manag0 ProtocolPort/MPEPP IpPort
8 add Vr/Manag0 ProtocolPort/MPEPP IpPort LogicalIf/
 200.10.10.2
9 set Vr/Manag0 ProtocolPort/MPEPP IpPort LogicalIf/
 200.10.10.2 netmask 255.255.255.248
10 set Vr/Manag0 ProtocolPort/MPEPP IpPort LogicalIf/
 200.10.10.2 broadcast 200.10.10.7
11 After saving and activating the changes, test the connection with a ping to
 the workstation from the Passport.

 ping -i(200.10.10.1) Vr/Manag0 Ip Icmp
```

## Procedure job aid

**Figure 22**  
**Configuring the remote Passport node component hierarchy**



PPT 3395 011 AA

## Configuring the gateway Passport to connect to the Preside MDM

Configure the gateway Passport to the Preside MDM to physically connect to the Preside MDM workstation.

### Prerequisites

- If you are using llcEncap encapsulation, you must decide to either use static ARP entries or to allow for dynamic entries into the routing table.
- If you are using IpVcEncap, static ARP is mandatory.
- If you do not create the static hostEntry component, a DynHost component is automatically created under the Vr/<vr\_name> Ip Arp component.

The following information is required before starting to configure the gateway Passport:

- The IP address of the ATM port for both the outgoing connection from the NIC on the MDM and the incoming connection on the gateway Passport. These IP addresses must be in the same subnet.
- The subnet mask that will be used to create the subnet. There will be one subnet from the MDM to the gateway Passport, and one subnet for each connection from the gateway Passport to remote Passports.
- The VCC identifier number that will be used to connect the MDM and the Passports together. This is called the PVC in the ATM NIC configuration.

**Note:** This information is required only if the SunATM NIC is manually configured.

- The slot and port number on each Passport that requires an ATM connection.

### Procedure steps

- 1 Create a static ARP entry for IP routing to ensure IP connectivity across the ATM network.

```
add Vr/<vr_name> Ip Arp HostEntry/<host_address>
```

- 2 Specify a PVC entry for the remote host.

```
set Vr/<vr_name> Ip Arp HostEntry/<host_address> pvcNo
<conn>
```

- 3 After you have activated the changes, test the connection by pinging the MDM from the Passport.

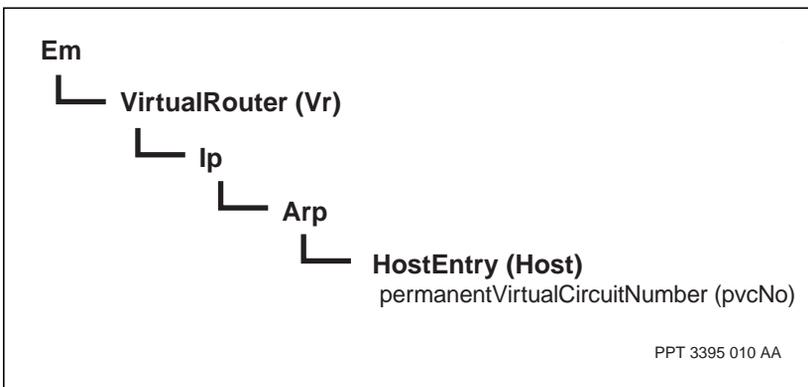
```
ping -i(<IP of SunATM NIC>) Vr/<vr_name> Ip Icmp
```

### Variable definitions

| Variable       | Value                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <conn>         | Specifies the PVC for the static hostEntry, and is the instance number of the AtmConnection component on the ATM MPE interface.<br><br>This PVC number is not the same as the PVC number used to configure the SunATM NIC on the MDM. The PVC number used in configuring the SunATM NIC must match the instance number of the Vcc component under the AtmIf component associated with the physical port that the ATM line is connected to. |
| <host_address> | The IP address of the static host being defined. This is the IP of the SunATM NIC on the MDM.                                                                                                                                                                                                                                                                                                                                              |
| <vr_name>      | The name assigned to the virtual router.                                                                                                                                                                                                                                                                                                                                                                                                   |

### Procedure job aid

**Figure 23**  
**Configuring the gateway Passport to connect to the Preside MDM component hierarchy**



## Chapter 9

# Connecting Passport to the network using StartUp reference

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This section provides reference information that you may find useful when connecting a Passport node to the network using the StartUp utility.

### Connecting Passport 15000 and Passport 20000 to the network using StartUp reference

- “Connections using a 4-port DS3 channelized frame relay card” (page 95)
- “Connections to Preside MDM using the OAM Ethernet port or through a Passport IP services network over ATM MPE” (page 97)

#### Connections using a 4-port DS3 channelized frame relay card

A 4-port DS3 channelized frame relay FP can be configured to be either channelized or unchannelized. Both configurations for the same FP at the same time is not supported. For more information on 4-port DS3 channelized frame relay FPs, see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.

**Note:** Before inserting a PQC12-based FP, ensure that PCR3.0 software is running on the Passport 15000 or 20000.

If you choose a timeslot that is currently selected, it becomes de-selected. In this example, if you enter 0 after de-selecting timeslot 24, then you are selecting timeslots 1 through 23 inclusive.

When provisioning timeslots on the 4-port DS3 channelized FP, you can choose a timeslot value of none. This timeslot value allows for the pre-provisioning of a frame relay service, either FrUni, FrNni, or FrAtm, without assigning specific DS0 timeslots to a channel. Once you create a framer component for one of the frame relay services with a timeslot of none provisioned, the channel is in a ready, enabled, idle state and does not transfer data thus saving bandwidth. A timeslot value of none cannot be combined with other valid timeslot values (see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference* for details).

**Table 1**  
**Information for using DS3 links to connect to Preside MDM through a Passport-only network**

| Item                                                                                    | Values for your installation | Examples of values |
|-----------------------------------------------------------------------------------------|------------------------------|--------------------|
| DS3 line length (in feet)                                                               |                              | 300                |
| Will the link supply a local clock?                                                     |                              | Y (local)          |
| Framing type                                                                            |                              | HDLC               |
| Port number                                                                             |                              | 2                  |
| Line type                                                                               |                              | Y (ESF)            |
| Clocking source                                                                         |                              | Y (local)          |
| Timeslots                                                                               |                              | 1, 3, 4, 6, 12     |
| Ds1 line length (in feet)<br>[This item applies to the 4-port DS3 channelized FP only.] |                              | 300                |
| Framing type                                                                            |                              | HDLC               |
| SNMP Network Management                                                                 |                              | Y                  |
| Configure SNMPv1                                                                        |                              | Y                  |
| SNMPv1 Manager                                                                          |                              | 47.14.51.245       |
| (Sheet 1 of 2)                                                                          |                              |                    |

**Table 1 (continued)**  
**Information for using DS3 links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
| (Sheet 2 of 2)           |                              |                    |

### **Connections to Preside MDM using the OAM Ethernet port or through a Passport IP services network over ATM MPE**

You are prompted to enter the IP address of Preside MDM, the encryption key, and the inbound and outbound security parameter index (SPI) values only if IPsec is enabled. If the component *Vr Ip Spd* exists, IPsec is enabled.

Ensure that the encryption key and SPI values you enter are identical to those entered for Preside MDM. For more information about IPsec, see NN10600-605 *Passport - MDM Network Security: Operations*.

## **Connecting Passport 7400 to the network using StartUp reference**

- “Connections through a DPN network” (page 99)
- “Connections to Preside MDM through a DPN network using DS3 or E3 links” (page 99)
- “Connections to Preside MDM through a DPN network using V.35 or V.11/X.21 links” (page 101) “Connections to Preside MDM through a DPN network using E1 links” (page 102)
- “Connections to Preside MDM through a DPN network using DS1 links” (page 103)
- “Connections to Preside MDM through a DPN network using DS3 ATM links” (page 104)

- “Connections to Preside MDM through a DPN network using E3 ATM links” (page 105)
- “Connections to Preside MDM through a DPN network using OC-3 ATM links” (page 106)
- “Connections to Preside MDM through a DPN network using DS1 ATM and DS1 MSA32 links” (page 107)
- “Connections to Preside MDM through a DPN network using E1 ATM and E1 MSA32 links” (page 108)
- “Connections to Preside MDM through a DPN network using JT2 ATM links” (page 109)
- “Connections through a Passport network” (page 110)
- “Connections to Preside MDM through a Passport-only network using DS3 or E3 links” (page 112)
- “Connections to Preside MDM through a Passport-only network using V.35 or V.11/X.21 links” (page 113)
- “Connections to Preside MDM through a Passport-only network using E1 links” (page 114)
- “Connections to Preside MDM through a Passport-only network using DS1 links” (page 115)
- “Connections to Preside MDM through a Passport-only network using DS3 ATM links” (page 116)
- “Connections to Preside MDM through a Passport-only network using E3 ATM links” (page 117)
- “Connections to Preside MDM through a Passport-only network using OC-3 ATM links” (page 118)
- “Connections to Preside MDM through a Passport-only network using DS1 ATM and DS1 MSA32 links” (page 119)
- “Connections to Preside MDM through a Passport-only network using E1 ATM and E1 MSA32 links” (page 120)
- “Connections to Preside MDM through a Passport-only network using JT2 ATM links” (page 121)

- “Direct connections from Passport 7400 to Preside MDM using a frame relay PVC” (page 122)
- “Connections to Preside MDM through a Passport IP services network over ATM MPE” (page 123)
- “Connections to Preside MDM through a Passport IP services network over FR DTE” (page 125)
- “Connections to Preside MDM through a Passport IP services network over Ethernet” (page 125)
- “Connections to Preside MDM using the OAM Ethernet port” (page 126)

## Connections through a DPN network

Ensure that you have configured the call server resource module (CSRM) to support the new Passport 7400 node in a connection through a DPN network.

**Table 2**  
**Information for connecting a Passport 7400 node to Preside MDM through a DPN network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| Node IP address          |                              | 12.34.56.78        |
| DNIC                     |                              | 3021               |
| IPIVC DNA                |                              | 30210211040000     |
| IPIVC CUG interlock code |                              | 32770              |
| Slot number              |                              | 3                  |
|                          |                              |                    |

## Connections to Preside MDM through a DPN network using DS3 or E3 links

Before you begin, the network administrator must ensure that the network wide data, line mode IP address, RID, MID, node name, node ID, network administration identifier (NAMS ID), and IP interface over virtual circuit data network address (IPIVC DNA) are unique.

**Table 3**  
**Information for using DS3 or E3 links to connect a Passport node to**  
**Preside MDM through a DPN network**

| Item                                                                                   | Values for your installation | Examples of values |
|----------------------------------------------------------------------------------------|------------------------------|--------------------|
| Trunk type: Enter 1 for Gateway to a DPN, or 2 for unacknowledged trunk to a Passport. |                              | 1                  |
| Line length: Enter the length (in feet for DS3 trunks and in meters for E3 trunks).    |                              | 300                |
| Clocking source: Will the link supply a local clock?                                   |                              | Y (local)          |
| Framing type (for unacknowledged-type trunk)                                           |                              | HDLC               |
| SNMP Network Management                                                                |                              | Y                  |
| Configure SNMPv1                                                                       |                              | Y                  |
| SNMPv1 Manager                                                                         |                              | 47.14.51.245       |
| SNMPv1 Community String                                                                |                              | public             |
| Configure SNMPv2c                                                                      |                              | Y                  |
| SNMPv2c Manager                                                                        |                              | 47.14.51.245       |
| SNMPv2c Community String                                                               |                              | public             |
|                                                                                        |                              |                    |

## Connections to Preside MDM through a DPN network using V.35 or V.11/X.21 links

**Table 4**  
Information for using V.35 or X.21 links to connect a Passport node to Preside MDM through a DPN network

| Item                                                                                   | Values for your installation | Examples of values |
|----------------------------------------------------------------------------------------|------------------------------|--------------------|
| Port number                                                                            |                              | 8                  |
| Trunk type: Enter 1 for Gateway to a DPN, or 2 for unacknowledged trunk to a Passport. |                              | 1                  |
| Framing type (for unacknowledged-type trunk)                                           |                              | HDLC               |
| Port type: (Is the port DCE?)                                                          |                              | Y                  |
| Line speed: (for DCE port)                                                             |                              | 9600               |
| SNMP Network Management                                                                |                              | Y                  |
| Configure SNMPv1                                                                       |                              | Y                  |
| SNMPv1 Manager                                                                         |                              | 47.14.51.245       |
| SNMPv1 Community String                                                                |                              | public             |
| Configure SNMPv2c                                                                      |                              | Y                  |
| SNMPv2c Manager                                                                        |                              | 47.14.51.245       |
| SNMPv2c Community String                                                               |                              | public             |
|                                                                                        |                              |                    |

## Connections to Preside MDM through a DPN network using E1 links

**Table 5**  
**Information for using E1 links to connect a Passport node to Preside MDM through a DPN network**

| Item                                                                                   | Values for your installation | Examples of values      |
|----------------------------------------------------------------------------------------|------------------------------|-------------------------|
| Port number                                                                            |                              | 2                       |
| Trunk type: Enter 1 for Gateway to a DPN, or 2 for unacknowledged trunk to a Passport. |                              | 1                       |
| Line type                                                                              |                              | Y (CAS)<br>N (CCS)      |
| Timeslots                                                                              |                              | 1,2,4,6                 |
| Clocking source                                                                        |                              | Y (local)<br>N (module) |
| Framing type (for unacknowledged-type trunk)                                           |                              | HDLC                    |
| SNMP Network Management                                                                |                              | Y                       |
| Configure SNMPv1                                                                       |                              | Y                       |
| SNMPv1 Manager                                                                         |                              | 47.14.51.245            |
| SNMPv1 Community String                                                                |                              | public                  |
| Configure SNMPv2c                                                                      |                              | Y                       |
| SNMPv2c Manager                                                                        |                              | 47.14.51.245            |
| SNMPv2c Community String                                                               |                              | public                  |
|                                                                                        |                              |                         |

## Connections to Preside MDM through a DPN network using DS1 links

**Table 6**  
**Information for using DS1 links to connect a Passport node to Preside MDM through a DPN network**

| Item                                                                                   | Values for your installation | Examples of values      |
|----------------------------------------------------------------------------------------|------------------------------|-------------------------|
| Port number                                                                            |                              | 2                       |
| Trunk type: Enter 1 for Gateway to a DPN, or 2 for unacknowledged trunk to a Passport. |                              | 1                       |
| Framing type (for unacknowledged-type trunk)                                           |                              | HDLC                    |
| Line type (Will the link use ESF)                                                      |                              | Y                       |
| Timeslots                                                                              |                              | 1,2,4,6                 |
| Clocking source                                                                        |                              | Y (local)<br>N (module) |
| Line length (in feet)                                                                  |                              | 300                     |
| SNMP Network Management                                                                |                              | Y                       |
| Configure SNMPv1                                                                       |                              | Y                       |
| SNMPv1 Manager                                                                         |                              | 47.14.51.245            |
| SNMPv1 Community String                                                                |                              | public                  |
| Configure SNMPv2c                                                                      |                              | Y                       |
| SNMPv2c Manager                                                                        |                              | 47.14.51.245            |
| SNMPv2c Community String                                                               |                              | public                  |
|                                                                                        |                              |                         |

## Connections to Preside MDM through a DPN network using DS3 ATM links

**Table 7**  
**Information for using DS3 ATM links to connect a Passport node to Preside MDM through a DPN network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| Port number              |                              | 1                  |
| Line length? (in feet)   |                              | 200                |
| Clocking source          |                              | Y (local)          |
| Mapping type             |                              | 1. (direct mode)   |
| Scrambling               |                              | Y (on)             |
| OAM segment boundary?    |                              | Y                  |
| ATM VPI                  |                              | 0                  |
| ATM VCI                  |                              | 32                 |
| ATM PCR                  |                              | 4000               |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
|                          |                              |                    |

## Connections to Preside MDM through a DPN network using E3 ATM links

**Table 8**  
**Information for using E3 ATM links to connect a Passport node to Preside MDM through a DPN network**

| Item                                                                                | Values for your installation | Examples of values |
|-------------------------------------------------------------------------------------|------------------------------|--------------------|
| Port number                                                                         |                              | 0                  |
| Line length (in meters)                                                             |                              | 100                |
| Clocking source                                                                     |                              | Y (local)          |
| Framing type                                                                        |                              | 1. (g832 type)     |
| Mapping type, if framing type is g751. (otherwise, mapping defaults to direct mode) |                              | 1. (direct mode)   |
| Scrambling                                                                          |                              | Y (on)             |
| Is the node an OAM segment boundary?                                                |                              | Y                  |
| ATM VPI                                                                             |                              | 0                  |
| ATM VCI                                                                             |                              | 32                 |
| ATM PCR                                                                             |                              | 30000              |
| SNMP Network Management                                                             |                              | Y                  |
| Configure SNMPv1                                                                    |                              | Y                  |
| SNMPv1 Manager                                                                      |                              | 47.14.51.245       |
| SNMPv1 Community String                                                             |                              | public             |
| Configure SNMPv2c                                                                   |                              | Y                  |
| SNMPv2c Manager                                                                     |                              | 47.14.51.245       |
| SNMPv2c Community String                                                            |                              | public             |
|                                                                                     |                              |                    |

## Connections to Preside MDM through a DPN network using OC-3 ATM links

**Table 9**  
**Information for using OC-3 links to connect a Passport node to Preside MDM through a DPN network**

| Item                                 | Values for your installation | Examples of values                       |
|--------------------------------------|------------------------------|------------------------------------------|
| Port number                          |                              | 0                                        |
| Clocking source                      |                              | Y (local)                                |
| Line type                            |                              | 2. (synchronous digital hierarchy - SDH) |
| Scrambling                           |                              | N (off)                                  |
| Is the node an OAM segment boundary? |                              | Y                                        |
| ATM VPI                              |                              | 0                                        |
| ATM VCI                              |                              | 32                                       |
| ATM PCR                              |                              | 4000                                     |
| SNMP Network Management              |                              | Y                                        |
| Configure SNMPv1                     |                              | Y                                        |
| SNMPv1 Manager                       |                              | 47.14.51.245                             |
| SNMPv1 Community String              |                              | public                                   |
| Configure SNMPv2c                    |                              | Y                                        |
| SNMPv2c Manager                      |                              | 47.14.51.245                             |
| SNMPv2c Community String             |                              | public                                   |
|                                      |                              |                                          |

## Connections to Preside MDM through a DPN network using DS1 ATM and DS1 MSA32 links

**Table 10**  
Information for using DS1 ATM and MSA32 links to connect a Passport node to Preside MDM through a DPN network

| Item                                                                                                | Values for your installation | Examples of values |
|-----------------------------------------------------------------------------------------------------|------------------------------|--------------------|
| Port number                                                                                         |                              | 1                  |
| Clocking source                                                                                     |                              | no                 |
| Line length (feet)                                                                                  |                              | 200                |
| Scrambling                                                                                          |                              | Y (on)             |
| Use IMA mode?<br><b>Note:</b> Required for 8-port ATM FPs and 32-port MSA FPs only.                 |                              | yes                |
| Use proprietary protocol?<br><b>Note:</b> Required only for links using IMA mode on 8-port ATM FPs. |                              | no                 |
| Is the node an OAM segment boundary?                                                                |                              | Y                  |
| ATM VPI                                                                                             |                              | 0                  |
| ATM VCI                                                                                             |                              | 32                 |
| ATM PCR                                                                                             |                              | 3000               |
| SNMP Network Management                                                                             |                              | Y                  |
| Configure SNMPv1                                                                                    |                              | Y                  |
| SNMPv1 Manager                                                                                      |                              | 47.14.51.245       |
| SNMPv1 Community String                                                                             |                              | public             |
| Configure SNMPv2c                                                                                   |                              | Y                  |
| (Sheet 1 of 2)                                                                                      |                              |                    |

**Table 10 (continued)**

Information for using DS1 ATM and MSA32 links to connect a Passport node to Preside MDM through a DPN network

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
| (Sheet 2 of 2)           |                              |                    |

## Connections to Preside MDM through a DPN network using E1 ATM and E1 MSA32 links

**Table 11**

Information for using E1 ATM and MSA32 links to connect a Passport node to Preside MDM through a DPN network

| Item                                                                                       | Values for your installation | Examples of values |
|--------------------------------------------------------------------------------------------|------------------------------|--------------------|
| Port number                                                                                |                              | 3                  |
| Line type<br><b>Note:</b> Required for the 3-port E1 ATM FP only.                          |                              | Y (CAS)<br>N (CCS) |
| Clocking source                                                                            |                              | Y (local)          |
| Scrambling                                                                                 |                              | yes                |
| IMA mode<br><b>Note:</b> Required for the 8-port ATM and 32-port MSA FPs only.             |                              | yes                |
| Proprietary protocol<br><b>Note:</b> Required only for links using IMA mode on 8-port ATM. |                              | no                 |
| Is the node an OAM segment boundary?                                                       |                              | Y                  |
| (Sheet 1 of 2)                                                                             |                              |                    |

**Table 11 (continued)**  
**Information for using E1 ATM and MSA32 links to connect a Passport node to Preside MDM through a DPN network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| ATM VPI                  |                              | 0                  |
| ATM VCI                  |                              | 32                 |
| ATM PCR                  |                              | 2000               |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
| (Sheet 2 of 2)           |                              |                    |

## Connections to Preside MDM through a DPN network using JT2 ATM links

**Table 12**  
**Information for using JT2 ATM links to connect a Passport node to Preside MDM through a DPN network**

| Item                  | Values for your installation | Examples of values |
|-----------------------|------------------------------|--------------------|
| Port number           |                              | 0                  |
| Line length (in feet) |                              | 100                |
| Clocking source       |                              | no                 |
| Scrambling            |                              | yes (on)           |
| (Sheet 1 of 2)        |                              |                    |

**Table 12 (continued)**  
**Information for using JT2 ATM links to connect a Passport node to Preside MDM through a DPN network**

| Item                                 | Values for your installation | Examples of values |
|--------------------------------------|------------------------------|--------------------|
| Is the node an OAM segment boundary? |                              | Y                  |
| ATM VPI                              |                              | 0                  |
| ATM VCI                              |                              | 32                 |
| ATM PCR                              |                              | 8                  |
| SNMP Network Management              |                              | Y                  |
| Configure SNMPv1                     |                              | Y                  |
| SNMPv1 Manager                       |                              | 47.14.51.245       |
| SNMPv1 Community String              |                              | public             |
| Configure SNMPv2c                    |                              | Y                  |
| SNMPv2c Manager                      |                              | 47.14.51.245       |
| SNMPv2c Community String             |                              | public             |
| (Sheet 2 of 2)                       |                              |                    |

## Connections through a Passport network

In this topology, the Passport 7400 node connects to a Passport 15000-only network. The Passport 15000-only network must contain a Passport 15000 node that connects directly to Preside MDM.

- For connections through an existing Passport-only network, ensure that you have configured
  - Preside MDM to recognize the new node
  - the call router on the first node
  - a new DLCI for the FR UNI
  - all existing nodes so that they recognize the new node

- Before proceeding, ensure that you have added and configured the proper DLCI to the *FrUni* component on the initial Passport 7400. For information about this procedure and others involving IP interfaces over frame relay (IPIFR), see 241-5701-805 *Passport 7400, 15000, 20000 Understanding IP*.

**Table 13**  
**Information for connecting to Preside MDM through a Passport-only network**

| Item                                                      | Values for your installation | Examples of values |
|-----------------------------------------------------------|------------------------------|--------------------|
| Node IP address                                           |                              | 12.34.56.78        |
| DNIC                                                      |                              | 3021               |
| IPIFR DNA                                                 |                              | 30210211040000     |
| IPIFR SubnetMask                                          |                              | 255.0.0.0          |
| IPIFR <i>Lcn</i> component                                |                              | 16                 |
| IPIFR <i>npi</i> attribute                                |                              | x121               |
| Remote Passport 7400, 15000, 20000 FR UNI DNA             |                              | 30210111110030     |
| Remote Frame Relay DLCI                                   |                              | 115                |
| Remote Passport 7400, 15000, 20000 FR UNI NPI             |                              | x121               |
| Static route (SR) destination IP address (if SR required) |                              | 23.45.67.89        |
| Static route gateway IP address (if SR required)          |                              | 47.12.34.56        |
| Slot number                                               |                              | 4                  |
|                                                           |                              |                    |

## Connections to Preside MDM through a Passport-only network using DS3 or E3 links

**Table 14**  
**Information for using DS3 or E3 links to connect to Preside MDM through a Passport-only network**

| Item                                               | Values for your installation | Examples of values |
|----------------------------------------------------|------------------------------|--------------------|
| Line length (in feet for DS3 and in meters for E3) |                              | 300                |
| Clocking source                                    |                              | Y (local)          |
| Framing type                                       |                              | HDLC               |
| SNMP Network Management                            |                              | Y                  |
| Configure SNMPv1                                   |                              | Y                  |
| SNMPv1 Manager                                     |                              | 47.14.51.245       |
| SNMPv1 Community String                            |                              | public             |
| Configure SNMPv2c                                  |                              | Y                  |
| SNMPv2c Manager                                    |                              | 47.14.51.245       |
| SNMPv2c Community String                           |                              | public             |
|                                                    |                              |                    |

## Connections to Preside MDM through a Passport-only network using V.35 or V.11/X.21 links

**Table 15**  
**Information for using V.35 or X.21 links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| Port number              |                              | 8                  |
| Is the port DCE          |                              | Y                  |
| Line speed (DCE only)    |                              | 9600               |
| Framing type             |                              | HDLC               |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
|                          |                              |                    |

## Connections to Preside MDM through a Passport-only network using E1 links

**Table 16**  
**Information for using E1 links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| Port number              |                              | 2                  |
| Line type                |                              | Y (CAS)<br>N (CCS) |
| Timeslots                |                              | 1, 3, 4, 6, 12     |
| Clocking source          |                              | Y (local)          |
| Framing type             |                              | HDLC               |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
|                          |                              |                    |

## Connections to Preside MDM through a Passport-only network using DS1 links

**Table 17**  
**Information for using DS1 links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| Port number              |                              | 2                  |
| Line type                |                              | Y (ESF)            |
| Clocking source          |                              | Y (local)          |
| Timeslots                |                              | 1, 3, 4, 6, 12     |
| Line length (in feet)    |                              | 300                |
| Framing type             |                              | HDLC               |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
|                          |                              |                    |

## Connections to Preside MDM through a Passport-only network using DS3 ATM links

**Table 18**  
**Information for using DS3 ATM links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| Port number              |                              | 1                  |
| Line length (in feet)    |                              | 200                |
| Clocking source          |                              | Y (local)          |
| Mapping type             |                              | 1 (direct mode)    |
| Cell scrambling          |                              | Y (on)             |
| OAM segment boundary     |                              | Y                  |
| ATM VPI                  |                              | 0                  |
| ATM VCI                  |                              | 32                 |
| ATM PCR                  |                              | 8                  |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
|                          |                              |                    |

## Connections to Preside MDM through a Passport-only network using E3 ATM links

Table 19

Information for using E3 ATM links to connect to Preside MDM through a Passport-only network

| Item                                                                            | Values for your installation | Examples of values |
|---------------------------------------------------------------------------------|------------------------------|--------------------|
| Port number                                                                     |                              | 0                  |
| Line length (in meters)                                                         |                              | 100                |
| Clocking source                                                                 |                              | Y (local)          |
| Framing type                                                                    |                              | 1. (g832 mode)     |
| Mapping type for g751 framing type (otherwise, mapping defaults to direct mode) |                              | 1. (direct mode)   |
| Cell scrambling                                                                 |                              | Y (on)             |
| OAM segment boundary                                                            |                              | Y                  |
| ATM VPI                                                                         |                              | 0                  |
| ATM VCI                                                                         |                              | 32                 |
| ATM PCR                                                                         |                              | 8                  |
| SNMP Network Management                                                         |                              | Y                  |
| Configure SNMPv1                                                                |                              | Y                  |
| SNMPv1 Manager                                                                  |                              | 47.14.51.245       |
| SNMPv1 Community String                                                         |                              | public             |
| Configure SNMPv2c                                                               |                              | Y                  |
| SNMPv2c Manager                                                                 |                              | 47.14.51.245       |
| SNMPv2c Community String                                                        |                              | public             |
|                                                                                 |                              |                    |

## Connections to Preside MDM through a Passport-only network using OC-3 ATM links

**Table 20**  
**Information for using OC-3 ATM links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values                       |
|--------------------------|------------------------------|------------------------------------------|
| Port number              |                              | 0                                        |
| Clocking source          |                              | N (line)                                 |
| Line type                |                              | 2. (synchronous digital hierarchy - SDH) |
| Cell scrambling          |                              | Y (on)                                   |
| OAM segment boundary     |                              | Y                                        |
| ATM VPI                  |                              | 0                                        |
| ATM VCI                  |                              | 32                                       |
| ATM PCR                  |                              | 8                                        |
| SNMP Network Management  |                              | Y                                        |
| Configure SNMPv1         |                              | Y                                        |
| SNMPv1 Manager           |                              | 47.14.51.245                             |
| SNMPv1 Community String  |                              | public                                   |
| Configure SNMPv2c        |                              | Y                                        |
| SNMPv2c Manager          |                              | 47.14.51.245                             |
| SNMPv2c Community String |                              | public                                   |
|                          |                              |                                          |

## Connections to Preside MDM through a Passport-only network using DS1 ATM and DS1 MSA32 links

**Table 21**  
Information for using DS1 ATM and DS1 MSA32 links to connect to Preside MDM through a Passport-only network

| Item                                                                                           | Values for your installation | Examples of values |
|------------------------------------------------------------------------------------------------|------------------------------|--------------------|
| Port number                                                                                    |                              | 1                  |
| Clocking source                                                                                |                              | no                 |
| Line length (in feet)                                                                          |                              | 200                |
| Cell scrambling                                                                                |                              | yes (on)           |
| IMA mode<br><b>Note:</b> Required for DS1 8-port ATM and 32-port DS1 FPs only.                 |                              | yes                |
| Proprietary protocol<br><b>Note:</b> Required only for links using IMA mode on DS1 8-port FPs. |                              | no                 |
| OAM segment boundary                                                                           |                              | Y                  |
| ATM VPI                                                                                        |                              | 0                  |
| ATM VCI                                                                                        |                              | 32                 |
| ATM PCR                                                                                        |                              | 3000               |
| SNMP Network Management                                                                        |                              | Y                  |
| Configure SNMPv1                                                                               |                              | Y                  |
| SNMPv1 Manager                                                                                 |                              | 47.14.51.245       |
| SNMPv1 Community String                                                                        |                              | public             |
| Configure SNMPv2c                                                                              |                              | Y                  |
| (Sheet 1 of 2)                                                                                 |                              |                    |

**Table 21 (continued)**  
**Information for using DS1 ATM and DS1 MSA32 links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
| (Sheet 2 of 2)           |                              |                    |

### Connections to Preside MDM through a Passport-only network using E1 ATM and E1 MSA32 links

**Table 22**  
**Information for using E1 ATM and MSA32 links to connect to Preside MDM through a Passport-only network**

| Item                                                                                              | Values for your installation | Examples of values        |
|---------------------------------------------------------------------------------------------------|------------------------------|---------------------------|
| Port number                                                                                       |                              | 3                         |
| Line type<br><b>Note:</b> Required for the 3-port E1 ATM FP only.                                 |                              | yes (CAS)<br>no (CCS)     |
| Clocking source                                                                                   |                              | no (module)<br>yes (line) |
| Cell scrambling                                                                                   |                              | yes (on)                  |
| IMA mode<br><b>Note:</b> Required for E1 8-port and 32-port MSA FPs only.                         |                              | yes                       |
| Proprietary protocol?<br><b>Note:</b> Required only for links using IMA mode on E1 8-port ATM FP. |                              | no                        |
| OAM segment boundary                                                                              |                              | Y                         |
| (Sheet 1 of 2)                                                                                    |                              |                           |

**Table 22 (continued)**  
**Information for using E1 ATM and MSA32 links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| ATM VPI                  |                              | 0                  |
| ATM VCI                  |                              | 32                 |
| ATM PCR                  |                              | 2000               |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
| (Sheet 2 of 2)           |                              |                    |

## Connections to Preside MDM through a Passport-only network using JT2 ATM links

**Table 23**  
**Information for using JT2 ATM links to connect to Preside MDM through a Passport-only network**

| Item                  | Values for your installation | Examples of values        |
|-----------------------|------------------------------|---------------------------|
| Port number           |                              | 0                         |
| Line length (in feet) |                              | 100                       |
| Clocking source       |                              | no (module)<br>yes (line) |
| Cell scrambling       |                              | yes (on)                  |
| (Sheet 1 of 2)        |                              |                           |

**Table 23 (continued)**  
**Information for using JT2 ATM links to connect to Preside MDM through a Passport-only network**

| Item                     | Values for your installation | Examples of values |
|--------------------------|------------------------------|--------------------|
| OAM segment boundary     |                              | Y                  |
| ATM VPI                  |                              | 0                  |
| ATM VCI                  |                              | 32                 |
| ATM PCR                  |                              | 8                  |
| SNMP Network Management  |                              | Y                  |
| Configure SNMPv1         |                              | Y                  |
| SNMPv1 Manager           |                              | 47.14.51.245       |
| SNMPv1 Community String  |                              | public             |
| Configure SNMPv2c        |                              | Y                  |
| SNMPv2c Manager          |                              | 47.14.51.245       |
| SNMPv2c Community String |                              | public             |
| (Sheet 2 of 2)           |                              |                    |

### **Direct connections from Passport 7400 to Preside MDM using a frame relay PVC**

This topology directly connects the Preside MDM workstation and the new Passport 7400 node. To achieve a direct connection between Preside MDM and a new Passport node, ensure that you have configured Preside MDM to recognize the node as a new node.

**Table 24**  
**Information for connecting directly to Preside MDM**

| Item                                                      | Values for your installation | Examples of values |
|-----------------------------------------------------------|------------------------------|--------------------|
| Node IP address                                           |                              | 47.1.2.3           |
| DNIC                                                      |                              | 3334               |
| IPIFR DNA                                                 |                              | 333440001          |
| IPIFR SubnetMask                                          |                              | 255.0.0.0          |
| IPIFR <i>Lcn</i> component                                |                              | 30                 |
| IPIFR <i>npi</i> attribute                                |                              | x121               |
| Passport 7400 FR UNI DNA                                  |                              | 33340121           |
| Frame relay DLCI                                          |                              | 52                 |
| Passport 7400 FR UNI NPI                                  |                              | e164               |
| Static route (SR) destination IP address (if SR required) |                              | 23.45.67.89        |
| Static route gateway IP address (if SR required)          |                              | 47.12.34.56        |
| Slot number                                               |                              | 3                  |
| Port type supported by this FP                            |                              | 1 (v11)<br>2 (v35) |
| Port number                                               |                              | 0                  |
| Is the port DCE                                           |                              | Y                  |
| Line speed (DCE only)                                     |                              | 1920000            |
|                                                           |                              |                    |

## Connections to Preside MDM through a Passport IP services network over ATM MPE

If you are using a non-optical FP to connect to Preside MDM, do not enter information on line type of scrambling.

You are prompted to enter the IP address of Preside MDM, the encryption key, and the inbound and outbound security parameter index (SPI) values only if IPsec is enabled. If the component *Vr Ip Spd* exists, IPsec is enabled.

Ensure that the encryption key and SPI values you enter are identical to those entered for Preside MDM. For more information about IPSec, see NN10600-605 *Passport - MDM Network Security: Operations*.

**Table 25**  
**Information for connecting a Passport node to Preside MDM**  
**through IP over ATM MPE using an OC3 FP**

| Item                                | Values for your installation | Example of values |
|-------------------------------------|------------------------------|-------------------|
| Software release                    |                              | BE003A            |
| Node ID                             |                              | 1234              |
| Node name                           |                              | Boston            |
| NAMS ID                             |                              | 1500              |
| ATM FP slot number                  |                              | 5                 |
| ATM port number                     |                              | 0                 |
| Scrambling                          |                              | Yes               |
| Is the node an OAM segment boundary |                              | No                |
| Line type (SONET/SDH)?              |                              | sonet             |
| VPI                                 |                              | 0                 |
| VCI                                 |                              | 40                |
| PCR                                 |                              | 10000             |
| IP port address                     |                              | 47.208.138.161    |
| IP port network mask                |                              | 255.255.255.0     |
| IP broadcast address                |                              | 255.255.255.255   |
| Next hop IP address                 |                              | 47.208.138.165    |
| IP address of Preside MDM           |                              | 47.206.134.156    |
| Encryption key (8 byte key)         |                              | 3434343434343434  |
| Inbound SPI                         |                              | 401               |
| Outbound SPI                        |                              | 400               |
|                                     |                              |                   |

## Connections to Preside MDM through a Passport IP services network over FR DTE

**Table 26**  
Information for connecting a Passport node to Preside MDM through IP over FR DTE

| Item                 | Values for your installation | Example of values |
|----------------------|------------------------------|-------------------|
| Software release     |                              | BE003A            |
| Node ID              |                              | 1234              |
| Node name            |                              | Boston            |
| NAMS ID              |                              | 1500              |
| Slot number          |                              | 2                 |
| Port number          |                              | 3                 |
| Is the port DCE?     |                              | Yes               |
| Line speed           |                              | 19200             |
| IP port address      |                              | 47.208.138.161    |
| IP port network mask |                              | 255.255.255.0     |
| Next hop IP address  |                              | 47.208.138.165    |
| Static DLCI          |                              | 16                |
| LMI procedures       |                              | ccitt             |
|                      |                              |                   |

## Connections to Preside MDM through a Passport IP services network over Ethernet

**Table 27**  
Information for connecting a Passport node to Preside MDM through Ethernet

| Item             | Values for your installation | Example of values |
|------------------|------------------------------|-------------------|
| Software release |                              | BE003A            |
| Node ID          |                              | 1234              |
| Node name        |                              | Boston            |
| NAMS ID          |                              | 1500              |
| (Sheet 1 of 2)   |                              |                   |

**Table 27 (continued)**  
**Information for connecting a Passport node to Preside MDM through Ethernet**

| Item                        | Values for your installation | Example of values |
|-----------------------------|------------------------------|-------------------|
| Slot number                 |                              | 4                 |
| Port number                 |                              | 1                 |
| IP port address             |                              | 47.208.138.161    |
| IP port network mask        |                              | 255.255.255.0     |
| IP broadcast address        |                              | 255.255.255.255   |
| Next hop IP address         |                              | 47.208.138.165    |
| IP address of Preside MDM   |                              | 47.206.134.156    |
| Encryption key (8 byte key) |                              | 3434343434343434  |
| Inbound SPI                 |                              | 401               |
| Outbound SPI                |                              | 400               |
| (Sheet 2 of 2)              |                              |                   |

### Connections to Preside MDM using the OAM Ethernet port

You are prompted to enter the IP address of Preside MDM, the encryption key, and the inbound and outbound security parameter index (SPI) values only if IPsec is enabled. If the component *Vr Ip Spd* exists, IPsec is enabled.

Ensure that the encryption key and SPI values you enter are identical to those entered for Preside MDM. For more information about IPsec, see NN10600-605 *Passport - MDM Network Security: Operations*.

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## Chapter 10

# StartUp fundamentals

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After installing and activating Preside MDM, you need to connect it to the node so that it can begin managing the node. To assist you, the StartUp software package is installed at the factory before the Passport node is shipped to you. The StartUp software prompts you for information and configures the connection between the node and Preside MDM. StartUp also performs basic configuration, sets up equipment sparing, and performs card tests. You can easily make your Passport node functional by using the StartUp software to connect the node to Preside MDM and configure it with a basic set of features.

For more information on StartUp, refer to the following sections:

- “What does StartUp do?” (page 127)
- “Important things to remember about StartUp” (page 128)
- “The passport.atmconfig script” (page 128)
- “Preside MDM connectivity using StartUp” (page 129)

### What does StartUp do?

StartUp performs the following functions:

- facilitates the establishment of a link between your Passport node and Preside MDM. Once this link is created, you can see, manipulate, and finish configuring the node through Preside MDM.
- helps streamline the process for configuring your Passport node by adding default components and configuring default values for various attributes. If these default values do not suit your network configuration,

you will need to reconfigure them outside of StartUp. For more information about attribute values, see 241-5701-060 *Passport 7400, 15000, 20000 Components*.

- Resets the control processors to base software.
- Facilitates the configuration of control processor sparing.
- Performs card tests to evaluate the condition of the processor cards

**Note:** Running StartUp at any time other than software installation and commissioning may result in a loss of configuration information and can affect service.

## Important things to remember about StartUp

Consider the following items when using StartUp:

- StartUp indicates whenever you make an entry that falls outside of the valid range. StartUp then allows you to correct the entry.
- StartUp advances to the next step only after you make a valid entry.
- To quit StartUp at any time, type *quit*. StartUp then returns you to the local operator terminal prompt. See the procedure “Quitting StartUp” (page 32) for more information.
- You must perform the options in StartUp in a specific order.
- Running StartUp at any time other than software installation and commissioning will result in a loss of configuration information and can affect service.
- While running StartUp, you will occasionally be prompted to confirm your configuration changes. Complete your changes as prompted. For more information on confirming your changes, see 241-5701-045 *Passport 7400, 15000, 20000 Management System User Interface Guide*.

## The `passport.atmconfig` script

While it allows you to add new Passport switches, the `passport.atmconfig` script does not allow you to delete a Passport or move a Passport to another group. Limitations with configuring the ATM network interface card (NIC) driver software also exist. The driver software must be obtained and configured before running the script.

The `passport.atmconfig` script can also set up IP routing on a Preside MDM workstation and start the ATM connection to the network.

The script

- adds the group, host name, and IP address of the Passport to the `/opt/MagellanNMS/cffg/HGDS.cfg` file
- adds information about the ATM interface to the `/etc/opt/SUNWconn.atm/aarconfig` file and the `/etc/opt/SUNWconn.atm/atmconfig` file
- creates or updates the `/etc/opt/SUNWconn.atm/atm.cf` file with ATM routing information.

For more details on the `passport.atmconfig` script, refer to 241-6001-303 *Preside MDM Administrator Guide*.

## Preside MDM connectivity using StartUp

When you run StartUp, the order of the menus presented to you is dependent on the configuration status of your node and the type of connection you want to configure.

If you have an existing node and need to change the Preside MDM connectivity, StartUp begins by displaying the StartUp main menu. If you are connecting a new node, StartUp begins by displaying the StartUp operations menu.

### Connecting a Passport 7400 node

If you run StartUp on an unconnected node, the node has not been previously configured for Preside MDM connectivity. As a result, StartUp begins by displaying all of the possible ways to connect Preside MDM to your node.

If you are running StartUp on a previously connected node, StartUp begins by asking if you want to change the previously selected method of connectivity. If you say you want to change, StartUp displays all of the possible ways to connect Preside MDM to your node.

You can connect Preside MDM to your node is by using one of the following methods:

- an IPIVC or IPIFR connection
- Passport IP services networking through the OAM Ethernet port. For more information on the OAM Ethernet port, see *241-5701-600 Passport 7400, 15000, 20000 Configuration Guide*.

## Connecting a Passport 15000 or 20000 node

On Passport 15000 and 20000, applications and services are categorized as hot, warm or cold standby based on their sparing behavior. For Passport 15000 and 20000, the IPIFR interface is a warm standby feature when provisioned on a spare LP.

During an equipment switchover, the IPIFR connection between Passport 15000 or 20000 and Preside MDM is dropped and is re-established by the Preside MDM once the switchover is complete. Because it is a warm standby application, the IPIFR connection is re-established more quickly than if it was a cold standby application, but not as quickly as a hot standby application.

Also, a warm standby application or feature can operate together with a hot standby application or feature on the same FP without affecting the ability of the hot standby application or feature to provide hitless services.

See *241-5701-600 Passport 7400, 15000, 20000 Configuration Guide* for a description of hitless services and hot, warm and cold standby applications and features.

If you run StartUp on an unconnected node, the node has not been previously configured for Preside MDM connectivity. As a result, StartUp begins by displaying all of the possible ways to connect Preside MDM to your node.

If you are running StartUp on a previously connected node, StartUp begins by asking if you want to change the previously selected method of connectivity. If you say you want to change, StartUp displays all of the possible ways to connect the Preside MDM to your node.

You can connect Preside MDM to your node by using one of the following methods:

- an IPIFR connection.
- Passport IP services networking through the OAM Ethernet port. For more information on the OAM Ethernet port, see 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*.
- a channelized DS3 frame relay channelized connection



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## Chapter 11

# Network management connectivity fundamentals

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This section contains background information on Preside MDM and Passport network management connectivity.

- “Preside MDM connectivity overview” (page 133)
- “Configuring IP interface over virtual circuit for Passport 7400” (page 138)
- “Configuring IP interface over frame relay” (page 141)
- “Upgrading from IPIVC to IPIFR in a Passport 7400 node” (page 146)
- “Configuring IP services networking through Ethernet” (page 150)

### Preside MDM connectivity overview

You can manage Passport nodes using a number of external management devices (MD). For example, you can log into a Passport node from a management workstation using a telnet application. You can also manage your Passport node using Preside MDM or a simple network management protocol (SNMP) network management system.

The management devices use management protocols such as telnet, FMIP, and SNMP to communicate with Passport. All management protocols require an Internet protocol (IP) connection from the management device to the Passport node.

Passport 7400 provides the following interface for establishing management IP connections:

- IP interface over frame relay (IPIFR)
- IP services network management through Ethernet
- IP interface over virtual circuit (IPIVC)

Passport 15000 and 20000 provides the following interfaces for establishing management IP connections:

- IP interface over frame relay (IPIFR)
- IP services network management through an OAM Ethernet port connection

Each of these interfaces uses one of the following IP components:

- IPIFR component
- virtual router (VR) IP component

The IPIFR component provides a simple IP interface to a Passport node which does not have IP forwarding capabilities and only supports static IP routing. When Passport uses the IPIFR component, Passport functions as an IP endstation host.

The VR IP component is an interface to a Passport node that is capable of sophisticated routing and forwarding of IP packets. When Passport uses the VR IP component, it functions as an IP router. IP services management through OAM Ethernet uses the VR IP component.

A Passport node can use either one of the IP subsystems, but not both. For more information on Preside MDM connectivity see the following:

- “Conceptual view of Preside MDM connectivity” (page 134)
- “Service and hardware requirements for Passport 7400” (page 137)

### **Conceptual view of Preside MDM connectivity**

The figure “Conceptual view of Preside MDM connectivity” (page 136) gives a general overview of Preside MDM connectivity. In the figure, management devices (MD) are workstations that run the management applications you use

to manage the Passport nodes. A management site (MS) is a cluster of one or more MDs. Typically, MSs are geographically separated. When you connect the various management sites together through a wide area network (WAN), they form a management network.

The Passport network consists of edge and internal nodes. Edge nodes have a direct connection to the management network. Passport supports the following three types of interfaces between the management network and the Passport network:

- IPIVC (Passport 7400 only)
- IPIFR
- Ethernet

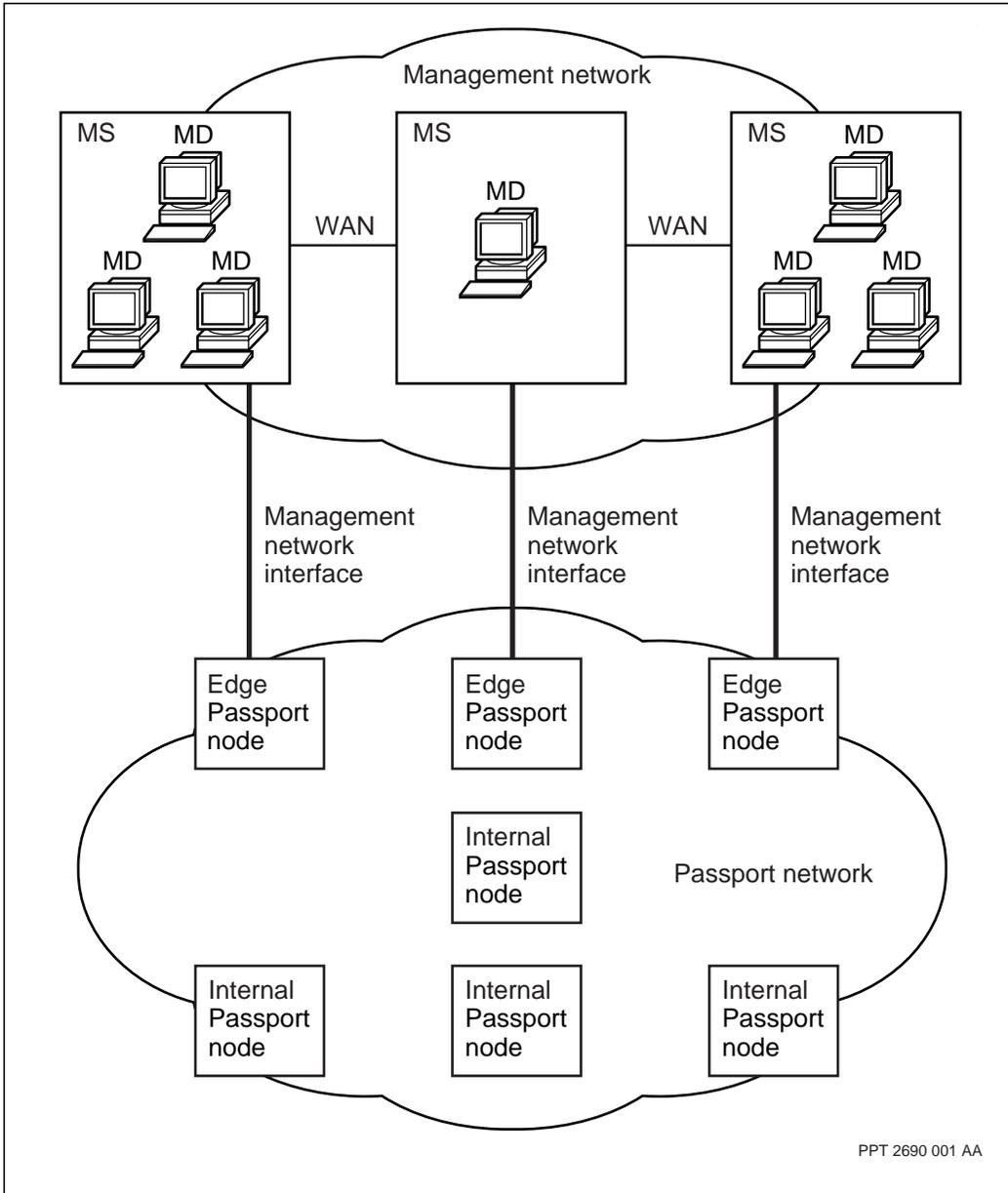
Typically, you will have between two and five edge nodes in your Passport network.

Internal nodes do not directly connect to the management network but connect to the edge node using Passport trunks. Typically, internal nodes make up 90% of your Passport network. You establish connections from the management network to the internal nodes through the edge nodes.

Both edge nodes and internal nodes can use the IPI or the VR IP subsystem to establish IP connections to the management network. Use the IPI subsystem (IPIVC for Passport 7400 nodes or IPIFR for all Passport nodes) on internal nodes unless they are already running the VR IP subsystem to support IP services. The IPI subsystem is easier to configure and requires fewer system resources than the VR IP subsystem.

On an edge node, your choice of IP subsystem depends on your network configuration. Typically, you only use the VR IP subsystem on the edge node when some or all of your Passport network support IP services.

**Figure 24**  
**Conceptual view of Preside MDM connectivity**



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## Service and hardware requirements for Passport 7400

The table “Service and hardware requirements of Preside MDM connectivity for Passport 7400” (page 137) describes the services you need to run on the control processor (CP) and on function processors (FP) of a Passport or node to support various network management configurations.

**Table 28**  
**Service and hardware requirements of Preside MDM connectivity for Passport 7400**

| Management network interface | Passport network transport media | Type of Passport node        | Service and hardware requirements                                                                                                    | Comments                                              |
|------------------------------|----------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| frame relay                  | frame relay                      | IPI edge Passport            | <ul style="list-style-type: none"> <li>FP: FrUni port</li> <li>FP: Trunk port</li> <li>CP: ipiFr</li> </ul>                          | The Passport trunk port also carries other data.      |
|                              |                                  | IPI internal Passport        | <ul style="list-style-type: none"> <li>FP: Trunk port</li> <li>CP: ipiFr</li> </ul>                                                  |                                                       |
|                              |                                  | VR IP internal Passport      | <ul style="list-style-type: none"> <li>FP: FrDte vFramer, FrUni vFramer</li> <li>FP: Trunk port</li> <li>CP: VR IP</li> </ul>        |                                                       |
| X.25                         | X.25                             | IPI edge Passport 7400       | <ul style="list-style-type: none"> <li>DPN module</li> <li>FP: DpnGateway port</li> <li>FP: Trunk port</li> <li>CP: ipiVc</li> </ul> | The Passport 7400 trunk port also carries other data. |
|                              |                                  | IPI internal Passport 7400   | <ul style="list-style-type: none"> <li>FP: Trunk port</li> <li>CP: ipiVc</li> </ul>                                                  |                                                       |
|                              |                                  | VR IP internal Passport 7400 | <ul style="list-style-type: none"> <li>DPN module</li> <li>FP: X25Dte port</li> <li>CP: VR IP</li> </ul>                             |                                                       |
| (Sheet 1 of 2)               |                                  |                              |                                                                                                                                      |                                                       |

**Table 28 (continued)**  
**Service and hardware requirements of Preside MDM connectivity for Passport 7400**

| Management network interface | Passport network transport media | Type of Passport node        | Service and hardware requirements                                                                                                                        | Comments                                         |
|------------------------------|----------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Ethernet                     | Frame Relay                      | VR IP edge Passport          | <ul style="list-style-type: none"> <li>FP: Ethernet port</li> <li>FP: FrDte vFramer, FrUni vFramer</li> <li>FP: Trunk port</li> <li>CP: VR IP</li> </ul> | The Passport trunk port also carries other data. |
|                              |                                  | IPI internal Passport        | <ul style="list-style-type: none"> <li>FP: Trunk port</li> <li>CP: ipiFr</li> </ul>                                                                      |                                                  |
|                              |                                  | VR IP internal Passport      | <ul style="list-style-type: none"> <li>FP: FrDte vFramer, FrUni vFramer</li> <li>FP: Trunk port</li> <li>CP: VR IP</li> </ul>                            |                                                  |
| Ethernet                     | ATM                              | VR IP edge Passport 7400     | <ul style="list-style-type: none"> <li>FP: Ethernet port</li> <li>FP: AtmMpe, Atmlf port</li> <li>CP: VR IP</li> </ul>                                   |                                                  |
|                              |                                  | VR IP internal Passport 7400 | <ul style="list-style-type: none"> <li>FP: AtmMpe, Atmlf port</li> <li>CP: VR IP</li> </ul>                                                              |                                                  |

(Sheet 2 of 2)

## Configuring IP interface over virtual circuit for Passport 7400

The figure “Management access to Passport network over X.25 SVCs” (page 140) illustrates IPIVC connections. A DPN module (possibly part of a DPN network) provides the X.25 interface to the management device. You can connect the management device directly to the DPN module, or you can connect it indirectly through an Ethernet LAN.

You must first provision IPIVC using an ASCII-based terminal that connects to a Passport node using a local interface. After you have provisioned IPIVC, you can use a management device such as Preside MDM to connect to the node. You can use the Passport StartUp utility to quickly provision IPIVC. For more information on the StartUp utility, see “Network management connectivity configuration using StartUp” (page 29) and “Network management connectivity fundamentals” (page 133).

If you are currently accessing the network through IPIVC, you can migrate to IPIFR without losing X.25 connectivity during the process. See “Passport 7400 IPIVC to IPIFR upgrade” (page 165).

For details on provisioning a port, see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference* or 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*. For details on how to provision a DPN Gateway, see 241-7401-110 *Passport 7400, DPN-100 Interworking Guide*.

The default route is a VC that IPIVC uses if the IP route for a given IP address is unknown. You can use the default route to access indirectly connected management devices through and IP-routing-capable device. You can define only one default route.

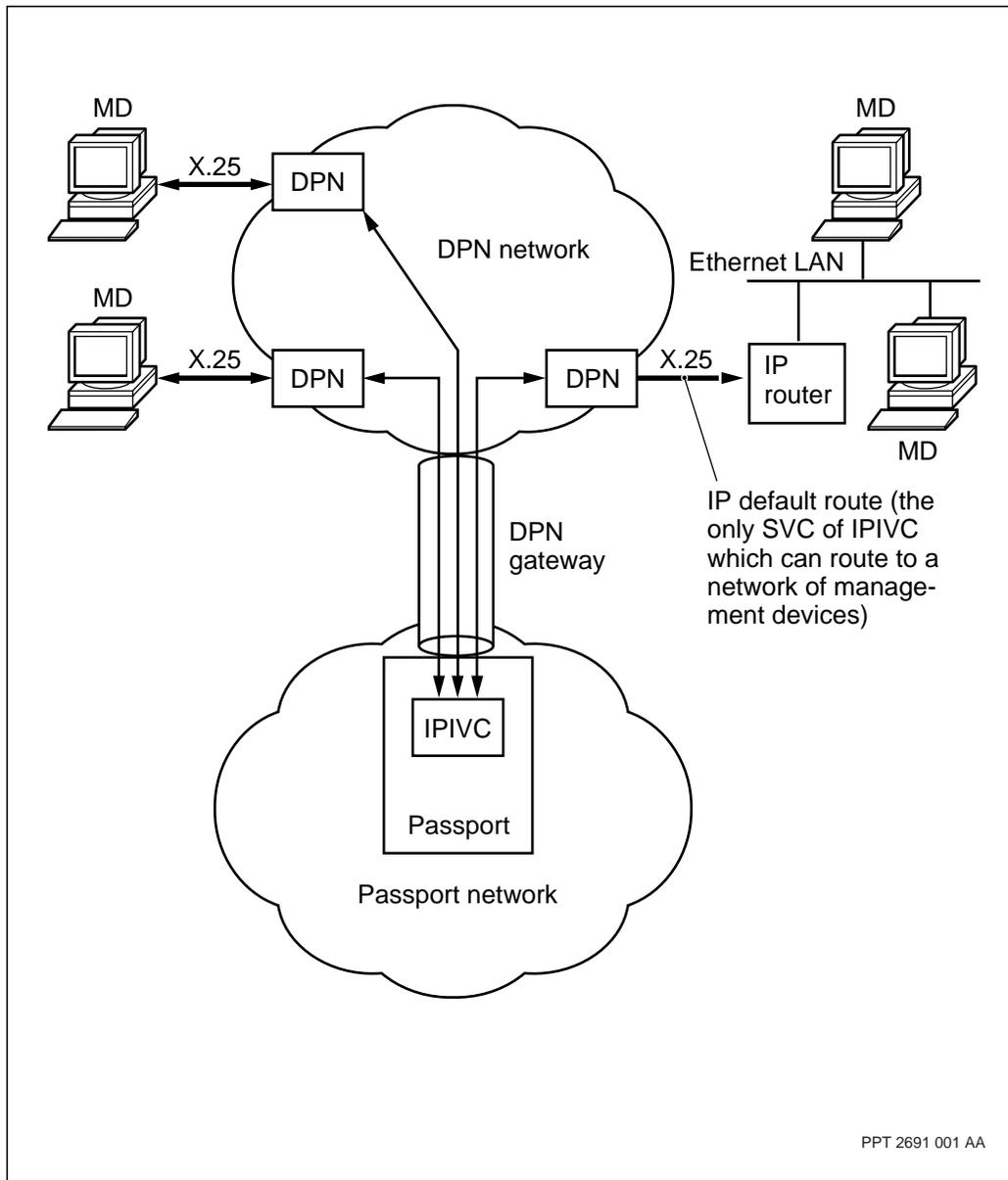
When you change the remote DNA, IPIVC performs one of the following actions:

- If no VC has been set up using the old remote DNA, the IPIVC replaces the old attribute value of the remote DNA with the new one. IPIVC then checks whether a VC has already been established using the new attribute value as the destination DNA. If such a VC exists, this VC is marked as the default VC.
- If a VC has been set up using the old remote DNA, the IPIVC stops using this VC as the default VC. IPIVC then proceeds with the actions described in the first scenario described above.

The creation of the `Ipivc` component results in the creation of the `DataNetworkAddress (Dna)` subcomponent.

Once you change the IP address of the IPIVC, all existing X.25 calls using this IPIVC clear.

**Figure 25**  
**Management access to Passport network over X.25 SVCs**



## IPIVC components and attributes

The *Ipivc* component allows external network management devices to access the node. The *Ipivc* component contains two provisionable attributes: *ipAddress* and *maximumNumberOfLcn*. The IPIVC must have a unique IP address that represents the address of the network interface and a unique DNA for setting up the virtual circuit.

The *DataNetworkAddress* component contains a subset of all attributes that apply to a VC. The *dataNetworkAddress* attribute of the *DataNetworkAddress* component must be unique in the network.

The *ClosedUserGroup* component contains attributes that define options associated with national or international closed user group (CUG) IDs. The CUG identifies a group of DNAs. The CUG provides security by ensuring that only authorized management devices (with the proper CUG) can access the node. In other words, the management devices that initiate a connection to the node (through the IPIVC) must all be members of the CUG provisioned on the IPIVC.

The *DefaultRoute* component is an optional subcomponent of the *Ipivc* component. The default route is the IP route used when no specific logical connection has been assigned from the Passport to a given IP address. Passport uses the default route to access management devices that connect indirectly to the DPN network through an IP-routing-capable device. The *DefaultRoute* component has two attributes that define the remote end of the default route: *callingIpAddress* and *callingDataNetworkAddress*.

The *LogicalChannelNumber* component is a dynamic subcomponent of the *Ipivc* component which represents the logical connection with the VC. Because IPIVC can support up to 24 VCs, there can be up to 24 instances of the *LogicalChannelNumber* component. The instance value of this component ranges from 16 to 39.

## Configuring IP interface over frame relay

You must run IPIFR on every Passport node to which you want to establish management connections using frame relay.

A Passport node can support only one of either IPIFR or IPIVC. The two interfaces cannot simultaneously coexist on a Passport node, except during migration from IPIVC to IPIFR. Multiple management devices can manage the same Passport node only if they all access the node using the same interface, which can be either IPIVC for a Passport 7400 node only (DPN X.25) or IPIFR (Passport frame relay) for all Passport nodes.

With IPIFR, you can connect management devices to a Passport 7400 network both directly or indirectly. You can connect management devices to a Passport 15000 or 20000 node only indirectly. For more information on the connection options available, refer to “IPIFR connection options” (page 175).

How you configure IPIFR depends on whether you have directly or indirectly connected management devices. If you have indirectly connected management devices on multiple LANs that are interconnected, you can provision a default route to provide path redundancy.

When you change the IP address of an IPIFR, all connections to IPIFR are cleared. When you change the subnetwork mask, all connections to the IPIFR are cleared.

## **IPIFR components and attributes**

The *IpiFr* component allows external network management devices to access the node. The *IpiFr* component contains three provisionable attributes: *ipAddress*, *subnetMask*, and *maximumNumberOfLcn*. The IPIFR must have a unique IP address that represents the address of the network interface and a unique DNA for setting up the VC.

The *Dna* component contains a subset of all attributes that apply to all VCs. The *dataNetworkAddress* attribute of each Passport 15000 node must be unique in the network.

The *LogicalChannelNumber (Lcn)* component is a subcomponent of the *IpiFr* component that represent the logical channel number (LCN) responsible for the logical connection with the PVC. There can be up to 24 instances of the *Lcn* component under the *IpiFr* component, allowing the IPIFR to support up to 24 VCs. The instance value of the *Lcn* component ranges from 16 to 39. At

least one LCN must exist to connect with a management workstation. You can configure additional LCNs to provide redundant access from the Passport 15000 node to multiple network management workstations.

The *Lcn* component contains a *remoteIpAddress* attribute that contains the far-end IP address of a frame relay PVC point-to-point IP connection. You can set the *remoteIpAddress* attribute (static ARP) or have IPIFR determine the IP address by inspecting the source address of the first packet received on the LCN. If the LCN connects to an IP-routing-capable device, set the IP address yourself.

The *DirectCall* (*Dc*) component is a subcomponent of the *Lcn* component. The *Dc* component defines a frame relay PVC between IPIFR and the frame relay user-to-network interface (UNI) to which the management device connects. To establish a connection, the frame relay user-to-network interface (*FrUni DlcI* component) must have a corresponding *DirectCall* component provisioned with mirrored information.

The *StaticRoute* (*Sr*) component represents the static IP route to a host, subnetwork, network IP address or default route IP address. The *Sr* component contains two attributes, *gatewayIpAddress* and *backupGatewayIpAddresses*. Backup gateways are only supported for the default route (that is, *StaticRoute/0.0.0.0*).

The *Route* (*R*) component dynamically represents the active IP routes to destination IP addresses (that is, it represents the routing table). The attributes of the *Route* component report the next hop (*gtyIpAddr*), LCN (*lcnIf*), and type (host, subnetwork, or network) for each destination address.

## **Configuring a Passport 7400 node to access a directly connected management device**

To initially provision IPIFR on a Passport node use the StartUp utility. This utility properly configures the module-wide virtual-circuit system component and sets the network ID. It will also set up one logical connection (represented by a *LogicalChannelNumber* component) between the node and a directly connected management device. See “Network management connectivity configuration using StartUp” (page 29) for information on using this utility.

You can add access to additional management devices by configuring a logical connection for each management device. On an edge Passport node you must also configure the frame relay user-to-network interface between the directly connected management device and the edge node.

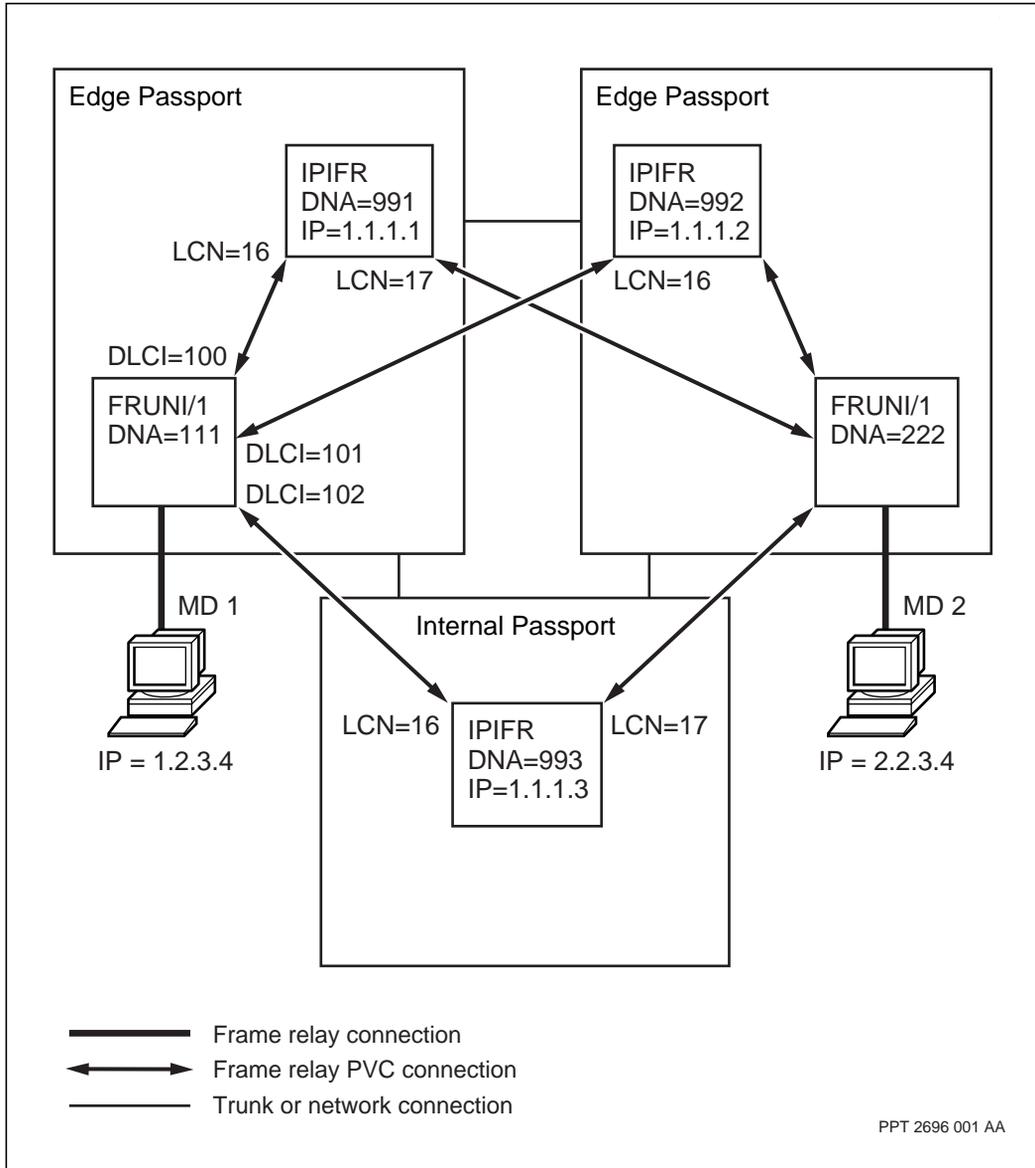
The figure “Example of directly connected management devices” (page 145) illustrates the connections between two edge nodes and an internal node to directly connected management devices. Each IPIFR and management device has an IP address. The connections between the IPIFR and the management devices are established using frame relay PVCs. The management devices connect to the edge nodes through a frame relay user-to-network interface.

Always use a high default priority when the management device is a Preside MDM workstation.

Setting the *procedures* attribute is critical to the proper provisioning of this FRUNI. The *procedures* attribute of the FRUNI service must match the setting for management device’s frame relay DTE port.

Always use delay sensitivity when the management device is a Preside MDM workstation. When the transfer priority is set at 11, the Passport trunk queue is set to interrupting, the routing metric is set to delay, and the egress queue is set to high. Also, when the transfer priority is set at 11, there is a limitation on the size of packet that can use that connection.

**Figure 26**  
**Example of directly connected management devices**



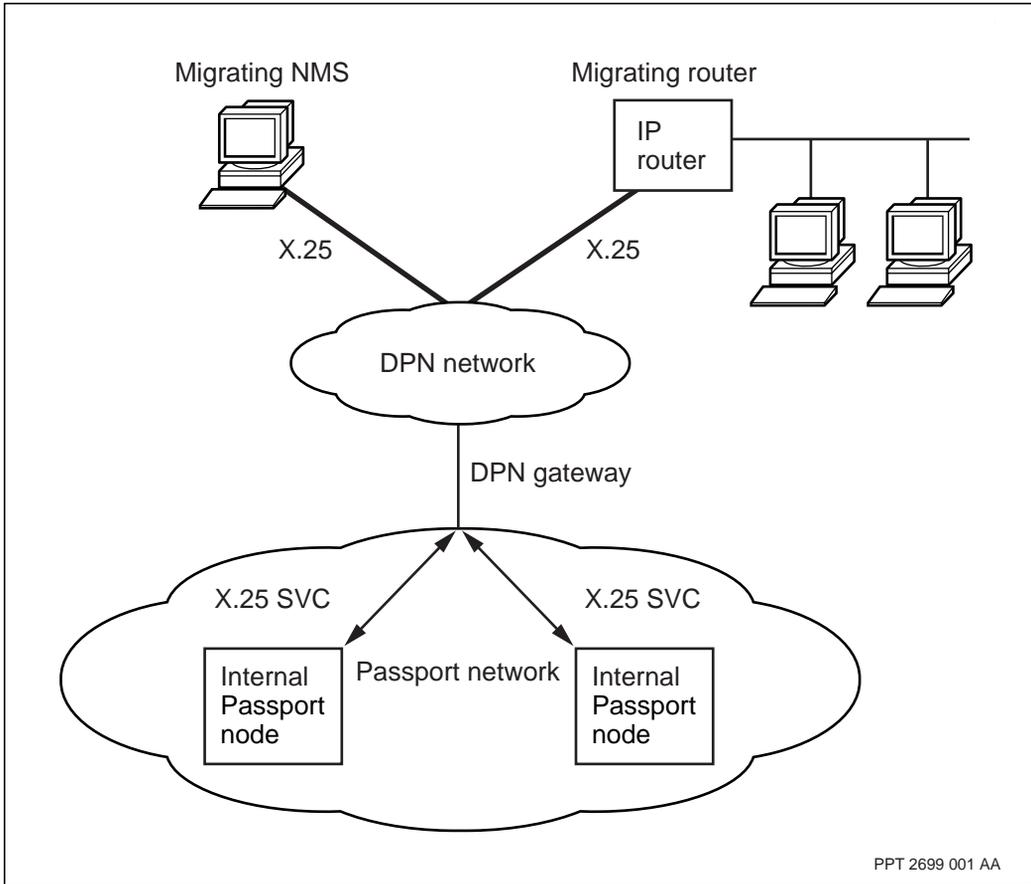
## Upgrading from IPIVC to IPIFR in a Passport 7400 node

The figure “Before upgrading to IPIFR: connection over X.25” (page 147) shows the applicable configurations before upgrading to IPIFR.

There are three types of upgrades:

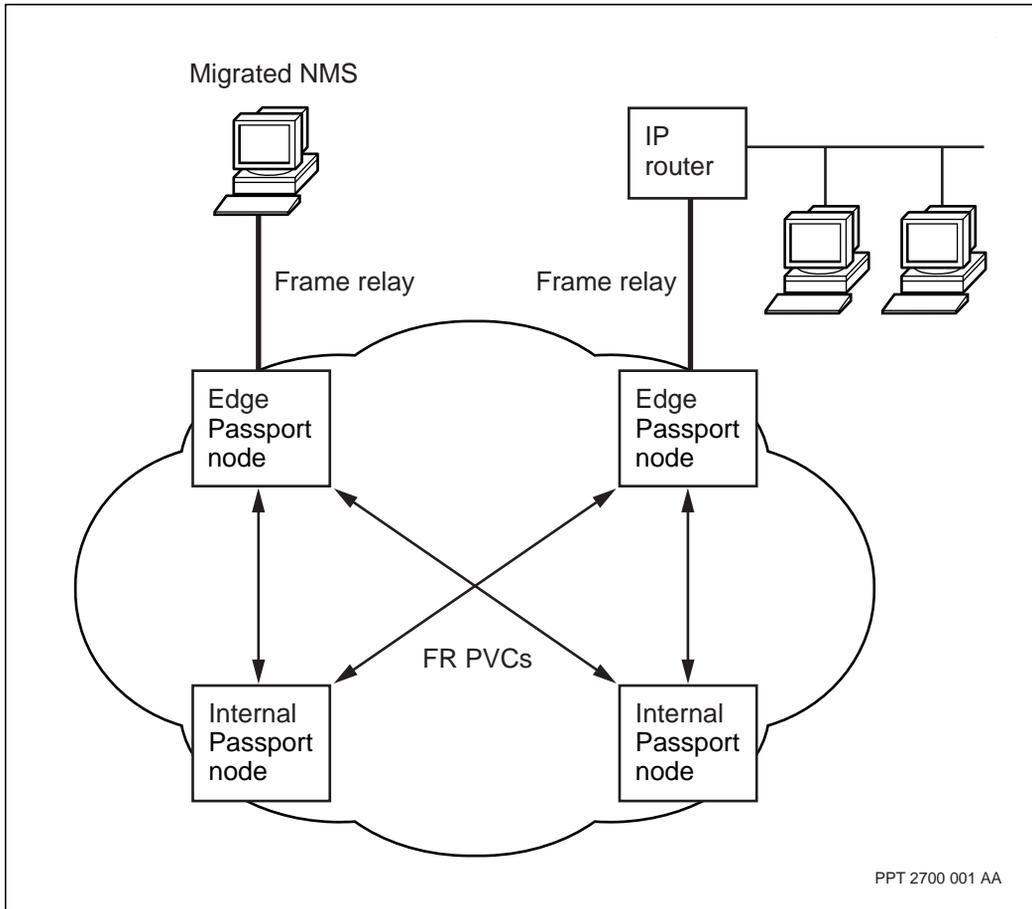
- upgrading a Preside MDM workstation to direct (point-to-point) FR connectivity illustrated in the figure “After upgrading to IPIFR: direct connection over FR” (page 148).
- upgrading an IP-routing-capable device illustrated in the figure “After upgrading to IPIFR: direct connection over FR” (page 148).
- upgrading a Preside MDM workstation to indirect FR connectivity through an additional IP-routing-capable device illustrated in the figure “After upgrading to IPIFR: indirect connection over FR” (page 149).

**Figure 27**  
**Before upgrading to IPIFR: connection over X.25**

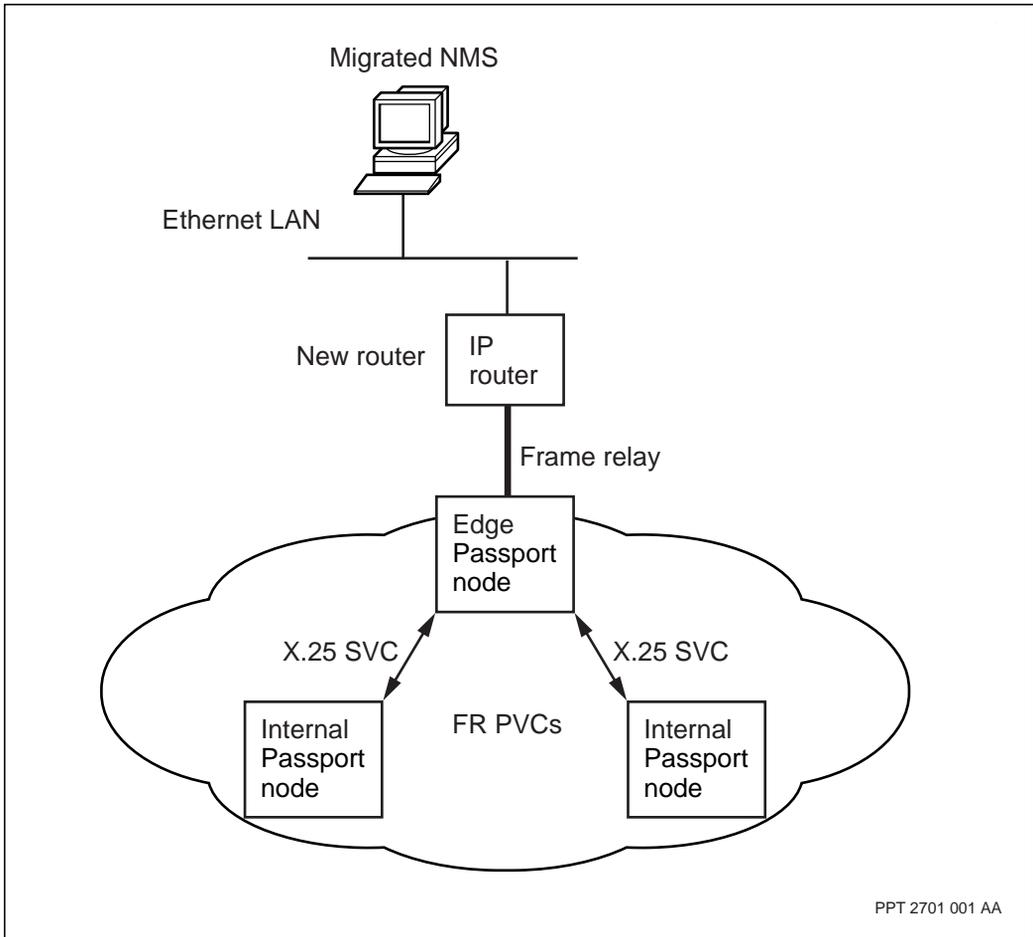


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**Figure 28**  
**After upgrading to IPIFR: direct connection over FR**



**Figure 29**  
**After upgrading to IPIFR: indirect connection over FR**



In the post-upgrade figures “After upgrading to IPIFR: direct connection over FR” (page 148) and “After upgrading to IPIFR: indirect connection over FR” (page 149), the Passport 7400 edge node connects directly to the Preside MDM workstation or the IP-routing-capable device. The internal Passport 7400 node connects to the Passport 7400 edge node.

## Configuring IP services networking through Ethernet

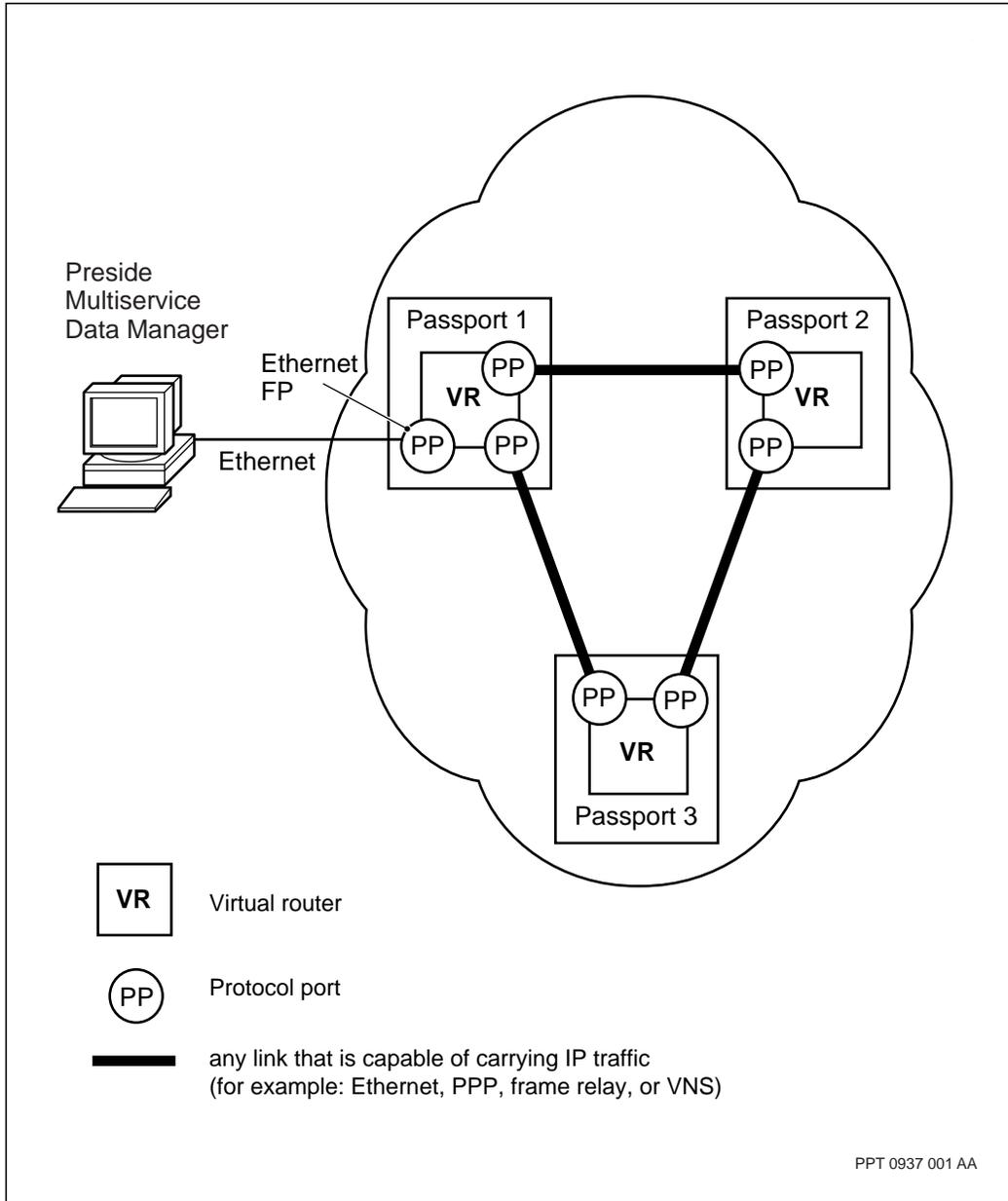
A management device can be directly connected to a Passport IP services network using an Ethernet connection, as shown in “Network management Ethernet connection to a network with IP services only” (page 151).

As well, a network with IP services only can be connected to a network without IP services. The management devices that were previously managing either network can manage the entire combined network. The figure “Connectivity between a network with IP services only to a network without IP services” (page 152) illustrates this type of configuration.

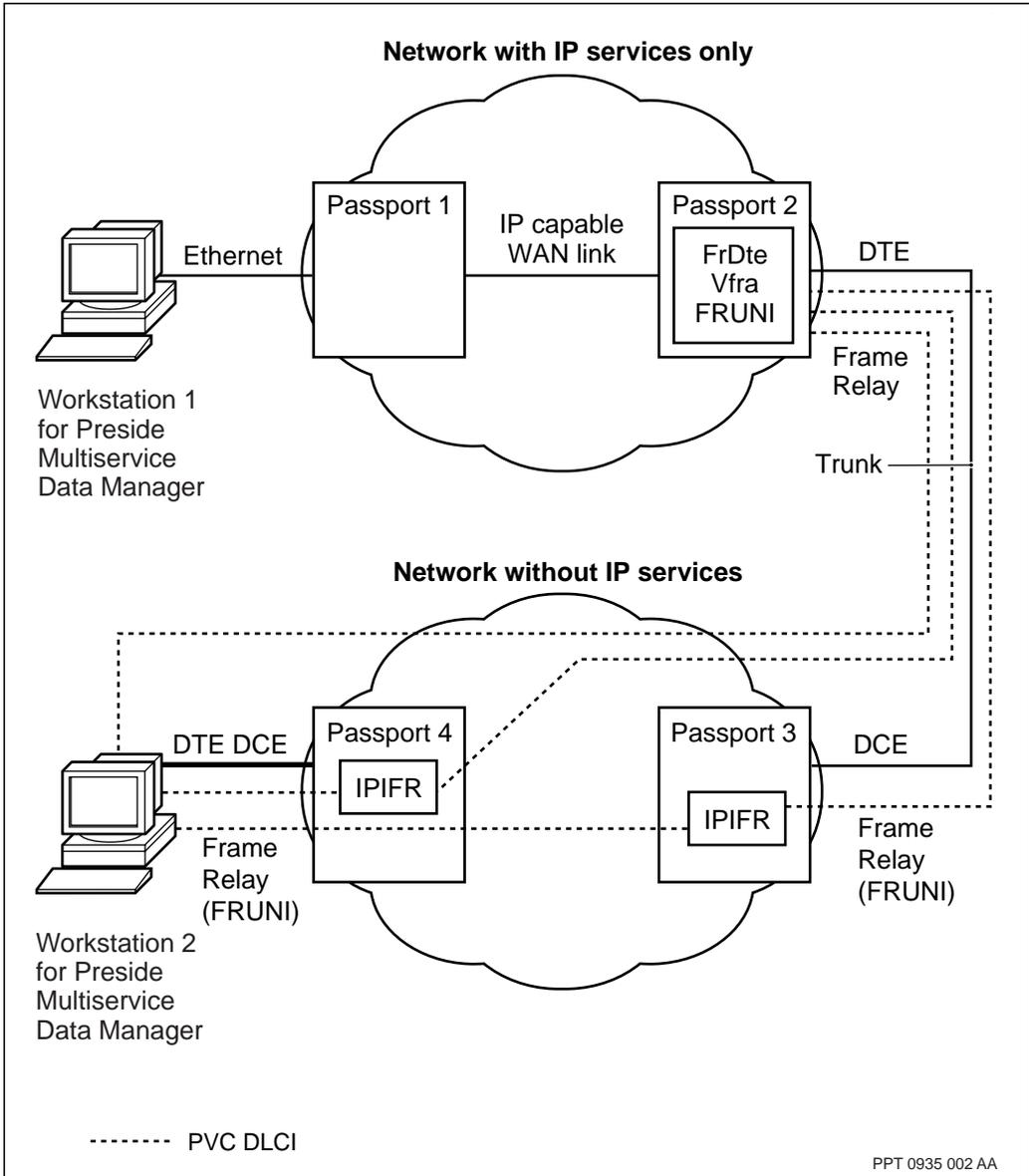
You can then manage the IP services network using SNMP, telnet, FTP, or FMIP applications over the Ethernet connection. See the following documents for a detailed description of IP services networks:

- 241-5701-030 *Passport 7400, 15000, 20000 Overview*
- 241-7401-200 *Passport 7400 Hardware Description*
- 241-1501-200 *Passport 15000, 20000 Hardware Description*
- 241-5701-400 *Passport 7400, 15000, 20000 Networking Overview*
- 241-5701-805 *Passport 7400, 15000, 20000 Understanding IP*

**Figure 30**  
**Network management Ethernet connection to a network with IP services only**



**Figure 31**  
**Connectivity between a network with IP services only to a network without IP services**



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## Chapter 12

# Troubleshooting a Passport node

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See these sections if you have problems with your Passport node:

- “Alarms” (page 153)
- “Handling problems” (page 154)
- “Resetting shelf configuration programming” (page 161)
- “Checking for processor card failure” (page 162)
- “DS1 and E1 StartUp parameters and DPN counterparts for a Passport 7400 node” (page 163)

For information on handling symptoms that can occur when installing an OC-48 FP in a Passport 15000 or 20000, see the troubleshooting section in 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.

## Alarms

As you use StartUp, you can encounter fault or failure conditions on the node that raise alarms. Passport 15000 components generate alarms asynchronously. When a component generates an alarm, it does so to signal one of the following conditions:

- The component is in need of repair.
- The component has detected a fault elsewhere on the node.

Alarms contain information that help you monitor and survey your network. For more information, see 241-5701-500 *Passport 6400, 7400, 15000, 20000 Alarms*.

## Handling problems

This table provides guidelines about how to respond to problems that can occur when you are using StartUp.

**Table 29**  
**Handling problems**

| Problems                                                                                                      | Probable causes                                                               | Corrective measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| You have run option 4, <i>Configure the node for Preside MDM connectivity</i> and the system is not operable. | The shelf configuration does not correspond to configuration you provisioned. | Reset the shelf configuration programming. See "Resetting shelf configuration programming" (page 161).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| There is no network connectivity.                                                                             | <p>There is a processor card failure.</p> <p>The link does not come up.</p>   | <p>Verify that the processor has failed. See "Checking for processor card failure" (page 162)</p> <p>Verify the configuration data. See 241-5701-520 <i>Passport 7400, 15000, 20000 Troubleshooting and Testing</i>.</p> <p>Verify that the physical connection is properly configured and is up.</p> <p>Verify that Preside MDM is configured with the information needed to establish the FRUNI connections.</p> <p>Verify that Preside MDM is making the call to the FRUNI.</p> <p>Verify that the node name, IP address and DLCI on the Passport are those which are provisioned in Preside MDM.</p> |
| (Sheet 1 of 8)                                                                                                |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**Table 29 (continued)**  
**Handling problems**

| Problems                          | Probable causes            | Corrective measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is no network connectivity. | The link does not come up. | For V.35 and V.11 links (on a V.11 or V.35 processor) check <ul style="list-style-type: none"> <li>• V.35 and V.11 DCE/DTE link modes</li> <li>• cable connections</li> <li>• V.35 and V.11 ready <i>LineState</i> and data <i>TransferLineState</i> are set up correctly</li> </ul> For DS1 and E1 links, check <ul style="list-style-type: none"> <li>• DS1 and E1 channel configurations at both ends match</li> <li>• master and slave clocking is consistent</li> <li>• DS1/E1 and DS3/E3 operational attributes</li> </ul> |
| (Sheet 2 of 8)                    |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**Table 29 (continued)**  
**Handling problems**

| Problems                          | Probable causes            | Corrective measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is no network connectivity. | The link does not come up. | <p>For DS3 ATM links, check that</p> <ul style="list-style-type: none"> <li>• the cable connections between the two ports (that is, transmit-to-receive and receive-to-transmit) are good</li> <li>• the mapping type matches on both ends (either direct or plcp)</li> <li>• in the <i>Cell</i> subcomponent, the attribute <i>scrambleCellPayload</i> is on for both ports that are physically connected</li> <li>• the port is enabled and busy, but the <i>Vcc</i> component is disabled. For more information, see the troubleshooting section in 241-5701-715 <i>Passport 7400, 15000, 20000 ATM Monitoring and Troubleshooting Guide</i>.</li> <li>• the <i>Vcc</i> component is enabled, but the Passport trunk does not come up. For more information, see the troubleshooting chapter in 241-5701-420 <i>Passport 7400, 15000, 20000 Trunking Guide</i>.</li> </ul> |

(Sheet 3 of 8)

**Table 29 (continued)**  
**Handling problems**

| Problems                          | Probable causes            | Corrective measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is no network connectivity. | The link does not come up. | <p>For E3 ATM links, check that</p> <ul style="list-style-type: none"> <li>• cable connections between the two ports (that is, transmit-to-receive and receive-to-transmit) are good</li> <li>• the mapping type is the same for both ends (direct or plcp)</li> <li>• the framing type is the same for both ends (g751 or g832)</li> <li>• the port is enabled and busy, but the <i>Vcc</i> component is disabled. For more information, see the troubleshooting section in <i>241-5701-715 Passport 7400, 15000, 20000 ATM Monitoring and Troubleshooting Guide</i>.</li> <li>• the <i>Vcc</i> component is enabled, but the Passport trunk does not come up. For more information, see the troubleshooting chapter in <i>241-5701-420 Passport 7400, 15000, 20000 Trunking Guide</i>.</li> </ul> |
| (Sheet 4 of 8)                    |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**Table 29 (continued)**  
**Handling problems**

| Problems                          | Probable causes            | Corrective measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is no network connectivity. | The link does not come up. | <p>For OC-3 ATM links, check that</p> <ul style="list-style-type: none"> <li>• the cable connections between the two ports (that is, transmit-to-receive and receive-to-transmit) are good</li> <li>• the same line type is selected at both ends (SONET or SDH)</li> <li>• the port is enabled and busy, but the <i>Vcc</i> component is disabled. For more information, see the troubleshooting section in 241-5701-715 <i>Passport 7400, 15000, 20000 ATM Monitoring and Troubleshooting Guide</i>.</li> <li>• the <i>Vcc</i> component is enabled, but the Passport trunk does not come up. For more information, see the troubleshooting chapter in 241-5701-420 <i>Passport 7400, 15000, 20000 Trunking Guide</i></li> </ul> |
| (Sheet 5 of 8)                    |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**Table 29 (continued)**  
**Handling problems**

| Problems                                                                                                                                                                                                                          | Probable causes                                                                                                  | Corrective measures                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPIVC is not operable.                                                                                                                                                                                                            | There are network configuration inconsistencies.                                                                 | <p>Verify that the new Passport 7400 node recognizes the DPN network CSRMs.</p> <p>Verify that the DPN network CSRMs recognize the new Passport 7400 node.</p> <p>Verify that the IPIVC DNA is associated with the DPN CSRMs.</p> <p>Check the prefix for the DNA RID mapping.</p>                                                                                                                                                                                         |
| <p>IPIVC is not operable (continued).</p> <p><b>Note:</b> These troubleshooting procedures require a higher skill level. Only those who are qualified to perform network administration must attempt them.</p>                    | Preside MDM IPIVC configuration is non-compliant.                                                                | Verify the IPIVC configuration on Preside MDM (see 241-6001-303 <i>Preside MDM Administrator Guide</i> ).                                                                                                                                                                                                                                                                                                                                                                  |
| <p>IPIFR is not operable in a direct connection.</p> <p><b>Note:</b> These troubleshooting procedures require a higher skill level and should only be attempted by those who are qualified to perform network administration.</p> | <p>There are network configuration inconsistencies.</p> <p>Preside MDM IPIFR configuration is non-compliant.</p> | <p>Verify that the FRUNI connection matches the values used for configuration.</p> <p>Verify that the LCN and its <i>DirectCall</i> component on the local IPIFR is properly configured and corresponds to the information in the DLCI and its <i>DirectCall</i> component on the initial FR UNI.</p> <p>Verify that there are no CSRMs on the Passport-only network.</p> <p>Verify the IPIFR configuration (see 241-6001-303 <i>Preside MDM Administrator Guide</i>).</p> |
| (Sheet 6 of 8)                                                                                                                                                                                                                    |                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**Table 29 (continued)**  
**Handling problems**

| Problems                                                                                                                                                                                                                                      | Probable causes                                                                                                                                                          | Corrective measures                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>IPIFR is not operable in a connection through a Passport network.</p> <p><b>Note:</b> These troubleshooting procedures require a higher skill level. Only those who are qualified to perform network administration must attempt them.</p> | <p>There are network configuration inconsistencies.</p>                                                                                                                  | <p>Verify that the Passport trunk is configured properly and is up.</p> <p>Verify that the DLCI and its <i>DirectCall</i> component on the FRUNI for the given connection is properly configured.</p> <p>See 241-5701-520 <i>Passport 7400, 15000, 20000 Troubleshooting and Testing</i> for details on connections using IPIFR.</p>               |
| <p>IPIFR is not operable in a connection through a Passport network.</p> <p><b>Note:</b> These troubleshooting procedures require a higher skill level. Only those who are qualified to perform network administration must attempt them.</p> | <p>The <i>CallRouter</i> component is not provisioned with the IPIFR prefix.</p> <p>Preside MDM IPIVC configuration is non-compliant.</p>                                | <p>Provision the IPIFR prefix in the <i>CallRouter</i> component on the node with the direct connection to Preside MDM.</p> <p>See 241-5701-405 <i>Passport 7400, 15000, 20000 Call Server Guide</i>.</p> <p>Verify the IPIVC configuration (see 241-6001-303 <i>Preside MDM Administrator Guide</i>).</p>                                         |
| <p>ATM MPE link is not up</p>                                                                                                                                                                                                                 | <p>The Passport is discarding all the traffic it receives. Traffic will be discarded if the rxFrameDiscard counter under the associated atmif vcc stats is non-zero.</p> | <p>Check the <i>Ip eng arc ov protectedPoolCapacity</i> parameter under the Lp that is associated to the ATM FP. This parameter may cause a traffic discard if set greater than 26000.</p> <p>If <i>Lp Eng FCRC PQC Ov</i> is provisioned, make sure <i>ipRoutes</i> is set to a non-zero value, or else traffic will once again be discarded.</p> |
| (Sheet 7 of 8)                                                                                                                                                                                                                                |                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                    |

**Table 29 (continued)**  
**Handling problems**

| Problems                                                                         | Probable causes                                                                                                      | Corrective measures                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MDM will not authenticate on the Passport through an ATM MPE link                | The ATM MPE link is not provisioned through a Management Virtual Router.                                             | If you have provisioned ATM Inband connectivity to your Passport network and cannot authenticate with MDM on the Passport, make sure you have linked the ATM MPE service to a protocol port under the management VR and not a non-management VR.                                                                                                  |
| Cannot ping the node from Preside MDM.                                           | IPIVC DNA CUG type or DNIC values are the default values.                                                            | After the StartUp script is complete, enter the customer-specific values for the Ipvic Dna Cug type and dnic values.                                                                                                                                                                                                                              |
| FTP session times out while transferring Management Data Provider (MDP) records. | Frame relay network-to-network interface (NNI) data link connection identifier (DLCI) uses default transfer priority | Your Passport to MDP ftp connection can time out when transferring very large amounts of accounting or performance data. If this problem occurs and you cannot complete a successful data transfer, or if you anticipate very large data transfers to your MDP, configure the frame relay NNI DLCI to use a transfer priority (TP) of normal (6). |
| (Sheet 8 of 8)                                                                   |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                   |

## Resetting shelf configuration programming

Follow this procedure to reset the shelf configuration programming.

- 1 From the StartUp menu, run option 1, *Reset the node to CP-only software.*
- 2 From the StartUp menu, run option 2, *Create sw LPTs and load software on FPS.*
- 3 From the StartUp menu, run option 3, *Perform on-card tests of each card in the node.*

- 4 From the StartUp menu, run option 4, *Configure the node for Preside MDM connectivity*.

You have now reset the shelf configuration programming. You can run other options from the main menu or exit StartUp. When you exit, StartUp prompts you to commit the view.

## Checking for processor card failure

Follow this procedure to check for a processor card failure.

- 1 Verify the status of the operational LEDs of the processor card. See 241-5701-520 *Passport 7400, 15000, 20000 Troubleshooting and Testing* for a description of the card status based on the LED display.

A solid amber LED means that the card is not faulty, but cannot operate. For Passport 7400 series switches, verify that you are using a valid card. See 241-7401-200 *Passport 7400 Hardware Description* for a list of processor cards with equivalent valid PECs.

If necessary, replace the card with a valid one.

- 2 From the StartUp menu, run option 3, *Perform on-card tests of each card in the node*.
- 3 Power down the node. See 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade* or 241-1501-215 *Passport 15000, 20000 Hardware Maintenance Guide*.
- 4 Remove and carefully reinsert the processor card into the backplane. Ensure that the processor is properly seated. See 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade* or 241-1501-240 *Passport 15000, 20000 Hardware Installation, Maintenance and Upgrade*.
- 5 Power up the node. See 241-7401-240 *Passport 7400 Hardware Installation, Maintenance and Upgrade* or 241-1501-240 *Passport 15000, 20000 Hardware Installation, Maintenance and Upgrade*.
- 6 From the StartUp menu, run option 3, *Perform on-card tests of each card in the node*.

If processor card problems persist, replace the processor card and return the failed processor card to Nortel Networks Networks.

## DS1 and E1 StartUp parameters and DPN counterparts for a Passport 7400 node

The following table lists DS1 and E1 StartUp parameters and their counterparts under DPN.

**Table 30**  
**DS1 and E1 StartUp parameters and corresponding DPN counterparts**

| Passport Trunk type                                                                                          | StartUp attribute                          | DPN                                           |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------|
| E1                                                                                                           | <i>lineType</i> : CCS                      | frame format: 2_Frame HDB3 *                  |
|                                                                                                              | <i>lineType</i> : CAS *                    | frame format: 16_Frame HDB3                   |
| DS1 (The DPN frame format is a combination of linetype and zero coding on StartUp. DPN defaults to E1 type.) | <i>lineType</i> : ESF *                    | frame format:<br>24_Frame B8ZS<br>24_Frame B7 |
|                                                                                                              | <i>linetype</i> : D4                       | frame format:<br>12_Frame B8ZS<br>12_Frame B7 |
|                                                                                                              | <i>zeroCoding</i> :<br>B8ZS *<br>B7<br>AMI | apply to above                                |
| E1 and DS1                                                                                                   | <i>clockingSource</i> :<br>line *<br>local | clock configuration:<br>slave *<br>master     |
|                                                                                                              | <i>dataInversion</i> :<br>off *<br>on      | HDLC inversion:<br>no *<br>yes                |
| * represents values that are set as defaults at the factory                                                  |                                            |                                               |

### Verifying that the file system is synchronized

To synchronize the file system before a software migration, perform the following procedure in operational mode.

- 1 Synchronize the file system:

**display FileSystem syncStatus**

If the shadowed file system is synchronized, then the attribute value for the displayed attribute is *synchronized*.

- 2** If the shadowed file system is synchronizing, wait until synchronization is complete. If the shadowed file system is unsynchronized, type the following command to start synchronizing:

**synchronize FileSystem**

---

## Appendix A

# Passport 7400 IPIVC to IPIFR upgrade

---

Perform a Passport 7400 IPIVC to IPIFR upgrade to convert Preside Multiservice Data Manager workstations (or IP-routing-capable devices) from IP over X.25 to IP over FR.

The procedures in this section apply only to Preside Multiservice Data Manager workstations and devices that are capable of IP routing (such as IP routers or Preside Multiservice Data Manager workstations running an IP routing daemon). The procedures are not necessary for Preside Multiservice Data Manager workstations connected to the IP router through a LAN.

During this process, the non-upgrading Preside Multiservice Data Manager workstations manage the Passport network through X.25 connections.

- “Prerequisites to Passport 7400 IPIVC to IPIFR upgrade” (page 165)
- “Passport 7400 IPIVC to IPIFR upgrade task” (page 166)

## Prerequisites to Passport 7400 IPIVC to IPIFR upgrade



### CAUTION

#### IPIFR upgrade rule

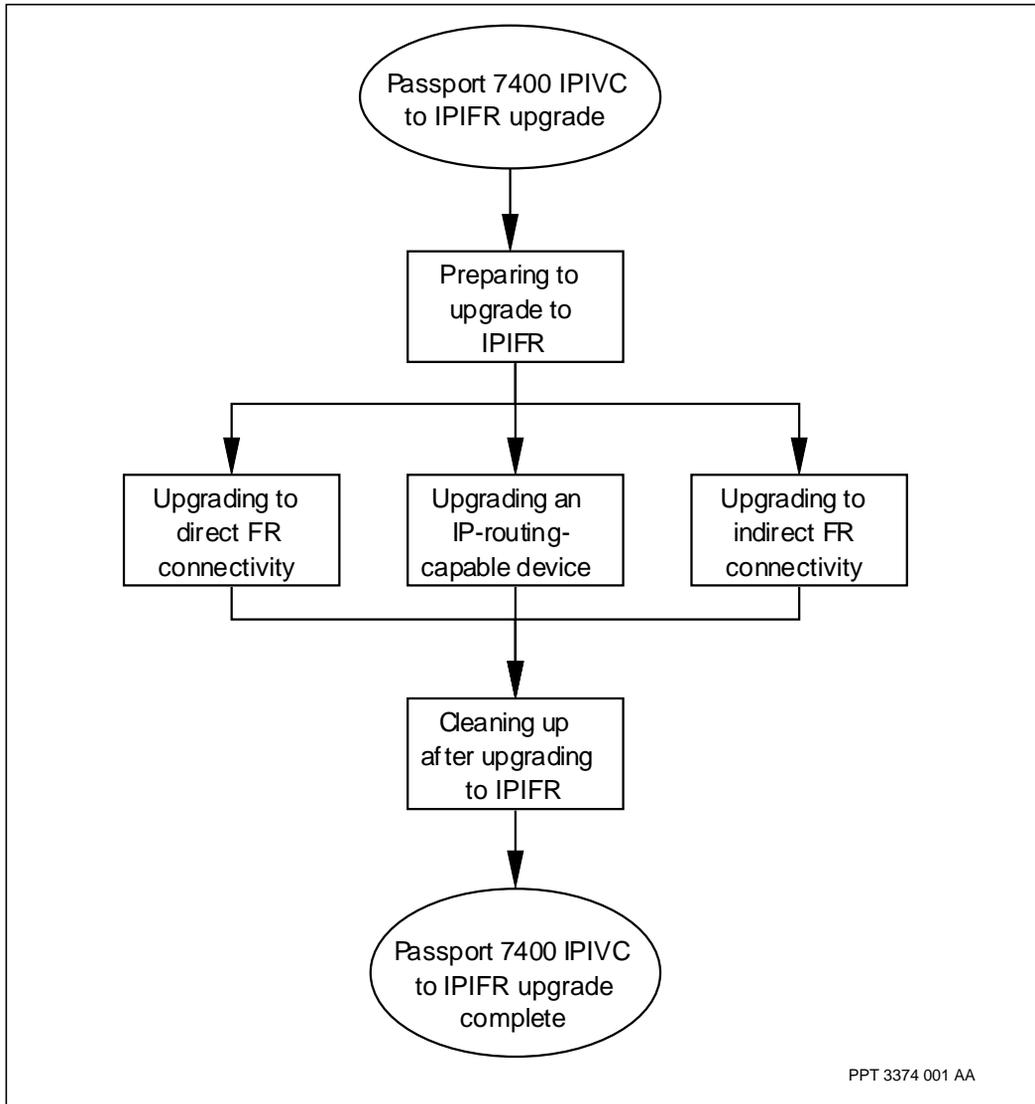
To ensure a successful upgrade and to avoid corruption of the routing table, strictly follow the upgrade procedures described in this section.

- For conceptual information, refer to “Upgrading from IPIVC to IPIFR in a Passport 7400 node” (page 146).

## **Passport 7400 IPIVC to IPIFR upgrade task**

“Passport 7400 IPIVC to IPIFR upgrade task flow” (page 167) shows you the sequence of tasks and procedures you perform to complete a Passport 7400 IPIVC to IPIFR upgrade. To link to any task or procedure, go to “Task navigation” (page 167).

**Figure 32**  
**Passport 7400 IPIVC to IPIFR upgrade task flow**



### Task navigation

- "Preparing to upgrade to IPIFR" (page 169)

- “Upgrading to direct FR connectivity” (page 170)
- “Upgrading an IP-routing-capable device” (page 171)
- “Upgrading to indirect FR connectivity” (page 172)
- “Cleaning up after upgrading to IPIFR” (page 173)

## Preparing to upgrade to IPIFR

You must prepare the Passport network before you can reconfigure individual Preside Multiservice Data Manager workstations or the IP-routing-capable device and switch them from X.25 to FR.

During the preparation phase, all Preside Multiservice Data Manager workstations continue their control and management activities for the Passport network using X.25 connections.

### Procedure steps

- 1 On the Passport edge nodes, provision a FRUNI service and the DLCIs for connection to the upgrading Preside Multiservice Data Manager workstation. See “Configuring a Passport 7400 direct frame relay network connection” (page 75).
- 2 Provision the IPIFR feature on every Passport node to be managed through the upgrading Preside Multiservice Data Manager workstation. See “Configuring the IPIFR feature” (page 40).
- 3 Provision the *IpiFr* component and appropriate LCNs on every Passport node to be managed through the upgrading Preside Multiservice Data Manager workstation. See “Configuring the IPIFR component” (page 41) and “Adding logical connections for management devices” (page 43).
- 4 On every Passport node, check whether the upgrading IP-routing-capable device is the IP default route currently configured on the Passport node’s *IpiVc* component. If it is, you must add the *StaticRoute/0.0.0.0* component to the *IpiFr* component. See “Configuring a default route for path redundancy” (page 48). The *gatewayIpAddress* attribute in the *StaticRoute/0.0.0.0* component of the *IpiFr* component must be the same as the *callingIpAddress* attribute in the *DefaultRoute* component of the *IpiVc* component.
- 5 Provision a *StaticRoute* component on the *IpiFr* component for the appropriate subnet of the IP-routing-capable device on every Passport node that indirectly connects to the upgrading Preside Multiservice Data Manager workstation. See “Configuring Passport to access an indirectly connected management device” (page 45).

## Upgrading to direct FR connectivity

Upgrade to direct FR connectivity to enable a Preside Multiservice Data Manager workstation to access the Passport network through IPIFR.

### Procedure steps

- 1 Shut down the X.25 service on the upgrading Preside Multiservice Data Manager workstation.
- 2 Disconnect the upgrading workstation from the network by disconnecting the X.25 cable between the workstation and the DPN.
- 3 On the SunLink X.25 card, unconfigure every Passport IP address over X.25.



#### **CAUTION**

##### **IPIFR upgrade rule**

Ensure that steps step 1 through step 3 have been successfully completed before continuing to step 4. If you do not, the routing table in the Passport node can become corrupted.

- 4 Install the FR software on the Preside Multiservice Data Manager workstation according to 241-6001-100 *Preside MDM Installer Guide*.
- 5 Configure the Preside Multiservice Data Manager workstation with the Passport host and group information using the `passport.frconfig` program according to 241-6001-303 *Preside MDM Administrator Guide*.
- 6 Connect the cable from the upgrading workstation to the FRUNI defined for this workstation during the preparation phase.
- 7 Reboot the workstation.
- 8 Make sure the FR service is active on the workstation.

## Upgrading an IP-routing-capable device

Upgrade an IP-routing-capable device to access the Passport network through IPIFR.

### Procedure steps

- 1 Shut down the X.25 service on the IP-routing-capable device.
- 2 Disconnect the upgrading IP-routing-capable device from the network by disconnecting the X.25 cable between the routing device and the DPN.
- 3 On the IP-routing-capable device, unconfigure every Passport IP address over X.25 according to the manufacturer's instructions.



#### **CAUTION**

##### **IPIFR upgrade rule**

Ensure that steps step 1 through step 3 have been successfully completed before continuing to step 4. If you do not, the routing table in the Passport node can become corrupted.

- 4 Configure the IP-routing-capable device for frame relay according to the manufacturer's instructions.
- 5 Connect the cable from the upgrading IP-routing-capable device to the FRUNI defined for this workstation during the preparation phase.
- 6 Reboot the IP-routing-capable device.

## Upgrading to indirect FR connectivity

Upgrade to indirect FR connectivity to enable a Preside Multiservice Data Manager workstation to access the Passport network through IPIFR while connected through an IP-routing-capable device.

### Procedure steps

- 1 On the IP-routing-capable device, configure every Passport 7400 IP address over FR. This step includes installing the FR IP port and provisioning DLCIs. For details, see the documentation provided with the IP-routing-capable device.
- 2 Connect the cable from the new IP-routing-capable device to the FRUNI defined for this device during the preparation phase.
- 3 Disconnect each upgrading workstation from the network by disconnecting the X.25 cable between the workstation and the DPN.
- 4 On the SunLink X.25 card, unconfigure every Passport IP address over X.25.
- 5 Connect the cable from the upgrading workstation to the Ethernet LAN.
- 6 Reboot each workstation.

## Cleaning up after upgrading to IPIFR

Clean up after upgrading to IPIFR on all upgrading workstations to remove the *IpiVc* component and *IpiVc* feature on each Passport 7400 node to reclaim the CP memory used by the IPIVC process.

### Prerequisites

**CAUTION****CP reboot**

The process of removing the *IpiVc* feature causes the CP to reboot. Nortel Networks recommends that you perform the following procedure during a maintenance window.

### Procedure steps

- 1 Delete the *IpiVc* component.  

```
delete IpiVc
```
- 2 Remove the IPIVC feature from the LPT/CP feature list.  

```
set sw Lpt/CP featureList ~ IpiVc
```
- 3 Display the feature list to ensure that IPIVC has been deleted.  

```
display Sw Lpt/CP featureList
```



---

## Appendix B

# IPIFR connection options

---

With IPIFR, you can connect management devices to a Passport 7400 network both directly or indirectly. You can connect management devices to a Passport 15000 or 20000 node only indirectly.

With a direct connection, a management device (MD) connects to an edge node in the Passport 7400 network using a frame relay interface. From this physical connection, you can configure a frame relay PVC to each node in the Passport 7400 network running IPIFR. Each IPIFR supports a maximum of 24 PVC connections.

With an indirect connection, an MD connects to a node in the Passport network through a IP-routing-capable device that has a frame relay interface. For example, the MD can connect to a Passport node through an IP router or a frame relay access device (FRAD). From this physical connection, you configure a frame relay PVC to each node in the Passport network running IPIFR. After you have configured the appropriate static routes, any MD on the same LAN as the IP-routing-capable device can establish TCP/IP connections to Passport nodes running IPIFR.

If your MDs are on a single LAN, then you can set the IP default route to the IP address of the IP-routing-capable device. This configuration allows outgoing IP packets not destined for a directly connected MD to be routed over the frame relay connection to the IP-routing-capable device.

If your MDs are on multiple LANs that each connect to the Passport network through an IP-routing-capable device, then you can set specific static IP routes to the IP-routing-capable devices. You can define host, subnetwork, and network static routes so that IPIFR can exchange packets with many indirectly connected MDs.

For more information on routing to directly and indirectly connected MDs, see the following sections:

- “Routing to directly connected devices” (page 176)
- “Routing to indirectly connected devices using a default route” (page 178)
- “Routing to indirectly connected devices using static routes” (page 181)
- “Providing path redundancy to indirectly connected devices using a default route” (page 185)

## Routing to directly connected devices

When you have a directly connected management device (MD), Passport uses a permanent virtual circuit (PVC) to establish a connection between the MD and IPIFR running on the node.

IPIFR views each PVC as a point-to-point IP connection. To configure the point-to-point connection, you must specify the IP address, subnetwork mask, data network address (DNA), and numbering plan for the IPIFR interface. You must also configure a logical channel number (LCN) for each directly connected management device. For the LCN, you must specify the IP address (remote IP address), the DNA (remote DNA), and the DLCI (remote DLCI) of the management device.

You can either provision the remote IP address of the management device or have Passport dynamically learn the remote IP address by inspecting the source address of the first IP packet received on the PVC.

An advantage to provisioning the remote IP address is that Passport can establish an IP route as soon as Passport establishes the frame relay PVC. Otherwise, Passport cannot establish an IP route until after the directly connected device (an MD or an IP-routing capable device) sends an IP packet to the Passport node on the PVC.

The completed definition of each PVC point-to-point IP link results in an IP routing table entry. The routing table entry is a host route (an IP route to a single IP node) to the MD. The destination IP address is the IP address of the management device. The gateway IP address is the IP address of IPIFR.

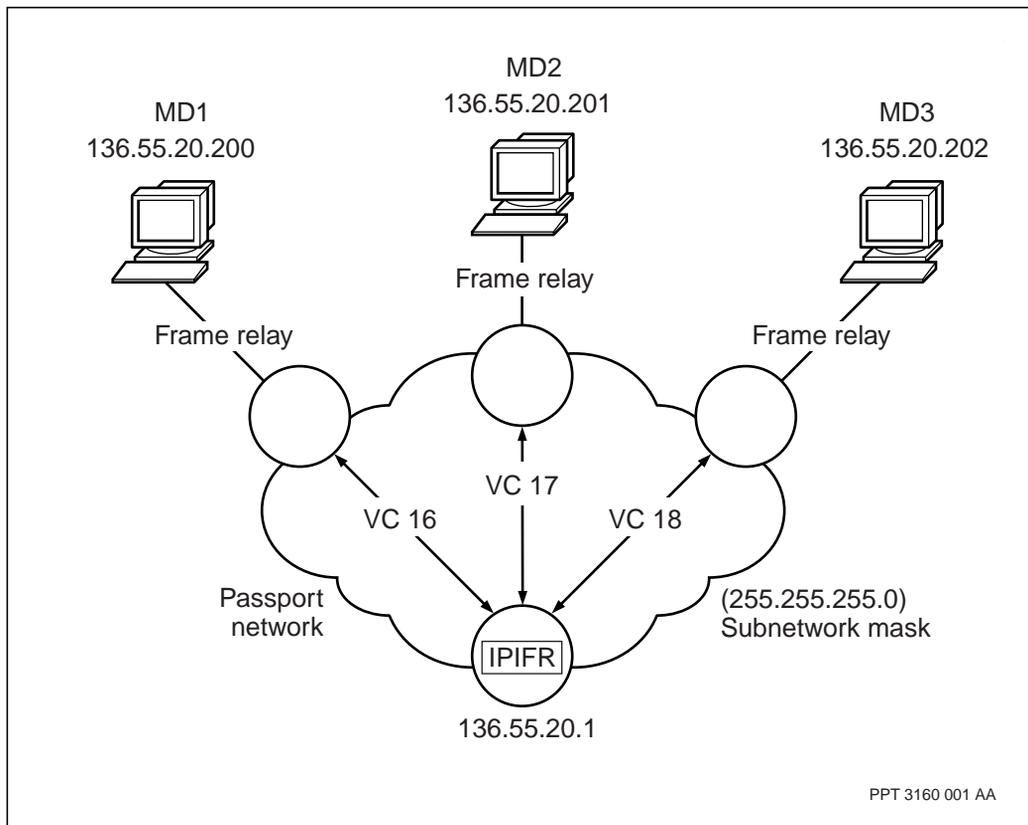
The figure “Example of directly connected management devices” (page 178) illustrates the connection between directly connected MDs to an internal Passport node running IPIFR. IPIFR uses a frame relay PVC to access each directly connected management device.

The table “Example IP routing table for directly connected management devices” (page 177) shows the routing table for the connections in the figure.

**Table 31**  
**Example IP routing table for directly connected management devices**

| <b>Destination</b> | <b>Destination IP</b> | <b>Gateway IP</b> | <b>Type</b> | <b>Interface</b> |
|--------------------|-----------------------|-------------------|-------------|------------------|
| MD 1               | 136.55.20.200         | 136.55.20.1       | host        | VC 16            |
| MD 2               | 136.55.20.201         | 136.55.20.1       | host        | VC 17            |
| MD 3               | 136.55.20.202         | 136.55.20.1       | host        | VC 18            |

**Figure 33**  
**Example of directly connected management devices**



## Routing to indirectly connected devices using a default route

IPIFR can use an IP default route to access indirectly connected management devices (MD). Use the default route to access indirectly connected MDs when you have only a single LAN connected to the Passport network using an IP-routing-capable device. If you have multiple LANs connected to the Passport network, use static routes to access the indirectly connected MDs. See “Routing to indirectly connected devices using static routes” (page 181) for more information.

The default route is the route IPIFR uses when it cannot find a specific host, subnetwork, or network route to a destination IP address. If you have a single IP-routing-capable device connected to your Passport network, you can configure a default route to that device by specifying its IP address as first hop (gateway address) of the default route. With this configuration, IPIFR routes all packets that are not destined for directly connected MDs to the IP-routing-capable device.

To use a default route, you must first configure the point-to-point IP connection to the directly connected IP-routing-capable device you want to use as the first hop of the default route. You must create an LCN specifying the IP address (remote IP address), the DNA (remote DNA), and the DLCI (remote DLCI) of the IP-routing-capable device.

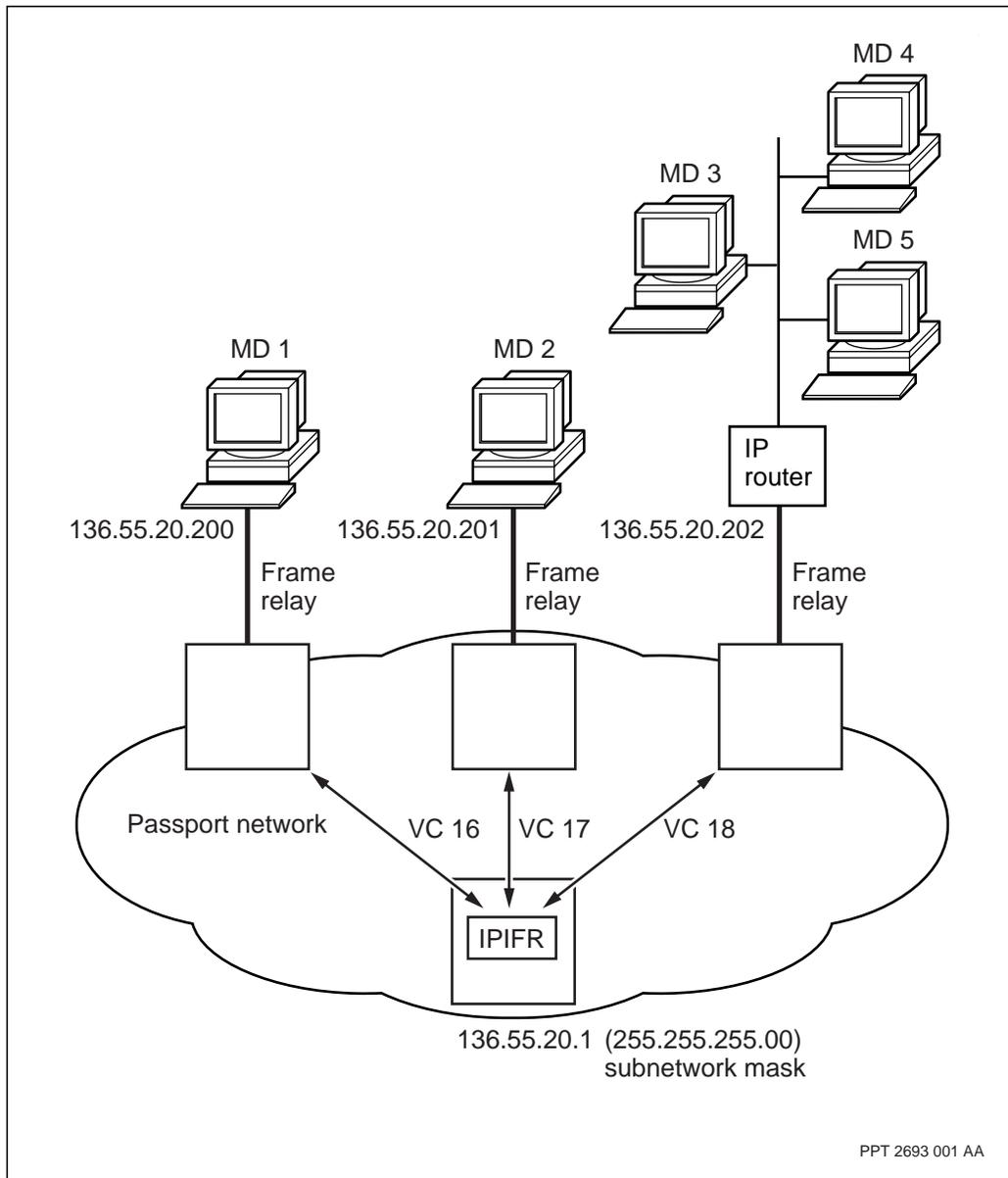
The figure “Example using default route to indirectly connected management devices” (page 180) illustrates an network using a default route to access all the indirectly connected MDs. When the destination IP address is not one of the two directly connected MDs (136.55.20.200 or 136.55.20.201), IPIFR sends IP packets to the default route, which is the IP router. The IP router then forwards the packets to each of the indirectly connected MDs (3, 4, and 5).

The table “Example routing table with a default route to indirectly connected management devices” (page 179) shows the routing table for the connections in the figure.

**Table 32**  
**Example routing table with a default route to indirectly connected management devices**

| Destination | Destination IP | Gateway IP    | Type    | Interface |
|-------------|----------------|---------------|---------|-----------|
| MD 1        | 136.55.20.200  | 136.55.20.1   | host    | VC16      |
| MD2         | 136.55.20.201  | 136.55.20.1   | host    | VC17      |
| IP Router   | 136.55.20.202  | 136.55.20.1   | host    | VC 18     |
| MD 3, 4, 5  | 0.0.0.0        | 136.55.20.202 | default | VC 18     |

**Figure 34**  
**Example using default route to indirectly connected management devices**



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## Routing to indirectly connected devices using static routes

Static IP routes allow IPIFR to access indirectly connected management devices (MD) on multiple LANs. If your indirectly connected MDs are on a single LAN, use a default route to access the MDs on the LAN. See “Routing to indirectly connected devices using a default route” (page 178)

You can also provide path redundancy by combining static routes with the default route. For more information, see “Providing path redundancy to indirectly connected devices using a default route” (page 185).

IPIFR supports three types of static IP routes:

- host routes—IP routes to a single IP node
- subnetwork routes—IP routes to a group of IP nodes determined by the network and subnetwork portions of their IP addresses
- network routes—IP routes to a group of IP nodes determined by the network portion of their IP addresses

Certain limitations apply depending on whether the network to which you are trying to route contains the Passport node (local network) or does not contain the Passport node (remote network). IPIFR does not support subnetwork routes to remote networks. IPIFR also does not support variable-length subnetting. You can only specify a single subnetwork mask for all the VC interfaces managed by IPIFR.

If the local network is divided into subnetworks, you cannot configure network routes to the local network. However, you can configure network routes to remote networks.

You can configure only one static IP route for a particular host, subnetwork, or network, up to a maximum of 50 static IP routes. When you configure a static IP route, you must specify the destination address and the gateway address.

The destination address is the host address of the MD, the MD’s subnetwork address, or its network address. Passport determines whether the destination address is a host, subnetwork, or network address using the appropriate network mask and, if applicable, the subnetwork mask defined for IPIFR.

The gateway address is the IP address of the host that is the first hop on the route to the MD.

To use static routes, you must first configure the point-to-point IP connections to the directly connected IP-routing-capable devices you want to use for the first hops of the static routes. You must create an LCN for each of IP-routing-capable device, specifying its IP address (remote IP address), DNA (remote DNA), and DLCI (remote DLCI).

The figure “Example using static routes to indirectly connected management devices” (page 184) illustrates the static routes between indirectly connected MDs to an internal Passport node running IPIFR.

IPIFR can reach the directly connected MD 1 using a host route. Since MD 1 is also an IP-routing-capable device (for example, a workstation running an IP routing application) and is part of the same network as the Passport node (136.55.0.0). You can configure a subnetwork route (136.55.25.0) to reach all MDs on the subnetwork using MD 2 as the gateway address (136.55.20.200).

You can configure host and network static routes to MDs on the 47.0.0.0 network using the directly connected IP routers (IP addresses 136.55.20.201 and 136.55.20.202) as gateway addresses. However, since the Passport node is not part of this network, you cannot configure subnetwork static routes. The table “Example routing table with static routes to indirectly connected management devices” (page 182) shows a routing table for the connections in the figure.

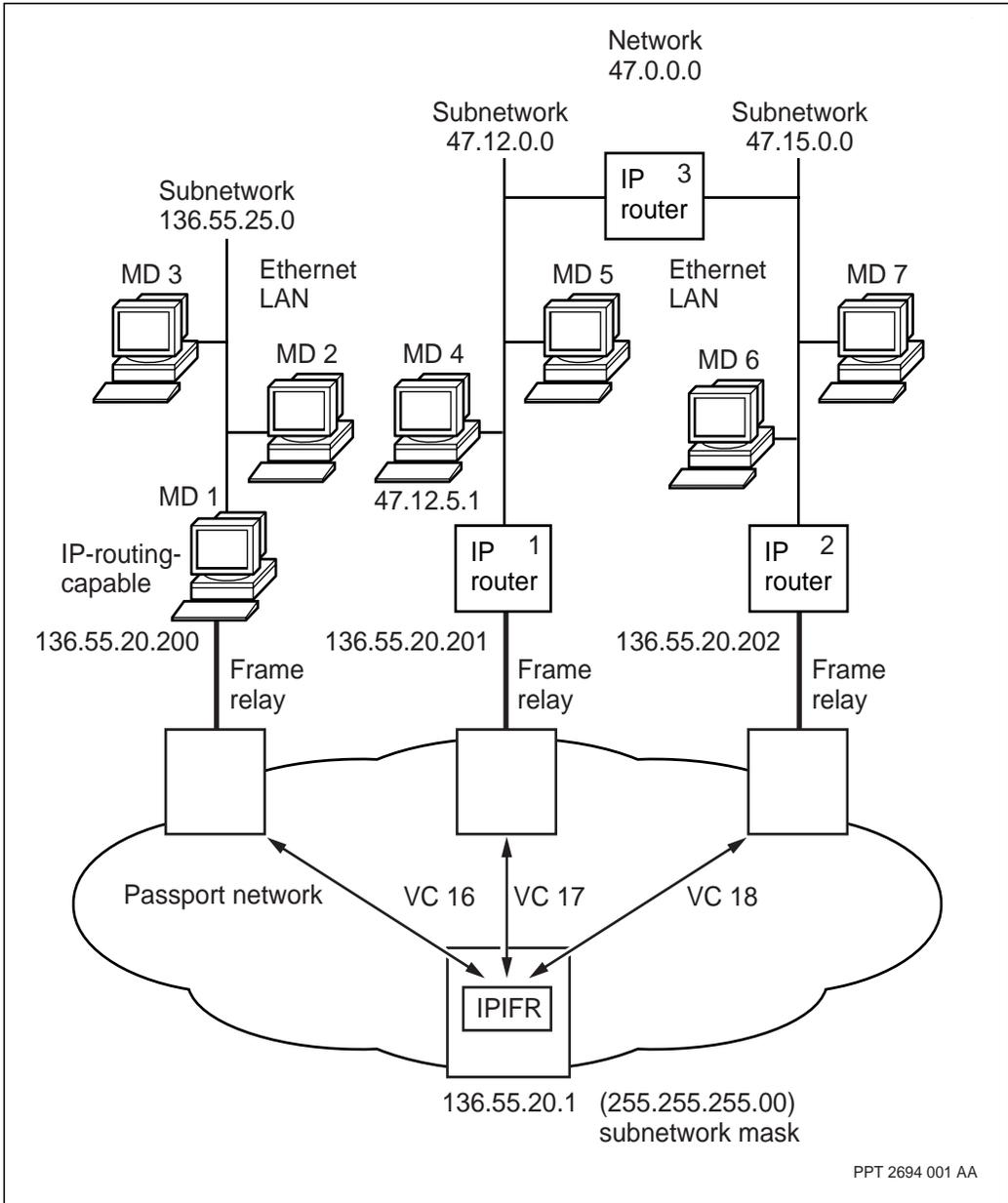
**Table 33**  
**Example routing table with static routes to indirectly connected management devices**

| Destination    | Destination IP | Gateway IP    | Type       | Interface |
|----------------|----------------|---------------|------------|-----------|
| MD 1           | 136.55.20.200  | 136.55.20.1   | host       | VC 16     |
| IP Router 1    | 136.55.20.201  | 136.55.20.1   | host       | VC 16     |
| IP Router 2    | 136.55.20.202  | 136.55.20.1   | host       | VC 16     |
| MD 2, 3        | 136.55.25.0    | 136.55.20.200 | subnetwork | VC 16     |
| (Sheet 1 of 2) |                |               |            |           |

**Table 33 (continued)**  
**Example routing table with static routes to indirectly connected management devices**

| <b>Destination</b> | <b>Destination IP</b> | <b>Gateway IP</b> | <b>Type</b> | <b>Interface</b> |
|--------------------|-----------------------|-------------------|-------------|------------------|
| MD 4               | 47.12.5.1             | 136.55.20.201     | host        | VC 17            |
| MD 4, 5, 6, 7      | 47.0.0.0              | 136.55.20.202     | network     | VC 18            |
| (Sheet 2 of 2)     |                       |                   |             |                  |

**Figure 35**  
**Example using static routes to indirectly connected management devices**



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## Providing path redundancy to indirectly connected devices using a default route

When you have multiple LANs of management devices (MD) connected to your Passport network, use static routes to access the indirectly connected MDs. You can also use a default route to provide path redundancy. The default route is the route IPIFR uses when it cannot find a specific host, subnetwork, or network route to a destination address.

If the configured static route to an MD is not available (for example, its VC is down), then IPIFR sends IP packets destined for that MD to the default route. If the default route points to an IP-routing-capable device that has IP connectivity and IP reachability to all MDs, then the default route provides an alternate path to the MD. The default route is not always optimum, but it maintains a path between the management device and the Passport network.

IPIFR also supports backups for the default route for even greater path redundancy. You can configure a number of backup gateway addresses. If the primary gateway address for the default route is not available, IPIFR searches through the backup gateway addresses until it finds an available route. IPIFR then uses this backup as the default route. At any given time, there is only one default route.

The figure “Example using a default route for path redundancy” (page 187) illustrates a network configuration that can use the default route for path redundancy. In this configuration, the management devices are on multiple LANs, but the LANs are all interconnected. You can choose one IP-routing-capable device (probably the most reliable one) for the primary default route, and the others as the backups. In the event of the failure of one of the links to the IP-routing-capable devices, IPIFR can reroute the IP packets to the available default route. This configuration maintains the connection between the management devices and the Passport network even when multiple links fail or when the primary default route fails.

The table “Example routing table using default route for path redundancy with all links available” (page 186) illustrates the routing table for the figure when all links are available. The primary default route is to IP Router 2 (136.55.20.202). IP Router 1 and the IP-routing-capable MD 1 serve as the backups for the default route. If VC 18 fails, the network route to 47.0.0.0 and the default route are unavailable. In this case, IPIFR assigns IP Router 1

(136.55.20.201) as the new default route. Since all the LANs interconnect, all MDs are still reachable through IP Router 1. The table “Example routing table using default route for path redundancy with primary default route unavailable” (page 186) illustrates the routing table after VC 18 fails.

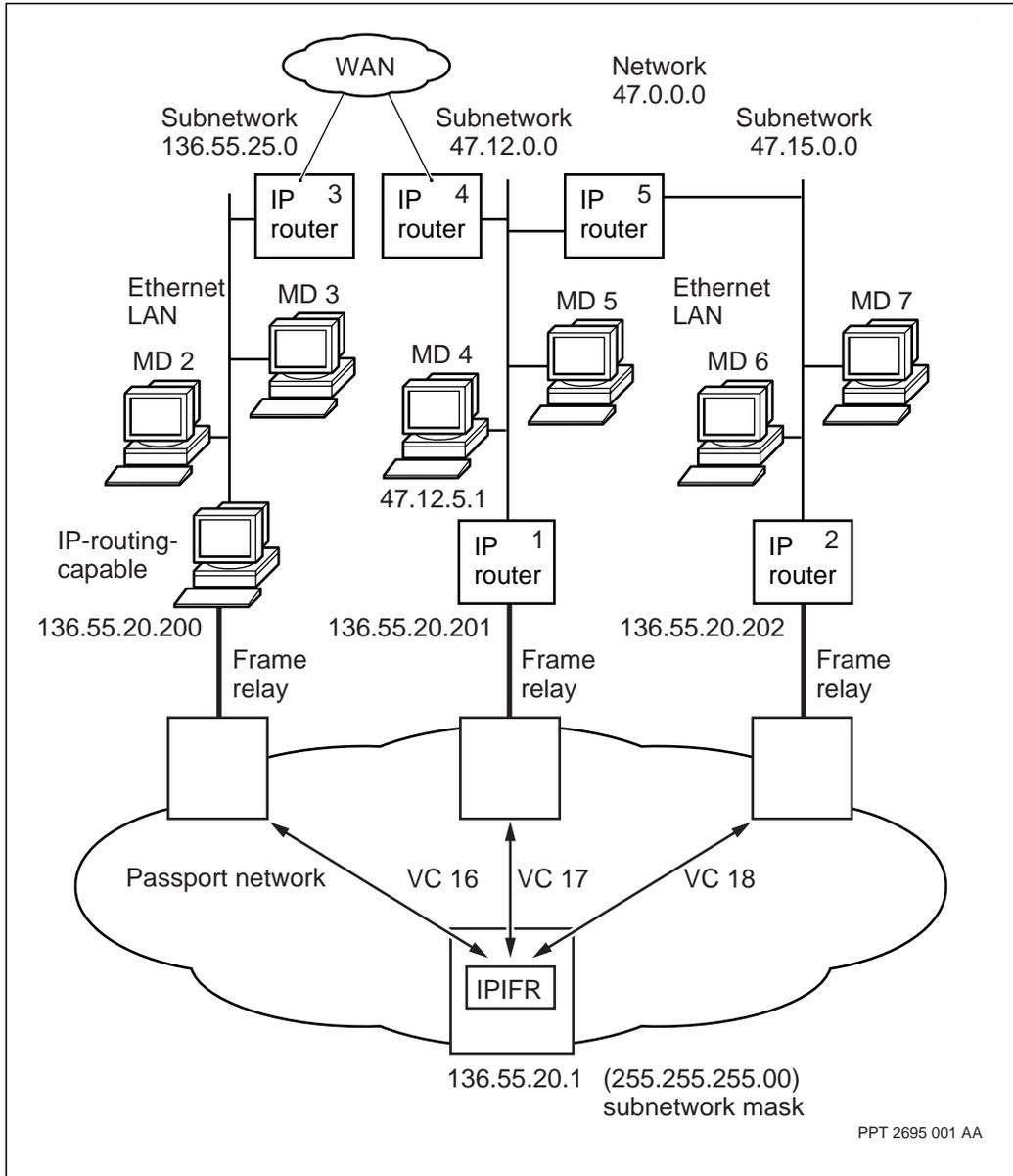
**Table 34**  
**Example routing table using default route for path redundancy with all links available**

| Destination                      | Destination IP | Gateway IP    | Type       | Interface |
|----------------------------------|----------------|---------------|------------|-----------|
| MD 1                             | 136.55.20.200  | 136.55.20.1   | host       | VC 16     |
| IP Router 1                      | 136.55.20.201  | 136.55.20.1   | host       | VC 16     |
| IP Router 2                      | 136.55.20.202  | 136.55.20.1   | host       | VC 16     |
| MD 2, 3                          | 136.55.25.0    | 136.55.20.200 | subnetwork | VC 16     |
| MD 4, 5, 6, 7                    | 47.0.0.0       | 136.55.20.202 | network    | VC 18     |
| MD 1                             | 136.55.20.200  | 136.55.20.1   | host       | VC 16     |
| All indirectly connected devices | 0.0.0.0        | 136.55.20.202 | default    | VC 18     |
|                                  |                |               |            |           |

**Table 35**  
**Example routing table using default route for path redundancy with primary default route unavailable**

| Destination                      | Destination IP | Gateway IP    | Type       | Interface |
|----------------------------------|----------------|---------------|------------|-----------|
| MD 1                             | 136.55.20.200  | 136.55.20.1   | host       | VC 16     |
| IP Router 1                      | 136.55.20.201  | 136.55.20.1   | host       | VC 16     |
| IP Router 2                      | 136.55.20.202  | 136.55.20.1   | host       | VC 16     |
| MD 2, 3                          | 136.55.25.0    | 136.55.20.200 | subnetwork | VC 16     |
| MD 1                             | 136.55.20.200  | 136.55.20.1   | host       | VC 16     |
| All indirectly connected devices | 0.0.0.0        | 136.55.20.201 | default    | VC 17     |
|                                  |                |               |            |           |

**Figure 36**  
**Example using a default route for path redundancy**





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## Appendix C

# Passport network topologies

---

To connect a new Passport node to Preside MDM using StartUp, you must specify the network topology through which the new node will connect to Preside MDM. The topology you select indicates the type of connectivity you will have with your Preside MDM workstation.

See the following sections for information about the network topologies into which you can add a Passport 7400 node.

- “A new Passport 7400 node connected to Preside MDM through a DPN network” (page 190)
- “A new Passport 7400 node connected to Preside MDM through a Passport-only network” (page 197)
- “A new Passport 7400 node connected directly to Preside MDM” (page 202)
- “A new Passport 7400 node connected to Preside MDM through IP services networking” (page 206)

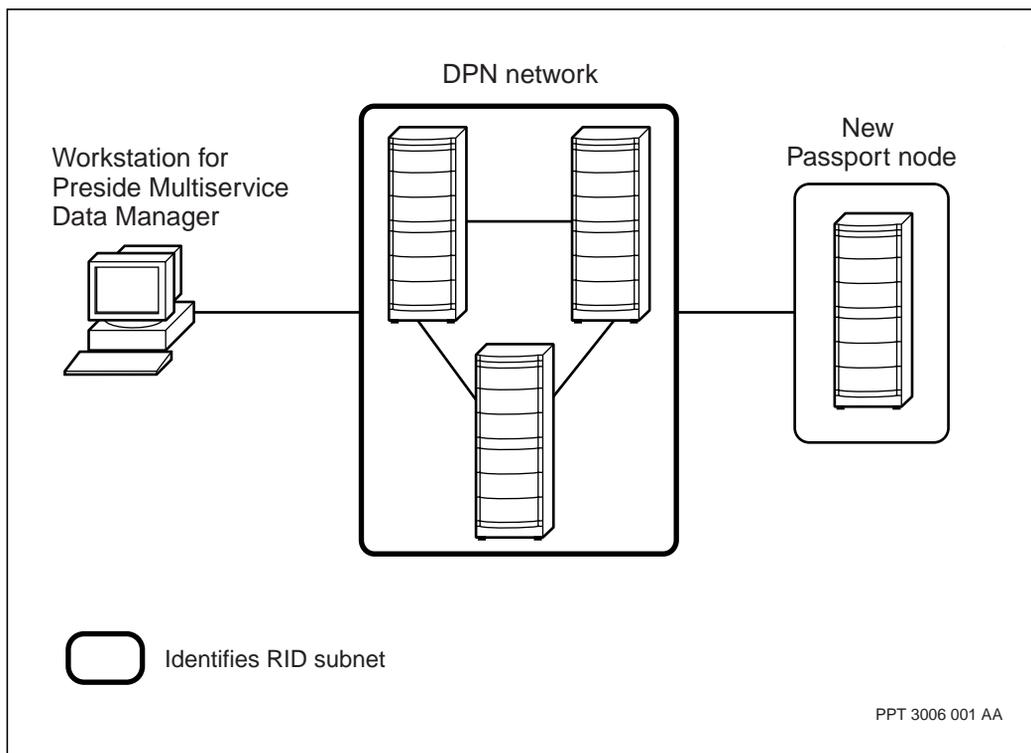
See the following sections for information about the network topologies into which you can add a Passport 15000 or 20000 node:

- “A new Passport 15000 or 20000 node connected to Preside MDM through an existing Passport network” (page 210)
- “A new Passport 15000 or 20000 node connected to Preside MDM through an OAM Ethernet port” (page 212)
- “A new Passport 15000 or 20000 node connected directly to Preside MDM through a frame relay channelized DS3 connection” (page 218)

## A new Passport 7400 node connected to Preside MDM through a DPN network

In this topology, the new node connects to a Preside MDM workstation through an existing DPN network. A Passport Routing Identifier (RID) subnet now includes the new node. The DPN network Call Server Resource Module (CSRM) handles all routing to this subnet. See the figure “A new node connected to Preside MDM node through a DPN network” (page 190).

**Figure 37**  
**A new node connected to Preside MDM node through a DPN network**



The routing identifier (RID) works with the call server resource module (CSRM) to enable networks to properly route calls. Three configurations exist for networks that use this topology. All three configurations have different requirements with respect to how you provision the node RID and CSRM. See the following sections:

- “The first Passport node in a DPN network” (page 191)
- “A new Passport node with a new RID connected to an existing Passport network” (page 192)
- “A new Passport node added to an existing RID subnet” (page 194)
- “Preside MDM configuration requirements for connecting a new node through a DPN network” (page 195)
- “Supported function processor cards” (page 211)

See 241-7401-110 *Passport 7400, DPN-100 Interworking Guide* for a complete description of the CSRM and Passport 15000 subnets.

**Note:** Provision the CSRM on the DPN resource module with the new unique RID assigned to the new Passport node. See 241-7401-110 *Passport 7400, DPN-100 Interworking Guide* for a definition of each information item and the CSRM configuration procedures.

## The first Passport node in a DPN network

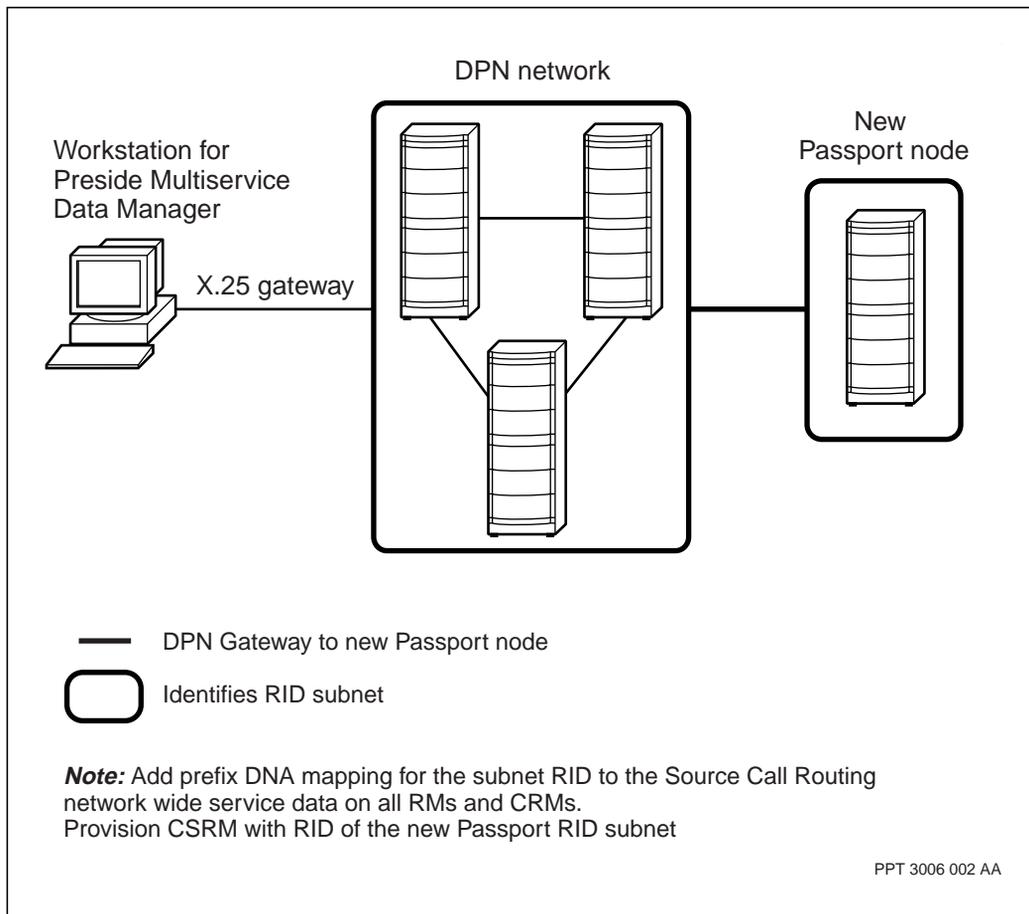
In this configuration, the new Passport node is the only Passport node in a DPN network. See the figure “The first Passport node in a DPN network” (page 192).

Before you install the new Passport node, ensure that the DPN Call Server Resource Module (CSRM) is installed and operating with the appropriate software. See the delivery information package you received with your Passport software for exact specifications.

For this configuration, you must configure the CSRM with

- the Prefix DNA of the new Passport node
- the RID of the new Passport subnet that it will support

**Figure 38**  
**The first Passport node in a DPN network**



### A new Passport node with a new RID connected to an existing Passport network

In this configuration, you connect the new Passport node to an existing Passport node and assign a new RID to the new Passport node. See the figure, "A new Passport node added to an existing Passport RID subnet" (page 195).

Before you install your Passport node, ensure that the DPN Call Server Resource Module (CSRM) is installed and operating with the appropriate level of software. See the delivery information package you received with your Passport software for exact specifications.

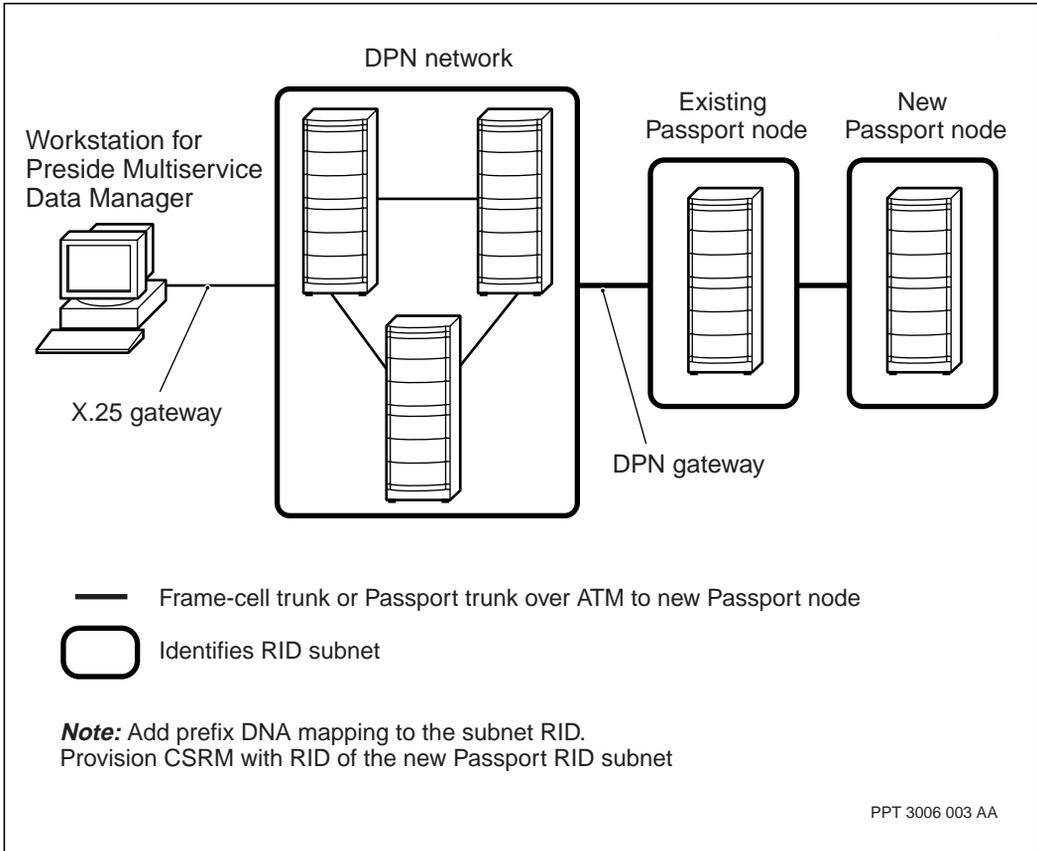
For this configuration, you must configure the CSRM with

- the prefix DNA mapping for the subnet RID to the source call routing network-wide service data on all RMs and CSRMs
- the RID for the new Passport subnet that it will support

This configuration supports both frame-cell trunks and Passport trunks over ATM, between the new Passport node and the existing Passport node.

**Note:** Preside MDM calls to the new Passport node do not come up unless a new DPN gateway is operational between the new Passport node and the CSRM.

**Figure 39**  
**A new Passport node with a new RID connected to an existing Passport network**

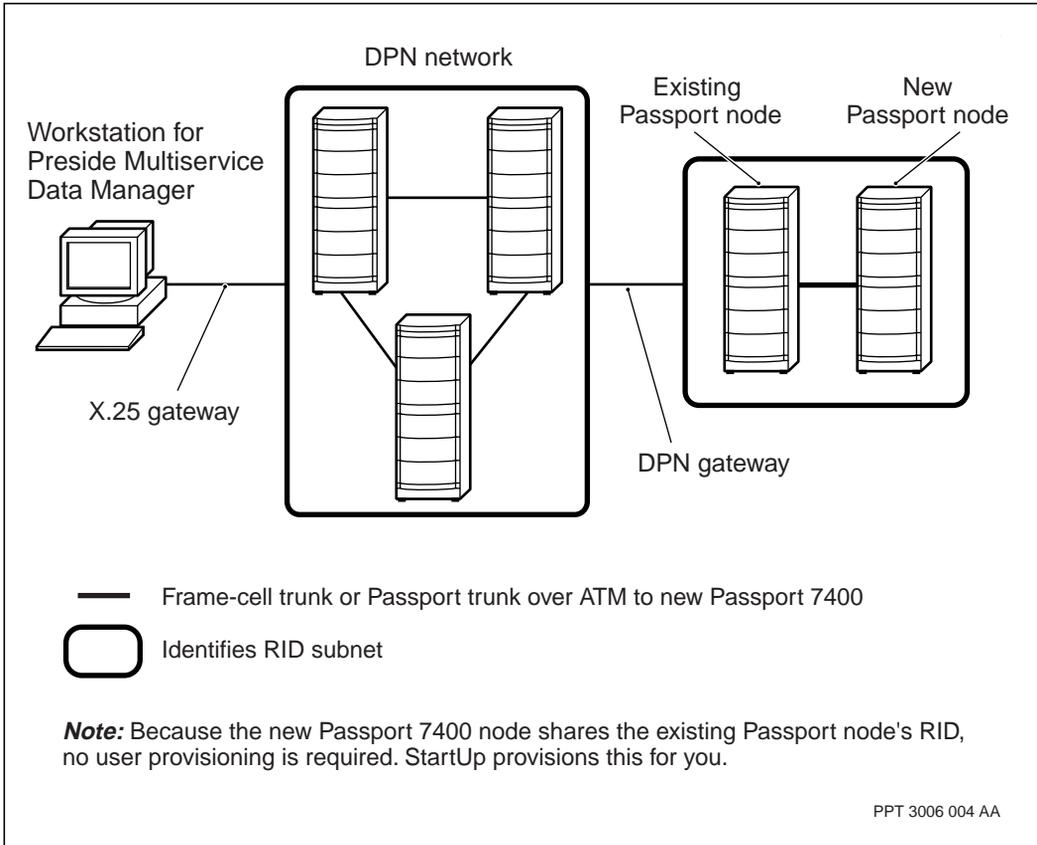


**A new Passport node added to an existing RID subnet**

In this configuration, you connect the new Passport node to a Passport node in an existing RID subnet. This configuration does not require CSRM or prefix DNA mapping. You must provision the RID on the new Passport node to be the same as the existing Passport node. See the figure, “A new Passport node added to an existing Passport RID subnet” (page 195).

This configuration supports Passport trunks over ATM between the new Passport node and the existing Passport node.

**Figure 40**  
**A new Passport node added to an existing Passport RID subnet**



## Preside MDM configuration requirements for connecting a new node through a DPN network

To manage your network with Preside MDM, the management system must be operating with the appropriate level of software before you can install your new Passport node. See the delivery information package you received with your Passport software for the exact specification.

You must also configure the Preside MDM workstation with

- the host name of the new Passport node

- the IP address for the new Passport node
- the local host name or IP address of the Preside MDM workstation
- the IPIVC DNA for the new Passport node
- the CUG index
- the name of the group of which the new Passport node will be a part

See 241-6001-100 *Preside MDM Installer Guide* for a definition of each information item and Preside MDM workstation configuration procedures.

### Supported function processor links

This table lists the types of function processor links supported by this topology.

**Table 36**  
**Function processor links for this topology**

| FPs                         | Preside MDM connection through DPN |                  |                         |
|-----------------------------|------------------------------------|------------------|-------------------------|
|                             | DPN Gateway                        | Frame-cell trunk | Passport trunk over ATM |
| V35                         | *                                  | *                |                         |
| V11                         | *                                  | *                |                         |
| DS1 (4-port and 8-port)     | *                                  | *                |                         |
| DS1 ATM (3-port and 8-port) |                                    |                  | *                       |
| E1                          | *                                  | *                |                         |
| E1 ATM (3-port and 8-port)  |                                    |                  | *                       |
| JT2 ATM                     |                                    |                  | *                       |
| DS3                         |                                    | *                |                         |
| DS3 ATM                     |                                    |                  | *                       |
| E3                          |                                    | *                |                         |
| E3 ATM                      |                                    |                  | *                       |
| (Sheet 1 of 2)              |                                    |                  |                         |

**Table 36 (continued)**  
**Function processor links for this topology**

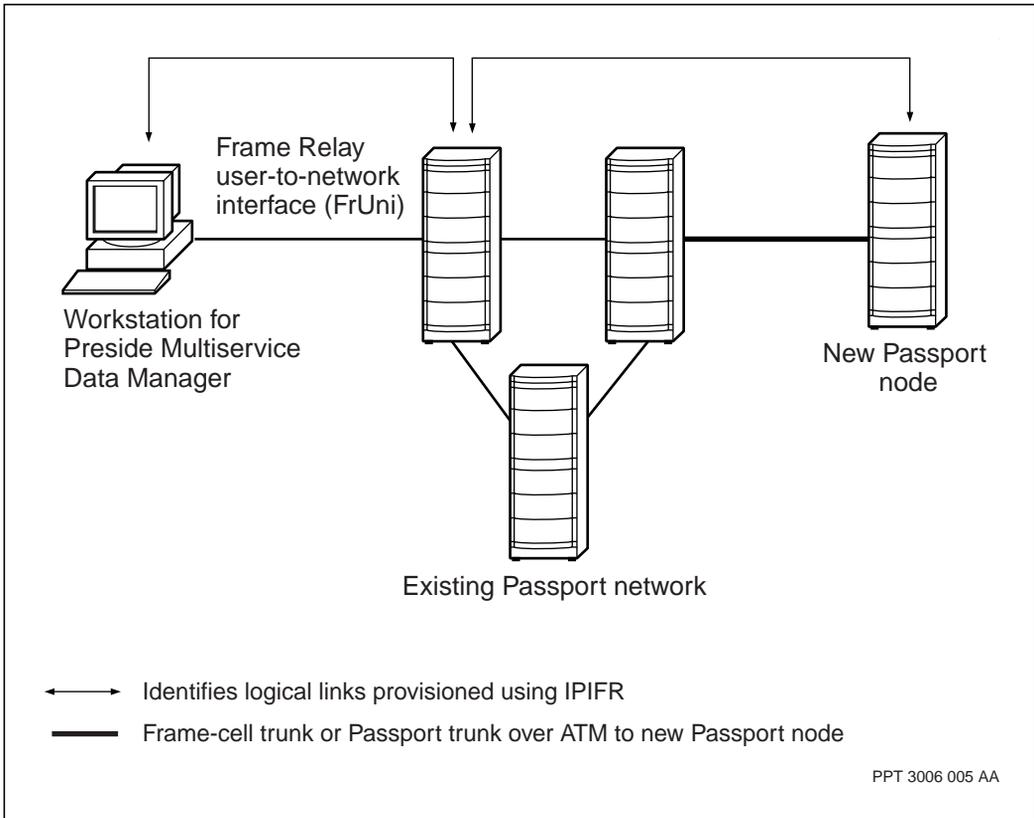
| FPs                 | Preside MDM connection through DPN |                  |                         |
|---------------------|------------------------------------|------------------|-------------------------|
|                     | DPN Gateway                        | Frame-cell trunk | Passport trunk over ATM |
| OC3 ATM (multimode) |                                    |                  | *                       |
| OC3 (single-mode)   |                                    |                  | *                       |
| (Sheet 2 of 2)      |                                    |                  |                         |

## **A new Passport 7400 node connected to Preside MDM through a Passport-only network**

In this topology, a Preside MDM workstation connects to a Passport-only network. A virtual channel is created between the existing node and the new node. This virtual channel creates a logical channel between the new Passport node and a Preside MDM workstation. This logical channel permits the new Passport node to emulate the link configuration data on the existing Passport node. You create this new channel using IP over frame relay (IPIFR).

See the figure “A new node connected to Preside MDM through a Passport-only network” (page 211).

**Figure 41**  
**A new node connected to Preside MDM through a Passport-only network**



The routing identifier (RID) works with the Passport call server feature to enable Passport-only networks to properly route calls. This topology supports two configurations. These configurations require different node RID and Passport call server provisioning. See the following sections:

- “A new Passport node with a new RID in an existing Passport network” (page 199)
- “A new Passport node added to an existing RID subnet” (page 200)
- “Supported function processor cards” (page 211)

For more information about the Passport call server feature, see *241-5701-405 Passport 7400, 15000, 20000 Call Server Guide*.

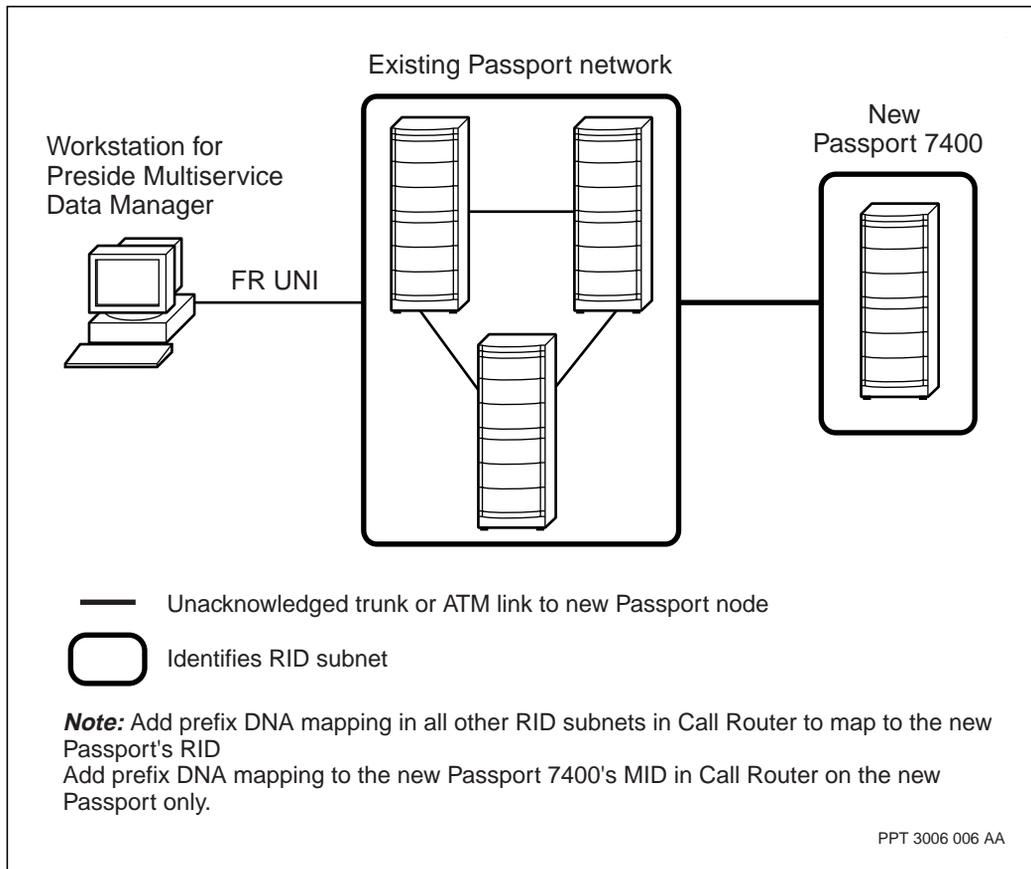
## **A new Passport node with a new RID in an existing Passport network**

In this configuration, the new Passport node connects to an existing Passport node.

To ensure proper call routing, you must

- add prefix DNA mapping to the RID subnets in the call router in order to map to the new Passport's RID
- add prefix DNA mapping to the new Passport's MID in the call router on the new Passport node only

**Figure 42**  
**A new Passport 7400 node with a new RID in an existing Passport network**

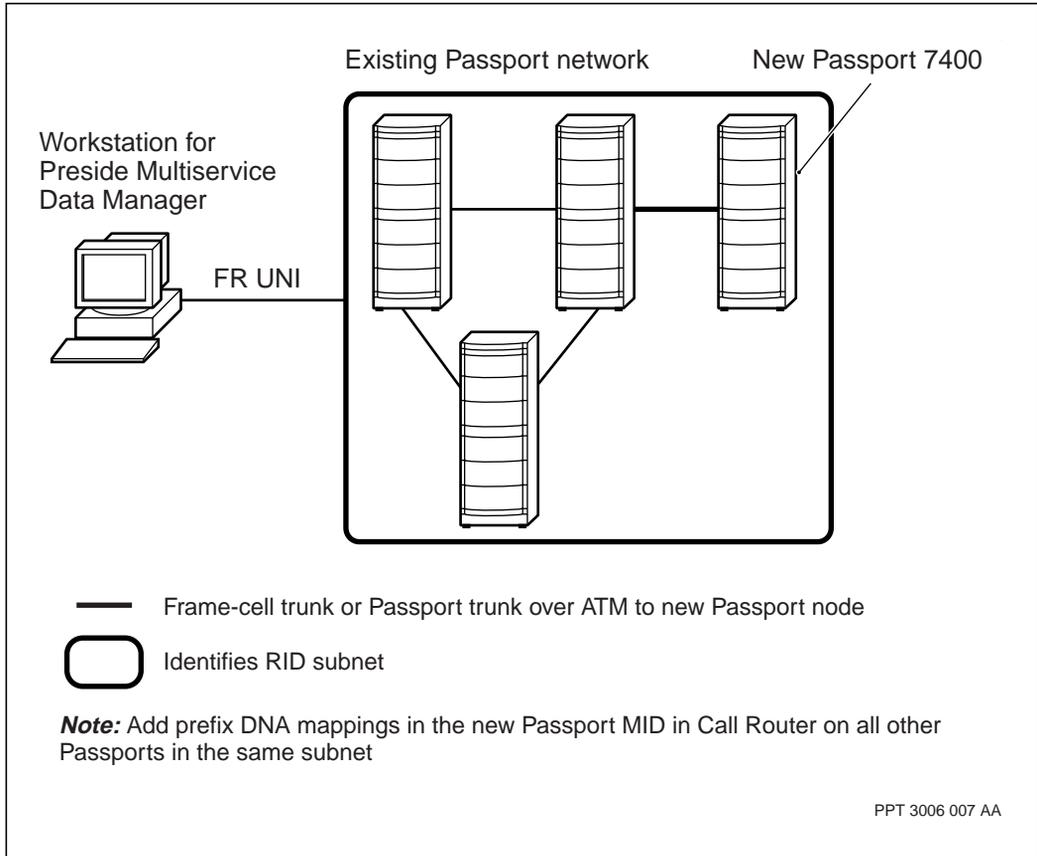


### A new Passport node added to an existing RID subnet

In this configuration, you connect the new Passport node to an existing Passport within the same RID subnet. See the figure, “A new Passport node added to an existing RID subnet” (page 201).

To ensure proper call routing, you must add prefix DNA mapping to the new Passport MID in call router on all other Passports in the same RID subnet as the new Passport node.

**Figure 43**  
**A new Passport node added to an existing RID subnet**



## Supported function processor links

This table lists the types of function processor links supported by this topology.

**Table 37**  
**Function processor links for this topology**

| FPs                                    | Preside MDM connection through Passport |                         |
|----------------------------------------|-----------------------------------------|-------------------------|
|                                        | Frame-cell trunk                        | Passport trunk over ATM |
| V35                                    | *                                       |                         |
| V11                                    | *                                       |                         |
| DS1 (4-port and 8-port)                | *                                       |                         |
| DS1 ATM (3-port and 8-port)            |                                         | *                       |
| E1                                     | *                                       |                         |
| E1 ATM (3-port and 8-port)             |                                         | *                       |
| JT2 ATM                                |                                         | *                       |
| DS3                                    | *                                       |                         |
| DS3 ATM                                |                                         | *                       |
| E3                                     | *                                       |                         |
| E3 ATM                                 |                                         | *                       |
| OC3 ATM<br>(single-mode and multimode) |                                         | *                       |

## A new Passport 7400 node connected directly to Preside MDM

In this topology, the new Passport node connects directly to a Preside MDM workstation. See the figure “A new Passport node connected directly to Preside MDM” (page 203).

For this topology, you must provision the following components:

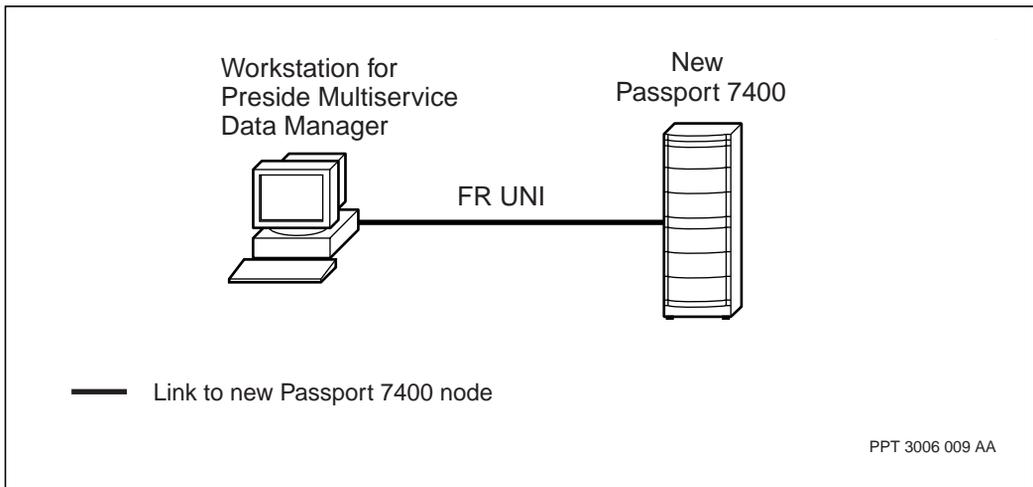
- *callRouter*
- *FrUni*
- *IPIFR*

A V.35/X.21 connection requires an RS-422 to V.35 interface converter.

For more information, see “RID provisioning guidelines for connecting directly to Preside MDM” (page 204)

- “Preside MDM configuration for connections using IPIFR networks (over frame relay)” (page 205)
- “Supported function processor links” (page 205)

**Figure 44**  
**A new Passport node connected directly to Preside MDM**

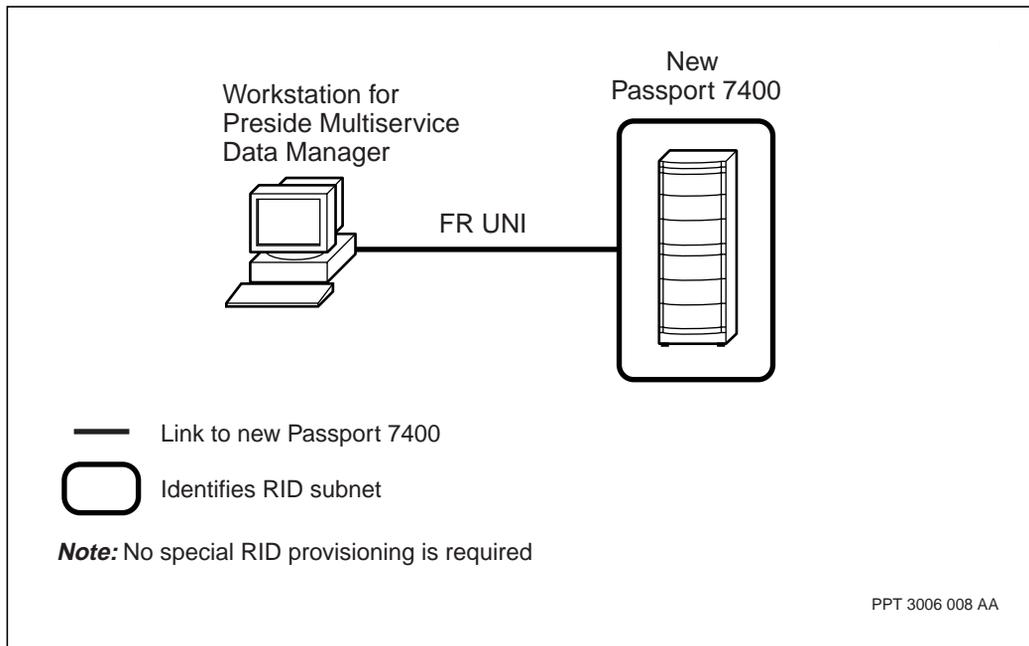


## RID provisioning guidelines for connecting directly to Preside MDM

The RID works with the Passport call server feature. Together, they enable Passport-only networks to properly route calls. For networks using this topology, you can add prefix mapping DNA to the Passport MID in call router. See the figure “A new Passport node added to an existing RID subnet” (page 201).

In single-node networks, Passport uses local call routing so that it automatically routes all calls to the RID to the single node. For more information about the Passport call server feature see 241-5701-405 *Passport 7400, 15000, 20000 Call Server Guide*.

**Figure 45**  
A new Passport 7400 node in a single node network with a new RID



## Preside MDM configuration for connections using IPIFR networks (over frame relay)

The Preside MDMt workstation must use the appropriate level of software before you can install your new Passport node. See the delivery information package you received with your Passport software for exact specifications.

You must configure the Preside MDM workstation with

- the node ID for the new Passport node
- the node name
- the IP address for the new Passport node
- the remote Passport FR UNI DNA
- the remote frame relay FrUni DLCI

For more information about configuring Preside MDM for a frame relay connection to a Passport network, see 241-6001-100 *Preside MDM Installer Guide*.

## Supported function processor links

This table lists the types of function processor links supported by this topology.

**Table 38**  
**Function processor links for this topology**

| FPs | Direct connection to Preside MDM |
|-----|----------------------------------|
|     | FR UNI                           |
| V35 | *                                |
| V11 | *                                |
|     |                                  |

## A new Passport 7400 node connected to Preside MDM through IP services networking

In this topology, a Preside MDM workstation connects to the new Passport node through an IP network. You can configure the link over four media types, ATM MPE, FR DTE, and Ethernet. This topology uses the Passport IP services networking capability.

This topology supports two configurations:

- “StartUp link to Preside MDM through IP services networking” (page 206)
- “StartUp same-subnet link to Preside MDM through IP services networking” (page 207)

For more information, see the following:

- “Supported function processor links” (page 205)
- “IP services configuration requirements for connecting a new Passport node through an IP network” (page 209)
- “Preside MDM configuration requirements for connecting a new Passport node through an IP network” (page 210)

### StartUp link to Preside MDM through IP services networking

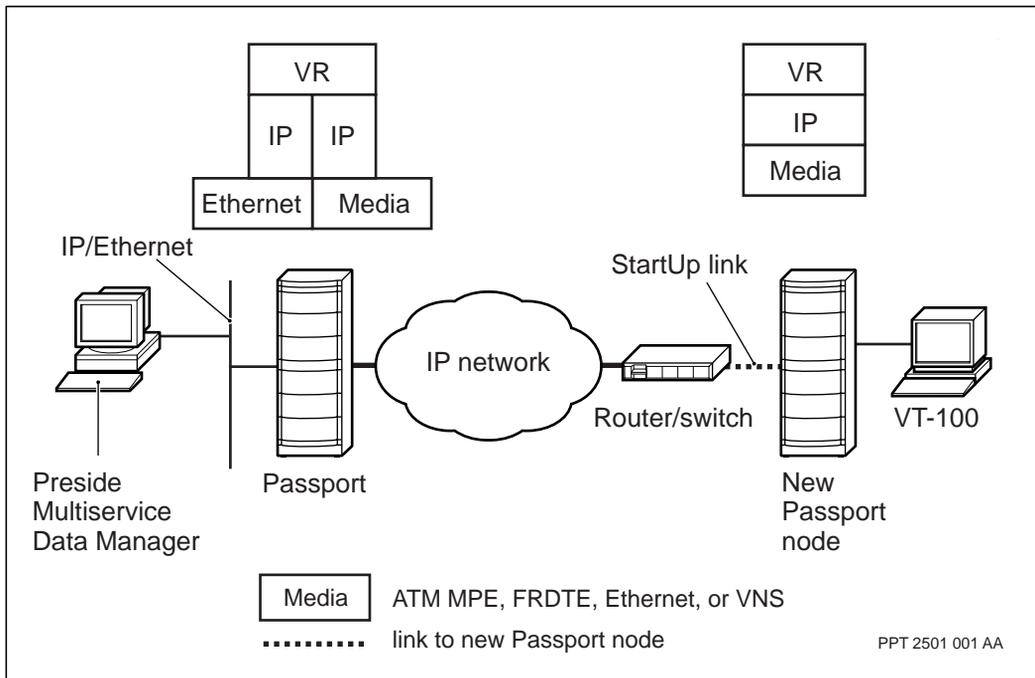
In this configuration, you connect the new Passport node to an existing IP router/switch in an IP network to which Preside MDM is connected. See the figure “StartUp link to Preside MDM through IP services networking” (page 207).

*Note:* The edge router or switch must advertise the new subnet to all routers and switches in the IP network. The IP address of the new Passport is then reachable through the IP network by Preside MDM.

The connection can be any one of the following media types:

- ATM MPE
- FR DTE
- Ethernet

**Figure 46**  
**StartUp link to Preside MDM through IP services networking**

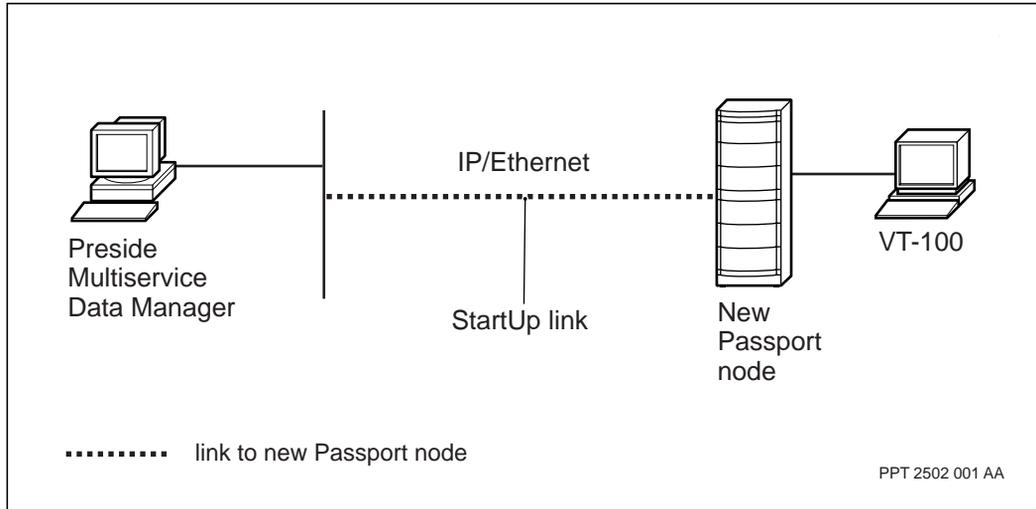


### StartUp same-subnet link to Preside MDM through IP services networking

In this configuration, you connect the new Passport node to a Preside MDM workstation on the same IP subnet. See the figure, “StartUp same-subnet link to Preside MDM through IP services networking” (page 208)

The connection is through Ethernet (6-port 10BaseT FP).

**Figure 47**  
**StartUp same-subnet link to Preside MDM through IP services networking**



### Supported function processor links

This table lists the types of function processor links supported by this topology.

**Table 39**  
**Function processor links for this topology**

| FPs              | Connection to Preside MDM through IP services |        |          |
|------------------|-----------------------------------------------|--------|----------|
|                  | ATM MPE                                       | FR DTE | Ethernet |
| V35              |                                               | *      |          |
| V11              |                                               | *      |          |
| DS1              |                                               | *      |          |
| DS1 (8-port)     |                                               | *      |          |
| DS1 ATM (3-port) | *                                             |        |          |
| DS1 ATM (8-port) | *                                             |        |          |
| E1               |                                               | *      |          |
| (Sheet 1 of 2)   |                                               |        |          |

**Table 39 (continued)**  
**Function processor links for this topology**

| FPs                          | Connection to Preside MDM through IP services |        |          |
|------------------------------|-----------------------------------------------|--------|----------|
|                              | ATM MPE                                       | FR DTE | Ethernet |
| E1 ATM (3-port)              | *                                             |        |          |
| E1 ATM (8-port)              | *                                             |        |          |
| JT2 ATM                      | *                                             |        |          |
| DS3                          |                                               | *      |          |
| DS3 ATM                      | *                                             |        |          |
| E3                           |                                               | *      |          |
| E3 ATM                       | *                                             |        |          |
| OC3 ATM (multimode)          | *                                             |        |          |
| OC3 (single-mode)            | *                                             |        |          |
| Ethernet (6-port<br>10BaseT) |                                               |        | *        |
| HSSI                         |                                               | *      |          |
| (Sheet 2 of 2)               |                                               |        |          |

### **IP services configuration requirements for connecting a new Passport node through an IP network**

To configure any of the media types supported by IP, you must configure the following:

- first virtual router (for example, *Vr/0*)
- IP protocol port (PP) with one logical interface
- IP component
- default IP static route entry

You will need the IP address of the Passport logical interface and its network mask.

StartUp provisions a protocol port using instance *mpe/1* (*Vr/0 pp/mpe1*) for ATM MPE media, *frdte/1* for the FR DTE media, and *enet/1* for the Ethernet media.

## **Preside MDM configuration requirements for connecting a new Passport node through an IP network**

To manage your network with a Preside MDM workstation, the workstation must be operating with the appropriate level of software before you can install your new Passport node. See the delivery information package you received with your Passport software for the exact specification.

You must also configure the Preside MDM workstation with the following:

- the host name of the new Passport node
- the IP address for the new Passport node
- the local host name or IP address of the Preside MDM workstation
- the name of the group of which the new Passport node will be a part

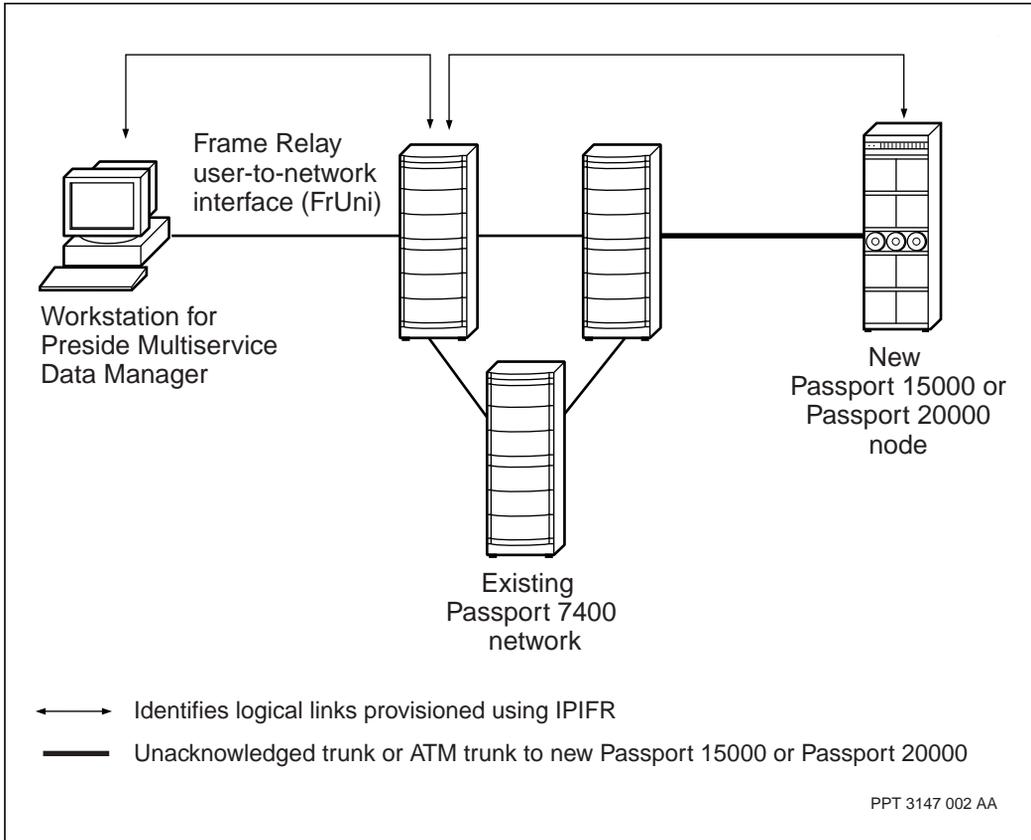
See 241-6001-100 *Preside MDM Installer Guide* for more information and Preside MDM workstation configuration procedures.

## **A new Passport 15000 or 20000 node connected to Preside MDM through an existing Passport network**

When you connect your Passport 15000 or 20000 node to a Preside MDM workstation through an existing Passport network, you need to create a virtual channel using IP over Frame Relay (IPIFR) between a Passport 7400 node and the new Passport 15000 or 20000 node. This virtual channel creates a logical channel between the two nodes, which permits the new Passport 15000 or 20000 node to emulate the link configuration data on the existing Passport 7400 node. Because the Passport 7400 node is connected to the Preside MDM workstation, the Passport 15000 or 20000 node can contact the Preside MDM workstation through this logical channel.

See the figure “A new node connected to Preside MDM through a Passport-only network” (page 211).

**Figure 48**  
**A new node connected to Preside MDM through a Passport-only network**



### Supported function processor cards

This table lists the types of function processor cards supported by this topology.

**Table 40**  
**Function processor cards supported by a connection using IPIFR**

| <b>FPs</b>                               |
|------------------------------------------|
| 12-port DS3                              |
| 12-port E3                               |
| 3-port OC-3/STM-1                        |
| 4-port OC-3/STM-1                        |
| 16-port OC-3/STM-1                       |
| 1-port OC-12/STM-4                       |
| 4-port OC-12/STM-4                       |
| 1-port OC-48/STM-16                      |
| 1-port OC-48/STM-16 channelized with APS |
|                                          |

## **A new Passport 15000 or 20000 node connected to Preside MDM through an OAM Ethernet port**

In this topology, the Preside MDM new Passport 15000 or 20000 node connects to the workstation through the OAM Ethernet port on the control processor. Local network management connectivity is possible through OAM Ethernet port on all Passport nodes. Remote network management connectivity is possible through the OAM Ethernet port only on Passport 7400.

This topology uses the Passport IP services capability. For more information on the OAM Ethernet port, see 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*.

### **Local network management connectivity through the Passport OAM Ethernet port**

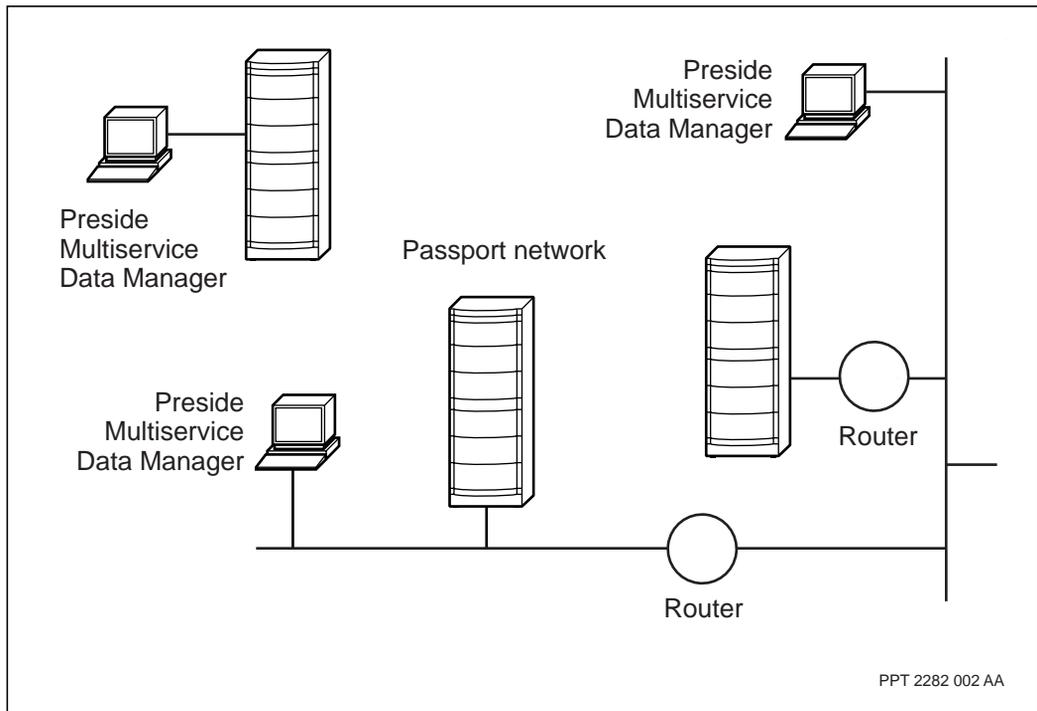
You can achieve local network management connectivity by connecting the Ethernet port on the network management device to the OAM Ethernet port on the Passport node in one of three ways:

- Directly to the physical OAM Ethernet port on the Passport CP

- Indirectly through an Ethernet LAN to the physical OAM Ethernet port on the Passport CP
- Indirectly through an Ethernet LAN and any number of IP routers, one of which is connected to the physical OAM Ethernet port on the Passport CP

See the figure “Local network management through the Passport OAM Ethernet port” (page 213) for more detail.

**Figure 49**  
**Local network management through the Passport OAM Ethernet port**

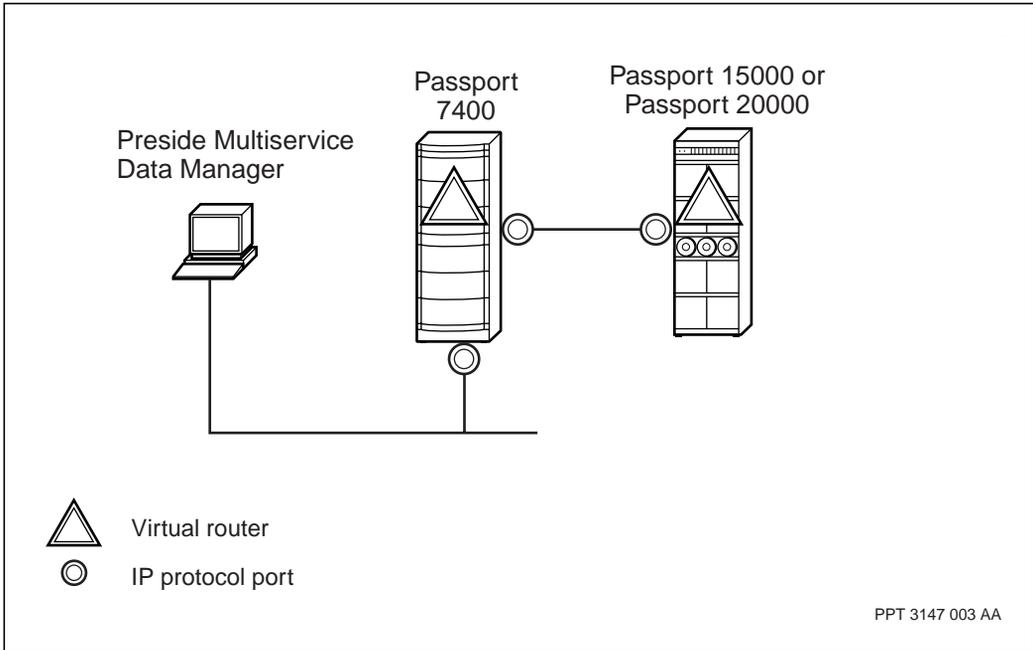


## **Remote network management connectivity through the Passport OAM Ethernet port**

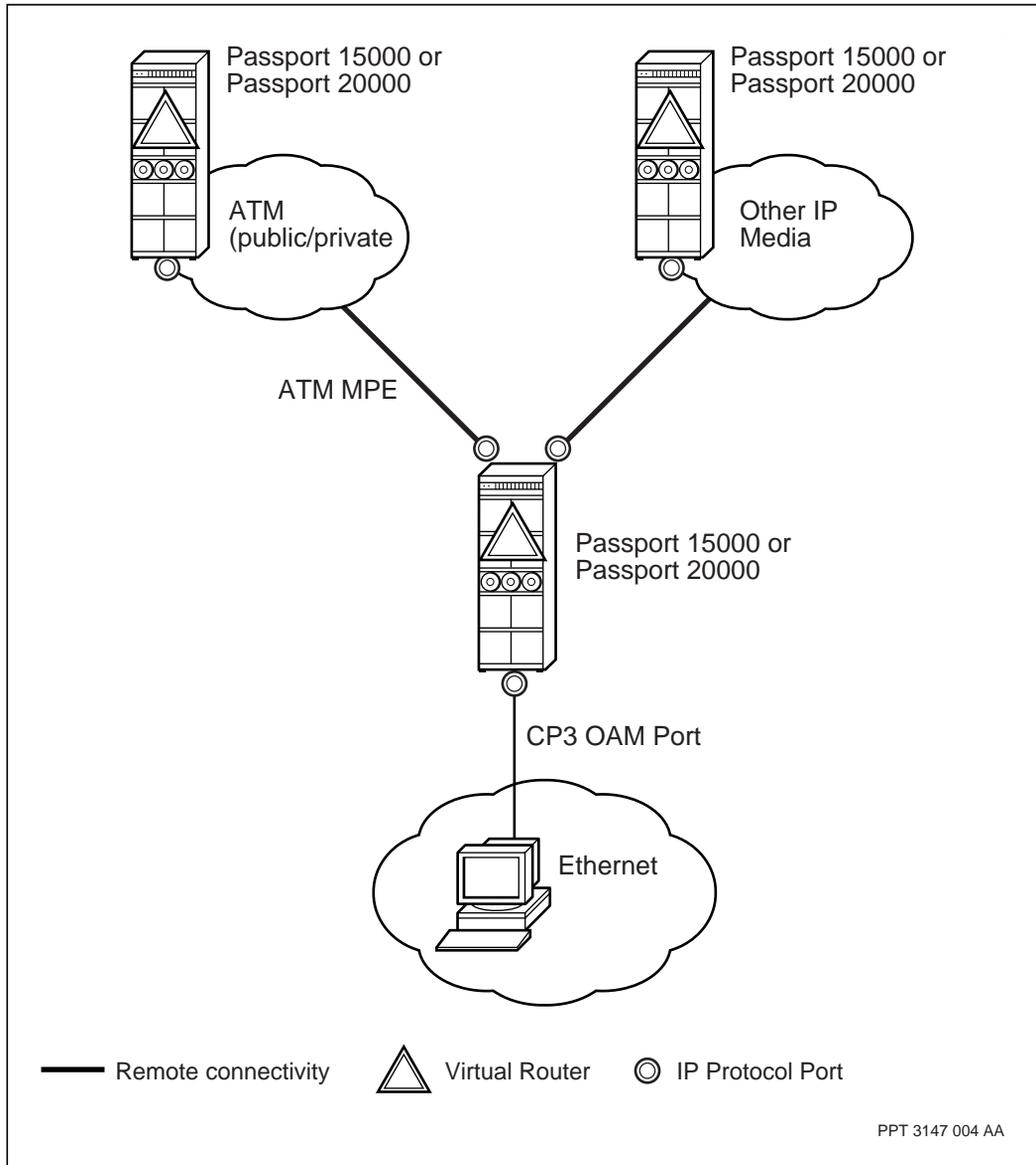
You can achieve remote network management connectivity by connecting the OAM Ethernet port of a remote Passport 15000 or 20000 node in one of three ways:

- Directly to an OAM Ethernet port or an Ethernet FP port on a local Passport 7400 node. See the figure “Remote connectivity to Preside MDM using a direct connection” (page 215).
- Directly to an OAM Ethernet port on a local Passport 15000 or 20000 node. See the figure “Remote connectivity to Preside MDM using a direct connection on a local Passport 15000 or 20000 node” (page 216)
- Indirectly through an Ethernet LAN to an OAM Ethernet port or an Ethernet FP port on a local Passport 7400 node. See the figure “Remote connectivity to Preside MDM using an indirect connection” (page 217).
- Indirectly through an Ethernet LAN and any number of IP routers to an OAM Ethernet port or an Ethernet FP port on a local Passport 7400 node. See the figure “Remote connectivity to Preside MDM using an indirect connection with a router” (page 218).

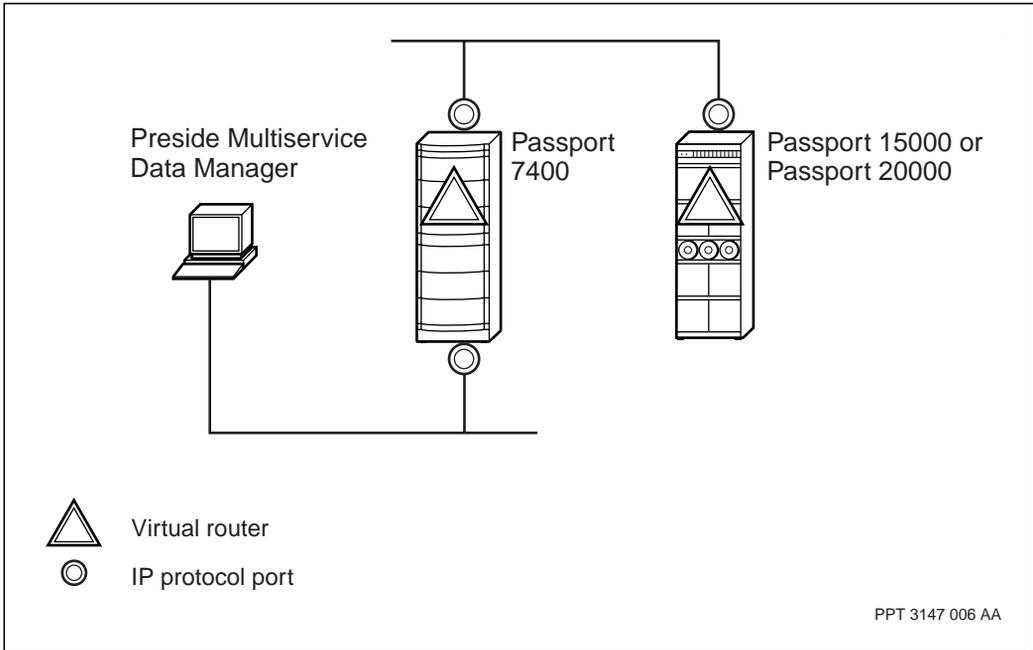
**Figure 50**  
**Remote connectivity to Preside MDM using a direct connection**



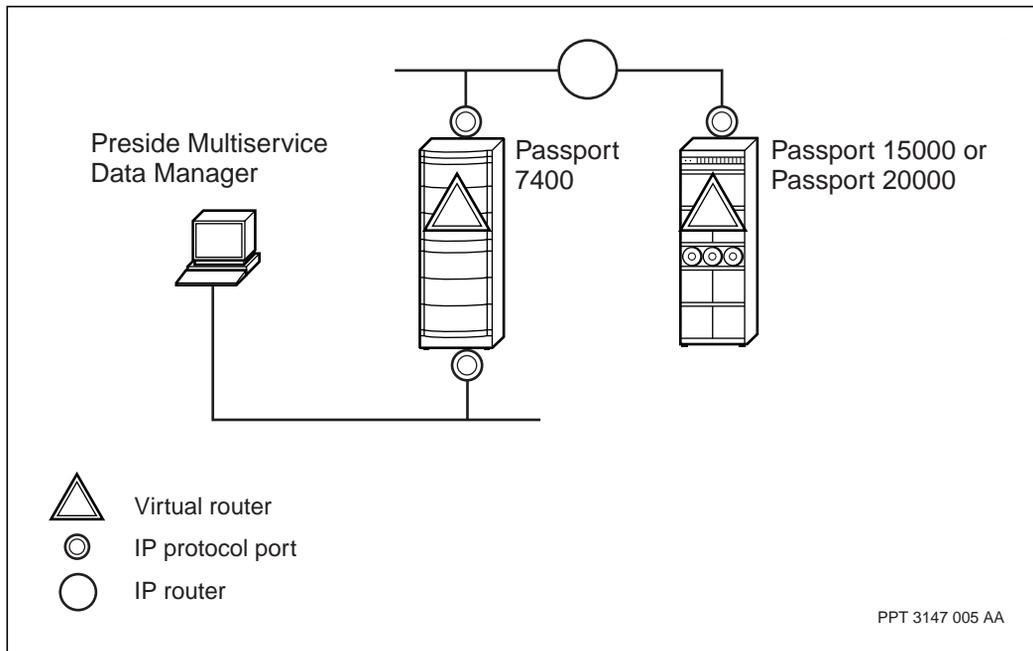
**Figure 51**  
**Remote connectivity to Preside MDM using a direct connection on a local Passport 15000 or 20000 node**



**Figure 52**  
**Remote connectivity to Preside MDM using an indirect connection**



**Figure 53**  
**Remote connectivity to Preside MDM using an indirect connection with a router**



## A new Passport 15000 or 20000 node connected directly to Preside MDM through a frame relay channelized DS3 connection

This section describes the connectivity between Preside MDM and the Passport 15000 or 20000 node using the 4-port DS3 frame relay channelized functional processor (FP). In this topology, the new Passport 15000 or 20000 node connects directly to the Preside MDM workstation using a DS3-based frame relay connection.

The 4-port DS3 frame relay FP allows you to connect Preside MDM directly to the Passport 15000 or 20000 node using a DS0, DS1, or DS3-based frame relay connection. The following network configurations are supported:

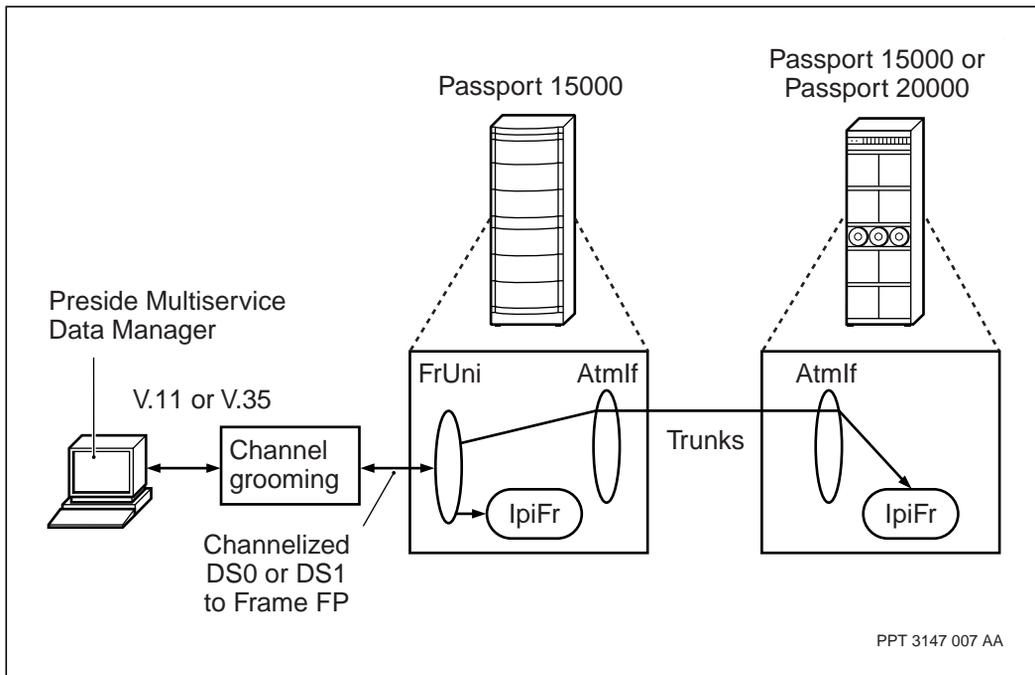
- Grooming equipment is used to channelize the V.35 and V.11 interfaces on a Preside MDM workstation at the DS0 or DS1 level onto a DS3 connection. This DS3 connection is attached to the channelized 4-port

DS3 frame relay channelized FP on the Passport 15000 or 20000 node. See the figure “A new node connected to Preside MDM through a frame relay channelized DS3 connection using channel grooming” (page 219).

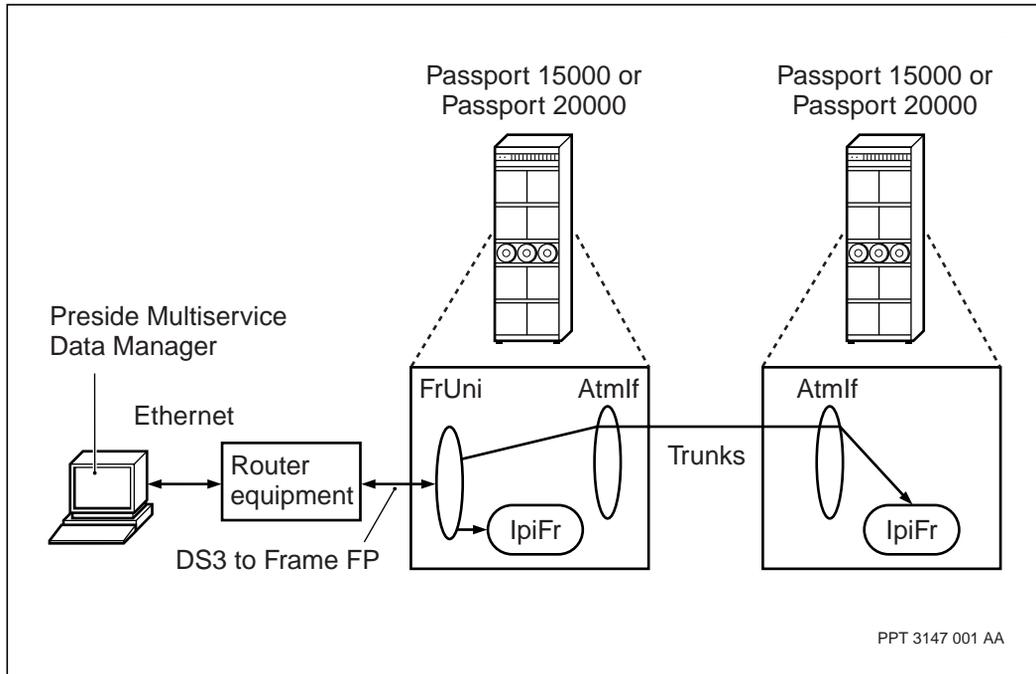
- Router equipment is used to connect a Preside MDM workstation on an Ethernet LAN with the 4-port DS3 frame relay channelized FP on the Passport 15000 or 20000 node. The connection to the 4-port DS3 frame relay channelized FP is made through a channel on the DS3 interface.

**Figure 54**

**A new node connected to Preside MDM through a frame relay channelized DS3 connection using channel grooming**



**Figure 55**  
**A new node connected to Preside MDM through a frame relay channelized DS3 connection using router equipment**





Passport 7400, 15000, 20000  
Network Management Connectivity

Release 5.2

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