NORTEL NETWORKS

Passport 7400, 15000, 20000

Configuring Switched Packet Voice Gateway

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Passport 7400, 15000, 20000

Configuring Switched Packet Voice Gateway

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Contents

List of tables

List of figures

About this document

This guide contains information about installing, configuring, and maintaining switched packet voice gateway (PVG). To use this guide effectively, see the following sections:

Who should read this guide

This guide is useful for anyone who installs, configures, and maintains switched PVG on Passport.

How this guide is organized

See "Switched PVG configuration work flow" (page 27) for details about how this document is organized.

What's new in this document

The following features were added to this document:

Other changes made to this document include the following:

- Clarified that the procedures “Configuring DiffServ” and “Configuring CoS” are optional in figure “VoIP using ATM transport and VR configuration task flow” (page 107).
- Removed two steps that added an E3 port to the IP service card and then set an interface application to the E3 port in procedure “Configuring the ATM interface, IP ports, and VM” (page 112).
- Removed component *LogicalProcessor (Lp)* and its attribute *E3*, and removed attribute *interfaceName* of component *AtmInterface (AtmIf)* in figure “Configuring the ATM interface, IP ports, and VM component hierarchy —Part 2” (page 115). Also, showed configuring of DiffServ and CoS as optional in “VoIP using ATM transport and VR configuration task flow” (page 107).
- Added attribute *congestedSeconds (congSec)* to figure “Operational and statistics attributes for switched PVG using ATM—Part 1” (page 239).
- Added attribute *congestedSeconds (congSec)* to figure “Operational and statistics attributes for switched PVG using IP—Part 1” (page 245).
- The chapters “About this document” (page 19), “VoIP using ATM transport and external routing configuration” (page 95), “VoIP using Ethernet transport and VR on a Passport 7400 configuration” (page 143), “MGC connection configuration for switched PVG” (page 157), “Backhaul using V5.2 configuration for switched PVG” (page 173), “Backhaul using PRI configuration for switched PVG” (page 187), “Voice band data configuration for switched PVG” (page 209), and “Packet delay variation tolerance configuration for switched PVG” (page 215) were updated based on NTP comments.

PVG: VrAp Carrier Grade

The following sections were updated for this feature:

- “Configuring the virtual router, OSPF, and protocol ports” (page 109)
- “Virtual router, OSPF, and protocol ports component hierarchy” (page 111)
- “MGC connection configuration for switched PVG task flow” (page 158)
- “Configuring the MGC connection using VrAp” (page 168)

- “Task navigation” (page 174)
- “Configuring V5.2 backhaul using VrAp” (page 185)
- “Task navigation” (page 188)
- “Configuring PRI backhaul using VrAp” (page 200)
- “V-CAC configuration for switched PVG” (page 221)

Voice Services Processor 3 with Optical TDM Interface (2pOc3ChSmIrVsp3)

The following sections were updated for this feature:

- “Nsta configuration task flow – Part 1” (page 34)
- “Task navigation” (page 36)
- “Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-0 FP with E1 trunking” (page 41)
- “Configuring Nsta and the TDM access group for an unspared VSP3-o FP with E1 trunking component hierarchy” (page 44)
- “Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-0 FP with DS1 trunking” (page 45)
- “Configuring Nsta and the TDM access group for an unspared VSP3-o FP with DS1 trunking component hierarchy” (page 48)
- “Configuring Nsta and the TDM access group (Tag) for a spared VSP3-0 FP with E1 trunking” (page 49)
- “Configuring Nsta and the TDM access group for a spared VSP3-o FP with E1 trunking component hierarchy” (page 53)
- “Configuring Nsta and the TDM access group (Tag) for a spared VSP3-0 FP with DS1 trunking” (page 54)
- “Configuring Nsta and the TDM access group for a spared VSP3-o FP with DS1 trunking component hierarchy” (page 57)
- “Supporting information for configuring Nsta for the TDM access group” (page 58)
- “Configuring the virtual router, OSPF, and protocol ports” (page 109)
- “Configuring link and protocol type to the MGC” (page 170)

- “Configuring DTMF tone transport component hierarchy” (page 230)

What you need to know

In order to understand and configure PVG on Passport, you need a basic understanding of the following areas:

- Passport hardware, including installation and maintenance procedures
- Passport operations and maintenance procedures, including how to configure a node
- Passport ATM services

Text conventions

There are a number of documentation conventions you should know about.

- `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.
- ...

  Three dots in a command indicate that the parameter can be repeated more than once in succession.

- |

  This symbol separates items from which you can 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.

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 /).

Procedure conventions

This document uses the following procedure conventions:

- You can enter commands using full component and attribute names, or you can abbreviate them. The commands used in the procedures contain the full component and attribute names in the first instance. In the second instance, the component and attribute names are abbreviated. For more information on abbreviating component and attribute names, see 241-5701-060 *Passport 7400, 15000, 20000 Components*. All component and attribute names are formatted in italics.
- The introduction of every procedure states whether you must perform the procedure in operational mode or provisioning mode. For more information on these modes, see “Operational mode” (page 24) or “Provisioning mode” (page 24).

- When you complete a procedure, you can verify your changes and then activate them as the new node configuration. For more information on completing configuration changes and exiting provisioning mode, see “Activating configuration changes” (page 25).

Operational mode

Procedures contained within this document can either be performed in operational mode or provisioning mode. When you initially log into a Passport node, you are in operational mode. Passport uses the following command prompt when you are in operational mode:

```
#>
```

where:
is the current command number

In operational mode, you work with operational components and attributes. In operational mode, you can

- list operational components and display operational attributes to determine the current operating parameters for the node
- control the state of parts of the node by locking and unlocking components
- set certain operational attributes and enter commands to perform diagnostic tests

Provisioning mode

To change from operational mode to provisioning mode, type the following command at the operator prompt:

```
start Prov
```

Only one user can be in provisioning mode at a time. Passport uses the following command prompt whenever you are in provisioning mode:

```
PROV #>
```

where:

is the current command number

In provisioning mode, you work with the provisionable components and attributes that contain the current and future configurations of the node. You can add and delete components, and display and set provisionable attributes. For information on completing the configuration changes, exiting provisioning mode, and returning to operational mode see “Activating configuration changes” (page 25).

For information on operational and provisionable attributes, see 241-5701-060 *Passport 7400, 15000, 20000 Components*.

Activating configuration changes

Several procedures in this document ask that you complete the configuration changes. When you complete the configuration changes, you are activating the configuration changes, confirming that you want to activate them, and saving the changes. You are instructed to complete the configuration changes only at the end of procedures that you perform in provisioning mode.

CAUTION

Activating a provisioning view can affect service

Activating a provisioning view can result in a CP reload or restart, causing all services on the Passport node to fail. See 241-5701-050 *Passport 7400, 15000, 20000 Commands*, for more information.

1. Verify that the provisioning changes you have made are acceptable:

   ```
   check Prov
   ```

   Correct any errors and then verify the provisioning changes again.

2. If you want to store the provisioning changes in a file, save the provisioning view:

   ```
   save Prov
   ```

3. If you want these changes as well as other changes made in the edit view to take effect immediately, activate, confirm, and commit the provisioning changes:

   ```
   activate Prov
   ```

   ```
   confirm Prov
   ```

   ```
   commit Prov
   ```

4 End the provisioning session:

```
end Prov
```

Related documents

This guide makes reference to several documents. Some procedures require you to use one or more documents in conjunction with a given procedure. Other documents are sources of more detailed or related information.

- 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*
- 241-5701-781 *Passport 7400, 15000, 20000 Configuring Non-Switched Packet Voice Gateway*
- 241-7401-210 *Passport 7400 Hardware Installation Guide*
- 241-1501-210 *Passport 15000, 20000 Hardware Installation Guide*
- 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*
- 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*
- 241-5701-700 *Passport 7400, 15000, 20000 ATM Overview*
- *DMS-MMP Base Product Description*, Issue M13.3 (approved), 5 May 2000.
- GR-CORE-506, *LSSGR: Signaling for Analog Interfaces*, November 1996
- ITU-T Recommendation E.180, *Technical Characteristics for Tones in the Telephone Service*.
- ITU-T Recommendation E.180, Supplement 2, *Various Tones Used in National Networks*, 1/94.

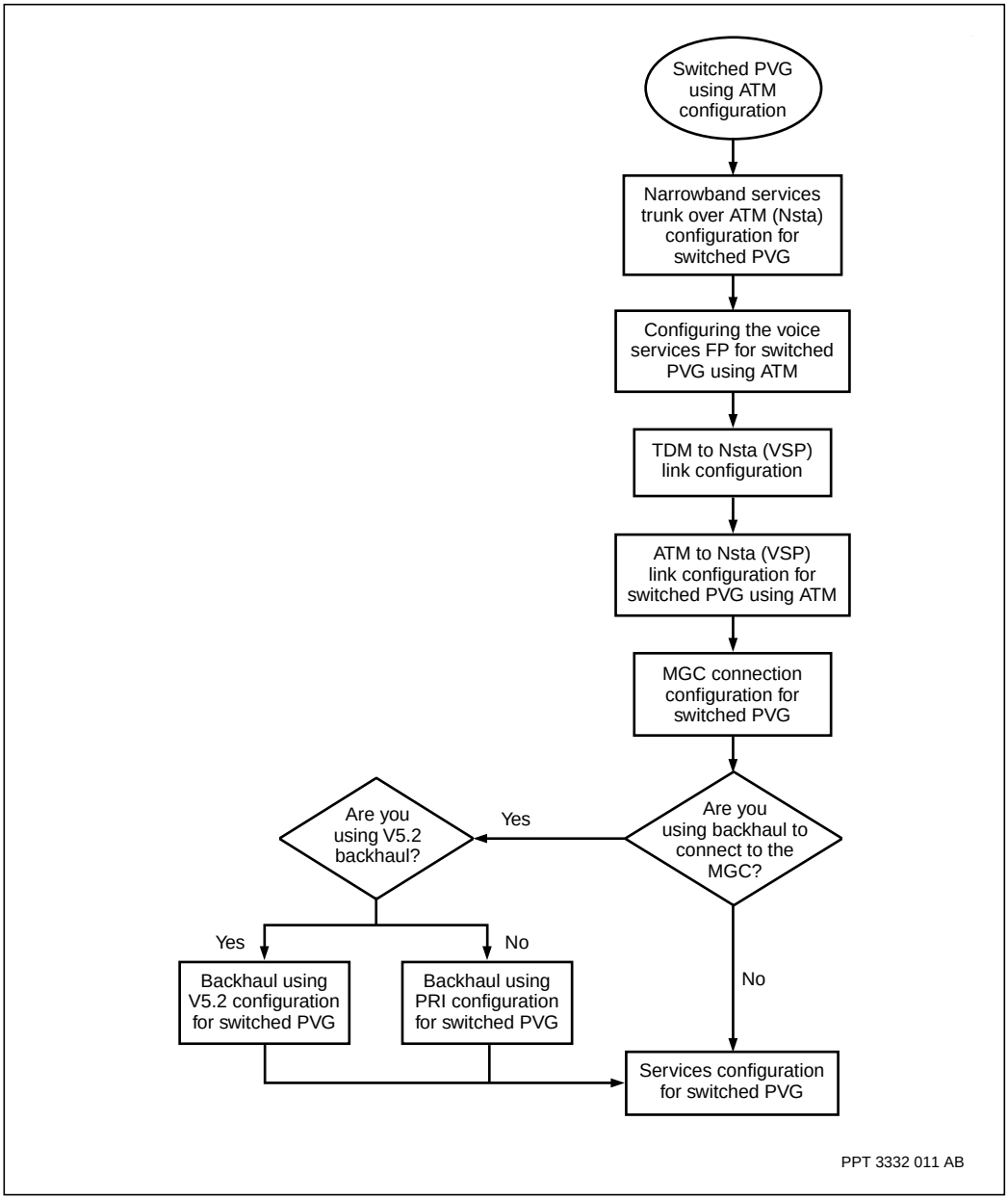
Chapter 1
Switched PVG configuration work flow

The switched PVG configuration task flow details the sequence of tasks you perform to configure switched PVG using ATM and switched PVG using IP, see the figures “Switched PVG using ATM configuration task flow” (page 28) and “Switched PVG using IP configuration task flow” (page 30). Each box in the task flow represents a task that comprises one or more procedures. Each task has a corresponding section in this guide that contains the relevant procedures. To link to any task, go to the list that follows the task flow.

Switched PVG configuration prerequisites

- Install Passport hardware. Follow the procedures in the 75241-7401-210 *Passport 7400 Hardware Installation Guide* or 241-1501-210 *Passport 15000, 20000 Hardware Installation Guide*.
- Download all required software. See 241-5701-270 *Passport 7400, 15000, 20000 Software Installation Guide*.
- Configure all required FPs, LPs, and LPTs. See 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide* and 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.
- For additional information about PVG and PVG configuration parameters see 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals* and 241-5701-060 *Passport 7400, 15000, 20000 Components*.

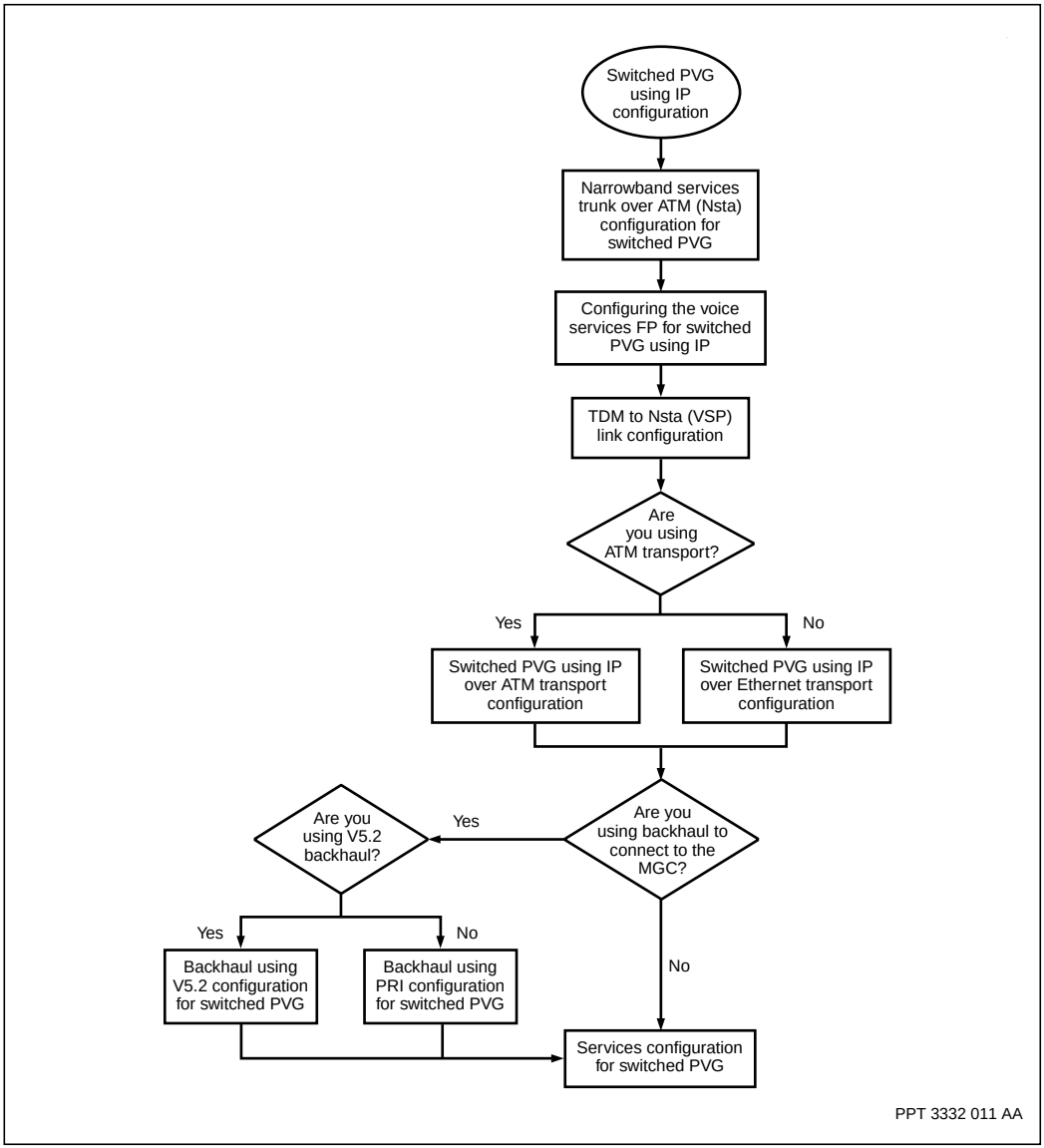
Figure 1
Switched PVG using ATM configuration task flow



Navigation links

- “Narrowband services trunk over ATM (Nsta) configuration for switched PVG” (page 33)
- “Voice services FP configuration for switched PVG using ATM” (page 61)
- “TDM to Nsta (VSP) link configuration” (page 69)
- “ATM to Nsta (VSP) link configuration for switched PVG using ATM” (page 75)
- “MGC connection configuration for switched PVG” (page 157)
- “Backhaul using V5.2 configuration for switched PVG” (page 173)
- “Backhaul using PRI configuration for switched PVG” (page 187)
- “Services configuration for switched PVG” (page 203)

Figure 2
Switched PVG using IP configuration task flow



Navigation links

- “Narrowband services trunk over ATM (Nsta) configuration for switched PVG” (page 33)
- “Configuring the voice services FP for switched PVG using IP” (page 65)
- “TDM to Nsta (VSP) link configuration” (page 69)
- “Switched PVG using IP over ATM transport configuration” (page 93)
- “Switched PVG using IP over Ethernet transport configuration” (page 125)
- “MGC connection configuration for switched PVG” (page 157)
- “Backhaul using V5.2 configuration for switched PVG” (page 173)
- “Backhaul using PRI configuration for switched PVG” (page 187)
- “Services configuration for switched PVG” (page 203)

Chapter 2
Narrowband services trunk over ATM (Nsta) configuration for switched PVG

Configure Nsta to establish the Vgs and basic rate group (Brag) or basic rate group server (BragS) components as well as the attributes necessary to configure switched PVG.

Navigation links

- "Prerequisites to Nsta configuration for switched PVG" (page 33)
- "Nsta configuration for switched PVG flow" (page 33)
- "Task navigation" (page 36)

Prerequisites to Nsta configuration for switched PVG

- See the sections on PVG and PVG services in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals* for more information about the voice services FP and the Nsta.

Nsta configuration for switched PVG flow

This task flow shows you the sequence of procedures you perform to configure services for switched PVG. To link to any procedure, go to "Task navigation" (page 36).

Figure 3
Nsta configuration task flow – Part 1

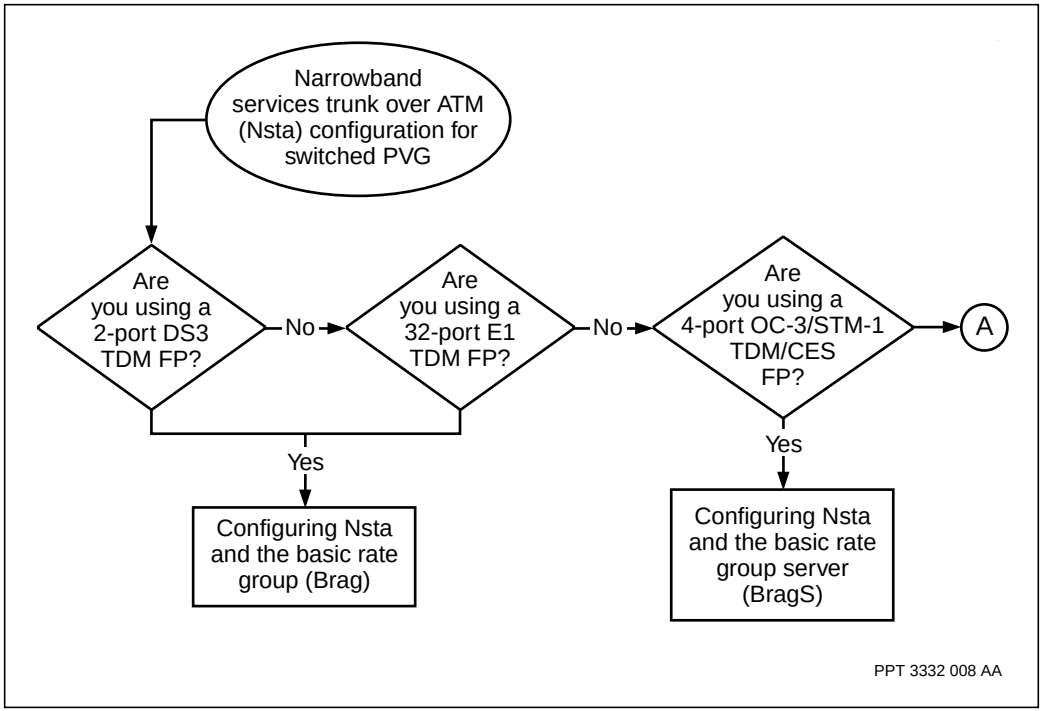
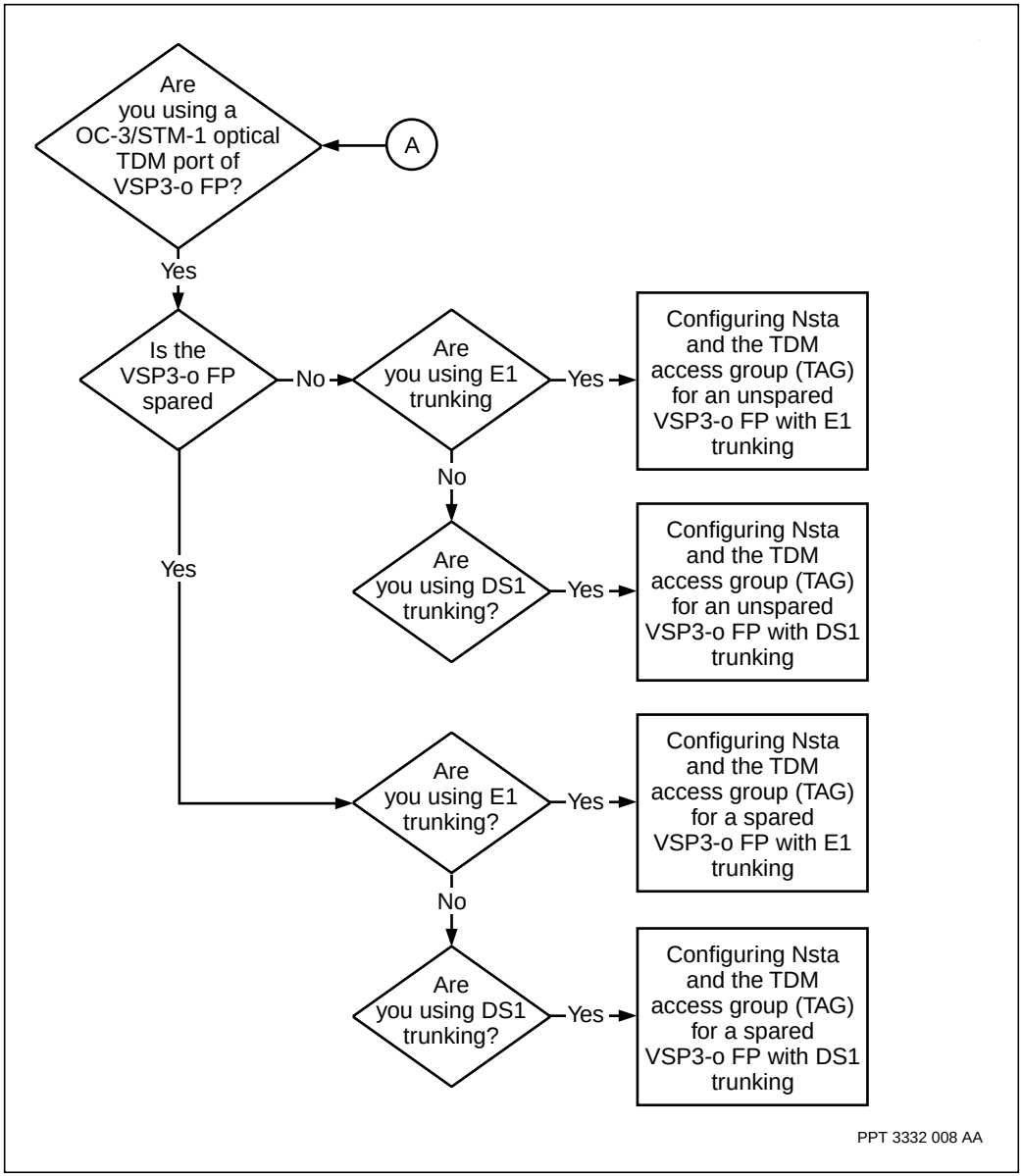


Figure 4
Nsta configuration task flow — Part 2



Task navigation

- “Configuring Nsta and the basic rate group (Brag)” (page 37)
- “Configure Nsta and the basic rate group server (BragS)” (page 39)
- For information about the next task, see “Switched PVG using ATM configuration task flow” (page 28).
- “Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-0 FP with E1 trunking” (page 41)
- “Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-0 FP with DS1 trunking” (page 45)
- “Configuring Nsta and the TDM access group (Tag) for a spared VSP3-0 FP with E1 trunking” (page 49)
- “Configuring Nsta and the TDM access group (Tag) for a spared VSP3-0 FP with DS1 trunking” (page 54)

Configuring Nsta and the basic rate group (Brag)

Configure Nsta and Brag to establish the necessary components and attributes to configure switched PVG.

Prerequisites

- See “Supporting information for configuring Nsta for the basic rate group” (page 58) for additional information related to this procedure.

Procedure steps

1. Add the Nsta component, you need one *Nsta* component for each voice services FP.

   ```
   add Nsta/<n>
   ```

2. Add the voice gateway service component. The *Vgs* subcomponent provides the switched trunking capability.

   ```
   add Nsta/<n> Vgs
   ```

3. Add the basic rate group component.

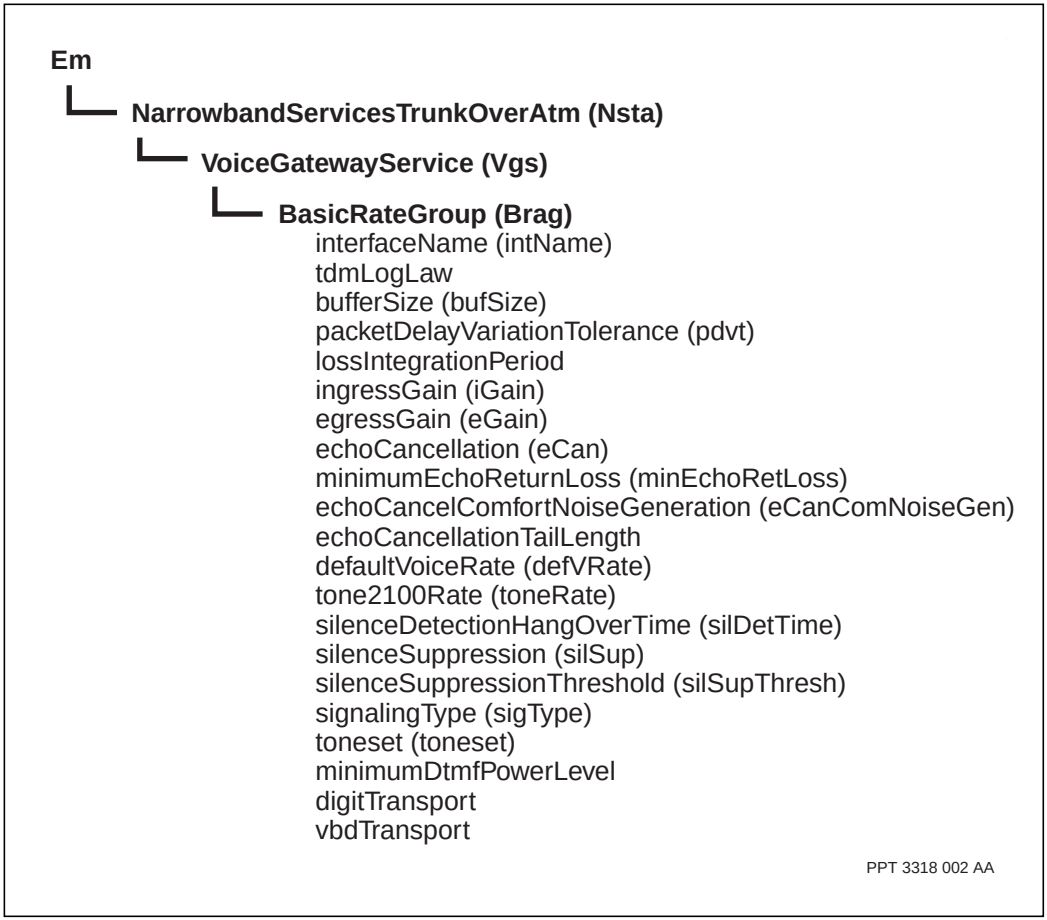
   ```
   add Nsta/<n> Vgs BasicRateGroup/0
   ```

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.

Procedure job aid

Figure 5
Nsta and the basic rate group component hierarchy



Configure Nsta and the basic rate group server (BragS)

Configure Nsta and the BragS to establish the necessary components and attributes to configure switched PVG.

Prerequisites

- See “Supporting information for configuring Nsta for basic rate group server” (page 58) for addition information related to this procedure.

Procedure steps

1. Add the Nsta component, you need one Nsta component for each voice services FP.

   ```
   add Nsta/<n>
   ```

2. Add the voice gateway service component. The *Vgs* subcomponent provides the switched trunking capability.

   ```
   add Nsta/<n> Vgs
   ```

3. Add the basic rate group component.

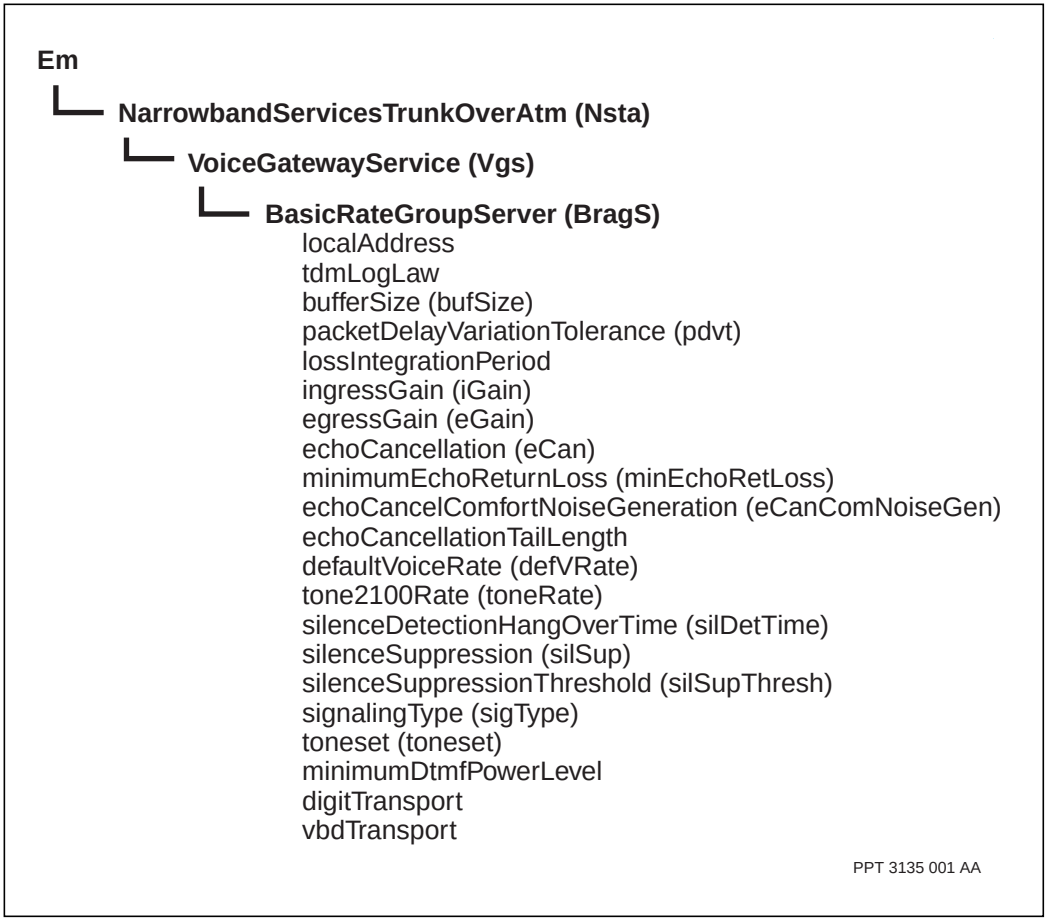
   ```
   add Nsta/<n> Vgs BasicRateGroupServer/0
   ```

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.

Procedure job aid

Figure 6
Nsta and the basic rate group server component hierarchy



Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-0 FP with E1 trunking

Configure Nsta and the TDM access group (Tag) to establish the necessary components and attributes to configure switched PVG for the voice services processor 3 with optical TDM interface (VSP3-o) FP card in an unspared configuration with E1 trunking.

Prerequisites

- See “Supporting information for configuring Nsta for the TDM access group” (page 58) for addition information related to this procedure.

Procedure steps

1 Add a *Sdh* component to the LP.

```
add Lp/<n> Sdh/<sdh>
```

2 Add a *Vc4* component that controls the VC4 path signal.

```
add Lp/<n> Sdh/<sdh> Vc4/<vc4>
```

3 Add a *Vc12* component that controls the VC12 low order path signal.

```
add Lp/<n> Sdh/<sdh> Vc4/<vc4> Vc12/<vc12>
```

The system automatically provisions an *E1* subcomponent beneath the *Vc12* component. The system automatically provisions a *Channel (Chan)* subcomponent with an instance value of 0 beneath the *E1* subcomponent. The system automatically provisions a *TrunkConditioning (Tc)* subcomponent beneath the *Chan* subcomponent.

4 Add subcomponent *VoiceServicesProcessor (Vsp)* to the *Lp* component.

```
add Lp/<n> Vsp
```

5 Add the *Nsta* component.

```
add Nsta/<m>
```

6 Link the *Nsta* component to the *Vsp* component.

```
set Nsta/<m> link Lp/<n> Vsp
```

7 Add a *VoiceGateway (Vgs)* component to the *Nsta* component.

```
add Nsta/<m> Vgs
```

8 Add a *TdmAccessGroup (Tag)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs Tag/<tag>
```

9 Add a *TdmNetworkProfile (TProf)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs TProf/<tprof>
```

10 Set the Profile (Prof) link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> Profile Vgs TProf/<tprof>
```

11 Set the *interfaceName* link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> interfaceName Lp/<n> Sdh/
<sdh> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan>
```

12 If time slot relay is used, add the subcomponent *TimeslotRelay (Tr)* under component *Nsta Vgs*. Note that you can not configure time slot relay for trunks that use per trunk signaling (PTS).

```
add Nsta/<m> Vgs TimeslotRelay/<tr>
```

13 If time slot relay is used, two channels are required. Set the *interfaceName* link of the *Tr* component to the first of the two required channels. This step assumes the specified channel has been configured with a collection of time slots.

```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName Lp/
<n> Sdh/<sdh> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan>
```

14 If time slot relay is used, set the *interfaceName* link of the *Tr* component to the second of the two required channels. This step assumes the specified second channel has been configured with an equal number of time slots as the first channel.

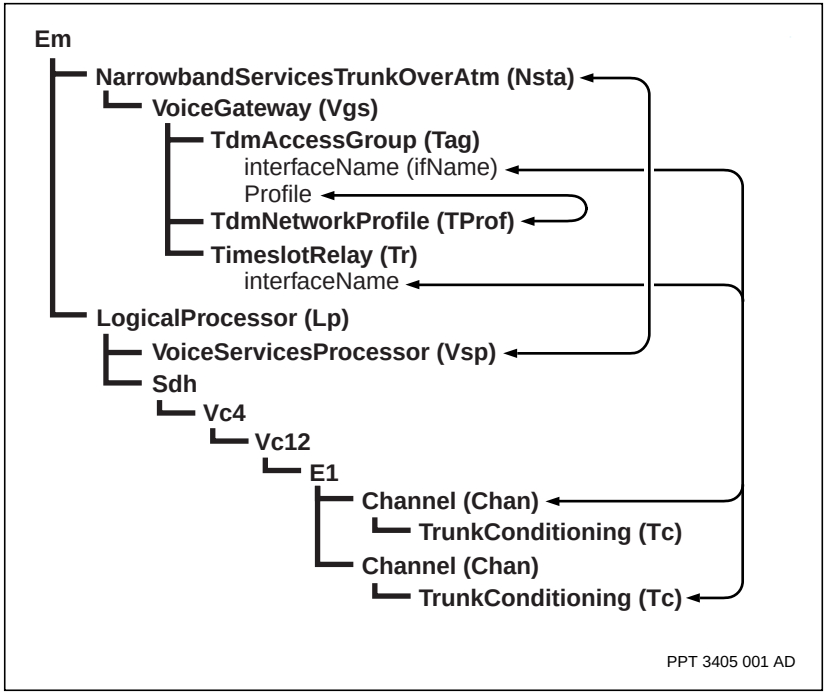
```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName Lp/
<n> Sdh/<sdh> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan>
```

Variable definitions

Variable	Value
<chan>	The instance value of the *Channel (Chan)* component
<m>	The instance value of the *NarrowbandServicesTrunkOverAtm (Nsta)* component
<n>	The instance value of the *LogicalProcessor (Lp)* component (the LP number)
<sdh>	The instance value of the *Sdh* component
<tag>	The instance value of the *TdmAccessGroup (Tag)* component
<tprof>	The instance value of the *TdmNetworkProfile (TProf)* component
<tr>	The instance value of the *TimeslotRelay (Tr)* component
<vc4>	The instance value of the *Vc4* component
<vc12>	The instance value of the *Vc12* component (the instance value <*vc12*> is composed of three decimal values represented as k, l, m)

Procedure job aid

Figure 7
Configuring Nsta and the TDM access group for an unspared VSP3-o FP with E1 trunking component hierarchy



Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-0 FP with DS1 trunking

Configure Nsta and the TDM access group (Tag) to establish the necessary components and attributes to configure switched PVG for the VSP3-o FP card in an unspared configuration with DS1 trunking.

Prerequisites

- See “Supporting information for configuring Nsta for the TDM access group” (page 58) for addition information related to this procedure.

Procedure steps

1. Add a *Sonet* component to the LP.

   ```
   add Lp/<n> Sonet/<sonet>
   ```

2. Add a *Vc4Sts* component that controls the STS path signal.

   ```
   add Lp/<n> Sonet/<sonet> Sts/<sts>
   ```

3. Add a *Vtldot5* component that controls the VTLDOT5 low order path signal.

   ```
   add Lp/<n> Sonet/<sonet> Sts/<sts> Vtldot5/<vtldot5>
   ```

   The system automatically provisions an *DS1* subcomponent beneath the *Vtldot5* component. The system automatically provisions a *Channel (Chan)* subcomponent with an instance value of 0 beneath the *DS1* subcomponent. The system automatically provisions a *TrunkConditioning (Tc)* subcomponent beneath the *Chan* subcomponent.

4. Add subcomponent *VoiceServicesProcessor (Vsp)* to the *Lp* component.

   ```
   add Lp/<n> Vsp
   ```

5. Add the *Nsta* component.

   ```
   add Nsta/<m>
   ```

6. Link the *Nsta* component to the *Vsp* component.

   ```
   set Nsta/<m> link Lp/<n> Vsp
   ```

7. Add a *VoiceGateway (Vgs)* component to the *Nsta* component.

   ```
   add Nsta/<m> Vgs
   ```

8 Add a *TdmAccessGroup (Tag)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs Tag/<tag>
```

9 Add a *TdmNetworkProfile (TProf)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs TProf/<tprof>
```

10 Set the Profile (Prof) link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> Profile Vgs TProf/<tprof>
```

11 Set the *interfaceName* link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> interfaceName Lp/<n> Sonet/
<sonet> Sts/<sts> Vtldot5/<vtldot5> Ds1 Chan/<chan>
```

12 If time slot relay is used, add the subcomponent *TimeslotRelay (Tr)* under component *Nsta Vgs*. Note that you can not configure time slot relay for trunks that use per trunk signaling (PTS).

```
add Nsta/<m> Vgs TimeslotRelay/<tr>
```

13 If time slot relay is used, two channels are required. Set the *interfaceName* link of the *Tr* component to the first of the two required channels. This step assumes the specified channel has been configured with a collection of time slots.

```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName Lp/
<n> Sonet/<sonet> Sts/<sts> Vtldot5/<vtldot5> Ds1
Chan/<chan_no>
```

14 If time slot relay is used, set the *interfaceName* link of the *Tr* component to the second of the two required channels. This step assumes the specified second channel has been configured with an equal number of time slots as the first channel.

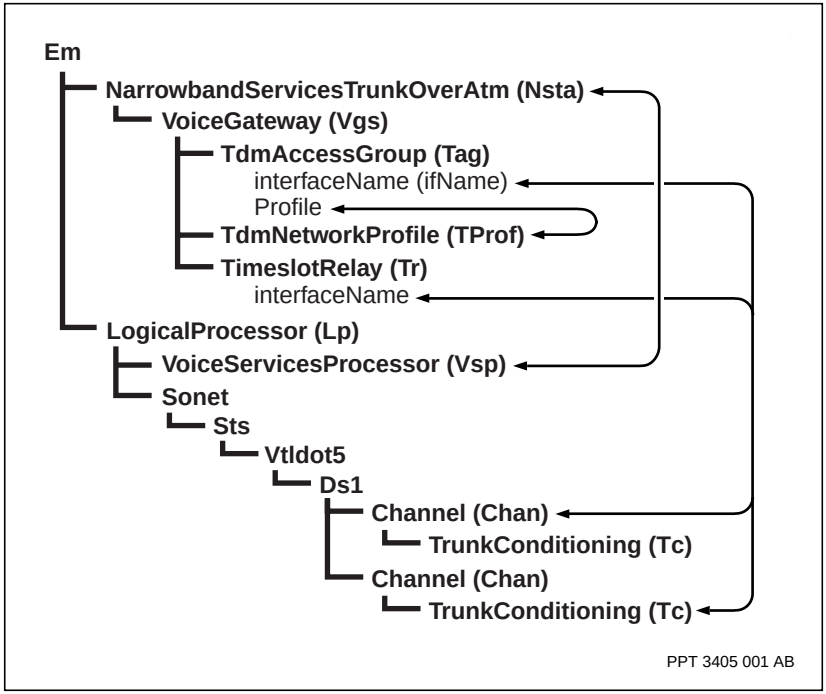
```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName Lp/
<n> Sonet/<sonet> Sts/<sts> Vtldot5/<vtldot5> Ds1
Chan/<chan_no>
```

Variable definitions

Variable	Value
<chan>	The instance value of the *Channel (Chan)* component
<m>	The instance value of the *NarrowbandServicesTrunkOverAtm (Nsta)* component
<n>	The instance value of the *LogicalProcessor (Lp)* component (the LP number)
<sonet>	The instance value of the *Sonet* component
<tag>	The instance value of the *TdmAccessGroup (Tag)* component
<tprof>	The instance value of the *TdmNetworkProfile (TProf)* component
<tr>	The instance value of the *TimeslotRelay (Tr)* component
<sts>	The instance value of the *Sts* component
<vtldot5>	The instance value of the *Vtldot5* component

Procedure job aid

Figure 8
Configuring Nsta and the TDM access group for an unspared VSP3-o FP with DS1 trunking component hierarchy



Configuring Nsta and the TDM access group (Tag) for a spared VSP3-0 FP with E1 trunking

Configure Nsta and the TDM access group (Tag) to establish the necessary components and attributes to configure switched PVG using the voice services processor 3 with optical TDM interface (VSP3-o) FP card in an spared configuration with E1 trunking.

Note: Unlike previous VSP-type cards, the VSP3-o FP sparing model is 1+1 as opposed to the 1:1 model used on VSP2 and VSP3 FP cards.

Prerequisites

- See “Supporting information for configuring Nsta for the TDM access group” (page 58) for addition information related to this procedure.

Procedure steps

1 Add a *Sdh* component to the LP that will provide the working line.

```
add Lp/<n> Sdh/<sdh>
```

2 Add a *Sdh* component to the LP that will provide the protection line.

```
add Lp/<n> Sdh/<sdh>
```

3 Add the *LineAutomaticProtectionSwitching (Laps)* component.

```
add Laps/<laps>
```

4 Link the *Laps* component to the *Sdh* component of the working line.

```
set Laps/<laps> workingLine Lp/<n> Sdh/0
```

5 Link the *Laps* component to the *Sdh* component of the protection line.

```
set Laps/<laps> protectionLine Lp/<n> Sdh/0
```

6 Add a *Vc4* component that controls the VC4 path signal.

```
add Laps/<n> Vc4/<vc4>
```

7 Add a *Vc12* component that controls the VC12 low order path signal.

```
add Laps/<n> Vc4/<vc4> Vc12/<vc12>
```

The system automatically provisions an *E1* subcomponent beneath the *Vc12* component. The system automatically provisions a *Channel (Chan)*

subcomponent and with an instance value of 0 beneath the *E1* subcomponent. The system automatically provisions a *TrunkConditioning (Tc)* subcomponent beneath the *Chan* subcomponent.

8 Add the *DualLpEquipmentProtection (Dlep)* component.

```
add Dlep/<dlep>
```

9 Set the *mainLp* link of the *Dlep* component to the *Lp* component of the main VSP3-o FP card.

```
set Dlep/<dlep> mainLp Lp/<n>
```

10 Set the spareLp link of the *Dlep* component to the *Lp* component of the spare VSP3-o FP card.

```
set Dlep/<dlep> spareLp Lp/<n>
```

11 Add subcomponent *VoiceServicesProcessor (Vsp)* to the *Dlep* component.

```
add Dlep/<dlep> Vsp
```

12 Add the *Nsta* component.

```
add Nsta/<m>
```

13 Link the *Nsta* component link to the *Vs*p component.

```
add Nsta/<m> link Dlep/<dlep> Vsp
```

14 Add a *TdmAccessGroup (Tag)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs Tag/<tag>
```

15 Add a *TdmNetworkProfile (TProf)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs TProf/<tprof>
```

16 Set the Profile (Prof) link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> Profile Vgs TProf/<tprof>
```

17 Set the *interfaceName* link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> interfaceName Lp/<n> Sdh/
<sdh> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan>
```

18 If time slot relay is used, add the subcomponent *TimeslotRelay (Tr)* under component *Nsta Vgs*. Note that you can not configure time slot relay for trunks that use per trunk signaling (PTS).

```
add Nsta/<m> Vgs TimeslotRelay/<tr>
```

19 If time slot relay is used, two channels are required. Set the *interfaceName* link of the *Tr* component to the first of the two required channels. This step assumes the specified channel has been configured with a collection of time slots.

```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName
Laps/<n> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan_no>
```

20 If time slot relay is used, set the *interfaceName* link of the *Tr* component to the second of the two required channels. This step assumes the specified second channel has been configured with an equal number of time slots as the first channel.

```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName
Laps/<n> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan_no>
```

Variable definitions

Variable	Value
<chan>	The instance value of the *Channel (Chan)* component
<dlep>	The instance value of the *DualLpEquipmentProtection (Dlep)* component
<laps>	The instance value of the *LineAutomaticProtectionSwitching (Laps)* component
<m>	The instance value of the *NarrowbandServicesTrunkOverAtm (Nsta)* component
<n>	The instance value of the *LogicalProcessor (Lp)* component (the LP number)
<sdh>	The instance value of the *Sdh* component
<tag>	The instance value of the *TdmAccessGroup (Tag)* component
<tprof>	The instance value of the *TdmNetworkProfile (TProf)* component
<tr>	The instance value of the *TimeslotRelay (Tr)* component

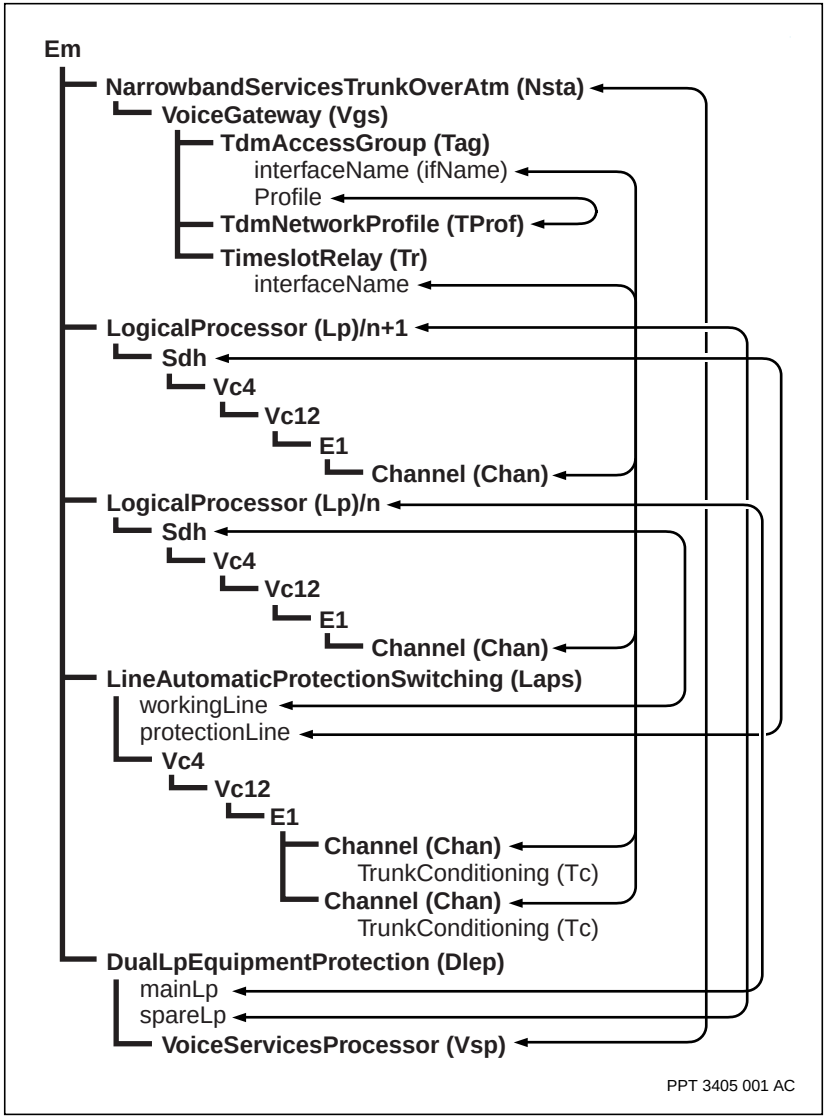
(Sheet 1 of 2)

Variable	Value
<vc4>	The instance value of the *Vc4* component
<vc12>	The instance value of the *Vc12* component (the instance value *<vc12>* is composed of three decimal values represented as k, l, m)

(Sheet 2 of 2)

Procedure job aid

Figure 9
Configuring Nsta and the TDM access group for a spared VSP3-o FP with E1 trunking component hierarchy



Configuring Nsta and the TDM access group (Tag) for a spared VSP3-0 FP with DS1 trunking

Configure Nsta and the TDM access group (Tag) to establish the necessary components and attributes to configure switched PVG using the VSP3-o FP card in an spared configuration with DS1 trunking.

Note: Unlike previous VSP-type cards, the VSP3-o FP sparing model is 1+1 as opposed to the 1:1 model used on VSP2 and VSP3 FP cards.

Prerequisites

- See “Supporting information for configuring Nsta for the TDM access group” (page 58) for addition information related to this procedure.

Procedure steps

1 Add a *Sdh* component to the LP that will provide the working line.

```
add Lp/<n> Sonet/<sonet>
```

2 Add a *Sdh* component to the LP that will provide the protection line.

```
add Lp/<n> Sonet/<sonet>
```

3 Add the *LineAutomaticProtectionSwitching (Laps)* component.

```
add Laps/<laps>
```

4 Link the *Laps* component to the *Sonet* component of the working line.

```
set Laps/<laps> workingLine Lp/<n> Sonet/0
```

5 Link the *Laps* component to the *Sonet* component of the protection line.

```
set Laps/<laps> protectionLine Lp/<n> Sonet/0
```

6 Add a *Sts* component that controls the STS path signal.

```
add Laps/<n> Sts/<sts>
```

7 Add a *Vc12* component that controls the VC12 low order path signal.

```
add Laps/<n> Sts/<sts> Vtldot5/<vtldot5>
```

The system automatically provisions an *Ds1* subcomponent beneath the *Vtldot5* component. The system automatically provisions a *Channel (Chan)* subcomponent and with an instance value of 0 beneath the *Ds1*

subcomponent. The system automatically provisions a *TrunkConditioning (Tc)* subcomponent beneath the *Chan* subcomponent.

8 Add the *DualLpEquipmentProtection (Dlep)* component.

```
add Dlep/<dlep>
```

9 Set the *mainLp* link of the *Dlep* component to the *Lp* component of the main VSP3-o FP card.

```
set Dlep/<dlep> mainLp Lp/<n>
```

10 Set the spareLp link of the *Dlep* component to the *Lp* component of the spare VSP3-o FP card.

```
set Dlep/<dlep> spareLp Lp/<n>
```

11 Add subcomponent *VoiceServicesProcessor (Vsp)* to the *Dlep* component.

```
add Dlep/<dlep> Vsp
```

12 Add the *Nsta* component.

```
add Nsta/<m>
```

13 Link the *Nsta* component link to the *Vs*p component.

```
add Nsta/<m> link Dlep/<dlep> Vsp
```

14 Add a *TdmAccessGroup (Tag)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs Tag/<tag>
```

15 Add a *TdmNetworkProfile (TProf)* subcomponent to the *Vgs* component.

```
add Nsta/<m> Vgs TProf/<tprof>
```

16 Set the Profile (Prof) link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> Profile Vgs TProf/<tprof>
```

17 Set the *interfaceName* link for the *Tag* component.

```
set Nsta/<m> Vgs Tag/<tag> interfaceName Lp/<n> Sonet/
<sonet> Sts/<sts> Vtldot5/<vtldot5> Ds1 Chan/<chan>
```

18 If time slot relay is used, add the subcomponent *TimeslotRelay (Tr)* under component *Nsta Vgs*. Note that you can not configure time slot relay for trunks that use per trunk signaling (PTS).

```
add Nsta/<m> Vgs TimeslotRelay/<tr>
```

19 If time slot relay is used, two channels are required. Set the *interfaceName* link of the *Tr* component to the first of the two required channels. This step assumes the specified channel has been configured with a collection of time slots.

```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName
Laps/<n> Sts/<sts> Vtldot5/<vtldot5> Ds1 Chan/<chan>
```

20 If time slot relay is used, set the *interfaceName* link of the *Tr* component to the second of the two required channels. This step assumes the specified second channel has been configured with an equal number of time slots as the first channel.

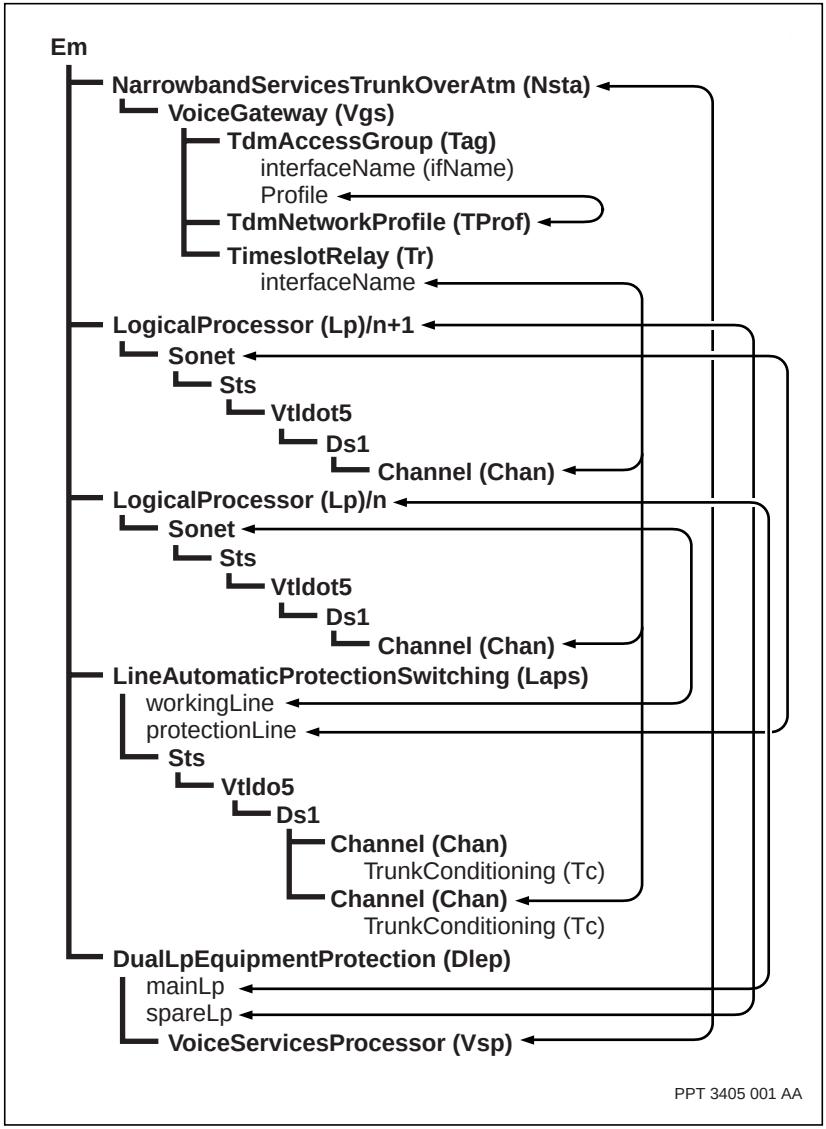
```
set Nsta/<m> Vgs TimeslotRelay/<tr> interfaceName
Laps/<n> Sts/<sts> Vtldot5/<vtldot5> Ds1 Chan/<chan>
```

Variable definitions

Variable	Value
<chan>	The instance value of the *Channel (Chan)* component
<dlep>	The instance value of the *DualLpEquipmentProtection (Dlep)* component
<laps>	The instance value of the *LineAutomaticProtectionSwitching (Laps)* component
<m>	The instance value of the *NarrowbandServicesTrunkOverAtm (Nsta)* component
<n>	The instance value of the *LogicalProcessor (Lp)* component (the LP number)
<sonet>	The instance value of the *Sonet* component
<tag>	The instance value of the *TdmAccessGroup (Tag)* component
<tprof>	The instance value of the *TdmNetworkProfile (TProf)* component
<tr>	The instance value of the *TimeslotRelay (Tr)* component
<sts>	The instance value of the *Sts* component
<vtldot5>	The instance value of the *Vtldot5* component

Procedure job aid

Figure 10
Configuring Nsta and the TDM access group for a spared VSP3-o FP with DS1 trunking component hierarchy



Supporting information for configuring Nsta for the basic rate group

Each Nsta connection contains a *BasicRateGroup* (*Brag*) component. The *Brag* component controls the settings for many of the voice and voice band data services that run over the connection, for example, echo cancellation, silence suppression, and maximum and minimum voice rates.

Almost all of the attributes of the *Brag* component contain default settings, and you can configure all of the attributes to suit the required traffic profile and quality of service. For descriptions of each attribute and permitted values, see 241-5701-060 *Passport 7400, 15000, 20000 Components*.

Supporting information for configuring Nsta for basic rate group server

Each Nsta connection for a 4-port OC3/STM-1Ch TDM/CES FP contains a *BasicRateGroupServer* (*BragS*) component. The *BragS* component controls the settings for many of the voice and voice band data services that may be applied to the connection, for example, echo cancellation, silence suppression, and maximum and minimum voice rates. All TDM groups (multiple Brag) with the same provisioning value are grouped together under a common Brag server and it is provisioned only once (instead of repeating on each Brag).

Almost all of the attributes of the *BragS* component contain default settings, and you can configure all of the attributes to suit the required traffic profile and quality of service. For descriptions of each attribute and permitted values, see 241-5701-060 *Passport 7400, 15000, 20000 Components*.

Supporting information for configuring Nsta for the TDM access group

Each Nsta connection contains a *TdmAccessGroup* (*Tag*) component. The *Tag* component represents a group of TDM timeslots in a TDM primary rate interface (PRI) stream associated with a VSP3-o FP card. The *Tag* component associates a processing profile with the TDM timeslots represented by the *Tag* component. The *Tag* component defines default processing for all TDM connections represented by the *Tag* component. This default processing profile can be overridden for each connection by the operator.

The recommended number of timeslots for a channel associated with a *Tag* component is 23 to 24 timeslots for DS1 and 30 or 31 timeslots for E1. This recommendation for DS1 timeslot allotment allows for one DS0 timeslot to be used for signaling.

Another component called a *TdmNetworkProfile* (*TProf*) component provides a processing profile that can be referenced by the *Tag* component

Almost all of the attributes of the *Tag* component contain default settings, and you can configure all of the attributes to suit the required traffic profile and quality of service. For descriptions of each attribute and permitted values, see 241-5701-060 *Passport 7400, 15000, 20000 Components*.

Chapter 3
Voice services FP configuration for switched PVG using ATM

Configure the voice services FP for switched PVG using ATM to create and configure the components associated with the voice services FP. The voice services FP for switched PVG using ATM can be either a VSP2 or VSP3 FP.

Prerequisites

- You must first configure the voice services FP. Please see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference* and 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide* before performing this task.

Procedure steps

1 Link the *Nsta* component to the logical processor you defined for the voice services FP.

```
set Nsta/<n> linktoserver lp/<q> vsp
```

2 Specify the PVG host name for the *Vgs* subcomponent.

```
set Nsta/<n> Vgs hostname <CLLI>
```

3 Specify the PVG ATM address for the *Vgs* subcomponent.

```
set Nsta/<n> Vgs gatewayATMAddress <address>
```

4 Add an AAL2 connection beneath the *Nsta* component.

```
add Nsta/<n> Vgs AtmTConn/<m>
```

5 Specify the ATM address of the node that can be reached by this trunk. This address cannot be the same as the value of the *gatewayAtmAddress* attribute of the *Nsta Vgs* component.

```
set Nsta/<n> Vgs AtmTConn/<m> rAddr <NSAP_address>
```

6 Specify the VCCI for this trunk. The value you enter here must be the same *vcci* attribute value as that entered for the remote node.

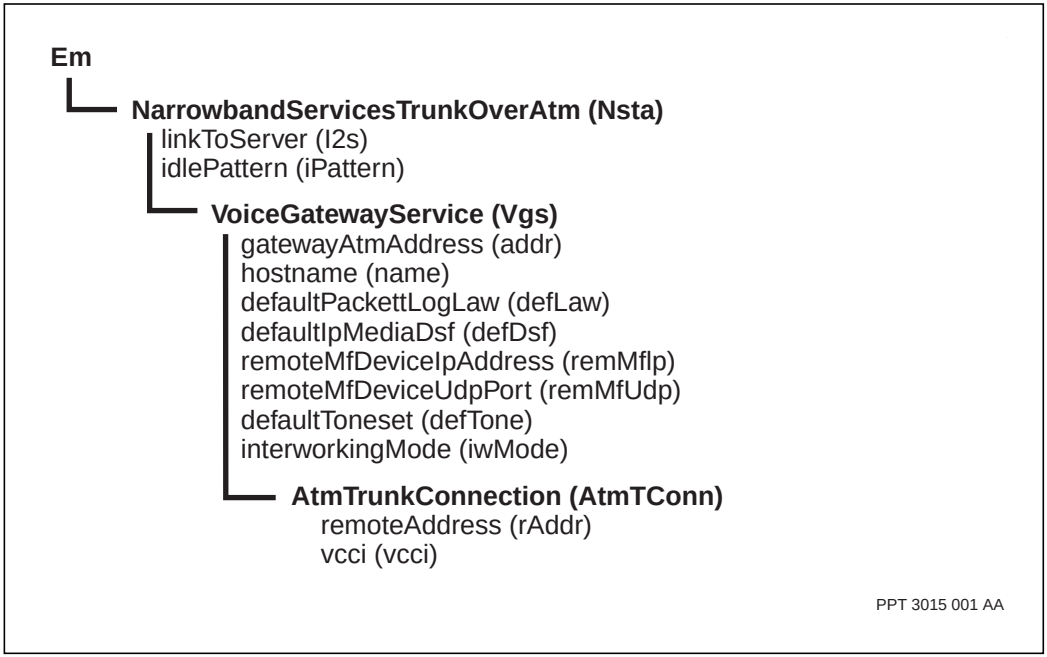
```
set Nsta/<n> Vgs AtmTConn/<m> vcci/<v>
```

Variable definitions

Variable	Value
<address>	The ATM address of the *Vgs* subcomponent.
<CLLI>	The PVG common language location identifier (CLLI) known to the media gateway controller.
<m>	The value for the *AtmTConn* component.
<n>	An instance value for the *Nsta* component.
<NSAP_address>	The NSAP ATM address of the remote node.
<q>	The value for the logical processor you defined for the voice services FP.
<v>	A value between 0 and 32767.

Procedure job aid

Figure 11
Voice services FP for switched PVG using ATM component hierarchy



Chapter 4
Configuring the voice services FP for switched PVG using IP

Configure the components for the voice services FP for switched PVG using IP to create and configure the components associated with the FP used for voice services. The type of FP for voice services must be a VSP2 (Passport 7400, 15000, 20000) or VSP3 FP (Passport 15000 or 20000 only) for switched PVG using IP.

Prerequisites

- You must first configure the voice services FP, please see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference* and 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference* before performing this task.

Procedure steps

1 Link the *Nsta* component to the logical processor you defined for the voice services FP.

```
set Nsta/<n> linktoserver lp/<q> vsp
```

2 Specify the PVG host name for the *Vgs* subcomponent.

```
set Nsta/<n> Vgs hostname <CLLI>
```

3 Specify the PVG ATM address for the *Vgs* subcomponent.

```
set Nsta/<n> Vgs gatewayATMAddress/<address>
```

4 Add an *IpMConn* component beneath the *Nsta* component. This component is used to provision trunks to carry the voice over IP service to a specific IP endpoint in the gateway.

```
add Nsta/<n> Vgs IpMConn
```

5 Specify the IP gateway to which traffic from the voice services FP is to be directed.

```
set Nsta/<n> Vgs IpMConn ipAddress <IP_address>
```

6 Specify the UDP port base for the media stream connections provisioned on the IpMConn.

```
set Nsta/<n> Vgs IpMConn udpPortBase/<basenumber>
```

7 Specify the Differentiated Service Field (DSF) value for all voice packets transmitted on all *IpMConn* components:

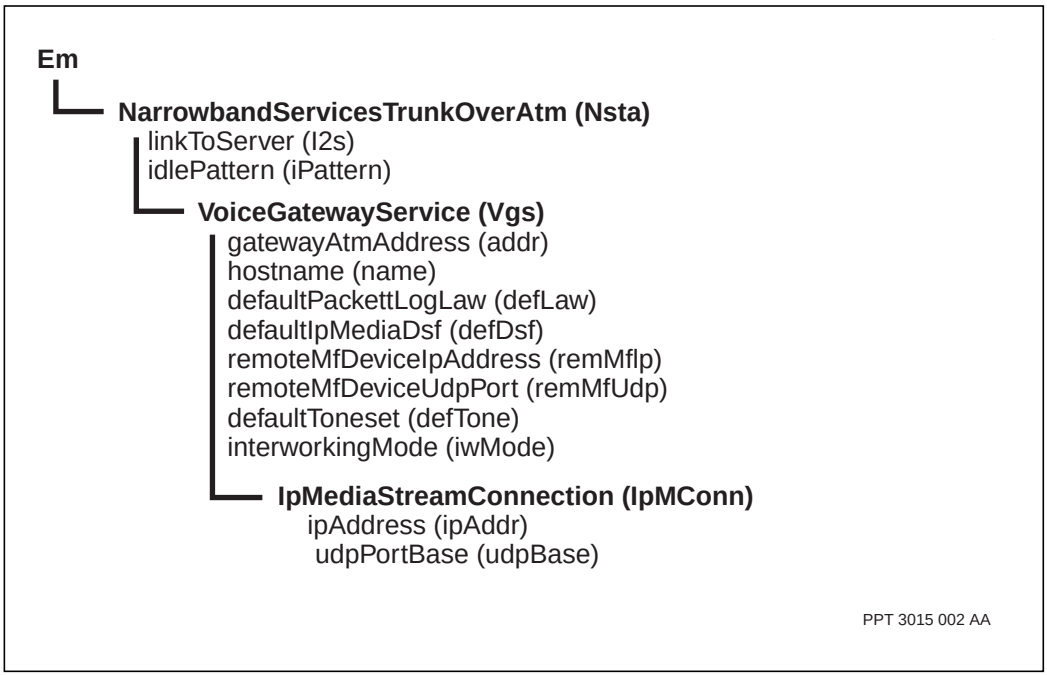
```
set nsta/<n> Vgs defaultIpMediaDsf/<defDsf_value>
```

Variable definitions

Variable	Value
<address>	The ATM address of the Vgs subcomponent.
<basenumber>	The low end of the range UDP port numbers to be assigned to the media stream connections using this *IpMConn* component.
<CLLI>	The PVG CLLI known to the media gateway controller.
<defDsf_value>	The DSF value for all voice packets transmitted on all *IpMConn* components. The range is 0 through 64, but the default value is 46.
<IP_address>	The IP address of the gateway. This address cannot be configured to be 0.0.0.0 or 255.255.255.255 values.
<n>	An instance value for the *Nsta* component.
<q>	The value for the logical processor you defined for the voice services FP.

Procedure job aid

Figure 12
Voice services FP configuration for switched PVG using IP component hierarchy



Chapter 5
TDM to Nsta (VSP) link configuration

Configure the TDM to Nsta (VSP) link to establish the connection between the TDM and VSP-type FP cards.

Navigation links

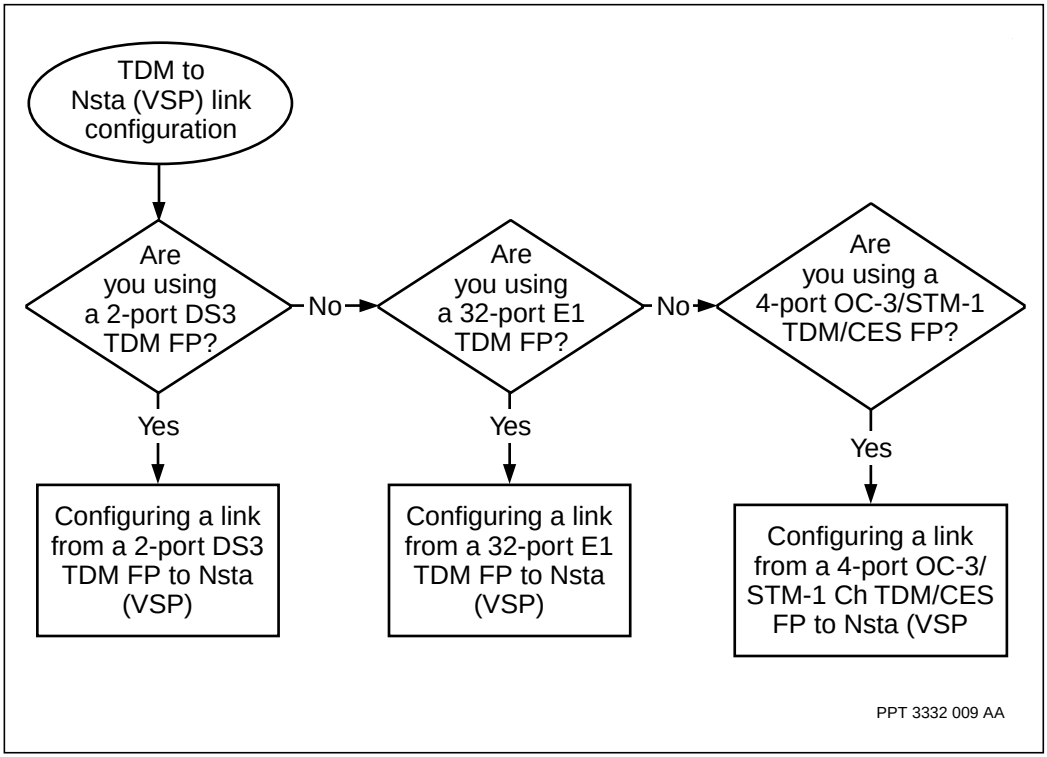
Prerequisites to TDM to Nsta (VSP) link configuration

- This task may require the provisioning of line automatic protection switching (LAPS) for the 4-port OC-3/STM-1 Ch TDM/CES FP. If you choose this configuration you will need the procedure "Configuring line and equipment protection for Passport 15000 or 20000 optical interfaces" in 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*. Information on the support of LAPS by the 4-port OC-3/STM-1 Ch TDM/CES FP as a TDM card, is found in 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.

TDM to Nsta (VSP) link configuration flow

This task flow shows you the sequence of procedures you perform to configure the TDM to Nsta (VSP) link. To link to any procedure, go to "Task navigation" (page 70).

Figure 13
TDM to Nsta (Vsp) link configuration task flow



Task navigation

- "Configuring a link from a 2-port DS3 TDM FP to Nsta (VSP)" (page 71)
- "Configuring a link from a 32-port E1 TDM FP to Nsta (VSP)" (page 72)
- "Configuring line and equipment protection for Passport 15000 or 20000 optical interfaces" in 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*
- "Configuring a link from a 4-port OC-3/STM-1Ch TDM/CES FP to Nsta (VSP)" (page 73)

Configuring a link from a 2-port DS3 TDM FP to Nsta (VSP)

Configure the link between Nsta and the TDM interface to associate the Nsta services to an interface on the 2-port DS3 TDM FP.

Prerequisites

- Configure the logical processor types and logical processors for the DS3 FP as described in 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals* and 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.

Procedure steps

1. Set the card's cardtype attribute to 2pDS3cAal.
2. Add to the associated LP any required interface components. For the 2-port DS3C TDM, you would add *DS3* and *DS1* components under the LP component.

   `add Lp/<p> DS3/<x> DS1/<y>`

3. Set the *clockingSource* attribute of the DS1 tributary port to module.

   `set Lp/<o> DS3/<x> DS1/<y> clockingSource module`

4. Connect the Nsta AAL2 connection to a port on the 2-port DS3C TDM.

   `set Nsta/<n> Vgs Brag/<b> interfaceName Lp/<p> DS3/<x> DS1/<y> Chan/0`

Variable definitions

Variable	Value
<b>	The instance of the *Brag* component. The value can be between 0 and 127.
<n>	The value for the *Nsta* component.
<p>	The value for the LP that runs on the 2-port DS3C TDM FP.
<x>	The value of the DS3.
<y>	The value of the DS1.

Configuring a link from a 32-port E1 TDM FP to Nsta (VSP)

Configure the link between Nsta and the TDM interface to associate the Nsta services to an interface on the 32-port E1 TDM FP.

Prerequisites

- Configure the logical processor types and logical processors for the E1 FP as described in 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals* and 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.

Procedure steps

1. Set the card's *cartype* attribute to *32pE1Aal*.
2. Add to the associated LP any required interface components. For a 32-port E1 TDM FP, you would add the *E1* component under the *Lp* component.

   `set Lp/<p> E1/<x>`

3. Connect the Nsta AAL2 connection to a port on the 32-port E1 TDM FP.

   `set Nsta/<n> Vgs Brag/<b> interfaceName Lp/<p> E1/<x> chan/0`

Variable definitions

Variable	Value
<b>	The instance of the *Brag* component. The value can be between 0 and 127.
<n>	The value for the *Nsta* component.
<p>	The value for the LP that runs on the 32-port E1TDM FP.
<x>	The value for the E1 TDM FP.

Configuring a link from a 4-port OC-3/STM-1Ch TDM/CES FP to Nsta (VSP)

Configure the link between Nsta and the TDM interface to associate the Nsta services to an interface on the 4-port OC-3/STM-1 Ch TDM/CES FP.

Prerequisites

- Configure the logical processor types and logical processors for the 4-port OC-3/STM-1 Ch TDM/CES FP as described in 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals* and 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.
- Ensure the trafficChannelIdentifierList under the Nsta Conn Brag has the equivalent numberof AAL2 channels to the number of timeslots under the E1 chan/0 timeslot list.

Procedure steps

1 Set the card's *cardtype* attribute to *4pOC3ChSmIr*

2 Add to the associated LP the AAL1 CES components and subcomponents.

```
set Lp/<p> sdh/<z> vc4/0 vc12/<k.l,m>
```

3 Connect the AALI1CES component to the port.

```
set aal1ces/x interfacename lp/<p> sdh/<z> vc4/0 vc12/
<k,l,m> E1 chan/0
```

4 Add an aep component under the AAL1CES component

```
add aal1ces/<x> aep
```

5 Set the aep component

```
set aal1ces/<x> aep addresstocall <v>
```

Variable definitions

Variable	Value
<k,l,m>	The instances of the low order path.
<n>	The value for the *Nsta* component.
<p>	The value for the logical processor of an FP.
<x>	The instance value of the *aal1ces* component.
<v>	The *Pap* localaddress value.
<z>	The value of the port.

Chapter 6
ATM to Nsta (VSP) link configuration for switched PVG using ATM

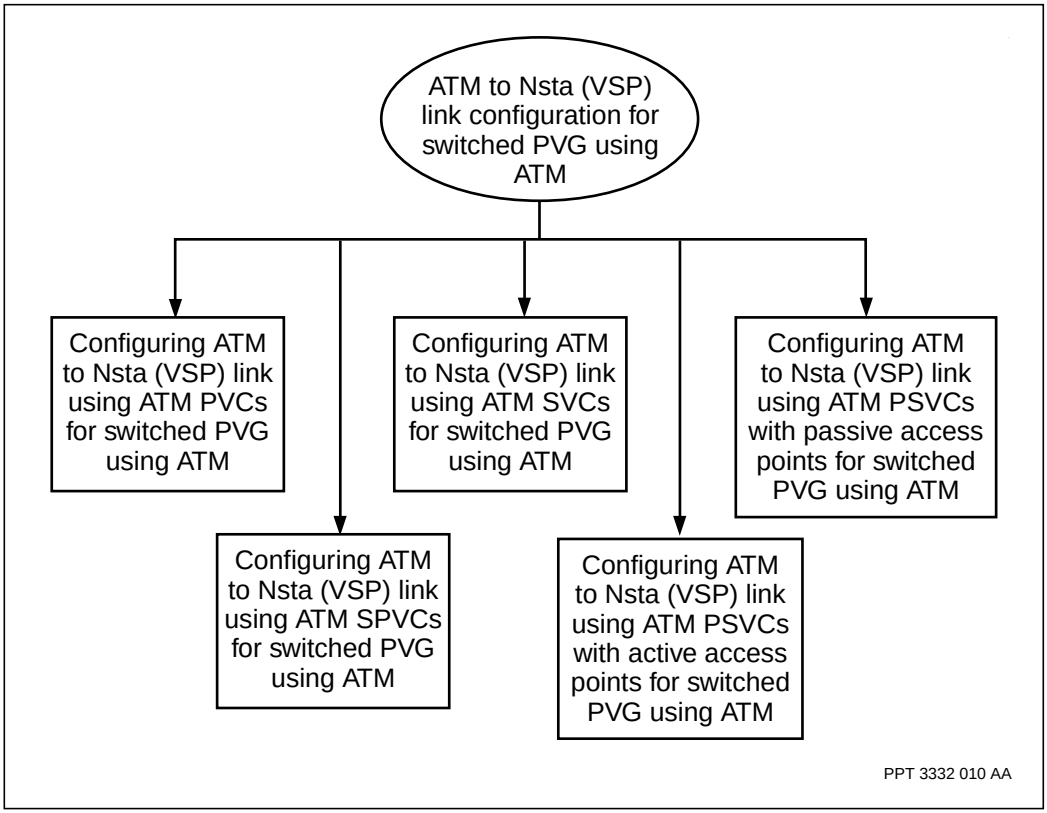
Configure the ATM to Nsta (VSP) link to establish the connection between the ATM and VSP-type FP cards.

Navigation links

ATM to Nsta (VSP) link configuration for switched PVG using ATM flow

This task flow shows you the sequence of procedures you perform to configure the ATM to Nsta (VSP) link. To link to any procedure, go to "Task navigation" (page 76).

Figure 14
ATM to Nsta (Vsp) link configuration for switched PVG using ATM task flow



Task navigation

- “Configuring ATM to Nsta (VSP) link using ATM PVCs for switched PVG using ATM” (page 78)
- “Configuring ATM to Nsta (VSP) link using ATM SPVCs for switched PVG using ATM” (page 81)
- “Configuring ATM to Nsta (VSP) link using ATM SVCs for switched PVG using ATM” (page 84)
- “Configuring ATM to Nsta (VSP) link using ATM PSVCs with active access points for switched PVG using ATM” (page 88)

- “Configuring ATM to Nsta (VSP) link using ATM PSVCs with passive access points for switched PVG using ATM” (page 91)

Configuring ATM to Nsta (VSP) link using ATM PVCs for switched PVG using ATM

Configure the ATM to Nsta (VSP) link using ATM PVCs to create the PVC virtual channel connections (VCCs) and link them to the ports on the ATM FPs.

Prerequisites

- Permitted values for the *AtmIf Vcc* depend on the connection map for the *AtmIf* component. You may need to edit the *ConnectionAdminstrator* or *ConnectionMapping* component. See 241-5701-700 *Passport 7400, 15000, 20000 ATM Overview*.

Procedure steps

1. Add an ATM interface.

   add AtmIf/<p>

2. Link the ATM interface to an ATM port.

   set AtmIf/<p> interfaceName lp/<m> <port>

3. Add a VCC to the ATM interface.

   add AtmIf/<p> Vcc/<VPI.VCI>

4. Add a *NailedUpEndPoint* component to the VCC.

   add AtmIf/<p> Vcc/<VPI.VCI> Nep

5. Add a permanent access point to the AAL2 connection.

   add Nsta/<n> Vgs AtmTConn/<t> Nap

6. Map a *Nap* component to a *Nep* component.

   set Nsta/<n> Vgs AtmTConn/<m> Nap atmConnection AtmIf/<p> Vcc/<VPI.VCI> Nep

7. Configure ATM traffic management.

   set AtmIf/<n> Vcc/<VPI.VCI> Vcd Tm <attribute> <attributevalue>

8. Optionally, if you plan to oversubscribe the connection pool capacity for the ATM interface, edit the connection administrator to accommodate the appropriate bandwidth.

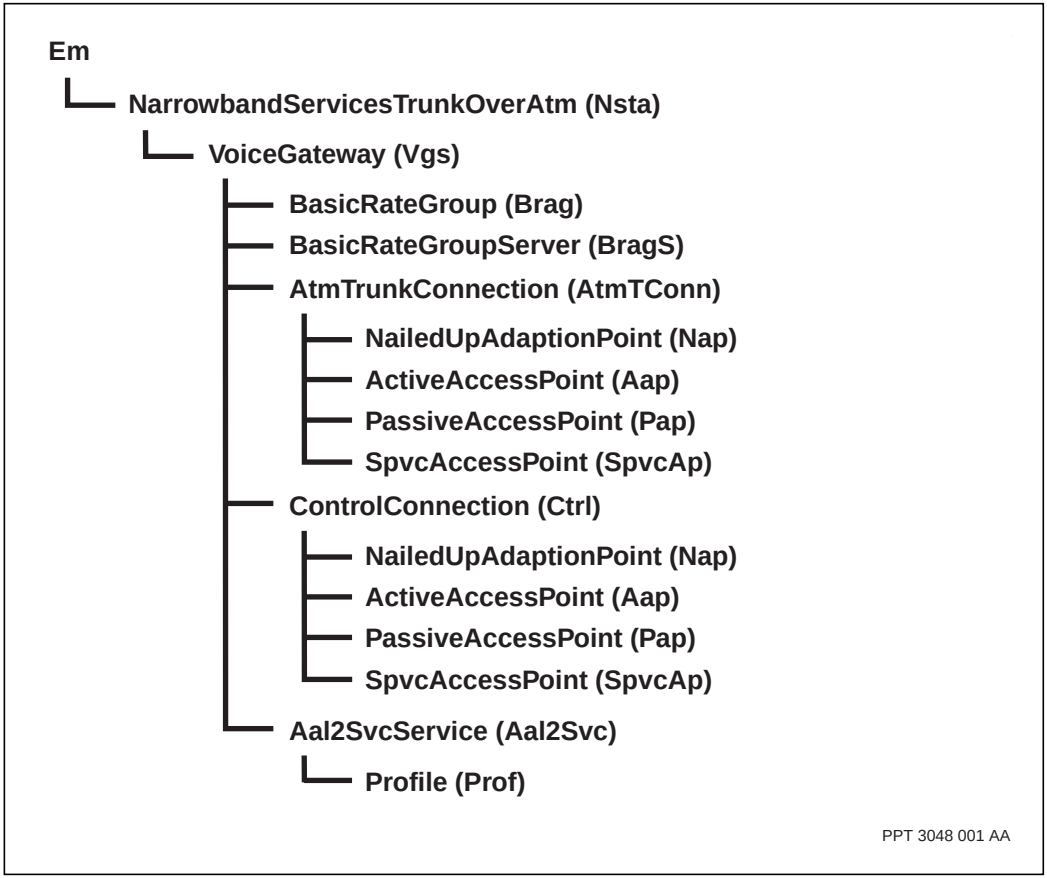
   set AtmIf/<p> Ca bandwidthPool 1 <percentage>

Variable definitions

Variable	Value
<attribute>	Any of the provisionable attributes.
<attributevalue>	A permitted value for the attribute. For more information about traffic management attributes and values see the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.
<m>	The LP number.
<n>	The value for the *Nsta* component.
<p>	The instance value of the *AtmIf* component and can be any value from 1 to 1024.
<percentage>	The percentage of the pool, between 0 and 1000, that is reserved for pool1. For more information about bandwidth pools, see 241-5701-700 *Passport 7400, 15000, 20000 ATM Overview*.
<port>	The port type and instance value, for example, *E1/1* or *Sonet/0 Path/0* or *DS3/0*. If the FP is channelized, include the channel instance as well, for example, *DS1/1 Channel/0*.
<t>	The value for component *AtmTConn.*
<VPI,VCI>	The instance value of the VCC. The VPI value can be from 0 to 255. The VCI value can be from 32 to 65535.

Procedure job aid

Figure 15
Configuring ATM to Nsta (VSP) link using ATM PVCs for switched PVG using ATM component hierarchy



Configuring ATM to Nsta (VSP) link using ATM SPVCs for switched PVG using ATM

Configure the ATM to Nsta (VSP) link using ATM SPVCs to link Nsta to the ports on the ATM FPs.

Procedure steps

1. Add an ATM interface.

   add AtmIf/<n>

2. Link the ATM interface to an ATM port.

   set AtmIf/<n> interfaceName lp/<m> <port>

3. Add a SPVC access point to the AAL2 connection.

   add Nsta/<n> Vgs AtmTConn/<m> SpvcAp

4. Specify the remote address of the ATM interface to call.

   set Nsta/<n> Vgs AtmTConn/<m> SpvcAp addrToCall <rem_addr>

5. Specify the remote VPI VCI combination of the ATM interface to call.

   set Nsta/<n> Vgs AtmTConn/<m> SpvcAp rVpiVci <VPI.VCI>

6. Specify the ATM service category.

   set Nsta/<n> Vgs AtmTConn/<m> SpvcAp service <cat>

7. Specify the peak cell rate.

   set Nsta/<n> Vgs AtmTConn/<m> SpvcAp pcr <p_cell_rate>

8. Specify the sustained cell rate.

   set Nsta/<n> Vgs AtmTConn/<m> SpvcAp scr <s_cell_rate>

9. Specify the maximum burst size.

   set Nsta/<n> Vgs AtmTConn/<m> SpvcAp mbs <max_burst_size>

10. Specify the retry limit.

    set Nsta/<n> Vgs AtmTConn/<m> SpvcAp limit <max_retry>

11. Optionally, if you plan to oversubscribe the connection pool capacity for the ATM interface, edit the *ConnectionAdministrator* component to accommodate the appropriate bandwidth.

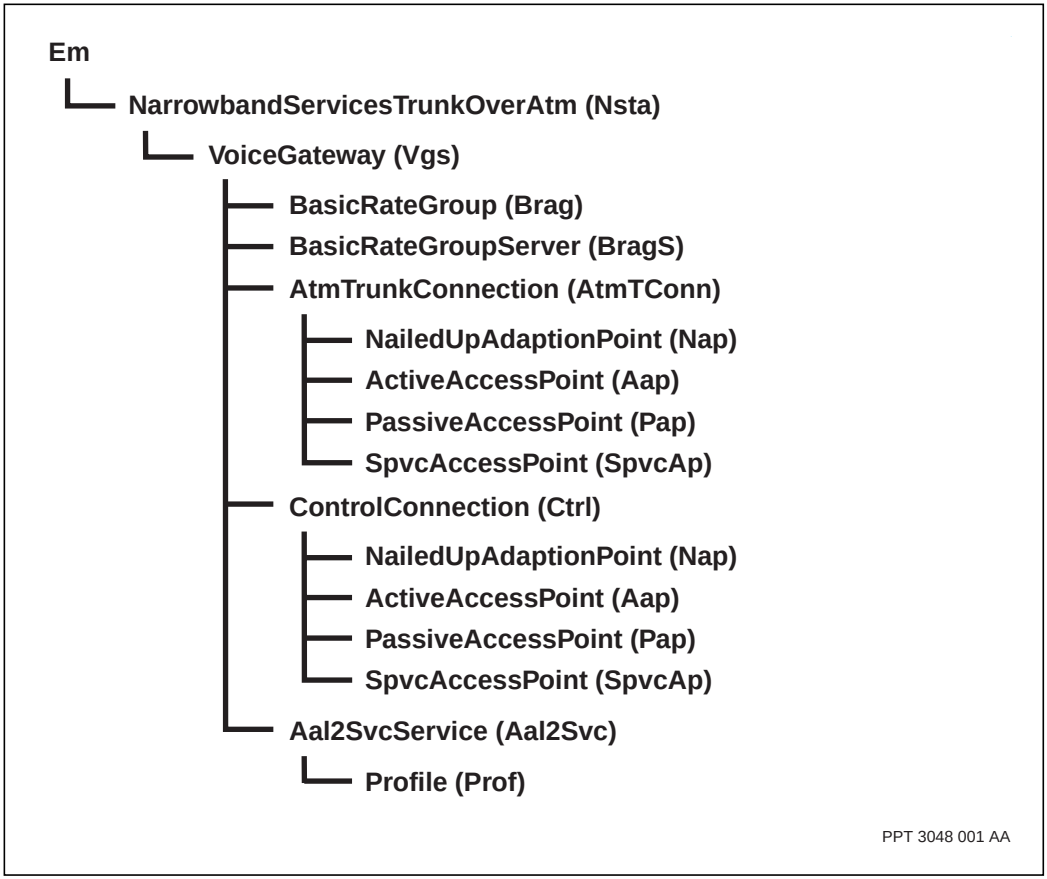
```
set AtmIf/<n> Ca bandwidthPool 1 <percentage>
```

Variable definitions

Variable	Value
<cat>	*ConstantBitRate* or *rtVariableBitRate*
<m>	The value for component *AtmTConn*
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries to connect to the far end before setting an alarm and forcing manual intervention. A value of 0 indicates that the application tries indefinitely to connect to the far end.
<n>	The value for the component *Nsta*
<p_cell_rate>	A number representing the peak cell rate
<rem_addr>	The address of the remote ATM interface
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<VPI.VCI>	The value for the VCC of the remote ATM interface

Procedure job aid

Figure 16
ATM to Nsta (VSP) link using ATM SPVCs for switched PVG using ATM component hierarchy



Configuring ATM to Nsta (VSP) link using ATM SVCs for switched PVG using ATM

Configure ATM to Nsta (VSP) link using ATM SVCs to create and enable the AAL2 SVC service and set traffic management parameters.

Procedure steps

1. Add SVC service to the AAL2 connection.

   add Nsta/<n> Vgs Aal2SvcService

2. Specify the setup timeout for SVCs.

   set Nsta/<n> Vgs Aal2SvcService svcSetuptimeout <svc_setup_timeout>

3. Specify the SVC pre-creation value.

   set Nsta/<n> Vgs Aal2SvcService svcpreCreation <svc_pre_creation>

4. Specify whether or not the traffic parameters will be automatically calculated.

   set Nsta/<n> Vgs Aal2SvcService autocalcTrafficPrms <auto_calc_traffic_parameters>

5. Add the AAL2 Svc service profile

   add Nsta<n> Vgs Aal2SvcService Profile/<profile>

6. Specify the hold over time.

   set Nsta/<n> Vgs Aal2SvcService Profile/<profile> holdOverTime <hold_over_time>

7. Specify the maximum number of Aal2 trunks.

   set Nsta/<n> Vgs Aal2SvcService Profile/<profile> maxTrunks <max_number_Aal2_trunks>

8. Specify the SVC persistence value.

   set Nsta/<n> Vgs Aal2SvcService Profile/<profile> svcpersistence <SVC_persistence>

9. Specify the ATM service category.

   set Nsta/<n> Vgs Aal2SvcService Profile/<profile> atmservice <cat>

10 Specify the peak cell rate.

```
set Nsta/<n> Vgs Aal2SvcService Profile/<profile> pcr
<p_cell_rate>
```

11 Specify the sustained cell rate.

```
set Nsta/<n> Vgs Aal2SvcService Profile/<profile> scr
<s_cell_rate>
```

12 Specify the maximum burst size.

```
set Nsta/<n> Vgs Aal2SvcService Profile/<profile> mbs
<max_burst_size>
```

Variable definitions

Variable	Value
<auto_calc_traffic_parameters>	*Enabled* or *disabled*. This attribute should be set to *enabled* when using G.711 codecs without silence suppression.
<cat>	*ConstantBitRate* or *rtVariableBitRate*.
<hold_over_time>	A number representing the hold over time.
<max_burst_size>	A number representing the maximum burst size. It must be a non-zero value when using rt-vbr and *autocalcTrafficPrms* is disabled. The provisioned value is ignored when using cbr and *autocalcTrafficPrms* is enabled. It must be 0 when using cbr and *autocalcTrafficPrms* is disabled.
<max_number_Aal2_trunks>	A number representing the maximum number of AAL2 trunks.
<n>	The value for the component *Nsta.*
<p_cell_rate>	A number representing the peak cell rate. It must be a non-zero value if *autocalcTrafficPrms* is disabled.
<profile>	The value of the *Profile* component. This value will be 1 since only one instance of the *Profile component is supported.*

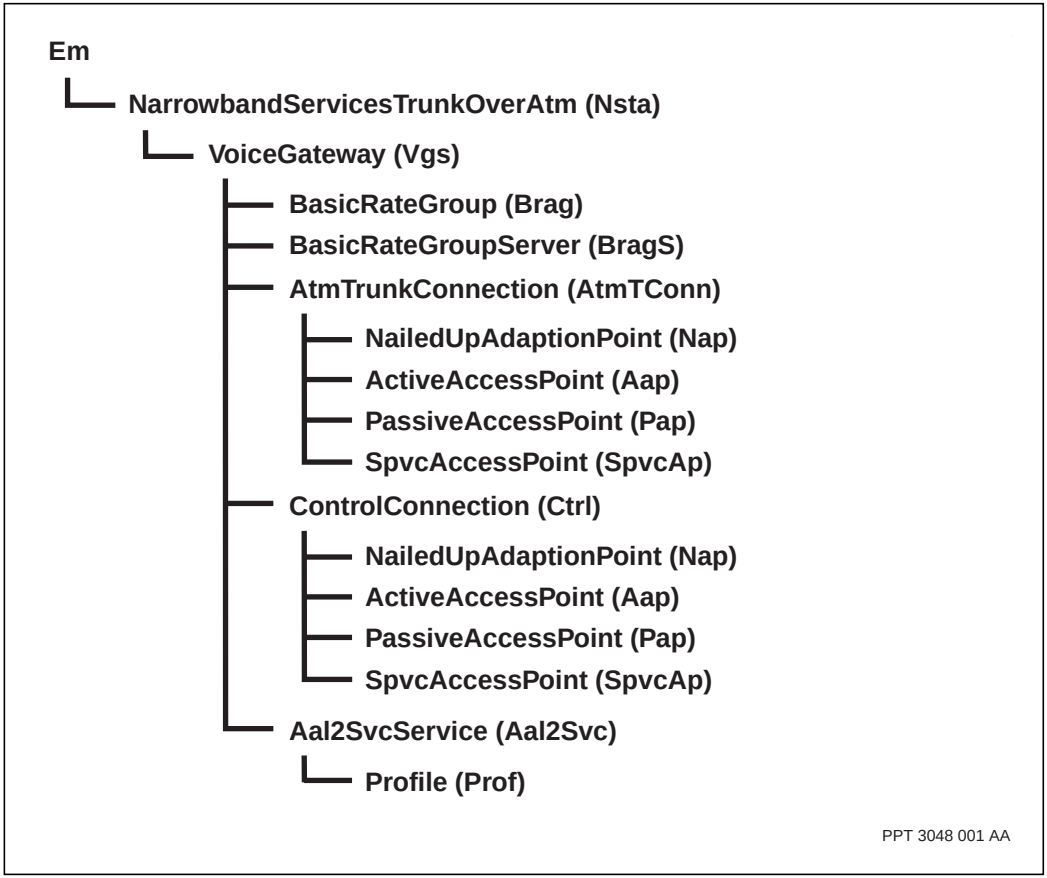
(Sheet 1 of 2)

Variable	Value
<s_cell_rate>	A number representing the sustained cell rate. It must be a non-zero value when using rt-vbr and *autocalcTrafficPrms* is disabled. The provisioned value is ignored when using cbr and *autocalcTrafficPrms* is enabled. It must be 0 when using cbr and *autocalcTrafficPrms* is disabled.
<SVC_persistence>	A number representing the SVC persistence value.
<svc_pre_creation>	*Enabled* or *disabled*.
<svc_setup_timeout>	A number representing the setup timeout for SVCs.

(Sheet 2 of 2)

Procedure job aid

Figure 17
Configuring ATM to Nsta (VSP) link using ATM SVCs for switched PVG using ATM component hierarchy



Configuring ATM to Nsta (VSP) link using ATM PSVCs with active access points for switched PVG using ATM

Configure bearer channels to use ATM PSVC with active access points to create and enable ATM PSVCs to accept ATM calls.

Procedure steps

1. Add an ATM interface.

   `add AtmIf/<n>`

2. Link the ATM interface to an ATM port.

   `set AtmIf/<n> interfaceName lp/<m> <port>`

3. Add an active access point to the AAL2 connection.

   `add Nsta/<n> Vgs AtmTConn/<m> Aap`

4. Specify the ATM service category.

   `set Nsta/<n> Vgs AtmTConn/<m> Aap service <cat>`

5. Specify the peak cell rate.

   `set Nsta/<n> Vgs AtmTConn/<m> Aap pcr <p_cell_rate>`

6. Specify the sustained cell rate.

   `set Nsta/<n> Vgs AtmTConn/<m> Aap scr <s_cell_rate>`

7. Specify the maximum burst size.

   `set Nsta/<n> Vgs AtmTConn/<m> Aap mbs <max_burst_size>`

8. Specify the retry limit.

   `set Nsta/<n> Vgs AtmTConn/<m> Aap limit <max_retry>`

9. Optionally, if you plan to oversubscribe the connection pool capacity for the ATM interface, edit the *ConnectionAdministrator* component to accommodate the appropriate bandwidth.

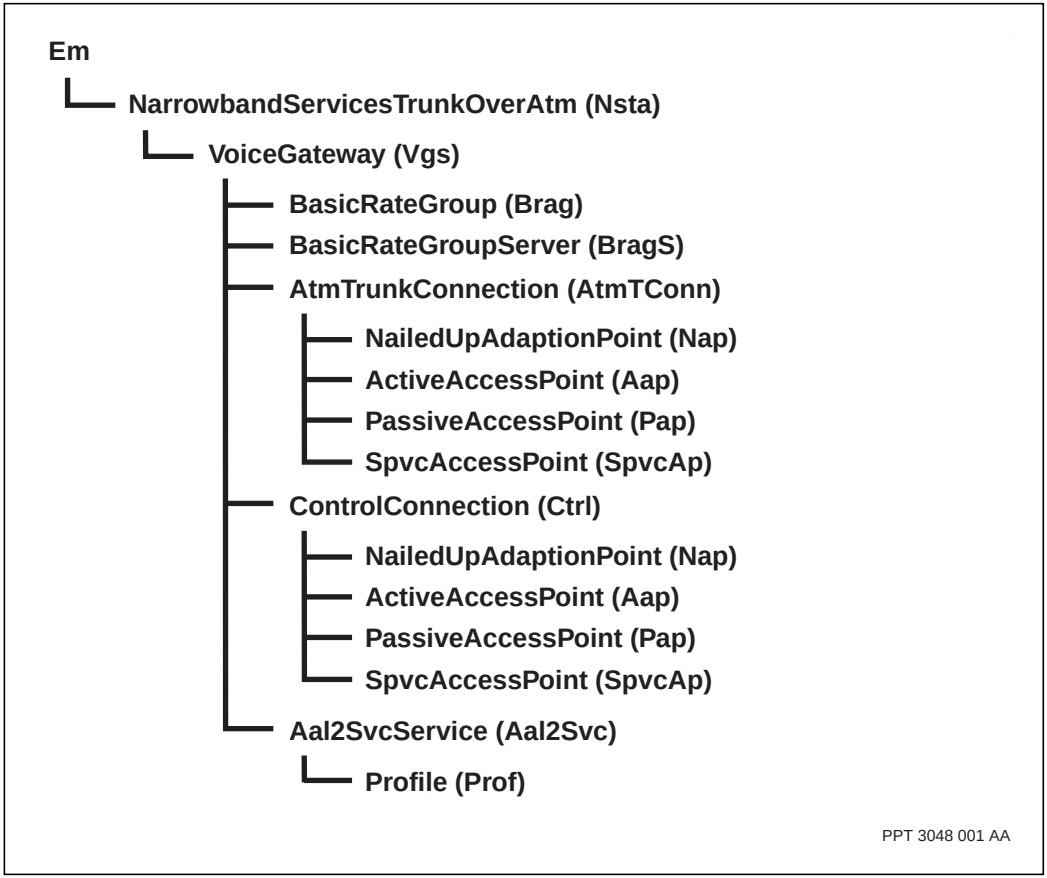
   `set AtmIf/<n> Ca bandwidthPool 1 <percentage>`

Variable definitions

Variable	Value
<cat>	*ConstantBitRate* or *rtVariableBitRated*.
<m>	The value for an *AtmTConn* component.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries to connect to the far end before setting an alarm and forcing manual intervention. A value of 0 indicates that the application tries indefinitely to connect to the far end.
<n>	The value for the *Nsta* component.
<p_cell_rate>	A number representing the peak cell rate.
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.

Procedure job aid

Figure 18
Configuring ATM to Nsta (VSP) link using ATM PSVCs with active access points for switched PVG using ATM component hierarchy



Configuring ATM to Nsta (VSP) link using ATM PSVCs with passive access points for switched PVG using ATM

Configure bearer channels to use ATM PSVCs with passive access points to allow the AtmTConn component to accept ATM calls only.

Procedure steps

1. Add an ATM interface.

   ```
   add AtmIf/<n>
   ```

2. Link the ATM interface to an ATM port.

   ```
   set AtmIf/<n> interfaceName lp/<m> <port>
   ```

3. Add a passive access point to the AAL2 connection.

   ```
   add Nsta/<n> Vgs AtmTConn/<m> Pap
   ```

4. Optionally, if you plan to oversubscribe the connection pool capacity for the ATM interface, edit the *ConnectionAdministrator* component to accommodate the appropriate bandwidth.

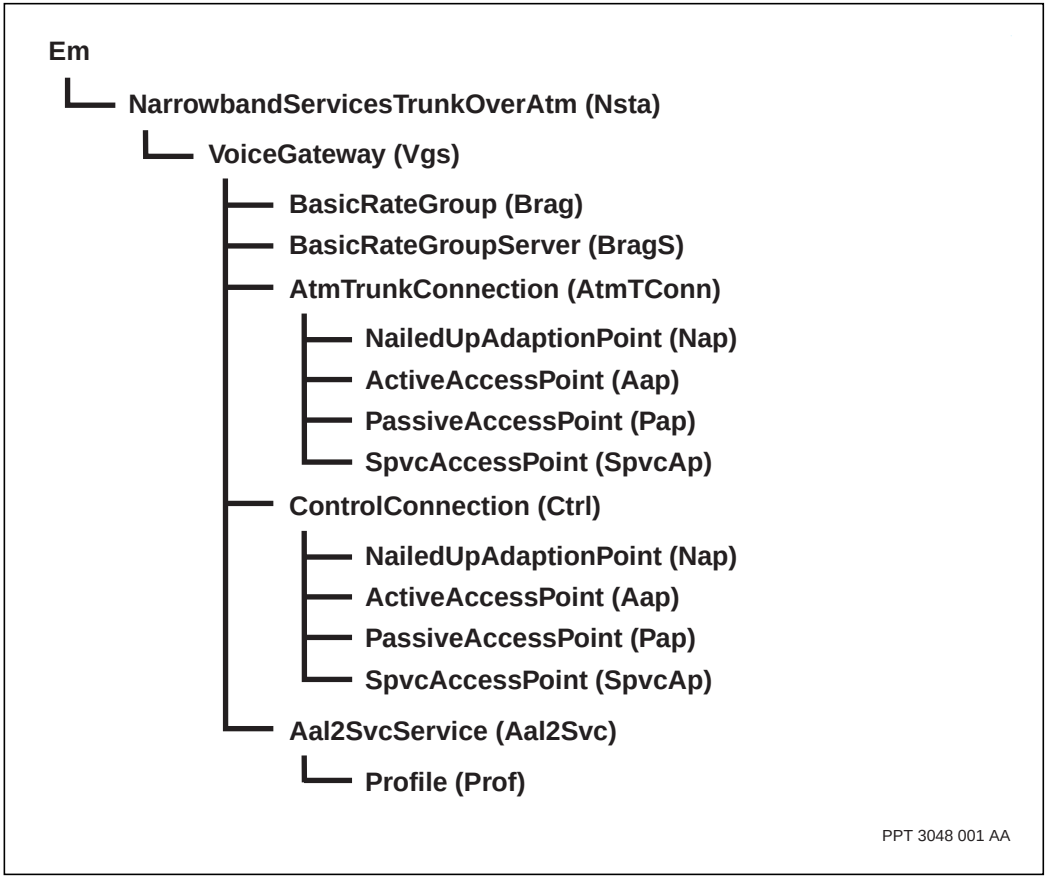
   ```
   set AtmIf/<n> Ca bandwidthPool 1 <percentage>
   ```

Variable definitions

Variable	Value
<m>	The value for the *AtmTConn* component.
<n>	The value for the *Nsta* component.

Procedure job aid

Figure 19
Configuring ATM to Nsta (VSP) link using ATM PSVCs with passive access points for switched PVG using ATM component hierarchy



Chapter 7
Switched PVG using IP over ATM transport configuration

Configure switched PVG using IP over ATM transport to send voice traffic over an IP network.

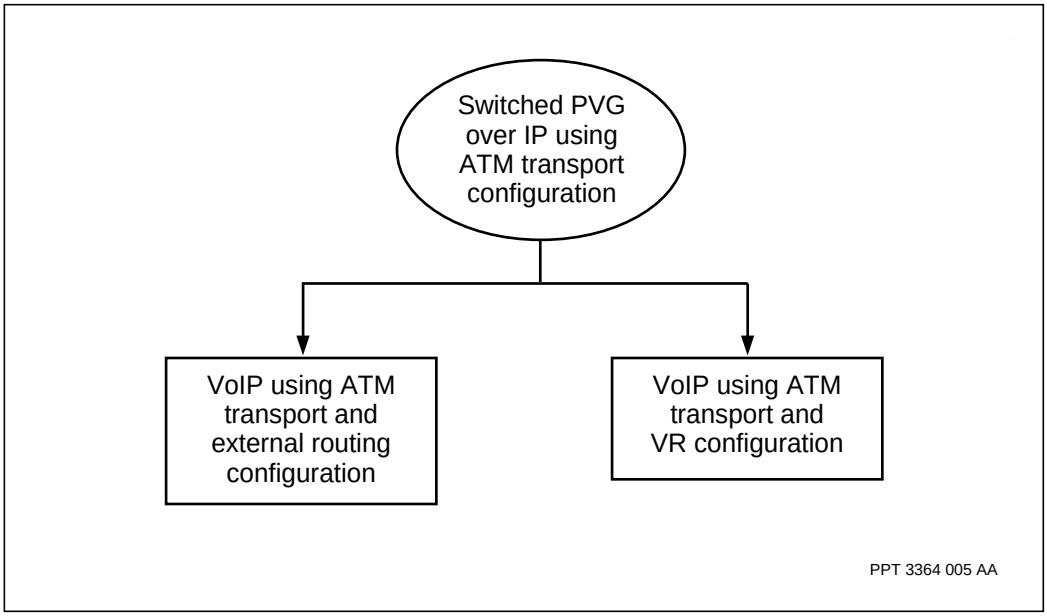
Navigation links

- "Switched PVG using IP over ATM transport configuration flow" (page 93)
- "Task navigation" (page 94)

Switched PVG using IP over ATM transport configuration flow

This task flow shows you the sequence of procedures you perform to configure switched PVG using IP over ATM transport. To link to any procedure, go to "Task navigation" (page 94).

Figure 20
Switched PVG using IP over ATM transport configuration task flow



Task navigation

- “VoIP using ATM transport and external routing configuration” (page 95)
- “VoIP using ATM transport and VR configuration” (page 105)

Chapter 8
VoIP using ATM transport and external routing configuration

Configure VoIP using ATM transport and external routing by configuring the ATM links to establish the connection between the ATM and VSP-type FP cards.

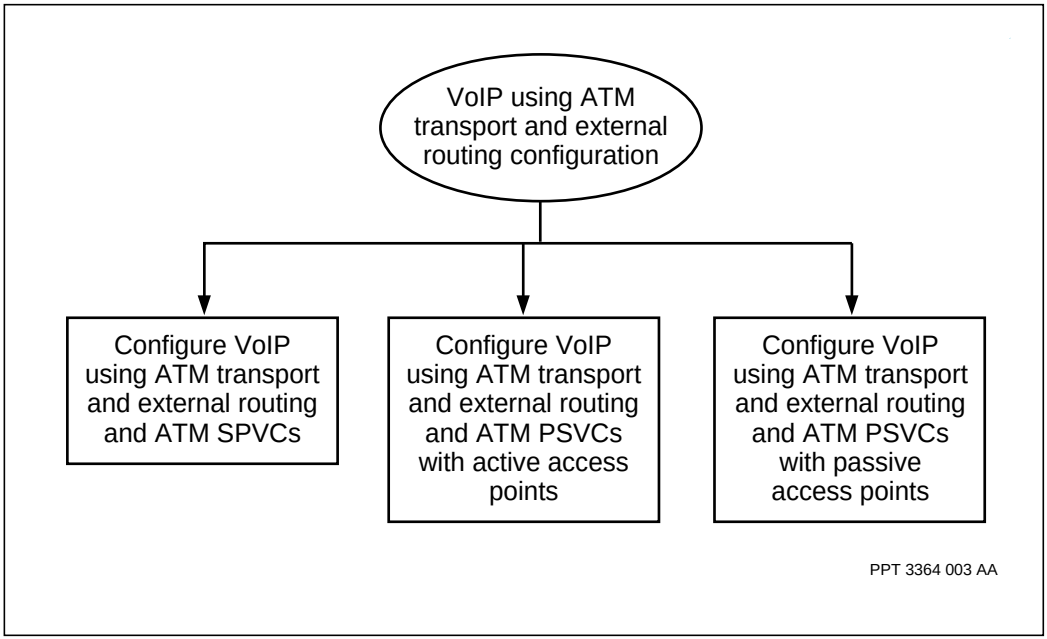
Navigation links

- "VoIP using ATM transport and external routing configuration flow" (page 95)
- "Task navigation" (page 96)

VoIP using ATM transport and external routing configuration flow

This task flow shows you the sequence of procedures you perform to configure VoIP using ATM transport and external routing. To link to any procedure, go to "Task navigation" (page 96).

Figure 21
VoIP using ATM transport and external routing configuration task flow



Task navigation

- “Configuring VoIP using ATM transport and external routing and ATM SPVCs” (page 97)
- “Configuring VoIP using ATM transport and external routing and ATM PSVCs with active access points” (page 100)
- “Configuring VoIP using ATM transport and external routing and ATM PSVCs with passive access points” (page 103)

Configuring VoIP using ATM transport and external routing and ATM SPVCs

Configure VoIP using ATM transport and external routing and ATM SPVCs to link Nsta to the ports on the ATM FPs.

Procedure steps

1. Add an SPVC access point to the AAL5 connection.

   add Nsta/<n> Vgs IpMConn SpvcAp

2. Specify the local ATM address of the access point.

   set Nsta/<n> Vgs IpMConn SpvcAp localAddr <loc_addr>

3. Specify the remote address of the ATM interface to call.

   set Nsta/<n> Vgs IpMConn SpvcAp addrToCall <rem_addr>

4. Specify the remote VPI VCI combination of the ATM interface to call.

   set Nsta/<n> Vgs IpMConn SpvcAp rVpiVci <VPI.VCI>

5. Specify the ATM service category.

   set Nsta/<n> Vgs IpMConn SpvcAp service <cat>

6. Specify the ATM service category.

   set Nsta/<n> Vgs IpMConn SpvcAp service <cat>

7. Specify the peak cell rate.

   set Nsta/<n> Vgs IpMConn SpvcAp pcr <p_cell_rate>

8. Specify the sustained cell rate.

   set Nsta/<n> Vgs IpMConn SpvcAp scr <s_cell_rate>

9. Specify the maximum burst size.

   set Nsta/<n> Vgs IpMConn SpvcAp mbs <max_burst_size>

10. Specify the retry limit.

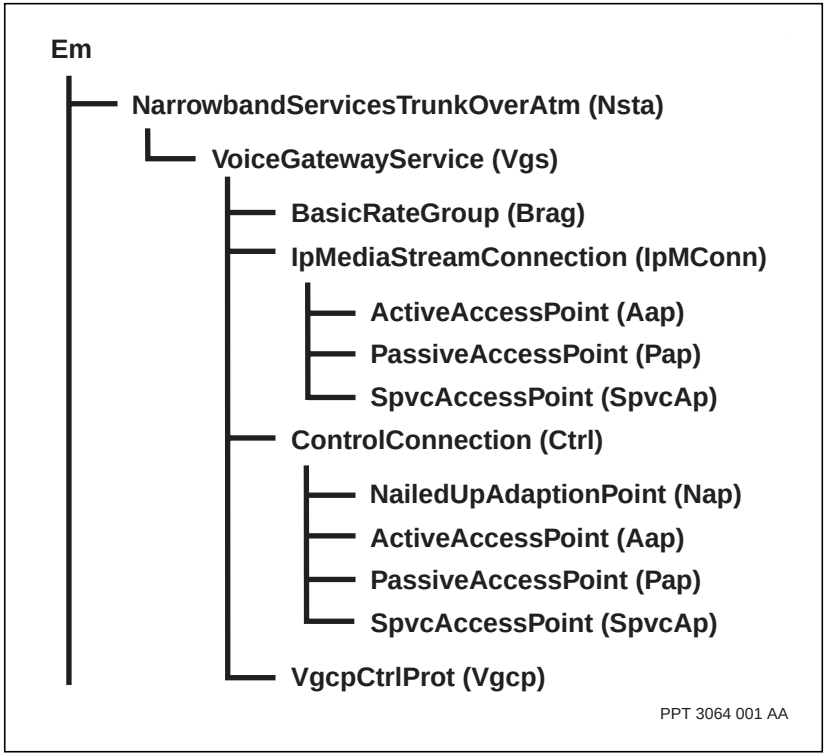
    set Nsta/<n> Vgs IpMConn SpvcAp limit <max_retry>

Variable definitions

Variable	Value
<cat>	*ConstantBitRate* or *rtVariableBitRate* (default).
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries to connect to the far end before setting an alarm and forcing manual intervention. A value of 0 indicates that the application tries indefinitely to connect to the far end.
<n>	The value for the *Nsta* component.
<p_cell_rate>	A number representing the peak cell rate.
<rem_addr>	The address of the remote ATM interface.
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<VPI.VCI>	The value for the VCC of the remote ATM interface.

Procedure job aid

Figure 22
VoIP using ATM transport and external routing and ATM PVCs component hierarchy



Configuring VoIP using ATM transport and external routing and ATM PSVCs with active access points

Configure VoIP using ATM transport and external routing and ATM PSVC with active access points to create and enable ATM PSVCs to accept ATM calls.

Procedure steps

1 Add an active access point to the AAL5 connection.

```
add Nsta/<n> Vgs IpMConn Aap
```

2 Specify the ATM address of the target IP interface and the addresses of any backups to that IP interface. A maximum of three ATM addresses can be specified, with each ATM address representing a target IP interface.

```
set Nsta/<n> Vgs IpMConn Aap addrToCall <rem_addr1>
<rem_addr2> <rem_addr3>
```

3 Specify the local ATM address of the access point.

```
set Nsta/<n> Vgs IpMConn Aap localAddr <loc_addr>
```

4 Optionally specify a filter for incoming provisioned SVC calls.

```
set Nsta/<n> Vgs IpMConn Aap expectedAddr <addr>
```

5 Specify the ATM service category.

```
set Nsta/<n> Vgs IpMConn Aap service <cat>
```

6 Specify the peak cell rate.

```
set Nsta/<n> Vgs IpMConn Aap pcr <p_cell_rate>
```

7 Specify the sustained cell rate.

```
set Nsta/<n> Vgs IpMConn Aap scr <s_cell_rate>
```

8 Specify the maximum burst size.

```
set Nsta/<n> Vgs IpMConn Aap mbs <max_burst_size>
```

9 Specify the retry limit.

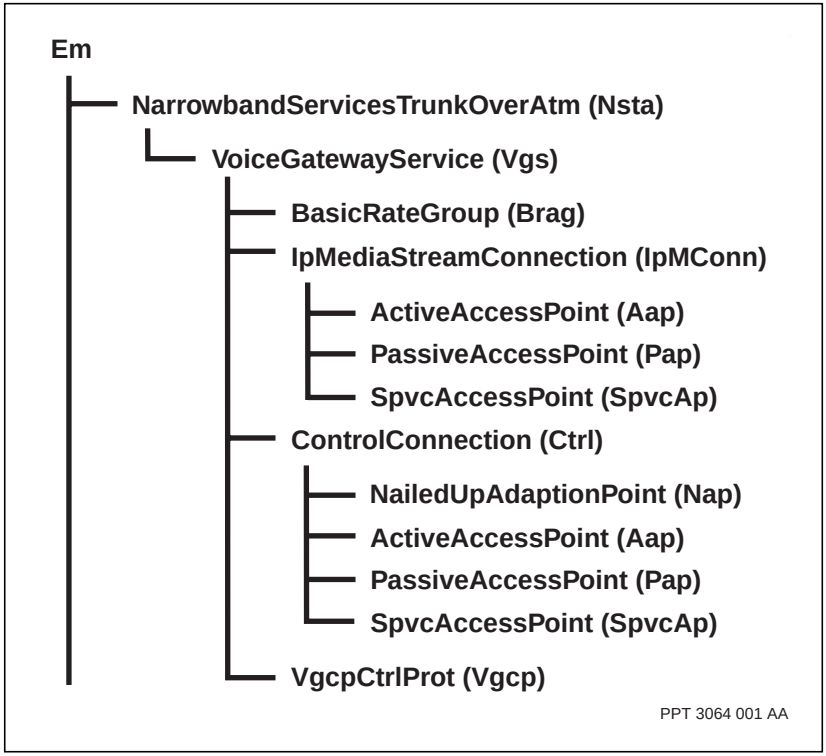
```
set Nsta/<n> Vgs IpMConn Aap limit <max_retry>
```

Variable definitions

Variable	Value
<addr>	The ATM address of the remote access point that is allowed to make calls to this local access point.
<cat>	*ConstantBitRate* or *rtVariableBitRate* (default).
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries to connect to the far end before setting an alarm and forcing manual intervention. A value of 0 indicates that the application tries indefinitely to connect to the far end.
<n>	The value for the *Nsta* component.
<rem_addr1> <rem_addr2> <rem_addr3>	A list of one to three ATM addresses. Each address represents a target IP interface. At least one ATM address must be supplied. Each address is separated by a space.
<p_cell_rate>	A number representing the peak cell rate.
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.

Procedure job aid

Figure 23
VoIP using ATM transport and external routing and ATM PSVCs and active access points component hierarchy



Configuring VoIP using ATM transport and external routing and ATM PSVCs with passive access points

Configure VoIP using ATM transport and external routing and ATM PSVCs with passive access points to allow the IpMConn component to accept ATM calls only.

Procedure steps

1. Add a passive access point to the AAL5 connection.

   ```
   add Nsta/<n> Vgs IpMConn Pap
   ```

2. Specify the local ATM address of the access point.

   ```
   set Nsta/<n> Vgs IpMConn Pap localAddr <loc_addr>
   ```

3. Optionally specify a filter for incoming provisioned SVC calls.

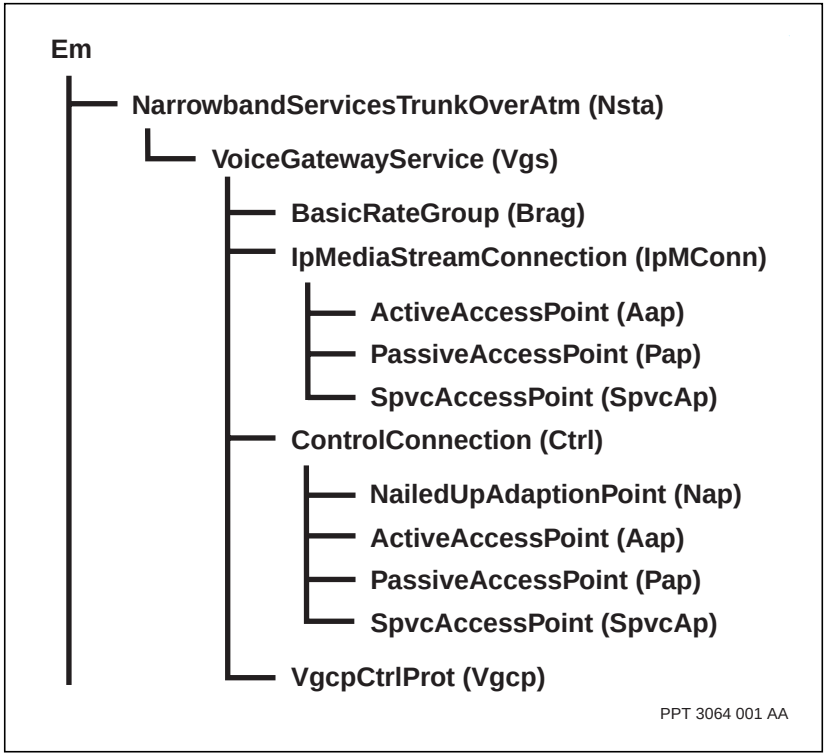
   ```
   set Nsta/<n> Vgs IpMConn Pap expectedAddr <addr>
   ```

Variable definitions

Variable	Value
<addr>	The ATM address of the remote access point that is allowed to make calls to this local access point.
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<n>	The value for the *Nsta* component.

Procedure job aid

Figure 24
VoIP using ATM transport and external routing and ATM PSVCs and passive access points component hierarchy



Chapter 9
VoIP using ATM transport and VR configuration

Configure switched PVG using IP with VR to send TDM traffic out to the IP network through IP service cards.

Navigation links

Prerequisites to VoIP using ATM transport and VR configuration

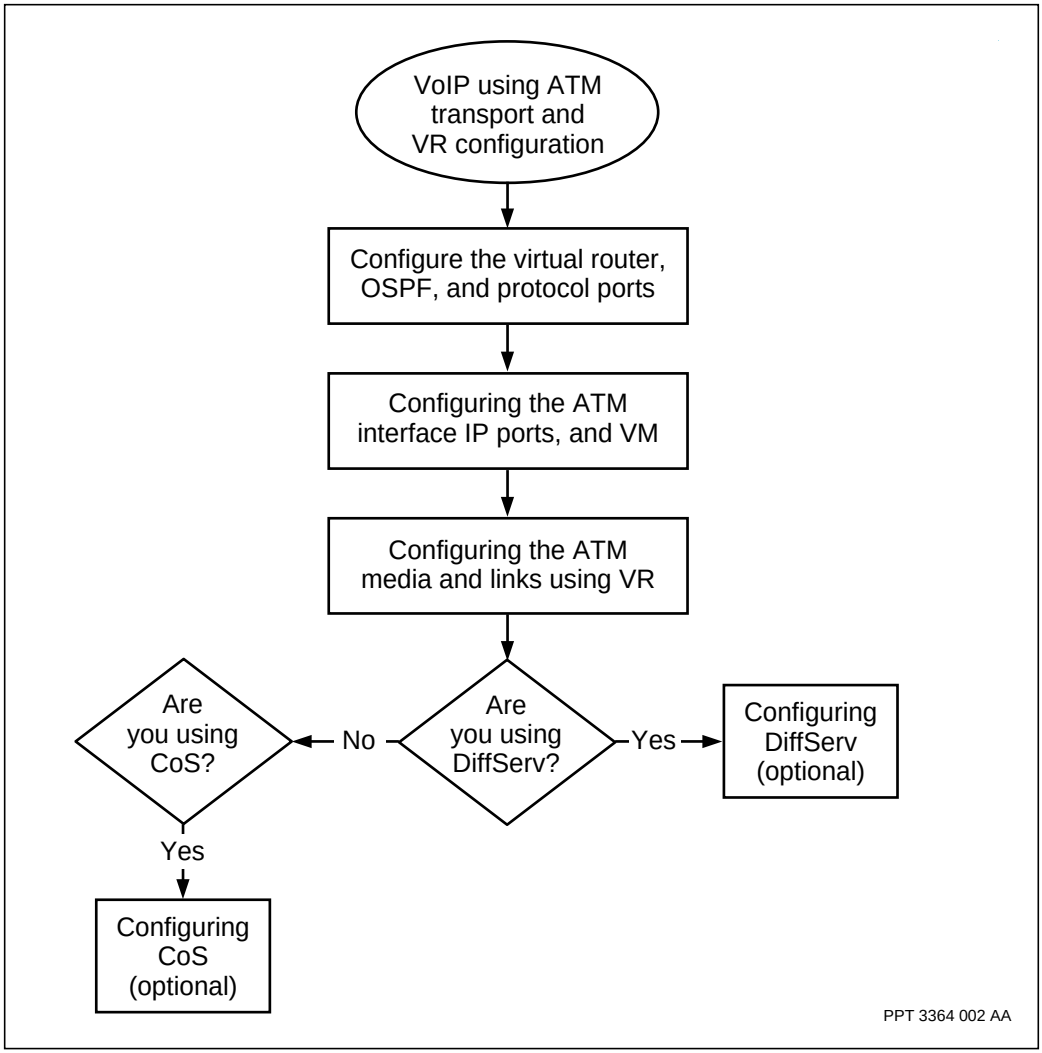
- VoIP using ATM transport and VR configuration uses virtual router access point (VR AP) functionality that is only available on Passport 15000 and 20000 PVG.
- Set the feature list of the LPT for the voice services card to *vgsIp ip atmMpe ipCos ipDiffServ* for the LPT (). Feature is only required when differentiated services (DiffServ) are used for traffic management capabilities*lpt/vgsIpipDiffServ*. This feature list can substitute feature *vgsIpG729* for feature *vgsIp*.
- Use the PQC12-based ATM IP FP card as the IP service card.

- Set the feature list of the logical processor type (LPT) for the IP service card (*lpt/ipservice*) to *ip atmMpe ipCos ipDiffServ*. Feature *ipDiffServ* is only required when differentiated services (DiffServ) are used for traffic management capabilities.

VoIP using ATM transport and VR configuration flow

This task flow shows you the sequence of procedures you perform to configure VoIP using ATM transport and VR. To link to any procedure, go to “Task navigation” (page 107).

Figure 25
VoIP using ATM transport and VR configuration task flow



Task navigation

- "Configuring the virtual router, OSPF, and protocol ports" (page 109)
- "Configuring the ATM interface, IP ports, and VM" (page 112)

Configuring the virtual router, OSPF, and protocol ports

Configure the virtual router (VR), open shortest path first (OSPF), and protocol ports for the PVG to select the best routes to destination addresses.

Prerequisites

- PVG can have two VR instances on one of the voice services processor-type (VSP2/VSP3/VSP3-o) FP cards when ATM IP FP cards are the IP service cards on the PVG shelf. The two VR instances can be used for separate connectivity of media and control traffic. When PVG has only one VR instance on one VSP2/VSP3/VSP3-o FP card, the virtual router connects both media and control traffic.

Procedure steps

1. Add a *vr* component for the VR on the PVG.

   ```
   add Vr/<vr_name>
   ```

2. Add the attribute *virtualRouterProcessor (vrp)* to the *Vr* component.

   ```
   add Vr/<name> virtualRouterProcessor
   ```

3. Set the attribute *virtualRouterProcessor (vrp)* of *Vr* component to the *LogicalProcessor (Lp)/0* instance.

   ```
   set Vr/<vr_name> virtualRouterProcessor Lp/0
   ```

4. Add a subcomponent *customizationSpecification (CustSpec)* to the *Vr* component.

   ```
   add Vr/<vr_name> CustSpec
   ```

5. Set the attribute *customizationType (custType)* of the subcomponent *customizationSpecification (CustSpec)* to a value *pvg*.

   ```
   set Vr/<vr_name> CustSpec custType pvg
   ```

6. Set the *vpnMode* attribute of the *vr* component to *carrier*.

   ```
   set Vr/<vr_name> vpnMode carrier
   ```

7. Add an *Ip* subcomponent under the *vr* component.

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

8. Add an *Ospf* subcomponent under the *Vr Ip* component.

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

9 Set the control processor switchover (CPSO) support to hot.

```
set shelf cpEquipmentProtection hot
```

10 Enable hot CPSO sparing for the provisioned instance of the *Ospf* subcomponent under the *Vr Ip* component.

```
set Vr/<vr_name> Ip Ospf spareInstance enable
```

11 Add an *AreaEntry* component.

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

12 Configure two protocol ports under the *Vr* component

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

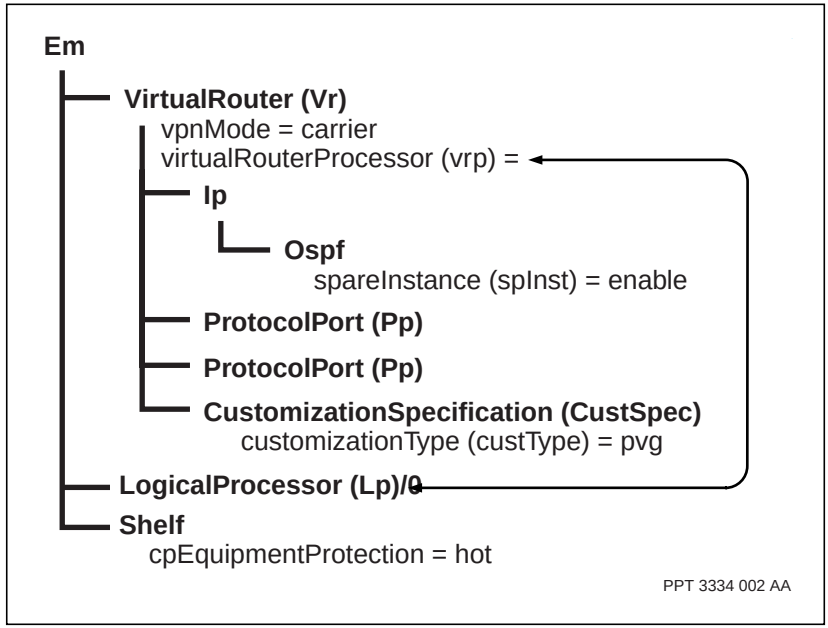
```
add Vr/<vr_name> Pp/<pp_id>
```

Variable definitions

Variable	Value
<area_value>	The value of the area entry component.
<id_value>	The IP address that for the *routerId* attribute. There is no default value.
<pp_id>	The identifier assigned to this protocol port.
<vr_lp>	The instance value of the logical processor that is linked to the shelf card on which the virtual router resides. Do not set the vrp to the Lp associated with the vpnExtender card.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 26
Virtual router, OSPF, and protocol ports component hierarchy



Configuring the ATM interface, IP ports, and VM

Configure the ATM interface to add the ATM service categories. Configure the IP ports to set the port protocol as IP and apply the IP attributes specific to the ports. Configure the virtual media (VM) to provision an IP address local to the VR.

Procedure steps

1. Add an interface application for the IP port of the IP service card.

   ```
   add AtmIf/<atmif_id>
   ```

2. Add a *NailedUpEndPoint* component to the virtual channel connection (VCC) of the interface application for the IP port of the IP service card.

   ```
   add AtmIf/<atmif_id> Vcc/<vcc_id> nep
   ```

3. Configure two ATM VCCs.

   ```
   set AtmIf/<atmif_id> Vcc/<vcc_id> Vcd
   TrafficManagement txTdt/6 txTdp
   <traffic_parameters_vector> atmServiceCategory
   rtVariableBitRate
   ```

   ```
   set AtmIf/<atmif_id> Vcc/<vcc_id> Vcd
   TrafficManagement txTdt/6 txTdp
   <traffic_parameters_vector> atmServiceCategory
   nrtVariableBitRate
   ```

4. Add an IpPort component under each of the protocol ports defined under the virtual router.

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

5. Define the IP addresses of each protocol port by adding an IpLogicalInterface component under each of the IpPort components.

   ```
   add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
   <ip_address>
   ```

6. Define a network mask for each of the protocol ports.

   ```
   set Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
   <ip_address> netMask <mask>
   ```

7. Add an interface for open shortest path first (OSPF) for each of the protocol ports.

```
add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
<ip_address> OspfIf
```

8 If provisioning for the local subnet, set the interface as passive for the *OspfIf* components that are associated with the VM.

```
set Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
<ip_address> OspfIf ifType passive
```

9 Add the virtual media (VM).

```
add Vm/<vm_id>
```

10 Set the mode of the VM interface.

```
set Vm/<vm_id> If/<if_id> mode alwaysUpInterface
```

11 Link the VR protocol port to the VM.

```
set Vr/<vr_name> Pp/<pp_id> linkToMedia Vm/<vm_id> If/
<if_id>
```

Variable definitions

Variable	Value
<if_id>	The instance of the virtual interface.
<ip_address>	The address assigned to the logical interface.
<lp_id>	The instance of the logical processor.
<mask>	The network mask to be used with the IP address. For this procedure use 255.255.255.255 as the mask.
<pp_id>	The identifier assigned to the protocol port.
<traffic_parameters_vector>	A vector of five traffic parameters. Refer to 241-5701-060 *Passport 7400, 15000, 20000 Components.*
<vcc_id>	The instance of the virtual channel connection (VCC).
<vm_id>	The instance of the virtual media.
<vr_name>	The name assigned to the virtual router

Procedure job aid

Figure 27
Configuring the ATM interface, IP ports, and VM component hierarchy — Part 1

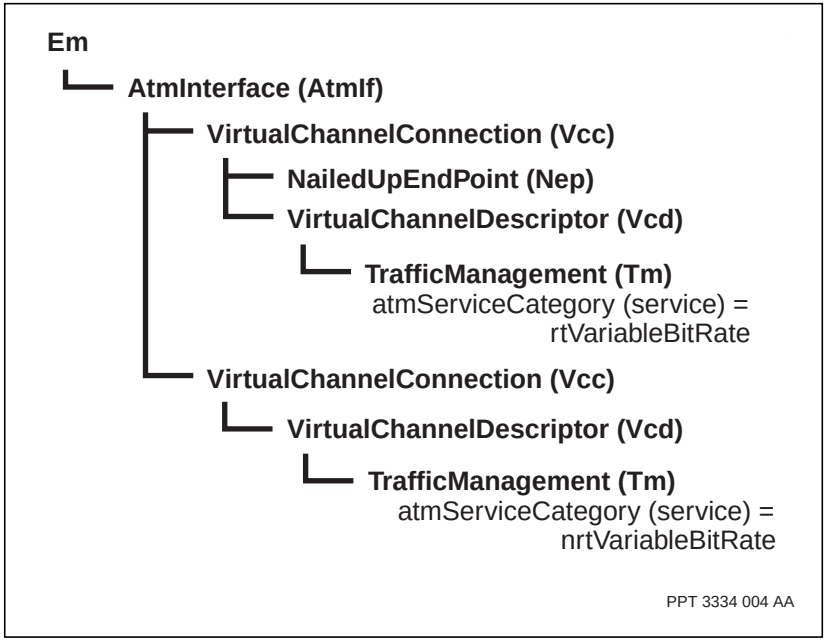
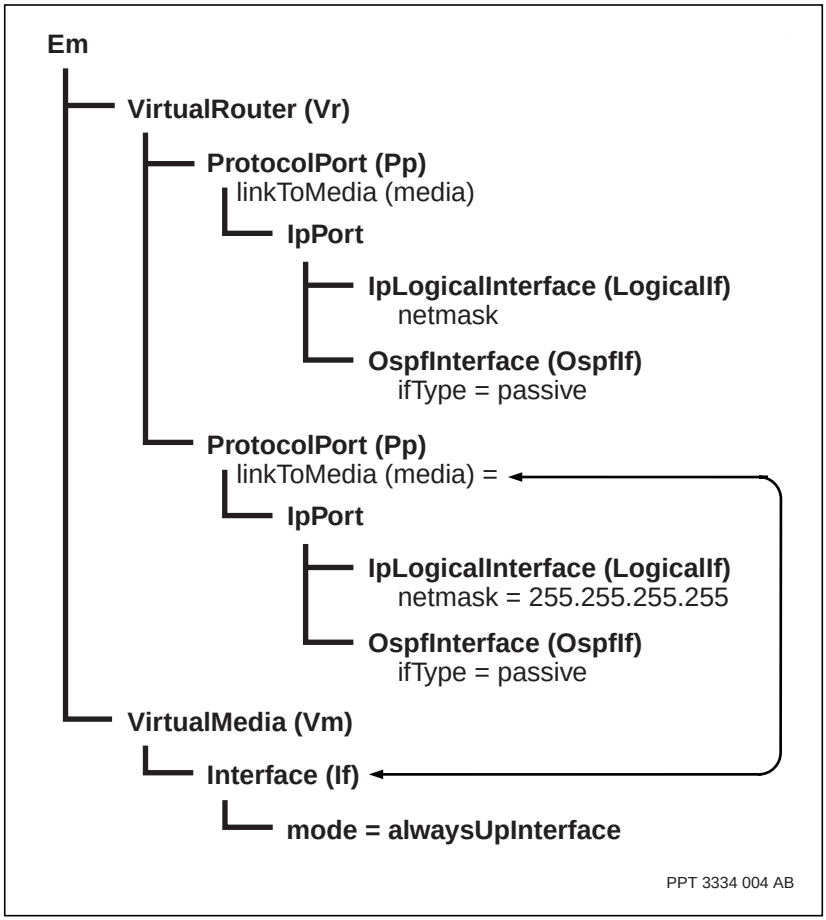


Figure 28
Configuring the ATM interface, IP ports, and VM component hierarchy — Part 2



Configuring the ATM media and links using VR

Configure the ATM media and link it to a protocol port under the VR using a virtual router access point (VR AP) for media and signaling traffic connections.

Procedure steps

1 Add two *atmMpe* components for ATM multiprotocol encapsulation (MPE) of virtual channel connections (VCC).

```
add AtmMpe/<atmmpe_id>

add AtmMpe/<atmmpe_id>
```

2 Add the *Ac* subcomponents under the *atmMpe* components.

```
add AtmMpe/<atmmpe_id> Ac/<ac_id>

add AtmMpe/<atmmpe_id> Ac/<ac_id>
```

3 Set *atmMpe ac* components to the ATM interfaces.

```
set AtmMpe/<atmmpe_id> Ac/<ac_id> AtmCon AtmIf/
<atmif_id> Vcc/<vcc_id> Nep

set AtmMpe/<atmmpe_id> Ac/<ac_id> AtmCon AtmIf/
<atmif_id> Vcc/<vcc_id> Nep
```

4 Link the VR protocol ports to each of the AtmMpe components.

```
set Vr/<vr_name> Pp/<pp_id> linkToMedia AtmMpe/
<atm_id>

set Vr/<vr_name> Pp/<pp_id> linkToMedia AtmMpe/
<atmMpe_id>
```

5 Add the VoIP media connection.

```
add Nsta/<nsta_id> Vgs ipMConn
```

6 Set the IP address of the VoIP media connection.

```
set Nsta/<nsta_id> Vgs ipMConn ipAddr <ip_address>
```

7 Add a VR AP to the VoIP media connection.

```
add Nsta/<nsta_id> Vgs ipMConn VrAp
```

8 Link the VR AP of the VoIP media connection to the VR.

```
set Nsta/<nsta_id> Vgs ipMConn VrAp subnetAccessName
Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/<ip_address>
```

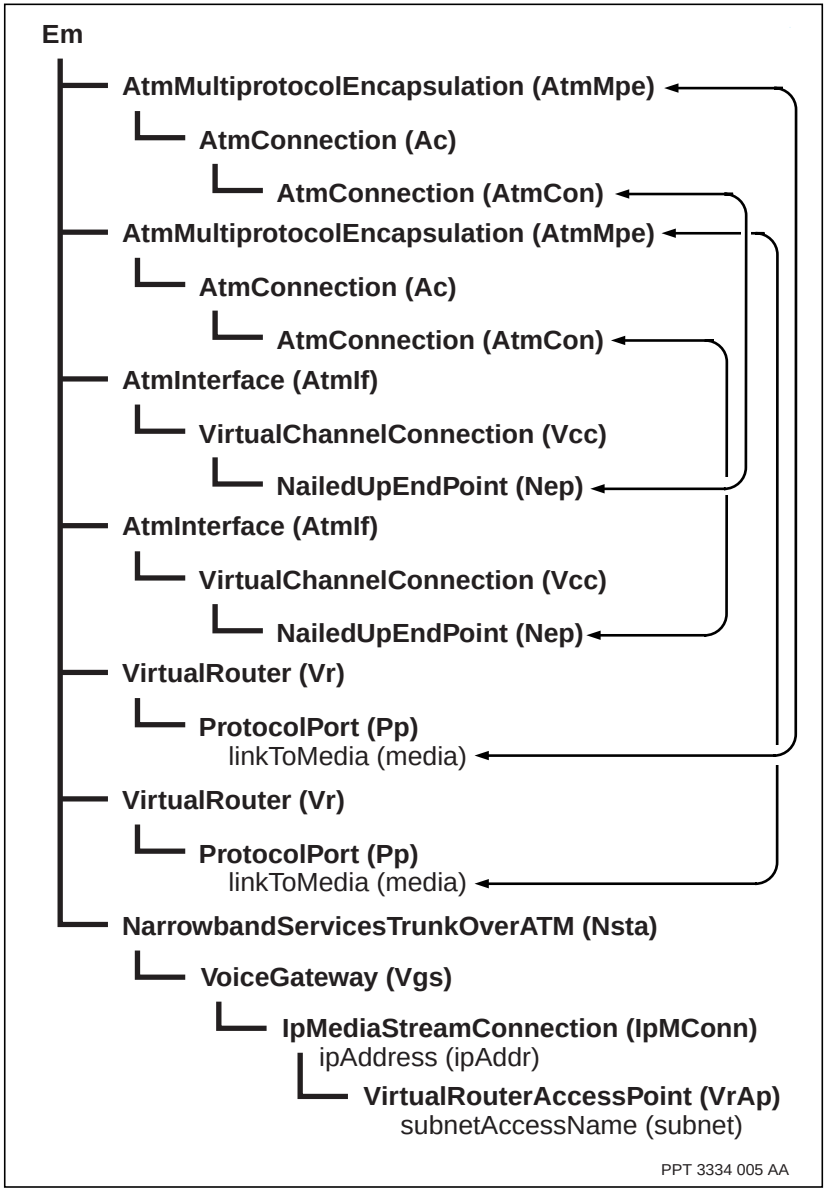
Note: Once provisioning is activated, the list of Local Hosts and their status can be displayed by issuing the following operational command:
`Display Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/ <ip_address> LocalHost/*`

Variable definitions

Variable	Value
<ac_id>	The instance number of the ATM connection on the ATM MPE interface.
<atmmpe_id>	The instance number of the ATM MPE interface.
<atmif_id>	The instance number of the ATM interface.
<ip_address>	The address assigned to the logical interface.
<nsta_id>	The instance of the *Nsta* component.
<pp_id>	The identifier assigned to this protocol port.
<vcc_id>	The instance value of the VCC.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 29
Configuring the ATM media and links using VR AP component hierarchy



Configuring DiffServ

Configure differentiated services (DiffServ) to use traffic management capabilities of the IP service cards.

Prerequisites

- An ATM IP FP card is required as the Ip service card to configure DiffServ. For information on ATM IP FPs, refer to 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.
- To support DiffServ, the feature list must include the *ipCos* and *ipDiffServ* features.
- DiffServ is not supported on the 4pGe FP.

Procedure steps

1 If the ipDiffServ feature is used in place of the ipCos feature, provision the differentiated services (DiffServ).

```
add -s Vr/<vr_name> Ip DiffServ/atm
```

2 If the ipDiffServ feature is used, set the class of service (CoS) for the IP traffic.

```
set Vr/<vr_name> Pp/<pp_id> IpPort ipCos 3
```

3 If the ipDiffServ feature is used, set the value of the *ipdscp* subcomponent for the VR.

```
set Vr/<vr_name> Pp/<pp_id> IpPort ipDscp ef
```

4 If the ipDiffServ feature is used, set the value of the *ipdscp* subcomponents for the *atmMpe ac* components.

```
set atmMpe/<atmmpe_id> AtmConnection/<ac_id> ipDscp ef
```

```
set atmMpe/<atmmpe_id> AtmConnection/<ac_id> ipDscp
af11
```

Note: The *atmMpe* component should have a minimum of two *AtmConnection* components.

5 If the ipDiffServ feature is used, set the CoS value for the *atmMpe ac* components.

```
set atmMpe/<atmmpe_id> AtmConnection/<ac_id> ipCos
<ip_cos>
```

```
set atmMpe/<atmmpe_id> AtmConnection/<ac_id> ipCos
<ip_cos>
```

6 If the ipDiffServ feature is used, link the *ds* subcomponent of the VR to the DiffServ of the VR.

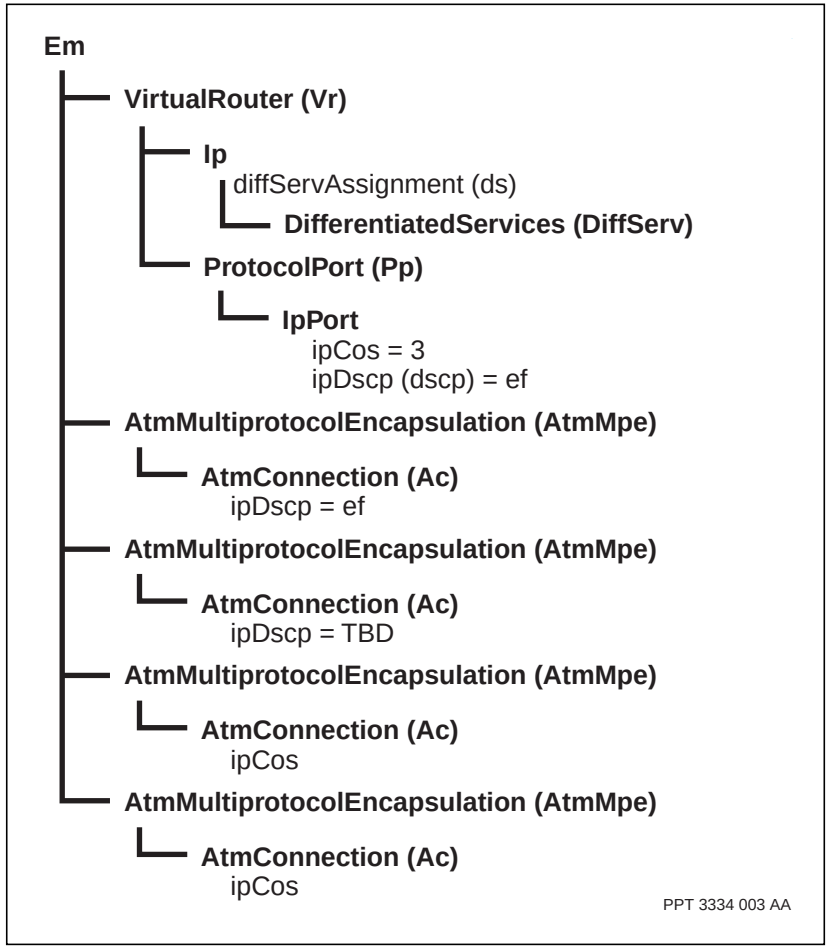
```
set Vr/<vr_name> Ip diffServAssignment Vr/<vr_name> Ip
DiffServ/atm
```

Variable definitions

Variable	Value
<ac_id>	The instance number of the ATM connection.
<atmmpe_id>	The instance number of the ATM MPE interface.
<ip_cos>	The value of the IP connection class assigned to the *AtmMpe AtmConnection ipCos* attribute.
<pp_id>	The identifier assigned to this protocol port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 30
Configuring DiffServ component hierarchy



Configuring CoS

Configure class of service (CoS) to use traffic management capabilities of the IP service cards.

Prerequisites

- An ATM IP FP card (4-port OC-3 ATM IP FP cards and 4-port OC-12 ATM IP FP cards) or 4pGe FP is required as the Ip service card to configure CoS.
- To support CoS, the feature list requires the *ipCos* feature.

Procedure steps

1 If the ipCos feature is used, add assign instances to the VR.

```
add -s Vr/<vr_name> Ip CosPolicyGroup/ipcos Policy/
<cos_id> assignedCos <assign_id>
```

2 If the ipCos feature is used, add type of service (TOS) values to the VR.

```
add -s Vr/<vr_name> Ip CosPolicyGroup/ipcos Policy/
<cos_id> TosMap tos <tos_value>
```

3 If the ipCos feature is used, link the *cosPolicyAssignment* subcomponent to the *CosPolicyGroup* subcomponent.

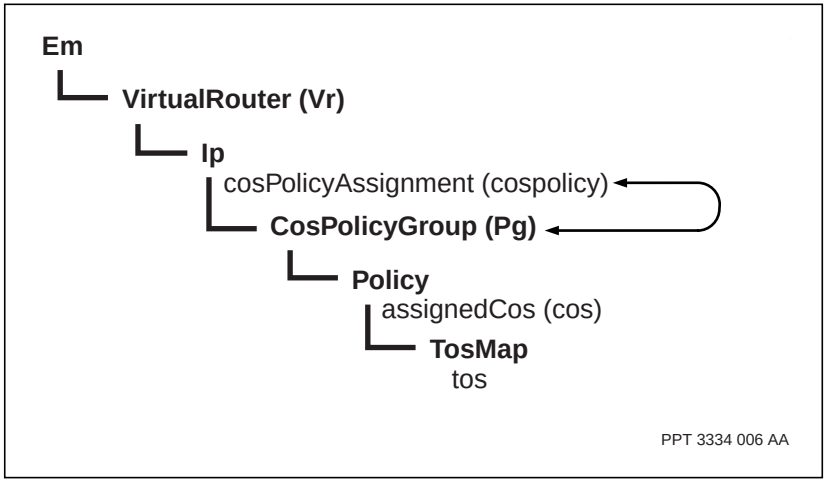
```
set Vr/<vr_name> Ip cosPolicyAssignment Vr/<vr_name>
Ip CosPolicyGroup/ipcos
```

Variable definitions

Variable	Value
<assign_id>	The instance of the subcomponent *assign*
<cos_id>	The instance number of the subcomponent *po*
<tos_value>	The value of the attribute *tos*
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 31
Configuring CoS component hierarchy



Chapter 10
Switched PVG using IP over Ethernet transport configuration

Configure switched PVG using IP over Ethernet transport configuration to send voice traffic over an IP network using Ethernet.

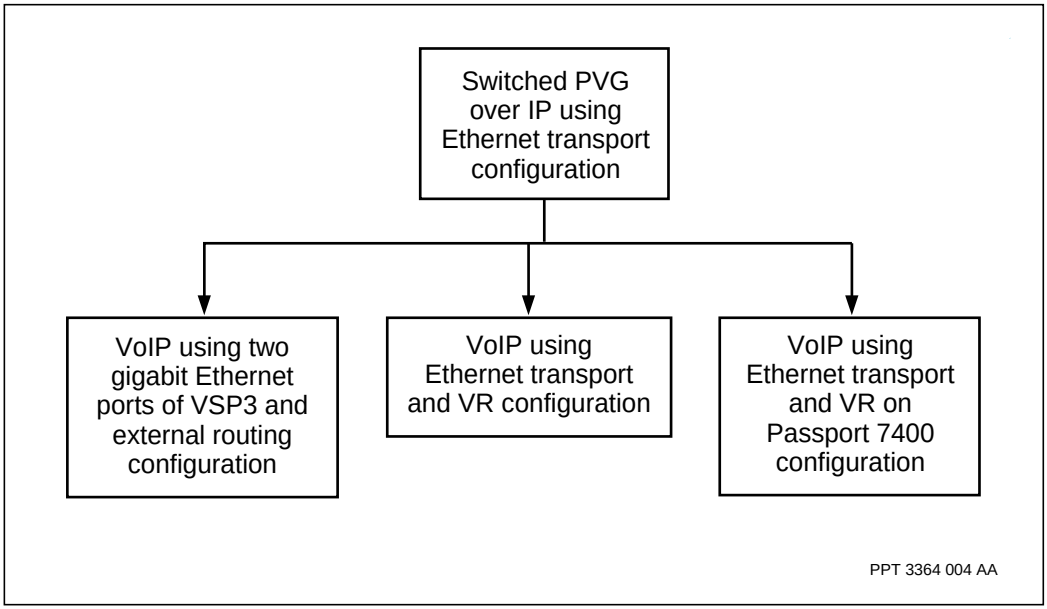
Navigation links

- "Switched PVG using IP over Ethernet transport configuration flow" (page 125)
- "Task navigation" (page 126)

Switched PVG using IP over Ethernet transport configuration flow

This task flow shows you the sequence of procedures you perform to configure switched PVG using IP over Ethernet transport. To link to any procedure, go to "Task navigation" (page 126).

Figure 32
Switched PVG using IP over Ethernet transport configuration task flow



Task navigation

- "VoIP using two gigabit Ethernet ports of VSP3 and external routing configuration" (page 127)
- "VoIP using Ethernet transport and VR configuration" (page 131)
- "VoIP using Ethernet transport and VR on a Passport 7400 configuration" (page 143)

Chapter 11
VoIP using two gigabit Ethernet ports of VSP3 and external routing configuration

Configure VoIP using two gigabit Ethernet ports of VSP3 and external routing to send TDM traffic out through the gigabit Ethernet ports of the VSP3 FP.

Prerequisites

- Set the feature list to *vgsIpGigE* (or *vgsIpG729GigE*) for the VSP LPT.
- See “Supporting information for configuring VoIP using two gigabit Ethernet ports of VSP3 and external routing” (page 129) for additional information about this procedure.

Procedure steps

1 Add VSP3 gigabit Ethernet port 0 to the LP of the *Vsp* component.

```
add Lp/<x> Vsp GigE/0
```

2 Add VSP3 gigabit Ethernet port 1 to the LP of the *Vsp* component.

```
add Lp/<x> Vsp GigE/1
```

3 Add an IP interface instance to the *Vgs* component.

```
add Nsta/<y> Vgs ipInterface/0
```

4 Set the IP address of the default router in the local subnet for the VSP3 gigabit Ethernet ports.

```
set Nsta/<y> Vgs ipInterface/0 defaultRouter
<defRtr_ip_address>
```

5 Set the IP address of the subnet mask for the network connected to the VSP3 gigabit Ethernet ports.

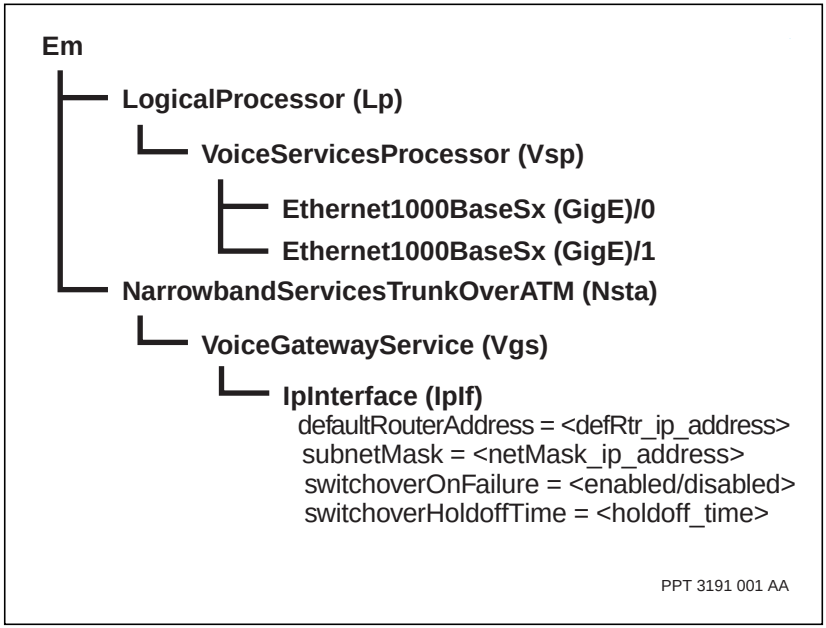
```
set Nsta/<y> Vgs ipInterface/0 subnetMask
<netMask_ip_address>
```

Variable definitions

Variable	Value
<defRtr_ip_address>	The IP address of the default router.
<netMask_ip_address>	The IP address of the subnet mask.
<x>	The instance number of the logical processor.
<y>	The instance of the application for voice services on the VSP3 card.

Procedure job aid

Figure 33
VoIP using two gigabit Ethernet ports of VSP3 and external routing component hierarchy



Supporting information for configuring VoIP using two gigabit Ethernet ports of VSP3 and external routing

VoIP using two gigabit Ethernet ports of VSP3 and external routing sends TDM traffic out as IP through VSP3 gigabit Ethernet ports of the VSP3 FP.

A router is required for connectivity to other subnets. A router that also supports bridging, is the recommended router for a direct connection to a VSP3 gigabit Ethernet port. Virtual router redundancy protocol (VRRP) or similar protocol is required for a redundant default gateway (router). The router/bridge that connects to the VSP3 gigabit Ethernet ports, is required to support auto-negotiation. All spare gigabit Ethernet ports on the same *Lp* component for VSP3 (both gigabit Ethernet ports on a VSP3 FP and/or both gigabit Ethernet ports on a spare VSP3 FP) need to be connected to the same subnet. A direct point-to-point router connection (no bridging) to the VSP3 gigabit Ethernet port, can be made if the VSP3 FP is not spared and only one of the VSP3 gigabit Ethernet ports is used.

Note: Subcomponents *Nap*, *SpvcAp*, *Aap*, and *Pap* are not to be added to the *ipMediaStreamConnection* (*ipMConn*) or *controlConn*ection (*Ctrl*) components.

Chapter 12
VoIP using Ethernet transport and VR configuration

Configure VoIP using Ethernet transport and VR to send TDM traffic out to the IP network through an Ethernet FP card as the IP service card.

Navigation links

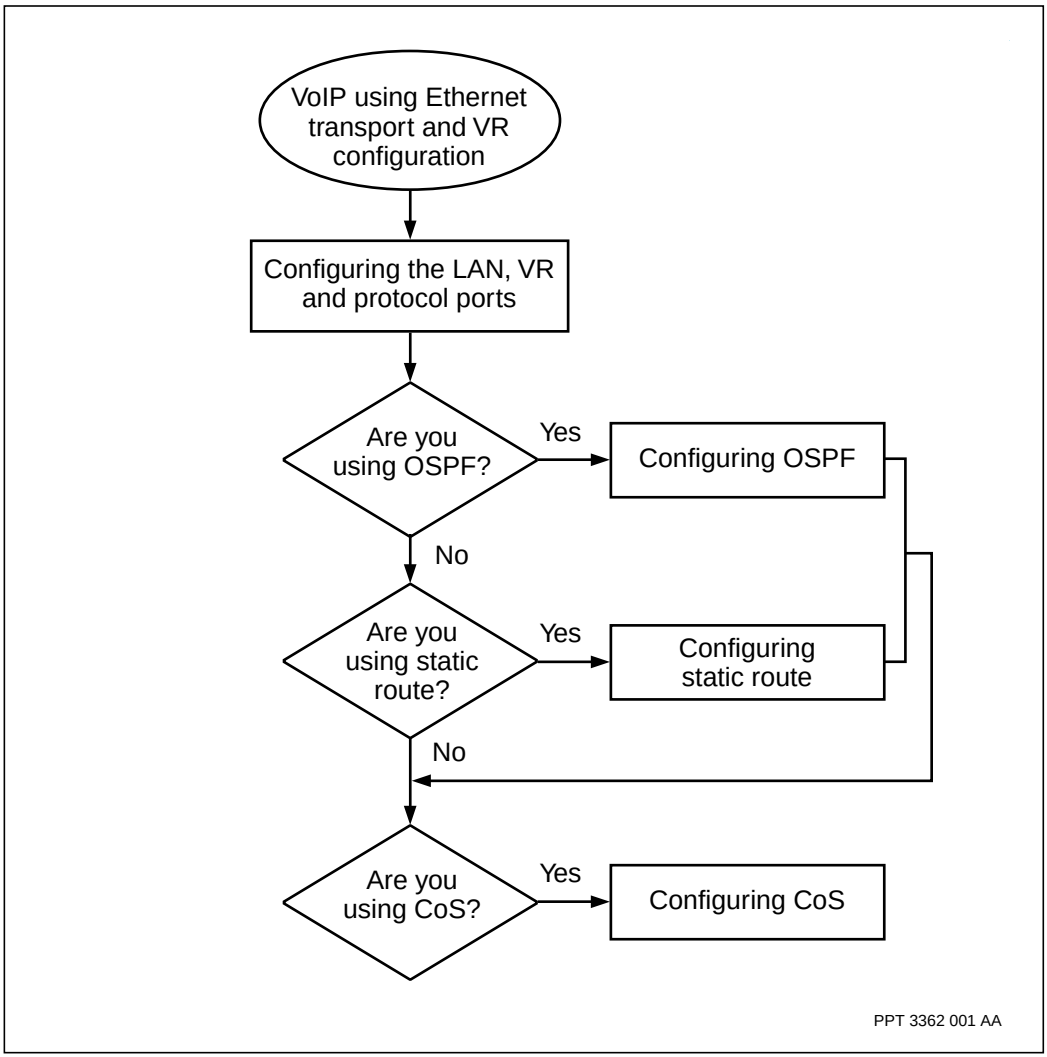
Prerequisites to VoIP using Ethernet transport and VR configuration

- Use the voice services processor 2 (VSP2) or VSP3 FP card as the voice services card.
- Set the feature list of the LPT for the voice services card to *vgsIp ip ipCos* for the LPT (*lpt/vgsIp*). This feature list can substitute feature *vgsIpG729* for feature *vgsIp*.
- Use the 4-port gigabit Ethernet (4pGe) FP card as the IP service card.
- Set the feature list of the LPT for the IP service card (*lpt/lan*) to *ip*.

VoIP using Ethernet transport and VR configuration flow

This task flow shows you the sequence of procedures you perform to configure VoIP using Ethernet transport and VR configuration. To link to any procedure, go to the list that follows the task flow.

Figure 34
VoIP using Ethernet transport and VR configuration task flow



Task navigation

- “Configuring the LAN, VR, and protocol ports” (page 134)
- “Configuring OSPF” (page 137)
- “Configuring static route” (page 139)
- “Configuring CoS” (page 141)

Configuring the LAN, VR, and protocol ports

Configure the local area network (LAN), VR, and protocol ports for the PVG to select the best routes to destination addresses.

Procedure steps

1 Set the card type as a 4pGe FP card.

```
set shelf card/<card_id> cardType 4pGe
```

2 Add the logical processor (LP).

```
add Lp/<lp_id>
```

3 Link the LP to the card type for the 4pGe FP card.

```
set Lp/<lp_id> mainCard shelf card/<card_id>
```

4 Add the logical processor type (LPT).

```
add sw Lpt/<lpt_id>
```

5 Link the LP to the LPT.

```
set Lp/<lp_id> logicalProcessorType sw Lpt/<lpt_id>
```

6 Add gigabit Ethernet (GigE) ports to the logical processor (*Lp*) (note: the maximum is four GigE ports for each logical processor).

```
add Lp/<lp_id> Ethernet/<ethernet_id>
```

7 Set the optical module type for the GigE ports.

```
set Lp/<lp_id> Ethernet/<ethernet_id> OpticalModule
type <optical_module_type>
```

8 Add the LAN applications (note: the *Framer* subcomponent is automatically created).

```
add La/<lan_id>
```

9 Link the LAN applications to the GigE ports.

```
set La/<lan_id> Framer interfaceName Lp/<lp_id>
Ethernet/<ethernet_id>
```

10 Add the virtual routers with an *Ip* subcomponent on the PVG.

```
add -s Vr/<vr_name> Ip
```

Note: Only one VR/IP instance can be made for a single 4pGe FP card on a PVG.

11 Add the protocol ports.

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

12 Link the protocol ports to the LAN applications.

```
set Vr/<vr_name> Pp/<pp_id> linkToMedia La/<lan_id>
```

13 Add the IP ports and the IP addresses.

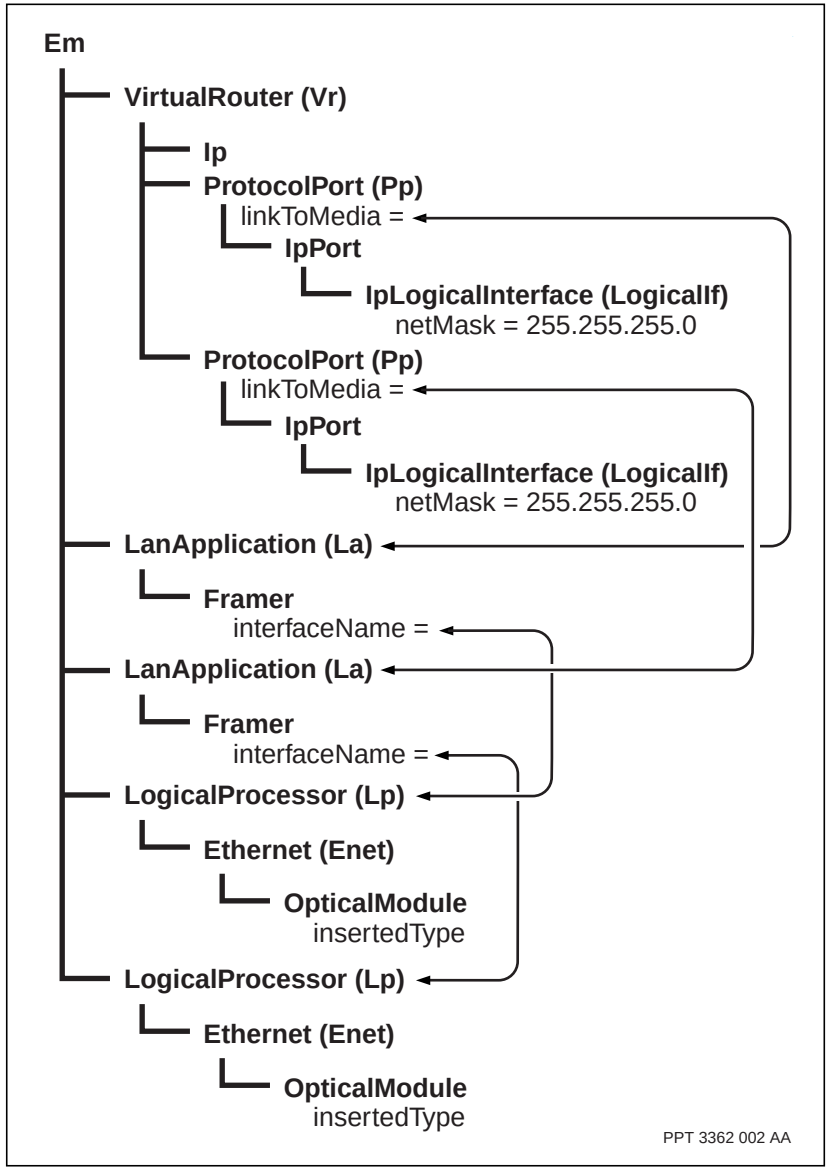
```
add -s Vr/<vr_name> Pp/<pp_id> IpP lo/<ip_address>
netMask <ip_address>
```

Variable definitions

Variable	Value
<ethernet_id>	The identifier assigned to this gigabit Ethernet (GigE) port.
<ip_address>	The assigned IP address.
<lan_id>	The identifier assigned to the LAN application.
<lp_id>	The identifier assigned to the LP.
<lpt_id>	The identifier assigned to this LPT.
<optical_module_type3>	The optical module type (LX or SX).
<pp_id>	The identifier assigned to this protocol port.
<vr_name>	The name assigned to this VR.

Procedure job aid

Figure 35
LAN, VR, and protocol ports component hierarchy



Configuring OSPF

Configure the VR to use open shortest path first (OSPF) to select the best routes to destination addresses.

Procedure steps

1. Add the *Ospf* component to the IP protocol on the virtual router.

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

2. Add the *OspfIf* component to the IP ports on the virtual router.

   ```
   add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
   <ip_address> OspfIf
   ```

3. Set the *ifType* subcomponent of the *OspfIf* component to a *passive* value.

   ```
   set Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
   <ip_address> OspfIf ifType passive
   ```

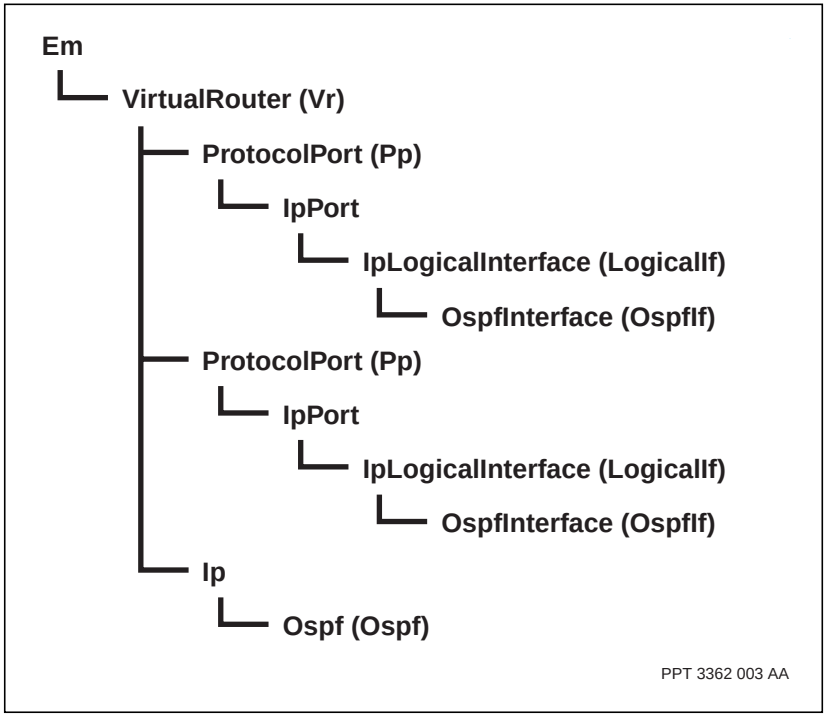
   Note: Use a *passive* value for the *ifType* subcomponent of the *OspfIf* component when linking the protocol port to virtual media (VM).

Variable definitions

Variable	Value
<ip_address>	The assigned IP address.
<pp_id>	The identifier assigned to this protocol port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 36
OSPF component hierarchy



Configuring static route

Configure static route to set the VR to use a static route as the destination address.

Procedure steps

1. Add a *Static* component as a *Ip* subcomponent of the component on the virtual router.

   ```
   add Vr/<vr_name> Pp/<pp_id> Ip Static
   ```

2. Add a static route to the route table.

   ```
   add Vr/<vr_name> Pp/<pp_id> Ip Static RouteEntry/
   <dest_address>, <dest_netmask>, <type_of_service>
   ```

3. Add a *NextHop* component for each defined static route.

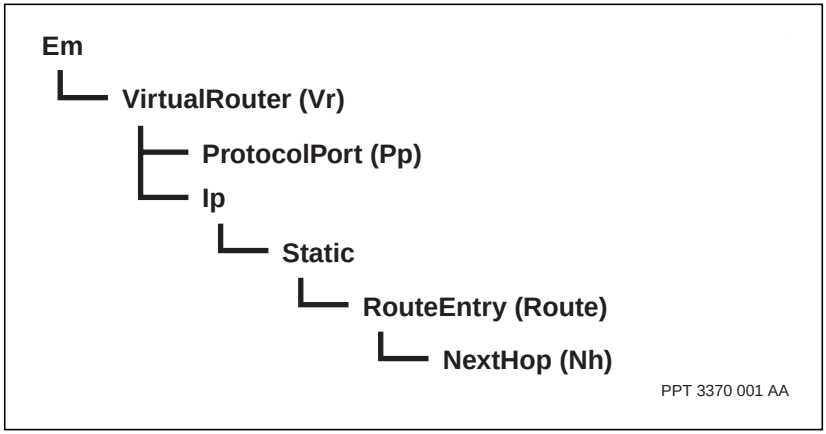
   ```
   add Vr/<vr_name> Pp/<pp_id> Ip Static RouteEntry/
   <dest_address>, <dest_netmask>, <type_of_service>,
   NextHop/<ip_address>
   ```

Variable definitions

Variable	Value
<dest_address>	The IP address of the remote node. It can refer to a specific node or to a network.
<dest_netmask>	The subnetwork mask of the remote node used with the IP address.
<ip_address>	The assigned IP address. The maximum number of *NextHop* components on a static route is three.
<pp_id>	The identifier assigned to this protocol port.
<type_of_service>	The type of service. Only the value of 0 is supported.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 37
Static route component hierarchy



Configuring CoS

Configure class of service (CoS) to use traffic management capabilities of the IP service cards.

Prerequisites

- A 4pGe FP card is required as the IP service card to configure CoS.

Procedure steps

1 If the ipCos feature is used, add assign instances to the VR.

```
add -s Vr/<vr_name> Ip CosPolicyGroup/ipcos Policy/
<cos_id> assignedCos <assign_id>
```

2 If the ipCos feature is used, add type of service (TOS) values to the VR.

```
add -s Vr/<vr_name> Ip CosPolicyGroup/ipcos Policy/
<cos_id> TosMap tos <tos_value>
```

3 If the ipCos feature is used, link the *cosPolicyAssignment* subcomponent to the *CosPolicyGroup* subcomponent.

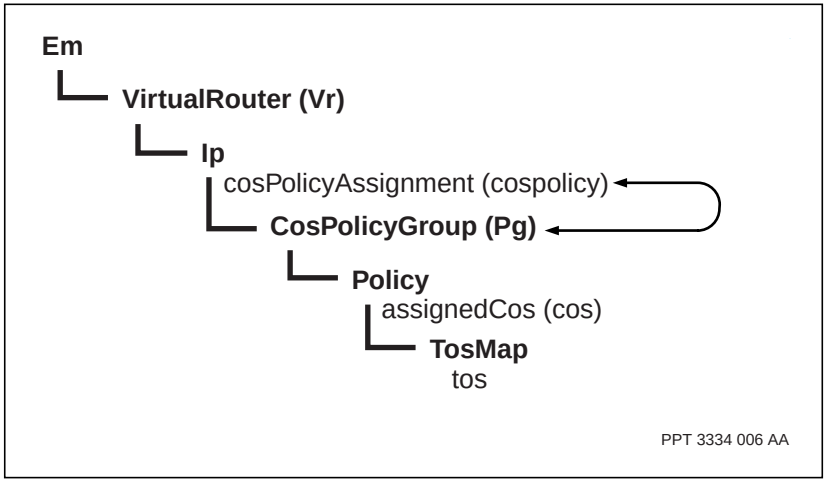
```
set Vr/<vr_name> Ip cosPolicyAssignment Vr/<vr_name>
Ip CosPolicyGroup/ipcos
```

Variable definitions

Variable	Value
<assign_id>	The instance of the subcomponent *assign*
<cos_id>	The instance number of the subcomponent *po*
<tos_value>	The value of the attribute *tos*
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 38
CoS component hierarchy



Chapter 13
VoIP using Ethernet transport and VR on a Passport 7400 configuration

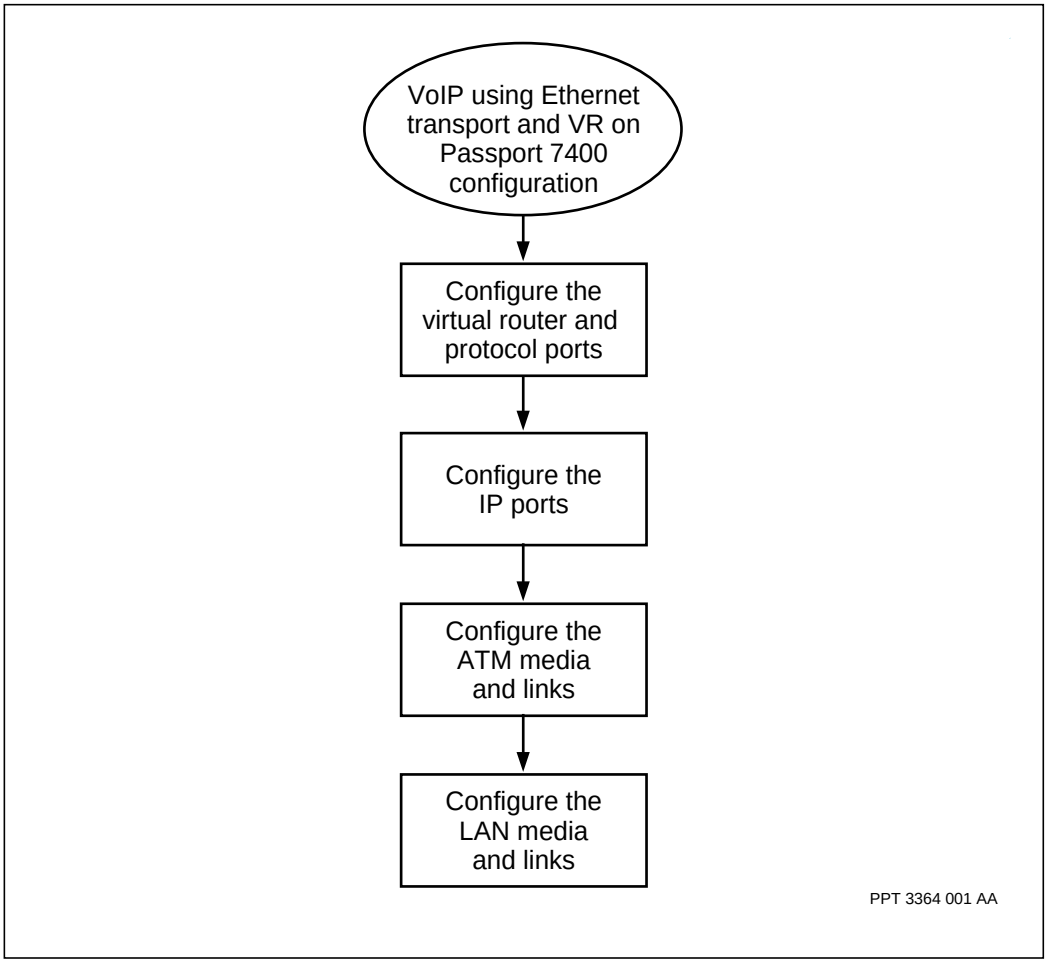
Configure VoIP using Ethernet transport and VR on a Passport 7400 to send IP traffic to a virtual router and then out on an ethernet interface.

Navigation links

VoIP using Ethernet transport and VR on a Passport 7400 configuration flow

This task flow shows you the sequence of procedures you perform to configure switched PVG using IP over ATM and a virtual router hairpin. To link to any procedure, go to "Task navigation" (page 145).

Figure 39
VoIP using Ethernet transport and VR on a Passport 7400 configuration task flow



Task navigation

- “Configuring the virtual router and protocol ports” (page 146)
- “Configuring the IP ports” (page 149)
- “Configuring the ATM media and links” (page 151)
- “Configuring the LAN media and links” (page 154)

Configuring the virtual router and protocol ports

Configure the virtual router and protocol ports to link to the ATM MPE and to the LAN application.

Prerequisites

- For additional information about configuring a virtual router, see 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP*.

Procedure steps

1. Add a Vr component

   `add Vr/<vr_name>`

2. Specify where the VR resides.

   `set Vr/<vr_name> vrp lp/<vr_lp>`

3. Add an Ip subcomponent under the Vr component

   `add Vr/<vr_name> Ip`

4. Configure two protocol ports under the Vr component

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

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

Variable definitions

Variable	Value
<pp_id>	The identifier assigned to this protocol port.
<vr_lp>	The instance value of the logical processor that is linked to the shelf card on which the virtual router resides.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 40
Configuring the virtual router and protocol ports component hierarchy

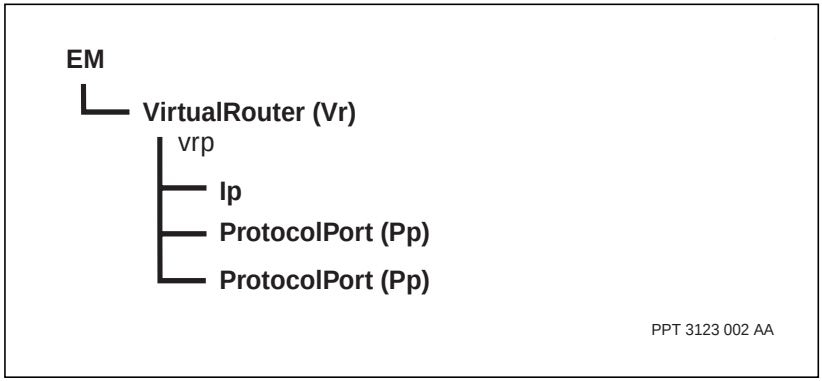
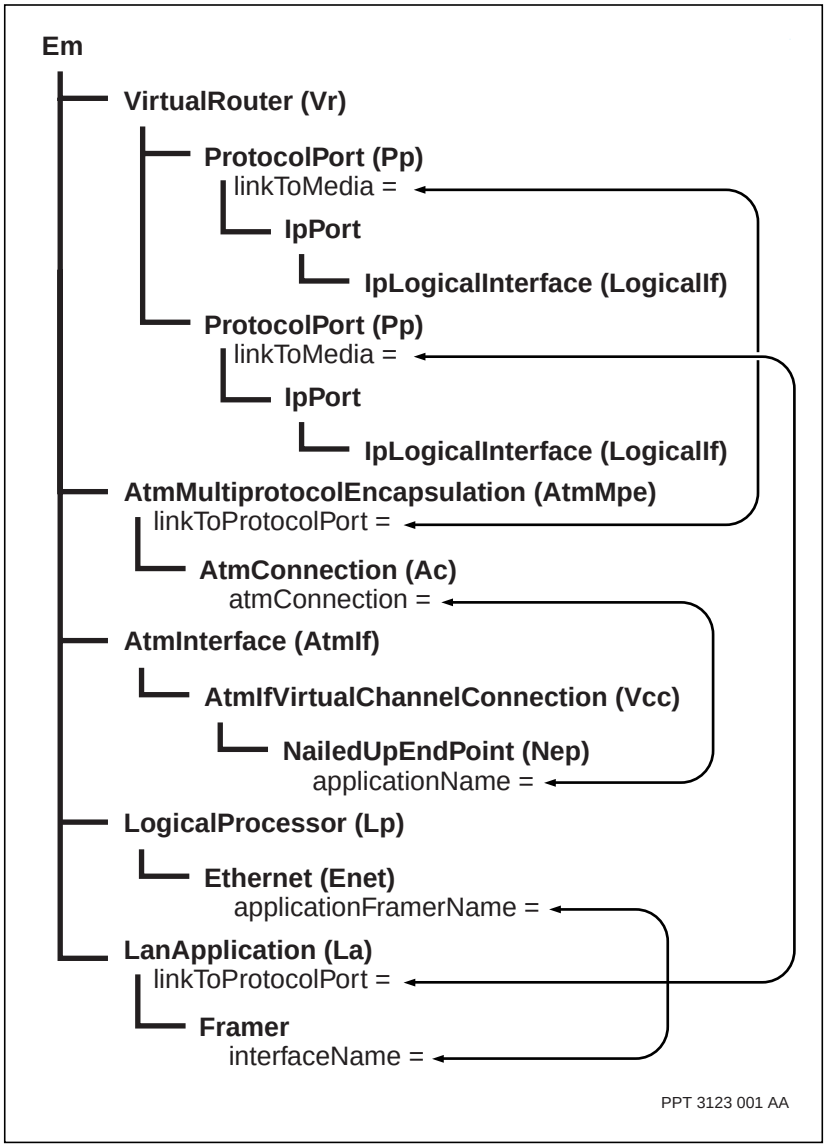


Figure 41
Configuring switched PVG using IP and a virtual router component hierarchy



Configuring the IP ports

Configure the IP ports to set the IP ports under the virtual router.

Prerequisites

- For more information on configuring IP ports see 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP*.

Procedure steps

1 Add an IpPort component under each of the protocol ports defined under the virtual router.

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

2 Define the IP addresses of each protocol port by adding an IpLogicalInterface component under each of the IpPort components.

```
add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
<ip_address>
```

3 Define a network mask for each of the protocol ports.

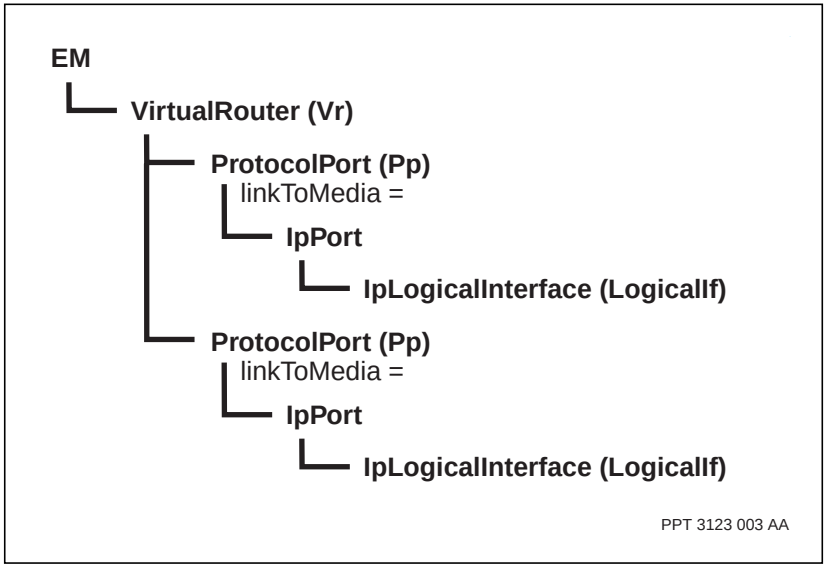
```
set Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
<ip_address> netmask <mask>
```

Variable definitions

Variable	Value
<ip_address>	The address assigned to this logical interface.
<mask>	The network mask to be used with the IP address. For this procedure use 255.255.255.252 as the mask.
<pp_id>	The identifier assigned to this protocol port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 42
IP ports component hierarchy



Configuring the ATM media and links

Configure the ATM media and links to configure the ATM media and link it to a protocol port under the virtual router.

Prerequisites

- For details on configuring an ATM MPE interface, see 241-5701-810 *Passport 7400, 15000, 20000 Configuring IP*.
- In the Passport 7400 configuration, this is a hairpinned connection. This means that logically, the ATM interface is on another shelf, although physically it is on the same shelf. For the Passport 15000-VSS solution, there is no hairpinning required as the ATM interface is physically on another shelf -- the ATM card on the Passport 7400 shelf.

Procedure steps

1 Add the AtmMpe component.

```
add AtmMpe/<n>
```

2 Link the *AtmMpe* component to a protocol port configured under the virtual router.

```
set Vr/<vr_name> Pp/<pp_id> linkToMedia AtmMpe/<n>
```

3 Add an additional ATM interface.

```
add Atmif/<i>
```

4 Add a VCC under the new ATM interface, and give it the same instance value (vpi, vci) as the user data VCC configured under the other ATM interface.

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

5 Add a nailed up endpoint under the VCC

```
add Atmif/<i> Vcc/<vc> Nep
```

6 Link the ATM connection under the AtmMpe component to the nailed-up endpoint under the VCC.

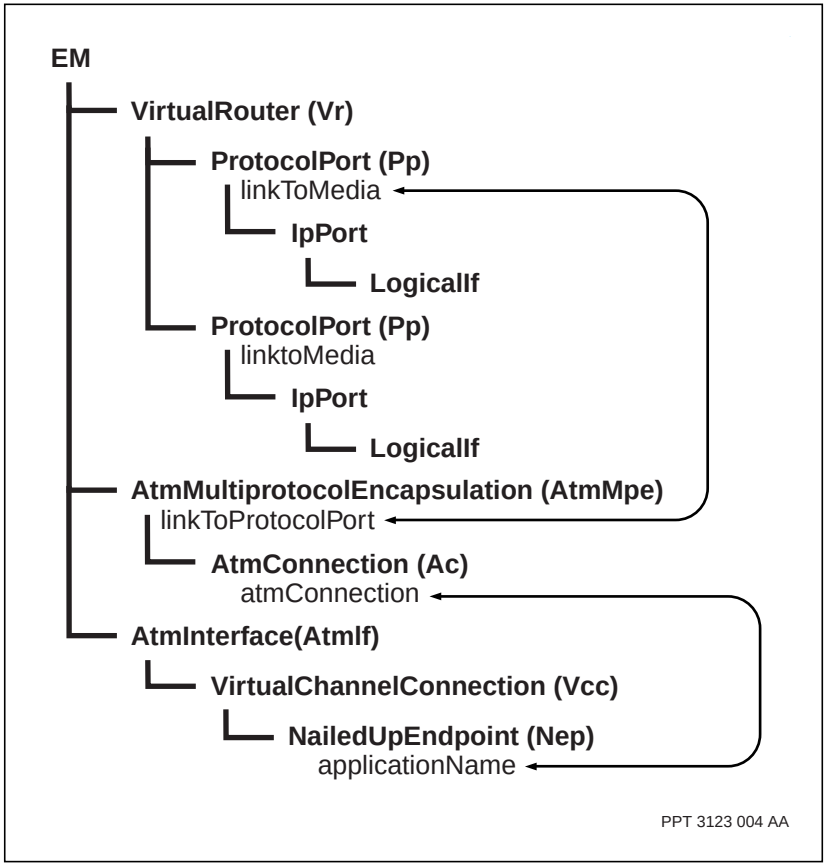
```
set AtmMpe/<n> Ac/<conn> atmConnection AtmIf/<i> Vcc/
<vc> Nep
```

Variable definitions

Variable	Value
<conn>	The instance number of the ATM connection on the ATM MPE interface.
<i>	The instance number of the ATM interface.
<n>	The instance number of the ATM MPE interface.
<pp_id>	The identifier assigned to this protocol port.
<vc>	The instance value of the VCC.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 43
ATM media and links component hierarchy



Configuring the LAN media and links

Configure the LAN media and links to configure the LAN media and link it to a protocol port under the virtual router.

Prerequisites

- For details on configuring LAN media, see 241-5701-270 *Passport 7400, 15000, 20000 Software Installation Guide*.

Procedure steps

1 Configure an Ethernet port.

```
add Lp/<x> Enet/<y>
```

2 Configure a LAN application.

```
add La/<n>
```

3 Associate the Lan media application with the Ethernet port by setting the interfaceName attribute of the Framer subcomponent.

```
set La/<n> Framer interfaceName Lp/<x> Enet/<y>
```

4 Link the Ethernet port to the virtual router

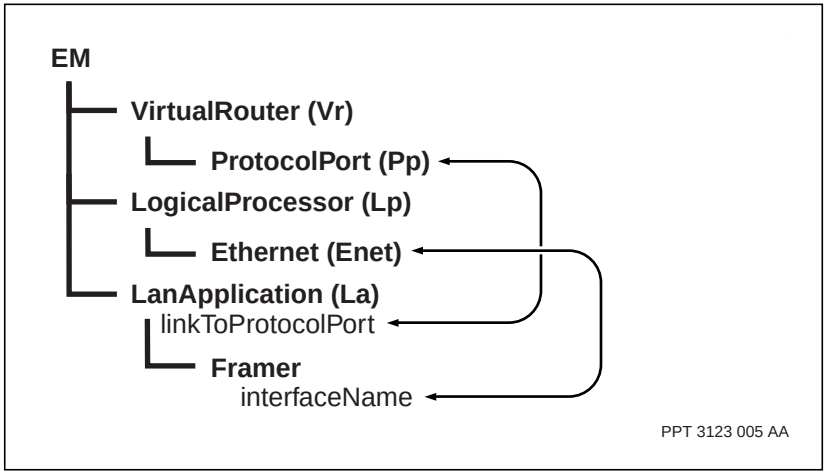
```
set Vr/<vr_name> Pp/<pp_id> linkToMedia La/<n>
```

Variable definitions

Variable	Value
<n>	The instance value of the LAN application.
<pp_id>	The identifier assigned to this protocol port.
<x>	The instance number of the logical processor.
<y>	The instance number of the ethernet port.

Procedure job aid

Figure 44
LAN media and links component hierarchy



Chapter 14
MGC connection configuration for switched PVG

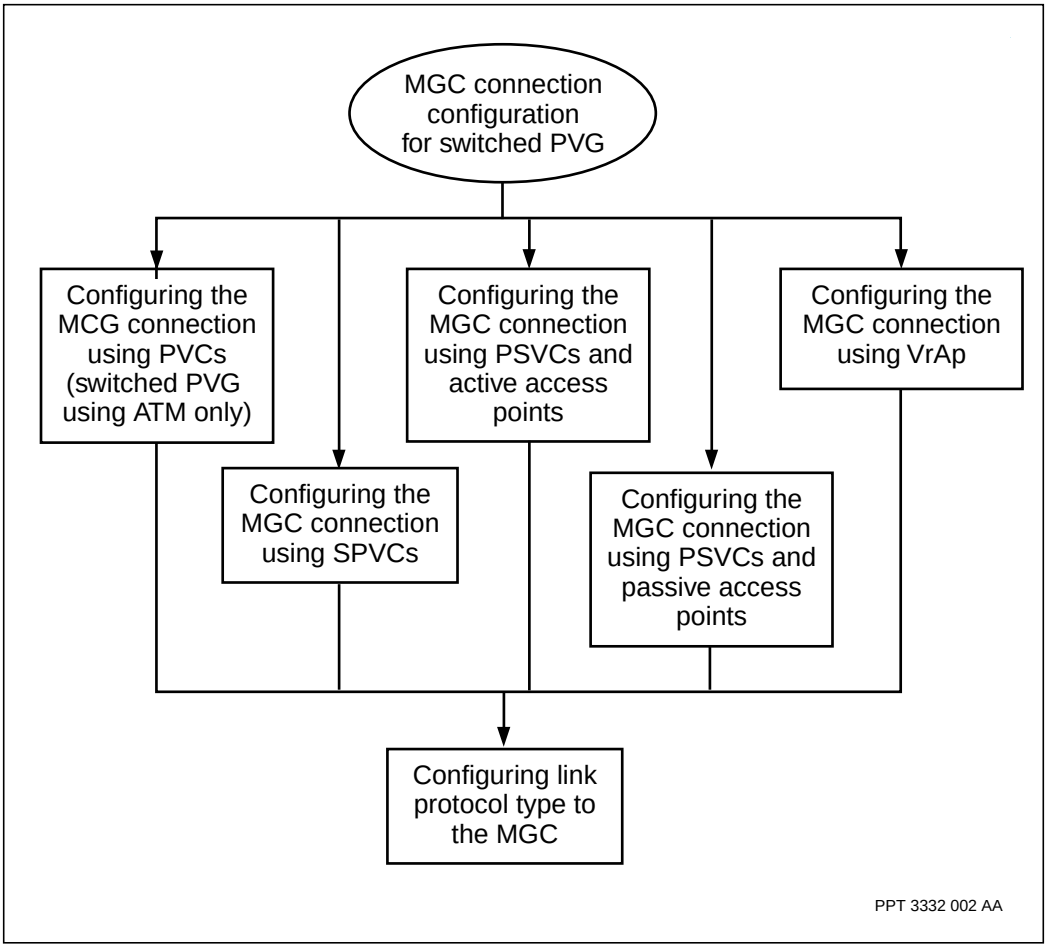
Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the PVG and the MGC.

Navigation links

MGC connection configuration for switched PVG flow

This task flow shows you the sequence of procedures you perform to configure the MGC connection. To link to any procedure, go to "Task navigation" (page 158).

Figure 45
MGC connection configuration for switched PVG task flow



Task navigation

- “Configuring the MGC connection using PVCs (switched PVG using ATM only)” (page 160)
- “Configuring the MGC connection using SPVCs” (page 162)
- “Configuring the MGC connection using PSVCs and active access points” (page 164)

- “Configuring the MGC connection using PSVCs and passive access points” (page 167)
- “Configuring the MGC connection using VrAp” (page 168)
- “Configuring link and protocol type to the MGC” (page 170)

Configuring the MGC connection using PVCs (switched PVG using ATM only)

Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the PVG and the MGC using PVCs.

Procedure steps

1. Add an ATM adaptation layer 5 (AAL5) control connection.

   add Nsta/<n> Vgs Ctrl/mg

2. Specify the IP address of the media gateway. Control messages from the controller are sent to this IP address to manage connections within the media gateway.

   set Nsta/<n> Vgs Ctrl/mg ipAddress <address>

3. Specify the IP addresses of the DNS servers available to the media gateway. A maximum of two DNS servers for each media gateway is allowed.

   set Nsta/<n> Vgs Ctrl/mg dnsList <address1,address2>

4. Add a permanent access point to the AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/mg Nap

5. Map a *Nap* component to a *Nep* component.

   set Nsta/<n> Vgs Ctrl/mg Nap atmConnection AtmIf/<p> Vcc/<VPI.VCI> Nep

Variable definitions

Variable	Value
<address>	The IP address of the media gateway.
<address1, address2>	A list of IP addresses of the DNS servers available to the media gateway. Separate the addresses with a comma.
<n>	The value for the *Nsta* component.

(Sheet 1 of 2)

Variable	Value
<p>	The value for the ATM interface that you want to map to the NSTA connection.
<VPI.VCI>	The value for the VCC of that ATM interface.

(Sheet 2 of 2)

Configuring the MGC connection using SPVCs

Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the PVG and the MGC using SPVCs.

Procedure steps

1. Add an AAL5 control connection.

   `add Nsta/<n> Vgs Ctrl/mg`

2. Specify the IP address of the media gateway. Control messages from the controller are sent to this IP address to manage connections within the media gateway.

   `set Nsta/<n> Vgs Ctrl/mg ipAddress <address>`

3. Specify the IP addresses of the DNS servers available to the media gateway. A maximum of two DNS servers for each media gateway is allowed.

   `set Nsta/<n> Vgs Ctrl/mg dnsList <address1,address2>`

4. Add an SPVC access point to the AAL5 control connection.

   `add Nsta/<n> Vgs Ctrl/mg SpvcAp`

5. Specify the remote address of the ATM interface to call.

   `set Nsta/<n> Vgs Ctrl/mg SpvcAp addrToCall <rem_addr1> <rem_addr2> <rem_addr3>`

6. Specify the combination of the remote virtual path identifier (VPI) and virtual channel identifier (VCI) of the ATM interface to call.

   `set Nsta/<n> Vgs Ctrl/mg SpvcAp rVpiVci <VPI.VCI>`

7. Specify the ATM service category.

   `set Nsta/<n> Vgs Ctrl/mg SpvcAp service <cat>`

8. Specify the peak cell rate.

   `set Nsta/<n> Vgs Ctrl/mg SpvcAp pcr <p_cell_rate>`

9. Specify the sustained cell rate.

   `set Nsta/<n> Vgs Ctrl/mg SpvcAp scr <s_cell_rate>`

10. Specify the maximum burst size.

    `set Nsta/<n> Vgs Ctrl/mg SpvcAp mbs <max_burst_size>`

11 Specify the retry limit.

```
set Nsta/<n> Vgs Ctrl/mg SpvcAp limit <max_retry>
```

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component
<address>	The IP address of the media gateway
<address1, address2>	A list of IP addresses of the DNS servers available to the media gateway. Separate the addresses with a comma.
<cat>	*ConstantBitRate* or *nrtVariableBitRate*
<rem_addr1> <rem_addr2> <rem_addr3>	A list of one to three ATM addresses. Each address represents a router used by the MGC. At least one ATM address must be supplied. Each address is separated with a space.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries to connect to the far end before setting an alarm and forcing manual intervention. A value of 0 indicates that the application tries indefinitely to connect to the far end.
<p_cell_rate>	A number representing the peak cell rate
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<VPI.VCI>	The value for the VCC of the remote ATM interface

Configuring the MGC connection using PSVCs and active access points

Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the PVG and the MGC using PSVC and active access points.

Procedure steps

1. Add an AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/mg

2. Specify the IP address of the media gateway. Control messages from the controller are sent to this IP address to manage connections within the media gateway.

   set Nsta/<n> Vgs Ctrl/mg ipAddress <address>

3. Specify the IP addresses of the DNS servers available to the media gateway. A maximum of two DNS servers for each media gateway is allowed.

   set Nsta/<n> Vgs Ctrl/mg dnsList <address1,address2>

4. Add an active access point to the AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/mg Aap

5. Specify the ATM address of the main router and the backup routers used by the MGC. A maximum of three ATM addresses can be specified, with each ATM address representing a router.

   set Nsta/<n> Vgs Ctrl/mg Aap addrToCall <rem_1> <rem_addr2> <rem_addr3>

6. Specify the local ATM address of the access point.

   set Nsta/<n> Vgs Ctrl/mg Aap localAddr <loc_addr>

7. Optionally specify a filter for incoming provisioned SVC calls.

   set Nsta/<n> Vgs Ctrl/mg Aap expectedAddr <addr>

8. Specify the ATM service category.

   set Nsta/<n> Vgs Ctrl/mg Aap service <cat>

9. Specify the peak cell rate.

   set Nsta/<n> Vgs Ctrl/mg Aap pcr <p_cell_rate>

10 Specify the sustained cell rate.

```
set Nsta/<n> Vgs Ctrl/mg Aap scr <s_cell_rate>
```

11 Specify the maximum burst size.

```
set Nsta/<n> Vgs Ctrl/mg Aap mbs <max_burst_size>
```

12 Specify the retry limit.

```
set Nsta/<n> Vgs Ctrl/mg Aap limit <max_retry>
```

Variable definitions

Variable	Value
<addr>	The ATM address of the remote access point that is allowed to make calls to this local access point
<address>	The IP address of the media gateway
<address1, address2>	A list of IP addresses of the DNS servers available to the media gateway. Separate the addresses with a comma.
<cat>	*ConstantBitRate* or *nrtVariableBitRate*
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries to connect to the far end before setting an alarm and forcing manual intervention. A value of 0 indicates that the application tries indefinitely to connect to the far end.
<n>	The value for the *Nsta* component
<p_cell_rate>	A number representing the peak cell rate

(Sheet 1 of 2)

Variable	Value
<rem_addr1> <rem_addr2> <rem_addr3>	A list of one to three ATM addresses. Each address represents a router used by the MGC. At least one ATM address must be supplied. Each address is separated with a space.
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.

(Sheet 2 of 2)

Configuring the MGC connection using PSVCs and passive access points

Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the PVG and the MGC using PSVC and passive access points.

Procedure steps

1. Add an AAL5 control connection.

   ```
   add Nsta/<n> Vgs Ctrl/mg
   ```

2. Specify the IP address of the media gateway. Control messages from the controller are sent to this IP address to manage connections within the media gateway.

   ```
   set Nsta/<n> Vgs Ctrl/mg ipAddress <address>
   ```

3. Specify the IP addresses of the DNS servers available to the media gateway. A maximum of two DNS servers for each media gateway is allowed.

   ```
   set Nsta/<n> Vgs Ctrl/mg dnsList <address1,address2>
   ```

4. Add a passive access point to the AAL5 control connection.

   ```
   add Nsta/<n> Vgs Ctrl/mg Pap
   ```

5. Optionally specify a filter for incoming provisioned SVC calls.

   ```
   set Nsta/<n> Vgs Ctrl/mg Pap expectedAddr <addr>
   ```

Variable definitions

Variable	Value
<addr>	The ATM address of the remote access point that is allowed to make calls to this local access point.
<address>	The IP address of the media gateway.
<address1, address2>	A list of IP addresses of the DNS servers available to the media gateway. Separate the addresses with a comma.
<n>	The value for the *Nsta* component.

Configuring the MGC connection using VrAp

Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the PVG and the MGC using virtual router access point (VrAp).

Procedure steps

1 Provision the VoIP control connection.

```
add Nsta/<nsta_id> Vgs Ctrl/mg
```

2 Add the *UdpPort* component.

```
add Nsta/<nsta_id> Vgs Ctrl/mg UdpPort/<udpport_id>
```

3 Set the IP address of the VoIP control connection.

```
set Nsta/<nsta_id> Vgs Ctrl/mg ipAddress <ip_address>
```

4 Add a *vr* component for the VR on the PVG.

```
add Vr/<vr_name>
```

5 Add a subcomponent *customizationSpecification (CustSpec)* to the *Vr* component.

```
add Vr/<vr_name> CustSpec
```

6 Set the attribute *customizationType (custType)* of the subcomponent *customizationSpecification (CustSpec)* to a value *pvg*.

```
set Vr/<vr_name> CustSpec custType pvg
```

7 Add the protocol port.

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

8 Add the *IpPort* subcomponent for the *ProtocolPort (Pp)* component.

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

9 Add the *IpLogicalInterface* subcomponent for the *IpPort* component.

```
add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
<ip_address>
```

10 Add a subcomponent *VirtualRouterAccessPoint (VrAp)* to the VoIP control connection.

```
add Nsta/<nsta_id> Vgs Ctrl/mg VrAp
```

11 Link the IP address of the VR AP to the ip address of the VR.

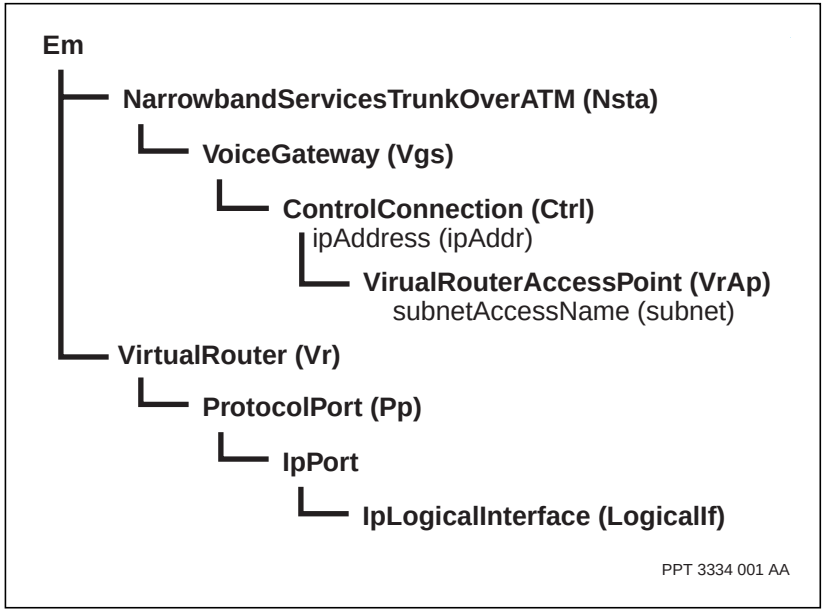
```
set Nsta/<nsta_id> Vgs Ctrl/mg VrAp subnetAccessName
Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/<ip_address>
```

Variable definitions

Variable	Value
<ip_address>	The address assigned to the logical interface.
<nsta_id>	The instance of the *Nsta* component.
<pp_id>	The identifier assigned to this protocol port.
<udpport>	The instance of the user datagram protocol (UDP) port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 46
Configuring the MGC connection using VrAp component hierarchy



Configuring link and protocol type to the MGC

Configure link and protocol type to the MGC to set up an interface to the controller and set the control protocol.

Procedure steps

1 Add a UDP port beneath the control connection.

```
add Nsta/<n> Vgs Ctrl/mg UdpPort/<udpport>
```

2 Add the voice gateway control protocol (VGCP, also known as ASPEN) or the H.248 control protocol beneath the *Vgs* component.

```
add Nsta/<n> Vgs Vgcp
```

or

```
add Nsta/<n> Vgs H248/0
```

Note: The VSP3-o FP card supports H.248 protocol and does not support ASPEN protocol (also known as VGCP).

3 Set up an interface to the controller using the VGCP or H.248 control protocol.

```
set Nsta/<n> Vgs Vgcp udpPortConnection <udpport>
Nsta/<n> Vgs Ctrl/mg UdpPort/<udpport>
```

or

```
set Nsta/<n> Vgs H248/0 udpPortConnection <udpport>
Nsta/<n> Vgs Ctrl/mg UdpPort/<udpport>
```

Note: For switched PVG using IP (VoIP), the UDP port must be on a VSP2 FP or VSP3 FP card. For switched PVG using ATM (VoATM or VoAAL2), the UDP port must be on a VSP2 FP, a VSP3 FP, or a VSP3-o FP card.

4 Set the Differentiated Service Field in IP packets transmitted using this UDP port:

```
set Nsta/<n> Vgs Ctrl/mg UdpPort/<udpport>
differentiatedServiceField <diffserv_value>
```

5 If the H.248 control protocol is used, set the H.248 message identifier that the media gateway (MG) includes as part of every message sent to the media gateway controller (MGC).

```
set Nsta/<n> Vgs H248/0 mgMid <h248_mid>
```

6 If the H.248 control protocol is used, add a *Mgc* component for each MGC.

```
add Nsta/<n> Vgs mgc/<mgc_id>
```

7 For each *Mgc* component you added (when using H.248 control protocol), set the MGC IP address of the *Mgc* component for each MGC.

```
set Nsta/<n> Vgs mgc/<mgc_id> initialMgcAddress
<mgc_ip_address>
```

8 For each *Mgc* component you added (when using H.248 control protocol), set the MGC user datagram protocol (UDP) port of the *Mgc* component for each MGC.

```
set Nsta/<n> Vgs mgc/<mgc_id> initialMgcPort
<mgc_udp_port>
```

9 Ensure that the encoding format is set to match the format used by the MGC.

```
set Nsta/<n> Vgs mgc/<mgc_id> encodingFormat <format>
```

10 Link each *Mgc* component added for a MGC (when using H.248 control protocol) to the H.248 control protocol.

```
set Nsta/<n> Vgs H248/0 mgcList Nsta/<n> Vgs mgc/
<mgc_id>
```

Variable definitions

Variable	Value
<diffserv_value>	Specifies the Differentiated Service Field in transmitted IP packets. The default value is 46
<format>	The encoding format used for messages between the MGC and MG. Valid choices are *shorttext and longtext*, and the value on the MG should match that of the MGC.
<h248_mid>	Specifies the H.248 message identifier that must be an IPV4 address.
<mgc_id>	The instance value assigned to identify a particular MGC.
<mgc_ip_address>	The MGC IP address that the MG sends the initial H.248 registration message.

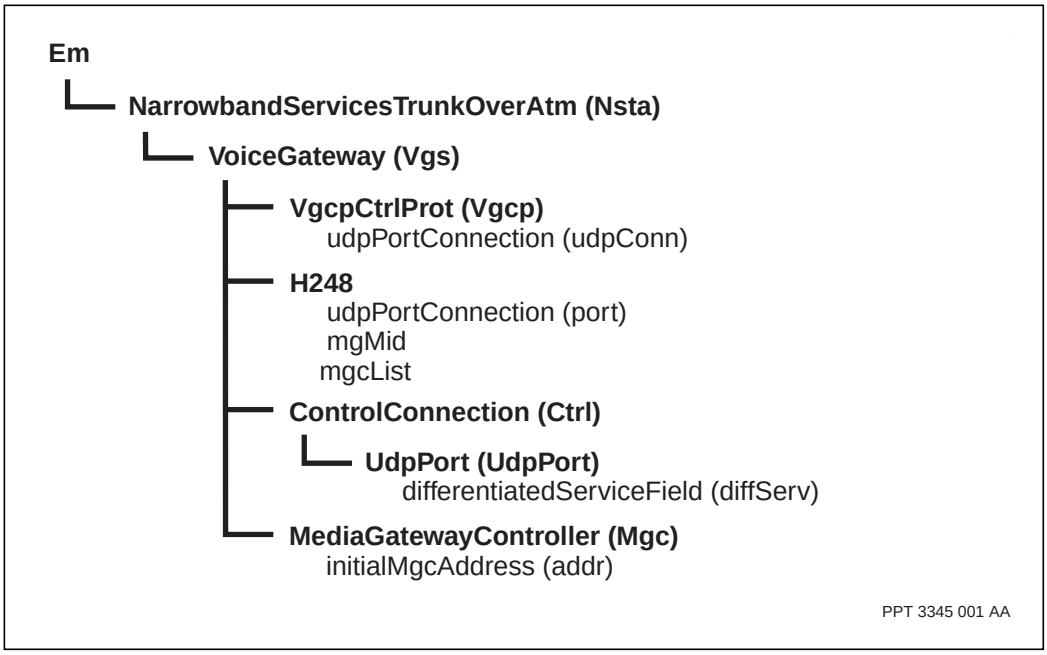
(Sheet 1 of 2)

Variable	Value
<mgc_udp_port>	The UDP port that the MG uses to send the initial H.248 registration message.
<n>	The value for the *Nsta* component
<udpport>	The user datagram protocol (UDP) port on which one of the VSP2 FP card, the VSP3, or the VSP3-o FP card listens for commands from the gateway controller

(Sheet 2 of 2)

Procedure job aid

Figure 47
Link and protocol type MGC component hierarchy



Chapter 15
Backhaul using V5.2 configuration for switched PVG

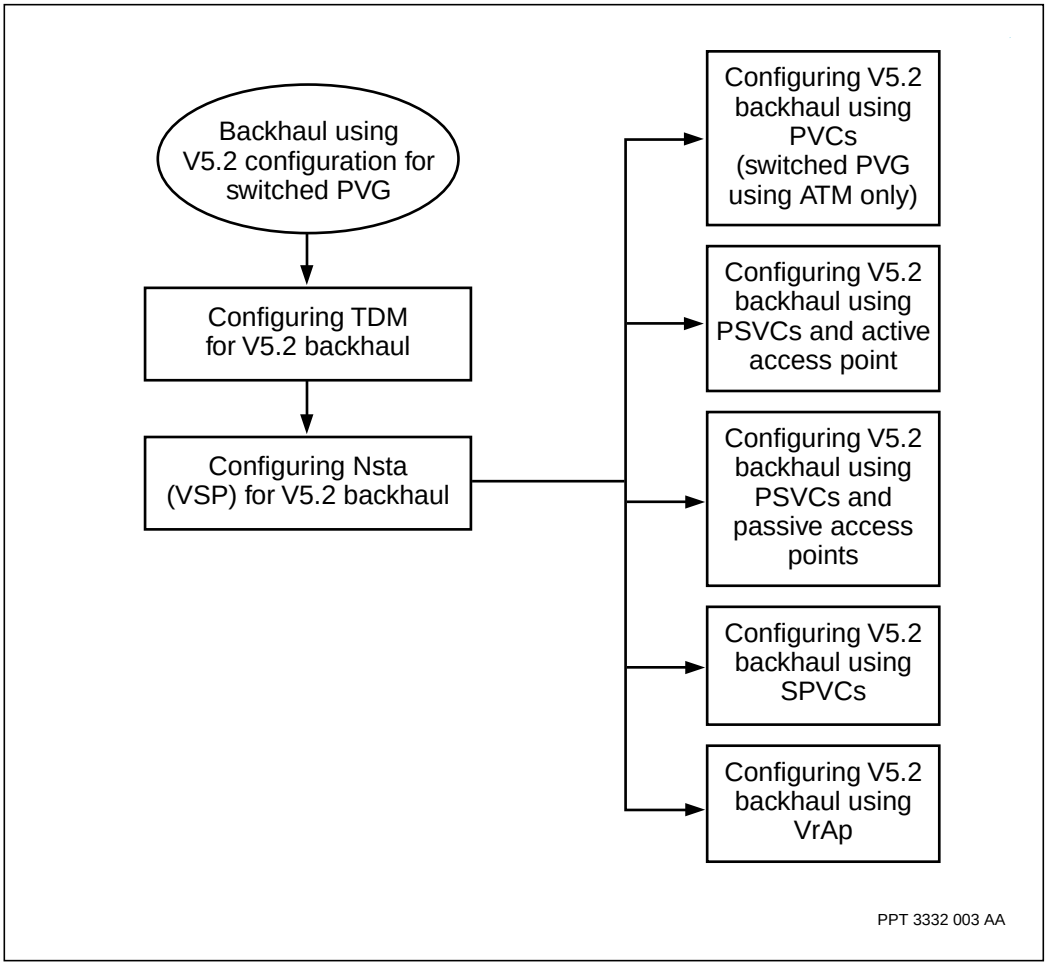
Configure backhaul using V5.2 to provide the transport of V5.2 layer 3 signaling protocols between an access node and the media gateway controller using V5UA/SCTP/IP. PVG acts as a signaling gateway and media gateway to provide the interworking between the access node and the media gateway controller.

Navigation links

Backhaul using V5.2 configuration for switched PVG flow

This task flow shows you the sequence of procedures you perform to configure backhaul. To link to any procedure, go to "Task navigation" (page 174).

Figure 48
Backhaul using V5.2 configuration for switched PVG



Task navigation

- “Configuring TDM for V5.2 backhaul” (page 176)
- “Configuring Nsta (VSP) for V5.2 backhaul” (page 177)
- “Configuring V5.2 backhaul using PVCs (switched PVG using ATM only)” (page 179)

Configuring TDM for V5.2 backhaul

Configure TDM for V5.2 backhaul to set the connection from the access node to the PVG.

Procedure steps

1. Add a *v5link* component to the basic rate group. The *v5link* component represents the signaling datalink between the Access Network and the PVG.

   `add Nsta/<n> Vgs brag/0 v5link`

   The *v5ua* component has five provisionable attributes: *t200*, *t203*, *n200*, *n201* and *maxOutstandingFrames*. For a description of these attributes see 241-5701-060 *Passport 7400, 15000, 20000 Components*.

2. If the V5.2 link contains a C-channel with signaling data, add a *lapV5* subcomponent to the v5link component. Because each V5.2 link can have up to three C-channels, repeat this step for each C-channel in the V5.2 link. If the V5.2 link does not contain a C-channel, skip this step.

   `add Nsta/<n> Vgs brag/0 v5link lapv5/<timeslot>`

   Note: Provisioning of C-channel timeslots must be coordinated with the MGC. Provisioning a timeslot as a C-channel on the SG without provisioning it on the MGC means the C-channel is effectively useless.

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<timeslot>	The instance value for a *lapv5* component and must be 15, 16 or 31. (The V5.2 specification defines timeslots 15, 16 or 31 as the only possible values for C-channels.)

Configuring Nsta (VSP) for V5.2 backhaul

Configuring Nsta (VSP) for V5.2 backhaul for switched PVG to set the connection from the PVG to the media gateway controller.

Procedure steps

1. Add an AAL5 control connection.

   ```
   add Nsta/<n> Vgs Ctrl/sg
   ```

2. Specify the IP address of the signaling gateway. Control messages from the controller are sent to this IP address to manage connections within the signaling gateway.

   ```
   set Nsta/<n> Vgs Ctrl/sg ipAddress <address>
   ```

3. Add the stream control transmission protocol (SCTP) port of the signaling gateway (SG) to the AAL5 control connection.

   ```
   add Nsta/<n> Vgs Ctrl/sg sctpPort/<sctp_port>
   ```

4. Specify the Differentiated Service Codepoint field in IP datagrams from this port:

   ```
   set Nsta/<n> Vgs Ctrl/sg SctpPort/<sctp_port>
   diffServCodepoint <diffServ_value>
   ```

5. Specify the V5.2 user adaptation (V5UA) layer protocol. Add the *v5ua* component beneath the *Vgs* component.

   ```
   add Nsta/<n> Vgs v5ua
   ```

6. Map the SCTP port of the signaling gateway (SG) to a *sctpPortConnection* component.

   ```
   set Nsta/<n> Vgs v5ua sctpPortConnection Nsta/<n> Vgs
   Ctrl/sg sctpPort/<sctp_port>
   ```

Variable definitions

Variable	Value
<address>	The IP address of the signaling gateway.
<diffServ_value>	The Differentiated Service Codepoint field in IP datagrams from this port. The default value is 46.

(Sheet 1 of 2)

Variable	Value
<n>	The value for the *Nsta* component.
<sctp_port>	The port number of the SCTP.
(Sheet 2 of 2)	

Configuring V5.2 backhaul using PVCs (switched PVG using ATM only)

Configure V5.2 backhaul using PVCs to set the V5.2 backhaul signaling link for call control over SCTP. This becomes the path for V5.2 layer 3 messages to reach the MGC.

Procedure steps

1. Add a permanent access point to the AAL5 control connection.

   ```
   add Nsta/<n> Vgs Ctrl/sg Nap
   ```

2. Map a Nap component to a Nep component.

   ```
   set Nsta/<n> Vgs Ctrl/sg Nap atmConnection AtmIf/<p>
   Vcc/<VPI.VCI> Nep
   ```

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<p>	The value for the ATM interface that you want to map to the NSTA connection.
<VPI.VCI>	The value for the VCC of that ATM interface.

Configuring V5.2 backhaul using PSVCs and active access points

Configure V5.2 backhaul using provisioned SVC and active access points to set the *Ctrl Aap* component and attributes and identify the IP address of the PVG.

Procedure steps

1. Add an active access point to the AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/sg Aap

2. Specify the ATM address of the MGC and the addresses of any backup MGCs. A maximum of three ATM addresses can be specified, with each ATM address representing an MGC.

   set Nsta/<n> Vgs Ctrl/sg Aap addrToCall <rem_addr1> <rem_addr2> <rem_addr3>

3. Specify the local ATM address of the access point.

   set Nsta/<n> Vgs Ctrl/sg Aap localAddr <loc_addr>

4. Optionally specify a filter for incoming provisioned SVC calls.

   set Nsta/<n> Vgs Ctrl/sg Aap expectedAddr <addr>

5. Specify the ATM service category.

   set Nsta/<n> Vgs Ctrl/sg Aap service <cat>

6. Specify the peak cell rate.

   set Nsta/<n> Vgs Ctrl/sg Aap pcr <p_cell_rate>

7. Specify the sustained cell rate.

   set Nsta/<n> Vgs Ctrl/sg Aap scr <s_cell_rate>

8. Specify the maximum burst size.

   set Nsta/<n> Vgs Ctrl/sg Aap mbs <max_burst_size>

9. Specify the retry limit.

   set Nsta/<n> Vgs Ctrl/sg Aap limit <max_retry>

Variable definitions

Variable	Value
<addr>	The ATM address of the remote access point that is allowed to make calls to this local access point
<cat>	*ConstantBitRate* or *nrtVariableBitRate*
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries before generating an alarm and forcing manual intervention.
<n>	The value for the *Nsta* component
<p_cell_rate>	A number representing the peak cell rate
<rem_addr1> <rem_addr2> <rem_addr3>	A list of one to three ATM addresses. Each address represents an MGC. At least one ATM address must be supplied. Each address is separated with a space
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.

Configuring V5.2 backhaul using PSVCs and passive access points

Configure V5.2 backhaul using PSVCs and passive access points to set the Ctrl Pap component and attributes and identify the IP address of the PVG.

Procedure steps

1. Add a passive access point to the AAL5 control connection.

   `add Nsta/<n> Vgs Ctrl/sg Pap`

2. Specify the local ATM address of the access point.

   `set Nsta/<n> Vgs Ctrl/sg Pap localAddr <loc_addr>`

Variable definitions

Variable	Value
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<n>	The value for the *Nsta* component.

Configuring V5.2 backhaul using SPVCs

Configure V5.2 backhaul using SPVCs to set the Ctrl SpvcAp component and attributes and identify the IP address of the PVG.

Procedure steps

1. Add an SPVC access point to the AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/sg SpvcAp

2. Specify the local ATM address of the access point.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp localAddr <loc_addr>

3. Specify the remote address of the ATM interface to call.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp addrToCall <rem_addr>

4. Specify the combination of the remote virtual path identifier (VPI) and virtual channel identifier (VCI) of the ATM interface to call.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp rVpiVci <VPI.VCI>

5. Specify the ATM service category.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp service <cat>

6. Specify the peak cell rate.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp pcr <p_cell_rate>

7. Specify the sustained cell rate.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp scr <s_cell_rate>

8. Specify the maximum burst size.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp mbs <max_burst_size>

9. Specify the retry limit.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp limit <max_retry>

Variable definitions

Variable	Value
<address>	The IP address of the signaling gateway
<cat>	*ConstantBitRate* or *nrtVariableBitRate*

(Sheet 1 of 2)

Variable	Value
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries before generating an alarm and forcing manual intervention.
<n>	The value for the *Nsta* component
<p_cell_rate>	A number representing the peak cell rate
<rem_addr>	The address of the remote ATM interface
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<sctp_port>	The port number of the SCTP
<VPI.VCI>	The value for the VCC of the remote ATM interface

(Sheet 2 of 2)

Configuring V5.2 backhaul using VrAp

Configure V5.2 backhaul using virtual router access point (VrAp) so that call establishment, release, and maintenance commands can travel between the PVG and the MGC.

Procedure steps

1. Provision the VoIP control connection.

   add Nsta/<nsta_id> Vgs Ctrl/sg

2. Add the *UdpPort* component.

   add Nsta/<nsta_id> Vgs Ctrl/sg UdpPort/<udpport_id>

3. Set the IP address of the VoIP control connection.

   set Nsta/<nsta_id> Vgs Ctrl/sg ipAddress <ip_address>

4. Add a *vr* component for the VR on the PVG.

   add Vr/<vr_name>

5. Add a subcomponent *customizationSpecification (CustSpec)* to the *Vr* component.

   add Vr/<vr_name> CustSpec

6. Set the attribute *customizationType (custType)* of the subcomponent *customizationSpecification (CustSpec)* to a value *pvg*.

   set Vr/<vr_name> CustSpec custType pvg

7. Add the protocol port.

   add Vr/<vr_name> Pp/<pp_id>

8. Add the *IpPort* subcomponent for the *ProtocolPort (Pp)* component.

   add Vr/<vr_name> Pp/<pp_id> IpPort

9. Add the *IpLogicalInterface* subcomponent for the *IpPort* component.

   add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/ <ip_address>

10. Add a VR access point (AP) to the VoIP control connection.

    add Nsta/<nsta_id> Vgs Ctrl/sg VrAp

11. Add a subcomponent *VirtualRouterAccessPoint (VrAp)* to the VoIP control connection.

```
add Nsta/<nsta_id> Vgs Ctrl/sg VrAp
```

12 Link the IP address of the VR AP to the ip address of the VR.

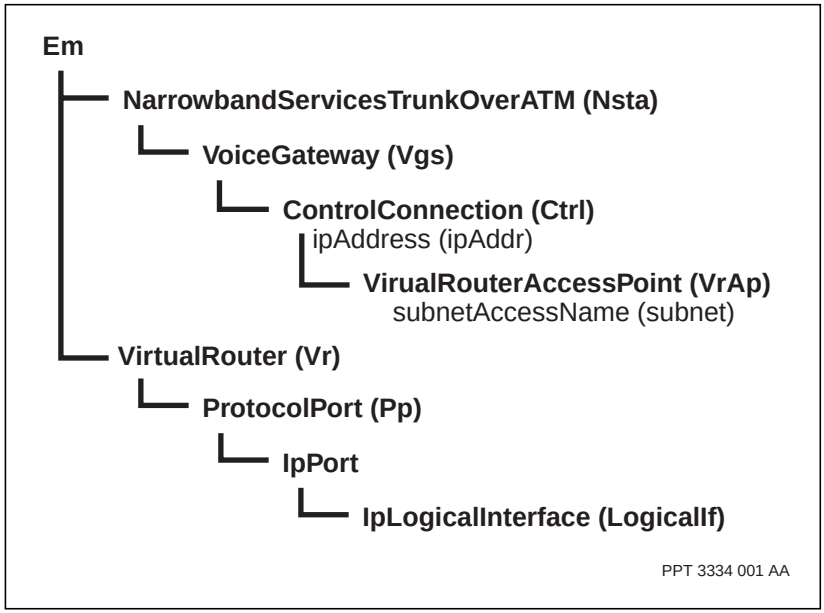
```
set Nsta/<nsta_id> Vgs Ctrl/sg VrAp subnetAccessName
Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/<ip_address>
```

Variable definitions

Variable	Value
<ip_address>	The address assigned to the logical interface.
<nsta_id>	The instance of the *Nsta* component.
<pp_id>	The identifier assigned to this protocol port.
<udpport>	The instance of the user datagram protocol (UDP) port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 49
V.52 backhaul using VrAp component hierarchy



Chapter 16
Backhaul using PRI configuration for switched PVG

Configure backhaul using PRI to provide transportation of PRI D-channel signaling for call control between a PRI-controlled device and the media gateway controller.

Navigation links

- "Prerequisites to backhaul using PRI configuration for switched PVG" (page 187)
- "Backhaul using PRI configuration for switched PVG flow" (page 187)
- "Task navigation" (page 188)

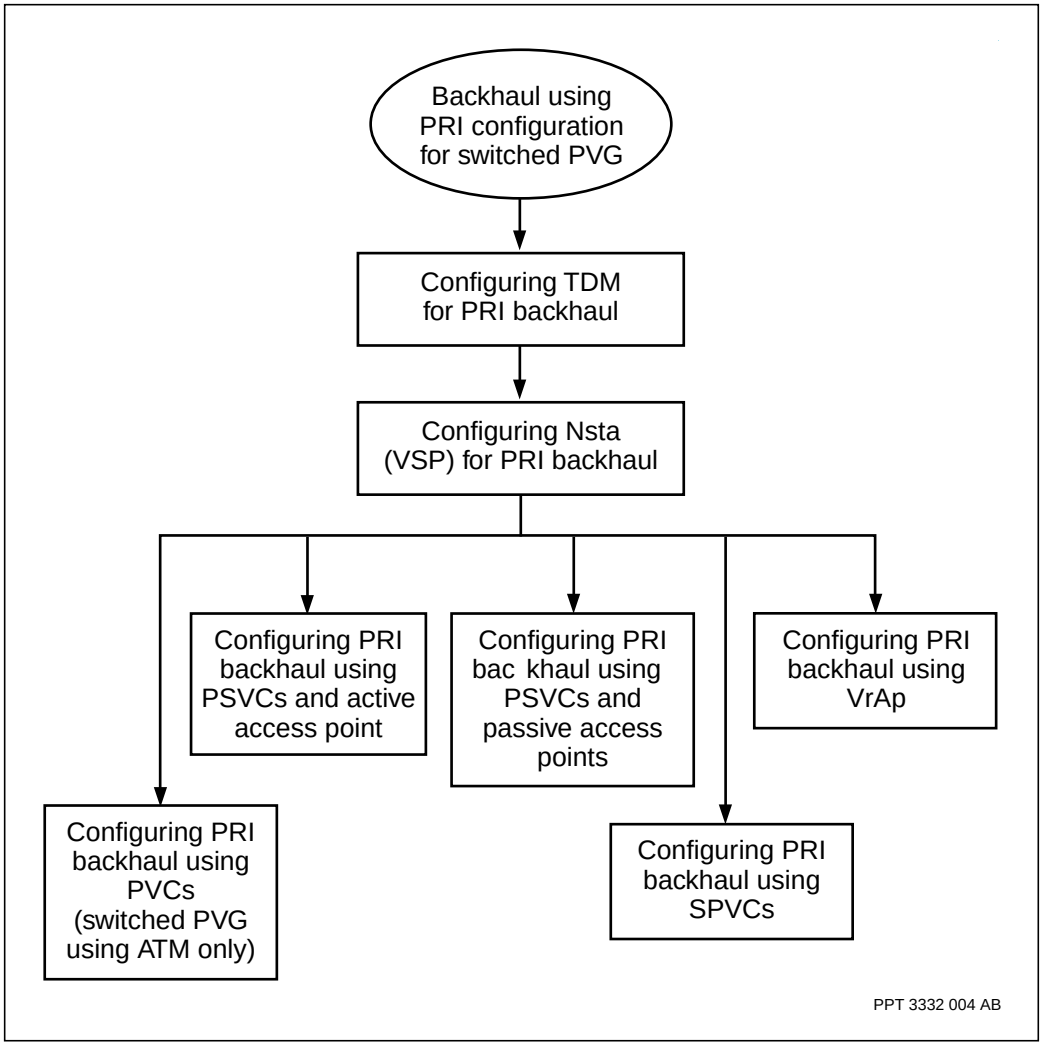
Prerequisites to backhaul using PRI configuration for switched PVG

- When the PRI backhaul link to the gateway controller (GWC) control is removed, the IUA can take up to 15 minutes to disable, depending upon the provisioned values. This is the expected behavior as the delay is to allow the signaling gateway (SG) and the GWC to establish an alternate link. The GWC is also referred to as the MGC. The SG is also referred to as the PVG.

Backhaul using PRI configuration for switched PVG flow

This task flow shows you the sequence of procedures you perform to configure backhaul. To link to any procedure, go to"Task navigation" (page 188).

Figure 50
Backhaul using PRI configuration for switched PVG task flow



Task navigation

- “Configuring TDM for PRI backhaul” (page 190)
- “Configuring Nsta (VSP) for PRI backhaul” (page 192)

Configuring TDM for PRI backhaul

Configure TDM for PRI backhaul on switched PVG to set the connection from the PRI-controlled device to the PVG.

Procedure steps

1 Add a *Q.921* component to the basic rate group.

```
add Nsta/<n> Vgs Brag/0 Q921/<timeslot>
```

```
add Nsta/<n> Vgs BragS/0 Q921/<timeslot>
```

2 Set the *Q.921* component to specify if the PRI trunk is the network end or the user end.

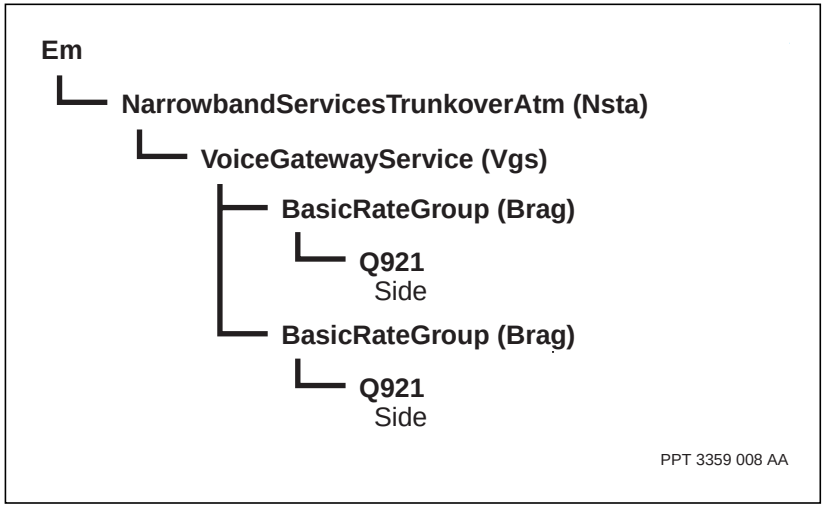
```
set Nsta/<n> Vgs Brag/0 Q921/<timeslot> side
<side_value>
set Nsta/<n> Vgs BragS/0 Q921/<timeslot> side
<side_value>
```

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<side_value>	The specified end of the PRI trunk and can be specified as *user* or *network* (the default is *network*).
<timeslot>	The instance value for a *q921* component and must be within the range of provisioned timeslots for the associated E1/T1 trunk.

Procedure job aid

Figure 51
TDM for PRI backhaul on switched PVG component hierarchy



Configuring Nsta (VSP) for PRI backhaul

Configuring Nsta (VSP) for PR I backhaul to set the connection from the PVG to the media gateway controller.

Procedure steps

1 Add an AAL5 control connection.

```
add Nsta/<n> Vgs Ctrl/sg
```

2 Specify the IP address of the signaling gateway. Control messages from the controller are sent to this IP address to manage connections within the signaling gateway.

```
set Nsta/<n> Vgs Ctrl/sg ipAddress <address>
```

Note: The IP address for the signaling gateway (SG) must be offset by four from the MGC. If for example, the IP address of the MGC is a *10.20.2.2* address then the IP address of the SG should be a *10.20.2.6* address.

3 Specify the IP addresses of the DNS servers available to the signaling gateway. A maximum of two DNS servers for each signaling gateway is allowed.

```
set Nsta/<n> Vgs Ctrl/sg dnsList <address1,address2>
```

4 Add the stream control transmission protocol (SCTP) port of the signaling gateway (SG) to the AAL5 control connection.

```
add Nsta/<n> Vgs Ctrl/sg sctpPort/<sctp_port>
```

5 Specify the Differentiated Service Codepoint field in IP datagrams from this port:

```
set Nsta/<n> Vgs Ctrl/sg SctpPort/<sctp_port>
diffServCodepoint <diffServ_value>
```

6 Specify the ISDN user adaptation (IUA) layer protocol. Add the *iua* component beneath the *Vgs* component.

```
add Nsta/<n> Vgs iua
```

7 Map the SCTP port of the signaling gateway (SG) to a *sctpPortConnection* component.

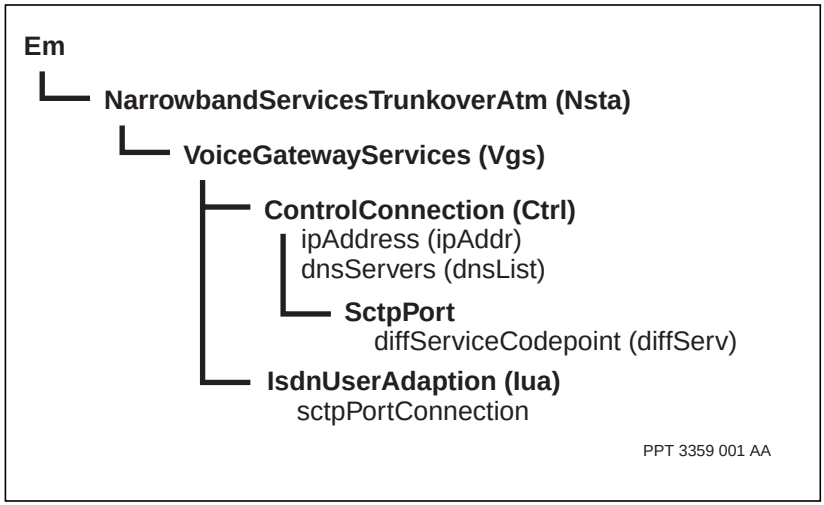
```
set Nsta/<n> Vgs iua sctpPortConnection Nsta/<n> Vgs
Ctrl/sg sctpPort/<sctp_port>
```

Variable definitions

Variable	Value
<address>	The IP address of the signaling gateway.
<address1, address2>	A list of IP addresses of the DNS servers available to the signaling gateway. Separate the addresses with a comma.
<diffServ_value>	The Differentiated Service Codepoint field in IP datagrams from this port. The default value is 0.
<n>	The value for the *Nsta* component.
<sctp_port>	The port number of the SCTP.

Procedure job aid

Figure 52
Nsta (VSP) for backhaul component hierarchy



Configuring PRI backhaul using PVCs (switched PVG using ATM only)

Configure PRI backhaul on a PVG set the backhaul signaling link using PVCs for call control.

Procedure steps

1. Add a permanent access point to the AAL5 control connection.

   `add Nsta/<n> Vgs Ctrl/sg Nap`

2. Map a Nap component to a Nep component.

   `set Nsta/<n> Vgs Ctrl/sg Nap atmConnection AtmIf/<p> Vcc/<VPI.VCI> Nep`

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<p>	The value for the ATM interface that you want to map to the NSTA connection.
<VPI.VCI>	The value for the VCC of that ATM interface.

Configuring PRI backhaul using PSVCs and active access points

Configure PRI backhaul on a PVG set the backhaul signaling link using PSVCs and active access points for call control.

Procedure steps

1. Add an active access point to the AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/sg Aap

2. Specify the ATM address of the MGC and the addresses of any backup MGCs. A maximum of three ATM addresses can be specified, with each ATM address representing an MGC.

   set Nsta/<n> Vgs Ctrl/sg Aap addrToCall <rem_addr1> <rem_addr2> <rem_addr3>

3. Specify the local ATM address of the access point.

   set Nsta/<n> Vgs Ctrl/sg Aap localAddr <loc_addr>

4. Optionally specify a filter for incoming provisioned SVC calls.

   set Nsta/<n> Vgs Ctrl/sg Aap expectedAddr <addr>

5. Specify the ATM service category.

   set Nsta/<n> Vgs Ctrl/sg Aap service <cat>

6. Specify the peak cell rate.

   set Nsta/<n> Vgs Ctrl/sg Aap pcr <p_cell_rate>

7. Specify the sustained cell rate.

   set Nsta/<n> Vgs Ctrl/sg Aap scr <s_cell_rate>

8. Specify the maximum burst size.

   set Nsta/<n> Vgs Ctrl/sg Aap mbs <max_burst_size>

9. Specify the retry limit.

   set Nsta/<n> Vgs Ctrl/sg Aap limit <max_retry>

Variable definitions

Variable	Value
<addr>	The ATM address of the remote access point that is allowed to make calls to this local access point.
<cat>	*ConstantBitRate* or *nrtVariableBitRate*
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries before generating an alarm and forcing manual intervention.
<n>	The value for the *Nsta* component.
<p_cell_rate>	A number representing the peak cell rate.
<rem_addr1> <rem_addr2> <rem_addr3>	A list of one to three ATM addresses. Each address represents an MGC. At least one ATM address must be supplied. Each address is separated with a space.
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.

Configuring PRI backhaul using PSVCs and passive access points

Configure PRI backhaul on a PVG set the backhaul signaling link using SPVCs and passive access points for call control.

Procedure steps

1. Add a passive access point to the AAL5 control connection.

   `add Nsta/<n> Vgs Ctrl/sg Pap`

2. Specify the local ATM address of the access point.

   `set Nsta/<n> Vgs Ctrl/sg Pap localAddr <loc_addr>`

Variable definitions

Variable	Value
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<n>	The value for the *Nsta* component.

Configuring PRI backhaul using SPVCs

Configure PRI backhaul on a PVG set the backhaul signaling link using SPVCs for call control.

Procedure steps

1. Add an SPVC access point to the AAL5 control connection.

   add Nsta/<n> Vgs Ctrl/sg SpvcAp

2. Specify the local ATM address of the access point.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp localAddr <loc_addr>

3. Specify the remote address of the ATM interface to call.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp addrToCall <rem_addr>

4. Specify the combination of the remote virtual path identifier (VPI) and virtual channel identifier (VCI) of the ATM interface to call.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp rVpiVci <VPI.VCI>

5. Specify the ATM service category.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp service <cat>

6. Specify the peak cell rate.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp pcr <p_cell_rate>

7. Specify the sustained cell rate.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp scr <s_cell_rate>

8. Specify the maximum burst size.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp mbs <max_burst_size>

9. Specify the retry limit.

   set Nsta/<n> Vgs Ctrl/sg SpvcAp limit <max_retry>

Variable definitions

Variable	Value
<cat>	*ConstantBitRate* or *nrtVariableBitRate*
<loc_addr>	The local ATM address of the access point. Other active access points use this address to generate calls.
<max_burst_size>	A number representing the maximum burst size. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<max_retry>	A number representing the maximum number of retry rounds the application tries before generating an alarm and forcing manual intervention.
<n>	The value for the *Nsta* component.
<p_cell_rate>	A number representing the peak cell rate.
<rem_addr>	The address of the remote ATM interface.
<s_cell_rate>	A number representing the sustained cell rate. It must be zero if the ATM service category is *constantBitRate*. It must not be zero if the ATM service category is something other than *constantBitRate*.
<VPI.VCI>	The value for the VCC of the remote ATM interface.

Configuring PRI backhaul using VrAp

Configure PRI backhaul using virtual router access point (VrAp) so that call establishment, release, and maintenance commands can travel between the PVG and the MGC.

Procedure steps

1 Provision the VoIP control connection.

```
add Nsta/<nsta_id> Vgs Ctrl/mg
```

2 Add the *UdpPort* component.

```
add Nsta/<nsta_id> Vgs Ctrl/mg UdpPort/<udpport_id>
```

3 Set the IP address of the VoIP control connection.

```
set Nsta/<nsta_id> Vgs Ctrl/mg ipAddress <ip_address>
```

4 Add a *vr* component for the VR on the PVG.

```
add Vr/<vr_name>
```

5 Add a subcomponent *customizationSpecification (CustSpec)* to the *Vr* component.

```
add Vr/<vr_name> CustSpec
```

6 Set the attribute *customizationType (custType)* of the subcomponent *customizationSpecification (CustSpec)* to a value *pvg*.

```
set Vr/<vr_name> CustSpec custType pvg
```

7 Add the protocol port.

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

8 Add the *IpPort* subcomponent for the *ProtocolPort (Pp)* component.

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

9 Add the *IpLogicalInterface* subcomponent for the *IpPort* component.

```
add Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/
<ip_address>
```

10 Add a VR access point (AP) to the VoIP control connection.

```
add Nsta/<nsta_id> Vgs Ctrl/mg VrAp
```

11 Add a subcomponent *VirtualRouterAccessPoint (VrAp)* to the VoIP control connection.

```
add Nsta/<nsta_id> Vgs Ctrl/mg VrAp
```

12 Link the IP address of the VR AP to the ip address of the VR.

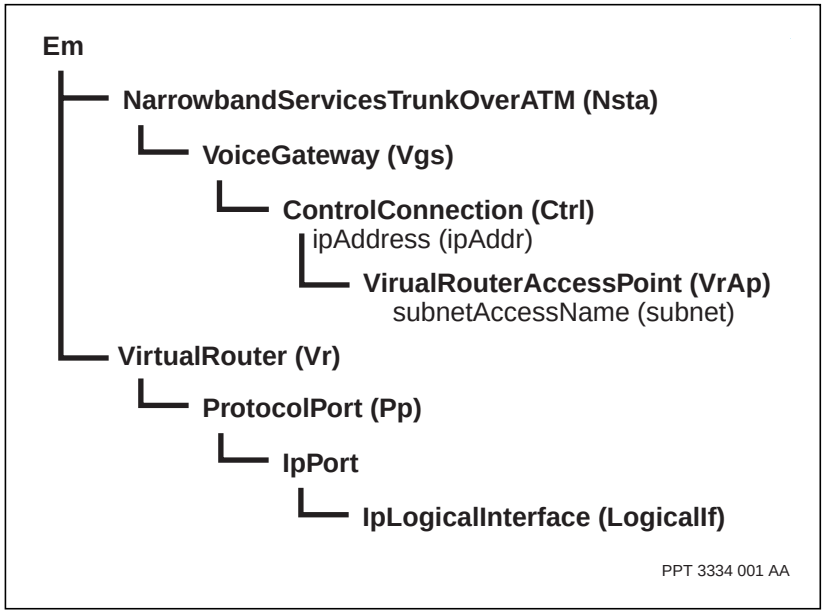
```
set Nsta/<nsta_id> Vgs Ctrl/mg VrAp subnetAccessName
Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/<ip_address>
```

Variable definitions

Variable	Value
<ip_address>	The address assigned to the logical interface.
<nsta_id>	The instance of the *Nsta* component.
<pp_id>	The identifier assigned to this protocol port.
<udpport>	The instance of the user datagram protocol (UDP) port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Figure 53
PRI backhaul using VrAp component hierarchy



Chapter 17
Services configuration for switched PVG

Configure services for switched PVG to define PVG behavior for services such as echo cancellation, voice band data, packet delay variation tolerance, congestion management, digit collection, and tones.

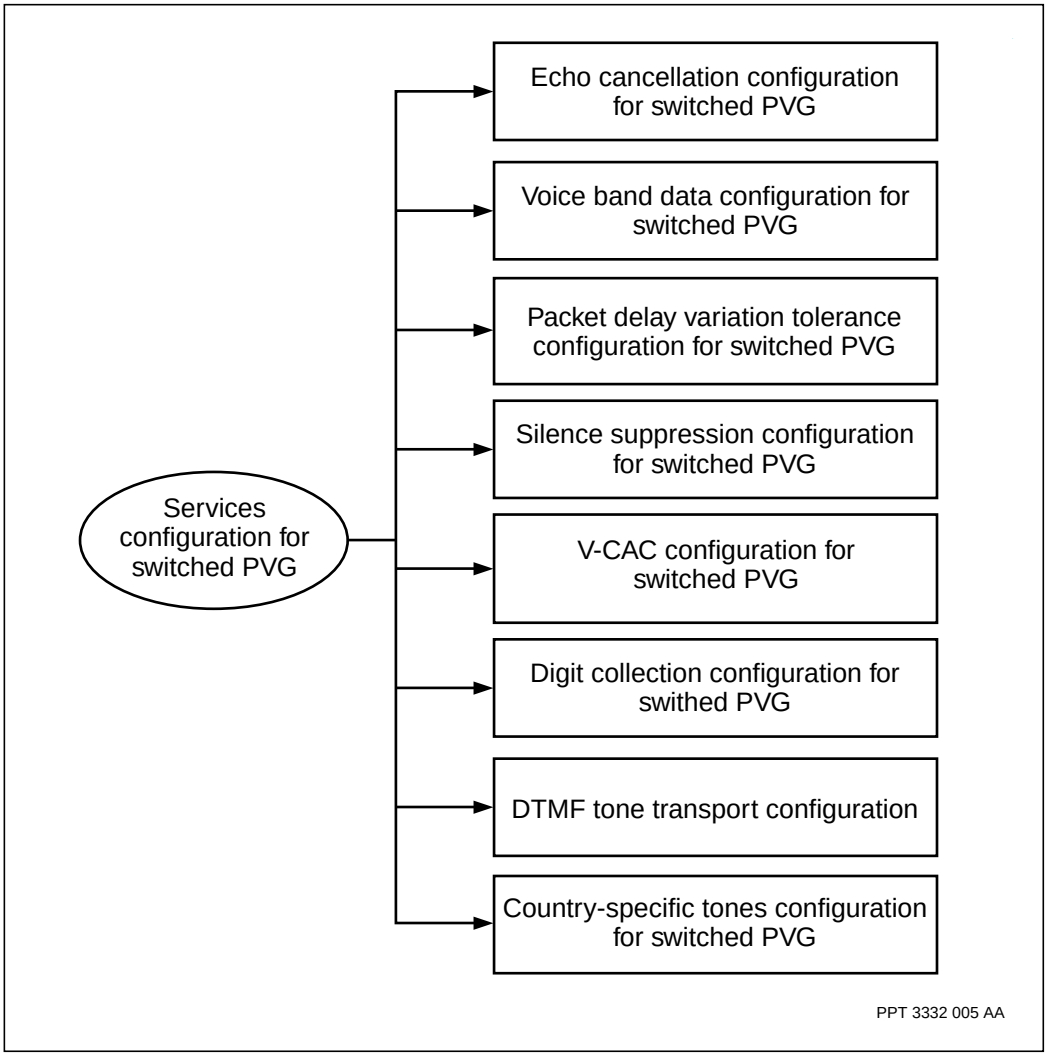
Navigation links

- “Services configuration for switched PVG flow” (page 203)
- “Task navigation” (page 204)

Services configuration for switched PVG flow

This task flow shows you the sequence of procedures you perform to configure services for switched PVG. To link to any procedure, go to “Task navigation” (page 204).

Figure 54
Services configuration for switched PVG



Task navigation

- “Echo cancellation configuration for switched PVG” (page 207)
- “Voice band data configuration for switched PVG” (page 209)

Chapter 18
Echo cancellation configuration for switched PVG

Configure echo cancellation to define how PVG deals with echo within the network.

Prerequisites

- See the sections on echo cancellation for switched PVG and echo canceller options in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.

Procedure steps

1. Set the value for echo cancellation that determines whether echo cancellation will be on or off when a 2100Hz tone is detected:

   `set Nsta/<n> Vgs Brag/0 echoCancellation <eCan_value>`

   `set Nsta/<n> Vgs BragS/0 echoCancellation <eCan_value>`

2. Set the value for the minimum echo return loss expected on the line.

   `set Nsta/<n> Vgs Brag/0 minimumEchoReturnLoss <minEchoRetLoss_value>`

   `set Nsta/<n> Vgs BragS/0 minimumEchoReturnLoss <minEchoRetLoss_value>`

3. Set the comfort noise generation as enabled or disabled. If the *echoCancellation* attribute is set to disabled this attribute has no affect.

   `set Nsta/<n> Vgs Brag/0 echoCancelComfortNoiseGeneration <eCanComNoiseGen_value>`

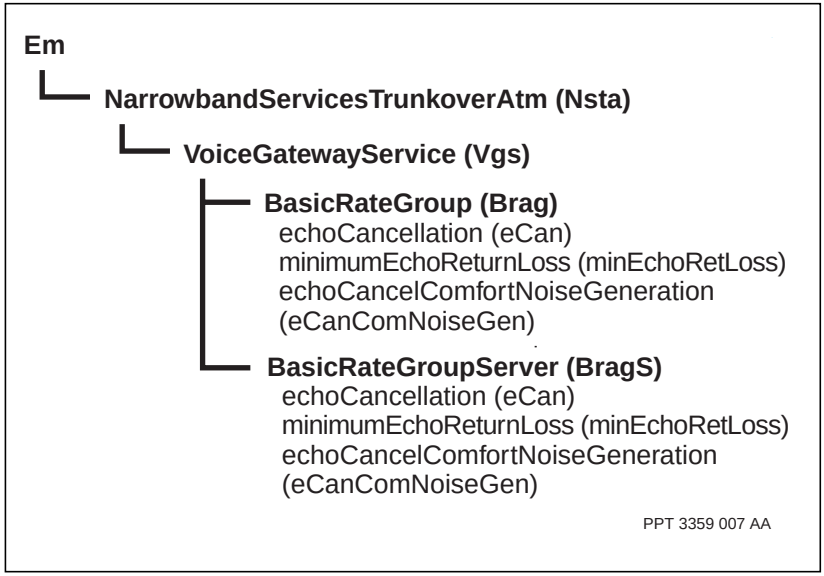
```
set Nsta/<n> Vgs BragS/0
echoCancelComfortNoiseGeneration
<eCanComNoiseGen_value>
```

Variable definitions

Variable	Value
<eCanComNoiseGen_value>	The value for the *echoCancelComfortNoiseGeneration* attribute. The default value is enabled.
<eCan_value>	The value for the *echoCancellation* attribute. The default value is g165Mode.
<m>	The value for the *Vgs* component.
<minEchoRetLoss_value>	The value for the *minimumEchoReturnLoss* attribute. The default value is 6 dB.
<n>	The value for the *Nsta* component.

Procedure job aid

Figure 55
Echo cancellation component hierarchy



Chapter 19
Voice band data configuration for switched PVG

Configure voice band data to determine how switched PVG will handle data calls.

Navigation links

- "Prerequisites to voice band data configuration for switched PVG" (page 209)
- "Voice band data configuration for switched PVG flow" (page 209)
- "Task navigation" (page 210)

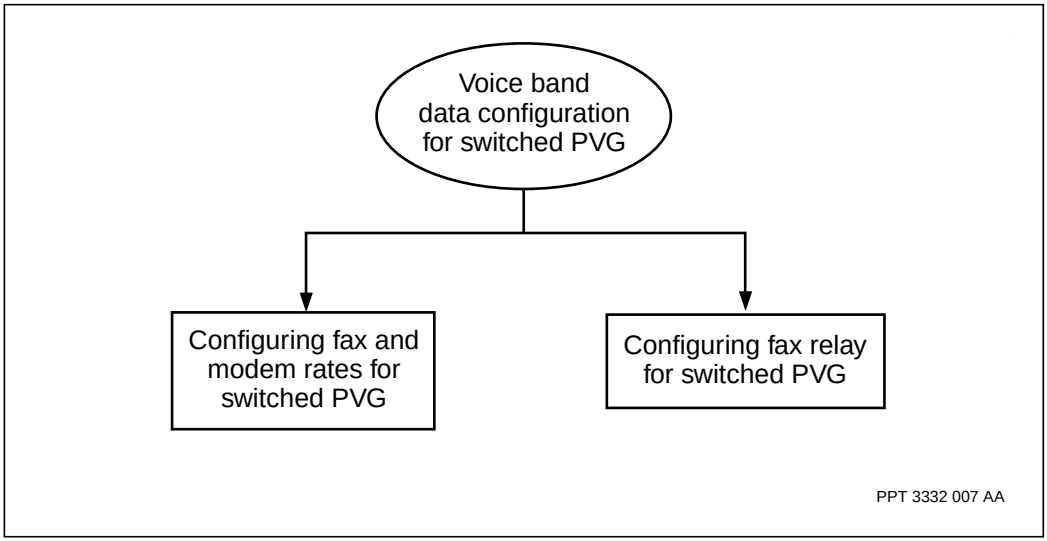
Prerequisites to voice band data configuration for switched PVG

- See the section on fax and modem calls in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*

Voice band data configuration for switched PVG flow

This task flow shows you the sequence of procedures you perform to configure voice band data for switched PVG. To link to any procedure, go to "Task navigation" (page 210).

Figure 56
Voiceband data configuration for switched PVG task flow



Task navigation

- “Configuring fax and modem rates for switched PVG” (page 211)
- “Configuring fax relay for switched PVG” (page 213)

Configuring fax and modem rates for switched PVG

Configure fax and modem rates to define how switched PVG deals with data calls during compression situations.

Procedure steps

1. Set the value for the encoding algorithm to be used for AAL2 channels when a 2100Hz tone is detected.

   `set Nsta/<n> Vgs Brag/0 tone2100Rate <toneRate_value>`

   `set Nsta/<n> Vgs BragS/0 tone2100Rate <toneRate_value>`

   Note: For the *vgsAtmG729* feature, if the attribute *defaultVoiceRate* of the *Nsta Vgs Brag* or *BragS* component is set to a value of *8kG729* then the attribute *tone2100Rate* may not be set to a *32kG726* value.

2. Set the maximum number of voice band data channels that are permitted at modem rate during congestion.

   `set Nsta/<n> Vgs Brag/0 voicebandDataMaxChannels <vbdMaxChan_value>`

   `set Nsta/<n> Vgs BragS/0 voicebandDataMaxChannels <vbdMaxChan_value>`

3. Set the value for the vbdTransport component to configure the transport method for voice band data (VBD) tones.

   `set Nsta/<n> Vgs Brag/0 vbdTransport <vbdTransport_value>`

   `set Nsta/<n> Vgs BragS/0 vbdTransport <vbdTransport_value>`

Variable definitions

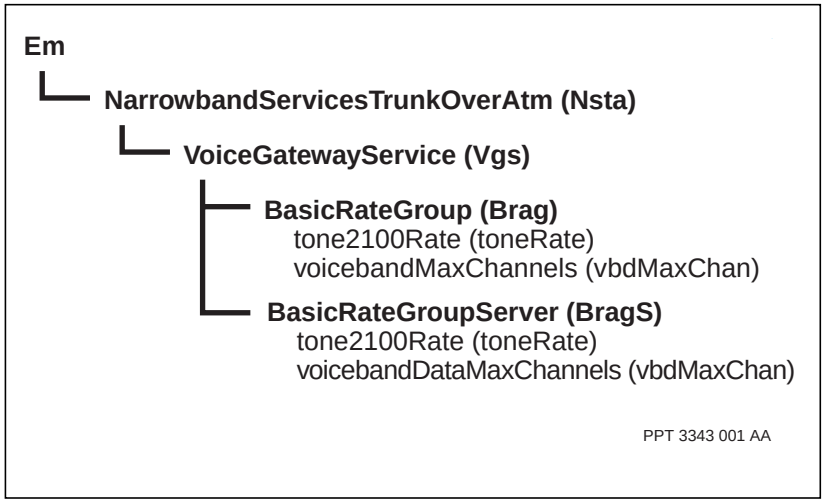
Variable	Value
<n>	The value for the *Nsta component.*
<toneRate_value>	The value for the *tone2100Rate* attribute. The default value is 64kG711.

(Sheet 1 of 2)

Variable	Value
<vbdMaxChan_value>	The value for the voicebandDataMaxChannels attribute. The default value is 12.
<vbdTransport_value>	The value for the vbdTransport attribute. The default value is useTone2100RateIfNegotiated.
(Sheet 2 of 2)	

Procedure job aid

Figure 57
Fax and modem rates component hierarchy



Configuring fax relay for switched PVG

Configure fax relay to transport fax using the T.38 method of demodulating and extracting fax data and relaying it across the network. This feature is supported on VoIP only.

Prerequisites

- Fax relay is only supported for switched PVG using IP on the Passport 15000 or 20000 when the voice services processor 3 (VSP3) FP is used.

Procedure steps

1. Add the FaxRelayOverIP subcomponent to transport fax using the T.38 method:

   `add Nsta/<n> Vgs FaxRelayOverIp`

2. Set how V.8/V.34 fax data is transported:

   `set Nsta/<n> Vgs FaxRelayOverIp v34OverVbd <vbd_value>`

3. Set the depth of redundancy used in T.38 over UDP/IP:

   `set Nsta/<n> Vgs FaxRelayOverIp t38FaxUdpRedundancy <redundancy_value>`

4. Set how long T.38 packets are held on the receive buffer before being passed to playout:

   `set Nsta/<n> Vgs FaxRelayOverIp t38PacketReorderDelay <delay_value>`

Variable definitions

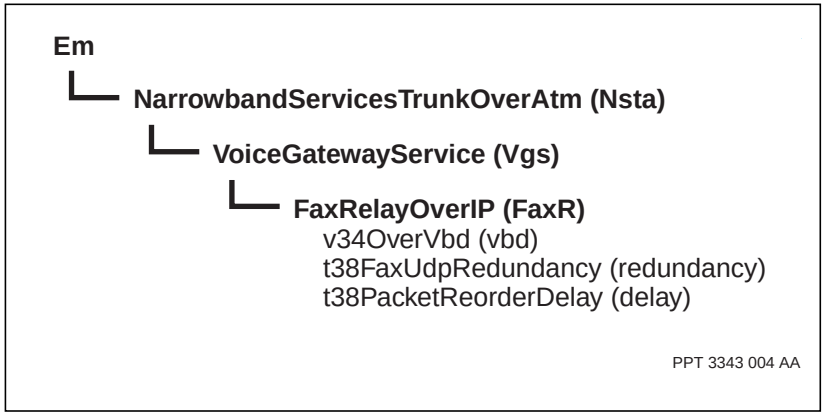
Variable	Value
<delay_value>	The value for the *t38PacketReorderDelay* attribute. The default value is 200 msec.
<n>	The value for the *Nsta component.*

(Sheet 1 of 2)

Variable	Value
<redundancy_value>	The value for the *t38FaxUdpRedundancy* attribute. The default value is 1.
<vbd_value>	The value for the *v34OverVbd* attribute. The default value is disabled.
(Sheet 2 of 2)	

Procedure job aid

Figure 58
Fax relay component hierarchy



Chapter 20
Packet delay variation tolerance configuration for switched PVG

Configure packet delay variation tolerance to determine the size of the packet buffer and the amount of delay before data transmission.

Prerequisites

- See the section on packet delay variation tolerance and the de-jitter buffer in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.

Procedure steps

1. Set the capacity of the packet delay variation buffer:

   `set Nsta/<n> Vgs Brag/0 buffersize <bufsize_value>`

   `set Nsta/<n> Vgs BragS/0 buffersize <bufsize_value>`

2. Set the initial delay that occurs before any data is transmitted:

   `set Nsta/<n> Vgs Brag/0 packetDelayVariationTolerance <pdvt_value>`

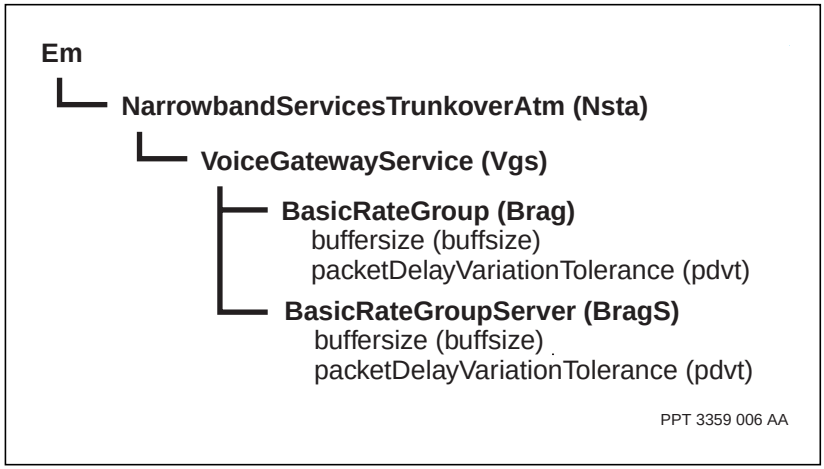
   `set Nsta/<n> Vgs BragS/0 packetDelayVariationTolerance <pdvt_value>`

Variable definitions

Variable	Value
<bufsize_value>	The value for the *buffersize* attribute. The default value is 50 msec.
<n>	The value for the *Nsta* component.
<pdvt_value>	The value of the *packetDelayVariationTolerance* attribute. The default is 20 msec.

Procedure job aid

Figure 59
Packet delay variation tolerance component hierarchy



Chapter 21
Silence suppression configuration for switched PVG

Configure silence suppression to define when suppression will be applied, the maximum level for silence suppression, and the amount of time before silence suppression is applied.

Prerequisites

- See the section on silence suppression in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.
- The congestion thresholds control how the system avoids congestion. The default values for congestion threshold attributes satisfy typical configurations, so use caution if you change them.

Procedure steps

1 Set the value for silence suppression to specify when silence suppression is performed:

```
set Nsta/<n> Vgs Brag/0 silenceSuppression
<silSup_value>
```

```
set Nsta/<n> Vgs BragS/0 silenceSuppression
<silSup_value>
```

2 Set the value for the silence suppression threshold to specify the level above which silence suppression is not performed:

```
set Nsta/<n> Vgs Brag/0 silenceSuppressionThreshold
<silSupThresh_value>
```

set Nsta/<n> Vgs BragS/0 silenceSuppressionThreshold <silSupThresh_value>

3 Set the value for the amount of time a timeslot speech path is left alone before suppression is applied:

set Nsta/<n> Vgs Brag/0 silenceDetectionHangOverTime <silDetTime_value>

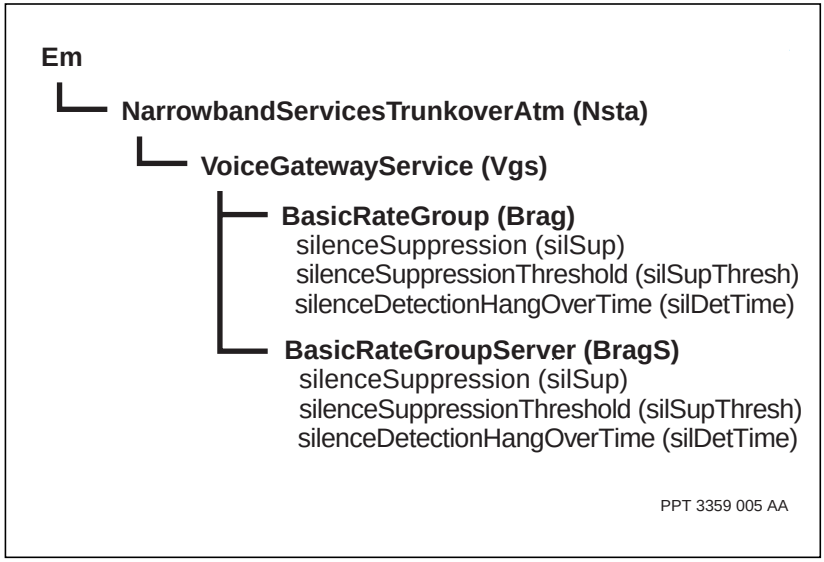
set Nsta/<n> Vgs BragS/0 silenceDetectionHangOverTime <silDetTime_value>

Variable definitions

Variable	Value
<n>	The value for the *Nsta component.*
<silDetTime_value>	The value for the *silenceDetectionHangOverTime* attribute. The default value is 200 msec.
<silSup_value>	The value for the *silenceSuppression* attribute. The default value is enabled.
<silSupTresh_value>	The value for the *silenceSuppressionThreshold* attribute. The default value is -40.

Procedure job aid

Figure 60
Configuring silence suppression component hierarchy



Chapter 22
V-CAC configuration for switched PVG

Configure voice-band connection admission control (V-CAC) to set the admission control levels for the media gateway.

Prerequisites

- See the sections on V-CAC in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.
- The congestion thresholds control how the system avoids congestion. The default values for congestion threshold attributes satisfy typical configurations, so use caution if you change them.
- Provisioning of V-CAC is optional. For switched voice using ATM, if the component *VoiceCallAdmissionControl* is not provisioned, the V-CAC feature continues to operate based on the provisionable attribute *maxNumberAal2Trunks* of the *Nsta Vgs AtmTConn* component. For switched PVG using IP, if the component *VoiceCallAdmissionControl* is not provisioned, the V-CAC feature continues to operate. Also, V-CAC is not supported for virtual router access point (VrAp) in switched PVG using IP.

Procedure steps

1 Add the *Nsta Vgs VoiceCallAdmissionControl* component if you decide to provision the voice-band connection admission control (V-CAC) feature.

```
add Nsta/<n> Vgs VCac
```

2 Specify the average duration of the active voice period for the VGS if you decided to provision the V-CAC feature.

```
set Nsta/<n> Vgs VCac avActive/<av>
```

Note: The attribute Nsta Vgs VCac averageActiveDuration (avActive) is a characterization of real speech and not parameters under operator control.

3 Specify the packet loss probability index per ATM VCC for the VGS if you decided to provision the V-CAC feature.

```
set Nsta/<n> Vgs VCac plpIndex/<plp>
```

4 Specify the percentage of time that the source is active for the VGS if you decided to provision the V-CAC feature.

```
set Nsta/<n> Vgs VCac srcActive/<src>
```

Note: The attribute Nsta Vgs VCac sourceActiveTime (srcActive) is a characterization of real speech and not parameters under operator control.

5 Specify the percentage of shelf backplane bandwidth allocated for the VGS if you decided to provision the V-CAC feature.

```
set Nsta/<n> Vgs VCac shbw/<bw>
```

6 Specify if calls that autonomously transition from voice to voice-band data (VBD) are deleted when new bandwidth requirements of the call exceed the bandwidth available to the V-CAC feature.

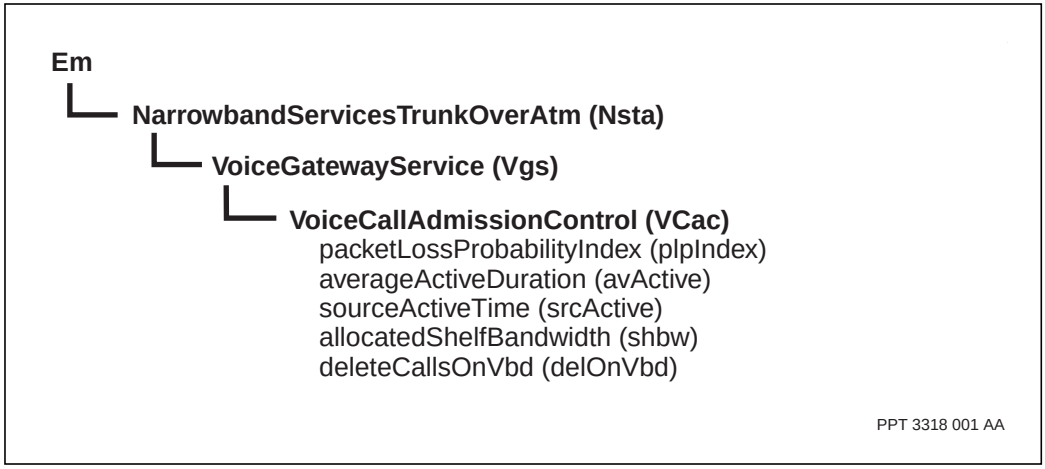
```
set Nsta/<n> Vgs VCac delOnVbd/<del>
```

Variable definitions

Variable	Value
<av>	The value for the *avActive* attribute.
<bw>	The value for the *shbw* attribute.
<del>	The value for the *delOnVbd* attribute.
<n>	The value for the *Nsta* component.
<plp>	The value for the *packetLossProbabilityIndex* attribute.
<src>	The value for the *srcActive* attribute.

Procedure job aid

Figure 61
Voice-band connection admission control (V-CAC) for switched PVG component hierarchy



Chapter 23
Digit collection configuration for switched PVG

Configure DTMF digit collection to set the timers used during digit collection.

Prerequisites

- See 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals* for more information about DTMF digit collection.

Procedure steps

1 Add the *DigitCollection* component.

```
add Nsta/<n> Vgs DigitCollection
```

2 Add the minimum Dtmf power level attribute.

```
set Nsta/<n> Vgs Brag/0 minimumDtmfPowerLevel
<Power_value>

set Nsta/<n> Vgs BragS/0 minimumDtmfPowerLevel
<Power_value>
```

3 Configure the initial digit timer attribute.

```
set Nsta/<n> Vgs DigitCollection initialDigitTimer
<TimerValue>
```

4 Configure the short interdigit timer.

```
set Nsta/<n> Vgs DigitCollection shortInterDigitTimer
<TimerValue>
```

5 Configure the long interdigit timer.

set Nsta/<n> Vgs DigitCollection longInterDigitTimer <TimerValue>

6 Configure the long duration digit timer.

set Nsta/<n> Vgs DigitCollection longDurationDigitTimer <TimerValue>

7 When required, use the *Zero* verb to re-initialize the *peakCollectionsInProgress* operational attribute.

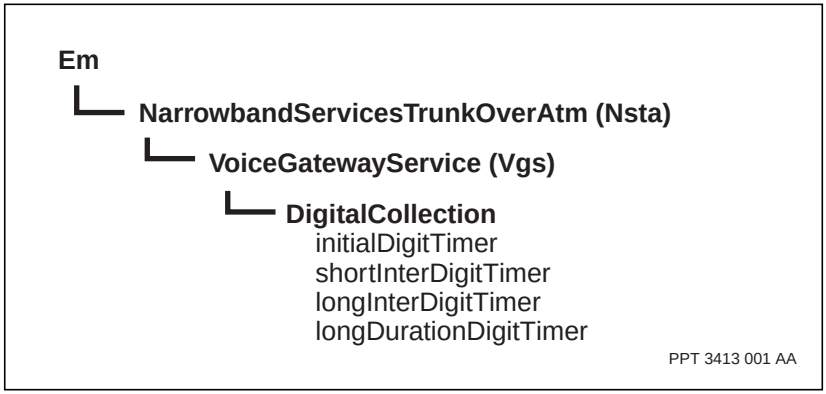
ZERO Nsta/<n> Vgs DigitCollection

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<Power_value>	The value for the *minimumDtmfPowerLevel* attribute. The default is -27 dBm0. If the *DigitCollection* component is missing, the *minimumDtmfPowerLevel* attribute is ignored.
<TimerValue>	The value for one of *initialDigitTimer*, *shortInterDigitTimer*, *longInterDigitTimer* or *longDurationDigitTimer*.

Procedure job aid

Figure 62
DTMF digit collection for voice services for switched PVG component hierarchy



Chapter 24
DTMF tone transport configuration

Configure for DTMF tone transport to set the transport method for DTMF tones.

Prerequisites

- The *digitTransport* attribute will be ignored and *sendAsVoice* will be the digit tone transport method if the feature list does not contain the *vgsIP, vgsAtm, or vgsAtmDC* features.
- DTMF tone transport requires a VSP3.

Procedure steps

1. If component Nsta Vgs *BasicRateGroup (Brag)* is configured, set the DTMF relay method for the *digitTransport* attribute of the basic rate group.

   `set Nsta/<n> Vgs Brag/0 digitTransport <digitTransport_value>`

2. If component *Nsta Vgs BasicRateGroupServer (BragS)* is configured, set the DTMF relay method for the *digitTransport* attribute of the basic rate group server.

   `set Nsta/<n> Vgs BragS/0 digitTransport <digitTransport_value>`

3. If component *Nsta Vgs TdmNetworkProfile (TProf)* component is configured, set the DTMF relay method for the *tdmLogLaw (logLaw)* attribute of the TDM network profile.

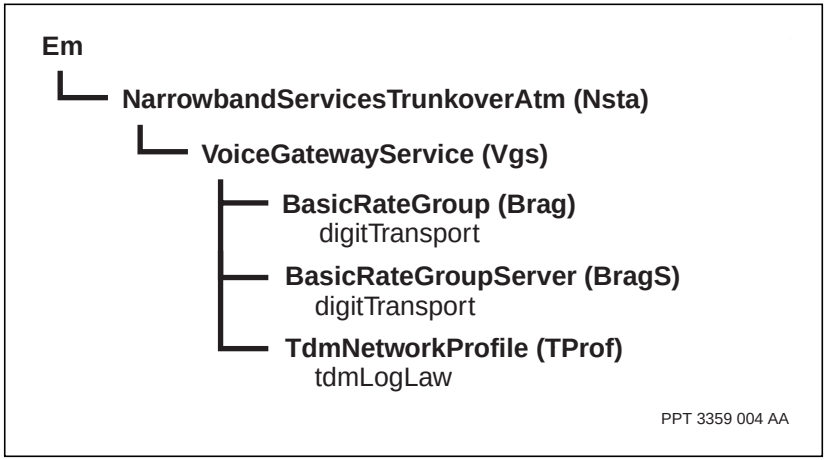
   `set Nsta/<n> Vgs TProf/0 tdmLogLaw <tdmLogLaw_value>`

Variable definitions

Variable	Value
<digitTransport_value>	The value for the *digitTransport* attribute. There is no default value. The value *relay* is only supported on the VSP3.
<n>	The value for the *Nsta* component.
<tdmLogLaw_value>	The value for the tdmLogLaw attribute. There is no default value.

Procedure job aid

Figure 63
Configuring DTMF tone transport component hierarchy



Chapter 25
Country-specific tones configuration for switched PVG

Configure country-specific tones to enable PVG to play out the audible tones specific to the user's country.

Prerequisites

- For more information on tones, read the section on audible tones in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.
- The *toneset* attribute has no effect if *defaultVoiceRate* is set to amr or csd.

Procedure steps

1 Set the default country toneset to be used on all basic rate group (*Brag*) or basic rate group server (*BragS*) subcomponents of the *Vgs* component.

```
set Nsta/<n> Vgs defaultToneset <defaultTonesetvalue>
```

2 If required, set the toneset for each *Brag* or *BragS* subcomponent to specify a toneset to be used on an individual DS1 or E1 port.

```
set Nsta/<n> Vgs Brag/<p> toneset <tonesetvalue>
```

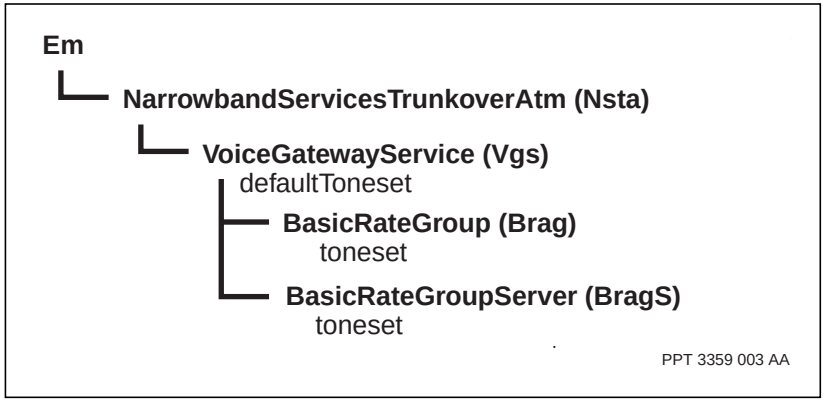
```
set Nsta/<n> Vgs BragS/<q> toneset <tonesetvalue>
```

Variable definitions

Variable	Value
<defaultTonesetvalue>	The default value is canadaUsa. Other possible values are: argentina, australia, austria, belgium, brazil, canadaUsa, chile, china, czech, france, germany, greece, hongKong, india, ireland, israel, italy, japan, korea, malaysia, mexico, netherlands, newZealand, panama, philippines, poland, portugal, romania, singapore, spain, sweden, switzerland, taiwan, thailand, turkey, uk, venezuela.
<n>	The value for the *Nsta* component.
<p>	The value for a specific instance of the *Brag* subcomponent.
<q>	The value for a specific instance of the *BragS* subcomponent.
<tonesetvalue>	The default value is sameAsVgs. Other possible values are: sameAsVgs, argentina, australia, austria, belgium, brazil, canadaUsa, chile, china, czech, france, germany, greece, hongKong, india, ireland, israel, italy, japan, korea, malaysia, mexico, netherlands, newZealand, panama, philippines, poland, portugal, romania, singapore, spain, sweden, switzerland, taiwan, thailand, turkey, uk, venezuela.

Procedure job aid

Figure 64
Tones for switched PVG component hierarchy



Chapter 26
Switched PVG monitoring

Monitor switched PVG to view operational and statistics attributes as well as open systems interconnection (OSI) state information for most PVG components.

Navigation links

Switched PVG monitoring tasks

Verifying that switched PVG is enabled

Verify that switched PVG using ATM is enabled to ensure that the system is enabled.

Prerequisites

- After you have saved and committed the provisioning session, the system is enabled and ready to accept calls within a few minutes.

Procedure steps

1 For switched PVG using ATM, IP, or Natvie IP, display the *Vgs Brag* or *Vgs BragS* attributes:

```
display -o Nsta/<n> vgs Brag/*
```

```
display -o Nsta/<n> vgs BragS/*
```

If the *failureCause* attribute is not set to *none*, or the system generates one or more alarms, see the fault management section in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.

2 For switched PVG using ATM, display the Vgs control connections.

```
display -o Nsta/<n> vgs ctrl/*
```

If the *cStat* attribute is not set to *enable*, see the fault management section in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.

3 For switched PVG using ATM, display the Vgs ATM connections (AtmTConn).

```
display -o Nsta/<n> vgs AtmTConn/*
```

If the *cStat* attribute is not set to *enable*, see the fault management section in the 241-5701-780 *Passport 7400, 15000, 20000 Packet Voice Gateway Technology Fundamentals*.

Variable definitions

Variable	Value
<n>	The value for the *Nsta component.*

Displaying operational and statistics attributes for switched PVG using ATM

Display operational and statistics attributes for switched PVG using ATM to view information about the state of your node.

Prerequisites

- For more information about using Passport commands to monitor your node, see 241-5701-050 *Passport 7400, 15000, 20000 Commands* and 241-5701-600 *Passport 7400, 15000, 20000 Configuration Guide*.
- For information about ATM operational attributes, see 241-5701-700 *Passport 7400, 15000, 20000 ATM Overview* and 241-5701-060 *Passport 7400, 15000, 20000 Components*.
- When the VSP-type card has a high number of call setup requests outstanding it may take up to a minute for component display request to appear.

Procedure steps

1 To display the names and values for all operational attributes associated with a *Vgs* component, enter

```
display Nsta/<n> Vgs
```

2 To display the names and values for an operational attribute associated with a *Brag* subcomponent, enter

```
display Nsta/<n> Vgs Brag/<b> <attribute>
```

3 To display the names and values for an operational attribute associated with an *AtmTConn* subcomponent, enter

```
display Nsta/<n> Vgs AtmTConn/<a> <attribute>
```

4 To display the names and values for an operational attribute associated with a *Control* subcomponent, enter

```
display Nsta/<n> Vgs Control/<c> <attribute>
```

5 To display the names and values for an operational attribute associated with a *Vgcp* subcomponent if the voice gateway control protocol (VGCP, also known as ASPEN) is used, enter

```
display Nsta/<n> Vgs Vgcp <attribute>
```

6 To display the names and values for an operational attribute associated with a *H248* subcomponent if the H.248 control protocol is used, enter

`display Nsta/<n> Vgs H248/0 <attribute>`

Variable definitions

Variable	Value
<a>	The instance value for the *AtmTConn* subcomponent.
<attribute>	The name of the operational attribute.
<b>	The instance value for the *Brag* subcomponent.
<c>	The instance value for the *Control* subcomponent.
<n>	The value for the *Nsta component.*

Procedure job aid

Figure 65
Operational and statistics attributes for switched PVG using ATM—Part 1

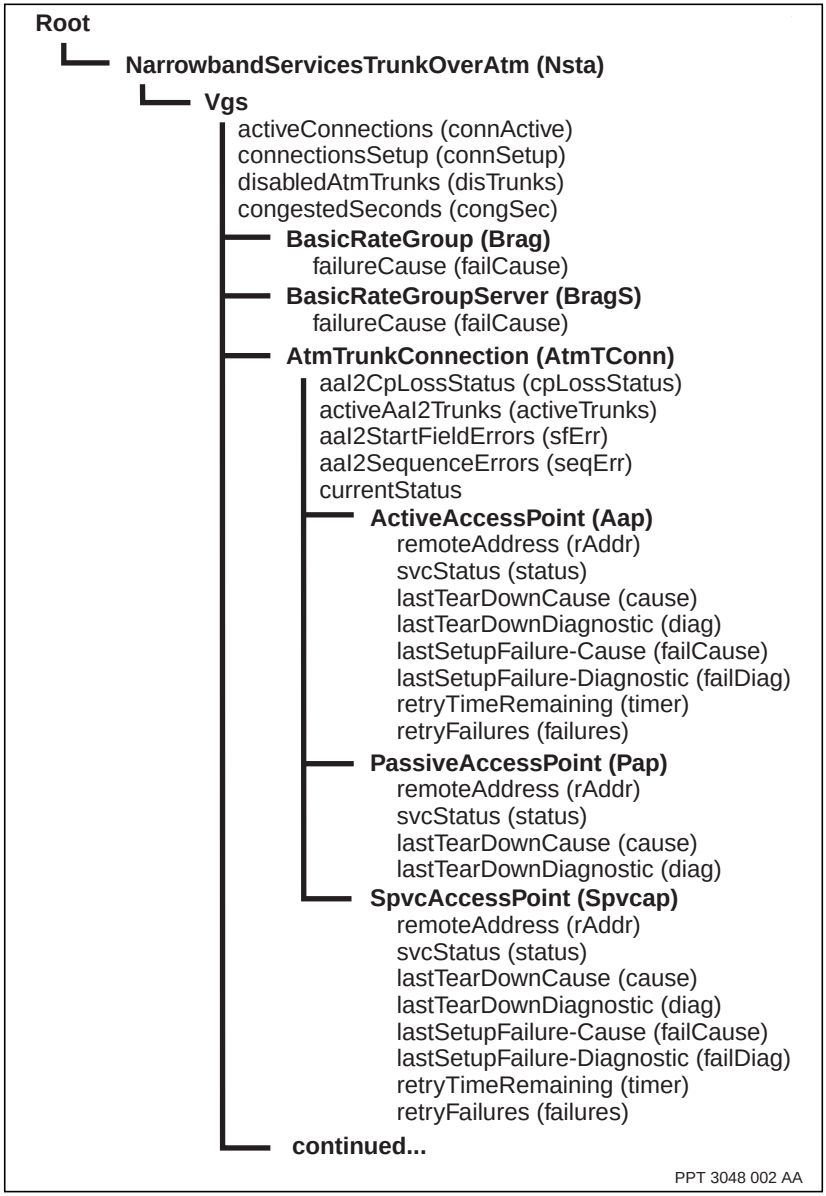


Figure 66
Operational and statistics attributes for switched PVG using ATM—Part 2

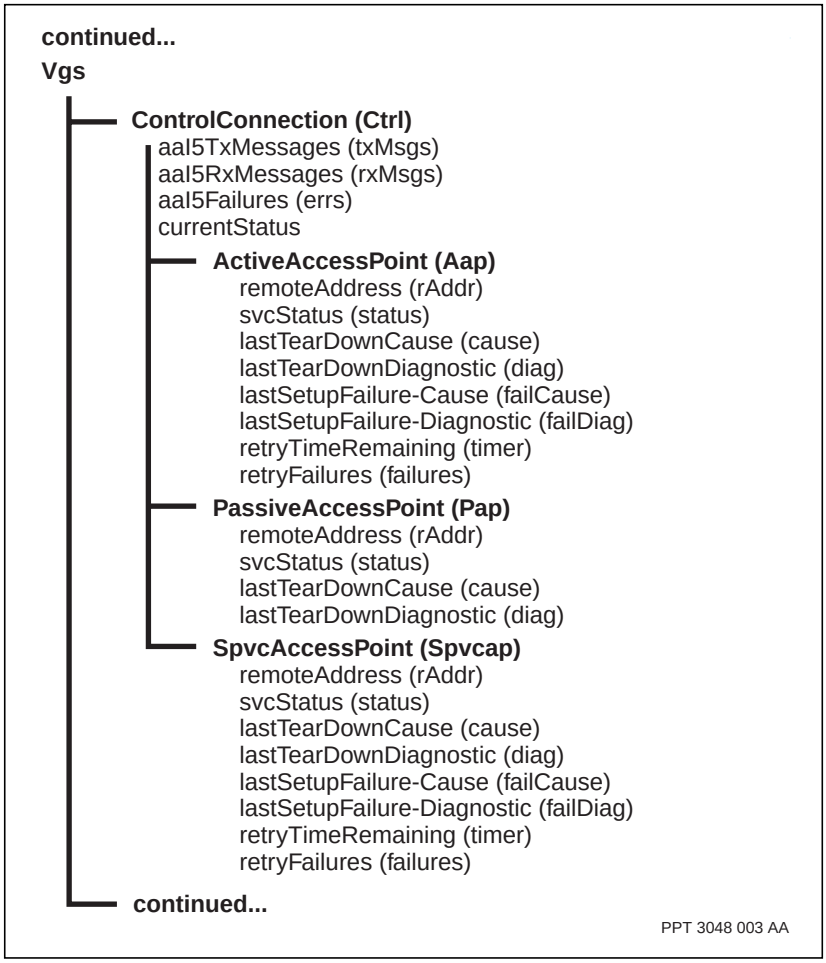


Figure 67
Operational and statistics attributes for switched PVG using ATM—Part 3

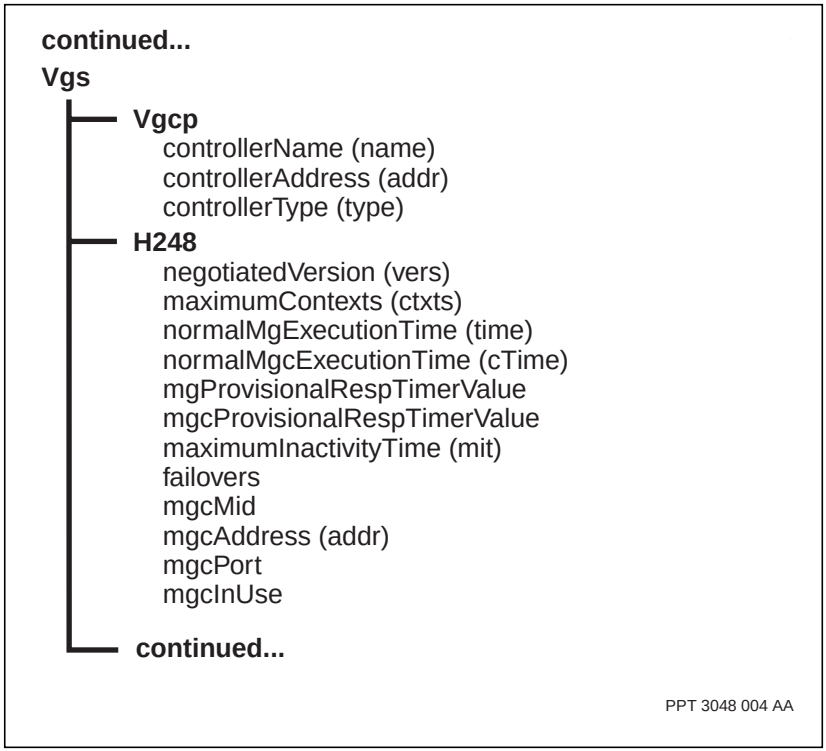
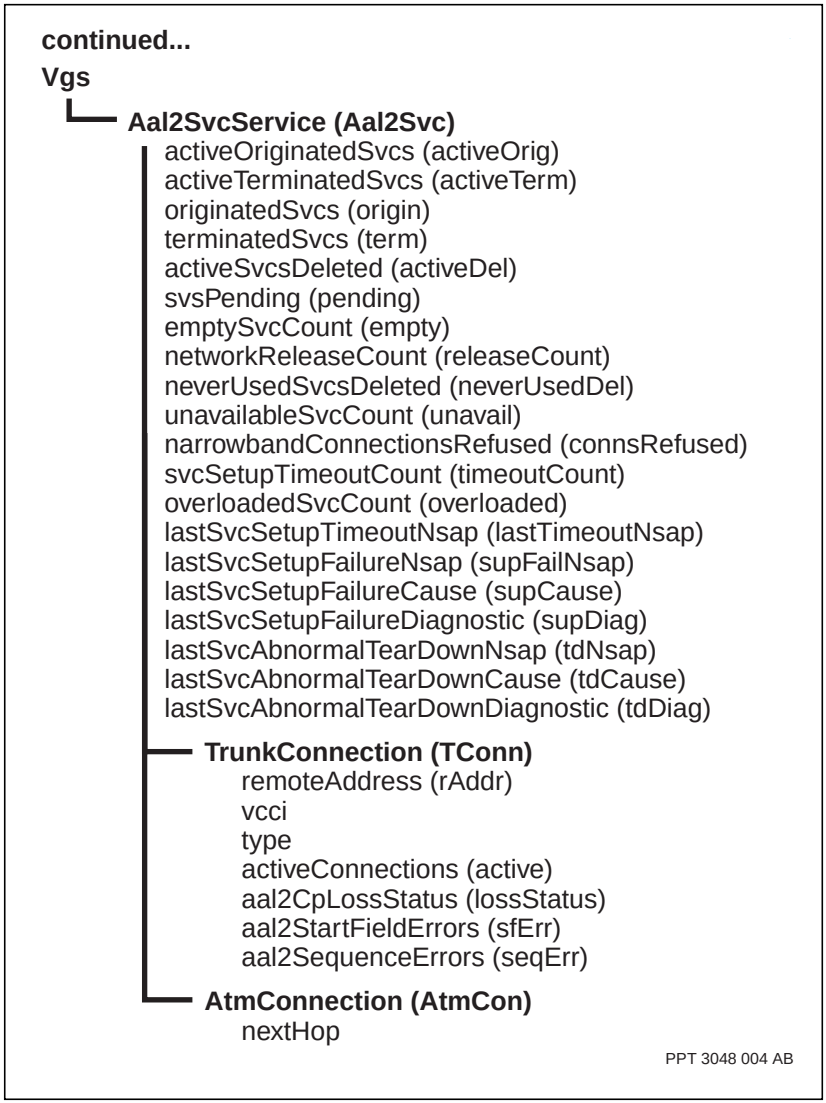


Figure 68
Operational and statistics attributes for switched PVG using ATM—Part 4



Displaying operational and statistics attributes for switched PVG using IP

Display operation and statistics attributes for switched PVG using IP to view information about the state of your node.

Prerequisites

- For more information about using Passport commands to monitor your node, see 241-5701-050 *Passport 7400, 15000, 20000 Commands*.
- For information about ATM operational attributes, see 241-5701-700 *Passport 7400, 15000, 20000 ATM Overview*.
- When the VSP-type card has a high number of call setup requests outstanding it may take up to a minute for component display requests to appear.

Procedure steps

1 To display the names and values for all operational attributes associated with a *Vgs* component, enter

```
display Nsta/<n> Vgs
```

2 To display the names and values for an operational attribute associated with a *Brag* subcomponent, enter

```
display Nsta/<n> Vgs Brag/<b> <attribute>
```

3 To display the names and values for an operational attribute associated with an *IpMConn* subcomponent, enter

```
display Nsta/<n> Vgs IpMConn <attribute>
```

4 To display the names and values for an operational attribute associated with a *Control* subcomponent, enter

```
display Nsta/<n> Vgs Control/<c> <attribute>
```

5 To display the names and values for an operational attribute associated with a *Vgcp* subcomponent if the voice gateway control protocol (VGCP, also known as ASPEN) is used, enter

```
display Nsta/<n> Vgs Vgcp <attribute>
```

6 To display the names and values for an operational attribute associated with a *H248* subcomponent if the H.248 control protocol is used, enter

```
display Nsta/<n> Vgs H248/0 <attribute>
```

Variable definitions

Variable	Value
<attribute>	The name of the operational attribute.
<b>	The instance value for the *Brag* subcomponent.
<c>	The instance value for the *Control* subcomponent.
<n>	The value for the *Nsta component.*

Procedure job aid

Figure 69
Operational and statistics attributes for switched PVG using IP—Part 1

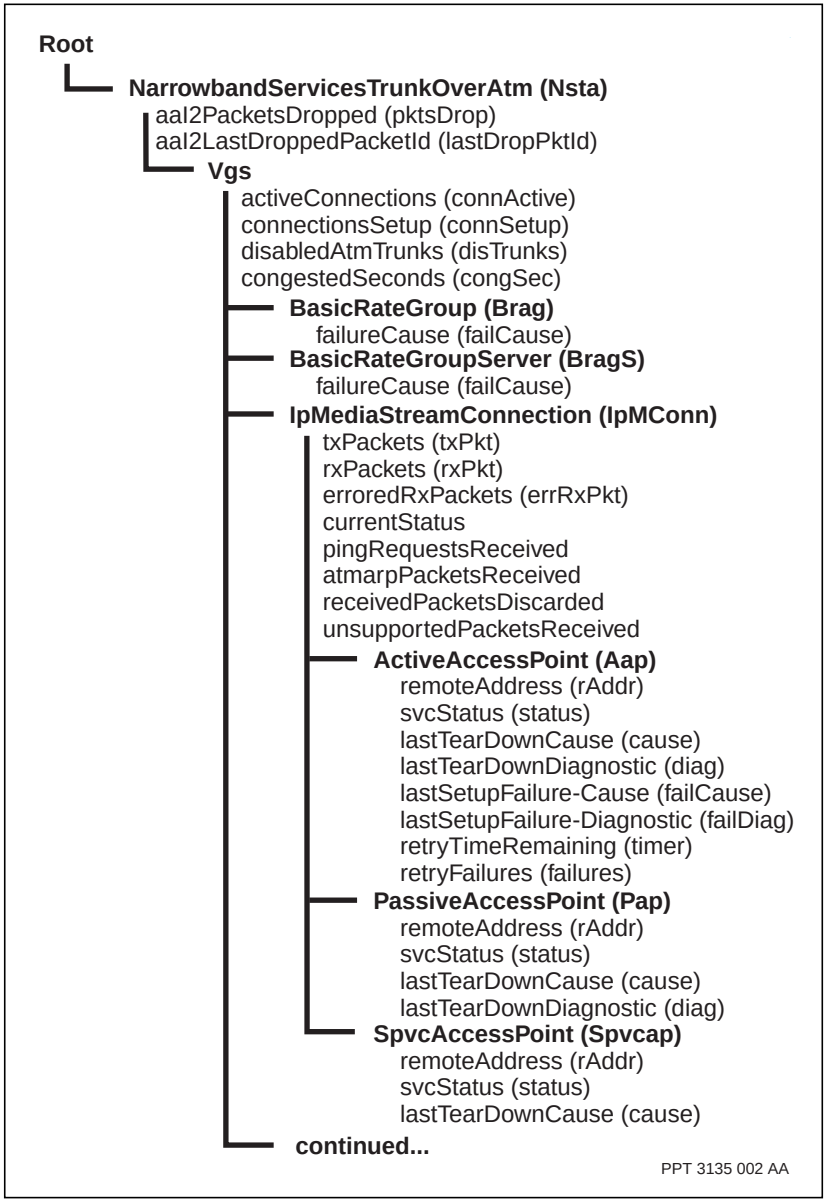


Figure 70
Operational and statistics attributes for switched PVG using IP—Part 2

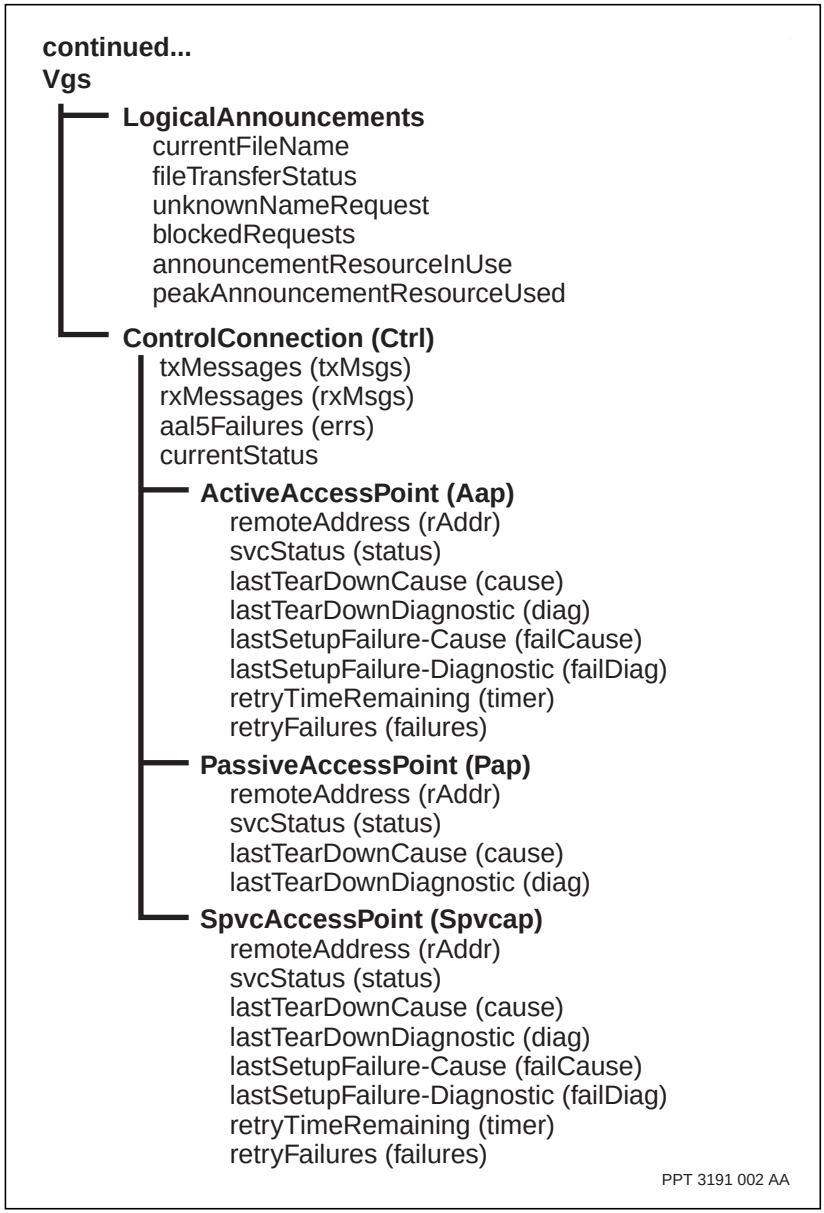
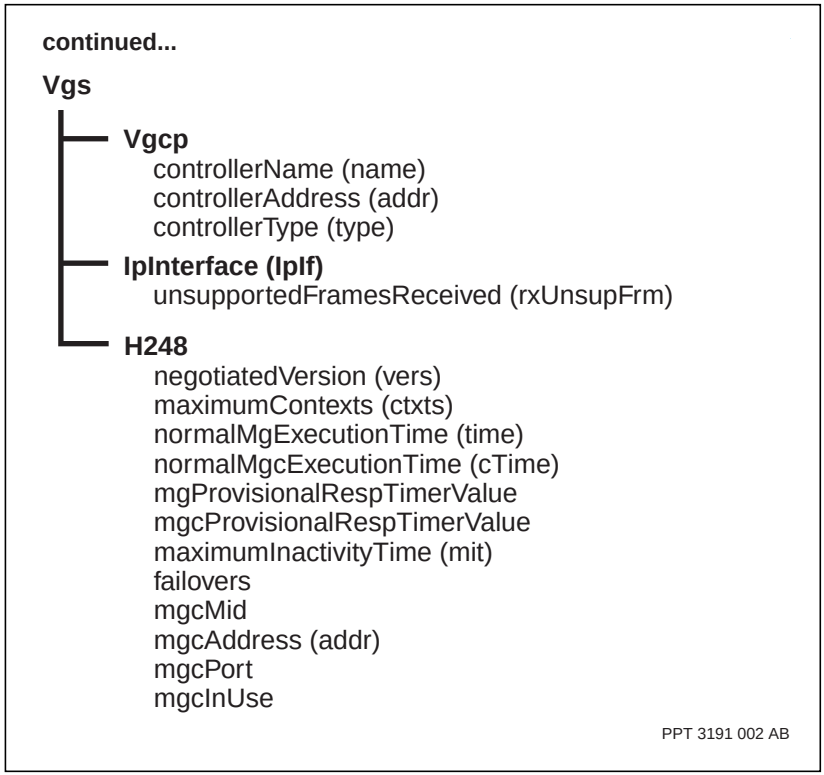


Figure 71
Operational and statistics attributes for switched PVG using IP—Part 3



Displaying OSI states for switched PVG

Display OSI states for switched PVG to view the state of any component that supports OSI states.

Prerequisites

- For information about OSI states for Passport hardware, see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.
- For information about OSI states for ATM components, see 241-5701-700 *Passport 7400, 15000, 20000 ATM Overview*.

Procedure steps

1 To display the OSI state for a *Vgs* subcomponent, enter

```
display Nsta/<n> <subcomponent>/<m> OsiState
```

Variable definitions

Variable	Value
<m>	The instance value of the subcomponent.
<n>	The value for the *Nsta component.*
<subcomponent>	is on of *AtmTConn*, *IpMConn*, *Control*, or *Brag*.

Procedure job aid

Table 1
State combinations for the *Nsta* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Disabled, Idle	The component is unlocked, but the voice services FP to which it links is disabled, or all of the *Connection* subcomponents are disabled.
Unlocked, Enabled, Active	At least one connection is configured.
Locked, Disabled, Idle	The component is locked.

Table 2
State combinations for the *AtmTrunkConnection* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Disabled, Idle	The *Nsta* component is disabled. The connection is not transferring any data or collecting any traffic statistics.
Unlocked, Enabled, Active	The connection is receiving and transmitting data. The connection is also collecting traffic statistics. If there is no traffic for a period of time, the component remains in this state as it can still gather operational statistics.
Locked, Disabled, Idle	The component is locked. The connection carries no traffic and collects no traffic statistics.

Table 3
State combinations for the *IpMediaStreamConnection* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Disabled, Idle	The *Nsta* component is disabled. The connection is not transferring any data or collecting any traffic statistics.
Unlocked, Enabled, Active	The connection is receiving and transmitting data. The connection is also collecting traffic statistics. If there is no traffic for a period of time, the component remains in this state as it can still gather operational statistics.
Locked, Disabled, Idle	The component is locked. The connection carries no traffic and collects no traffic statistics.

Table 4
State combinations for the *ControlConnection* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Disabled, Idle	This component is unlocked, but the AAL5 connection to the call server specified by the *Nap* subcomponent is unavailable.
Unlocked, Enabled, Idle	This is a transitory state as the component progresses from the *Unlocked*, *Disabled*, *Idle* state to the *Unlocked*, *Enabled*, *Active* state. This state is never visible to the operator.
Unlocked, Enabled, Active	This component is unlocked, and the AAL5 connection to the call server is available.

Table 5
State combinations for the *BasicRateGroup* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Disabled, Idle	Channels in the group are not being processed due to a problem in the path (for example, the *Channel* component is disabled or locked) or because the *Connection* component is locked.
Unlocked, Enabled, Active	At least one channel is carrying and processing data.
Locked, Disabled, Idle	The operator has locked the channel group.

Table 6
State combinations for the *BasicRateGroupServer* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Disabled, Idle	Channels in the group are not being processed due to a problem in the path (for example, the *Channel* component is disabled or locked) or because the *Connection* component is locked.
(Sheet 1 of 2)	

Table 6 (continued)
State combinations for the *BasicRateGroupServer* component

Combination (Administrative, Operational, Usage)	Details
Unlocked, Enabled, Active	At least one channel is carrying and processing data.
Locked, Disabled, Idle	The operator has locked the channel group.

(Sheet 2 of 2)

Display OSI states for VoIP using two gigabit Ethernet ports of VSP3 and external routing

Display OSI states for VoIP using two gigabit Ethernet ports of VSP3 and external routing to display the OSI states of the components that support OSI states.

Prerequisites

- For information about OSI states for Passport hardware, see 241-5701-615 *Passport 7400, 15000, 20000 FP Configuration Reference*.

Procedure steps

1 To display the OSI state for a *GigE* subcomponent when using a VSP3 gigabit Ethernet port, enter

```
display Lp/<x> Vsp GigE/<y> OsiState
```

Variable definitions

Variable	Value
<x>	The logical processor number.
<y>	The VSP3 gigabit Ethernet port number (0 or 1).

Procedure job aid

Table 7
State combinations for the *Ethernet1000BaseSX* component

Combination (Administrative, Operational, Usage)	Detail
Unlocked, Disabled, Idle	External factors render the gigabit Ethernet interface inoperable through detection and declaration of a minimum of one port alarm (loss of synchronization, auto-negotiation failure, remote fault indication), or the parent component is disabled and/or locked.
Unlocked, Enabled, Idle	The gigabit Ethernet interface is not being used by the application to transmit data. The line input has been recognized as good.
Unlocked, Enabled, Busy	The gigabit Ethernet interface is in use by the application.

Passport 7400, 15000, 20000

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