NORTEL

Nortel Media Gateway 7480/15000

Switched Service Configuration Management

NN10600-782

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New in this release

The following sections detail what is new in *Nortel Media Gateway 7480/15000 Switched Service Configuration Management* (NN10600-782) for PCR 7.2.

- Features (page 8)
- Other changes (page 10)

Features

See the following sections for information about feature changes:

- Channel Associated Signalling (page 8)
- Media Gateway V5.2 signalling on VSP3-o (page 8)
- Media Gateway as a Host device (page 9)
- Media Gateway Transcoder Free and Remote Transcoder operation modes (page 9)
- Media Gateway alternative call waiting and additional support for international tonesets (page 9)
- Media Gateway Nodal Provisioning Templates for PT-IP in Carrier VoIP networks (page 9)
- Media Gateway Codecs for IP and ATM (page 9)
- Media Gateway New 2pVS card (page 9)
- Media Gateway New 2pVSP4e card (page 10)

Channel Associated Signalling

The following section was updated for this feature:

- Configuring Per-Trunk or Channel Associated Signaling (CAS) on the MG (page 154)

Media Gateway V5.2 signalling on VSP3-o

The following section was updated for this feature:

- Configuring V5.2 backhaul using VSP3-o FPs (page 162)

Media Gateway as a Host device

The following sections were updated for this feature:

- Configuring the Media Gateway as a host (page 40)

Media Gateway Transcoder Free and Remote Transcoder operation modes

The following sections were updated for this feature:

- Transcoder free operation mode (TrFO) (page 200)
- Remote transcoder operation (RTOCdma) mode (page 204)

Media Gateway alternative call waiting and additional support for international tonesets

The following sections were updated for this feature:

- Country-specific tones configuration for switched Media Gateway (page 223)

Media Gateway Nodal Provisioning Templates for PT-IP in Carrier VoIP networks

The following section was updated for this feature:

- Media Gateway 15000 configuration for the Carrier VoIP Networks UA-IP and PT-IP solution (page 261)
- FP configuration for Multiservice Switch 15000 Media Gateway 15000 (page 262)
- Link configuration for Multiservice Switch 15000 Media Gateway 15000 (page 262)
- TDM trunk configuration for Multiservice Switch 15000 Media Gateway 15000 (page 264)

Media Gateway Codecs for IP and ATM

The following sections were updated for this feature:

- Narrowband services trunk over ATM configuration for switched Media Gateway (page 16)
- Configuring the voice services FP for switched Media Gateway using IP (page 49)

Media Gateway New 2pVS card

The following sections were updated for this feature:

- Remote transcoder operation (RTOCdma) mode (page 204)

Media Gateway New 2pVSP4e card

The following sections were updated for this feature:

- Configuring the Media Gateway as a host (page 40)
- Configuring the voice services FP for switched Media Gateway using IP (page 49)
- VoIP using Ethernet transport VR configuration (page 107)
- MGC connection configuration for switched Media Gateway (page 140)
- Backhaul using PRI configuration for switched Media Gateway (page 172)
- Voice band data configuration for switched Media Gateway (page 209)
- DTMF tone transport configuration (page 221)
- Configuring IPSec for switched Media Gateway call control connections (page 226)
- Media Gateway 15000 configuration for the Carrier VoIP Networks UA-IP and PT-IP solution (page 261)

The following sections were updated for this feature:

- Configuring Nsta and the basic rate group (Brag) (page 20)
- Configure Nsta and the basic rate group server (BragS) (page 23)

Other changes

There were no other changes made to this document.

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.

- *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780)
- *Nortel Media Gateway 7480/15000 Non-switched Service Configuration Management* (NN10600-781)
- *Nortel Multiservice Switch 7400 Installation, Maintenance, and Upgrade – Hardware* (NN10600-175)
- *Nortel Multiservice Switch 15000/20000 Installation, Maintenance, and Upgrade – Hardware* (NN10600-130)
- *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551)

- *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550)
- *Nortel Multiservice Switch 7400/15000/20000 ATM Fundamentals* (NN10600-700)
- *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.

Switched Media Gateway configuration work flow

The switched Media Gateway configuration task flow details the sequence of tasks you perform to configure switched Media Gateway using ATM and IP, see the figures Switched Media Gateway using ATM configuration task flow (page 13) and Switched Media Gateway using IP configuration task flow (page 14). 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.

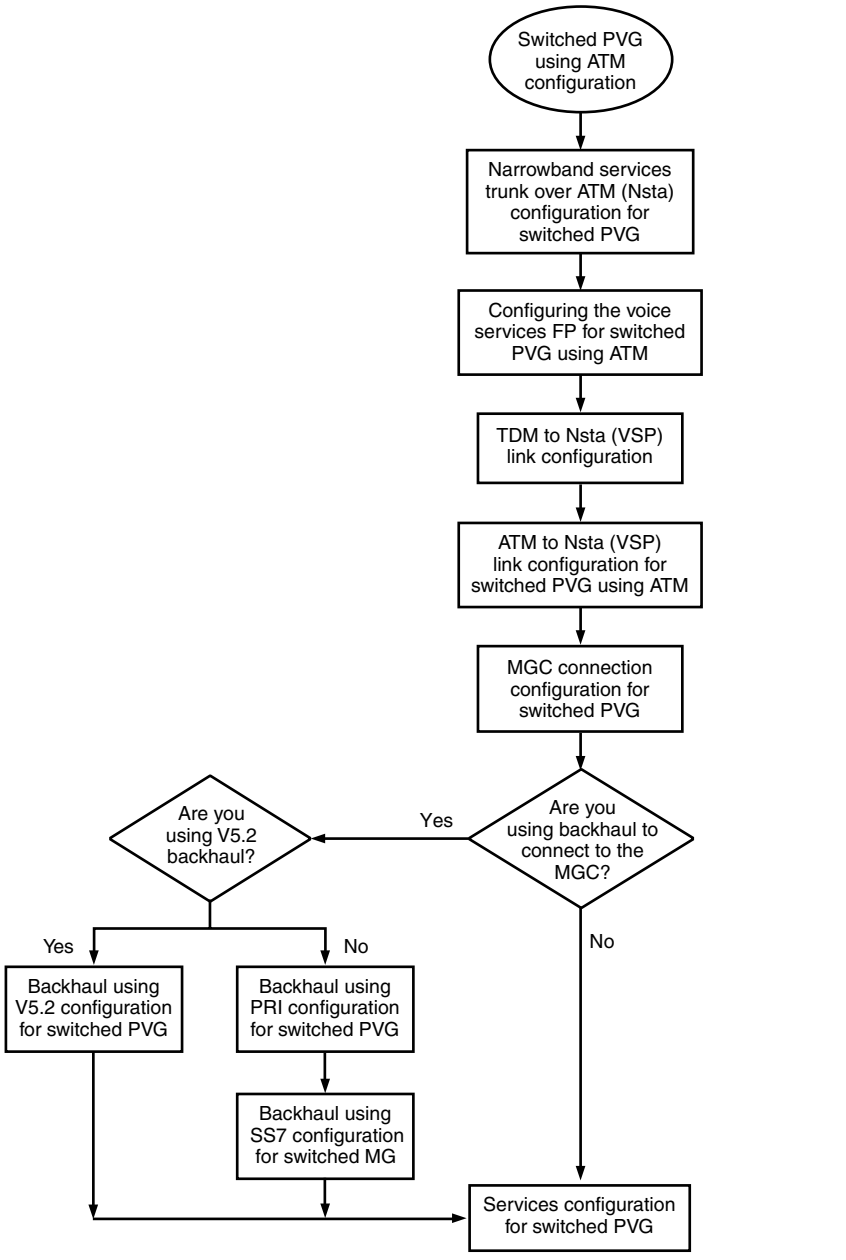
Switched Media Gateway configuration prerequisites

- Install Nortel Multiservice Switch hardware. Follow the procedures in 75*Nortel Multiservice Switch 7400 Installation, Maintenance, and Upgrade – Hardware* (NN10600-175) or *Nortel Multiservice Switch 15000/20000 Installation, Maintenance, and Upgrade – Hardware* (NN10600-130).
- Download all required software. See *Nortel Multiservice Switch 7400/15000/20000 Installation – Software* (NN10600-270).
- Configure all required FPs, LPs, and LPTs. See *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550) and *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).
- For additional information see *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) and *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060).

Switched Media Gateway configuration task flow

The following task flows show the sequence of procedures to configure switched Media Gateway for ATM and IP. To go to any procedure, go to Navigation links (page 14).

Switched Media Gateway using ATM configuration task flow



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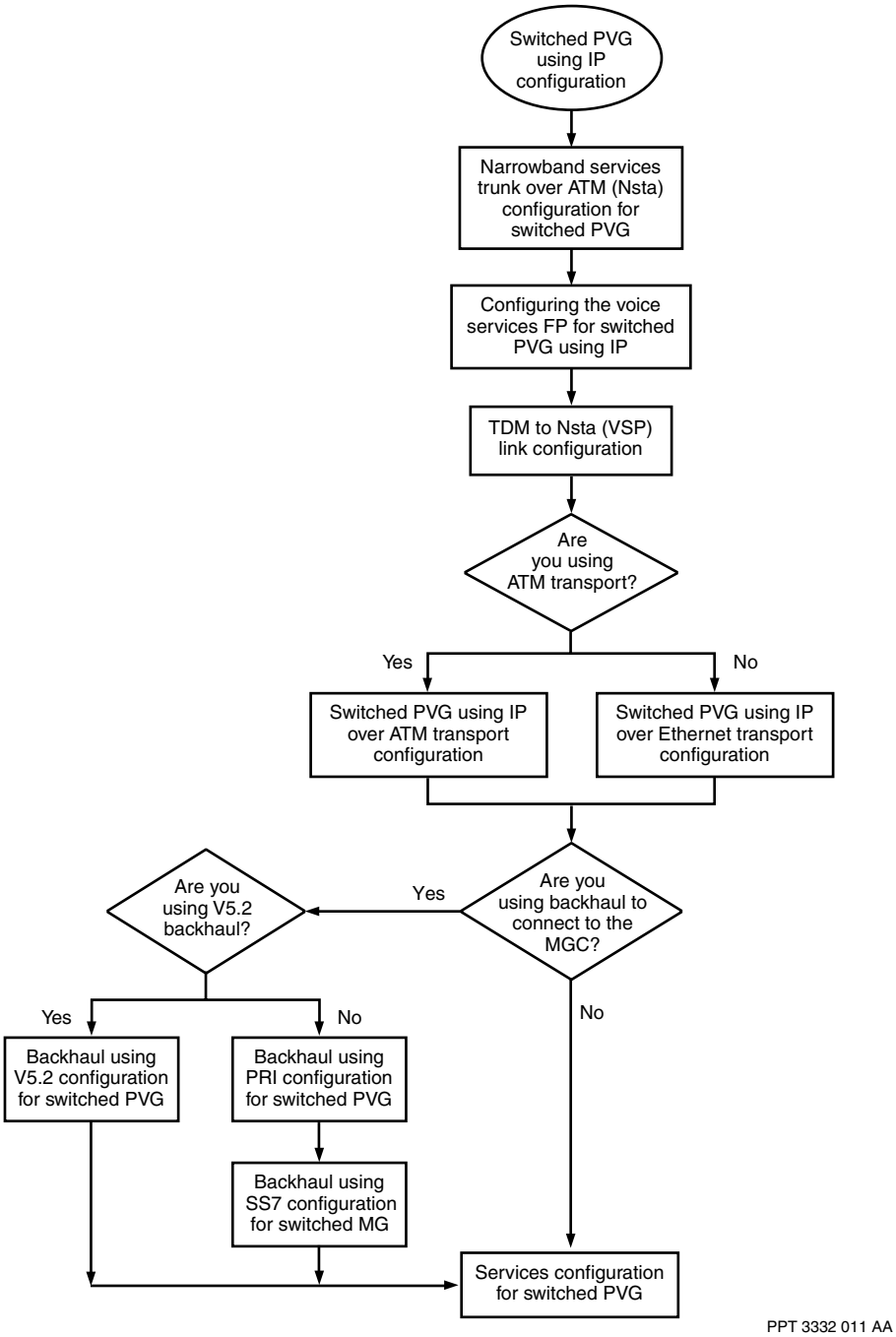
Switched Media Gateway using IP configuration task flow



Navigation links

- Narrowband services trunk over ATM configuration for switched Media Gateway (page 16) [for ATM]

- Voice services FP configuration for switched Media Gateway using ATM (page 45) [for ATM]
- TDM to Nsta (VSP) link configuration (page 53) [for ATM]
- ATM to Nsta (VSP) link configuration for switched Media Gateway using ATM (page 59)[for ATM]
- MGC connection configuration for switched Media Gateway (page 140) [for ATM]
- Backhaul using V5.2 configuration for switched Media Gateway (page 157) [for ATM]
- Backhaul using PRI configuration for switched Media Gateway (page 172) [for ATM]
- Services configuration for switched Media Gateway (page 198) [for ATM]
- Narrowband services trunk over ATM configuration for switched Media Gateway (page 16) [for IP]
- Configuring the voice services FP for switched Media Gateway using IP (page 49) [for IP]
- TDM to Nsta (VSP) link configuration (page 53) [for IP]
- Switched Media Gateway using IP over ATM transport configuration (page 75) [for IP]
- Switched Media Gateway using IP over Ethernet transport configuration (page 103) [for IP]
- MGC connection configuration for switched Media Gateway (page 140) [for IP]
- Backhaul using V5.2 configuration for switched Media Gateway (page 157) [for IP]
- Backhaul using PRI configuration for switched Media Gateway (page 172) [for IP]
- Backhaul using SS7 configuration for switched Media Gateway (page 188)
- Services configuration for switched Media Gateway (page 198) [for IP]

Narrowband services trunk over ATM configuration for switched Media Gateway

Configure narrowband services trunk over ATM (Nsta) to establish the Vgs and basic rate group or basic rate group server components as well as the attributes necessary to configure switched Media Gateway.

- Prerequisites to Nsta configuration for switched Media Gateway (page 16)
- Nsta configuration for switched Media Gateway flow (page 16)
- Task navigation (page 18)

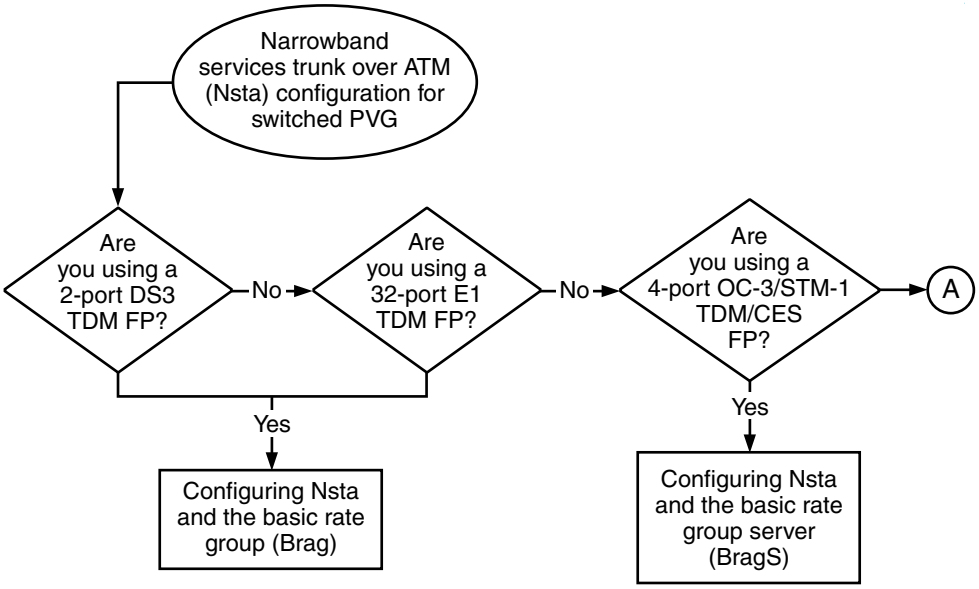
Prerequisites to Nsta configuration for switched Media Gateway

- See the sections on Media Gateway and services in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) for more information about the voice services FP and the Nsta.

Nsta configuration for switched Media Gateway flow

This task flow shows you the sequence of procedures you perform to configure services for switched Media Gateway. To link to any procedure, go to Task navigation (page 18).

Nsta configuration task flow – Part 1



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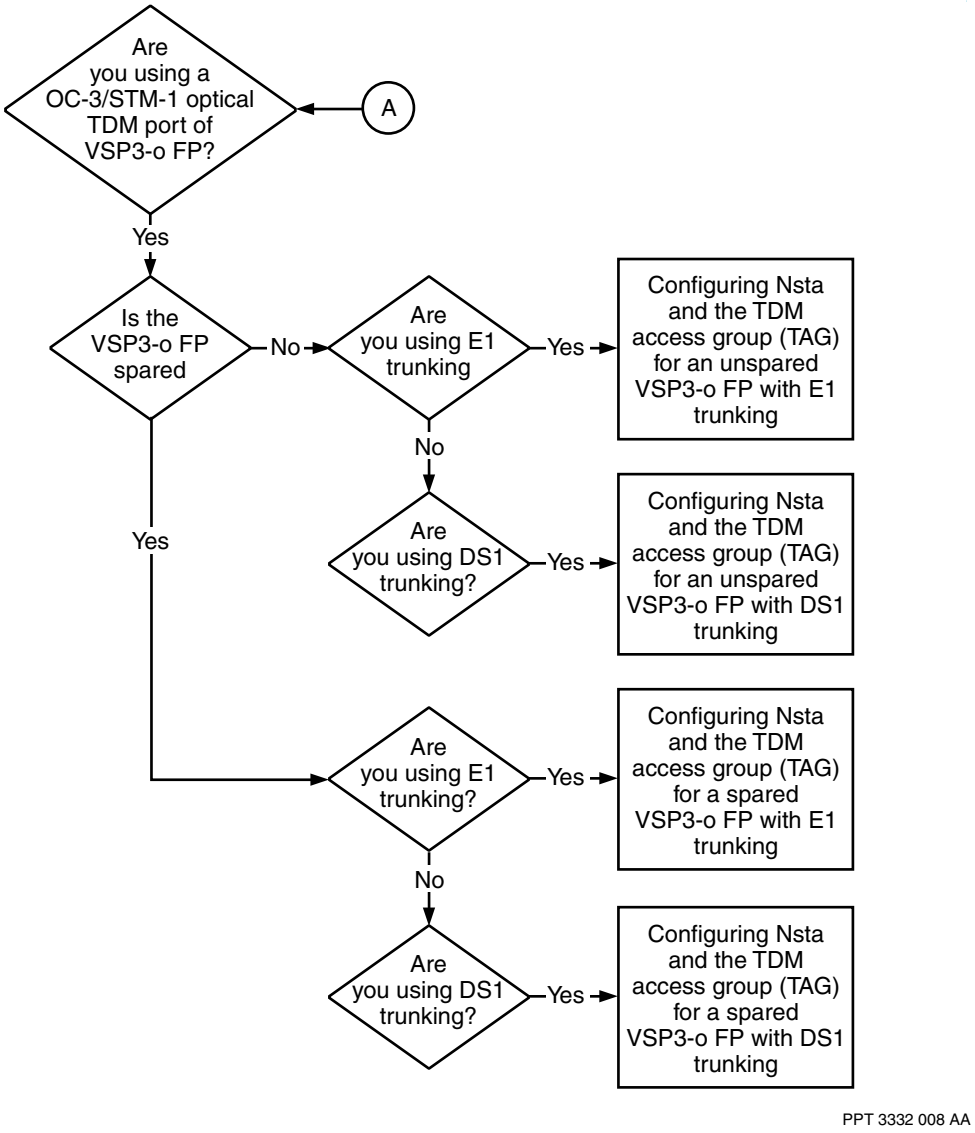
Nsta configuration task flow — Part 2



PPT 3332 008 AA

Task navigation

- Configuring Nsta and the basic rate group (Brag) (page 20)
- Configure Nsta and the basic rate group server (BragS) (page 23)
- For information about the next task, see Switched Media Gateway configuration task flow (page 13).
- Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-o FP with E1 trunking (page 26)

- Configuring Nsta and the TDM access group (Tag) for an unspared VSP3-o FP with DS1 (page 29)
- Configuring Nsta and the TDM access group (Tag) for a spared VSP3-o FP with E1 trunking (page 32)
- Configuring Nsta and the TDM access group (Tag) for a spared VSP3-o FP with DS1 trunking (page 36)

Configuring Nsta and the basic rate group (Brag)

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

Prerequisites

- See Supporting information for configuring Nsta for the basic rate group (page 258) for additional information related to this procedure.

Procedure steps

Step	Action
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**
4	Configure the codec in the defaultCodecList as necessary. **set nsta/n vgs pktprof/y defaultCodecList <ATMcodec>**

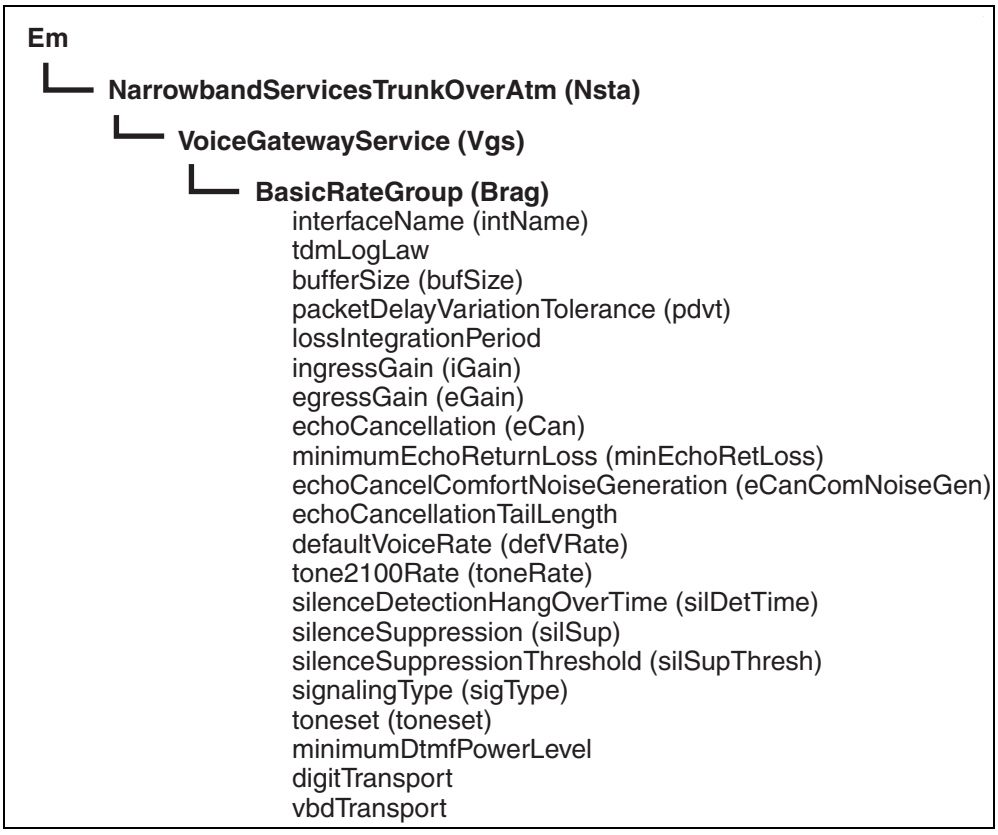
--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<ATMcodec>	For VoATM, you can have one codec in the list as follows: • 64kG711A (5ms) • 64kG711U (5ms) • 32kG726ITU (5ms & 10ms) • 24kG726ITU (5ms & 10ms) • 8kG729 (10ms)
Attention: If the H.248 component is defined: all Brag/BragS components must have their packet-side attributes set to sameAsProfile, which forces them to the values specified in the PacketNetworkProfile component. **Attention:** The enumerated range that can be provisioned in the tone2100Rate has been modified such that the 32kG726 codec has been sub-divided into ITU and IETF variants (32kG726ITU and 32kG726IETF) and only the ITU variant is allowed for VoATM. **Attention:** For VoATM, the defaultCodecList attribute replaces the defaultVoiceRate attribute and continues to provide the same functionality that the defaultVoiceRate attribute provided in past releases. For VoATM networks, the defaultCodecList can contain only one value. That single value can be any of the supported codecs per the feature list on that card and not only the G.711A value.	

Procedure job aid

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 Media Gateway.

Prerequisites

- See Supporting information for configuring Nsta for basic rate group server (page 259) for addition information related to this procedure.

Procedure steps

Step	Action
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`**
4	Configure the codec in the defaultCodecList as necessary. **`set nsta/n vgs pktprof/y defaultCodecList <ATMcodec>`**

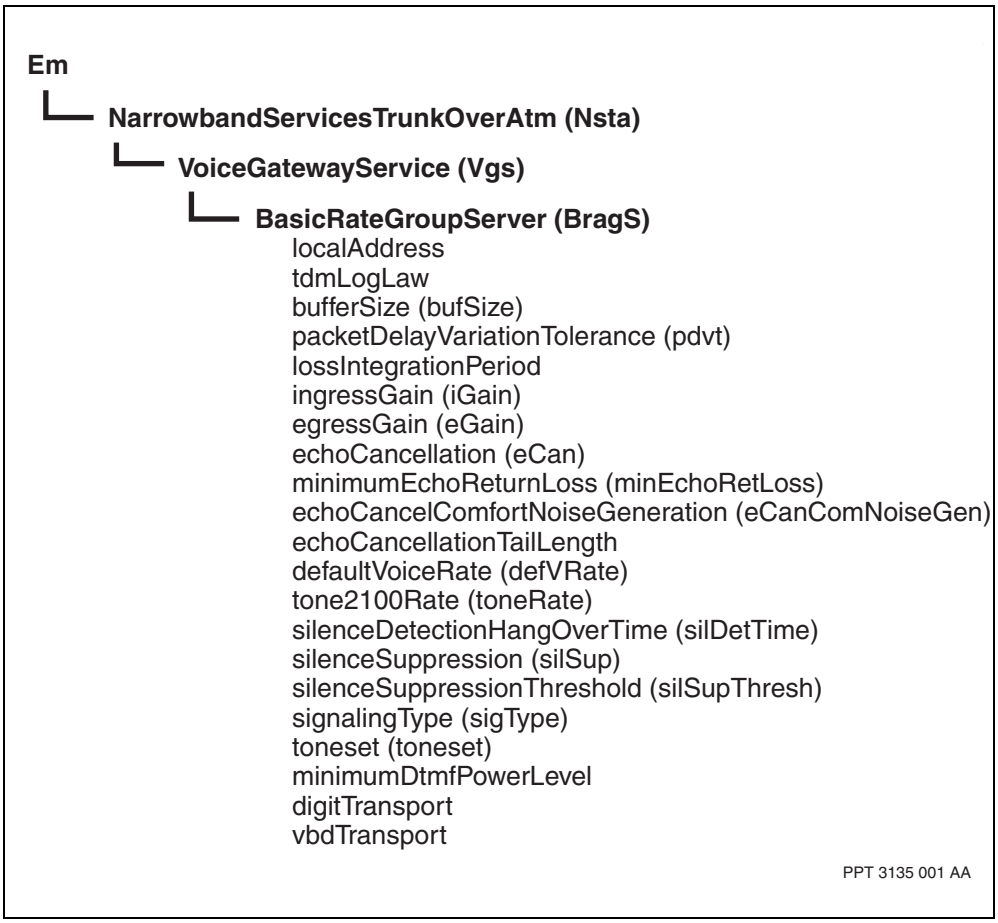
--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<ATMcodec>	For VoATM, you can have one codec in the list as follows: • 64kG711A (5ms & 10ms) • 64kG711U (5ms & 10ms) • 32kG726ITU (5ms & 10ms) • 24kG726ITU (5ms & 10ms) • 8kG729 (5ms & 10ms)
Attention: If the H.248 component is defined: all Brag/BragS components must have their packet-side attributes set to sameAsProfile, which forces them to the values specified in the PacketNetworkProfile component. **Attention:** The enumerated range that can be provisioned in the tone2100Rate has been modified such that 32kG726 has been sub-divided into ITU and IETF variants (32kG726ITU and 32kG726IETF) and only the ITU variant is allowed for VoATM. **Attention:** For VoATM, the defaultCodecList attribute replaces the defaultVoiceRate attribute and continues to provide the same functionality that the defaultVoiceRate attribute provided in past releases. For VoATM networks, the defaultCodecList can contain only one value. That single value can be any of the supported codecs per the feature list on that card and not only the G.711A value.	

Procedure job aid

Nsta and the basic rate group server component hierarchy



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

Configure Nsta and the TDM access group (Tag) to establish the necessary components and attributes to configure switched Media Gateway 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 259) for addition information related to this procedure.

Procedure steps

Step	Action
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 *TdmAccessGroup (Tag)* subcomponent to the *Vgs* component. **add Nsta/<m> Vgs Tag/<tag>** The ability to view the DS0 component is dynamically created upon creation of the *Tag* component.
10	Add *TdmNetworkProfile (TProf)* subcomponent to the *Vgs* component. **add Nsta/<m> Vgs TProf/<tprof>**

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

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

12 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>
```

13 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>
```

14 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>
```

15 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>
```

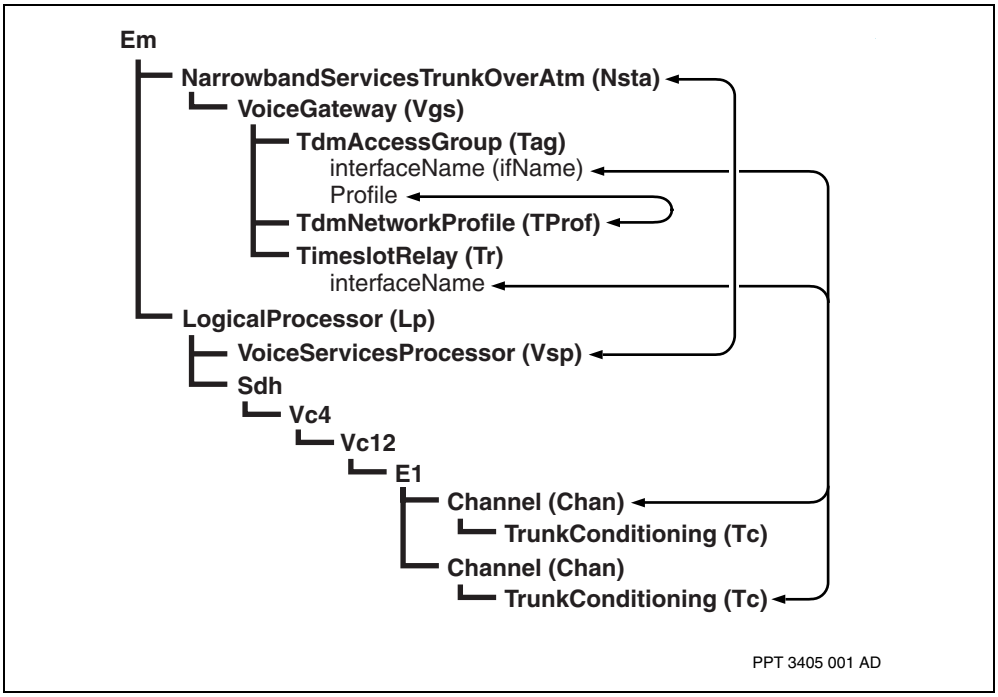
--End--

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

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-o FP with DS1

Configure Nsta and the TDM access group (Tag) to establish the necessary components and attributes to configure switched Media Gateway 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 259) for addition information related to this procedure.

Procedure steps

Step	Action
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>** The ability to view the DS0 component is dynamically created upon creation of the *Tag* component.
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>
```

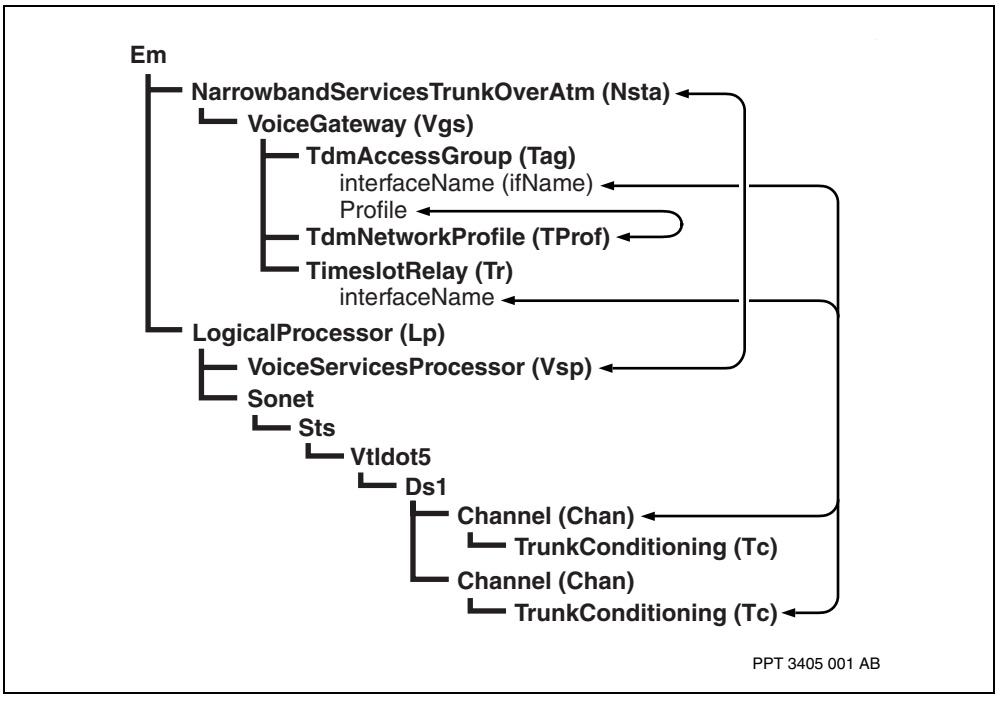
--End--

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

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-o FP with E1 trunking

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

Prerequisites

- See Supporting information for configuring Nsta for the TDM access group (page 259) for addition information related to this procedure.

Attention: 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. As well, the VSP3-o card supports mode configuration as either unidirectional or bidirectional and it supports revertive LAPS behavior.

Procedure steps

Step	Action
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	Set the revertive attribute, as necessary, for the behavior between two pairs of LAPS. **`set Laps/<laps> revertive <Yes|No>`** Set the revertive attribute to Yes to enable revertive behavior. The default value is No.
7	Set the mode, as necessary, between two pairs of LAPS. **`set Laps/<laps> mode <unidirectional | bidirectional>`**

Attention: If a Mode Mismatch alarm is raised, ensure that both ends of the LAPS are configured in the same manner (unidirectional to unidirectional, bidirectional to bidirectional). Both ends must have the same provisioning.

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

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

9 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.

10 Add the *DualLpEquipmentProtection (Dlep)* component.

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

11 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>
```

12 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>
```

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

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

14 Add the *Nsta* component.

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

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

```
set Nsta/<m> linkToServer Dlep/<dlep> Vsp
```

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

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

The ability to view the DS0 component is dynamically created upon creation of the *Tag* component.

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

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

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

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

19 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>
```

20 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>
```

21 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>

22 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>

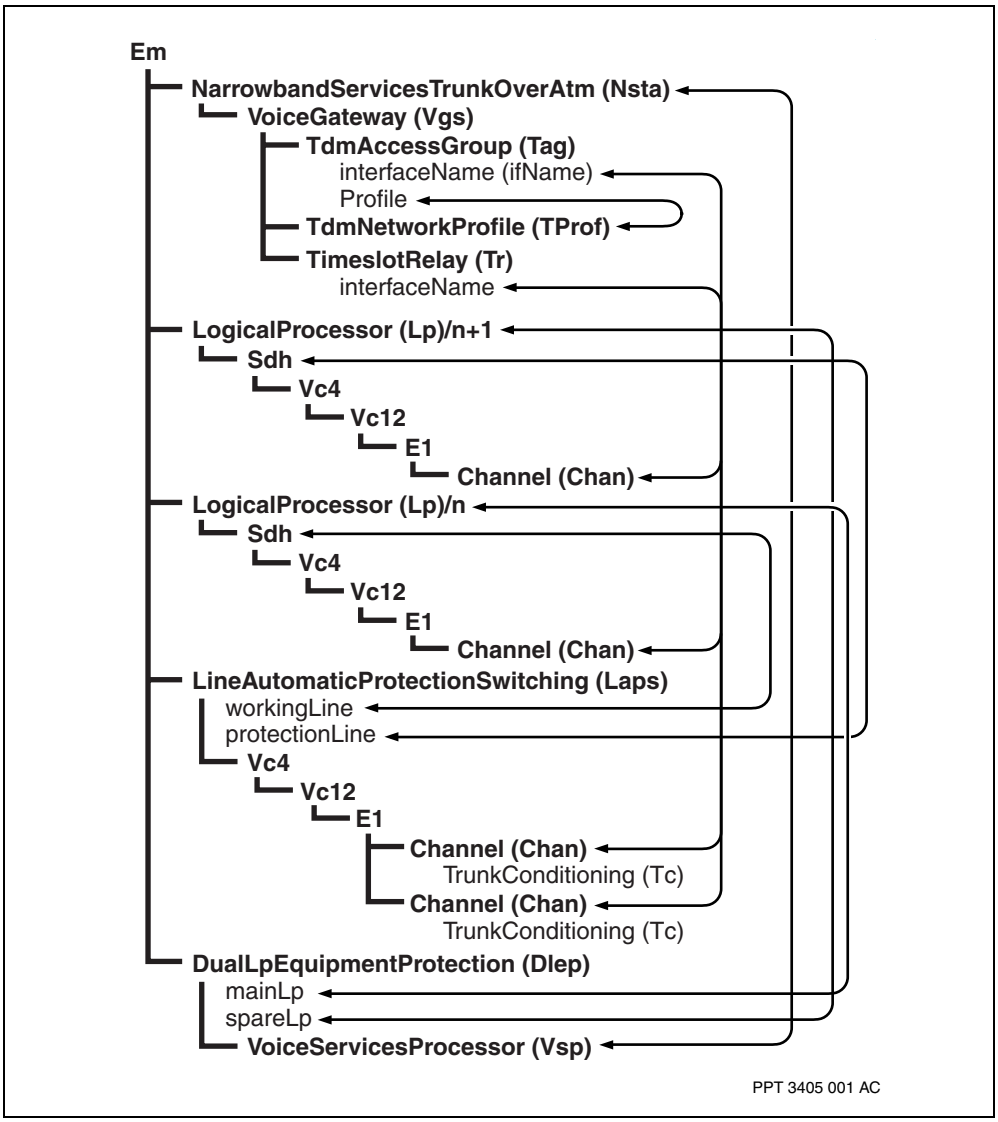
--End--

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
<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)
<unidirectional | bidirectional>	The mode between the pairs of laps components can be unidirectional or bidirectional as required. The default is unidirectional.
<Yes | No>	The revertive attribute of the Laps components can be revertive, in which case you would enter Yes or non-revertive, in which case you would enter No. The default is No.

Procedure job aid

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-o FP with DS1 trunking

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

Prerequisites

- See Supporting information for configuring Nsta for the TDM access group (page 259) for addition information related to this procedure.

Attention: 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. As well, the VSP3-o card supports mode configuration as either unidirectional or bidirectional and it supports revertible LAPS behavior.

Procedure steps

Step	Action
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	Set the revertive attribute, as necessary, for the behavior between two pairs of LAPS. **`set Laps/<laps> revertive <Yes|No>`** Set the revertive attribute to Yes to enable revertive behavior. The default value is No.
7	Set the mode, as necessary, between two pairs of LAPS. **`set Laps/<laps> mode <unidirectional | bidirectional>`**

Attention: If a Mode Mismatch alarm is raised, ensure that both ends of the LAPS are configured in the same manner (unidirectional to unidirectional, bidirectional to bidirectional). Both ends must have the same provisioning.

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

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

9 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.

10 Add the *DualLpEquipmentProtection (Dlep)* component.

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

11 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>
```

12 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>
```

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

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

14 Add the *Nsta* component.

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

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

```
set Nsta/<m> linkToServer Dlep/<dlep> Vsp
```

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

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

The ability to view the DS0 component is dynamically created upon creation of the *Tag* component.

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

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

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

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

19 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>
```

20 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>
```

21 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>

22 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>

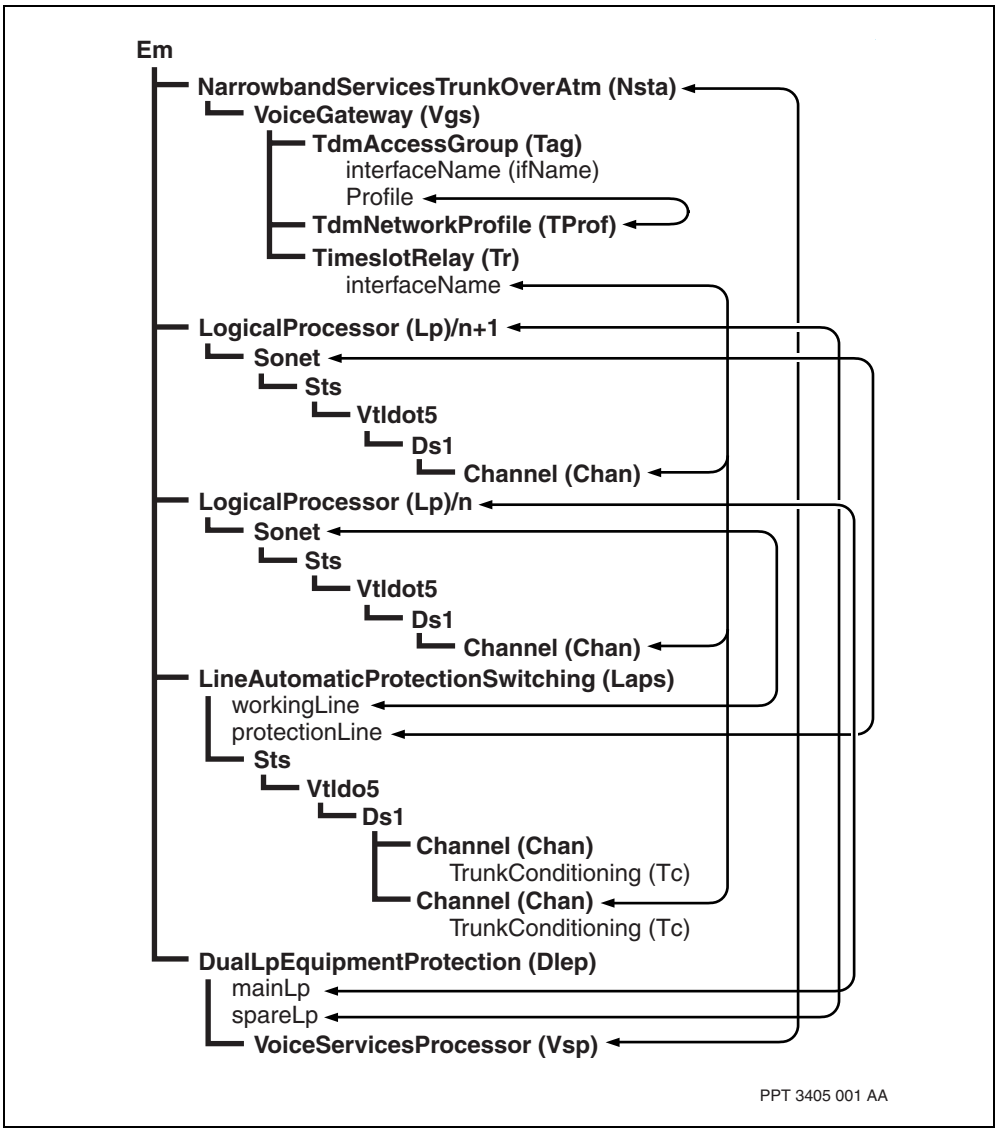
--End--

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
<unidirectional | bidirectional>	The mode between the pairs of laps components can be unidirectional or bidirectional as required. The default is unidirectional.
<Yes | No>	The revertive attribute of the Laps components can be revertive, in which case you would enter Yes or non-revertive, in which case you would enter No. The default is No.

Procedure job aid

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



Configuring the Media Gateway as a host

Configure the Media Gateway as a host using the Nodal Provisioning Templates provided from the MDM.

A CDL attribute has been introduced to handle the slight behavioral differences between the topologies and the roles of GARP and the restricted ProxyARP in each of these solutions. The attribute localHostDeviceTopology is under the Vr CustSpec component and must be set to a value of layer2 or layer3 for the Local Host Device (LHD) topology configuration (Topology 2 or Topology3, respectively) or noLHD for remote configurations (Topology 1). The default value is noLHD.

Prerequisites

The following must be set up on the adjacent next-hop routers to inter-connect with the 4pGE on a MG15000 VR Host Interface configuration:

- Ports must be connected to a L2 Ethernet bridging capable box before connecting to a L3 routed port. ERS8600 can support the functionality of both in one box.
- Auto-neg enabled
- SX or LX interface support
- Dual-homed GE to next-hop routers to allow the provisioning of multiple routed ports on the same subnet. The two routers must be interconnected to each other via a L2 Transparent Bridge.
- Policy routing/filtering
- GARP packets processing support
- When using Topology 2b, VRRP must be configured on the two adjacent NHRs in master/slave mode. The VRRP Master IP address must be configured to match that of the PDR preferred Next Hop IP address on the NHR.
- The value of the losDuringMigration attribute under LpEth is set to “enabled” when the localHostDevice Topology under Vr Custspec is set to

layer3. The value of the losDuringMigration attribute must be disabled for all other configurations (Topologies 1 and 2).

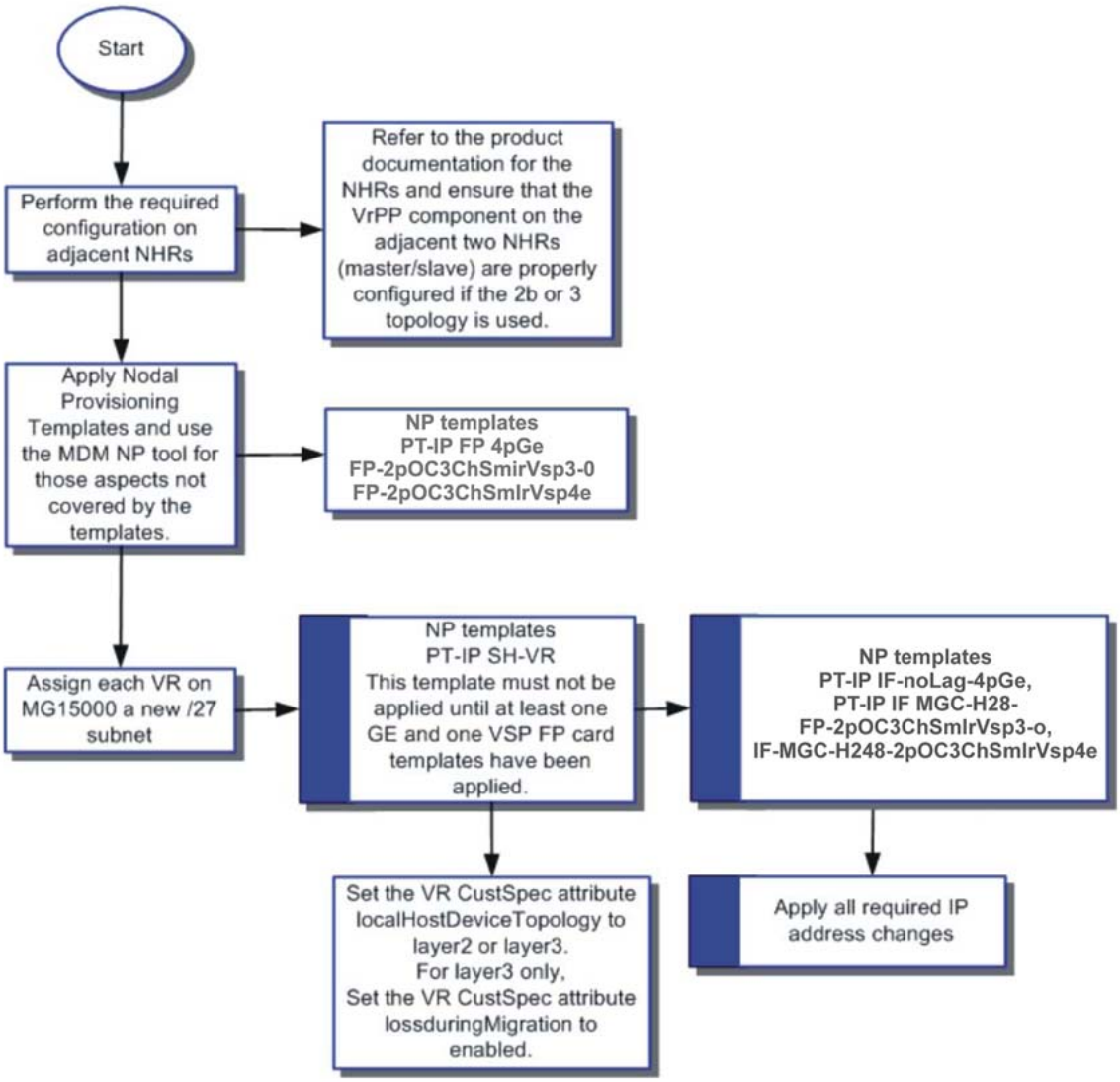
On the Media Gateway:

- Ensure that the VR CustSpec component attribute customizationType is set to PVG. (Vr CustSpec customizationType pvg)
- Ensure that the required provisioning is done on the adjacent NHRs.
- Ensure that the localHostDeviceTopology and customizationType attributes are synchronized to the appropriate values. That is, for the localHostDeviceTopology to be set to a value other than noLHD the customizationType attribute must be set to pvg

Media Gateway as host configuration flow

This task flow shows you the sequence of procedures you perform to configure the Media Gateway as a host device. An example of the provisioning required to make Media Gateway a host is provided in Example of the configuration of Media Gateway as a host device (page 43). To link to the procedure for Using Nodal Provisioning Templates, refer to NN10114-511 *Passport 15000 and Preside MDM in Succession Networks Configuration Overview (PT-AAL1/UA-AAL1)*.

Media Gateway as host configuration task flow



Example of the configuration of Media Gateway as a host device

This feature is configured using Nodal Provisioning Templates. The following is an example of the provisioning achieved, at an incremental level, using the Nodal Provisioning Templates to have the Media Gateway seen as a host device from the perspective of adjacent Next Hop Routers (NHRs).

Procedure steps

Step	Action
1	Each MG15000 Vr is assigned a new /27 subnet (32 addresses) that contains: • two GigE protocol ports, each assigned a /30 • one VrAP protocol port, assigned a /28 • two IP addresses in the GE /30 subnets for the WAN router port on the L2 device. For a 2VR model, the MG15000 has two GigE links on each GigE card in slot 2 and 3 and the subnet for Vr/1 is 10.10.10.0/27 and the subnet for Vr/2 is 10.10.10.32/27 as follows: Vr/1 subnets are: • 10.10.10.0/30 for GE link slot 2 port 0 • 10.10.10.4/30 for GE link slot 3 port 0 • 10.10.10.16/28 for the VSP cards' VrAP Vr/2 subnets are: • 10.10.10.32/30 for GE link slot 2 port 1 • 10.10.10.36/30 for GE link slot 3 port 1 • 10.10.10.48/28 for the VSP cards' VrAP
2	Set the VR Custom Spec localHostDeviceTopology attribute and the losDuringMigration attributes according to the configuration (layer2 or layer3 as follows: layer2: **set vr/2 CustSpec localHostDeviceTopology layer2** **set Lp/1 Eth/0 losDuringMigration disabled** **set vr/2 CustSpec localHostDeviceTopology layer2** **set Lp/2 Eth/0 losDuringMigration disabled** layer3: Generic direct connect local host configuration: **set vr/2 CustSpec localHostDeviceTopology layer3** **set Lp/1 Eth/0 losDuringMigration enabled**

```
set vr/2 CustSpec localHostDeviceTopology layer3
set Lp/2 Eth/0 losDuringMigration enabled
```

layer3: Network controlled direct connect local host configuration:

```
set vr/2 CustSpec localHostDeviceTopology layer3-
NetworkControlled
set Lp/1 Eth/0 losDuringMigration disabled
set vr/2 CustSpec localHostDeviceTopology layer3-
NetworkControlled
set Lp/2 Eth/0 losDuringMigration disabled
```

3 Apply all required IP address changes, as required.

Change the Nsta Vgs [IpMConn|Ctrl/mg|Ctrl/sg] ipAddr and Nsta Vgs [IpMConn|Ctrl/mg|Ctrl/sg] vrap subnet component (to point to the new LogicalIf components) to remove and add Vr Pp Ip LogicalIf components:

```
delete vr/1 pp ip logicalif/xx.xx.xx.xx (old vr/1 ip
address to VSP)
add vr/1 pp ip logicalif/10.10.10.0
set nsta vgs ipmconn ipaddress
```

4 Verify that the PDRs are provisioned correctly, since the nexthop addresses may have changed:

```
d vr/* ip static route/0.0.0.0,0.0.0.0,0 nh/
```

5 Add the required next hops, if necessary:

```
add -s vr/1 ip static route/0.0.0.0,0.0.0.0,0 nh/
10.10.10.1
add -s vr/1 ip static route/0.0.0.0,0.0.0.0,0 nh/
10.10.10.5
```

6 Set the PDR NH preferences/metrics, where the lower metric follows the SA GigE FP PDR NH:

```
set vr/1 ip static route/0.0.0.0,0.0.0.0,0 nh/10.10.10.1
metric 1
set vr/1 ip static route/0.0.0.0,0.0.0.0,0 nh/10.10.10.5
metric 2
```

Attention: OSPF, BGP, RIP, or IS-IS must not be provisioned on this node.

7 Ensure static ARP entries are configured for the GE links on the migrationActive 4pGe card (slot 3).

```
d vr/1 ip arp dyn/10.10.10.6,na phys
(This displays the GE MAC address.)
add vr/1 ip arp host/10.10.10.6,na phys XX-XX-XX-XX-XX-
XX-XX-XX
(This is the MAC address displayed by the previous
command.)
```

--End--

Voice services FP configuration for switched Media Gateway using ATM

Configure the voice services FP for switched Media Gateway using ATM to create and configure the components associated with the voice services FP. The voice services FP for switched Media Gateway using ATM can be a VSP2, VSP3, or VSP3-o FP.

Prerequisites for voice services FP configuration for switched Media Gateway using ATM

- You must first configure the voice services FP. See *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551) and *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550) before performing this task.

Configuring voice services FPs for switched Media Gateway using ATM

Procedure steps

Step	Action
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 Media Gateway host name for the *Vgs* subcomponent. **set Nsta/<n> Vgs hostname <CLLI>**
3	Specify the Media Gateway ATM address for the *Vgs* subcomponent. **set Nsta/<n> Vgs gatewayATMAddress <address>**
4	Configure the codec in the defaultCodecList as necessary. **set nsta/n vgs pktprof/y defaultCodecList <ATMcodec>**
5	Add an AAL2 connection beneath the *Nsta* component. **add Nsta/<n> Vgs AtmTConn/<m>**
6	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>**
7	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>**

--End--

Variable definitions

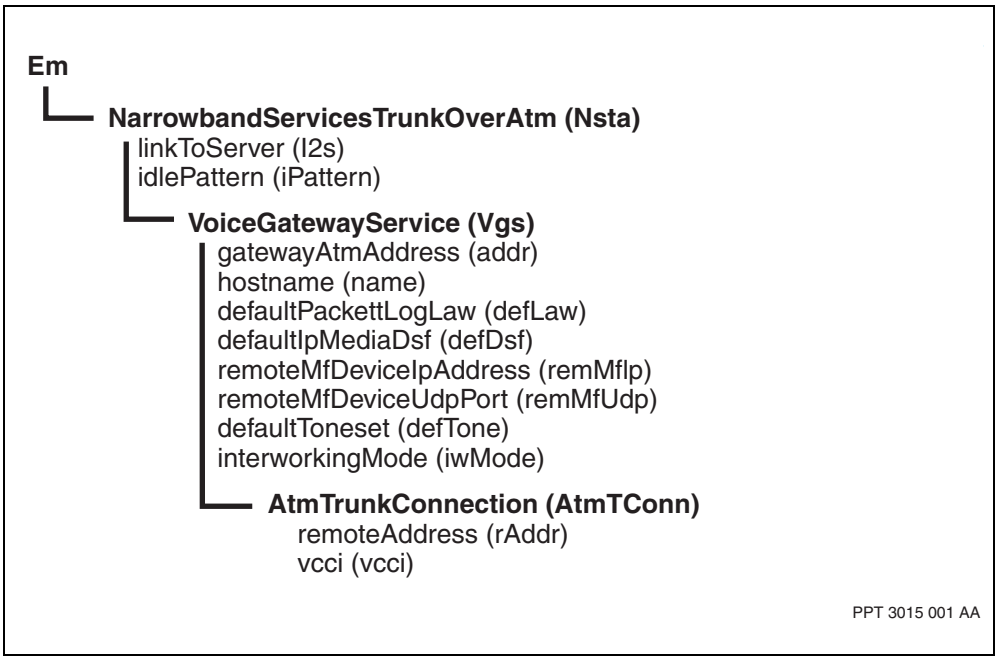
Variable	Value
<address>	The ATM address of the *Vgs* subcomponent.
<CLLI>	The Media Gateway common language location identifier (CLLI) known to the media gateway controller.
<m>	The value for the *AtmTConn* component.
<n>	An instance value for the *Nsta* component.
<NSAP_address>	The NSAP ATM address 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.
<ATMcodec>	For VoATM, you can have one codec in the list as follows: • 64kG711A (5ms) • 64kG711U (5ms) • 32kG726ITU (5ms & 10ms) • 24kG726ITU (5ms & 10ms) • 8kG729 (10ms)

Attention: The enumerated range that can be provisioned in the tone2100Rate has been modified such that the 32kG726 codec has been sub-divided into ITU and IETF variants (32kG726ITU and 32kG726IETF) and only the ITU variant is allowed for VoATM.

Attention: For VoATM, the defaultCodecList attribute replaces the defaultVoiceRate attribute and continues to provide the same functionality that the defaultVoiceRate attribute provided in past releases. For VoATM networks, the defaultCodecList can contain only one value. That single value can be any of the supported codecs per the feature list on that card and not only the G.711A value.

Procedure job aid

Voice services FP for switched Media Gateway using ATM component hierarchy



Configuring the voice services FP for switched Media Gateway using IP

Configure the components for the voice services FP for switched Media Gateway using IP to create and configure the components associated with the FP. The voice services FP for switched Media Gateway using IP can be a VSP2, VSP3, VSP3-o,2pVSP4e, or 2pVS.

Prerequisites for configuring the voice services FP for switched Media Gateway using IP

- You must first configure the voice services FP, see *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551) and before performing this task.

Procedure steps

Step	Action
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 Media Gateway host name for the *Vgs* subcomponent. **set Nsta/<n> Vgs hostname <CLLI>**
3	Specify the Media Gateway 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>
```

8 Configure the defaultCodecList as necessary.

Attention: For VoIP, the operator can rearrange the order of the codecs in the defaultCodecList so that the MG15000 can return a list of codecs in the SDP response that has the first codec in the list providing the defaultVoiceRate. To change the order of the codecs in the defaultCodecList, the defaultCodecList must be emptied using the ! (bang) operator. Then the codecs can be added in the desired order.

```
set nsta/n vgs pktprof/y defaultCodecList <IPcodec>
<IPcodec> <IPcodec>
set nsta/n vgs pktprof/y tone2100Rate <IPcodec>
set nsta/n vgs defaultPacketLogLaw <useAsProfile>
```

The provisioning command to change the order of the list is as follows:

```
set nsta/n vgs pktprof/0 defaultCodecList ! <codec>
<codec> <codec>
```

If the ! (bang) operator is not used, the codecs are appended to the defaultCodecList.

Attention: The G.726-32 ITU codec is not supported for the VSP2.

--End--

Variable definitions

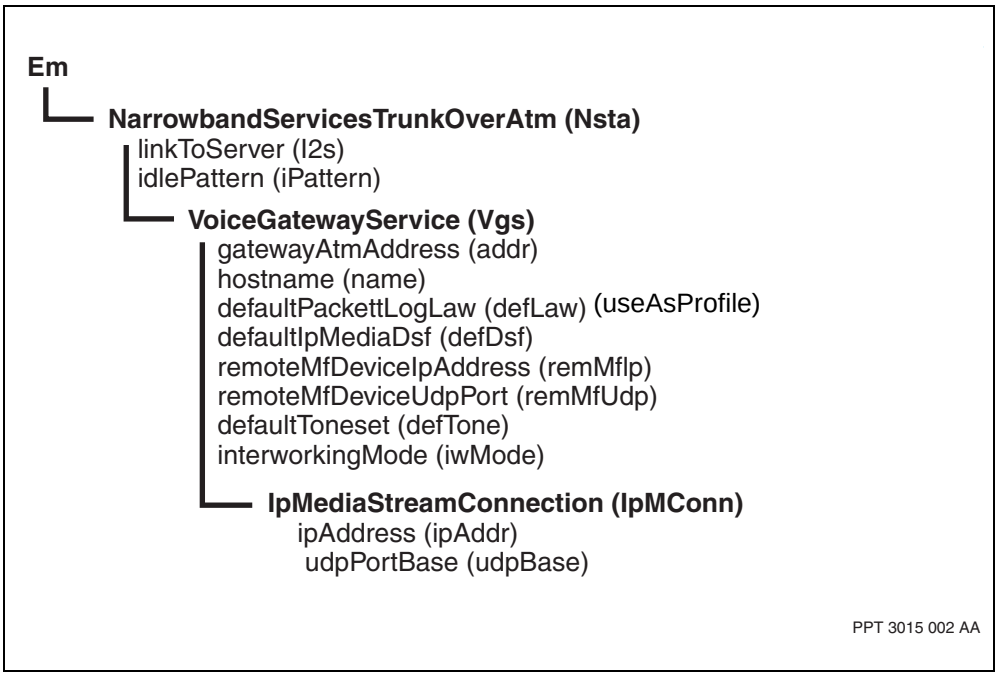
Variable	Value
<address>	The ATM address of the Vgs subcomponent.
<basenumber>	The low end of the range UDP port numbers to be assigned to the media stream connections using this *IpMConn* component.
<CLLI>	The Media Gateway CLLI known to the media gateway controller.
<defDsf_value>	The DSF value for 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.

(1 of 2)

Variable	Value
<q>	The value for the logical processor you defined for the voice services FP.
<IPcodec>	MG15000 supports all of the following codecs in the defaultCodecList in an order that you specify for VoIP: • G.711U (10ms and 20ms) • G711A (10ms and 20ms) • G.729a (10ms and 20ms) • G726-32 ITU (10ms and 20ms) • EVRC0 (per RFC 3558) **Attention:** You can provision codecs 64kG711U and 64kG711A as the tone2100Rate for VoIP solutions through the PacketNetworkProfile attribute (Nsta/Vgs/PktProf). Refer to *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) for more information.
(2 of 2)	

Procedure job aid

Voice services FP configuration for switched Media Gateway using IP component hierarchy



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.

- Prerequisites to TDM to Nsta (VSP) link configuration (page 53)
- TDM to Nsta (VSP) link configuration flow (page 53)
- Task navigation (page 54)

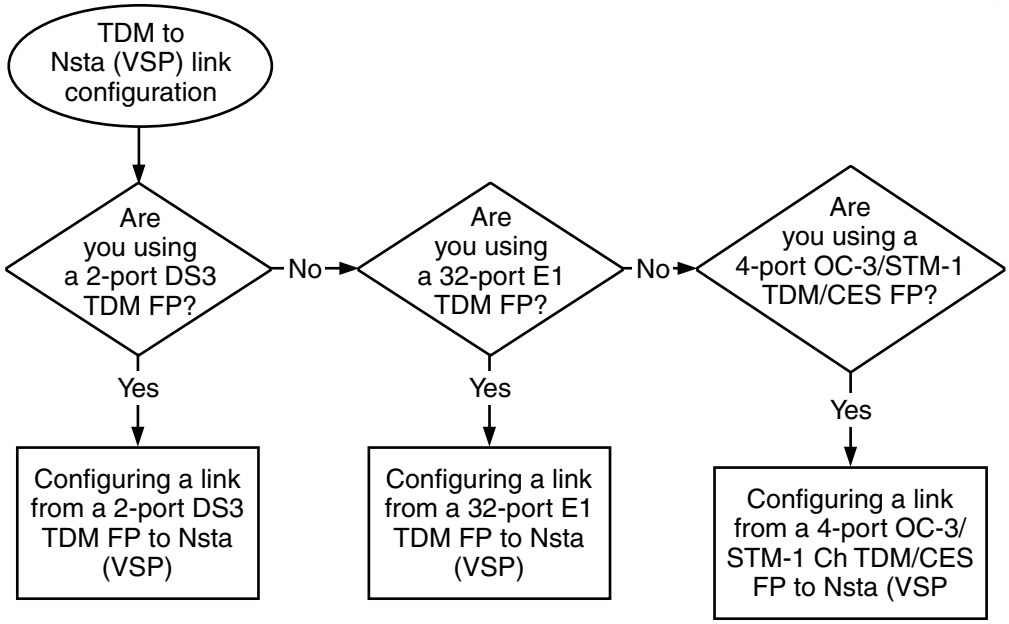
Prerequisites to TDM to Nsta (VSP) link configuration

- 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 Nortel Multiservice Switch 15000 and Multiservice Switch 20000 optical interfaces” in *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550). 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 *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).

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 54).

TDM to Nsta (Vsp) link configuration task flow



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Task navigation

- Configuring a link from a 2-port DS3 TDM FP to Nsta (VSP) (page 55)
- Configuring a link from a 32-port E1 TDM FP to Nsta (VSP) (page 56)
- “Configuring line and equipment protection for Nortel Multiservice Switch 15000 and Multiservice Switch 20000 optical interfaces” in *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550)
- Configuring a link from a 4-port OC-3/STM-1Ch TDM/CES FP to Nsta (VSP) (page 57)

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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) and *Nortel Multiservice Switch 7400/ 15000/20000 Fundamentals – FP Reference* (NN10600-551).

Procedure steps

Step	Action
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`**
	--End--

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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) and *Nortel Multiservice Switch 7400/ 15000/20000 Fundamentals – FP Reference* (NN10600-551).

Procedure steps

Step	Action
1	Set the card's *cardtype* 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`**
	--End--

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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) and *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).
- Ensure the traffic Channel Identifier List under the Nsta Conn Brag has the equivalent number of AAL2 channels to the number of timeslots under the E1 chan/0 timeslot list.

Procedure steps

Step	Action
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>**

--End--

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.

(1 of 2)

Variable	Value
<v>	The *Pap* localaddress value.
<z>	The value of the port.
	(2 of 2)

ATM to Nsta (VSP) link configuration for switched Media Gateway using ATM

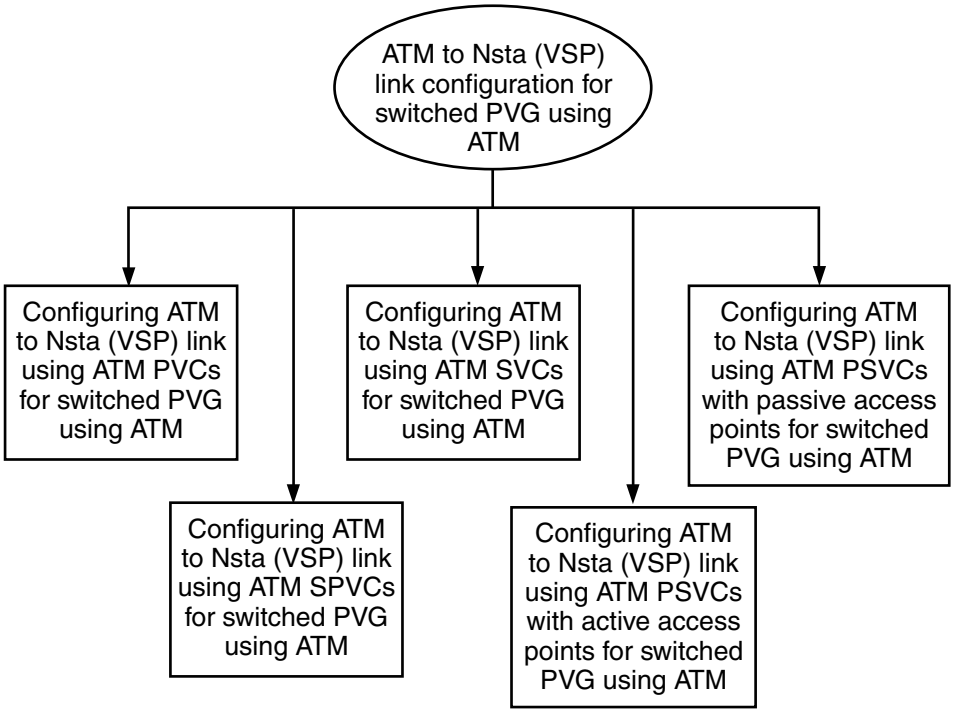
Configure the ATM to Nsta (VSP) link to establish the connection between the ATM and VSP-type FP cards.

- ATM to Nsta (VSP) link configuration for switched Media Gateway using ATM flow (page 59)
- Task navigation (page 60)

ATM to Nsta (VSP) link configuration for switched Media Gateway 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 60).

ATM to Nsta (Vsp) link configuration for switched Media Gateway using ATM task flow



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Task navigation

- Configuring ATM to Nsta (VSP) link using ATM PVCs for switched Media Gateway using ATM (page 61)
- Configuring ATM to Nsta (VSP) link ATM SPVCs for switched Media Gateway using ATM (page 64)
- Configuring ATM to Nsta (VSP) link using ATM SVCs for switched Media Gateway using ATM (page 67)
- Configuring ATM to Nsta (VSP) link using ATM PSVCs with active access points for switched Media Gateway using ATM (page 70)
- Configuring ATM to Nsta (VSP) link using ATM PSVCs with passive access points for switched Media Gateway using ATM (page 73)

Configuring ATM to Nsta (VSP) link using ATM PVCs for switched Media Gateway 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 *Nortel Multiservice Switch 7400/15000/20000 ATM Fundamentals* (NN10600-700).

Procedure steps

Step	Action
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>**

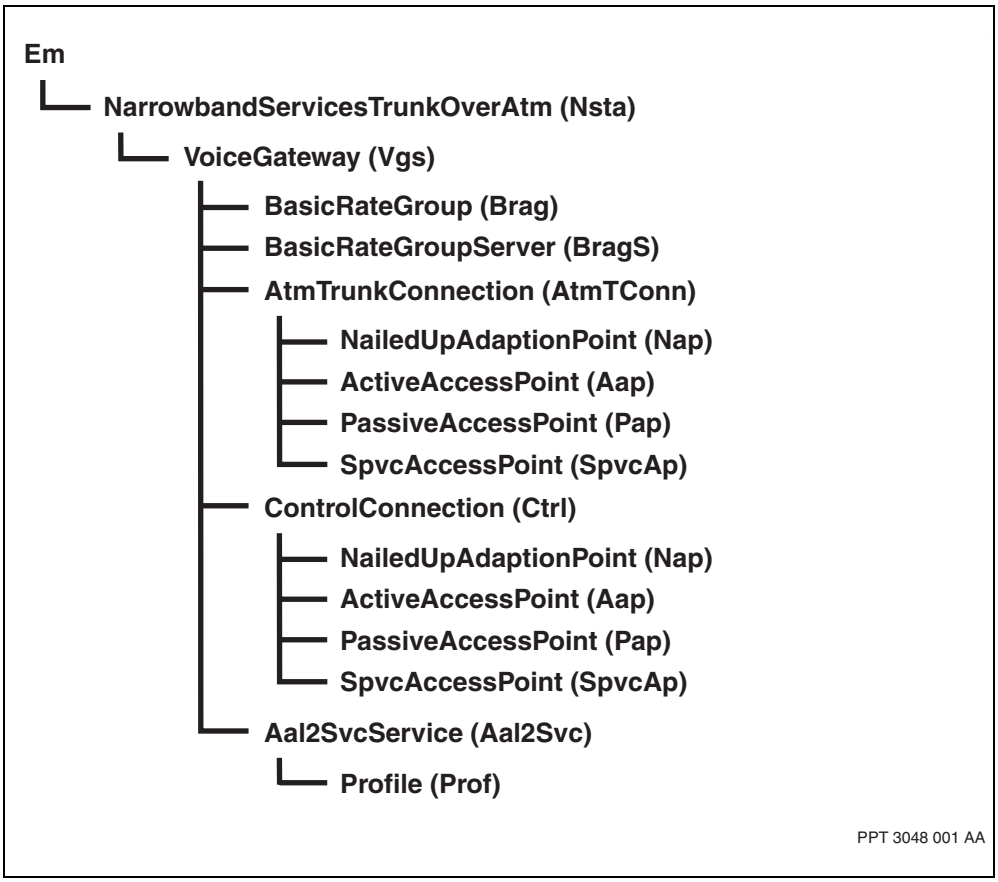
--End--

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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).
<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 *Nortel Multiservice Switch 7400/15000/20000 ATM Fundamentals* (NN10600-700).
<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

Configuring ATM to Nsta (VSP) link using ATM PVCs for switched Media Gateway using ATM component hierarchy



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

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

Procedure steps

Step	Action
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>**

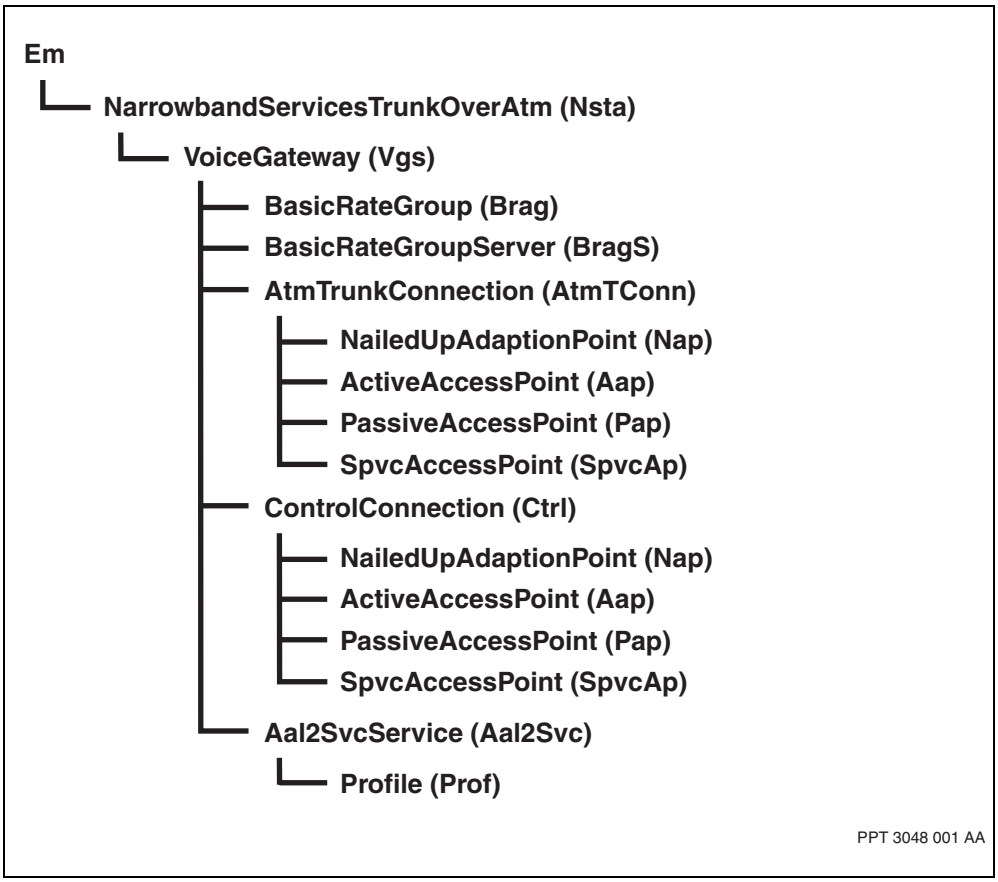
--End--

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

ATM to Nsta (VSP) link using ATM SPVCs for switched Media Gateway using ATM component hierarchy



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

Step	Action
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>
```

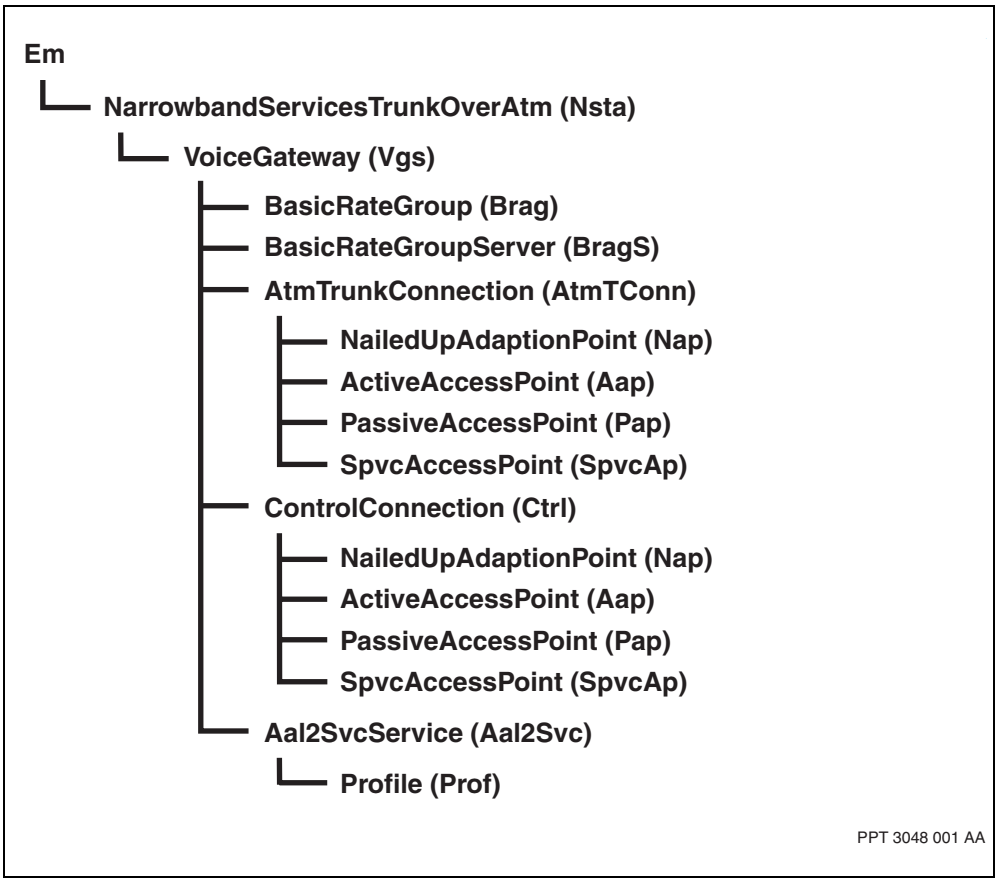
--End--

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.*
<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.

Procedure job aid

Configuring ATM to Nsta (VSP) link using ATM SVCs for switched Media Gateway using ATM component hierarchy



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

Step	Action
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>**

--End--

Variable definitions

Variable	Value
<cat>	*ConstantBitRate* or *rtVariableBitRated*.
<m>	The value for an *AtmTConn* component.

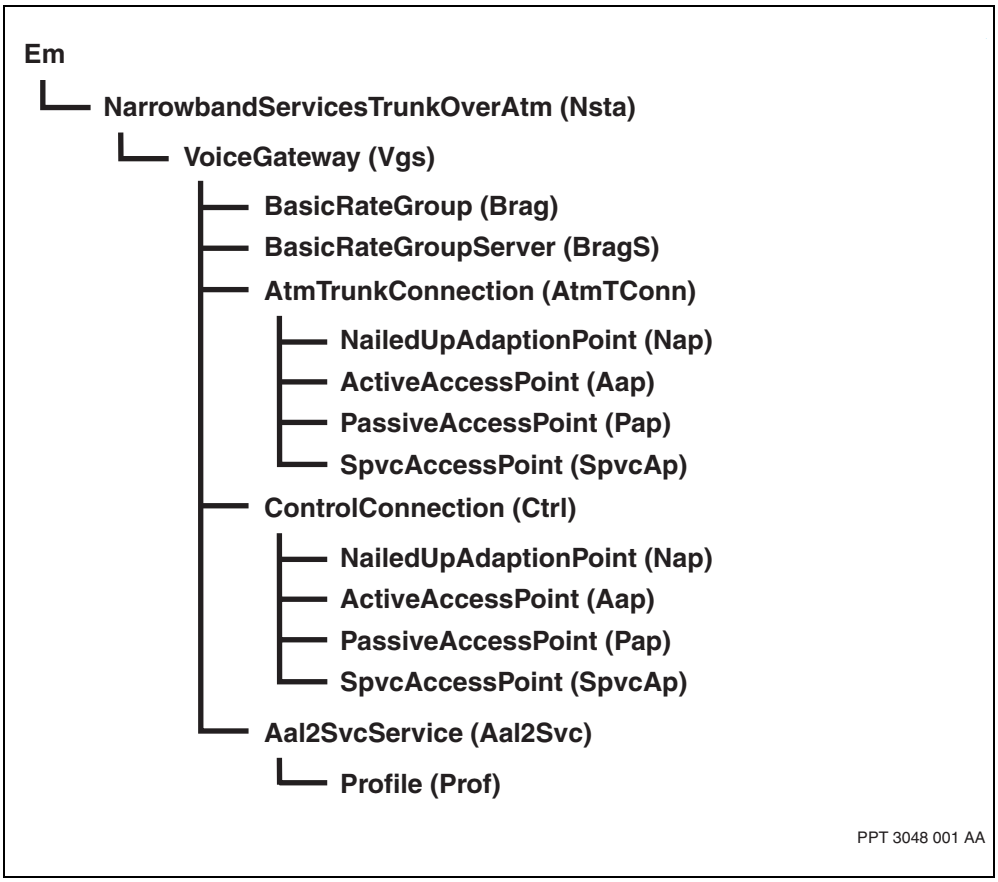
(1 of 2)

Variable	Value
<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*.

(2 of 2)

Procedure job aid

Configuring ATM to Nsta (VSP) link using ATM PSVCs with active access points for switched Media Gateway using ATM component hierarchy



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

Step	Action
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>`**

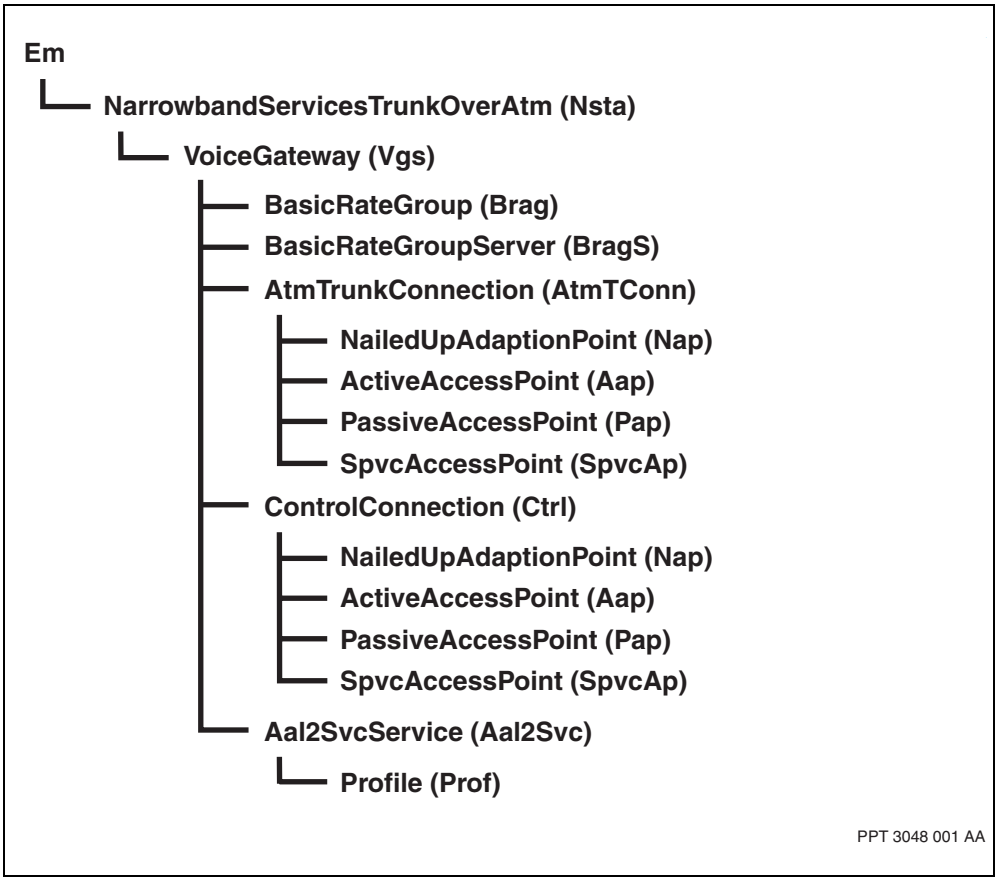
--End--

Variable definitions

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

Procedure job aid

Configuring ATM to Nsta (VSP) link using ATM PSVCs with passive access points for switched Media Gateway using ATM component hierarchy



Switched Media Gateway using IP over ATM transport configuration

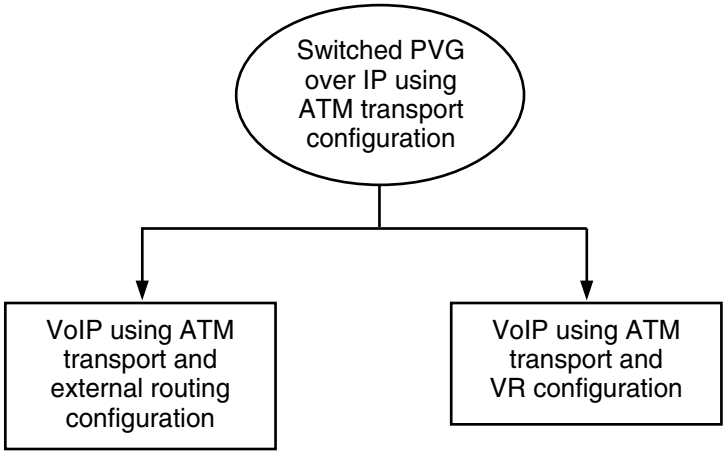
Configure switched Media Gateway using IP over ATM transport to send voice traffic over an IP network.

- Switched Media Gateway using IP over ATM transport configuration flow (page 75)
- Task navigation (page 76)

Switched Media Gateway using IP over ATM transport configuration flow

This task flow shows you the sequence of procedures you perform to configure switched Media Gateway using IP over ATM transport. To link to any procedure, go to Task navigation (page 76).

Switched Media Gateway using IP over ATM transport configuration task flow



PPT 3364 005 AA

Task navigation

- VoIP using ATM transport and external routing configuration (page 77)
- VoIP using ATM transport and VR configuration (page 87)

VoIP using ATM transport and external routing configuration

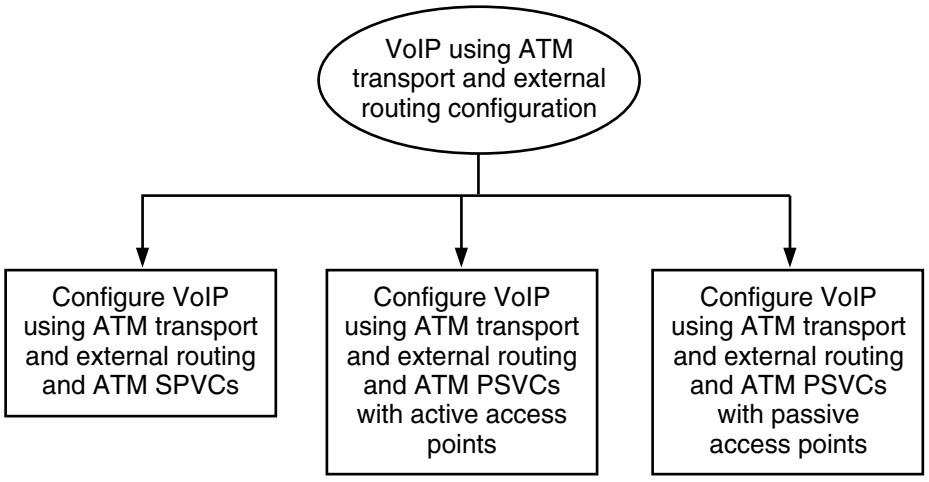
Configure VoIP using ATM transport and external routing by configuring the ATM links to establish the connection between the ATM and VSP-type FP cards.

- VoIP using ATM transport and external routing configuration flow (page 77)
- Task navigation (page 78)

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 78).

VoIP using ATM transport and external routing configuration task flow



PPT 3364 003 AA

Task navigation

- Configuring VoIP using ATM transport and external routing and ATM SPVCs (page 79)
- Configuring VoIP using ATM transport and external routing and ATM PSVCs with active access points (page 82)
- Configuring VoIP using ATM transport and external routing and ATM PSVCs with passive access points (page 85)

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

Step	Action
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 peak cell rate. **`set Nsta/<n> Vgs IpMConn SpvcAp pcr <p_cell_rate>`**
7	Specify the sustained cell rate. **`set Nsta/<n> Vgs IpMConn SpvcAp scr <s_cell_rate>`**
8	Specify the maximum burst size. **`set Nsta/<n> Vgs IpMConn SpvcAp mbs <max_burst_size>`**
9	Specify the retry limit. **`set Nsta/<n> Vgs IpMConn SpvcAp limit <max_retry>`**

--End--

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*.

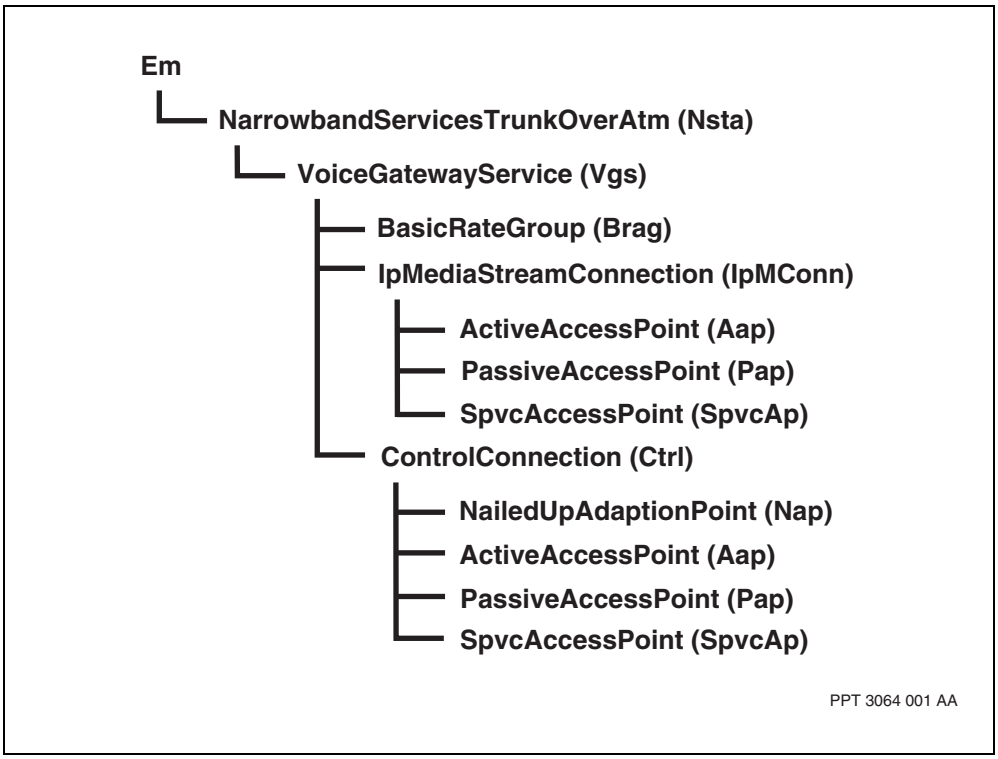
(1 of 2)

Variable	Value
<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.

(2 of 2)

Procedure job aid

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

Step	Action
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>**

--End--

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).

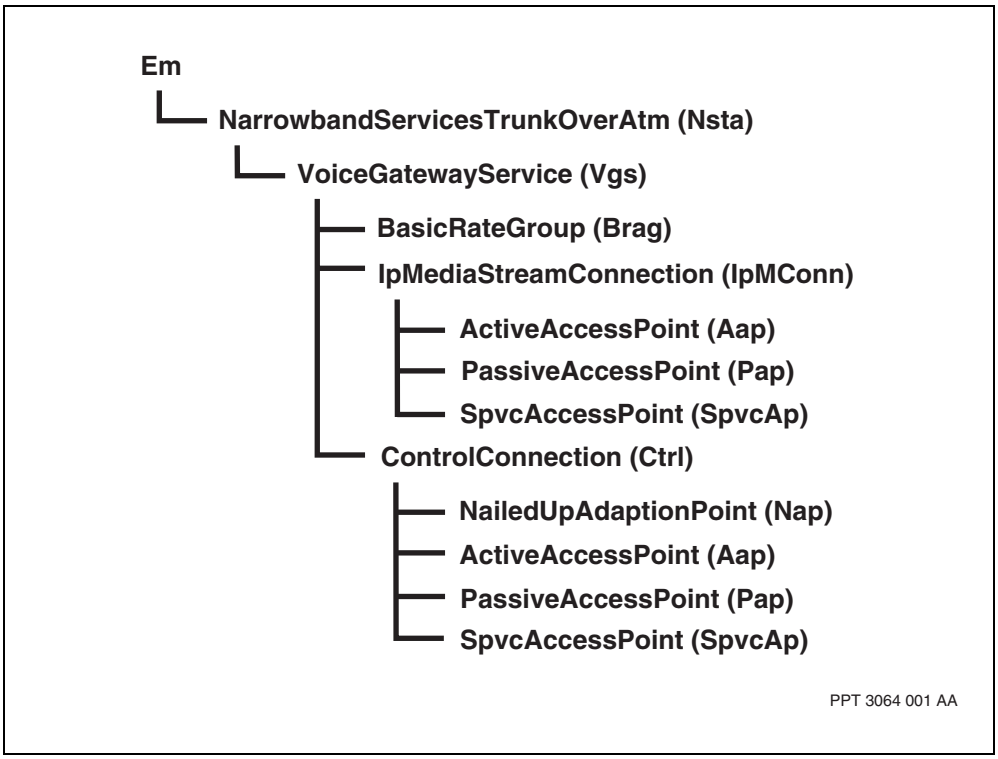
(1 of 2)

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 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*.

(2 of 2)

Procedure job aid

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

Step	Action
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>**

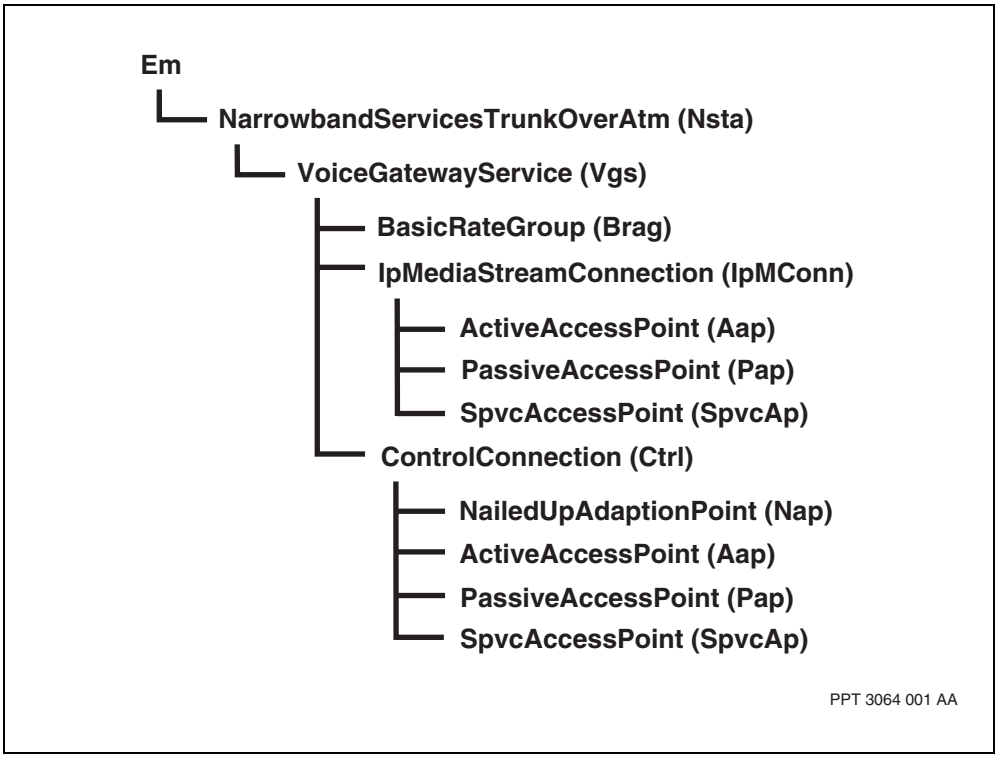
--End--

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

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



VoIP using ATM transport and VR configuration

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

- Prerequisites to VoIP using ATM transport and VR configuration (page 87)
- VoIP using ATM transport and VR configuration task flow (page 87)
- Task navigation (page 88)

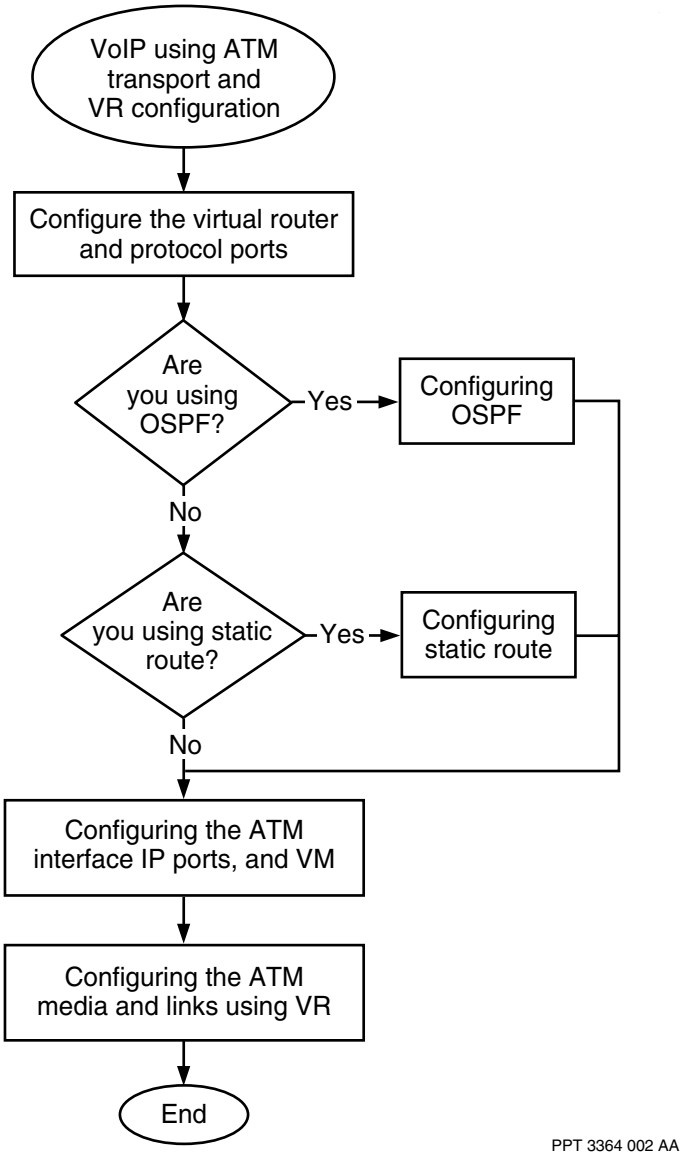
Prerequisites to VoIP using ATM transport and VR configuration

- VoIP using ATM transport and VR configuration uses virtual router access point (VR AP) functionality that is only available on Nortel Multiservice Switch 15000.
- Set the feature list of the logical processor type (LPT) for the voice services card to *vgsIp ip atmMpe ipCos ipDiffServ* for the LPT. Feature *ipDiffServ* is required when differentiated services (DiffServ) are used for traffic management capabilities. 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 required when DiffServ is used for traffic management capabilities.
- To configure more than one virtual router (VR) on a Nortel Multiservice Switch shelf, feature *mvr* is required in the feature list of the logical processor type (LPT) for the control processor (CP) card.
- Application *WanDte* is required before adding component *AtmMpe*.

VoIP using ATM transport and VR configuration task 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 88).

VoIP using ATM transport and VR configuration task flow



Task navigation

- Configuring the virtual router and protocol ports (page 89)
- Configuring OSPF (page 92)
- Configuring static route (page 94)
- Configuring the ATM interface, IP ports, and VM (page 96)
- Configuring the ATM media and links using VR (page 100)

Configuring the virtual router and protocol ports

Configure the virtual router (VR) and protocol ports for the Media Gateway to select the best routes to destination addresses.

Prerequisites

- Media Gateway 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 Media Gateway shelf. The two VR instances can be used for separate connectivity of media and control traffic. When Media Gateway has only one VR instance on one VSP2/ VSP3/VSP3-o FP card, the virtual router connects both media and control traffic.

Procedure steps

Step	Action
1	Add a *vr* component for the VR on the Media Gateway. **add Vr/<vr_name>**
2	Add the *DifferentiatedServicesDomain* subcomponent to the *Vr* component. **add Vr/<name> Dsd/<dsd_type>** For more information about the *Dsd* subcomponent, see *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – Layer 3 Traffic Management* (NN10600-808) and *Nortel Multiservice Switch 7400/15000/20000 Configuration – Layer 3 Traffic Management* (NN10600-809).
3	Add the attribute *virtualRouterProcessor (vrp)* to the *Vr* component. **add Vr/<name> virtualRouterProcessor**
4	Set the attribute *virtualRouterProcessor (vrp)* of *Vr* component to the *LogicalProcessor (Lp)/0* instance. **set Vr/<vr_name> virtualRouterProcessor Lp/0**

Attention: The VR functionality of MG is located in the CP card (*Lp/0*).

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	Set the *vpnMode* attribute of the *vr* component to *carrier*. **set Vr/<vr_name> vpnMode carrier**
8	Add an *Ip* subcomponent under the vr component.

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

9 Configure two protocol ports under the *Vr* component

```
add Vr/<vr_name> Pp/<pp_id1>
add Vr/<vr_name> Pp/<pp_id2>
```

Attention: Address resolution protocol (ARP) is a mechanism for mapping 32-bit IP addresses to 48-bit Ethernet hardware addresses. For information on an inverse ARP (InARP) and inverse ARP scalability, see *Nortel Multiservice Switch 7400/15000/20000 IP Fundamentals* (NN10600-800). For information on configuring static ARP, see *Nortel Multiservice Switch 7400/15000/20000 Configuration – IP* (NN10600-801).

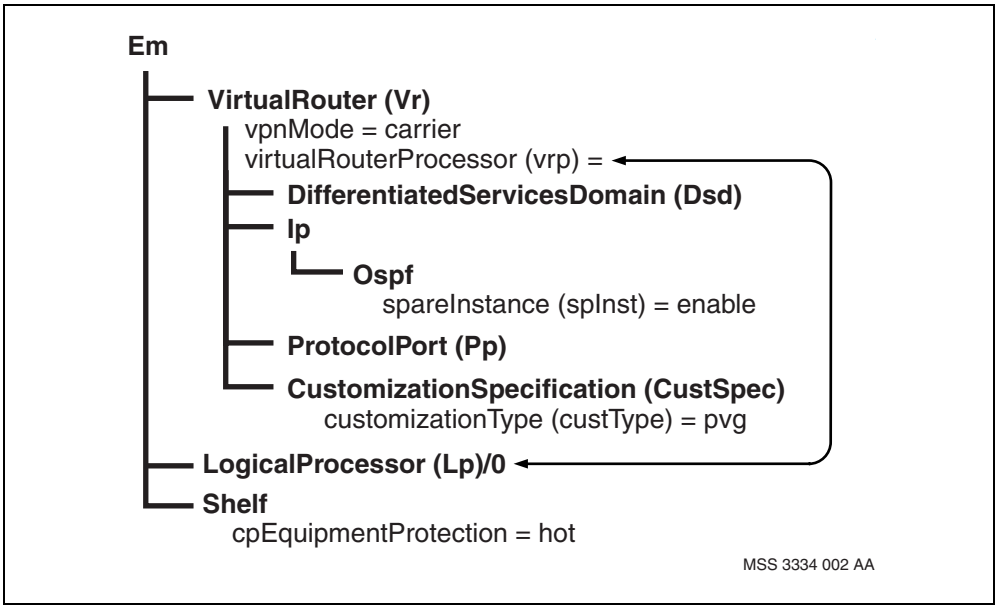
--End--

Variable definitions

Variable	Value
<dsd_type>	The instance value of the DifferentiatedServicesDomain (Dsd) subcomponent.
<id_value>	The IP address for the *routerId* attribute. There is no default value.
<pp_id1>	The identifier assigned to this protocol port.
<pp_id2>	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

Virtual router, OSPF, 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

Step	Action
1	Add the *Ospf* component to the IP protocol on the virtual router. **`add Vr/<vr_name> Ip Ospf`**
2	Set the control processor switchover (CPSO) support to hot. **`set shelf cpEquipmentProtection hot`**
3	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`**
4	Add an *AreaEntry* component. **`add Vr/<vr_name> Ip Ospf Area/<area_value>`**

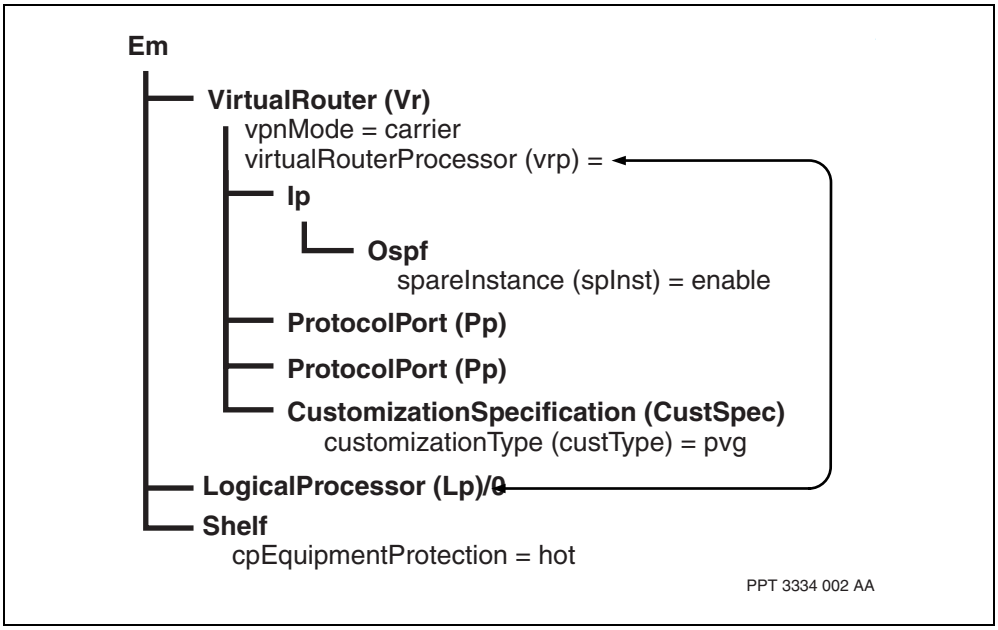
--End--

Variable definitions

Variable	Value
<area_value>	The value of the area entry component.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

OSPF component hierarchy



Configuring static route

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

Procedure steps

Step	Action
1	Add a *Static* component as a *Ip* subcomponent of the component on the virtual router. **`add Vr/<vr_name> Ip Static`**
2	Add a static route to the route table. **`add Vr/<vr_name> Ip Static RouteEntry/<dest_address>, <dest_netmask>, <type_of_service>`**
3	Add a *NextHop* component for each defined static route. **`add Vr/<vr_name> Ip Static RouteEntry/<dest_address>, <dest_netmask>, <type_of_service>, NextHop/<ip_address>`**

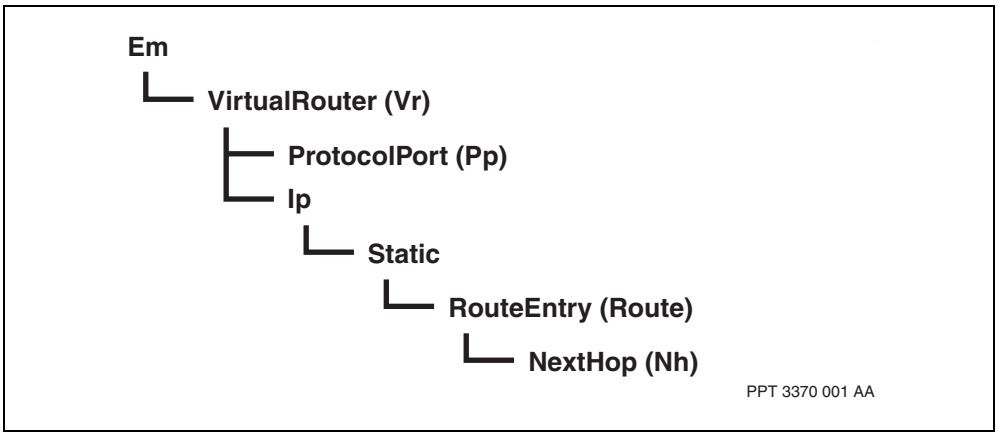
--End--

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.
<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

Static route 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

Step	Action
1	Add an interface application for the IP port of the IP service card. **add AtmIf/<atmif_id>**
	Attention: Permanent virtual circuits (PVCs) and soft permanent virtual circuits (SPVCs) are supported on VoIP using ATM transport.
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 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>

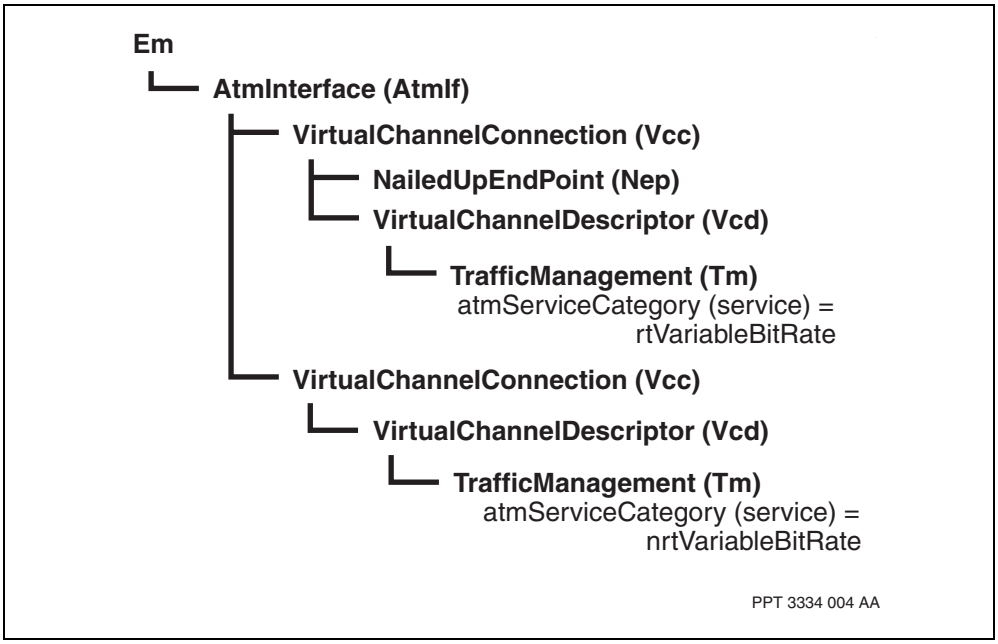
--End--

Variable definitions

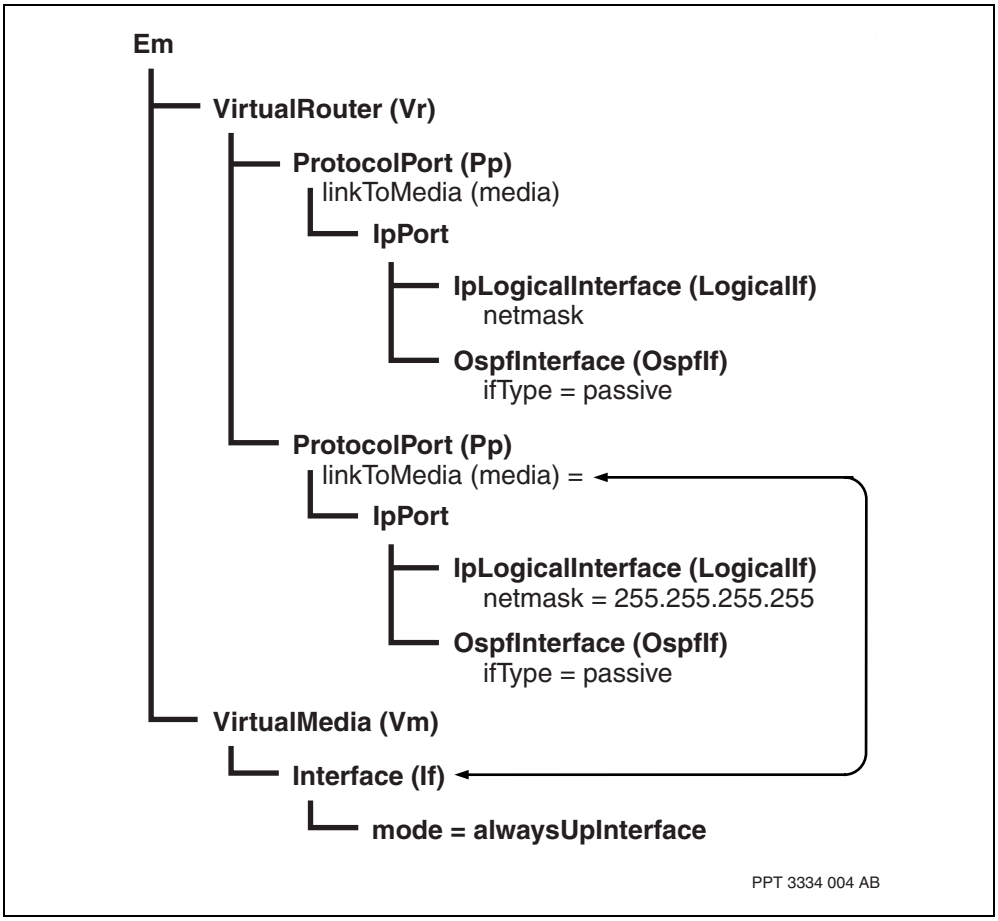
Variable	Value
<if_id>	The instance of the virtual interface.
<ip_address>	The address assigned to the logical interface.
<lp_id>	The instance of the logical processor.
<mask>	The network mask to be used with the IP address. For this procedure use 255.255.255.255 as the mask.
<pp_id>	The identifier assigned to the protocol port.
<traffic_parameters_vector>	A vector of five traffic parameters. See *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060)
<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

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



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 (VrAp) for media and signaling traffic connections.

Prerequisites

- For the VrAp to work properly with carrier grade VR, this procedure requires activation of subcomponent *customizationSpecification (CustSpec)* of component *VirtualRouter (Vr)*.

Procedure steps

Step	Action
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/ <atmmpe_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 VrAp to the VoIP media connection. **add Nsta/<nsta_id> Vgs ipMConn VrAp**
8	Link the VrAp of the VoIP media connection to the VR. Use the instance of component *Vr ProtocolPort (Pp)* of Configuring the ATM interface, IP ports, and VM (page 96) that links to the VM. **set Nsta/<nsta_id> Vgs ipMConn VrAp subnetAccessName Vr/ <vr_name> Pp/<pp_id> IpPort LogicalIf/<ip_address>**

Attention: 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/*

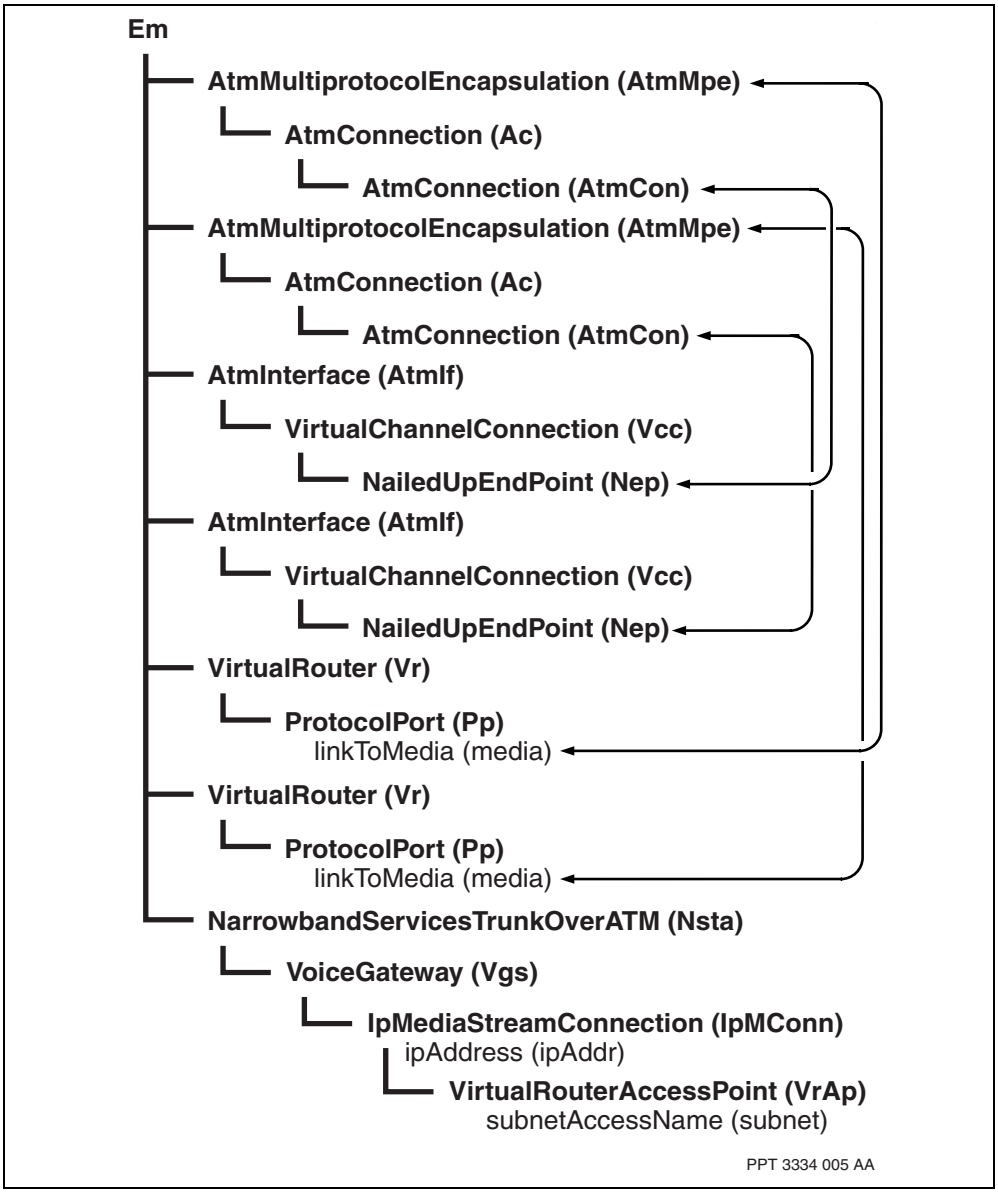
--End--

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

Configuring the ATM media and links using VR component hierarchy



Switched Media Gateway using IP over Ethernet transport configuration

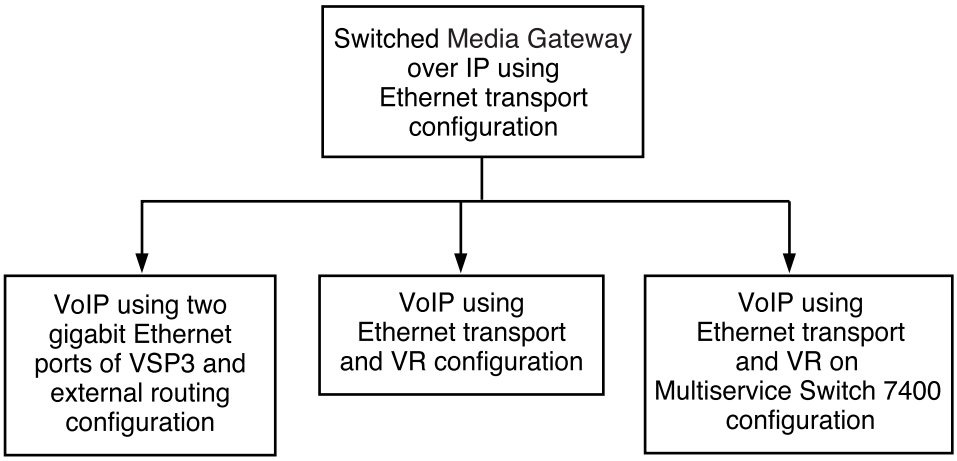
Configure switched Media Gateway using IP over Ethernet transport configuration to send voice traffic over an IP network using Ethernet.

- Switched Media Gateway using IP over Ethernet transport configuration flow (page 103)
- Task navigation (page 104)

Switched Media Gateway using IP over Ethernet transport configuration flow

This task flow shows you the sequence of procedures you perform to configure switched Media Gateway using IP over Ethernet transport. To link to any procedure, go to Task navigation (page 104).

Switched Media Gateway using IP over Ethernet transport configuration task flow



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Task navigation

- VoIP using two gigabit Ethernet ports of VSP3 and external routing configuration (page 105)
- VoIP using Ethernet transport VR configuration (page 107)
- Configuration of VoIP using Ethernet transport and VR (page 129)

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 gigabit Ethernet ports of VSP3 and external routing (page 260) for additional information about this procedure.

Procedure steps

Step	Action
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>**

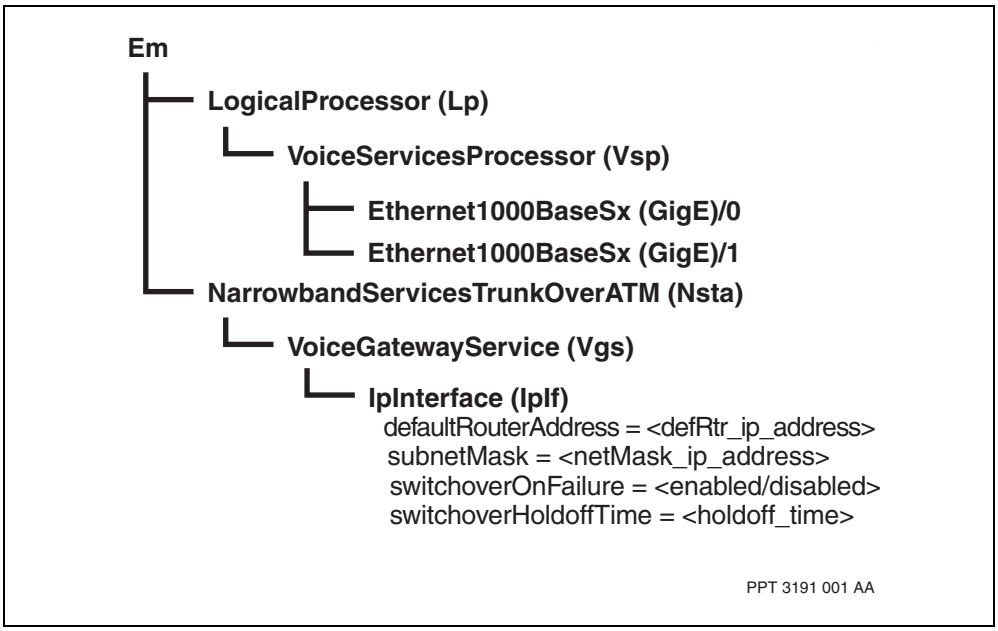
--End--

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

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



VoIP using Ethernet transport 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.

- Prerequisites to VoIP using Ethernet transport and VR configuration (page 107)
- VoIP using Ethernet transport and VR configuration flow (page 107)
- Task navigation (page 109)

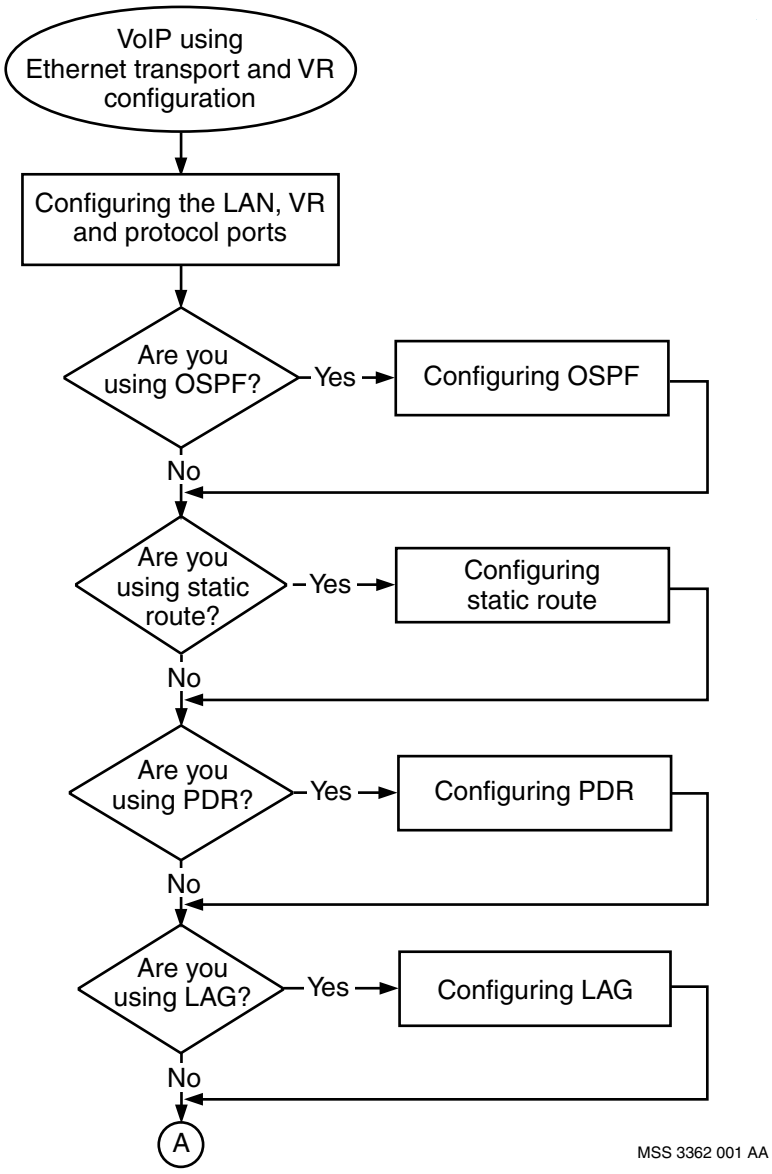
Prerequisites to VoIP using Ethernet transport and VR configuration

- Use the voice services processor 2 (VSP2), the VSP3, the voice services processor 3 with optical TDM interface (VSP3-o), the2pVSP4e, or the 2pVS FP card as the voice services card.
- Set the feature list of the LPT for the voice services card to *vgsIp ip* for the LPT (*lpt/vgsIp*). This feature list can substitute feature *vgsIpG729* for feature *vgsIp*.
- For TrFO and RTOCdma capable nodes, set the feature list of the LPT for the voice services card to either vgsIpRtoCdma or vgsIpTrfo as required for the configuration.
- Feature *ipDiffServ* is not required for the LPTs of all FP cards when default differentiated services (DiffServ) functionality is used by configuring component *Vr DifferentiatedServicesDomain (Dsd)*.
- Set the feature list of the LPT for the IP service card (*lpt/lan*) to *ip*.

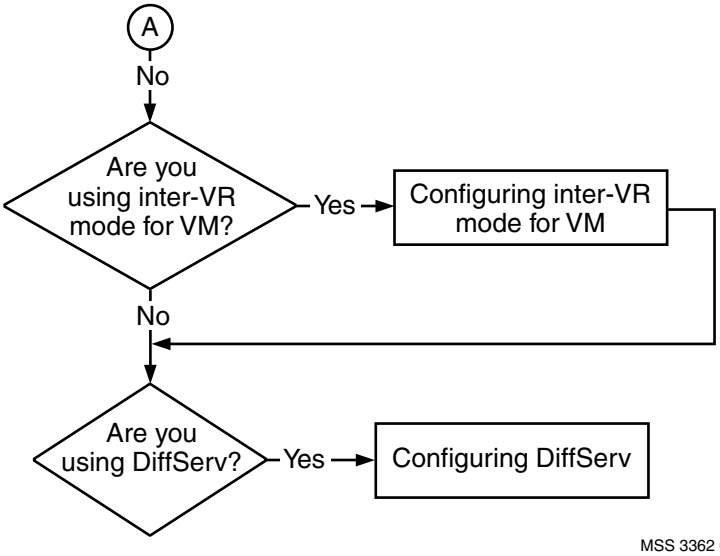
VoIP using Ethernet transport and VR configuration flow

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.

VoIP using Ethernet transport and VR configuration task flow — Part 1



VoIP using Ethernet transport and VR configuration task flow — Part 2



Task navigation

- Configuring the LAN, VR, and protocol ports (page 110)
- Configuring OSPF (page 115)
- Configuring static route (page 117)
- Configuring PDR (page 119)
- Configuring LAG (page 122)
- Configuring inter-VR mode for VM (page 124)
- Configuring DiffServ (page 127)

Configuring the LAN, VR, and protocol ports

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

Procedure steps

Step	Action
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 Media Gateway. **add -s Vr/<vr_name> Ip**
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>**
14	Add the virtual media (VM). **add Vm/<vm_id>**
15	Set the mode of the VM interface.

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

16 Link the VR protocol port to the VM.

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

17 Add the VoIP media connection.

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

18 Set the IP address of the VoIP media connection.

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

19 Add subcomponent *VirtualRouterAccessPoint (VrAp)* to the VoIP media connection.

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

20 Link the *VrAp* subcomponent of the VoIP media connection to the VR. Use the instance of component *Vr ProtocolPort (Pp)* in this procedure that links to the VM.

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

Attention: If PRI or V5.2 protocols are used, component *Nsta Vgs Ctrl/mg VirtualRouterAccessPoint (VrAp)* and component *Nsta Vgs Ctrl/sg VirtualRouterAccessPoint (VrAp)* must also link to the protocol ports of the VM.

Attention: For carrier grade, two LAN applications are required to provide a separate LAN application on each of the two 4pGe cards in the LP group.

Attention: 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/*

--End--

Variable definitions

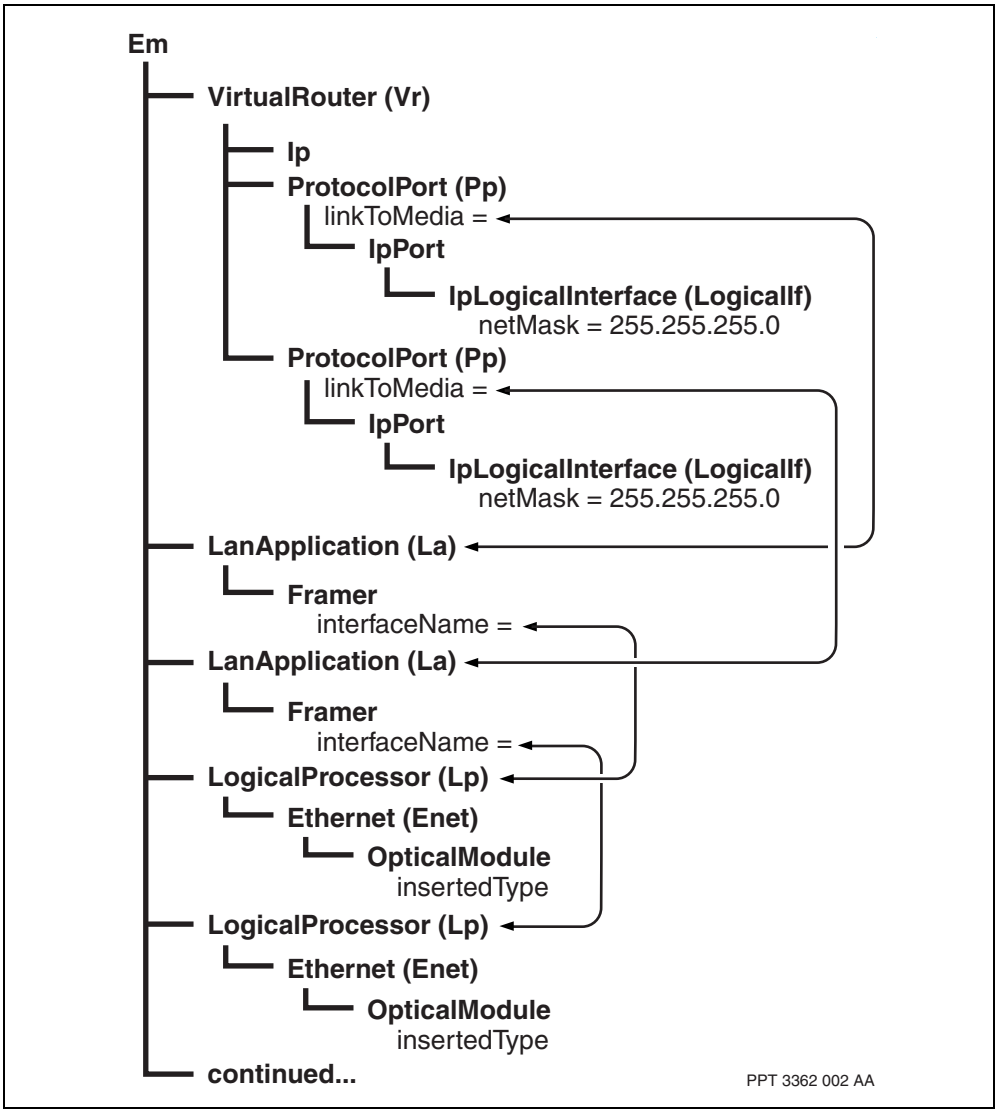
Variable	Value
<ethernet_id>	The identifier assigned to this gigabit Ethernet (GigE) port.
<ip_address>	The assigned IP address.
<lan_id>	The identifier assigned to the LAN application.
<lp_id>	The identifier assigned to the LP.
<lpt_id>	The identifier assigned to this LPT.

(1 of 2)

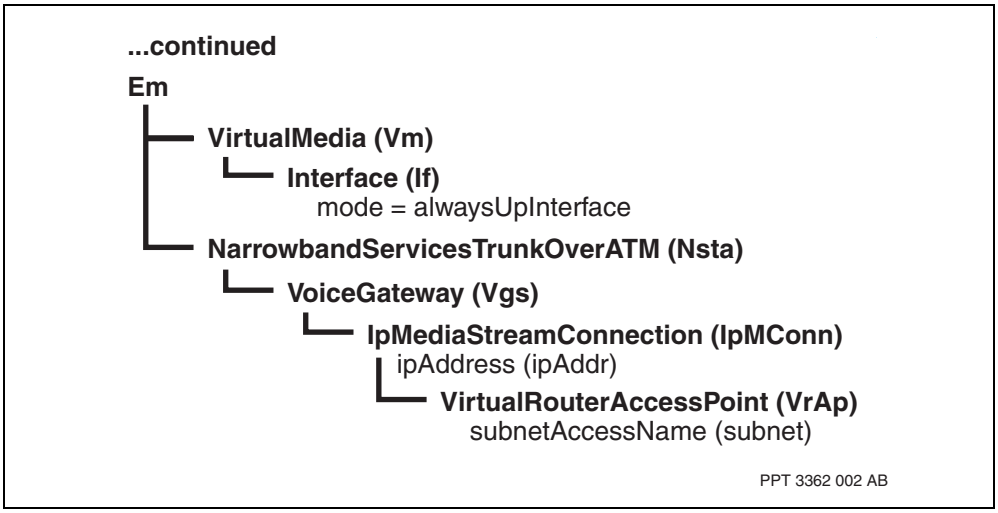
Variable	Value
<nsta_id>	The instance of the *Nsta* component.
<optical_module_type3>	The optical module type (LX or SX).
<pp_id>	The identifier assigned to this protocol port.
<vr_name>	The name assigned to this VR.
(2 of 2)	

Procedure job aid

LAN, VR, and protocol ports component hierarchy — Part 1



LAN, VR, and protocol ports component hierarchy — Part 2



Configuring OSPF

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

Procedure steps

Step	Action
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`**

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

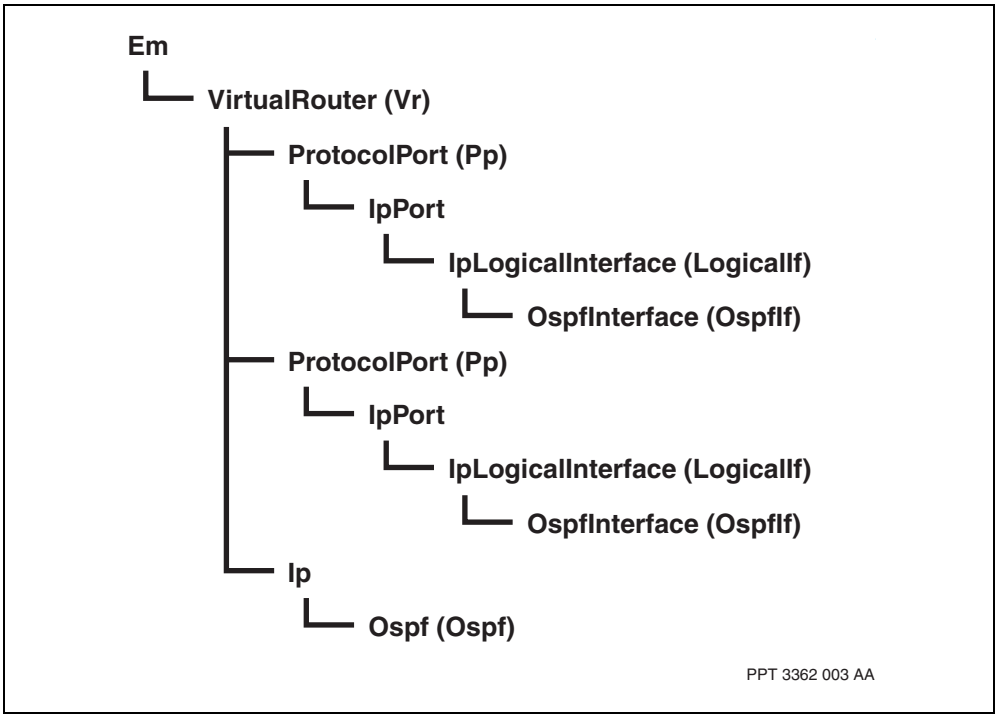
--End--

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

OSPF component hierarchy



Configuring static route

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

Procedure steps

Step	Action
1	Add a *Static* component as a *Ip* subcomponent of the component on the virtual router. **`add Vr/<vr_name> Ip Static`**
2	Add a static route to the route table. **`add Vr/<vr_name> Ip Static RouteEntry/<dest_address>, <dest_netmask>, <type_of_service>`**
3	Add a *NextHop* component for each defined static route. **`add Vr/<vr_name> Ip Static RouteEntry/<dest_address>, <dest_netmask>, <type_of_service>, NextHop/<ip_address>`**

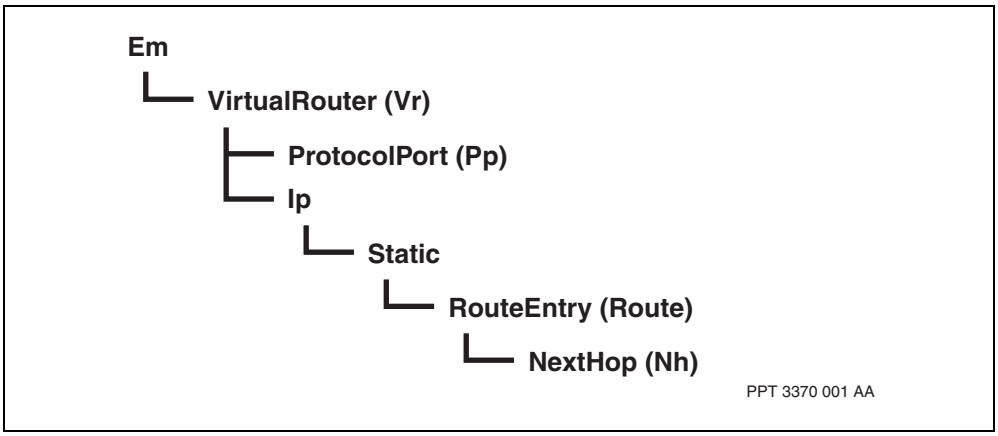
--End--

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.
<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

Static route component hierarchy



Configuring PDR

Configure protected default routes (PDR) to forward outbound IP traffic and provide layer 3 sparing (carrier grade protection) for the IP service card (4pGe FP card).

Prerequisites

- A 4pGe FP card is required as the IP service card to configure PDR. For information on the 4pGe FP cards, refer to *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).

Procedure steps

Step	Action
1	Add the PDR. **add Vr/<vr_name> Ip Static RouteEntry/0.0.0.0,0.0.0.0,0** **set Vr/<vr_name> Ip Static RouteEntry/0.0.0.0,0.0.0.0,0 protected yes**
2	Set the PDR to the highest preference. **set Vr/<vr_name> Ip Static RouteEntry/0.0.0.0,0.0.0.0,0 staticRemoteRtePreference 1**
3	Enable attribute *preConfigFwdPath* of component *Vr Ip*. **set Vr/<vr_name> Ip preConfigFwdPath enabled**
4	Add a minimum of two next hops to the PDR as interfaces over the 4pGe cards. A maximum of eight next hops can be configured for a PDR. **add Vr/<vr_name> Ip Static RouteEntry/0.0.0.0,0.0.0.0,0 nextHop/10.10.10.2** **add Vr/<vr_name> Ip Static RouteEntry/0.0.0.0,0.0.0.0,0 nextHop/10.10.20.2**

Attention: For hitless software migration (HSM), each 4pGe card in the LP group requires a PDR next hop. For each PDR next hop add a static ARP entry on a migrationActive Lp of an LpG.

5	Add a static ARP entry and provision the remote MAC address. **add Vr/<vr_name> Ip Arp HostEntry/<hostAddress>,<cos>** **set Vr/<vr_name> Ip Arp HostEntry/<hostAddress>,<cos> physAddress <mac_address>**

Attention: Add the static ARP host for nextHop interfaces on Lp's that are migrationActive under the LpG only.

6	Disable equal cost multi-path (ECMP).

```
set Vr/<vr_name> Ip Ospf ecmpStatus disabled
set Vr/<vr_name> Ip static maxEcmpNextHops 1
```

7 Add a LP group for hitless software migration (HSM).

```
add LpGroup/<lpgroup_name>
```

8 Add the LPs to the LP group for each of the two 4pGe cards that are coupled to support HSM.

```
add LpGroup/1 lp/<lp_id>
add LpGroup/1 lp/<lp_id>
```

9 Configure the LPs of the LP group to set the 4pGe card that stays in services on the active shelf.

```
set LpGroup/1 lp/<lp_id> migrationBehaviour
stayInServiceShelf
```

10 Configure the LPs of the LP group to set the 4pGe card that moves to the migration shelf.

```
set LpGroup/1 lp/<lp_id> migrationBehaviour
moveToMigrationShelf
```

11 Add OSPF TOS metric values for each of the PDR next hops as follows from the CLI. Ensure that the priority of the next hop associated with the stayInService FP is lower than that of the next hop associated with the moveToMigration FP.

For example, if card 4 is the stayInService FP, with Vr/1 Pp/GIGE40 linked to Lp/4 Eth/0, and card 5 is the moveToMigration FP, with Vr/1 Pp/GIGE50 linked to Lp/5 Eth/0, perform the following steps to add OSPF TOS Metrics and set the values to 1 and 10 for cards 4 and 5 respectively.

```
add -s vr/<VR #> pp/<PP for service FP> ipp log/<IP
address> ospf tos/0
add -s vr/<VR #> pp/<PP for migration FP> ipp log/<IP
address> ospf tos/0
set vr/<VR #> pp/<PP for migration FP> ipp log/<IP
address> ospf tos/0
tosMetric <2 or higher>
```

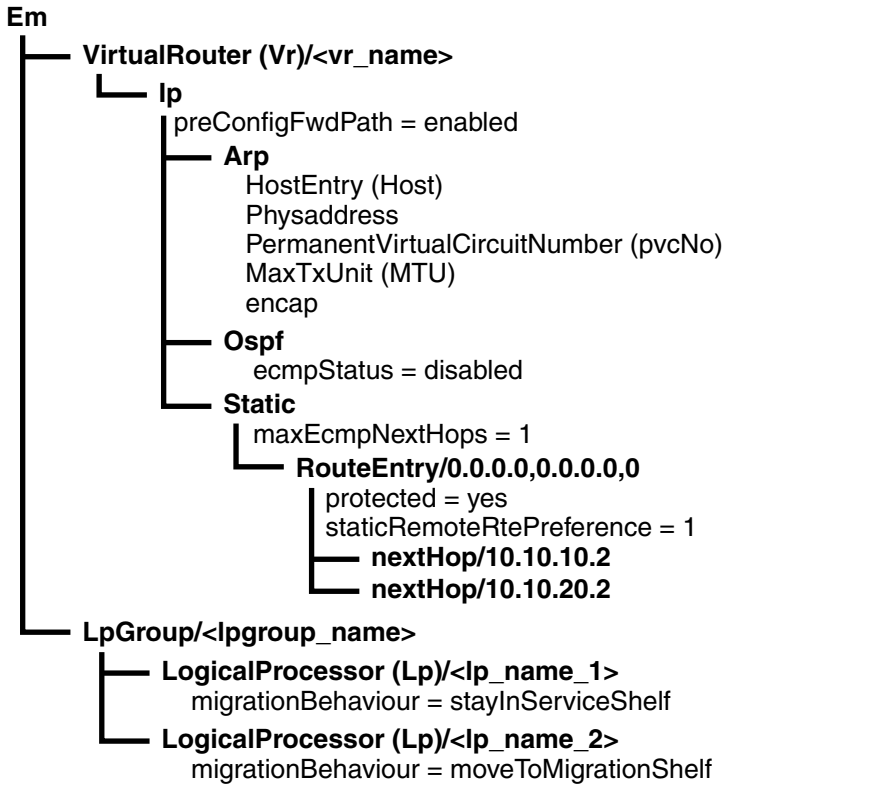
--End--

Variable definitions

Variable	Value
<lpgroup_name>	The name assigned to this logical processor group (LPG).
<lp_id>	The identifier assigned to the logical processor (LP).
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Configuring PDR component hierarchy



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Configuring LAG

Configure link aggregation (LAG) to group the gigabit Ethernet (GE) ports of a single 4pGe FP card into one logical Ethernet port.

Prerequisites

- A 4pGe FP card is required as the IP service card to configure LAG. For information on the 4pGe FP cards, refer to *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).

Procedure steps

Step	Action
1	Add the *lag* feature to the feature list on the LP of the 4pGe FP card. **set sw lpt/GigE featureList lag** **set lp/<lp_id> lpt sw lpt/GigE**
2	Configure two Ethernet ports for LAG. **add lp/<lp_id> enet/<enet_port>** **add lp/<lp_id> enet/<enet_port>**
3	Configure the *Lag* component. **add lp/<lp_id> Lag/<lag_id>**
4	Set the media access control (MAC) address of the remote LAG group. **set lp/<lp_id> Lag/<lag_id> partnerAdminSystemId <mac_address>**
5	Set the *lacpMode* attribute of the *Lag* component to passive. **set lp/<lp_id> Lag/<lag_id> lacpMode passive**
6	Configure the LAG links. **add lp/<lp_id> Lag/<lag_id> link/<link_id>** **set lp/<lp_id> Lag/<lag_id> link/<link_id> interfaceName lp/<lp_id> enet/<enet_port>**
7	Add the LAN application. **add Lan/<lan_id>**
8	Set the LAN framer to link to the *Lag* component (*applicationFramerName* attribute). **set Lan/<lan_id> framer interfaceName lp/<lp_id> Lag/ <lag_id>**

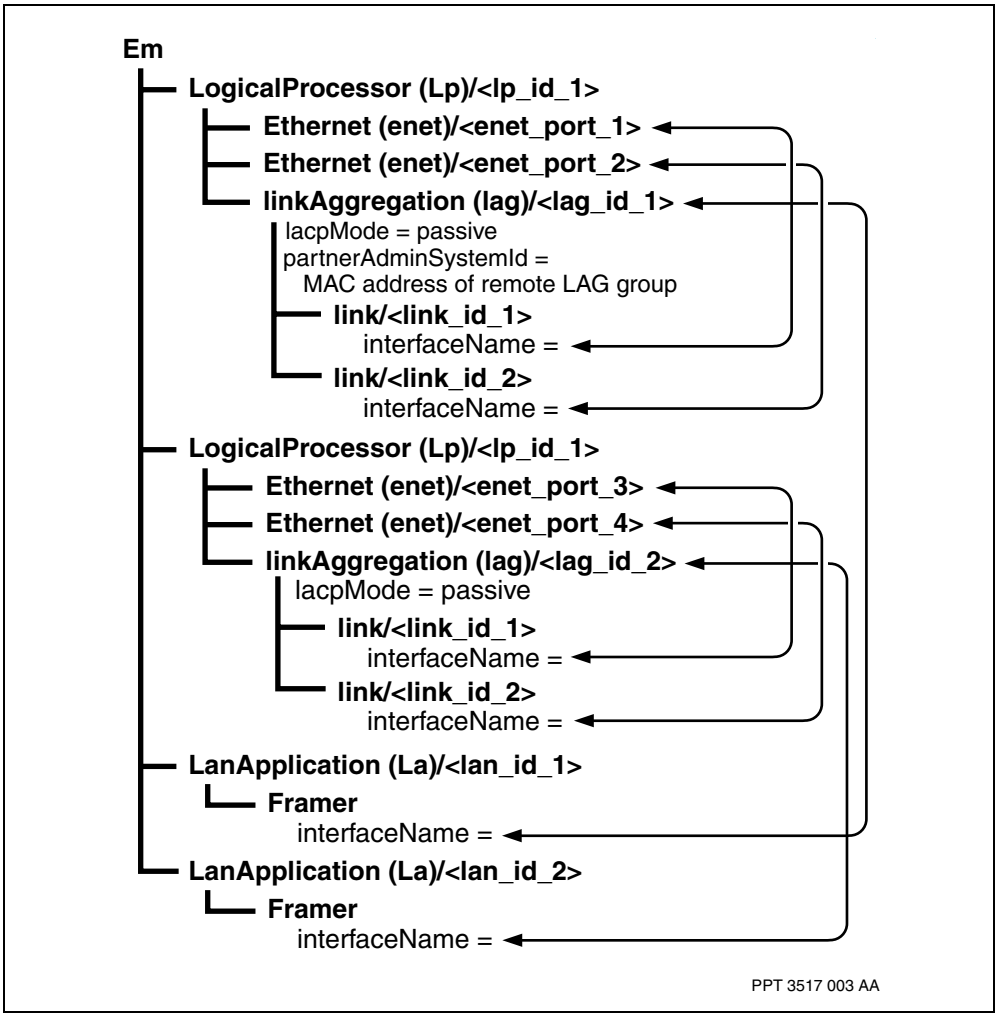
--End--

Variable definitions

Variable	Value
<enet_port>	The instance of the Ethernet port.
<mac_address>	The MAC address assigned to the remote LAG group.
<lag_id>	The identifier assigned to the *Lag* component.
<lan_id>	The instance of the LAN application.
<link_id>	The identifier assigned to the *link* component.
<lp_id>	The identifier assigned to the logical processor (LP).

Procedure job aid

Configuring LAG component hierarchy



Configuring inter-VR mode for VM

Configure virtual media (VM) in inter-VR mode to provide inter-VSP connectivity of media traffic for VSP cards linked to two different VRs.

Prerequisites

- A 4pGe FP card is required as the IP service card to configure DiffServ. For information on the 4pGe FP cards, refer to *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).

Procedure steps

Step	Action
1	Add a new virtual media (Vm) instance. This must not be one of the existing Vm instances. **add VM/<vm_id>**
2	Add a VM interface for each VR. **add VM/<vm_id> Interface/<vmif_id>**
3	Set the mode for each VM interface. **set VM/<vm_id> Interface/<vmif_id> mode interVrConnection**
4	Configure the protocol port, IP port, and logical interface for each VR. **add -s Vr/<vr_name> Pp/<pp_id> IpPort LogicalIf/ <ip_address> netmask <ip_address>**
5	Link the protocol ports to the VM interface. **set Vr/<vr_name> Pp/<pp_id> link VM/<vm_id> Interface/ <vmif_id>**
6	Configure static routes for each VR to send media traffic between VSP-type cards over the VM. **add -s Vr/<vr_name> Ip Static RouteEntry<dest_address>,<dest_netmask>, <type_of_service> NextHop/<ip_address>**
7	If an equivalent OSPF route is being advertised over the GE links, change the static route preference to be more preferred. **set Vr/<vr_name> Ip Static RouteEntry/ <dest_address>,<dest_netmask>,<type_of_service> staticRemoteRtePreference <preference>**

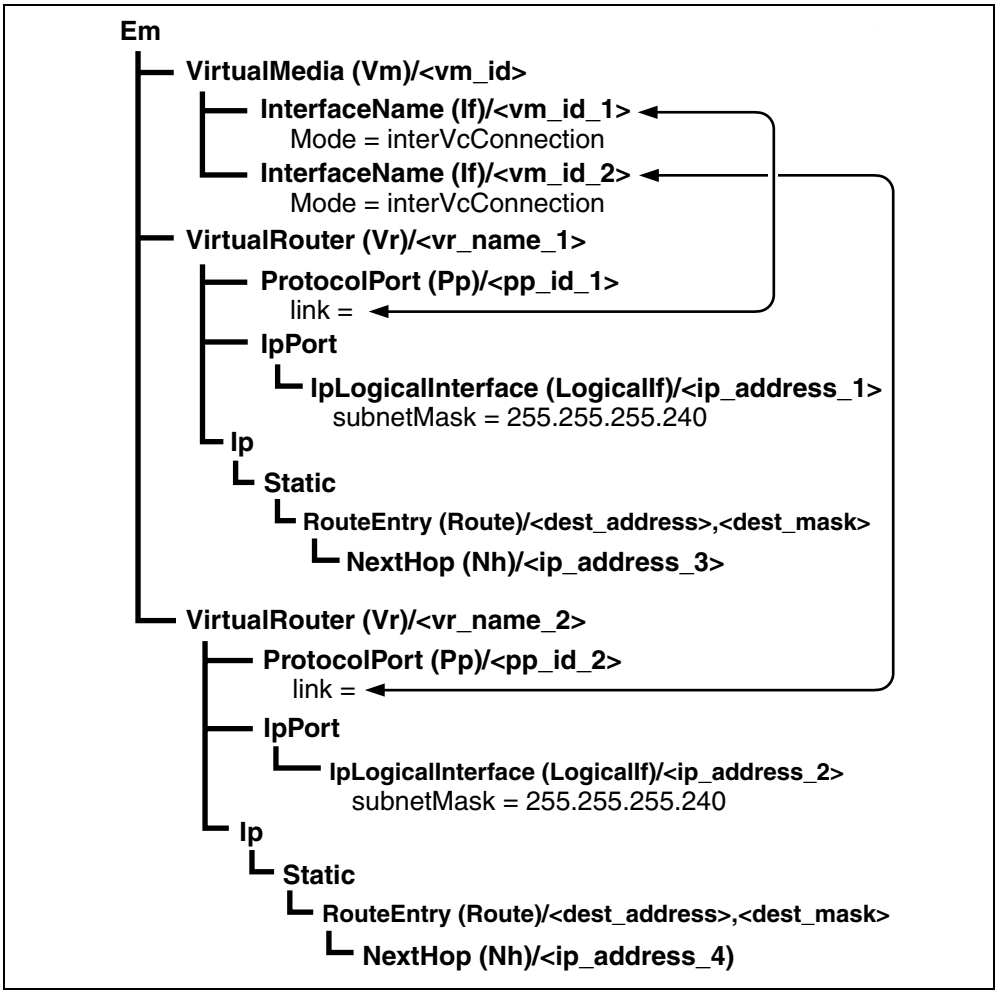
--End--

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.
<pp_id>	The identifier assigned to this protocol port.
<type_of_service>	The type of service. Only the value of 0 is supported.
<vm_id>	The instance of the virtual media.
<vmif_id>	The instance of the virtual media interface.
<vr_name>	The name assigned to this virtual router.
<preference>	Static route preference

Procedure job aid

Configuring inter-VR mode for VM component hierarchy



Configuring DiffServ

Configure differentiated services (DiffServ) to use traffic management capabilities of the IP service card (4pGe FP card).

Prerequisites

- A 4pGe FP card is required as the IP service card to configure DiffServ. For information on the 4pGe FP cards, refer to *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).
- To support DiffServ, the feature list must include the *ipDiffServ feature.*

Procedure steps

Step	Action
1	Assign the VR to the DiffServ domain through component *Vr DifferentiatedServicesDomain (Dsd)*. **add Vr/<vr_name> Dsd/pv**
2	Set the values of attributes *phbRoutingSource* and *phbGeneralSource* under component *Vr dsd*. **set Vr/<vr_name> Dsd/pv phbRoutingSource cs1** **set Vr/<vr_name> Dsd/pv phbGeneralSource df**
3	Set the traffic class and mappings for the 4pGe transmission queues. **set Vr/<vr_name> Dsd/pv trafficClass/premium sc8q 4**
4	Change the diffServ marking for voice signaling traffic. **set Nsta/<nsta_id> Vgs Ctrl/mg UdpPort/<udpport_id> diffserv 40** **set Nsta/<nsta_id> Vgs Ctrl/sg SctpPort/<sctpport_id> diffserv 40**
5	A subcomponent PerHopBehavior (Phb) is added by default to component Vr Dsd. Set the attribute *trafficClass (tc)* under component *Vr Dsd PerHopBehavior (Phb)*. **set Vr/<vr_name> Dsd/pv Phb/cs5 tc network**
6	Configure the gigabit Ethernet (GE) queue bandwidth for ep2, ep3, ep6, and ep7. **set lp/<lp_id> ethernet/2 tm ep/2 minimumBandwidthGuarantee 10** **set lp/<lp_id> ethernet/2 tm ep/3 minimumBandwidthGuarantee 70** **set lp/<lp_id> ethernet/2 tm ep/6 minimumBandwidthGuarantee 10** **set lp/<lp_id> ethernet/2 tm ep/7 minimumBandwidthGuarantee 5**

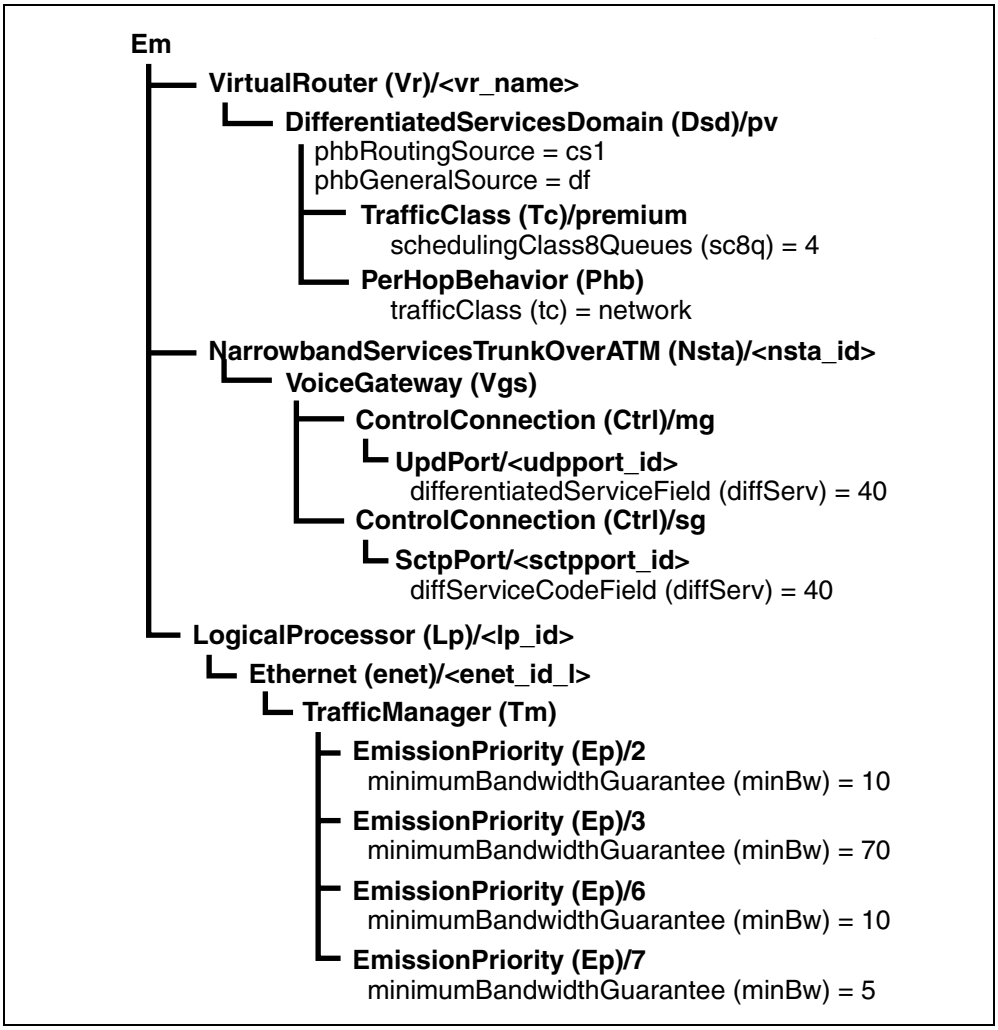
--End--

Variable definitions

Variable	Value
<lp_id>	The identifier assigned to the logical processor (LP).
<nsta_id>	The instance of the *Nsta* component.
<pp_id>	The identifier assigned to this protocol port.
<sctpport_id>	The instance of the simple control transmission protocol (SCTP) port.
<udpport_id>	The instance of the user datagram protocol (UDP) port.
<vr_name>	The name assigned to this virtual router.

Procedure job aid

Configuring DiffServ component hierarchy



Configuration of VoIP using Ethernet transport and VR

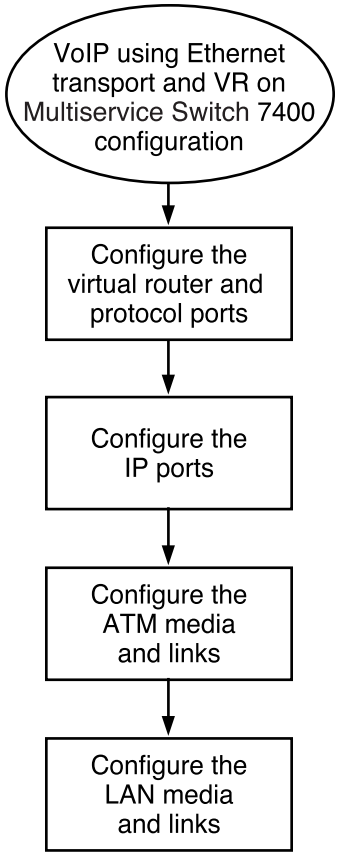
Configure VoIP using Ethernet transport and VR on Nortel Multiservice Switch 7400 nodes to send IP traffic to a virtual router and then out on an ethernet interface.

- Configuration flow of VoIP using Ethernet transport and VR on Multiservice Switch 7400 nodes (page 129)
- Task navigation (page 130)

Configuration flow of VoIP using Ethernet transport and VR on Multiservice Switch 7400 nodes

This task flow shows you the sequence of procedures you perform to configure switched Media Gateway using IP over ATM and a virtual router hairpin. To link to any procedure, go to Task navigation (page 130).

Configuration of VoIP using Ethernet transport and VR on Multiservice Switch 7400 task flow



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Task navigation

- Configuring the virtual router and protocol ports (page 131)
- Configuring the IP ports (page 134)
- Configuring the ATM media and links (page 136)
- Configuring the LAN media and links (page 138)

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 *Nortel Multiservice Switch 7400/15000/20000 Configuration – IP* (NN10600-801).

Procedure steps

Step	Action
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>**

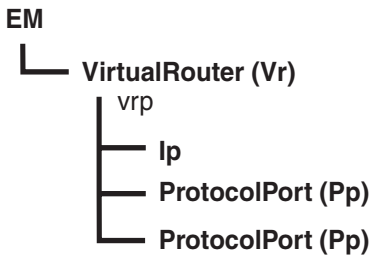
--End--

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

Configuring the virtual router and protocol ports component hierarchy



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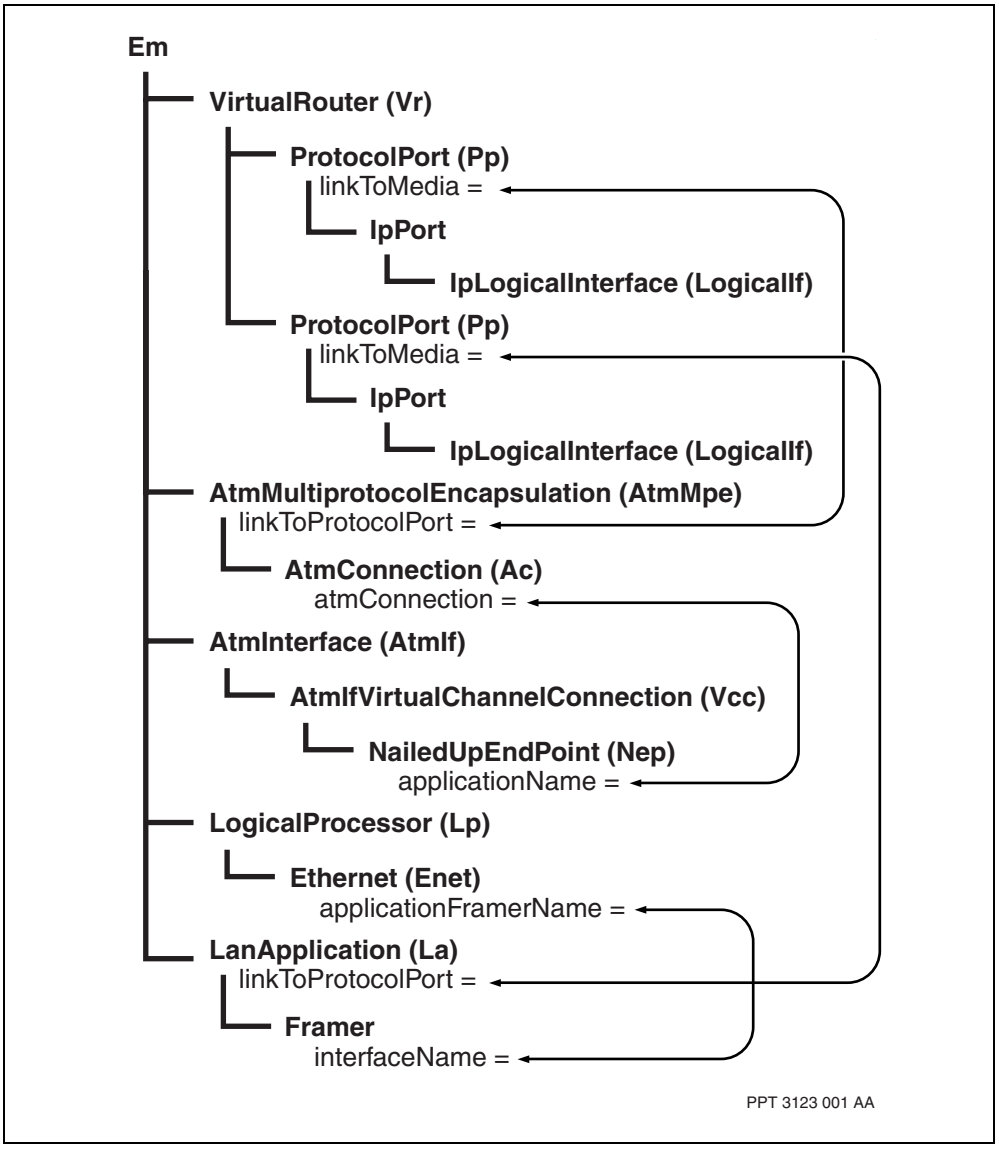
Configuring switched Media Gateway using IP and a virtual router component hierarchy



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 *Nortel Multiservice Switch 7400/15000/20000 Configuration – IP* (NN10600-801).

Procedure steps

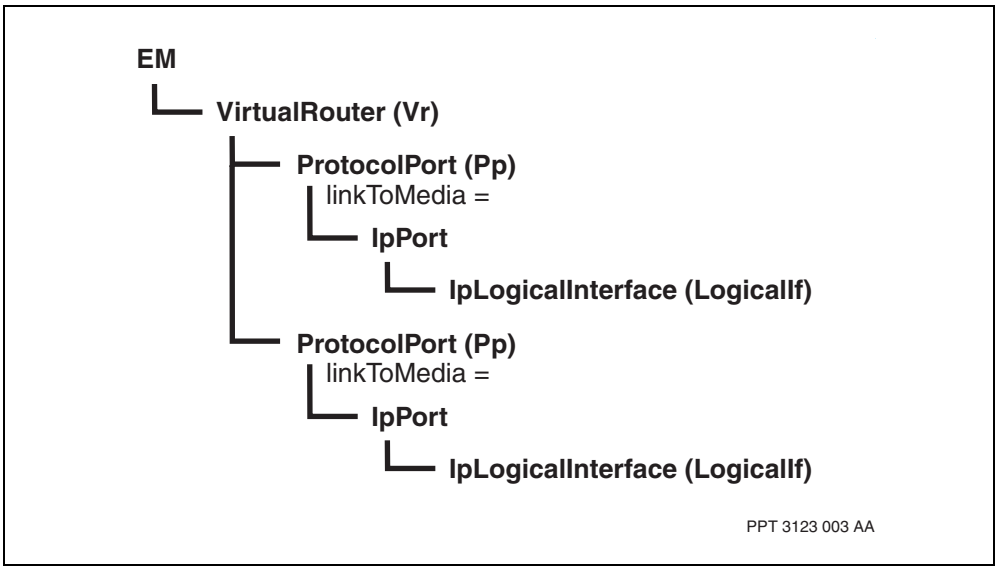
Step	Action
1	Add an IpPort component under each of the protocol ports defined under the virtual router. **`add Vr/<vr_name> Pp/<pp_id> IpPort`**
2	Define the IP addresses of each protocol port by adding an IpLogicalInterface component under each of the IpPort components. **`add Vr/<vr_name> Pp/<pp_id> 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>`**
	--End--

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

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 *Nortel Multiservice Switch 7400/15000/20000 Configuration – IP* (NN10600-801).
- In Nortel Multiservice Switch 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 Nortel Multiservice Switch 15000 Variable Speed Switch (VSS) solution, there is no hairpinning required as the ATM interface is physically on another shelf -- the ATM card on the Multiservice Switch 7400 shelf.

Procedure steps

Step	Action
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**

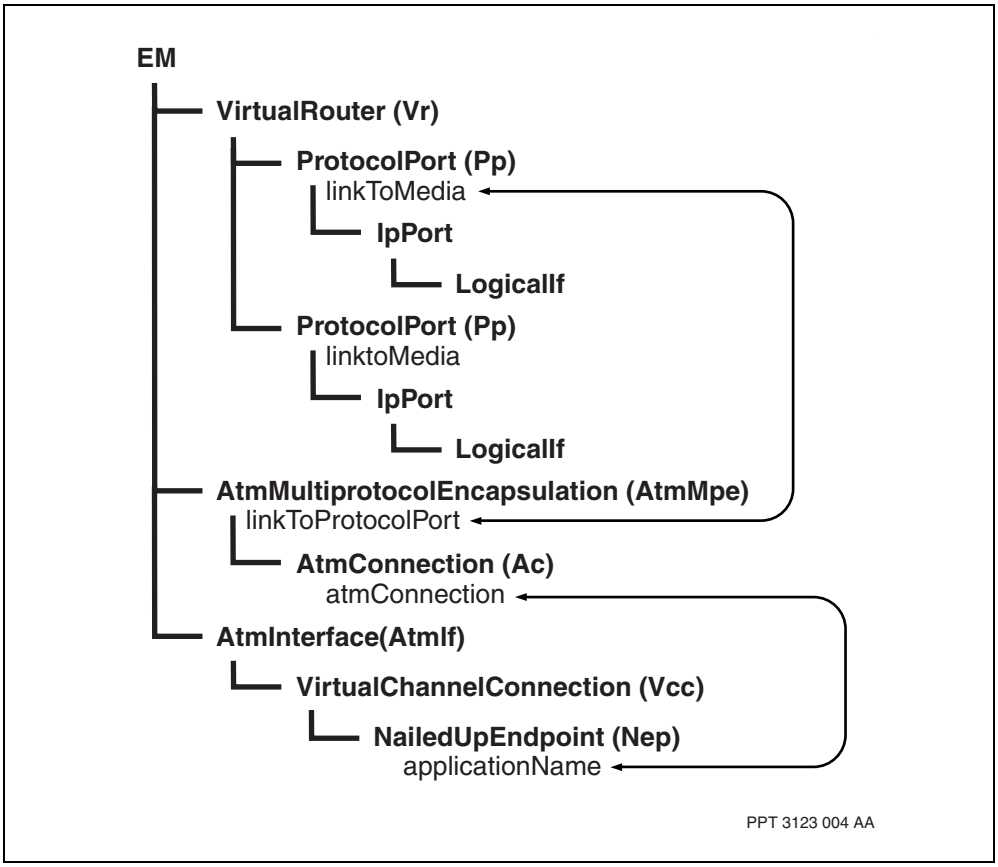
--End--

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

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 *Nortel Multiservice Switch 7400/15000/20000 Installation – Software* (NN10600-270).

Procedure steps

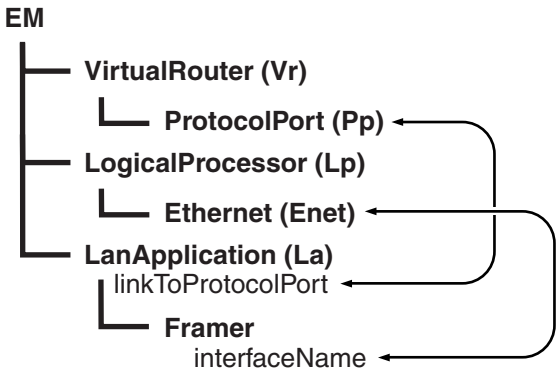
Step	Action
1	Configure an Ethernet port. **`add Lp/<x> Enet/<y>`**
2	Configure a LAN application. **`add La/<n>`**
3	Associate the Lan media application with the Ethernet port by setting the interfaceName attribute of the Framer subcomponent. **`set La/<n> Framer interfaceName Lp/<x> Enet/<y>`**
4	Link the Ethernet port to the virtual router **`set Vr/<vr_name> Pp/<pp_id> linkToMedia La/<n>`**
	--End--

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

LAN media and links component hierarchy



MGC connection configuration for switched Media Gateway

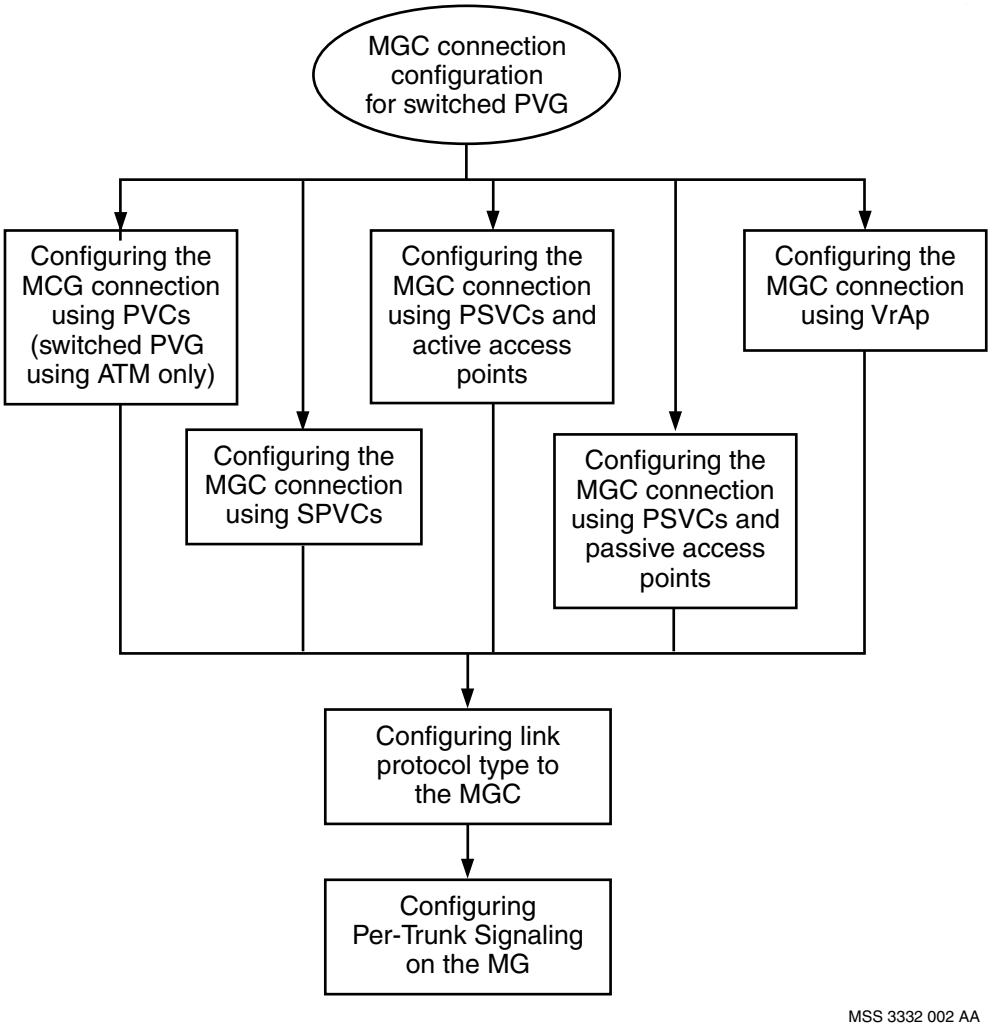
Configure the MGC connection so that call establishment, release, and maintenance commands can travel between the Media Gateway and the MGC.

- MGC connection configuration for switched Media Gateway flow (page 140)
- Task navigation (page 142)

MGC connection configuration for switched Media Gateway 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 142).

MGC connection configuration for switched Media Gateway task flow



Task navigation

- Configuring the MGC connection using PVCs (switched Media Gateway using ATM only) (page 143)
- Configuring the MGC connection using SPVCs (page 144)
- Configuring the MGC connection using PSVCs and active access points (page 146)
- Configuring the MGC connection using PSVCs and passive access points (page 148)
- Configuring the MGC connection using VrAp (page 149)
- Configuring link and protocol type to the MGC (page 151)
- Configuring Per-Trunk or Channel Associated Signaling (CAS) on the MG (page 154)

Configuring the MGC connection using PVCs (switched Media Gateway using ATM only)

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

Procedure steps

Step	Action
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**
	--End--

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.
<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 the MGC connection using SPVCs

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

Procedure steps

Step	Action
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>**

--End--

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 Media Gateway and the MGC using PSVC and active access points.

Procedure steps

Step	Action
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>**

--End--

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
<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*.

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 Media Gateway and the MGC using PSVC and passive access points.

Procedure steps

Step	Action
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>`**
	--End--

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 Media Gateway and the MGC using virtual router access point (VrAp).

Prerequisites

- For the VrAp to work properly with carrier grade virtual router (VR), this procedure requires activation of subcomponent *customizationSpecification (CustSpec)* of component *VirtualRouter (Vr)*.

Procedure steps

Step	Action
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 Media Gateway. **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 VrAp 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>
```

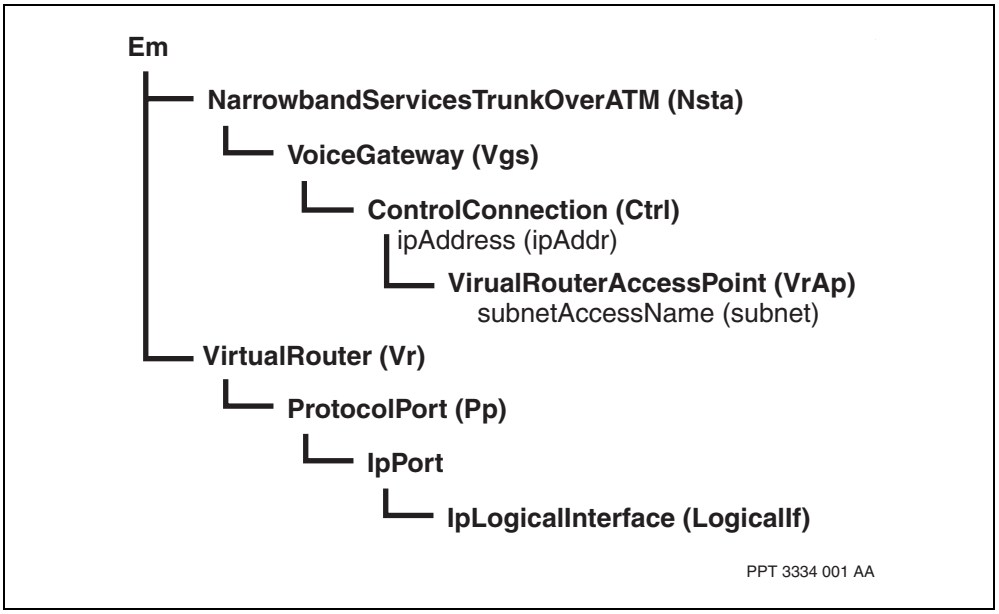
--End--

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

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

Step	Action
1	Add a UDP port beneath the control connection. **add Nsta/<n> Vgs Ctrl/mg UdpPort/<udpport>**
2	Add the H.248 control protocol beneath the *Vgs* component. **add Nsta/<n> Vgs H248/0**

Attention: The VSP3-o and 2pVSP4e FP cards supports H.248 protocol.

3	Set up an interface to the controller using the H.248 control protocol. **set Nsta/<n> Vgs H248/0 udpPortConnection <udpport> Nsta/<n> Vgs Ctrl/mg UdpPort/<udpport>**

Attention: For switched Media Gateway using IP (VoIP), the UDP port must be on a VSP2 FP, a VSP3 FP, VSP3-o, or a 2pVSP4e FP card. For switched Media Gateway 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	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	Add an *Mgc* component for each MGC. **add Nsta/<n> Vgs mgc/<mgc_id>**
7	For each *Mgc* component you added, 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, 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 an MGC to the H.248 control protocol.

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

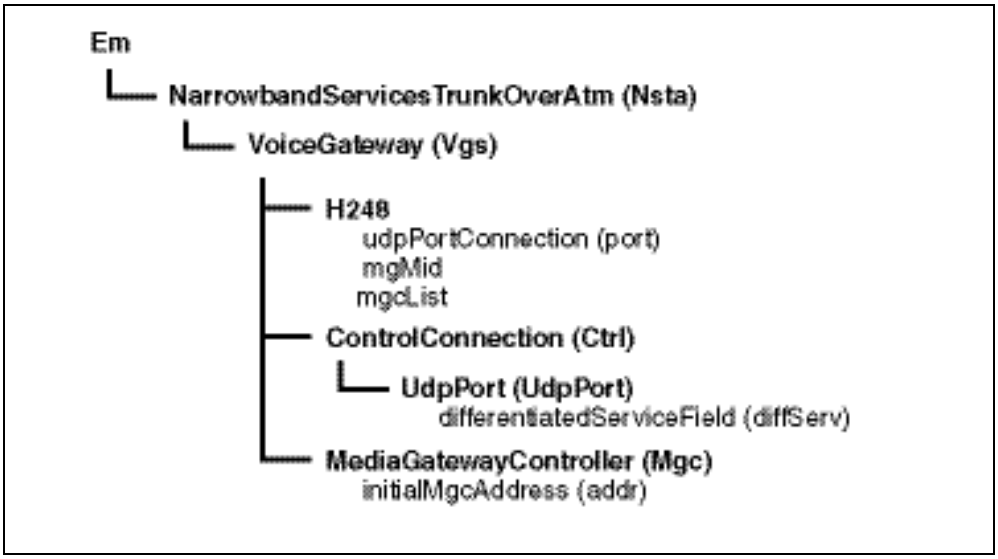
--End--

Variable definitions

Variable	Value
<diffserv_value>	Specifies the Differentiated Service Field in transmitted IP packets. The default value is 40
<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.
<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, the VSP3-o, or 2pVSP4e FP card listens for commands from the gateway controller

Procedure job aid

Link and protocol type MGC component hierarchy



Configuring Per-Trunk or Channel Associated Signaling (CAS) on the MG

Media Gateway may act as a relay point for Channel Associated Signaling (CAS) also known as Per-Trunk Signaling (PTS) through the support of a set of CAS signaling attributes, which are configured through a profile file.

Prerequisites

- Requires MGC running H.248 Gateway Control Protocol for operation.
- For correct operation, the appropriate profile file for the trunk type must be used. These profile files are provided embedded in the software load. See Profile name to trunk type mapping (page 156) for additional information.
- Applies to VSP3-o and 2pVSP4e.
- Valid DS1/E1 signaling profiles are available for NA CAS and International CAS.
- DS1 and E1 interfaces are not supported simultaneously.

Procedure steps

Step	Action
1	Add a *CasDefn* component for each variant to be used concurrently on a VSP FP. **`add Nsta/<n> Vgs CasDefn/<m>`**
2	Associate the *CasDefn* component with the variant profile file name: **`set Nsta/<n> Vgs CasDefn/<m> filename <CasVariantName>`**
3	Set the primary rate type to the correct value. **`set Nsta/<n> Vgs CasDefn/<m> primaryRateType <rate_type>`** For NA CAS, the rate type is DS1. For International CAS, the rate type is E1.
4	Repeat step 1 through step 3 for all CAS definitions (with different instance values) up to a total of 25 instances.
5	For TDM interface via VSP3-o or 2pVSP4e, add a *CAS* subcomponent under each *Tag* component that is to be used for CAS signaling. **`add Nsta/<n> Vgs Tag/<k> Cas`**
6	Link the *Cas* component to the *CasDefn* component: **`set Nsta/<n> Vgs Tag/<k> Cas casDefinition Nsta/<n> Vgs CasDefn/<m>`**
7	Link the *Tag* component to a Chan. For DS1 signaling:

```
set Nsta/<n> Vgs Tag/<k> interfaceName Lp/<n> Sonet/<x>
Sts/<y> Vt1dot5<z>,<w> DS1 Chan/0
```

For E1 signaling:

```
set Nsta/<n> Vgs Tag/<k> interfaceName Lp/<n> Sdh/<x>
Vc4/0 Vc12/<y>,<z>,<w> E1 Chan/0
```

8 For all DS1 CAS TDM interfaces, ensure that the DS1 component *lineType* attribute under the DS1 component is set to ‘d4Cas’ or ‘esfCas’.

```
set Lp/<n> Sonet/<x> Sts/<y> Vt1dot5/<z>,<w> DS1
lineType <cas_type>
```

For all E1 CAS TDM interfaces, ensure that the E1 component *lineType* attribute is set to ‘cas’.

```
set Lp/<n> Sdh/<x> Vc4/0 Vc12/<y>,<z>,<w> E1 lineType
cas
```

9 For all E1 CAS TDM interfaces, ensure that the *Chan* subcomponent does not have timeslot 16 provisioned.

```
set Lp/<n> Sdh/<x> Vc4/0 Vc12/<y>,<z>,<w> E1 Chan/0
timeslot ~16
```

10 Ensure that the *Tc* component *noServiceResponse* attribute is set to *noResponse*

For all DS1 CAS TDM interfaces:

```
set Lp/<n> Sonet/<x> Sts/<y> Vt1dot5/<z>,<w> DS1 Chan/0
Tc noServiceResponse noResponse
```

For all E1 CAS TDM interfaces:

```
set Lp/<n> Sdh/<x> Vc4/0 Vc12/<y>,<z>,<w> E1 Chan/0 Tc
noServiceResponse noResponse
```

11 Check and activate provisioning:

```
check prov

activate prov

confirm prov
```

--End--

Procedure job aid

The following profiles and capabilities are provided embedded in the load.

Profile name to trunk type mapping

Profile name	Mode handler	Inpulse type(s)	Outpulse type(s)	Ringback type	Physical Signaling	Trunk type
ds1SigDtmf	DTMF	DTMF & DP	DTMF & DP	Not Supported	DS1 (or R1)	SC, CELL, DAL, PX, IBNT1, IBNT2 and IBNT0 only
fxsLsDpdt	DTMF or DP	DTMF or DP	DTMF or DP	Not Supported	FXS Loop Start	DAL & PX only
fxsGsDpdt	DTMF or DP	DTMF or DP	DTMF or DP	Not Supported	FXS Ground Start	DAL & PX only
nullE1	None	None	None	None	E1 CAS multiframed	N/A

Backhaul using V5.2 configuration for switched Media Gateway

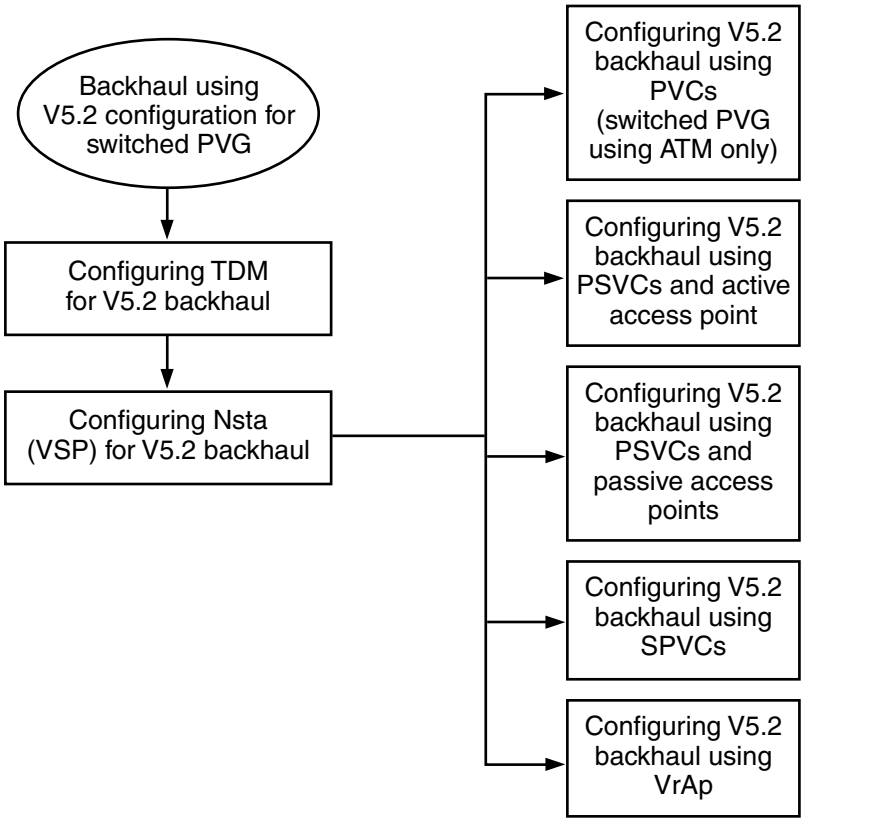
Configure backhaul using V5.2 to provide the transport of V5.2 layer 3 signaling protocols between an access node and the media gateway controller using V5UA/SCTP/IP. Media Gateway acts as a signaling gateway and media gateway to provide the interworking between the access node and the media gateway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

- Backhaul using V5.2 configuration for switched Media Gateway task flow (page 157)
- Task navigation (page 158)

Backhaul using V5.2 configuration for switched Media Gateway task 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 158).

Backhaul using V5.2 configuration for switched Media Gateway task flow (being updated for pcr7.2)



PPT 3332 003 AA

Task navigation

- Configuring TDM for V5.2 backhaul (page 159)
- Configuring Nsta (VSP) for V5.2 backhaul (page 160)
- Configuring V5.2 backhaul using VSP3-o FPs (page 162)
- Configuring V5.2 backhaul using PSVCs and active access points (page 165)
- Configuring V5.2 backhaul using PSVCs and passive access points (page 167)
- Configuring V5.2 backhaul using SPVCs (page 168)
- Configuring V5.2 backhaul using VrAp (page 170)

Configuring TDM for V5.2 backhaul

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

Procedure steps

Step	Action
1	Add a *v5link* component to the basic rate group. The *v5link* component represents the signaling datalink between the Access Network and the Media Gateway. **`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 *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060).
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>`**

Attention: 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.

--End--

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 Media Gateway to set the connection from the Media Gateway to the media gateway controller.

Procedure steps

Step	Action
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>**

--End--

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 40.
<n>	The value for the *Nsta* component.
<sctp_port>	The port number of the SCTP.

Configuring V5.2 backhaul using PVCs (switched Media Gateway 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

Step	Action
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`**

--End--

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 VSP3-o FPs

Configure V5.2 backhaul using PVCs to set the V5.2 backhaul signaling link for call control for the VSP3-o.

Prerequisites

- requires a Media Gateway Controller such as CS2000 running the H.248 Gateway Control Protocol for operation.
- provisioning changes must be done in the lowest possible traffic intervals
- Ensure you have configured the TDM *Lp/n* and then the *NSTA VGS* components
- Ensure you propagate the Interface ID (IID) to the MGC. Generation of an IID is automatic on the MG. The provisioning system automatically generates a link Id when the component is activated based on the LP number and the LP type. However, you must provision the IID on the MGC element manager's V5 link identifier to allow the two devices to communicate. The interface Id must match on the MG and the MGC.

CAUTION: Risk of lost messages

If you change the provisioning and one or more attribute or component changes made in the provisioning update is flagged as "critical", the SG will go to a disabled state to update its provisioning. When the MG goes to the disabled state, calls may be lost.

CAUTION:

The interface ID must match the value stored in the MGC provisioning database, otherwise, the link is cannot be used (the V5UA cannot locate it).

Procedure steps

Step	Action
1	Add the nsta vgs control and subcomponents. **add Nsta/1 Vgs Control/sg** **set nsta/1 vgs control/sg nap atmconn atmif/61 vcc/0.100 nep** **set nsta/1 vgs control/sg ipAddress 47.99.99.99** **add nsta/1 vgs control/sg sctpPort/10001**
2	Add the nsta vgs sgV5 and subcomponents.

```
add nsta/1 vgs sgV5

set nsta/1 vgs sgV5 sctpportconn nsta/1 vgs control/sg
sctp-port/10001

add nsta/1 vgs sgV5 v5uaiid/0

add nsta/1 vgs sgV5 as/0

add nsta/1 vgs sgV5 as/0 asp/0

set nsta/1 vgs sgV5 as/0 asp/0 ipaddress 47.100.100.100

set nsta/1 vgs sgV5 as/0 asp/0 port 10001

set nsta/1 vgs sgV5 as/0 asp/0 localRole server
```

3 Add the nsta vgs V5Link and subcomponents to provision the V5.2 link.

Attention

The lapV5 can be omitted if there are no C-channels on this link.

```
add nsta/1 vgs v5profile/0

add nsta/1 vgs v5link

set nsta/1 vgs v5link interfacename lp/1 sdh/0 vc4/0
vc12/1,1,1, e1 chan/1

set nsta/1 vgs v5link profile nsta/1 vgs v5profile/0

set nsta/1 vgs v5link linktoiid nsta/1 vgs sgV5 v5uaiid/0

add nsta/1 vgs v5link lapV5/15

add nsta/1 vgs v5link lapV5/16

add nsta/1 vgs v5link lapV5/31
```

Attention

If only one C-channel is defined, it is effectively mandatory that it be lapV5/16. However if connecting to vendor switches that do not enforce this, provisioning in any order is permitted.

4 Add second channel component.

```
add lp/1 vc4/0 vc12/1,1,1 e1 chan/1
```

5 For each lapv5 component, remove the timeslot from Chan/0 and insert it to Chan/1.

6 For a lapv5/16 component:

```
set lp/1 vc4/0 vc12/1,1,1 e1 chan/0 ts ~16

set lp/1 vc4/0 vc12/1,1,1 e1 chan/1 ts 16
```

7 For a lapv5/15 component:

```
set lp/1 vc4/0 vc12/1,1,1 e1 chan/0 ts ~15
set lp/1 vc4/0 vc12/1,1,1 e1 chan/1 ts 15
```

8 Set all optional data.

9 Repeat for any and all other V5.2 links.

--End--

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 Media Gateway.

Procedure steps

Step	Action
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>**

--End--

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*

(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_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*.

(2 of 2)

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 Media Gateway.

Procedure steps

Step	Action
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>`**
	--End--

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 Media Gateway.

Procedure steps

Step	Action
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>**

--End--

Variable definitions

Variable	Value
<address>	The IP address of the signaling gateway
<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*.

(1 of 2)

Variable	Value
<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
(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 Media Gateway and the MGC.

Procedure steps

Step	Action
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 Media Gateway.
	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>

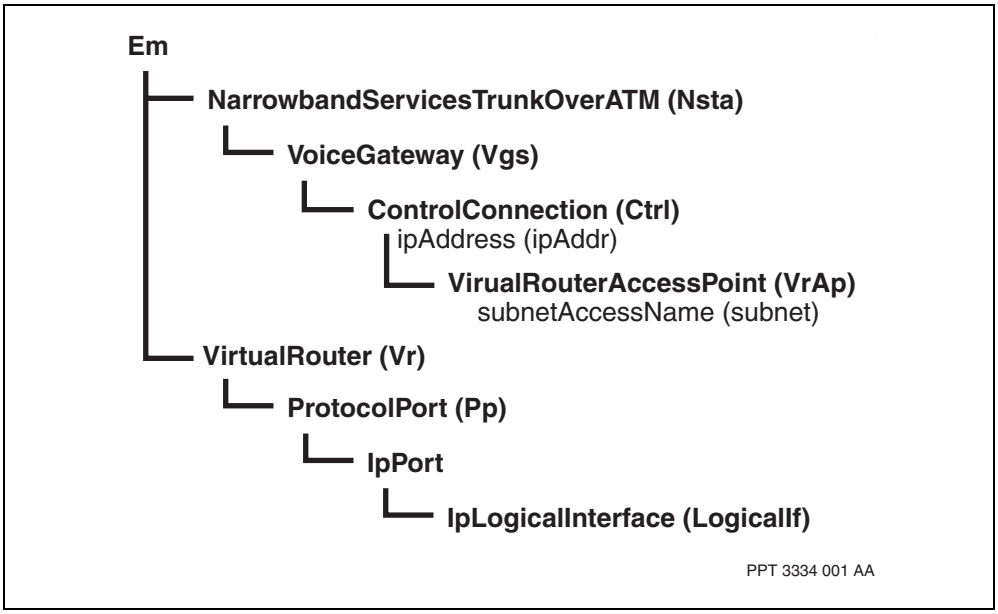
--End--

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

V.52 backhaul using VrAp component hierarchy



Backhaul using PRI configuration for switched Media Gateway

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.

- Prerequisites to backhaul using PRI configuration for switched Media Gateway (page 172)
- Backhaul using PRI configuration for switched Media Gateway task flow (page 172)
- Task navigation (page 173)

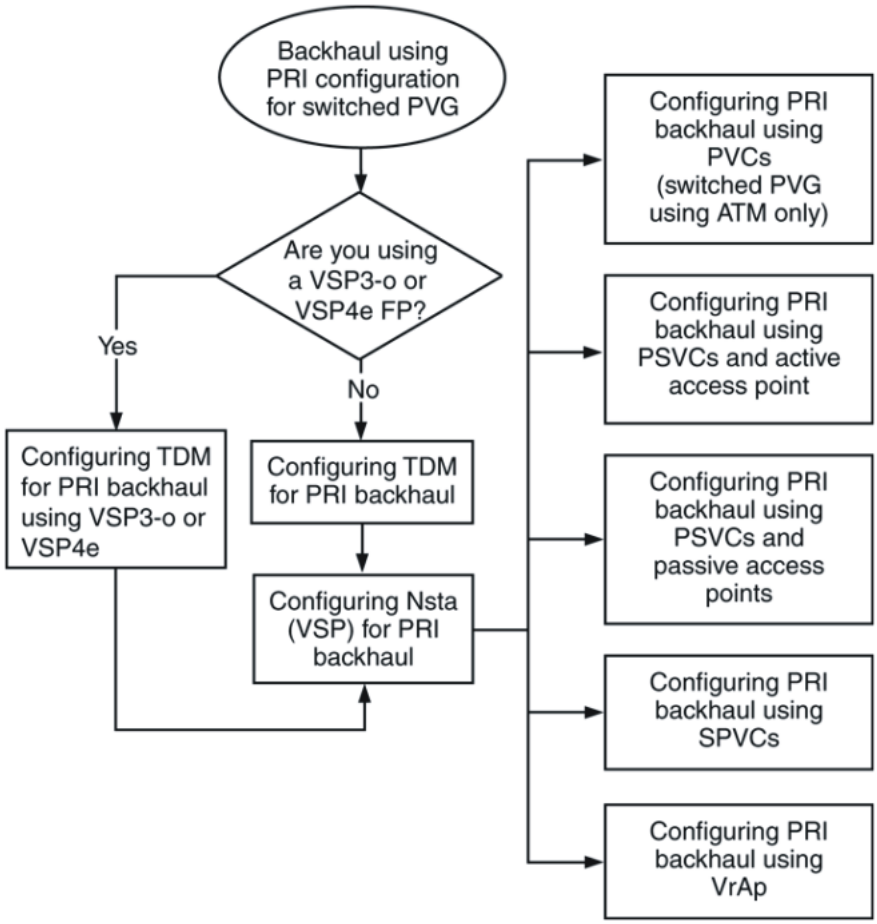
Prerequisites to backhaul using PRI configuration for switched Media Gateway

- 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 Media Gateway.

Backhaul using PRI configuration for switched Media Gateway task flow

This task flow shows you the sequence of procedures you perform to configure backhaul. To link to any procedure, go toTask navigation (page 173).

Backhaul using PRI configuration for switched Media Gateway task flow



Task navigation

- Configuring TDM for PRI backhaul (page 174)
- Configuring TDM for PRI backhaul using VSP3-o or 2pVSP4e (page 176)
- Configuring Vsta (VSP) for PRI backhaul (page 178)
- Configuring PRI backhaul using PVCs (switched Media Gateway using ATM only) (page 180)
- Configuring PRI backhaul using PSVCs and active access points (page 181)
- Configuring PRI backhaul using PSVCs and passive access points (page 183)
- Configuring PRI backhaul using SPVCs (page 184)
- Configuring PRI backhaul using VrAp (page 186)

Configuring TDM for PRI backhaul

Configure TDM for PRI backhaul on switched Media Gateway to set the connection from the PRI-controlled device to the Media Gateway.

Procedure steps

Step	Action
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>**

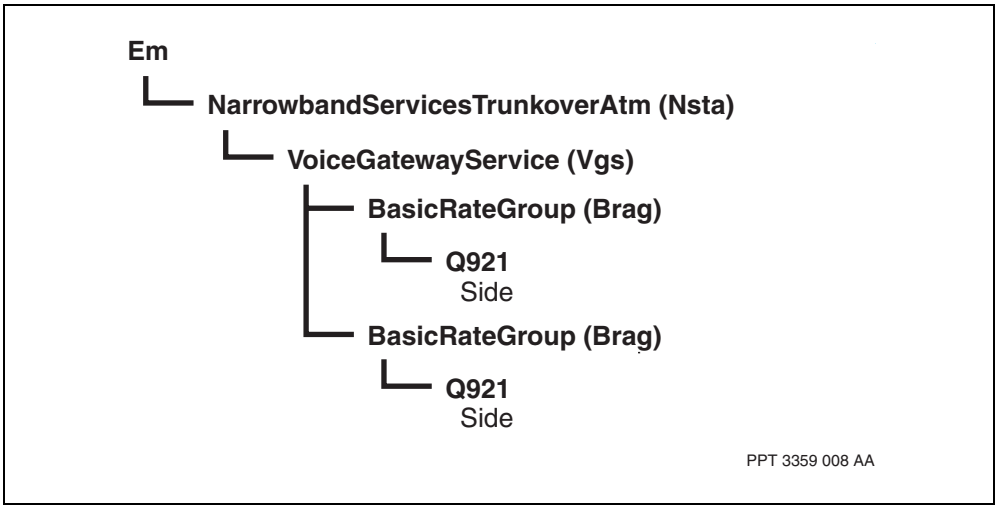
--End--

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

TDM for PRI backhaul on switched Media Gateway component hierarchy



Configuring TDM for PRI backhaul using VSP3-o or 2pVSP4e

Configure TDM for PRI backhaul on switched MG to set the connection from the PRI-controlled device to the voice services processor 3 with optical TDM interface (VSP3-o) FP card or the 2pVSP4e FP card on an MG shelf.

Procedure steps

Step	Action
1	Add the subcomponent *Q921* under component *Nsta Vgs*. **add Nsta/<m> Vgs Q921/<q921>**
2	Add a Q921Profile (Q921Prof) subcomponent to the *Vgs* component. **add Nsta/<m> Vgs Q921Prof/<q921prof>**
3	Set the *Profile (Prof)* link for the *Q921* component. **set Nsta/<m> Vgs Q921/<q921> Profile Nsta/<m> Vgs Q921Prof/<q921prof>**
4	If an unspared VSP3-o FP configuration is used, set the *interfaceName* link for the *Q921* component. This step uses component *Sdh Vc4 Vc12 E1 Chan* for E1 trunking (DS1 trunking uses component *Sonet Sts Vtldot5 Ds1 Chan*). **set Nsta/<m> Vgs Q921/<q921> interfaceName Lp/<n> Sdh/<sdh> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan>**
5	If a spared VSP3-o or 2pVSP4e FP configuration is used, set the *interfaceName* link for the *Q921* component. This step uses component *Laps Vc4 Vc12 E1 Chan* for E1 trunking (DS1 trunking uses component *Laps Sts Vtldot5 Ds1 Chan*). **set Nsta/<m> Vgs Q921/<q921> interfaceName Laps/<laps> Vc4/<vc4> Vc12/<vc12> E1 Chan/<chan>**

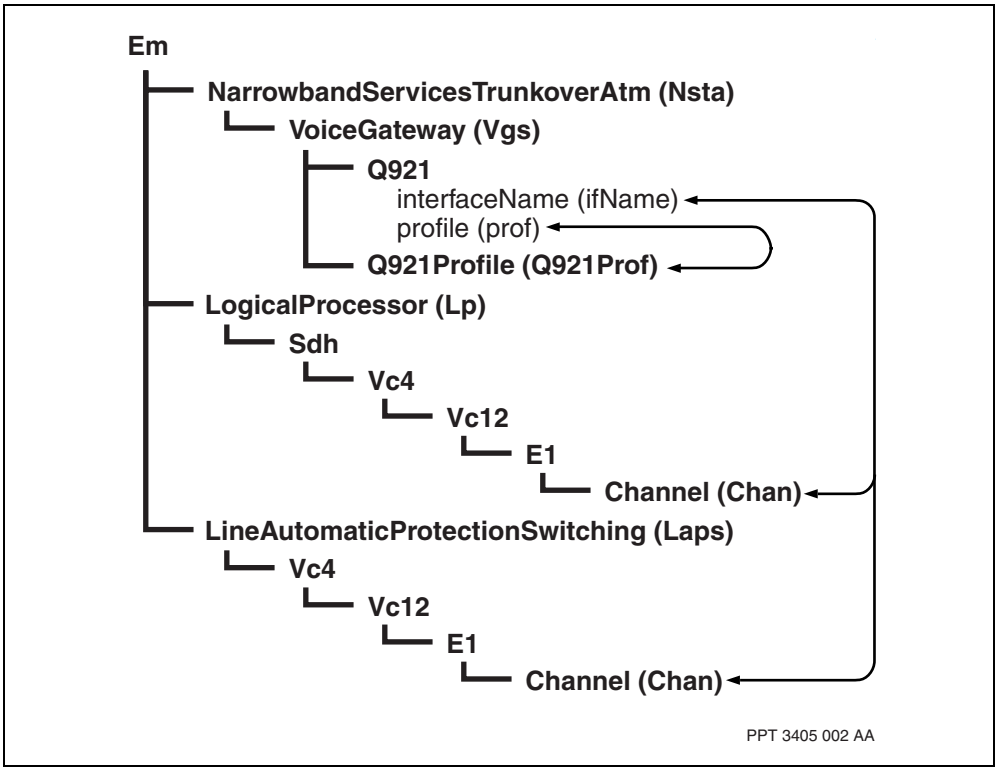
--End--

Variable definitions

Variable	Value
<chan>	The instance value of the *Channel (Chan)* 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).
<q921>	The instance value of the *Q921* component.
<q921prof>	The instance value of the *Q921Profile (Q921Prof)* component.
<sdh>	The instance value of the *Sdh* component.
<vc4>	The instance value of the *Vc4* component.
<vc12>	The instance value of the *Vc12* component.

Procedure job aid

Configuring TDM for PRI backhaul using VSP3-o component hierarchy



Configuring Vsta (VSP) for PRI backhaul

Configuring Nsta (VSP) for PR I backhaul to set the connection from the Media Gateway to the media gateway controller.

Procedure steps

Step	Action
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>**

Attention: 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>**

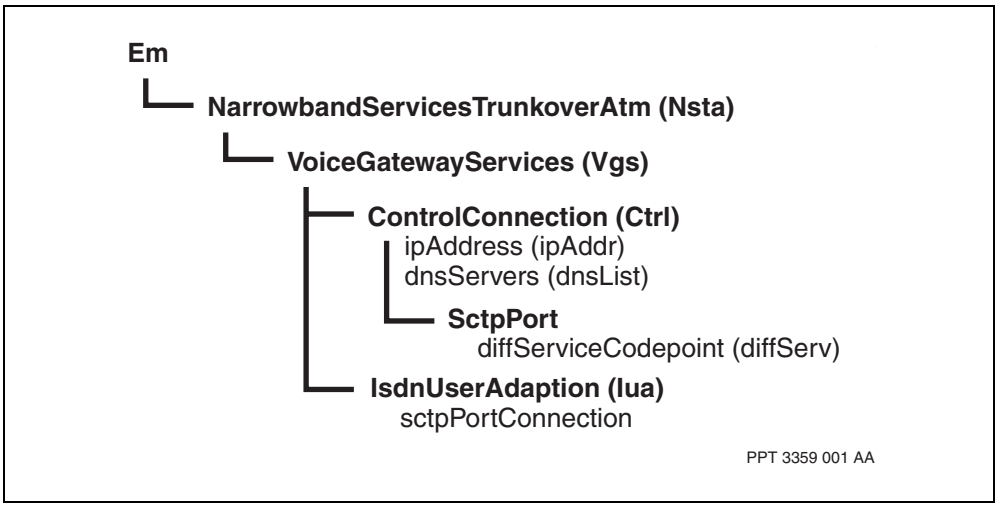
--End--

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 40.
<n>	The value for the *Nsta* component.
<sctp_port>	The port number of the SCTP.

Procedure job aid

Nsta (VSP) for backhaul component hierarchy



Configuring PRI backhaul using PVCs (switched Media Gateway using ATM only)

Configure PRI backhaul on a Media Gateway set the backhaul signaling link using PVCs for call control.

Procedure steps

Step	Action
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`**
	--End--

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 Media Gateway set the backhaul signaling link using PSVCs and active access points for call control.

Procedure steps

Step	Action
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>**

--End--

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.

(1 of 2)

Variable	Value
<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*.

(2 of 2)

Configuring PRI backhaul using PSVCs and passive access points

Configure PRI backhaul on a Media Gateway set the backhaul signaling link using SPVCs and passive access points for call control.

Procedure steps

Step	Action
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>`**
	--End--

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 Media Gateway set the backhaul signaling link using SPVCs for call control.

Procedure steps

Step	Action
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>**

--End--

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*.

(1 of 2)

Variable	Value
<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.
(2 of 2)	

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 Media Gateway and the MGC.

Procedure steps

Step	Action
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 Media Gateway.
	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>

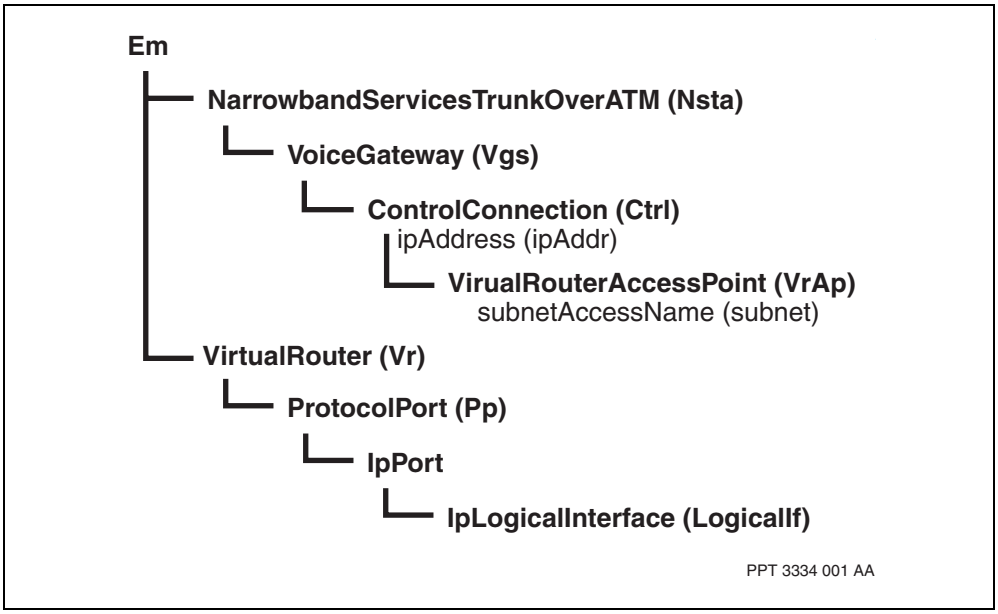
--End--

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

PRI backhaul using VrAp component hierarchy



Backhaul using SS7 configuration for switched Media Gateway

Configure backhaul using SS7 to provide support for CCS7 signalling backhaul over IP via the MG15000. This configuration enables the transport of channelized SS7 signaling between a Signaling Endpoint (SEP) and a Media Gateway Controller (MGC).

- Prerequisites to backhaul using SS7 configuration for switched Media Gateway (page 188)
- Backhaul using SS7 configuration for switched Media Gateway task flow (page 188)
- Task navigation (page 189)

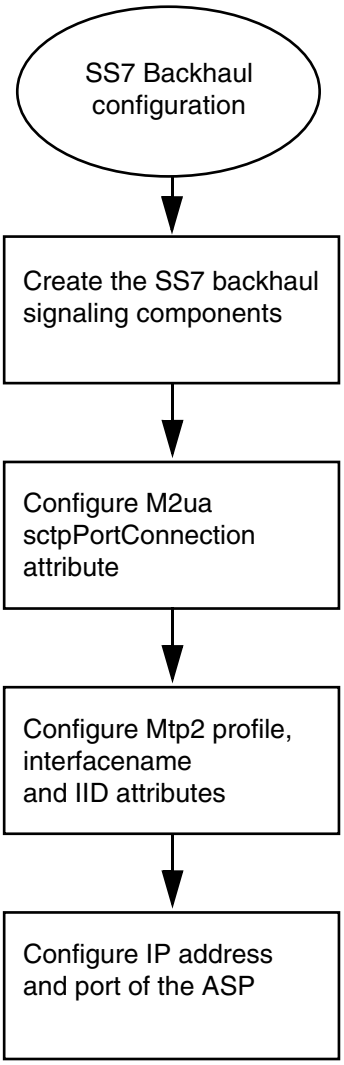
Prerequisites to backhaul using SS7 configuration for switched Media Gateway

- Ensure you have access to CLI and MDM provisioning tools such as MDM Nodal Provisioning Templates.

Backhaul using SS7 configuration for switched Media Gateway task flow

This task flow shows you the sequence of procedures you perform to configure backhaul. To link to any procedure, go toTask navigation (page 189).

Backhaul using SS7 configuration for switched Media Gateway task flow



Task navigation

- Configuring the SS7 backhaul signaling components Mtp2, Mtp2Profile, M2ua, As, Asp, and iid on the NSTA component (page 190)
- Configuring the M2ua sctpPortConnection attribute for SS7 Backhaul (page 192)
- Configuring the Mtp2 profile, interfacename, and IID attributes for SS7 Backhaul (page 193)
- Configuring the IP address and port of the ASP (page 196)

Configuring the SS7 backhaul signaling components Mtp2, Mtp2Profile, M2ua, As, Asp, and iid on the NSTA component

Configure the Mtp2, Mtp2Provile, M2ua, As, Asp, and iid components for the NSTA component on switched Media Gateway.

Procedure steps

Step	Action
1	Add an mtp2profile component to the *Nsta/<n> Vgs* component. **add Nsta/<n> Vgs mtp2profile/<k>**
2	Add an mtp2/0 component to the *Nsta/<n> Vgs* component. **add Nsta/<n> Vgs mtp2/<h>**
3	Add an m2UA component to the *Nsta/<n> Vgs* component. **add Nsta/<n> Vgs m2UA**
4	Add an application server subcomponent to the m2UA component. **add Nsta/<n> Vgs m2UA as/<m>**
5	Add an asp/0 subcomponent to the as/0 subcomponent. **add Nsta/<n> Vgs m2UA as/<m> asp/<p>**
6	Add an interface identifier (iid) subcomponent to the as/ subcomponent. **add Nsta/<n> Vgs m2UA as/<m> iid/<v>**
7	Add the stream control transmission protocol (SCTP) port of the signaling gateway (SG) to the control connection. **add Nsta/<n> Vgs ctrl/sg sctpport/<sctp port>**

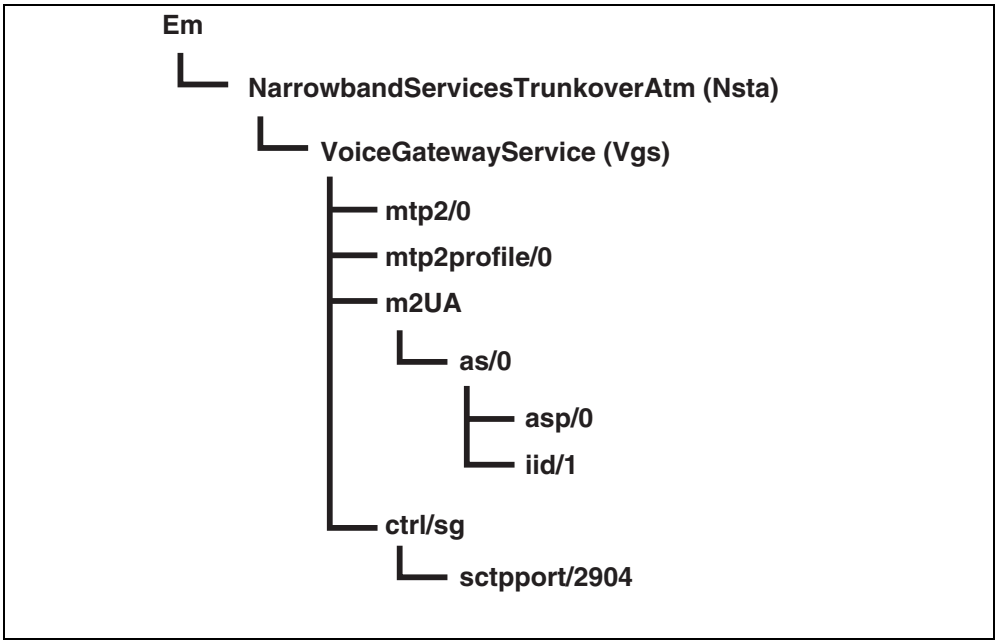
--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<m>	The value for the application server (as) instance that you want to map to the NSTA component.
<p>	The value for the asp instance that you want to map to the NSTA component.
<k>	The value for the mtp2profile instance that you want to map to the NSTA component.
<v>	The value for the interface identifier.
<sctp port>	The port number for the SCTP port. Any unused port can be used.
<h>	The value for the mtp2 instance that you want to map to the NSTA component.

Procedure job aid

Hierarchy for creating the SS7 backhaul signaling components



Configuring the M2ua sctpPortConnection attribute for SS7 Backhaul

Configure the SCTP port connection for the M2ua and ctrl/sg components.

Procedure steps

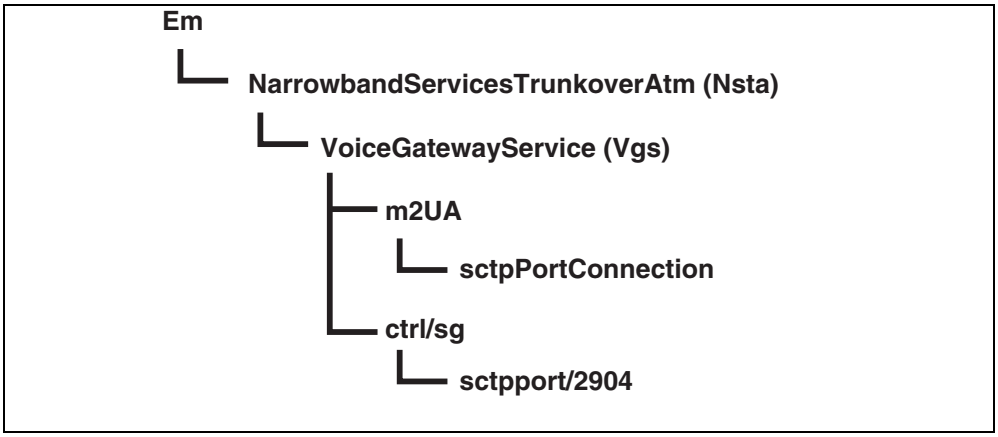
Step	Action
1	Map the SCTP port of the signaling gateway (SG) to a *sctpPortConnection* component. **`set nsta/<n> vgs m2ua sctpPortConnection nsta/<n> vgs ctrl/sg sctpport/<sctp port>`**
	--End--

Variable definitions

Variable	Value
<n>	The instance value of the *NarrowbandServicesTrunkOverAtm (Nsta)* component.
<sctp port>	The port number for the SCTP port. Any unused port can be used.

Procedure job aid

Configuring the port connection for SS7 backhaul



Configuring the Mtp2 profile, interfacename, and IID attributes for SS7 Backhaul

Configuring Nsta and logical processor for SS7 backhaul to set Mtp2 profile, interfacename, and IID attributes.

Procedure steps

Step	Action
1	Set the nsta/<n> vgs component with the mtp2/0 profile. **set Nsta/<n> Vgs mtp2/<g> profile nsta/<n> vgs mtp2profile/<h>**
2	Add logical processor sdh channel components: **add lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/<q>** **add lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/<q+1>**
3	Set the channel properties as required for a new E1 or for an existing E1 as shown in the table Setting channel properties (page 194).

Setting channel properties

If you are setting the channel properties for	then:
a new E1	**add lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/0 timeslot 1...31** **add lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/1 timeslot null** **set lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/0 timeslot ~16** The channel properties for timeslots 1-15 and 17-31 are set. **set lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/1 timeslot 16** The E1 channel 1 properties for timeslot 16 are now set. **set nsta/<n> vgs mtp2/0 interface name lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/1** The new E1 channel properties are set.
an existing E1	**add lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/1** **set lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/0 timeslot ~16** The channel properties for timeslots 1-15 and 17-31 are now set. **set lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/1 timeslot 16** The E1 channel 1 properties for timeslot 16 are now set. **set nsta/<n> vgs mtp2/0 interface name lp/<a> sdh/<b> vc4/<vc4> vc12/<vc12> e1 chan/1** The new E1 channel properties are set.

4 Set the interface identifier (IID).

set nsta/<n> vgs mtp2/<g> linkToLayer3 nsta/<n> vgs m2ua/0 as/<m> iid/<v>

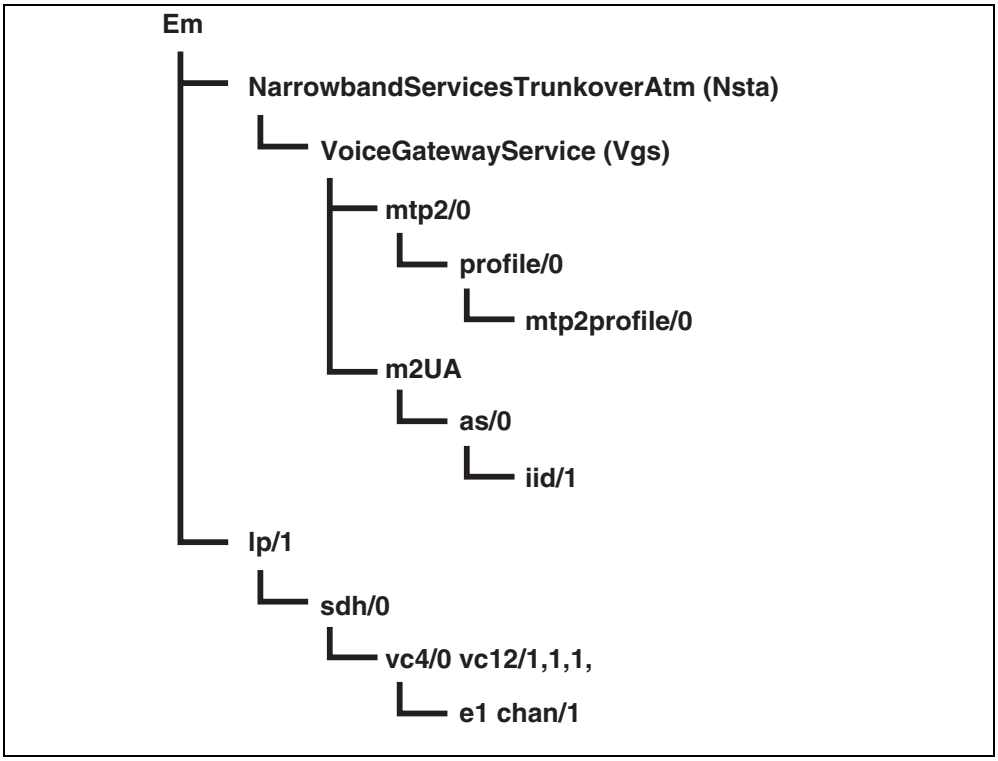
--End--

Variable definitions

Variable	Value
<a>	The instance value of the LogicalProcessor (*Lp*) component (the LP number).
<b>	The instance value of the *Sdh* component.
<vc4>	The instance value of the *Vc4* component.
<vc12>	The instance value of the *Vc12* component.
<n>	The value for the *Nsta* component.
<g>	The value for the mtp2 component.
<h>	The value for the `mtp2profile` component.
<q>	The instance value of the *Channel (Chan)* component.
<q+1>	The instance value of the *next Channel (Chan)* component.
<timeslot>	The timeslot assigned for the E1 channel.
<m>	The value for the application server (as) instance that you want to map to the NSTA component.

Procedure job aid

Nsta, Lp, and channel properties for SS7 backhaul component hierarchy



Configuring the IP address and port of the ASP

Configure the IP address and port for the USP at the other end of the expected M2UA backhaul link.

Procedure steps

Step	Action
1	Set the ipaddress. **set nsta/<n> vgs m2ua as/<m> asp/<p> ipaddress <ipaddress>**
2	Set the Application Server Process (asp) port. **set nsta/<n> vgs m2ua as/<m> asp/<p> port 2904**

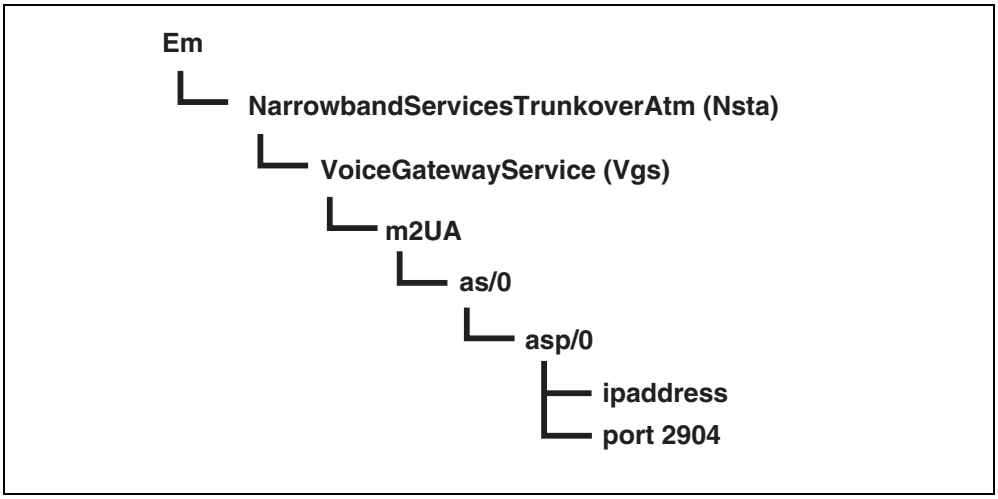
--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<m>	The value for the application server (as) instance that you want to map to the NSTA component.
<p>	The value for the asp instance that you want to map to the NSTA component.
<ipaddress>	The ip address for the asp.

Procedure job aid

ASP port for SS7 backhaul component hierarchy



Services configuration for switched Media Gateway

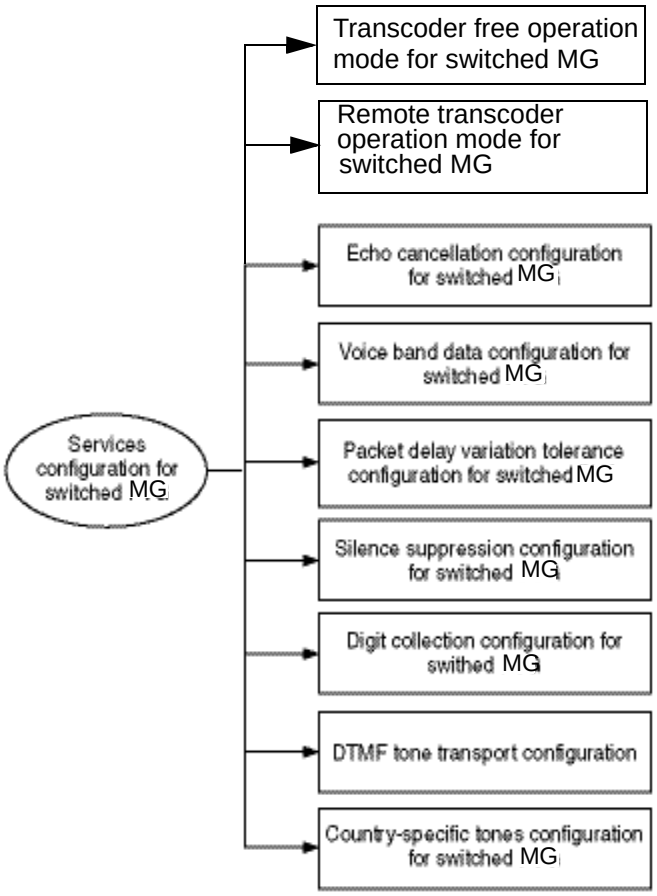
Configure services for switched Media Gateway to define its behavior for services such as transcoder free operation mode, remote transcoder operation mode, echo cancellation, voice band data, packet delay variation tolerance, congestion management, digit collection, and tones.

- Services configuration for switched Media Gateway task flow (page 198)
- Task navigation (page 199)

Services configuration for switched Media Gateway task flow

This task flow shows you the sequence of procedures you perform to configure services for switched Media Gateway. To link to any procedure, go to Task navigation (page 199).

Services configuration for switched Media Gateway



Task navigation

- Transcoder free operation mode (TrFO) (page 200)
- Remote transcoder operation (RTOCdma) mode (page 204)
- Configuring echo cancellation for switched Media Gateway (page 207)
- Voice band data configuration for switched Media Gateway (page 209)
- Packet delay variation tolerance configuration for switched Media Gateway (page 215)
- Silence suppression configuration for switched Media Gateway (page 217)
- Digit collection configuration for switched Media Gateway (page 219)
- DTMF tone transport configuration (page 221)
- Country-specific tones configuration for switched Media Gateway (page 223)

Transcoder free operation mode (TrFO)

Configure TrFO to enable transcoder free mode on the MG. TrFO is between an enhanced Base Station Controller (eBSC) and an MG running vgsIpTrfo.

A combination of eBSC and MG provisioned parameters and protocol messages originating from the Signalling Processing Module (SPM) application provide operational indicators, through the Application Programming Interface (API) Conversion Module (ACM) messaging, to determine EVRC handling.

eBSC-MG have a master-slave relationship with eBSC as master. The eBSC (2pVS or 2pVSP4e DSP) activates or deactivates TrFO features following the requests from the MG Digital Signal Processor (DSP). Provisioning the transcoderFreeOperation component on MG makes the MG TrFO capable.

Prerequisites

- See the section about Transcoder Operation modes in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).
- Ensure that when the TrFO feature is provisioned, RtoCdma is not used on the same 2pOc3ChSmIrVsp3, 2pVS, 2pVSP4e or 2pOc3ChSmIrVsp4e FP.
- Ensure that the Transcoder Free Operation component is provisioned only when vgsIpTrfo feature is used.
- Ensure that the echoCancellation attribute is set to disabled when the TranscoderFreeOperation component is added.
- Ensure that the defaultCodecList attribute of the PacketNetworkProfile component is set to either EVRC0 or G.711U when the Trfo feature is provisioned. The defaultCodecList is a list of supported codecs.
- Ensure that the EVRC0 codec is used when Trfo feature is provisioned.

Attention: For Trfo feature, you can provision the 64kG711U and EVRC0 codecs. The default value for the attribute *defaultCodeList* for the vgsIpTrfo feature is 64kG711A, 64kG711U, evrc0. You will need to re-order the list to make EVRC0 the first codec in the list. Refer to Supported Codecs per Feature packaging and Card Type in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) for information about supported codecs.

For TrFO to be fully supported the following six parameters must have been configured during initial provisioning so that EVRC is configured properly on both TDM and packet interfaces:

- TrFO capable (Transcode Free Operation is supported on the TDM channels)

  Verify with:

  ```
  d -p nsta/x vgs tprof/0 trfo
  ```

  where x is the nsta number.

- RFC-3558 EVRC Codec and Header Format (header free)
  Only Header Free EVRC0 is available in this release.

  Verify with:

  ```
  d -p nsta/x vgs pktprof/0
  ```

  where x is the nsta number and you will see evrc0 in the codec list.

- Enable/Disable TrFO on TDM (bi-directional)

  Enter the following to verify:

  ```
  add nsta/x vgs tprof/0 trfo (to enable)
  delete nsta/x vgs tprof/0 trfo (to disable)
  ```

  where x is the nsta number.

- RFC-3389 Silence Suppression Negotiated End-to-End

  Verify RFC 3389 is activated in the Gateway Controller (GWC). Activation does not mean negotiation, look at the H.248 message exchange.

  Ensure that TrFO MG has silence suppression enabled.

  Enter the following to verify:

  ```
  d nsta/# vgs pktprof/0 silencesuppression
  ```

  Ensure the attribute is set to “enabled.”

  Verify the H.248 message exchange to ensure that silence suppression has been negotiated on a per call basis.

- RFC-2833 DTMF Relay Negotiated End-to-End

  Verify RFC 2833 is activated in the GWC. Activation does not mean negotiation, look at the H.248 message exchange.

  Ensure that the TrFO MG has DTMF relay enabled.

  Verify with:

  ```
  d nsta/# vgs pktprof/0 digitTransport
  ```

  Ensure that the attribute is set to “relay.”

  Verify the H.248 message exchange to ensure that DTMF relay has been negotiated on a per call basis.

- Dynamic Payload Type Value for Wireless Codec Support - EVRC

  Verify by looking for any number between 96 and 127, however, the dynamic payload value is assigned per call.

Most of these parameters are sent to the DSP during voice channel configuration when both ends of the call are being established through the packet network. The TrFO Capable parameter value is sent to the DSP at initial startup and configuration of the DSP software.

Procedure steps

Step	Action
1	Set the card type for the voice services FP. `set shelf card/<card_id> cardType <cardtype>`
2	Add the logical processor (LP). `add Lp/<lp_id>`
3	Link the LP to the card type for the voice services FP. `set Lp/<lp_id> mainCard shelf card/<card_id>`
4	Add the logical processor type (LPT). `add sw Lpt/<lpt_id>`
5	Set the featurelist: `set sw lpt/<lpt_id> featureList vgsIptrfo`
6	Link the LP to the LPT. `set Lp/<lp_id> logicalProcessorType sw Lpt/<lpt_id>`
7	Link the Nsta component to the logical processor for the voice services FP. `set Nsta/<n> linktoserver lp/<q> vsp`
8	Configure the VSP for transcoder free operation mode.

```
add nsta/n vgs TProf/0 transcoderFreeOperation
set nsta/n vgs TProf/0 transcoderFreeOperation
```

Attention: If the default value for **`nsta/n vgs TProf/0`** needs to be changed, the set is done on the attribute trfoResponseTime.
(**`set nsta/n vgs TProf/0 trfoResponseTime`**)

```
set nsta/n vgs pktprof/0 defaultCodecList <evrc0>
<IPcodec> <IPcodec> <IPcodec>
```

Attention: When you set the defaultCodecList all the codecs must be included and the EVRC0 codec must be first.

--End--

Variable definitions

Variable	Value
<q>	The value for the logical processor you defined for the voice services FP.
<cardtype>	The value for the type of card.
<n>	The value for the *Nsta* component.
<IPcodec>	The codecs that will be in the default codec list.

Remote transcoder operation (RTOCdma) mode

Configure RTOCdma to enable remote transcoder operation mode on the MG.

Prerequisites

- See the section on Transcoder Operation modes in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).
- Ensure that feature vgsIpRtoCdma is provisioned on the 2pOc3ChSmIrVsp3, 2pOc3ChSmIrVsp4e, 2pVSP4eor 2pVS FPs
- Ensure that when the feature vgsIpRtoCdma is provisioned, vgsIpTrfo is not used on the same 2pVS FP, 2pOc3ChSmIrVsp3 FP, or 2pOc3ChSmIrVsp4e FP.
- Ensure that the defaultCodecList attribute of PacketNetworkProfile component is set to one of the following values: 8kG729, 64kG711U, 64kG711A, EVRC0. The default is EVRC0.
- Ensure that EVRC0 is the first codec in the defaultCodecList when feature vgsIpRtoCdma is provisioned.

Attention: Nortel recommends that overrideCodecNegotiation be enabled on wireless connected RTO MGs (for example, on a Selector Bank Subsystem (SBS)). The PDC sets the overrideCodecNegotiation attribute parameter of the PacketNetworkProfile component to disabled for all packages except package vgsIpRtoCdma.

Attention: For the vgsIpRtoCdma feature, you can provision the order of the 64kG711U, 64kG711A, 8kG729, and EVRC0 codecs as they are all supported codecs listed in the defaultCodecList. The default value for the attribute *defaultCodeList* for feature vgsIpRtoCdma is 64kG711A, 64kG711U, 8kG729, evrc0. See Configuring the voice services FP for switched Media Gateway using IP (page 49) to configure the codecs required. Refer to Supported Codecs per Feature packaging and Card Type in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) for information about supported codecs.

Procedure steps

Step	Action
1	Set the card type for the voice services FP. **set shelf card/<card_id> cardType <cardtype>**
2	Add the logical processor (LP). **add Lp/<lp_id>**
3	Link the LP to the card type for the voice services FP. **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	Link the Nsta component to the logical processor you defined for the voice services FP. **set Nsta/<n> linktoserver lp/<q> vsp**
7	Configure the overrideCodecNegotiation component. **set nsta/n vgs pktprof/0 overrideCodecNegotiation <codec negotiation override>**

--End--

Variable definitions

Variable	Value
<codec negotiation override>	The overrideCodecNegotiation attribute activates the codec negotiation override functionality and denotes the RTO network configuration of this VSP. For feature vgsIpRtoCdma, any valid value may be provisioned. For all other features only disabled may be provisioned. The codecNegotiationOverride value must be set to one of the following values: **<disabled | wirelessRto | wirelineRto>** The default value is disabled. When the MG uses the codec override mechanism, the MG will ignore all codecs except G.711U (payload type 0) and G.711A (payload type 8). That is, the codec negotiator in the MG ignores other codecs such as, EVRC, EVRC0, and G729. Use wirelineRTO when the MG connects to the PSTN and wirelessRTO when the MG connects to the legacy BSC.
<cardtype>	The value for the type of card.
<n>	The value for the *Nsta* component.

Configuring echo cancellation for switched Media Gateway

Configure echo cancellation to define how Media Gateway deals with echo within the network.

Prerequisites

- See the sections on echo cancellation for switched Media Gateway and echo canceller options in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).

Procedure steps

Step	Action
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>`**

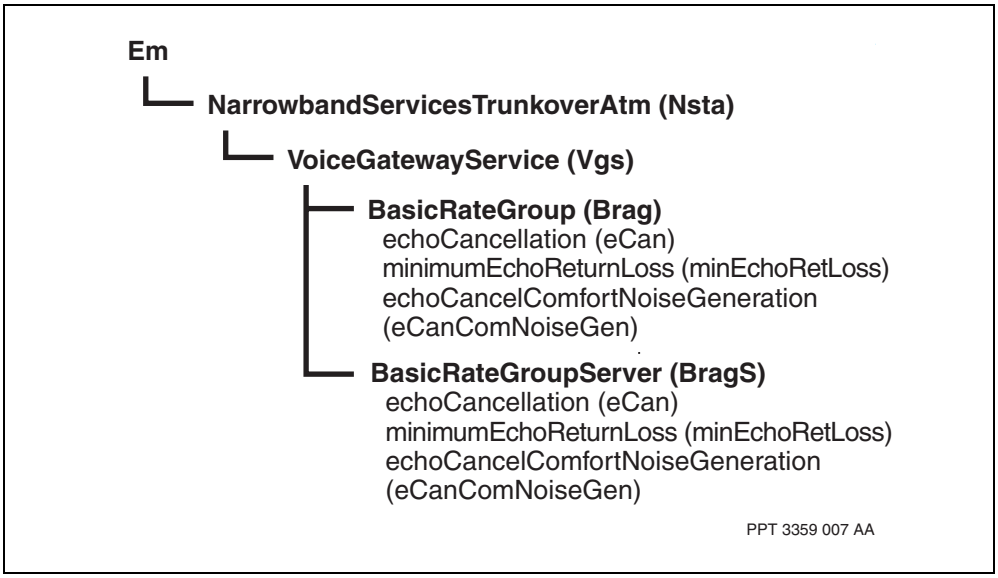
--End--

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

Echo cancellation component hierarchy



Voice band data configuration for switched Media Gateway

Configure voice band data to determine how switched Media Gateway will handle data calls.

- Prerequisites to voice band data configuration for switched Media Gateway (page 209)
- Voice band data configuration for switched Media Gateway task flow (page 209)
- Task navigation (page 210)

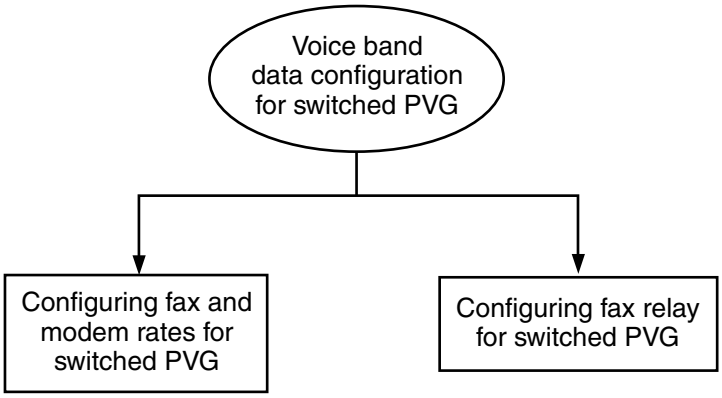
Prerequisites to voice band data configuration for switched Media Gateway

- See the section on fax and modem calls in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780)

Voice band data configuration for switched Media Gateway task flow

This task flow shows you the sequence of procedures you perform to configure voice band data for switched Media Gateway. To link to any procedure, go to Task navigation (page 210).

Voiceband data configuration for switched Media Gateway task flow



PPT 3332 007 AA

Task navigation

- Configuration fax and modem rates for switched Media Gateway (page 211)
- Configuring fax relay for switched Media Gateway (page 213)

Configuration fax and modem rates for switched Media Gateway

Configure fax and modem rates to define how switched Media Gateway deals with data calls during compression situations.

Procedure steps

Step	Action
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>**

Attention: 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>**

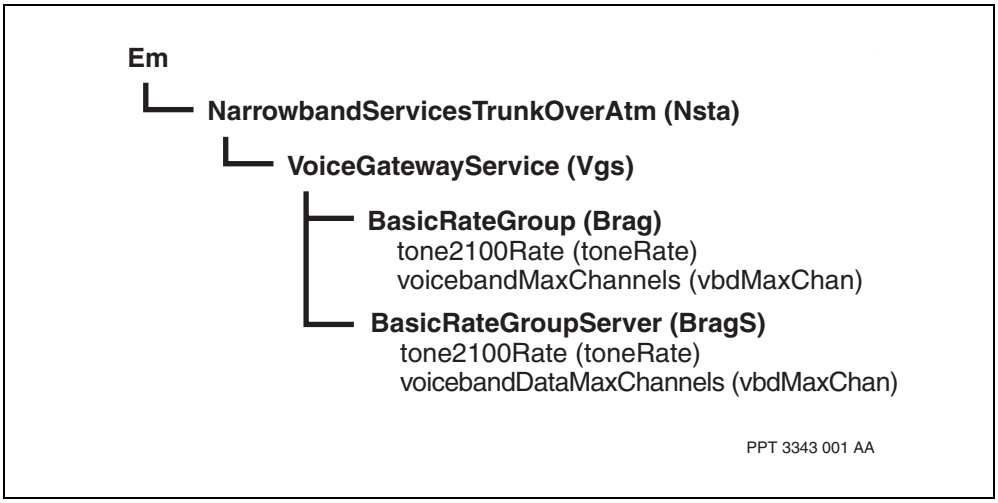
--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta component.*
<toneRate_value>	The value for the *tone2100Rate* attribute. The default value is 64kG711.
<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.*

Procedure job aid

Fax and modem rates component hierarchy



Configuring fax relay for switched Media Gateway

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 Media Gateway using IP on the Nortel Multiservice Switch 15000 nodes when the voice services processor 3 (VSP3) FP, the voice services processor 3 with optical TDM interface (VSP3-o) FP, or the 2pVSP4e FP card is used.

Procedure steps

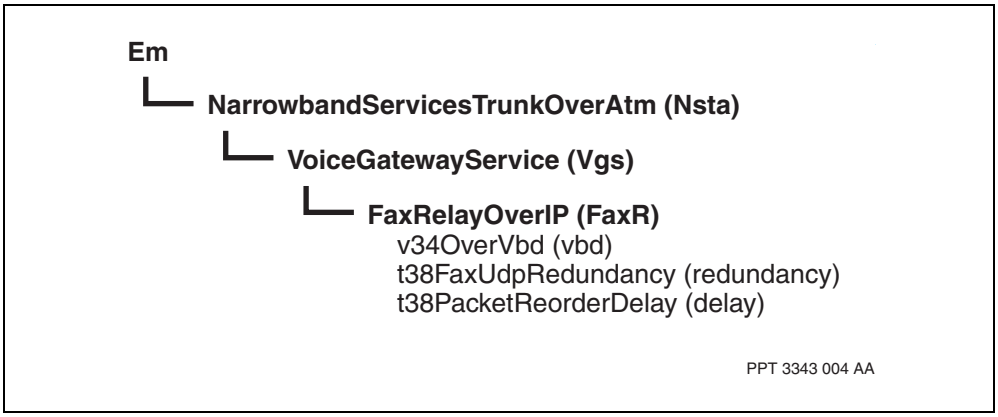
Step	Action
1	Add the FaxRelayOverIP subcomponent to transport fax using the T.38 method: **add Nsta/<n> Vgs FaxRelayOverIp**
2	Set how V.8/V.34 fax data is transported: **set Nsta/<n> Vgs FaxRelayOverIp v34OverVbd <vbd_value>**
3	Set the depth of redundancy used in T.38 over UDP/IP: **set Nsta/<n> Vgs 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>**
	--End--

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.*
<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.

Procedure job aid

Fax relay component hierarchy



Packet delay variation tolerance configuration for switched Media Gateway

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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).

Procedure steps

Step	Action
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>**

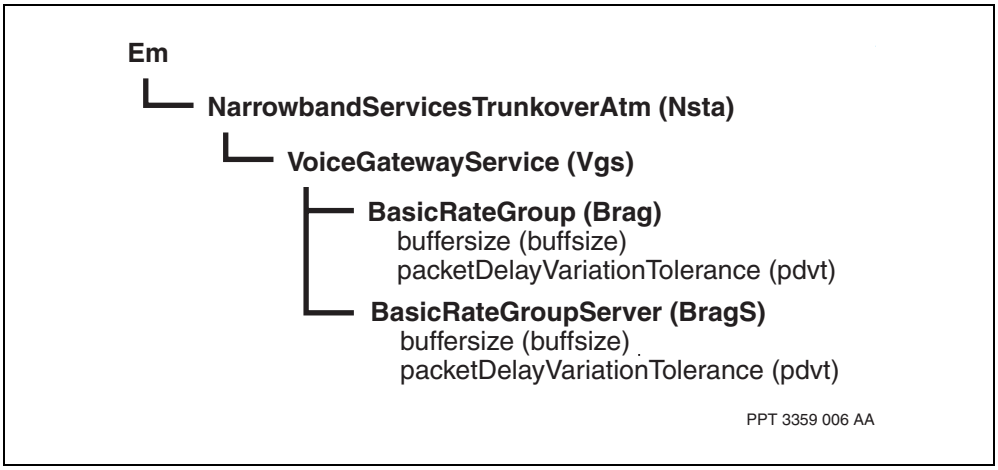
--End--

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

Packet delay variation tolerance component hierarchy



Silence suppression configuration for switched Media Gateway

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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).

Procedure steps

Step	Action
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>**

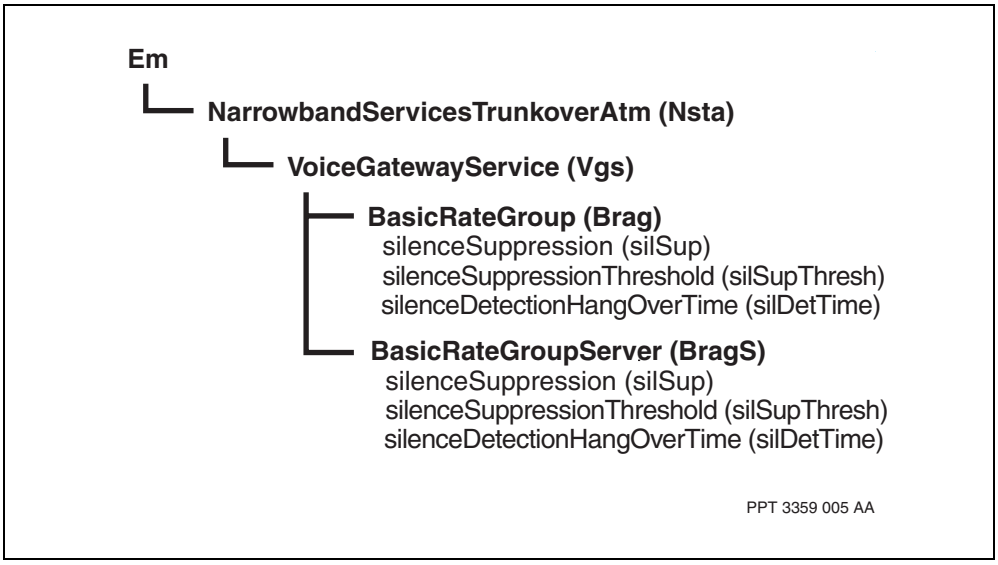
--End--

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

Configuring silence suppression component hierarchy



Digit collection configuration for switched Media Gateway

Configure DTMF digit collection to set the timers used during digit collection.

Prerequisites

- See *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780) for more information about DTMF digit collection.

Procedure steps

Step	Action
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**

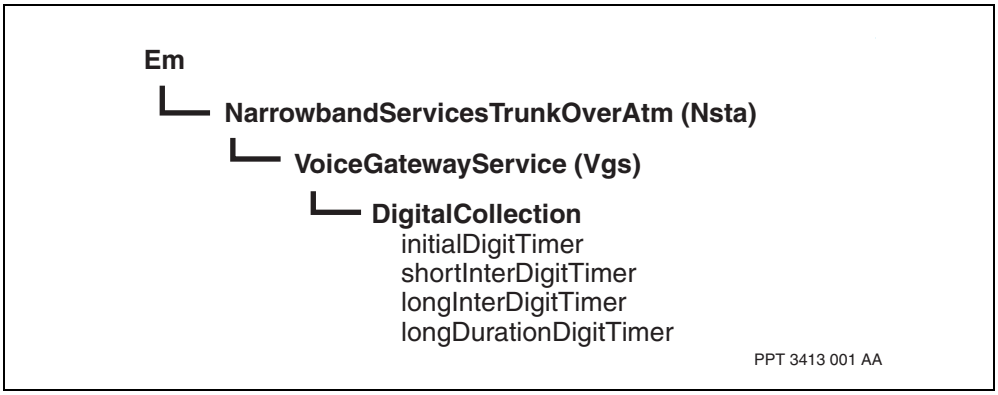
--End--

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

DTMF digit collection for voice services for switched Media Gateway component hierarchy



DTMF tone transport configuration

Configure for DTMF tone transport to set the transport method for DTMF tones.

PrerequisitesPrerequisites

- 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 voice services processor 3 (VSP3) FP, a voice services processor 3 with optical TDM interface (VSP3-o), or a voice services processor 4 with optical TDM interface (VSP4e) FP card.

Procedure steps

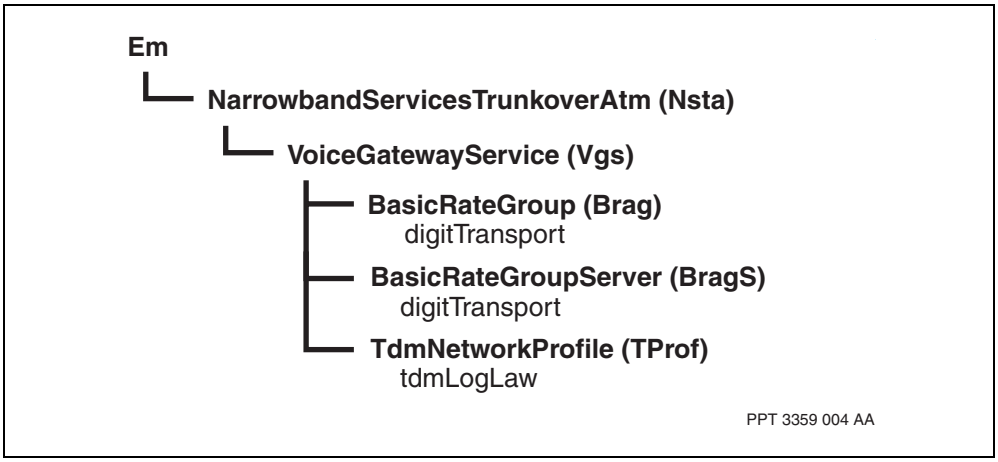
Step	Action
1	If component Nsta Vgs *BasicRateGroup (Brag)* is configured, set the DTMF relay method for the *digitTransport* attribute of the basic rate group. **set Nsta/<n> Vgs Brag/0 digitTransport <digitTransport_value>**
2	If component *Nsta Vgs BasicRateGroupServer (BragS)* is configured, set 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>**
	--End--

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

Configuring DTMF tone transport component hierarchy



Country-specific tones configuration for switched Media Gateway

Configure country-specific tones to enable Media Gateway to play out the audible tones specific to the user's country.

PrerequisitesPrerequisites

- For more information on tones, read the section on audible tones in *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).
- The *toneset* attribute has no effect if *defaultVoiceRate* is set to amr or csd.

Procedure steps

Step	Action
1	Set the default country toneset to be used on all basic rate group (*Brag*), basic rate group server (*BragS*), or TdmNetworkProfile (*Tprof*) subcomponents of the *Vgs* component. **`set Nsta/<n> Vgs defaultToneset <defaultTonesetvalue>`**
2	If required, set the toneset for each *Brag, BragS or Tprof* 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>`** **`set Nsta/<n> Vgs Tprof/<y> toneset <tonesetvalue>`**

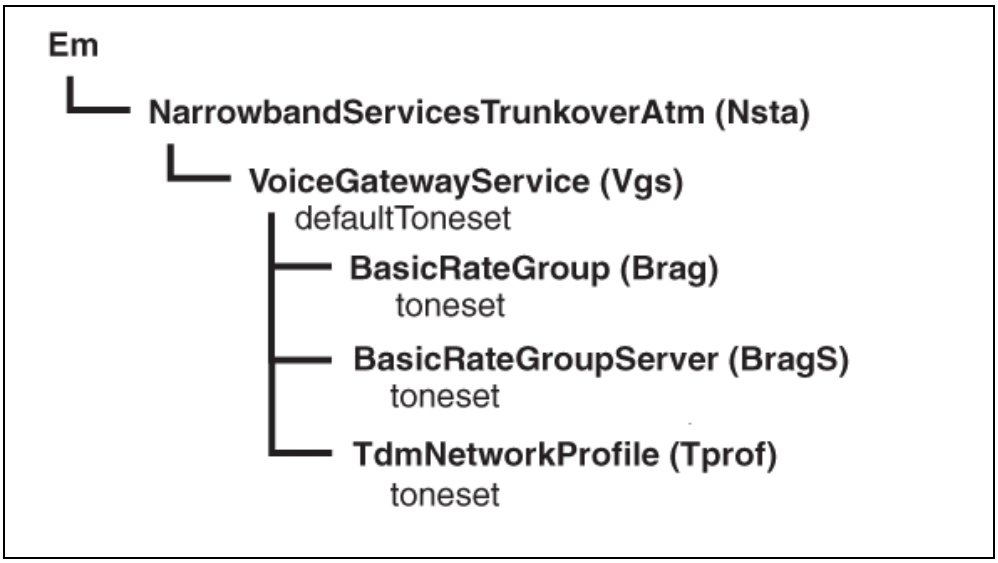
--End--

Variable definitions

Variable	Value
<defaultTonesetvalue>	The default value is canadaUsa. Other possible values are: argentina, australia, austria, belgium, brazil, brazilcustom1, canadaUsa, chile, china, custom1, custom2, custom3, custom4, custom5, czech, france, germany, greece, hongKong, india, ireland, israel, italy, japan, korea, malaysia, mexico, mexicocustom1, netherlands, newZealand, pakistan, 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.
<y>	The value for a specific instance of the *Tprof subcomponent.*
<tonesetvalue>	The default value is sameAsVgs. Other possible values are: sameAsVgs, argentina, australia, austria, belgium, brazil, brazilcustom1, canadaUsa, chile, china, custom1, custom2, custom3, custom4, custom5, czech, france, germany, greece, hongKong, india, ireland, israel, italy, japan, korea, malaysia, mexico, mexicocustom1, netherlands, newZealand, pakistan, panama, philippines, poland, portugal, romania, singapore, spain, sweden, switzerland, taiwan, thailand, turkey, uk, venezuela. **Attention:** MG supports the following tonesets as placeholders for future development. If you try to provision any of the placeholders prior to receiving the appropriate patch, you will receive a warning. Although the names are visible as options in the list of countries that can be set, they require a patch to deliver the associated toneset definitions. The tonesets are: • Bolivia • South Africa • Norway • Finland • Denmark • Hungary

Procedure job aid

Tones for switched Media Gateway component hierarchy



Configuring IPSec for switched Media Gateway call control connections

Configure IPSec on call control connections between a switched Media Gateway (MG) node and a Media Gateway Controller (MGC) in a Voice over IP (VoIP) Carrier VoIP Network. You have the option of activating the IPSec feature in order to secure the traffic flowing over the call control connection between Media Gatewaynodes and MGCs in the network.

The *SecurityPolicyDatabase (Spd)* component is a sub-component of the *Nsta* component. Add the *Spd* component and the IPSec application software to the existing components under *Nsta.* For more information on configuring the *Spd* component, see *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780). For information on configuring narrowband services trunk under ATM (Nsta), see Narrowband services trunk over ATM configuration for switched Media Gateway (page 16).

- Prerequisites to configuring IPSec for switched Media Gateway call control connections (page 227)
- IPSec configuration for switched Media Gateway call control connections flow (page 227)
- Task navigation (page 228)

The *Spd* component is configured on 2pOC3ChSmIrVsp3 FP's as shown in Configuring H.248 security protection and Spd component hierarchy (page 231) using the templates:

- IF-MGC-IPSEC-2pOC3ChSmIrVsp3-o

  Used to provision the Ctrl/mg component of the Nsta component with Spd attributes. Refer to *NN10225-512, Nortel Multiservice Switch 15000, Media Gateway 15000 and Multiservice Data Manager in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/UA-AAL1/ UA-IP/PT-AAL2)* for the attribute values used to configure the components in these templates.

- IF-MGC-IPSEC-ping-2pOC3ChSmIrVsp3-o

  Used to provision policy components that allow ICMP pings to be sent and received on 2pOC3ChSmIrVsp3 FP's.

Once you have configured IPSec for switched Media Gateway call control connections, see the following sections if you encounter connectivity problems:

- Verifying IKE Phase 1 connection problems (page 252)
- Verifying IKE Phase 2 connection problems (page 254)
- Verifying IPSec security violations (page 256)

For information on de-activating IPSec for switched Media Gateway call control connections, see De-activating IPSec for switched Media Gateway call control connections (page 260).

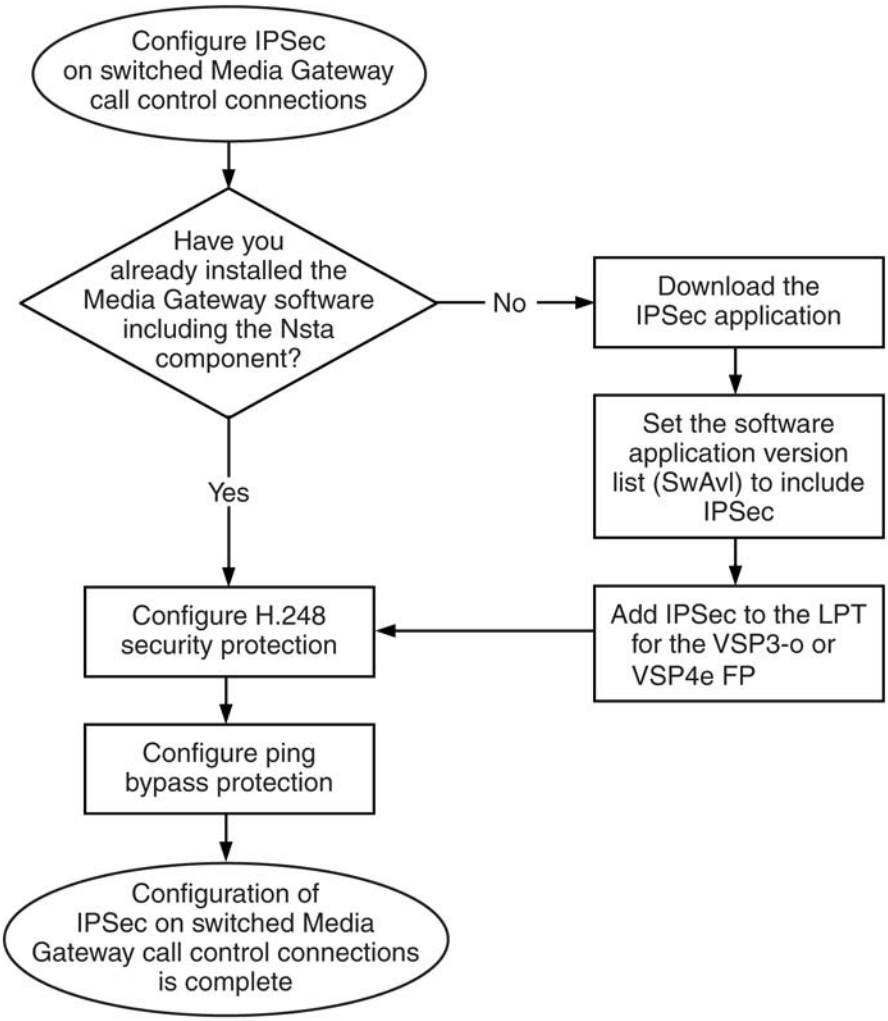
Prerequisites to configuring IPSec for switched Media Gateway call control connections

- Download the IPSec application using the procedures in *Nortel Multiservice Switch 7400/15000/20000 Installation – Software* (NN10600-270).
- Set the software application version list (*SwAvl)* to include IPSec using the procedures in *Nortel Multiservice Switch 7400/15000/20000 Upgrades – Software* (NN10600-272).
- Add the feature name *pvgipsec* to the logical processor type (LPT) for a VSP3-o function processor or 2pVSP4e function processor using the procedures in *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550).

IPSec configuration for switched Media Gateway call control connections flow

This task flow shows you the sequence of procedures you perform to configure IPSec for switched Media Gateway call control connections. To link to any procedure, go to Task navigation (page 228).

IPSec configuration for switched Media Gateway call control connections task flow



Task navigation

- Configuring H.248 security protection (page 229)
- Configuring ping bypass protection (page 232)

Configuring H.248 security protection

Configure H.248 security protection with internet key exchange (IKE) running 3DES and using a pre-shared key.

.

Procedure steps

Step	Action
1	Establish H.248 security protection for the traffic flowing between the Media Gateway switch and Media Gateway Controller. **add Nsta/<n> Vgs Ctrl/mg Spd/security** **add Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/1** **add Nsta/<n> Vgs Ctrl/mg Spd/security IkeProposal/1** **add Nsta/<n> Vgs Ctrl/mg Spd/security SecurityAssociationProposal/1**

Attention: The Media Gateway Controller (MGC) needs to be provisioned to support IPSec in flex mode prior to activating the provisioning on the Media Gateway.

Attention: Since there are other implementations of IPSec other than one documented in this section, you need to ensure that all *Policy* components are mutually exclusive of one another so as to guarantee interaction between a Media Gateway and any peer.

2	Set the characteristics for the first security policy. **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 srcIpAddress <IP address of MGC>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 dstIpAddress <r>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 protocol <udp>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 srcPort <2944>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 dstPort <2944>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 direction <inbound>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 action <apply>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 ikepolicy Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/1**

```
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1
saProposal Nsta/<n> Vgs Ctrl/mg Spd/security
SecurityAssociationProposal/1
```

Attention: The only supported H.248 port for Media Gateway is 2944. If the provisioned security policy for H.248 is set to *apply*, then 2944 is the only allowed port number. If you provision the *bypass* or *discard* policies, then you can use other port numbers.

3 Set the characteristics for the second security policy.

```
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2
srcIpAddress <same IP address as the Ctrl/mg>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2
dstIpAddress <IP address as the MGC>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 protocol
<udp>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 srcPort
<2944>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 dstPort
<2944>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 direction
<outbound>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 action
<apply>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 srcPort
<2944>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 ikepolicy
Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/1
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/2 saPolicy
Nsta/<n> Vgs Ctrl/mg Spd/security
SecurityAssociationProposal/1
```

4 Complete the setting of the characteristics for the first security policy.

```
set Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/1
remoteIpAddress <IP address of MGC>
set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/1 ikepolicy
Nsta/<n> Vgs Ctrl/mg Spd/security IkeProposal/1
set Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/1
ikePresharedKey <s>
set Nsta/<n> Vgs Ctrl/mg Spd/security IkeProposal/1
IkeTransform/1 encryptAlgorithm <3des>
```

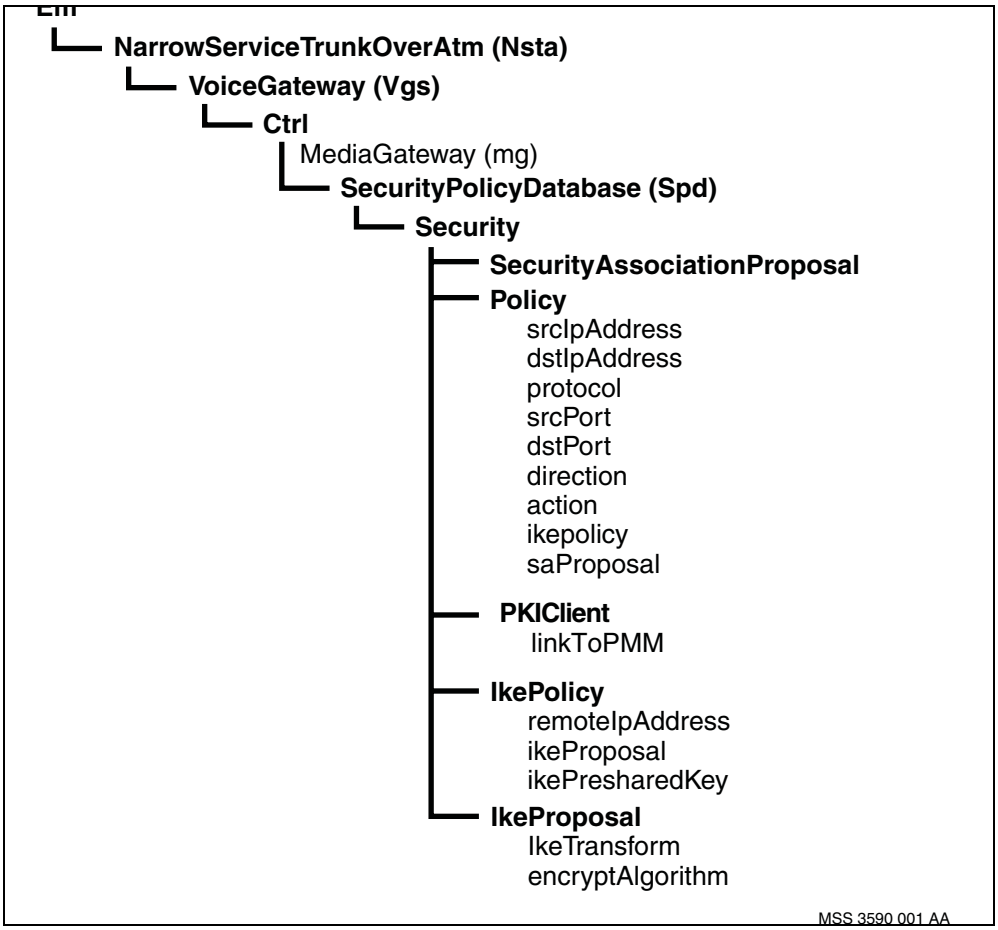
--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<IP address of MGC>	This address can be found by checking the *initialNgcAddress* attribute beneath the *Mgc* component.
<r>	The same IP address as the *Ctrl/mg* subcomponent.
<s>	An alphanumeric string longer than 16 characters is the IKE pre-shared key.

Procedure job aid

Configuring H.248 security protection and Spd component hierarchy



Configuring ping bypass protection

Configure ping bypass protection on the call control connection protected by IPSec by enabling ping between any two IP addresses.

Procedure steps

Step	Action
1	Create a security policy for one end of the traffic flowing between the Media Gateway switch and Media Gateway Controller. **add Nsta/<n> Vgs Ctrl/mg Spd/security Policy/3**
2	Set the characteristics for the security policy you have just created. **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/3 protocol <icmp>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/3 direction <inbound>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/3 action <bypass>**
3	Create a security policy for the other end of the traffic flowing between the Media Gateway switch and Media Gateway Controller. **add Nsta/<n> Vgs Ctrl/mg Spd/security Policy/4**
4	Set the characteristics for the security policy you have just created. **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/4 protocol <icmp>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/4 direction <inbound>** **set Nsta/<n> Vgs Ctrl/mg Spd/security Policy/4 action <bypass>**

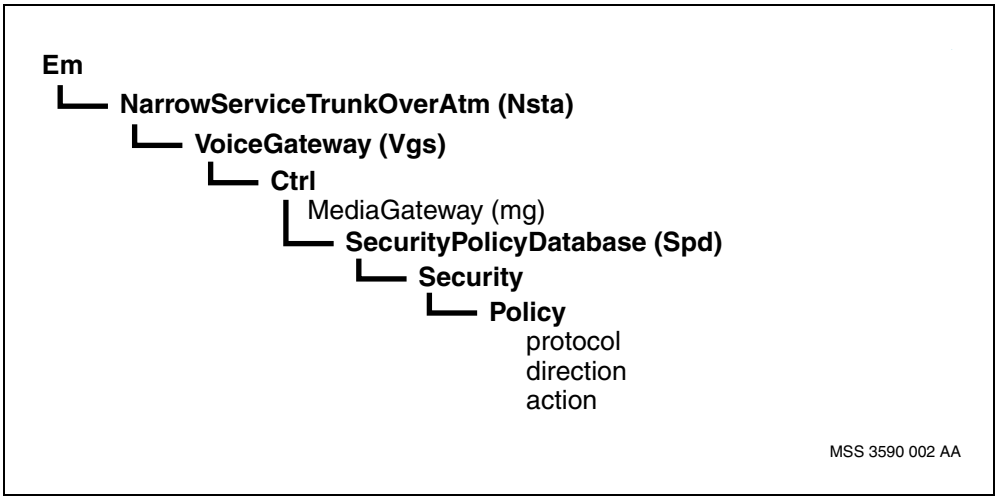
--End--

Variable definitions

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

Procedure job aid

Configuring ping bypass protection and Spd component hierarchy



Switched Media Gateway monitoring

Monitor switched Media Gateway to view operational and statistics attributes as well as open systems interconnection (OSI) state information for most Media Gateway components.

- Verifying that switched Media Gateway is enabled (page 235)
- Displaying operational and statistical attributes for switched Media Gateway using ATM (page 236)
- Displaying operational and statistical attributes for switched Media Gateway using IP (page 242)
- Displaying OSI states for switched Media Gateway (page 247)
- Displaying OSI states for VoIP using two gigabit Ethernet ports of VSP3 and external routing (page 250)
- Verifying IKE Phase 1 connection problems (page 252)
- Verifying IKE Phase 2 connection problems (page 254)
- Verifying IPSec security violations (page 256)

Verifying that switched Media Gateway is enabled

Verify that switched Media Gateway 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

Step	Action
1	For switched Media Gateway using ATM, IP, or Native 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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).
2	For switched Media Gateway 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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).
3	For switched Media Gateway 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 *Nortel Media Gateway 7480/15000 Technology Fundamentals* (NN10600-780).

--End--

Variable definitions

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

Displaying operational and statistical attributes for switched Media Gateway using ATM

Display operational and statistics attributes for switched Media Gateway using ATM to view information about the state of your node.

Prerequisites

- For more information about using Nortel Multiservice Switch system commands to monitor your node, see *Nortel Multiservice Switch 7400/15000/20000 Commands Reference* (NN10600-050) and *Nortel Multiservice Switch 7400/15000/20000 Configuration* (NN10600-550).
- For information about ATM operational attributes, see *Nortel Multiservice Switch 7400/15000/20000 ATM Fundamentals* (NN10600-700) and *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060).
- For information about 5- and 30-Minute performance measurement attributes, see *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060), *Nortel Multiservice Switch 7400/15000/20000 Administration – Data Management* (NN10600-561), NN10158-711 *Nortel Multiservice Switch 15000, Media Gateway 15000 and Multiservice Data Manager in Carrier Voice over IP Networks Performance (PT-AAL1/UA-AAL1/UA-IP)*.
- 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

Step	Action
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 *H248* subcomponent, enter

```
display Nsta/<n> Vgs H248/0 <attribute>
```

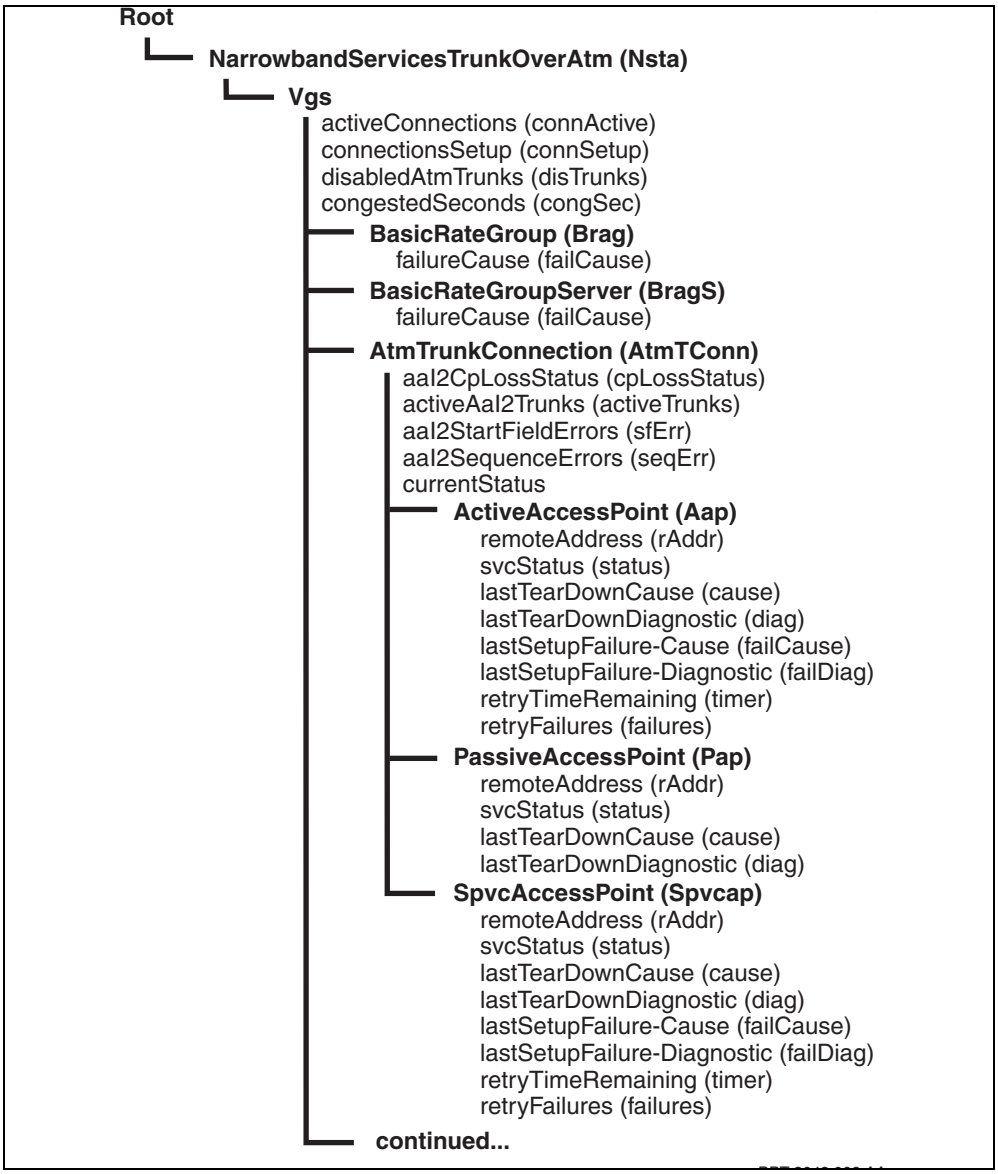
--End--

Variable definitions

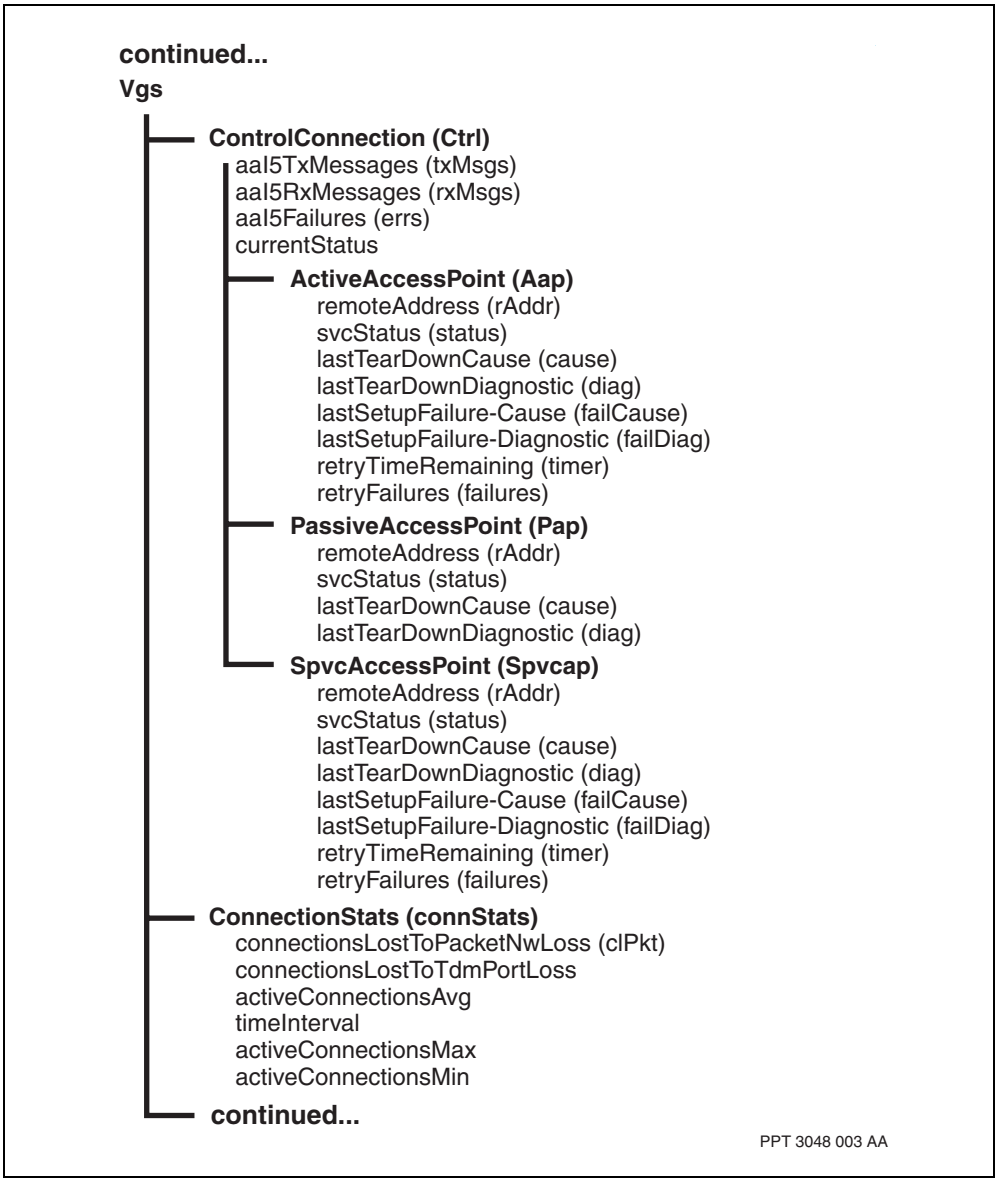
Variable	Value
<a>	The instance value for the *AtmTConn* subcomponent.
<attribute>	The name of the operational attribute.
<b>	The instance value for the *Brag* subcomponent.
<c>	The instance value for the *Control* subcomponent.
<n>	The value for the *Nsta component.*

Procedure job aid

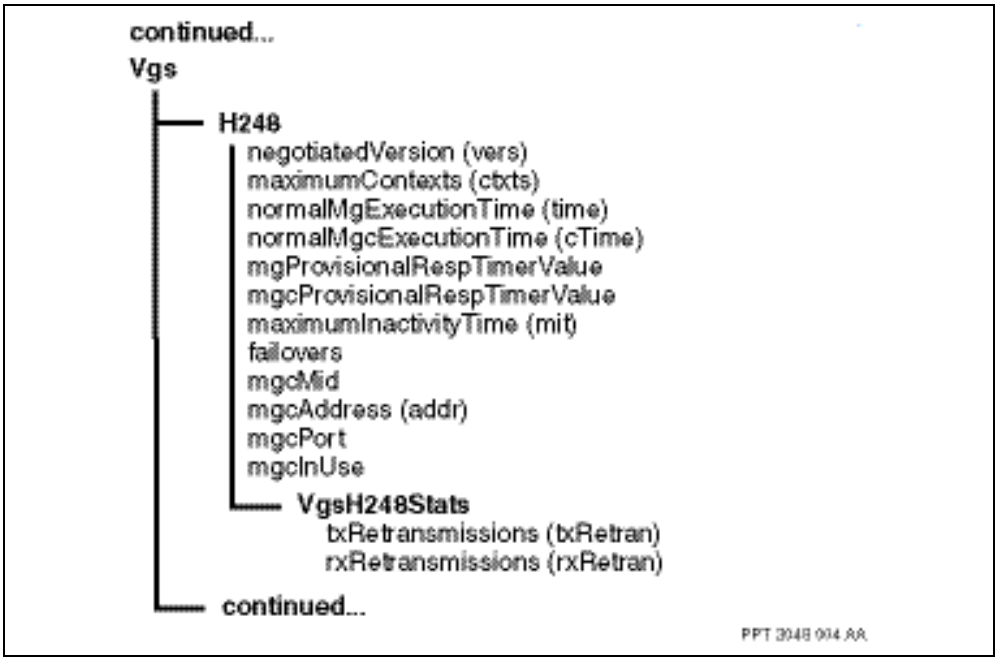
Operational and statistics attributes for switched Media Gateway using ATM—Part 1



Operational and statistics attributes for switched Media Gateway using ATM—Part 2



Operational and statistics attributes for switched Media Gateway using ATM—Part 3



Operational and statistics attributes for switched Media Gateway using ATM—Part 4

Displaying operational and statistical attributes for switched Media Gateway using IP

Display operation and statistics attributes for switched Media Gateway using IP to view information about the state of your node.

Prerequisites

- For more information about using Nortel Multiservice Switch system commands to monitor your node, see *Nortel Multiservice Switch 7400/15000/20000 Commands Reference* (NN10600-050).
- For information about ATM operational attributes, see *Nortel Multiservice Switch 7400/15000/20000 ATM Fundamentals* (NN10600-700).
- For information about 5- and 30-Minute performance measurement attributes, see *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060), *Nortel Multiservice Switch 7400/15000/20000 Administration – Data Management* (NN10600-561), NN10158-711 *Nortel Multiservice Switch 15000, Media Gateway 15000 and Multiservice Data Manager in Carrier Voice over IP Networks Performance (PT-AAL1/UA-AAL1/UA-IP)*.
- 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

Step	Action
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 *H248* subcomponent, enter **display Nsta/<n> Vgs H248/0 <attribute>**

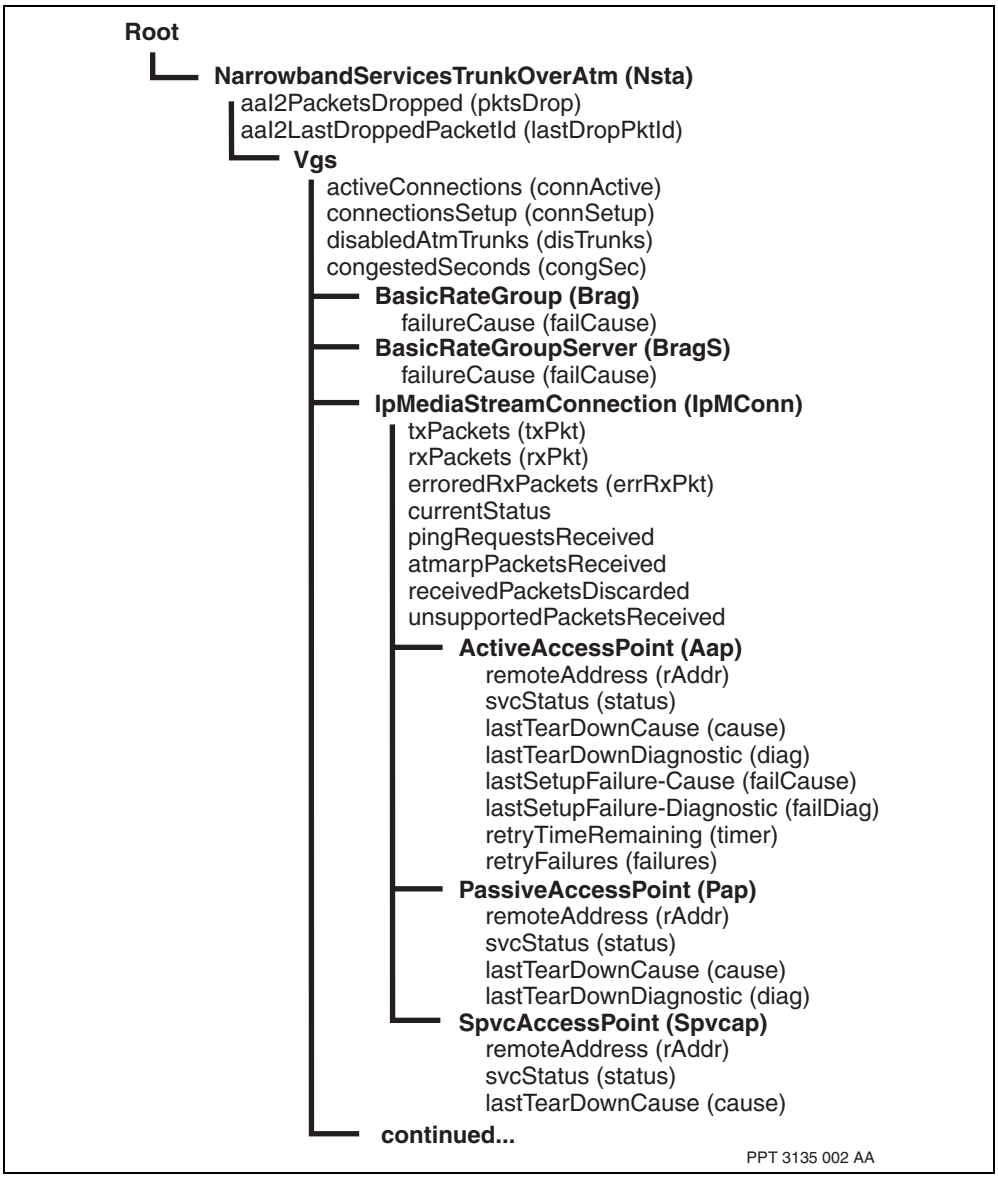
--End--

Variable definitions

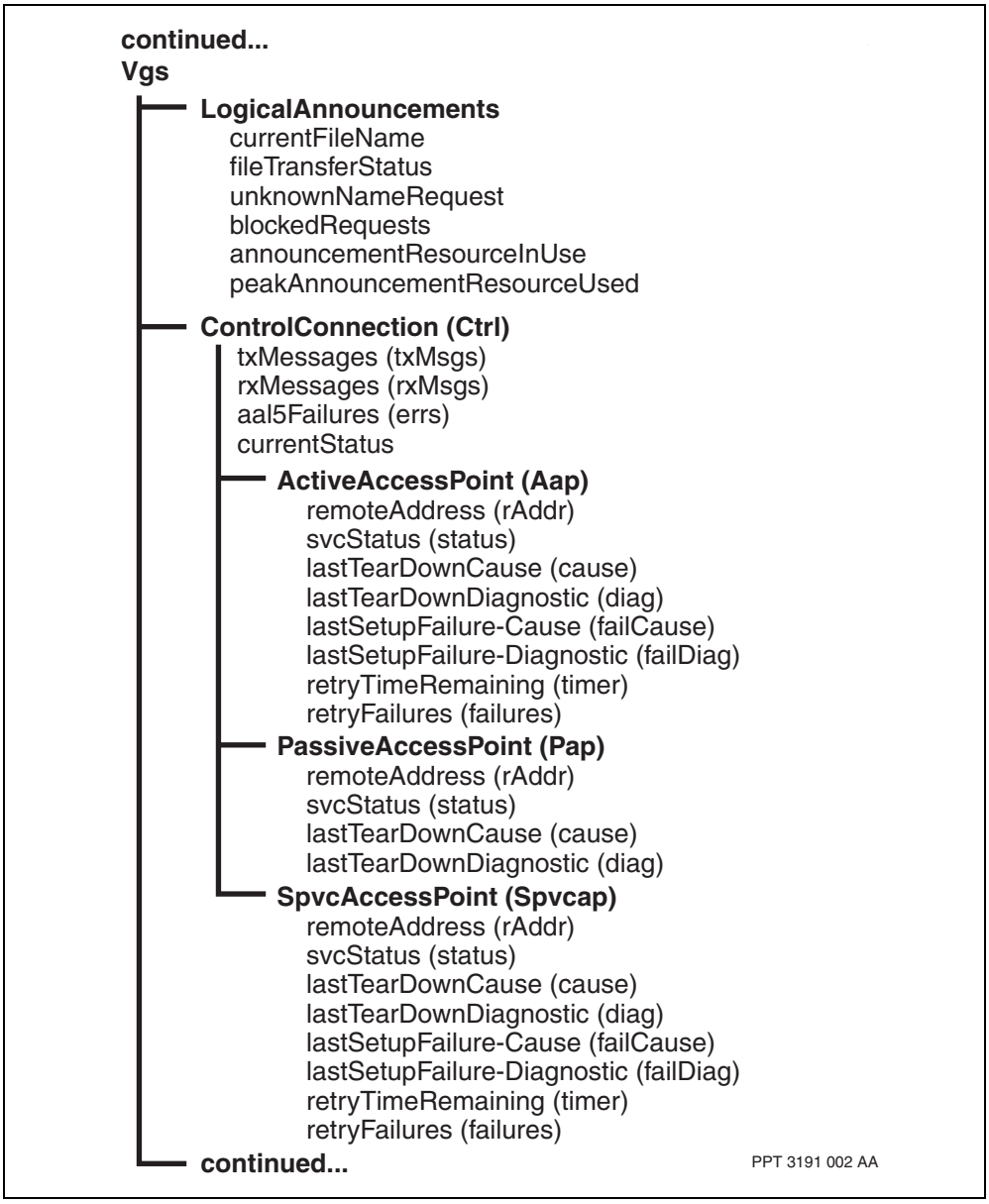
Variable	Value
<attribute>	The name of the operational attribute.
<b>	The instance value for the *Brag* subcomponent.
<c>	The instance value for the *Control* subcomponent.
<n>	The value for the *Nsta component.*

Procedure job aid

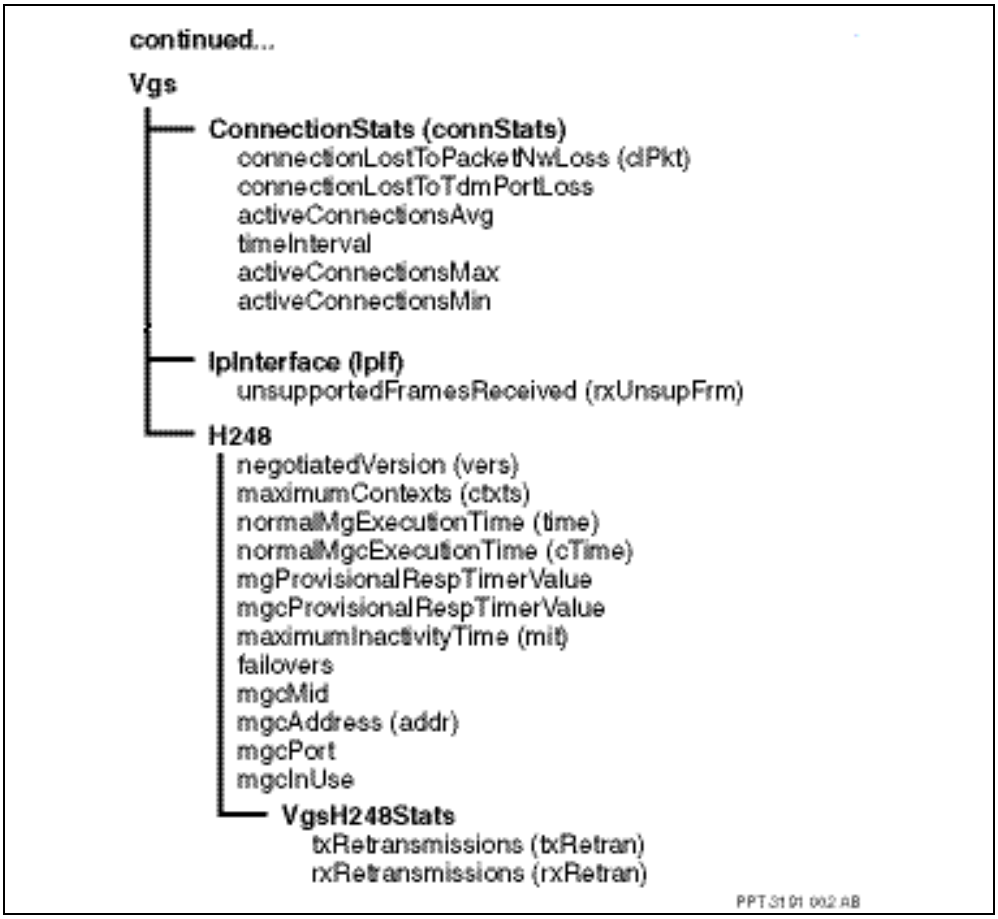
Operational and statistics attributes for switched Media Gateway using IP—Part 1



Operational and statistics attributes for switched Media Gateway using IP—Part 2



Operational and statistics attributes for switched Media Gateway using IP—Part 3



Displaying OSI states for switched Media Gateway

Display OSI states for switched Media Gateway to view the state of any component that supports OSI states.

Prerequisites

- For information about OSI states for Nortel Multiservice Switch hardware, see *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).
- For information about OSI states for ATM components, see *Nortel Multiservice Switch 7400/15000/20000 ATM Fundamentals* (NN10600-700).

Procedure steps

Step	Action
1	To display the OSI state for a *Vgs* subcomponent, enter **`display Nsta/<n> <subcomponent>/<m> OsiState`**
	--End--

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

State combinations for the Nsta component

Comination (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.

State combinations for the AtmTrunkConnection component

Comination (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.

State combinations for the IpMediaStreamConnection component

Comination (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.

State combinations for the ControlConnection component

Comination (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.

State combinations for the BasicRateGroup component

Comination (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.

State combinations for the BasicRateGroupServer component

Comination (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.

Displaying 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 Nortel Multiservice Switch hardware, see *Nortel Multiservice Switch 7400/15000/20000 Fundamentals – FP Reference* (NN10600-551).

Procedure steps

Step	Action
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`**
	--End--

Variable definitions

Variable	Value
<x>	The logical processor number.
<y>	The VSP3 gigabit Ethernet port number (0 or 1).

Procedure job aid

State combinations for the Ethernet1000BaseSX component

Comination (Administrative, Operational, Usage)	Details
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.

Verifying IKE Phase 1 connection problems

For those users with Internet Protocol security (IPSec) for switched Media Gateway configured on the call control connection between a Media Gateway (MC) and Media Gateway Controller (MGC) in a Carrier VoIP Network, an alarm associated with the *IkePolicy* component will alert you that there is no connectivity between these two network elements. Most connectivity problems between the MC and MGC are due to one of the following components being configured incorrectly:

- *IkePolicy*
- *IkeSecurityAssociationTransform*
- *Policy*
- *SecurityAssociationTransform*

By using this procedure you can verify that the packets are being received and negotiation is being attempted between the MG and MGC. This procedure will assist you in discovering which component has been configured incorrectly as well as the following procedure:

- Verifying IKE Phase 2 connection problems (page 254)

Prerequisites

- For information about configuring IPSec on call control connections between MCs and MGCs, see *Nortel Media Gateway 7480/15000 Switched Service Configuration Management* (NN10600-782).

Procedure steps

Step	Action
1	Display the packet count. **display Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/<y> packetCount** A system response appears stating a *packetCount* value. Display the packet count a second time to make sure that the number of packets is growing and that you have traffic flow on the connection.
2	Display the number of *phase1SuccessfulAttempts*. **display Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/<y> phase1SuccessfulAttempts** A system response appears stating a *phase1SuccessfulAttempts* value.
3	Display the number of *phase1FailedAttempts*. **display Nsta/<n> Vgs Ctrl/mg Spd/security IkePolicy/<y> phase1FailedAttempts** A system response appears stating a *phase1FailedAttempts* value.

4 Repeat step 3.

A system response appears stating a *phase1FailedAttempts* value. If the number of *phase1FailedAttempts* is increasing, you should check the provisioned *remoteIpAddress* attribute of the *IkePolicy* component and the *IkeTransform* component parameters. If these parameters are correct, re-enter the correct pre-shared key.

--End--

Variable definitions

Variable	Value
<n>	The value for the *Nsta* component.
<y>	The number assigned to the *IkePolicy* component.

Verifying IKE Phase 2 connection problems

For those users with Internet Protocol security (IPSec) for switched Media Gateway configured on the call control connection between a Media Gateway (MC) and Media Gateway Controller (MGC) in a Carrier VoIP Network, an alarm associated with the *IkePolicy* component will alert you that there is no connectivity between these two network elements. Most connectivity problems between the MC and MGC are due to one of the following components being configured incorrectly:

- *IkePolicy*
- *IkeSecurityAssociationTransform*
- *Policy*
- *SecurityAssociationTransform*

If no IKE phase 1 failures are evident but you are still experiencing loss of connectivity, verify IKE phase 2 negotiation for the H.248 connection using this procedure. For instructions on how to verify there are no IKE Phase 1 failures, see the following procedure:

- Verifying IKE Phase 1 connection problems (page 252)

Prerequisites

- For information about configuring IPSec on call control connections between MCs and MGCs, see *Nortel Media Gateway 7480/15000 Switched Service Configuration Management* (NN10600-782).

Procedure steps

Step	Action
1	Display the *securityAssociation*. **`display Nsta/<x> Vgs Ctrl/mg Spd/security IkePolicy/<y> securityAssociation`** A system response appears giving the number of the *securityAssociation*.
2	Display the number of *phase2FailedAttempts*. **`display Nsta/<x> Vgs Ctrl/mg Spd/security IkePolicy/<y> phase2FailedAttempts`** A system response appears stating a *phase1FailedAttempts* value.
3	Repeat step 2. A system response appears stating a *phase2FailedAttempts* value. If the number of *phase2FailedAttempts* is increasing, you should check the provisionable *Policy* attributes and the associated *SecurityAssociationTransform* component.

--End--

Variable definitions

Variable	Value
<x>	The value for the *Nsta* component.
<y>	The number assigned to the *IkePolicy* component.

Verifying IPSec security violations

For those users with IPSec for switched Media Gateway configured on the call control connection between the Media Gateway (MG) and Media Gateway Controller (MGC) in a Carrier VoIP Network, there is no alarm associated with security violations. You can obtain an overview of the security violations by displaying the attributes under the *Spd* component.

Security policies will discard packets under the following conditions:

- packet received is in error due to corruption
- the *action* attribute of the policy is set to *discard*
- unsecure packets received on a secure connection
- incorrectly secured packets sent to a secure connection

Prerequisites

- For information about configuring IPSec on call control connections between MCs and MGCs, see *Nortel Media Gateway 7480/15000 Switched Service Configuration Management* (NN10600-782).

Procedure steps

Step	Action
1	Display whether unauthorized packets are being sent to the MG. **`display Nsta/<x> Vgs Ctrl/mg Spd/security inSpdDiscards`** A system response appears giving the number of *inSpdDiscards*.
2	Display whether the secure packets being received by the MG are not authorized. **`display Nsta/<x> Vgs Ctrl/mg Spd/security inSaLookupFailures`** A system response appears giving the number of *inSaLookupFailures*.
3	Display whether any security policy is discarding packets on the MG. **`display Nsta/<x> Vgs Ctrl/mg Spd/security inPolicydiscards`** A system response appears giving the number of *inPolicydiscards*. Security policies will discard packets when they are received in error due to corruption, the *action* attribute of the policy is set to discard, unsecure packets are received on a secure connection, or incorrectly secured packets are sent to a secure connection. If packet discards are occurring, you need to check all the *Policy* and *IkePolicy* subcomponents of the *Spd* component to isolate which policy is being violated.

--End--

Variable definitions

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

Supporting information for switched Media Gateway configuration procedures

Several procedures in this document require supporting information that is presented in the following sections:

- Supporting information for configuring Nsta for the basic rate group (page 258)
- Supporting information for configuring Nsta for basic rate group server (page 259)
- Supporting information for configuring Nsta for the TDM access group (page 259)
- Supporting information for configuring VoIP using gigabit Ethernet ports of VSP3 and external routing (page 260)
- De-activating IPSec for switched Media Gateway call control connections (page 260)

Attention: The procedures that require the supporting information appearing in the following section are linked to the appropriate section by cross-references.

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 *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060).

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 *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060).

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

Under component *Nsta Vgs* are two subcomponents, *Q921* and *Q921Profile (Q921Prof)*, that define the frame format used for the timeslots per ITU-T Q.921 recommendation.

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 *Nortel Multiservice Switch 7400/15000/20000 Components Reference* (NN10600-060).

Supporting information for configuring VoIP using 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.

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

De-activating IPSec for switched Media Gateway call control connections

The information in this section is provided in case you need to de-activate IPSec for switched Media Gateway call control connections. Do not perform this task after performing the configuration procedures in Configuring IPSec for switched Media Gateway call control connections (page 226) unless you intend to de-activate IPSec.

Using the *Remove* command as described in *Nortel Multiservice Switch 7400/15000/20000 Commands Reference* (NN10600-050), de-activate the Media GatewayIPSec feature by removing the following items:

- the *Spd* component and its related sub-components
- the IPSec feature from the feature list for the LPT of the VSP 3-o or 2pVSP4e FP
- the IPSec application from the Software application version list (*SwAvl*)
- the software from the switch

Media Gateway 15000 configuration for the Carrier VoIP Networks UA-IP and PT-IP solution

The configuration information in this section is for Media Gateway 15000 when configured on a Multiservice Switch 15000 and included as part of a Carrier VoIP Network Universal Access - Internet Protocol (UA-IP) or Packet trunking - Internet Protocol (PT-IP) solution. The tables in this section provide the values for the Media Gateway 15000 set of nodal provisioning (NP) templates that are available from the Multiservice Data Manager application.

The standardized Media Gateway 15000 deployment for the Carrier VoIP UA-IP and PT-IP solutions demands a set of components and attributes with predefined configured values. The benefits of a standardized configuration with predefined configuration values are reduced engineering costs, increased automation of provisioning using templates, and more efficient troubleshooting.

Attention: For the tables of configuration attributes for the Media Gateway 15000 when configured on a Multiservice Switch 15000 in a Carrier VoIP Universal Access - Internet Protocol (UA-IP) or Packet Trunking - Internet Protocol (PT-IP) solution, refer to NN10225-512 *Nortel Multiservice Switch 15000 in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/UA-AAL1/UA-IP/PT-AAL2/PT-IP).*

There are three basic types of configuration tasks that need to be performed with configuring the Multiservice Switch 15000 as a Media Gateway 15000 in the Carrier VoIP UA-IP or PT-IP solution:

- FP configuration for Multiservice Switch 15000 Media Gateway 15000 (page 262)
- Link configuration for Multiservice Switch 15000 Media Gateway 15000 (page 262)
- TDM trunk configuration for Multiservice Switch 15000 Media Gateway 15000 (page 264)

FP configuration for Multiservice Switch 15000 Media Gateway 15000

The following function processors (FPs) support the Media Gateway 15000 in the Carrier VoIP UA-IP and PT-IP solutions. These FPs are configured on the Multiservice Switch 15000 shelf as a pair with one FP acting as a spare for the primary FP. For the required configured values, refer to the following sections of the NN10225-512 *Nortel Multiservice Switch 15000 in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/UA-AAL1/UA-IP/PT-AAL2/PT-IP).*

- 2-port Ge VSP3 function processor configuration

  This section gives the component and attribute configuration of a 2-port Gigabit Ethernet (Ge) multi-mode (Mm) Short reach (Sr) Voice Services Processor (Vsp) function processor (FP) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution.

- 2-port OC-3 VSP3-o function processor configuration

  This section gives the component and attribute configuration of a 2-port OC-3 ChSmIr voice services processor (VSP3-o) function processor (FP) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution.

- 2-port OC-3 2pVSP4e function processor configuration

  This section gives the component and attribute configuration of a 2-port OC-3 ChSmIr voice services processor 4 (VSP4e) function processor (FP) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution.

- 4-port OC-3 TDM function processor configuration

  This section gives the component and attribute configuration of a 4-port OC-3 time division multiplexing (TDM) FP (4pOC3ChSmIr) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution.

For background information about the tables of values contained in NN10225-512 *Nortel Multiservice Switch 15000 in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/UA-AAL1/UA-IP/PT-AAL2/PT-IP), refer to NN10114-511 Passport 15000 and Preside MDM in Succession Networks Configuration Overview (PT-AAL1/UA-AAL1).*

Link configuration for Multiservice Switch 15000 Media Gateway 15000

The following Link configurations are for time division multiplexing (TDM) trunks and trunk profiles on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Networks UA-IP or PT-IP solutions. For the required

configured values, refer to the following sections of the NN10225-512 *Nortel Multiservice Switch 15000 in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/UA-AAL1/UA-IP/PT-AAL2/PT-IP).*

- TDM OC-3 interface configuration

  This section gives the component and attribute configuration of an interface to optical carrier level 3 (OC-3) division multiplexing (TDM) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution. Review the information to understand how these interfaces are configured on a protected line automatic protection switching (LAPS) pair of synchronous optical network (SONET) ports on 4pOC3ChSmIr FPs.

- TDM OC-3 VSP3-o interface configuration

  This section gives the component and attribute configuration of an interface to optical carrier level 3 (OC-3) division multiplexing (TDM) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution. Review the information to understand how these interfaces are configured on a protected line automatic protection switching (LAPS) pair of synchronous optical network (SONET) ports on 2pOC3ChSmIrVsp3 FPs.

- TDM OC-3 2pVSP4e interface configuration

  This section gives the component and attribute configuration of an interface to optical carrier level 3 (OC-3) time division multiplexing (TDM) on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution. Review the information to understand how these interfaces are configured on a protected line automatic protection switching (LAPS) pair of synchronous optical network (SONET) ports on 2pOC3ChSmIrVspe4e FPs.

- MGC-H248 (VSP3) interface configuration

  This section gives the component and attribute configuration of an interface to a Media Gateway Controller (MGC) using H.248 on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution. The configuration uses H.248, the ITU-T gateway control protocol, as the control interface between the MGC and the Multiservice Switch 15000 Media Gateway 15000. This configuration provisions the Nsta component structure with an IP interface to the MGC on 2pGeMmSrVsp3 FPs.

- MGC-H248 (VSP3-o) interface configuration

  This section gives the component and attribute configuration of an interface to a Media Gateway Controller (MGC), using an optical link and H.248, on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. The configuration uses H.248, the ITU-T gateway control protocol, as the control interface between the MGC

and the Multiservice Switch 15000 Media Gateway 15000. This configuration provisions the Nsta component structure with an IP interface to the MGC on 2pOC3ChSrImVsp3 function processors (FPs).

Attention: The Nsta component instances must match the lower card slot number of the VSP FP pair.

TDM trunk configuration for Multiservice Switch 15000 Media Gateway 15000

The following TDM trunk configurations are for time-division multiplexing (TDM) trunks on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. There are three types of TDM trunks:

- ISDN User Part (ISUP)
- primary rate interface (PRI)
- Per Trunk Signalling (PTS)

For the required configured values for each type of TDM trunk, refer to the following sections of the NN10225-512 *Nortel Multiservice Switch 15000 in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/ UA-AAL1/UA-IP/PT-AAL2/PT-IP).*

- TDM trunk preparation - LAPS STS

  This section gives the component and attribute configuration of the line automatic protection switching (LAPS) synchronous transport signal (STS) components needed for time division multiplexing (TDM) trunks on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. The TDM trunks need to be provisioned on either 4pOC3ChSmIr (TDM), 2pOC3ChSmIrVsp3 (VSP3-o), or 2pOC3ChSmIrVsp4e (VSP4e) function processors (FPs). This TDM trunk configuration provisions a LAPS STS on the FPs.

- TDM ISUP trunk (VSP3-o) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) ISDN User Part (ISUP) trunk on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. The TDM ISUP trunks need to be provisioned on 2pOC3ChSmIrVsp3 function processors (FPs). This trunk configuration provisions a TDM ISUP trunk on a 2pOC3ChSmIrVsp3 FP

- TDM ISUP trunk (VSP4e) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) ISDN User Part (ISUP) trunk on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or

PT-IP solution. The TDM ISUP trunks need to be provisioned on 2pOC3ChSmIrVsp4e function processors (FPs). This trunk configuration provisions a TDM ISUP trunk on a 2pOC3ChSmIrVsp4e FP

- TDM ISUP trunk (VSP3) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) ISDN User Part (ISUP) trunk on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution. On VSP3 function processors (FPs), ISUP trunk settings are common. These TDM ISUP trunks need to be provisioned on 2pGeMmSrVsp3 FPs.

Attention: The Vt1dot5 hierarchy and associated links must not be configured previously.

- TDM PRI trunk profile (VSP3-o) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) primary rate interface (PRI) trunk profile on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. This configuration provisions a trunk profile on 2pOC3ChSmIrVsp3 function processors (FPs). A PRI trunk profile is common to all PRI trunks on a VSP3-o FP.

Attention: The Vt1dot5 hierarchy and associated links must not be configured previously.

- TDM PRI trunk (VSP3-o) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) primary rate interface (PRI) trunk profile on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. This configuration provisions a TDM PRI trunk on 2pOC3ChSmIrVsp3 function processors (FPs).

- TDM PRI trunk (VSP4e) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) primary rate interface (PRI) trunk profile on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. This configuration provisions a TDM PRI trunk on 2pOC3ChSmIrVsp4e function processors (FPs).

- TDM PRI trunk profile (VSP3) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) primary rate interface (PRI) trunk profile on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP

Network UA-IP solution. A trunk profile is common to all PRI trunks on VSP3 function processors (FPs). This configuration provisions a PRI trunk profile on 2pGeMmSrVsp3 FPs.

Attention: The Ctrl/sg hierarchy and associated links must not be configured previously.

- TDM PRI trunk (VSP3) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) primary rate interface (PRI) trunk on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP solution. PRI trunk settings are common on VSP3 function processors (FPs). This configuration provisions a TDM PRI trunk on 2pGeMmSrVsp3 FPs.

Attention: The Vt1dot5 hierarchy and associated links must not be configured previously.

- TDM PTS trunk profile (VSP3-o) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) Per Trunk Signalling (PTS) trunk profile on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. This configuration provisions a TDM PTS trunk profile on a 2pOC3ChSmIrVsp3 function processor (FP). A trunk profile is common to all PTS trunks using a specific profile on VSP3-o FPs.

Attention: The CasDefn structure and associated links must not be configured previously.

- TDM PTS trunk (VSP3-o) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) Per Trunk Signalling (PTS) trunk on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. The trunk is configured on 2pOC3ChSmIrVsp3 function processors (FPs).

Attention: The Vt1dot5 hierarchy and associated links must not be configured previously.

- TDM PTS trunk profile (VSP4e) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) Per Trunk Signalling (PTS) trunk profile on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. This configuration provisions a TDM PTS trunk profile on a 2pOC3ChSmIrVsp4e function processor (FP). A trunk profile is common to all PTS trunks using a specific profile on 2pVSP4e FPs.

Attention: The CasDefn structure and associated links must not be configured previously.

- TDM PTS trunk (VSP4e) configuration

  This section gives the component and attribute configuration of a time division multiplexing (TDM) Per Trunk Signalling (PTS) trunk on a Multiservice Switch 15000 Media Gateway 15000 in a Carrier VoIP Network UA-IP or PT-IP solution. The trunk is configured on 2pOC3ChSmIrVsp4e function processors (FPs).

Attention: The Vt1dot5 hierarchy and associated links must not be configured previously.

CVoIP Nodal Provisioning templates

The MDM NP template application provides a mechanism to add, change, or delete any component or attribute in any MG15000 configuration. You can apply the pre-defined templates into the valid targets (Drop-sites) in the device component hierarchy and configure the service in the resulting service form. Most of the configuration tasks are done transparently by the template, however, the templates do expose certain variable data to the user that must be entered manually. The Engineering Specification Book provides the template field values. Refer to Appendix B Using the MDM Nodal Provisioning Templates in the NN10225-512 *Nortel Multiservice Switch 15000 in Carrier Voice over IP Networks Configuration Attribute Summary (PT-AAL1/UA-AAL1/ UA-IP/PT-AAL2/PT-IP).*

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