



CHAPTER 9

Setting Up a Nortel Meridian 1 Digital PIMG Integration with Cisco Unity Connection

For detailed instructions for setting up a Nortel Meridian 1 digital PIMG integration with Cisco Unity Connection, see the following sections in this chapter:

- [Task List to Create the Integration with a Nortel Meridian 1 PIMG Phone System, page 9-1](#)
- [Requirements, page 9-2](#)
- [Programming the Nortel Meridian 1 PIMG Phone System for Integrating with Cisco Unity Connection, page 9-3](#)
- [Setting Up the Digital PIMG Units, page 9-10](#)
- [Creating a New Integration with the Nortel Meridian 1 Phone System, page 9-24](#)

Task List to Create the Integration with a Nortel Meridian 1 PIMG Phone System

Before doing the following tasks to integrate Cisco Unity Connection with the Nortel Meridian 1 phone system by using PIMG units (media gateways), confirm that the Cisco Unity Connection server is ready for the integration by completing the applicable tasks in the *Cisco Unity Connection Installation Guide*.

1. Review the system and equipment requirements to confirm that all phone system and Cisco Unity Connection server requirements have been met. See the [“Requirements” section on page 9-2](#).
2. Plan how the voice messaging ports will be used by Cisco Unity Connection. See [Chapter 2, “Planning How the Voice Messaging Ports Will Be Used by Cisco Unity Connection.”](#)
3. Program the Nortel Meridian 1 phone system and extensions. See the [“Programming the Nortel Meridian 1 PIMG Phone System for Integrating with Cisco Unity Connection” section on page 9-3](#).
4. Set up the PIMG units. See the [“Setting Up the Digital PIMG Units” section on page 9-10](#).
5. Create the integration. See the [“Creating a New Integration with the Nortel Meridian 1 Phone System” section on page 9-24](#).
6. Test the integration. See [Chapter 14, “Testing the Integration.”](#)
7. If this integration is a second or subsequent integration, add the applicable new user templates for the new phone system. See [Chapter 15, “Adding New User Template for Multiple Integrations.”](#)

Requirements

The Nortel Meridian 1 PIMG integration supports configurations of the following components:

Phone System

- One of the following models:
 - Nortel Meridian 1 phone system (Option 11, 21, 51, 61, 71, or 81), software release 17 or later.
 - Nortel Succession (CS 1000) phone system, software release 3.0 or later.
 - The Nortel SL 1 phone system, when upgraded to Meridian 1 so that it is compatible with the M2616 digital phone.
- The following software option packages installed:
 - Package 19, Digit Display Software (DDSP)
 - Package 46, Message Waiting Center (MWC)
- One or more digital lines that are compatible with the M2616 digital phone for connecting to the PIMG units.
- One or more of the applicable PIMG units. For details, see [Chapter 1, “Introduction.”](#)
- The voice messaging ports in the phone system connected by digital lines to the ports on the PIMG units.

We recommend that you connect the voice messaging ports on the phone system to the ports on the PIMG units in a planned manner to simplify troubleshooting. For example, the first phone system voice messaging port connects to the first port on the first PIMG unit, the second phone system voice messaging port connects to the second port on the first PIMG unit, and so on.

- The PIMG units connected to the same LAN or WAN that Cisco Unity Connection is connected to.
- If the PIMG units connect to a WAN, the requirements for the WAN network connections are:
 - For G.729a codec formatting, a minimum of 32.76 Kbps guaranteed bandwidth for each voice messaging port.
 - For G.711 codec formatting, a minimum of 91.56 Kbps guaranteed bandwidth for each voice messaging port.
 - No network devices that implement network address translation (NAT).
 - A maximum 200 ms one-way network latency.
- The phone system ready for the integration, as described in the documentation for the phone system.

Cisco Unity Connection Server

- Cisco Unity Connection installed and ready for the integration, as described in the *Cisco Unity Connection Installation Guide* at http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html.
- A license that enables the applicable number of voice messaging ports.

Centralized Voice Messaging

Cisco Unity Connection supports centralized voice messaging through the phone system, which supports various inter-phone system networking protocols including proprietary protocols such as Avaya DCS, Nortel MCDN, or Siemens CorNet, and standards-based protocols such as QSIG or DPNSS. Note that centralized voice messaging is a function of the phone system and its inter-phone system networking, not voice mail. Connection will support centralized voice messaging as long as the phone system and its

inter-phone system networking are properly configured. For details, see the “Centralized Voice Messaging” section in the “Integrating Cisco Unity Connection with the Phone System” chapter of the *Cisco Unity Design Guide Release 7.x* at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/7x/design/guide/7xcucdg.html.

Programming the Nortel Meridian 1 PIMG Phone System for Integrating with Cisco Unity Connection

The following programming instructions are provided as an example only. The specific programming for your phone system may vary depending on its configuration.



Caution

In programming the phone system, do not send calls to voice messaging ports in Cisco Unity Connection that cannot answer calls (voice messaging ports that are not set to Answer Calls). For example, if a voice messaging port is set only to Send MWI Requests, do not send calls to it.

To Program the Nortel Meridian 1 Phone System

- Step 1** Assign extensions for the voice messaging ports.
- Step 2** Confirm that the software on the phone system has the necessary following option packages by using overlay 22:
- DDSP (Package 19, Digit Display Software)
 - MWC (Package 46, Message Waiting Center)
- If either of these options is missing, contact your sales representative.
- Step 3** On overlay 11, set the following options to create the M2616 digital set emulation for the first port.

Table 9-1 Digital Set Emulation Options for the Second Port

Option	Setting
REQ	Enter NEW .
TYPE	Enter 2616 .
TN	Enter 0 0 6 2 .
CUST	Enter 0 .
CLS	Enter ADD HFD CNDA HTA MWA .
HUNT	Enter the extension of the second port on the PIMG unit.
KEY 00 SCR	Enter the primary number for this PIMG unit. Enter any valid unused number.
KEY 13 MIK	
KEY 14 MCK	
KEY 15 TRN	

- Step 4** Set the following options to create the digital set emulation for the second port.

Table 9-2 Digital Set Emulation Options for the Second Port

Option	Setting
REQ	Enter NEW .
TYPE	Enter 2616 .
TN	Enter 0 0 6 3 .
CUST	Enter 0 .
CLS	Enter ADD HFD CNDA HTA MWA .
HUNT	Enter the extension of the next port on the PIMG unit.
KEY 00 SCR	Enter the extension for this PIMG unit port. Enter any valid unused number.
KEY 13 MIK	
KEY 14 MCK	
KEY 15 TRN	

Step 5 Repeat [Step 4](#) for all remaining ports on the PIMG units.

Step 6 On overlay 95, set the following options to enable display of a four-letter code that represents why the call was forwarded.

Table 9-3 Calling Party Display Options

Option	Setting
REQ	Enter CHG .
TYPE	Enter CPND .
CUST	Enter the customer number.
RESN	Enter YES .
CFWD	Enter CFWD .
CFNA	Enter CFNA .
HUNT	Enter HUNT .
XFER	Enter T .
AAA	Enter A .

Step 7 On each subscriber phone, program the phone to forward calls to the pilot number assigned to the voice messaging ports, based on one of the Cisco Unity Connection call transfer types shown in [Table 9-4](#).

Table 9-4 Call Transfer Types

Transfer Type	Usage
Release transfer (blind transfer)	Program the phone to forward calls to the pilot number when: <ul style="list-style-type: none"> The extension is busy The call is not answered
Supervised transfer	Program the user station to forward calls to the pilot number only when the call is not answered (on the phone system, the number of rings before forwarding must be more than the number of rings to supervise the call). Confirm that call forwarding is disabled when the extension is busy.

Step 8 Use [Table 9-5](#) to determine the hunt method that you want to use, and do the applicable procedure.

Table 9-5 Hunt Methods for the Nortel Meridian 1 Phone System

Hunt Method	Procedure
Hunting Group <ul style="list-style-type: none"> Use for systems with up to 30 voice messaging ports. The search will route calls to the next idle PIMG port in the group when a call encounters a busy port. When the search reaches a PIMG port that has been disabled or has lost its connection to the PIMG unit, the search will stop at this port. The call rings until the caller hangs up. 	See the “To Set Up a Hunt Group for Up to 30 Ports” procedure on page 9-6.
ACD Hunt Group <ul style="list-style-type: none"> Use for systems with more than 30 voice messaging ports. The search will route calls to the next idle PIMG port in the group when a call encounters a busy port. When the search reaches a PIMG port that has been disabled or has lost its connection to the PIMG unit, the search will stop at this port. The call rings until the caller hangs up. 	See the “To Set Up an ACD Hunt Group for More Than 30 Ports” procedure on page 9-6.
Group Hunt Feature <ul style="list-style-type: none"> Use for systems with any number of voice messaging ports. Software option package 120 must be installed on the phone system. The search will route calls to the next idle PIMG port in the group when a call encounters a busy port. When the search reaches a PIMG port that has been disabled or has lost its connection to the PIMG unit, the search continues to the next available port. 	See the “To Set Up an ACD Hunt Group for More Than 30 Ports” procedure on page 9-6.

To Set Up a Hunt Group for Up to 30 Ports

See [Table 9-5](#) for considerations about using this procedure.

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- Step 1** Set up the first voice messaging port as the pilot number of the hunt group.
 - Step 2** Set the first voice messaging port to hunt to the second voice messaging port.
 - Step 3** Set the second voice messaging port to hunt to the third, then continue up to the 30th.
 - Step 4** Set the 30th voice messaging port to hunt to the first voice messaging port. See the example in [Table 9-6](#).

Table 9-6 Example of a 30-Port Hunt Group

Device	Setting	Destination
Port 1	HUNT	Port 2
Port 2	HUNT	Port 3
Port 3	HUNT	Port 4
.	HUNT	<additional ports>
.		
.		
Port 29	HUNT	Port 30
Port 30	HUNT	Port 1

To Set Up an ACD Hunt Group for More Than 30 Ports

See [Table 9-5](#) for considerations about using this procedure.

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- Step 1** Set up ACD 1 as the pilot number of the hunt group.
 - Step 2** With the Night Call Forward Destination (NCFW) command, set ACD 1 to forward to the first voice messaging port.
 - Step 3** Set the first voice messaging port to hunt to the second, then continue up to the 30th.
 - Step 4** Set the 30th voice messaging port to hunt to ACD 2.
 - Step 5** With the NCFW command, set ACD 2 to forward to the 31st voice messaging port.
 - Step 6** Set the 31st voice messaging port to hunt to the 32nd, and so on.
 - Step 7** Continue creating 30-port hunt groups in this manner until the last voice messaging port.
 - Step 8** Set the last voice messaging port to hunt to ACD 1. See the example in [Table 9-7](#).

Table 9-7 Example of a 72-Port ACD Hunt Group

Device	Settings	Destination
ACD 1 (pilot number)	NCFW	Port 1
Port 1	HUNT	Port 2
Port 2	HUNT	Port 3
<additional ports>		<additional ports>
Port 29	HUNT	Port 30
Port 30	HUNT	ACD 2
ACD 2	NCFW	Port 31
Port 31	HUNT	Port 32
<additional ports>		<additional ports>
Port 59	HUNT	Port 60
Port 60	HUNT	ACD 3
ACD 3	NCFW	Port 61
Port 61	HUNT	Port 62
<additional ports>		<additional ports>
Port 71	HUNT	Port 72
Port 72	HUNT	ACD 1

To Set Up the Group Hunt Feature

See [Table 9-5](#) for considerations about using this procedure.

Step 1 In LD 22, verify that software package 120 is equipped.

Table 9-8 Entries for LD 22

Prompt	Entry
REQ:	Enter PRT to start a print request.
TYPE:	Enter PKG to print the list of equipped packages.

Step 2 In LD 18, create a Group Hunt list number.

Table 9-9 Entries for LD 18

Prompt	Entry
REQ:	Enter NEW .
TYPE:	Enter GHT .
LSNO:	Enter the list number for the Group Hunt list. For example, enter 1.
CUST:	Enter the customer number as defined in LD 15.

Table 9-9 Entries for LD 18 (continued)

Prompt	Entry
DNSZ:	Enter the maximum length of DN allowed for Group Hunt list.
SIZE:	Enter the maximum number of DNs in the Group Hunt list.
WRT:	Enter YES to write the information to the data store.
STOR:	Press Enter .

Step 3 In LD 57, define the Pilot DN (PLDN) and associate it with the number for the Group Hunt list.

Table 9-10 Entries for LD 57

Prompt	Entry
REQ:	Enter CHG .
TYPE:	Enter FFC .
CUST:	Enter the customer number as defined in LD 15.
FFCT:	Press Enter .
CODE:	Enter PLDN for the Pilot DN.
PLDN:	Enter the DN that will be the pilot for the Group Hunt list.
USE:	Enter GPHT .
LSNO:	Enter the Group Hunt list number that you created in LD 18.
HTYP:	Do one of the following: <ul style="list-style-type: none"> If you want linear hunting, enter LIN. If you want round robin hunting, enter RRB.
CFWI:	Do one of the following: <ul style="list-style-type: none"> If you want Group Hunting to skip idle stations with Call Forward All Calls active, enter NO. If you want Group Hunting to terminate on idle stations with Call Forward All Calls active, enter YES.
MQUE:	Do one of the following to configure the maximum number of calls allowed in the Pilot DN queue: <ul style="list-style-type: none"> If you want to no calls in the queue, enter 0. If you want only one call in the queue at a time, enter 1. If you want no limit on the number of calls in the queue, enter ALL. If you want the number of calls in the queue to be less than or equal to the number of active members of the Group Hunt list, enter ACTM.

Step 4 In LD 18, modify the Group Hunt list number.

Table 9-11 Entries for LD 18

Prompt	Entry
REQ:	Enter CHG .
TYPE:	Enter GHT .
LSNO:	Enter the list number for the Group Hunt list that you created in Step 2 . For example, enter 1.
SIZE:	Enter the maximum number of DNs in the Group Hunt list.
WRT:	Enter YES to write the information to the data store.
STOR:	Enter the first DN in the Group Hunt list in the following format: <p style="text-align: center;">x...x y...y</p> For example, enter 00 2216.
WRT:	Enter YES to write the information to the data store.
STOR:	Enter the second DN in the Group Hunt list in the following format: <p style="text-align: center;">x...x y...y</p> For example, enter 01 2217.
WRT:	Enter YES to write the information to the data store.
STOR:	Enter the third DN in the Group Hunt list in the following format: <p style="text-align: center;">x...x y...y</p> For example, enter 02 2218.
.	Add more DNs in the Group Hunt list.
.	
.	
WRT:	Enter YES to write the information to the data store.
STOR:	Enter the last DN in the Group Hunt list in the following format: <p style="text-align: center;">x...x y...y</p> For example, enter 07 2223.

Step 5 In LD 11, enter a Group Hunt Pilot DN (PLDN) for each DN in the Group Hunt list that will connect to a PIMG port.

Table 9-12 Entries for LD 11

Prompt	Entry
REQ:	Enter CHG .
TYPE:	Enter the first DN in the Group Hunt list. For example, enter 2616.
TN:	Enter 1 0 0 7 .

Table 9-12 Entries for LD 11 (continued)

Prompt	Entry
ECHG:	Enter YES .
	Enter FDN <extension> for the PLDN that you configured in Step 3 .
	Enter HUNT <extension> for the PLDN that you configured in Step 3 .
	If applicable, enter EHT <extension> for the PLDN that you configured in Step 3 .
	If applicable, enter EFD <extension> for the PLDN that you configured in Step 3 .

Step 6 Repeat [Step 5](#) for all remaining DNs in the Group Hunt list.

Setting Up the Digital PIMG Units

Do the following procedures to set up the digital PIMG units that are connected to the Nortel Meridian 1 phone system.

These procedures require that the following tasks have already been completed:

- The phone system is connected to the PIMG units by using digital lines.
- The PIMG units are ready to be connected to the LAN or WAN.
- The PIMG units are connected to a power source.

Fields that are not mentioned in the following procedures must keep their default values. For the default values of all fields, see the manufacturer documentation for the PIMG units.

To Download the PIMG Firmware Update Files for Digital PIMG Units

Step 1 On a Windows workstation with a high-speed Internet connection that will have access to the PIMG units, go to the Voice and Unified Communications Downloads page at <http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=278875240>.



Note To access the software download page, you must be logged on to Cisco.com as a registered user.

This procedure describes the steps when using Internet Explorer as your web browser. If you are using a different web browser, the steps may differ.

Step 2 In the tree control on the Downloads page, expand **Unified Communications Applications > Voice Mail and Unified Messaging > Cisco Unity**, and click **Cisco Unity Telephony Integration**.

Step 3 On the Log In page, enter your user name and password, then click **Log In**.

Step 4 On the Select a Release page, under Latest Releases, click the most recent release.

Step 5 In the right column, click the version of the firmware for digital PIMG units.

Step 6 On the Download Image page, click **Download**.

Step 7 On the Supporting Document(s) page, click **Agree**.

Step 8 In the File Download dialog box, click **Save**.

- Step 9** In the Save As dialog box, browse to the Windows workstation that will have access the PIMG units, browse to a directory where you want to save the file, and click **Save**.
- Step 10** In the Download Complete dialog box, click **Open**. The window for extracting the PIMG firmware update files appears.
- Step 11** Click **Extract**.
- Step 12** In the Extract dialog box, browse to the directory where you want the extracted files, and click **Extract**.
- Step 13** Close the window for the extracting application.

Revised September 4, 2009

To Set Up the Digital PIMG Units (Firmware Version 6.x)

- Step 1** On the Windows workstation, add a temporary route to enable access to the PIMG units.
- On the Windows Start menu, click **Run**.
 - Enter **cmd**, and press **Enter**. The Command Prompt window appears.
 - At the command prompt, enter **route add 10.12.13.74 <IP Address of Workstation>**, and press **Enter**.
For example, if the IP address of the workstation is 198.1.3.25, enter “route add 10.12.13.74<space>198.1.3.25” in the Command Prompt window.
 - Close the Command Prompt window.
- Step 2** Connect a PIMG unit to the network.
- Step 3** In the web browser, go to **http://10.12.13.74**.
- Step 4** To log in, enter the following case-sensitive settings.

Table 9-13 Login Settings

Field	Setting
Username	Enter admin .
Password	Enter IpodAdmin .

- Step 5** Click **OK**.
- Step 6** On the System menu, click **Upgrade**.
- Step 7** On the Upgrade page, click **Browse**.
- Step 8** In the Choose File dialog box, browse to the directory on the Windows workstation that has the extracted PIMG firmware update files.
- Step 9** Click **Ami<xx>.app** (where <xx> is multiple digits), and click **Open**.
- Step 10** On the Upgrade page, click **Install File**.
- Step 11** After the file is installed, a message prompting you to restart the PIMG unit appears. Click **Cancel**.



Caution Do not restart the PIMG unit until you are instructed to do so later in this procedure, even if the file installation fails. Restarting the PIMG unit at this step may prevent the PIMG unit from functioning correctly.

Step 12 Repeat [Step 6](#) through [Step 11](#) for each of the following files:

- Ami_<xx>.fsh
- Run<xx>FskEcho.dsp
- iNim<xx>.ibt
- iNim<xx>.ilc
- iNim<xx>.iap

Step 13 On the Configuration menu, click **Import/Export**.

Step 14 On the Import/Export page, click **Browse**.

Step 15 In the Choose File dialog box, browse to the file DNI_Cfg_Generic.ini.

Step 16 Click **DNI_Cfg_Generic.ini**, and click **Open**.

Step 17 On the Import/Export page, click **Import File**.

Step 18 After the file is imported, a message prompting you to restart the PIMG unit appears. Click **OK**.

Step 19 In the web browser, go to <http://10.12.13.74>.

Step 20 To log in, enter the following case-sensitive settings.

Table 9-14 Login Settings

Field	Setting
Username	Enter admin .
Password	Enter IpodAdmin .

Step 21 Click **OK**.

Step 22 Do the following substeps to configure an RTP port range of 16384 to 32767.



Caution You must set the RTP port range for the PIMG units if your system uses an RTP port range of 16384 to 32767. Otherwise, Cisco Unity Connection will not be able to answer calls, and callers will hear ringing or silence.



Note The default RTP port range for PIMG units is 49000 to 50000. Some Cisco Unity Connection configurations require a different RTP port range.

- a. On the Configuration menu, click **Import/Export**.
- b. On the Import/Export page, under Export Settings, click **Export All Settings**.
- c. In the File Download dialog box, click **Save**.
- d. In the Save As dialog box, browse to the Windows workstation that has access to the PIMG units, browse to a directory where you want to save the file, and click **Save**.

- e. In the Download Complete dialog box, click **Open**. Notepad opens the file Config.ini that you saved.
- f. Locate the line with the following parameter:

```
gwRTPStartPort
```
- g. Change the value of the parameter to **16384** so that the line reads as follows:

```
gwRTPStartPort = 16384
```
- h. Locate the line with the following parameter:

```
gwRTPEndPort
```
- i. Change the value of the parameter to **32767** so that the line reads as follows:

```
gwRTPEndPort = 32767
```
- j. Save the file, and exit Notepad.
- k. On the Configuration menu of the PIMG unit, click **Import/Export**.
- l. On the Import/Export page, under Browse for Import File, click **Browse**.
- m. In the Choose File dialog box, browse to the file Config.ini that you saved.
- n. Click **Config.ini**, and click **Open**.
- o. On the Import/Export page, click **Import File**.
- p. When prompted to restart the PIMG unit, click **OK**.
- q. When the PIMG unit has restarted, in the web browser, go to **http://10.12.13.74**.
- r. To log in, enter the following case-sensitive settings.

Table 9-15 Login Settings

Field	Setting
Username	Enter admin .
Password	Enter IpodAdmin .

- s. Click **OK**.

Step 23 On the System menu, click **Password**.

Step 24 On the Change Password page, enter the following settings.

Table 9-16 Change Password Page Settings

Field	Setting
Old Password	Enter IpodAdmin . (This setting is case sensitive.)
New Password	Enter your new password. (This setting is case sensitive.)
Confirm Password	Enter your new password. (This setting is case sensitive.)

Step 25 Click **Change**.

- Step 26** On the Configuration menu, click **Routing Table**.
- Step 27** On the Routing Table page, under Router Configuration, click **VoIP Host Groups**.
- Step 28** Under VoIP Host Groups, enter the following settings for the first VoIP Host Group.

Table 9-17 First VoIP Host Group Settings

Field	Settings
Name	Accept the default or enter another descriptive name of the VoIP host group.
Load-Balanced	(Cisco Unity Connection without a cluster) Click False . (Cisco Unity Connection with a cluster configured) Click False .
Fault-Tolerant	(Cisco Unity Connection without a cluster) Click False . (Cisco Unity Connection with a cluster configured) Click True .

- Step 29** For Cisco Unity Connection without a cluster, under Host List, enter the host name or IP address of the Cisco Unity Connection server and the server port in the format <host name or IP address>:5060.
For Cisco Unity Connection with a cluster configured, under Host List, enter the host name or IP address of the subscriber Cisco Unity Connection server (the second Cisco Unity Connection server that you installed) and the server port in the format <host name or IP address>:5060.
- Step 30** For Cisco Unity Connection without a cluster, continue to [Step 32](#). For Cisco Unity Connection with a cluster configured, click **Add Host**.
- Step 31** In the second field, enter the host name or IP address of the publisher Cisco Unity Connection server (the first Cisco Unity Connection server that you installed) and the server port in the format <host name or IP address>:5060.



Caution Do not add a third host under Host List or a second host group under VoIP Host Groups. Otherwise, the Cisco Unity Connection cluster may not function correctly.

- Step 32** Click **Submit**.
- Step 33** Under Router Configuration, click **TDM Trunk Groups**.
- Step 34** Under TDM Trunk Groups, click **Add Trunk Group**.
- Step 35** Under TDM Trunk Groups, enter the following settings for the first TDM trunk group.

Table 9-18 First TDM Trunk Group Settings (Inbound Calls)

Field	Settings
Name	Enter Inbound_PBX_Calls or another unique name. This TDM trunk group will handle all incoming calls from the phone system.
Selection Direction	Click Ascending .
Selection Mode	Click Linear .
Port/Channel Content	Enter the numbers of the PIMG ports that will handle inbound calls. For example, enter “*” for all PIMG ports, or enter “1-6” for the first six PIMG ports.

Step 36 Under TDM Trunk Groups, click **Add Trunk Group**.

Step 37 Enter the following settings for the second TDM trunk group.

Table 9-19 *Second TDM Trunk Group Settings (MWIs)*

Field	Settings
Name	Enter MWIs or another unique name. This TDM trunk group will handle outbound MWI calls (where applicable).
Selection Direction	Click Ascending .
Selection Mode	Click Cyclic .
Port/Channel Content	Enter the numbers of the PIMG ports that will MWIs. For example, enter “*” for all PIMG ports, or enter “7,8” for the last two PIMG ports.

Step 38 Under TDM Trunk Groups, click **Add Trunk Group**.

Step 39 Enter the following settings for the third TDM trunk group.

Table 9-20 *Third TDM Trunk Group Settings (Outbound Calls)*

Field	Settings
Name	Enter Outbound_PBX_Calls or another unique name. This TDM trunk group will handle all outbound calls from Cisco Unity Connection.
Selection Direction	Click Descending .
Selection Mode	Click Linear .
Port/Channel Content	Enter * for all channels in all ports. Enter the numbers of the PIMG ports that will handle outbound (dialout) calls. For example, enter “*” for all PIMG ports, or enter “7,8” for the last two PIMG ports.

Step 40 Click **Submit**.

Step 41 Under Router Configuration, click **Inbound VoIP Rules**.

Step 42 Under Inbound VoIP Rules, uncheck the **Enabled** check box for the default rule.

Step 43 Click **Add Rule**.

Step 44 Under Inbound VoIP Rules, enter the following settings for the first new inbound VoIP rule.

Table 9-21 *First New Inbound VoIP Rule Settings (MWIs)*

Field	Settings
Enable	Check this check box.
Rule Label	Enter MWI_Calls or another name. This inbound VoIP rule will handle all MWI calls from Cisco Unity Connection.

Table 9-21 First New Inbound VoIP Rule Settings (MWIs) (continued)

Field	Settings
Request Type	Click Message .
Originating VoIP Host Address	Enter *.

Step 45 Under Inbound VoIP Request Matching, enter the following settings.



Caution The rule that you created in [Step 44](#) must be selected. Otherwise, any changes you make will apply to another inbound VoIP rule.

Table 9-22 Inbound VoIP Request Matching Settings

Field	Settings
Calling Number	Enter *.
Calling Name	Enter *.
Called Number	Enter *.
Called Name	Enter *.
Redirect Number	Enter *.
Redirect Name	Enter *.

Step 46 Under Outbound Routes, enter the following settings.



Caution The rule that you created in [Step 44](#) must be selected. Otherwise, any changes you make will apply to another rule.

Table 9-23 Outbound Routes Settings

Field	Settings
Device Selection	
Outbound Destination	Click TDM .
Trunk Group	Click the name of the TDM trunk group that you created for MWIs in Step 37 . For example, click “MWIs.”
CPID Manipulation	
Calling Number	Enter S .
Calling Name	Enter S .
Called Number	Enter D .
Called Name	Enter D .
Redirect Number	Enter R .
Redirect Name	Enter R .

Table 9-23 Outbound Routes Settings (continued)

Field	Settings
Select Primary/Alternate Route	
Primary	Click Primary .

Step 47 Under Inbound VoIP Rules, click **Add Rule**.

Step 48 Under Inbound VoIP Rules, enter the following settings for the second new inbound VoIP rule.

Table 9-24 Second New Inbound VoIP Rule Settings (Outbound Calls)

Field	Settings
Enable	Check this check box.
Rule Label	Enter Outbound_UC_Calls or another name. This inbound VoIP rule will handle all outbound calls from Cisco Unity Connection.
Request Type	Click Call .
Originating VoIP Host Address	Enter *.

Step 49 Under Inbound VoIP Request Matching, enter the following settings.



Caution The rule that you created in [Step 48](#) must be selected. Otherwise, any changes you make will apply to another rule.

Table 9-25 Inbound VoIP Request Matching Settings

Field	Settings
Calling Number	Enter *.
Calling Name	Enter *.
Called Number	Enter *.
Called Name	Enter *.
Redirect Number	Enter *.
Redirect Name	Enter *.

Step 50 Under Outbound Routes, enter the following settings.



Caution The rule that you created in [Step 48](#) must be selected. Otherwise, any changes you make will apply to another rule.

Table 9-26 Outbound Routes Settings

Field	Settings
Device Selection	
Outbound Destination	Click TDM .
Trunk Group	Click the name of the TDM trunk group that you created for outbound calls in Step 39 . For example, click “Outbound_PBX_Calls.”
CPID Manipulation	
Calling Number	Enter S .
Calling Name	Enter S .
Called Number	Enter D .
Called Name	Enter D .
Redirect Number	Enter R .
Redirect Name	Enter R .
Select Primary/Alternate Route	
Primary	Click Primary .

Step 51 Click **Submit**.

Step 52 Under Router Configuration, click **Inbound TDM Rules**.

Step 53 Under Inbound TDM Rules, enter the following settings for the first inbound TDM rule.

Table 9-27 First Inbound TDM Rule Settings

Field	Settings
Enable	Check this check box.
Rule Label	Enter Inbound_Rule_1 or another name. This inbound TDM rule will handle all incoming calls from the phone system.
Request Type	Click Call .
Trunk Group	Click the name of the TDM trunk group that you created for incoming calls from the phone system in Step 35 . For example, click “Inbound_PBX_Calls.”

Step 54 Under Inbound TDM Request Matching, enter the following settings.



Caution The rule that you created in [Step 53](#) must be selected. Otherwise, any changes you make will apply to another rule.

Table 9-28 Inbound TDM Request Matching Settings

Field	Settings
Calling Number	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Calling Name	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Called Number	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Called Name	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Redirect Number	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Redirect Name	Enter the applicable matching rule that will be used. For example, enter “*” for all.

Step 55 Under Outbound Routes, enter the following settings.



Caution The rule that you created in [Step 53](#) must be selected. Otherwise, any changes you make will apply to another rule.

Table 9-29 Outbound Routes Settings

Field	Settings
Device Selection	
Outbound Destination	Click VoIP .
Host Group	Click the name of the VoIP host group that you created for Cisco Unity Connection in Step 28 .
CPID Manipulation	
Calling Number	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Calling Name	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Called Number	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Called Name	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Redirect Number	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Redirect Name	Enter the applicable matching rule that will be used. For example, enter “*” for all.
Select Primary/Alternate Route	
Primary	Click Primary .

- Step 56** If you want to create more Inbound TDM rules, under Inbound TDM Rules, click **Add Rule**. Otherwise, continue to [Step 58](#).
- Step 57** Repeat [Step 53](#) through [Step 56](#) for all remaining inbound TDM rules that you want to create.
- Step 58** Click **Submit**.
- Step 59** On the Configuration menu, click **TDM > Digital**.
- Step 60** On the Digital Telephony page, in the Telephony Switch Type field, click **M1**.
- Step 61** Click **Submit**.
- Step 62** On the Configuration menu, click **TDM > General**.
- Step 63** On the TDM General Settings page, enter the following settings.

Table 9-30 TDM General Settings Page Settings

Field	Settings
PCM Coding	Click uLaw .
Minimum Call Party Delay (ms)	Enter 500 .
Maximum Call Party Delay (ms)	Enter 2000 .
Dial Digit on Time (ms)	Enter 100 .
Dial Inter-Digit Time (ms)	Enter 100 .
Dial Pause Time (ms)	Enter 2000 .
Turn MWI On FAC	Leave this field blank.
Turn MWI Off FAC	Leave this field blank.
Outbound Call Connect Timeout (ms)	Enter 10000 .
Wait for Ringback/Connect on Blind Transfer	Click Yes .
Hunt Group Extension	Enter the pilot number of the Cisco Unity Connection voice messaging ports.

- Step 64** Click **Submit**.
- Step 65** On the Configuration menu, click **TDM > Port Enable**.
- Step 66** On the TDM Port Enabling page, click **No** for the ports that you want to disable on the PIMG unit.
- Step 67** Confirm that **Yes** is selected for all other ports on the PIMG unit.
- Step 68** Click **Submit**.
- Step 69** On the Configuration menu, click **VoIP > General**.
- Step 70** On the VoIP General Settings page, enter the following settings.

Table 9-31 VoIP General Settings Page Settings



Field	Setting
User-Agent	
Host and Domain Name	Enter the host and domain name of the PIMG unit.
Transport Type	Click UDP .
Call as Domain Name	Click No .
Invite Expiration (sec)	Enter 120 .
Server	
DNS Server Address	Enter the IP Address of the Domain Name Server that the PIMG unit will use.
Registration Server Address	Leave this field blank.
Registration Server Port	Enter 5060 .
Registration Expiration (sec)	Enter 3600 .
TCP/UDP	
UDP/TCP Transports Enabled	Click Yes .
TCP/UDP Server Port	Enter 5060 .
Proxy	
Primary Proxy Server Address	Leave this field blank.
Primary Proxy Server Port	Not applicable. Leave the default setting.
Backup Proxy Server Address	Not applicable. Leave the default setting.
Backup Proxy Server Port	Not applicable. Leave the default setting.
Proxy Query Interval	Enter 10 .
Timing	
T1 Time (ms)	Enter 400 .
T2 Time (ms)	Enter 3000 .
Monitoring	
Monitor Call Connections	Click No .

Step 71 Click **Submit**.

Step 72 On the Configuration menu, click **VoIP > Media**.

Step 73 On the VoIP Media Settings page, enter the following settings.

Table 9-32 VoIP Media Settings Page Settings

Field	Settings
Audio	
Audio Compression	Click the preferred codec for audio compression.
RTP Digit Relay Mode	Click RFC2833 .
Signaling Digit Relay Mode	Click Off .
Voice Activity Detection	Click Off .
Frame Size	Click the applicable setting: <ul style="list-style-type: none"> • G.711—20 • G.729AB—10 <div style="text-align: center;"></div> <p>Caution Failure to use the correct setting will result in recorded messages containing nothing but silence.</p>
Frames Per Packet	Click the applicable setting: <ul style="list-style-type: none"> • G.711—1 • G.729AB—2 <div style="text-align: center;"></div> <p>Caution Failure to use the correct setting will result in recorded messages containing nothing but silence.</p>

Step 74 Click **Submit**.

Step 75 On the Configuration menu, click **VoIP > QOS**.

Step 76 On the VoIP QOS Configuration page, enter the following settings.

Table 9-33 VoIP QOS Configurative Page Settings

Field	Settings
Call Control QOS Byte	Enter 104 .
RTP QOS Byte	Enter 184 .

Step 77 Click **Submit**.

Step 78 On the Configuration menu, click **IP**.

Step 79 On the IP Settings page, enter the following settings.

Table 9-34 IP Settings Page Settings

Field	Settings
Client IP Address	Enter the new IP address you want to use for the PIMG unit. (This is the IP address that you enter in Cisco Unity Connection Administration when you create the integration.)
Client Subnet Mask	Enter the new subnet mask, if the subnet mask is different from the default IP address.
Default Network Gateway Address	Enter the IP address of the default network gateway router that the PIMG units will use.
BOOTP Enabled	Click No .

- Step 80** Click **Submit**.
- Step 81** On the Configuration menu, click **Tone Detection**.
- Step 82** On the Tone Detection page, under Call Progress Tone - Learn, in the Learn Tone Event field, click **Busy** and do the following substeps to verify that the tone is correct.
- From a available phone, call a second phone.
 - Answer the second phone when it rings, and leave both handsets off so that both phones are busy.
 - From a third phone, dial one of the busy phones.
 - Confirm that you hear a busy tone.
 - Hang up the third phone but leave the handsets for the other two phones off.
- Step 83** Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 82c](#) from the third phone.
- Step 84** Click **Learn**.
- Step 85** On the Tone Detection page, under Call Progress Tone - Learn, in the Learn field, click **Error** and do the following substeps to verify that the tone is correct.
- From an available phone, dial an extension that does not exist.
 - Confirm that you hear the reorder or error tone.
 - Hang up the phone.
- Step 86** Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 85a](#).
- Step 87** Click **Learn**.
- Step 88** On the Tone Detection page, under Call Progress Tone - Learn, in the Learn field, click **Ringback** and do the following substeps to verify that the tone is correct.
- From an available phone, dial an extension that does exist
 - Confirm that you hear the ringback tone.
 - Hang up the phone.
- Step 89** Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 88a](#).
- Step 90** Click **Learn**.
- Step 91** Click **Submit**.
- Step 92** Hang up the phones that you used in [Step 82](#).

- Step 93** On the System menu, click **Restart**.
- Step 94** On the Restart page, click **Restart Unit Now**.
- Step 95** Repeat [Step 2](#) through [Step 94](#) on all remaining PIMG units.

Creating a New Integration with the Nortel Meridian 1 Phone System

Revised August 14, 2009

After ensuring that the Nortel Meridian 1 phone system, the PIMG units, and Cisco Unity Connection are ready for the integration, do the following procedure to set up the integration and to enter the port settings.


To Create an Integration

- Step 1** Log on to Cisco Unity Connection Administration.
- Step 2** In Cisco Unity Connection Administration, expand **Telephony Integrations**, then click **Phone System**.
- Step 3** On the Search Phone Systems page, under Display Name, click the name of the default phone system.
- Step 4** On the Phone System Basics page, in the Phone System Name field, enter the descriptive name that you want for the phone system.
- Step 5** If you want to use this phone system for TRaP connections (when users record and playback through the phone in Cisco Unity Connection web applications), check the Default TRAP Switch check box. If you want to use another phone system for TRaP connections, uncheck this check box.
- Step 6** Click **Save**.
- Step 7** On the Phone System Basics page, in the Related Links drop-down box, click **Add Port Group** and click **Go**.
- Step 8** On the New Port Group page, enter the applicable settings and click **Save**.

Table 9-35 Settings for the New Port Group Page

Field	Setting
Phone System	Click the name of the phone system that you entered in Step 4 .
Create From	Click Port Group Template and click SIP to DMG/PIMG/TIMG in the drop-down box.
Display Name	Enter a descriptive name for the port group. You can accept the default name or enter the name that you want.
SIP Security Profile	Click 5060 .
SIP Transport Protocol	Click the SIP transport protocol that Cisco Unity Connection will use.

Table 9-35 Settings for the New Port Group Page (continued)

Field	Setting
IP Address or Host Name	Enter the IP address of the PIMG unit that you are integrating with Cisco Unity Connection.
Port	Enter the SIP port of the PIMG unit that Cisco Unity Connection will connect to. We recommend that you use the default setting.
	 <p>Caution This name must match the setting in the TCP/UDP Server Port field on the Configuration > VoIP > General page of the PIMG unit. Otherwise, the integration will not function correctly.</p>

Step 9 In the Related Links drop-down box, click **Add Ports** and click **Go**.

Step 10 On the New Port page, enter the following settings and click **Save**.

Table 9-36 Settings for the New Ports Page

Field	Considerations
Enabled	Check this check box.
Number of Ports	Enter 8 . (If you want to use fewer than eight voice messaging ports, enter the number of voice messaging ports that you want to use on this PIMG unit.) Note For a Cisco Unity Connection cluster, the Cisco Unity Connection server must have the number of voice messaging ports that are set up on the phone system for the PIMG integration so that this Cisco Unity Connection server can handle all voice messaging traffic for the Cisco Unity Connection cluster if one of the servers stops functioning. For example, if the phone system is set up with 16 voice messaging ports, this Cisco Unity Connection server must have 16 voice messaging ports.
Phone System	Click the name of the phone system that you entered in Step 4 .
Port Group	Click the name of the port group that you added in Step 8 .

Step 11 On the Search Ports page, click the display name of the first voice messaging port that you created for this phone system integration.



Note By default, the display names for the voice messaging ports are composed of the port group display name followed by incrementing numbers.

Step 12 On the Port Basics page, set the voice messaging port settings as applicable. The fields in the following table are the ones that you can change.

Table 9-37 Settings for the Voice Messaging Ports

Field	Considerations
Enabled	Check this check box to enable the port. The port is enabled during normal operation. Uncheck this check box to disable the port. When the port is disabled, calls to the port get a ringing tone but are not answered. Typically, the port is disabled only by the installer during testing.
Extension	Enter the extension for the port as assigned on the phone system.
Answer Calls	Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from users.
Perform Message Notification	Check this check box to designate the port for notifying users of messages. Assign Perform Message Notification to the least busy ports.
Send MWI Requests	Check this check box to designate the port for turning MWIs on and off. Assign Send MWI Requests to the least busy ports.
Allow TRAP Connections	Check this check box so that users can use the port for recording and playback through the phone in Cisco Unity Connection web applications. Assign Allow TRAP Connections to the least busy ports.
Outgoing Hunt Order	Enter the priority order in which Cisco Unity Connection will use the ports when dialing out (for example, if the Perform Message Notification, Send MWI Requests, or Allow TRAP Connections check box is checked). The highest numbers are used first. However, when multiple ports have the same Outgoing Hunt Order number, Cisco Unity Connection will use the port that has been idle the longest.

Step 13 Click **Save**.

Step 14 Click **Next**.

Step 15 Repeat [Step 12](#) through [Step 14](#) for all remaining voice messaging ports for the phone system.

Step 16 In Cisco Unity Connection Administration, expand **Telephony Integrations**, then click **Phone System**.

Step 17 On the Search Phone Systems page, under Display Name, click the name of the phone system that you entered in [Step 4](#).

Step 18 Repeat [Step 7](#) through [Step 17](#) for each remaining PIMG unit that will be integrated with Cisco Unity Connection.



Note Each PIMG unit is connected to one port group with the applicable voice messaging ports. For example, a system that uses five PIMG units requires five port groups, one port group for each PIMG unit.

Step 19 If another phone system integration exists, in Cisco Unity Connection Administration, expand **Telephony Integrations**, then click **Trunk**. Otherwise, skip to [Step 23](#).

Step 20 On the Search Phone System Trunks page, on the Phone System Trunk menu, click **New Phone System Trunk**.

Step 21 On the New Phone System Trunk page, enter the following settings for the phone system trunk and click **Save**.

Table 9-38 Settings for the Phone System Trunk

Field	Setting
From Phone System	Enter the display name of the phone system that you are creating a trunk for.
To Phone System	Enter the display name of the previously existing phone system that the trunk will connect to.
Trunk Access Code	Enter the extra digits that Cisco Unity Connection must dial to transfer calls through the gateway to extensions on the previously existing phone system.

Step 22 Repeat [Step 20](#) and [Step 21](#) for all remaining phone system trunks that you want to create.

Step 23 In the Related Links drop-down list, click **Check Telephony Configuration** and click **Go** to confirm the phone system integration settings.

If the test is not successful, the Task Execution Results displays one or more messages with troubleshooting steps. After correcting the problems, test the connection again.

Step 24 In the Task Execution Results window, click **Close**.
