



# NEC NEAX 2400 PIMG Integration Guide for Cisco Unity Connection 1.2

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This document provides instructions for integrating the NEC NEAX 2400 phone system with Cisco Unity Connection by using the Intel NetStructure PBX-IP Media Gateway (PIMG).

## Integration Tasks

Before doing the following tasks to integrate Cisco Unity Connection with the NEC NEAX 2400 phone system, confirm that the Cisco Unity Connection server is ready for the integration by completing the applicable tasks in the *Cisco Unity Connection Installation Guide*.

The following task list describes the process for creating an integration.

## Task List to Create the Integration

Use the following task list to set up a new integration with the NEC NEAX 2400 phone system. If you are installing a new Cisco Unity Connection server by using the *Cisco Unity Connection Installation Guide*, you may have already completed some of the following tasks.

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 2](#).
2. Plan how the voice messaging ports will be used by Cisco Unity Connection. See the [“Planning How the Voice Messaging Ports Will Be Used by Cisco Unity Connection” section on page 4](#).
3. Program the NEC NEAX 2400 phone system and extensions. See the [“Programming the NEC NEAX 2400 Phone System” section on page 6](#).
4. Set up the PIMG units. See the [“Setting Up the PIMG Units” section on page 8](#).
5. Create the integration. See the [“Creating a New Integration with the NEC NEAX 2400 Phone System” section on page 15](#).
6. Test the integration. See the [“Testing the Integration” section on page 18](#).



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7. If this integration is a second or subsequent integration, add the applicable new user templates for the new phone system. See the [\(Multiple Integrations Only\) Adding New User Templates, page 21](#).

## Requirements

The NEC NEAX 2400 integration supports configurations of the following components:

### Phone System

- One of the following NEC NEAX 2400 phone systems:
  - IMG
  - IMX
  - IPX (release 15 or later)
- One or more of the applicable PIMG units. For details, refer to the “Supported Circuit-Switched Phone System Integrations” section of *Cisco Unity Connection System Requirements, and Supported Hardware and Software* at [http://www.cisco.com/en/US/products/ps6509/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html).
- 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 network latency.
- The phone system ready for the integration, as described in the documentation for the phone system.

### Cisco Unity Connection Server

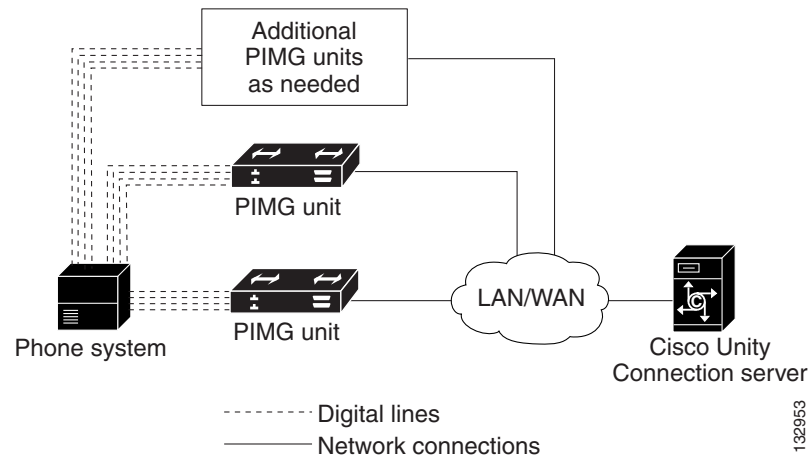
- Cisco Unity Connection installed and ready for the integration, as described in the *Cisco Unity Connection Installation Guide* at [http://www.cisco.com/en/US/products/ps6509/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html).
-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

# Integration Description

The NEC NEAX 2400 PIMG integration sends call information and voice connections through the digital lines, which connect the phone system to the PIMG units. The PIMG units communicate with the Cisco Unity Connection server through the LAN or WAN by using Session Initiation Protocol (SIP).

Figure 1 shows the required connections.

**Figure 1** Connections Between the Phone System and Cisco Unity Connection



## Call Information

The phone system sends the following information with forwarded calls:

- The extension of the called party
- The extension of the calling party (for internal calls) or the phone number of the calling party (if it is an external call and the system uses caller ID)
- The reason for the forward (the extension is busy, does not answer, or is set to forward all calls)

Cisco Unity Connection uses this information to answer the call appropriately. For example, a call forwarded to Cisco Unity Connection is answered with the personal greeting of the user. If the phone system routes the call to Cisco Unity Connection without this information, Cisco Unity Connection answers with the opening greeting.

## Integration Functionality

The NEC NEAX 2400 integration with Cisco Unity Connection provides the following features:

- Call forward to personal greeting
- Call forward to busy greeting
- Caller ID
- Easy message access (a subscriber can retrieve messages without entering an ID because Cisco Unity Connection identifies the subscriber based on the extension from which the call originated; a password may be required)

- Identified subscriber messaging (Cisco Unity Connection identifies the subscriber who leaves a message during a forwarded internal call, based on the extension from which the call originated)
- Message waiting indication (MWI)

## Integrations with Multiple Phone Systems

Cisco Unity Connection can be integrated with multiple phone systems at one time. For information on and instructions for integrating Cisco Unity Connection with multiple phone systems, refer to the *Multiple Phone System Integration Guide* at [http://www.cisco.com/en/US/products/ps6509/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps6509/products_installation_and_configuration_guides_list.html).

# Planning How the Voice Messaging Ports Will Be Used by Cisco Unity Connection

Before programming the phone system, you need to plan how the voice messaging ports will be used by Cisco Unity Connection. The following considerations will affect the programming for the phone system (for example, setting up the hunt group or call forwarding for the voice messaging ports):

- The number of voice messaging ports installed.
- The number of voice messaging ports that will answer calls.
- The number of voice messaging ports that will only dial out, for example, to send message notification, to set message waiting indicators (MWIs), and to make telephone record and playback (TRAP) connections.

The following table describes the voice messaging port settings in Cisco Unity Connection that can be set on Telephony Integrations > Port of Cisco Unity Connection Administration.

**Table 1**      **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.

**Table 1**      **Settings for the Voice Messaging Ports (continued)**

Field	Considerations
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.

**The Number of Voice Messaging Ports to Install**

The number of voice messaging ports to install depends on numerous factors, including:

- The number of calls Cisco Unity Connection will answer when call traffic is at its peak.
- The expected length of each message that callers will record and that users will listen to.
- The number of users.
- The number of ports that will be set to dial out only.
- The number of calls made for message notification.
- The number of MWIs that will be activated when call traffic is at its peak.
- The number of TRAP connections needed when call traffic is at its peak. (TRAP connections are used by Cisco Unity Connection web applications to play back and record over the phone.)
- The number of calls that will use the automated attendant and call handlers when call traffic is at its peak.

It is best to install only the number of voice messaging ports that are needed so that system resources are not allocated to unused ports.

**The Number of Voice Messaging Ports That Will Answer Calls**

The calls that the voice messaging ports answer can be incoming calls from unidentified callers or from users. Typically, the voice messaging ports that answer calls are the busiest.

You can set voice messaging ports to both answer calls and to dial out (for example, to send message notifications). However, when the voice messaging ports perform more than one function and are very active (for example, answering many calls), the other functions may be delayed until the voice messaging port is free (for example, message notifications cannot be sent until there are fewer calls to answer). For best performance, dedicate certain voice messaging ports for only answering incoming calls, and dedicate other ports for only dialing out. Separating these port functions eliminates the possibility of a collision, in which an incoming call arrives on a port at the same time that Cisco Unity Connection takes the port off-hook to dial out.

**The Number of Voice Messaging Ports That Will Only Dial Out, and Not Answer Calls**

Ports that will only dial out and will not answer calls can do one or more of the following:

- Notify users by phone, pager, or e-mail of messages that have arrived.
- Turn MWIs on and off for user extensions.
- Make a TRAP connection so that users can use the phone as a recording and playback device in Cisco Unity Connection web applications.

Typically, these voice messaging ports are the least busy ports.



**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.

**Preparing for Programming the Phone System**

Record your decisions about the voice messaging ports to guide you in programming the phone system.

# Programming the NEC NEAX 2400 Phone System

If you use programming options other than those supplied in the following procedure, the performance of the integration may be affected.



**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 Dialout MWI, do not send calls to it.

Do the following procedure.

**To Program the NEC NEAX 2400 Phone System by Using the Command Line Interface**

- Step 1** Log on to the NEC NEAX 2400 administration terminal and go to the Maintenance Command Menu page.
- Step 2** On the Maintenance Command Menu page, enter **14** (Installation).
- Step 3** On the Installation Menu page, enter **3** (ASYD) to assign system data.
- Step 4** Enter the following settings.

**Table 2** Assignment of System Data Settings

Field	Setting
Sys	<b>1</b>
Index	<b>78</b>
Data	<b>0B</b>

- Step 5** On the Maintenance Command Menu page, enter **6** (Station Data).
- Step 6** On the Station Data Commands page, enter **3** (ASTN) to assign the station numbers for the voice messaging ports.
- Step 7** On the Station Number Assignment page, enter the extension for the first port that will connect to the PIMG unit.



**Caution**

Confirm that the station number (extension) is not already assigned. Otherwise, the integration will not function correctly.

- Step 8** On the Station Data Commands page, enter **2** (ASCL).
- Step 9** On the Station Class Data page, assign the applicable station class information to the voice messaging port.
- Step 10** On the Station Data Commands page, enter **1** (ASDT).
- Step 11** On the Station Data page, in the LENS field, enter the applicable line equipment number for the voice messaging port.
- Step 12** On the Station Data Commands page, enter **5** (AKYD).
- Step 13** On the Key Data page, select **Assignment/Change** and press **Enter**.
- Step 14** On the Assignment of Key Data page, enter the following settings to enable the PRIMARY APPEARANCE function on Key 1.

**Table 3 Assignment of Key Data Settings for Key 1**

Field	Setting
KYN	1
KYI	2

- Step 15** Press **Esc** to move to the next operation.
- Step 16** Enter the following settings to enable the MWL SET function on Key 5.

**Table 4 Assignment of Key Data Settings for Key 5**

Field	Setting
KYN	5
FKI	9

- Step 17** Press **Esc** to move to the next operation.
- Step 18** Enter the following settings to enable the MWL CNCL function on Key 6.

**Table 5 Assignment of Key Data Settings for Key 6**

Field	Setting
KYN	6
FKY	11

- Step 19** On the Maintenance Command Menu page, enter **13** (Restriction Data).
- Step 20** On the Restriction Data Commands page, enter **2** (ASFC).
- Step 21** On the Service Feature Assignment page, enter the following settings.

**Table 6 Service Feature Assignment Settings**

Field	Setting
TN:1	SFI:74
TN:1	SFI:82

**Step 22** Program each phone to forward calls to the pilot number assigned to the voice messaging ports, based on one of the Cisco Unity call transfer types shown in [Table 7](#).

**Table 7** 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"> <li>The extension is busy.</li> <li>The call is not answered.</li> </ul>
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.

## Setting Up the PIMG Units

Do the following procedures to set up the PIMG units that are connected to the NEC NEAX 2400 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 documentation for the PIMG unit.

### To Download the PIMG Firmware Update Files for Digital PIMG Units

**Step 1** On a Windows workstation that will have access to the PIMG units, open a web browser and go to the **Cisco Unity PIMG Software Download** page at <http://www.cisco.com/cgi-bin/tablebuild.pl/unity-PIMG>.



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

**Step 2** On the Cisco Unity PIMG Software Download page, click the most recent version of the firmware for digital (DNI) PIMG units.

**Step 3** On the Details page, click **Next**.

**Step 4** On the Document page, click **Accept**.

**Step 5** In the Enter Network Password dialog box, enter your user name and password, then click **OK**.

**Step 6** In the File Download dialog box, click **Save**.

- Step 7** 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 8** In the Download Complete dialog box, click **Open**. The window for extracting the PIMG firmware update files appears.
- Step 9** Click **Extract**.
- Step 10** In the Extract dialog box, browse to the directory where you want the extracted files, and click **Extract**.
- Step 11** Close the window for the extracting application.


**To Set Up the Digital PIMG Units**

- Step 1** On the Windows workstation, add a temporary route to enable access to the PIMG units.
  - a. On the Windows Start menu, click **Run**.
  - b. Enter **cmd**, and press **Enter**. The Command Prompt window appears.
  - c. 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.
  - d. 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** On the System Login page, enter the following case-sensitive settings.

**Table 8 System Login Page Settings**

Field	Setting
Username	<b>admin</b>
Password	<b>IpodAdmin</b>

- Step 5** Click **Log On**.
- Step 6** On the Configure 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**.
- 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 Configure menu, click **Upgrade**.

**Step 14** On the Upgrade 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 Upgrade page, click **Install**.

**Step 18** After the file is installed, 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** On the System Login page, enter the following case-sensitive settings.

**Table 9** System Login Page Settings

Field	Setting
Username	admin
Password	IpodAdmin

**Step 21** Click **Log On**.

**Step 22** On the Configure menu, click **Password**.

**Step 23** On the Password page, enter the following settings.

**Table 10** Password Page Settings

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

**Step 24** Click **Change**.

**Step 25** On the Configure menu, click **System**.

**Step 26** On the System page, enter the following settings.

**Table 11 System Page Settings**

Field	Setting
Operating Mode	SIP
Telephony Switch Type	NEC_NEAX
PCM Coding	uLaw

- Step 27** Click **Apply Changes**.
- Step 28** On the Configure menu, click **Gateway**.
- Step 29** On the Gateway page, click the **Gateway Routing** tab.
- Step 30** On the Gateway Routing tab, enter the following settings.

**Table 12 Gateway Routing Tab Settings**





Field	Setting
Fault Tolerance Enabled	No
Load Balancing Enabled	No
VoIP Endpoint ID: 1	<the IP address of the Cisco Unity Connection server>
VoIP Endpoint ID: 2	<blank>

- Step 31** Click **Apply Changes**.
- Step 32** Click the **Gateway Advanced** tab.
- Step 33** On the Gateway Advanced tab, enter the following settings.

**Table 13 Gateway Advanced Tab Settings**

Field	Setting
Call Connect Mode	OnAnswer
Destination for Unroutable PBX Calls	<the extension of an attendant who will receive calls to Cisco Unity Connection that are unanswered>
Turn MWI On FAC	<blank>
Turn MWI Off FAC	<blank>
Wait for Ringback/Connect on Blind Transfer	Yes
Hunt Group Extension	<the pilot number for the Cisco Unity Connection voice messaging ports>
Audio Compression	Click the preferred codec for audio compression: <ul style="list-style-type: none"> <li>• G.711 Only</li> <li>• G.729 A Preferred</li> </ul>

**Table 13 Gateway Advanced Tab Settings (continued)**

Field	Setting
Signaling Digit Relay Mode	<b>Off</b>
Voice Activity Detection	<b>Off</b>
Frame Size	<p>Click the applicable setting:</p> <ul style="list-style-type: none"> <li>G.711—<b>20</b></li> <li>G.729a—<b>10</b></li> </ul> <p> <b>Caution</b> Failure to use the correct setting will result in recorded messages containing nothing but silence.</p>
Frames Per Packet	<p>Click the applicable setting:</p> <ul style="list-style-type: none"> <li>G.711—<b>1</b></li> <li>G.729a—<b>2</b></li> </ul> <p> <b>Caution</b> Failure to use the correct setting will result in recorded messages containing nothing but silence.</p>
Call Control QOS Byte	<p>(PIMG units connect only to a LAN) <b>0</b></p> <p>(PIMG units connect to a WAN) <b>104</b></p> <p> <b>Note</b> For details on the setting for a LAN, see the caveat <a href="#">CSCsb96387</a>.</p>
RTP QOS Byte	<p>(PIMG units connect only to a LAN) <b>0</b></p> <p>(PIMG units connect to a WAN) <b>184</b></p> <p> <b>Note</b> For details on the setting for a LAN, see the caveat <a href="#">CSCsb96387</a>.</p>

**Step 34** Click **Apply Changes**.

**Step 35** Click the **Gateway Capabilities** tab.

**Step 36** Depending on how you have planned to use the voice messaging ports, click the applicable setting for each port in the Telephony Port Capability column.

**Table 14 Gateway Capabilities Tab Settings**

Telephony Port Capability Settings	Voice Messaging Port Usage
Calls-Only	The port will answer incoming calls only and will not dial out (for example, to set MWIs or send message notifications).

**Table 14 Gateway Capabilities Tab Settings (continued)**

Telephony Port Capability Settings	Voice Messaging Port Usage
MWIs-Only	The port will dial out only (for example, to set MWIs or send message notifications) and will not answer incoming calls.
Both	The port will answer incoming calls and will also dial out (for example, to set MWIs or send message notifications).



**Caution** In setting up the PIMG unit, do not send calls to ports in Cisco Unity 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 Dialout MWI, do not send calls to it. Otherwise the integration will not function correctly.

If a port in Cisco Unity Connection is disabled, click **No** in the Telephony Port Enabled column for the corresponding port on this tab. Note that changing a setting in the Telephony Port Enabled column requires restarting the PIMG unit.

- Step 37** Click **Apply Changes**.
- Step 38** On the Configure menu, click **SIP**.
- Step 39** On the SIP page, enter the following settings.

**Table 15 SIP Page Settings**

Field	Setting
Host and Domain Name	<the domain name of the PIMG unit>
Server Port	<b>5060</b>
Primary Proxy Server Address	<the IP address of the Cisco Unity Connection server>
Primary Proxy Server Port	<b>5060</b> (When you configure more than one PIMG unit, increase this setting by 1 for each successive unit. For example, unit 2 will be 5061, unit 3 will be 5062, and so on.)
Proxy Query Interval	<b>10</b>
T1 Time	<b>400</b>
T2 Time	<b>3000</b>

- Step 40** Click **Apply Changes**.
- Step 41** On the Configure menu, click **IP**.
- Step 42** On the IP page, enter the following settings.

**Table 16 IP Page Settings**

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

- Step 43** Click **Apply Changes**.
- Step 44** On the Configure menu, click **Tones**.
- Step 45** On the Tones page, click the **Learn** tab.



**Caution** Destination addresses cannot be duplicated in the same session. Otherwise, the process for learning tones will not succeed. If you do not have enough available phones to learn all the tones at one time, you can run multiple sessions to learn tones individually by checking or unchecking the applicable Acquire Tone check boxes.

- Step 46** On the Tones page, for the Dialtone event, confirm that the Acquire Tone check box is checked and leave the Destination Address field blank.
- Step 47** On the Tones page, for the Busy Tone event, confirm that the Acquire Tone check box is checked and do the following substeps to verify that the tone is correct.
  - a. From a available phone, call a second phone.
  - b. Answer the second phone when it rings, and leave both handsets off so that both phones are busy.
  - c. From a third phone, dial one of the busy phones.
  - d. Confirm that you hear a busy tone.
  - e. Hang up the third phone but leave the handsets for the other two phones off.
- Step 48** On the Tones page, in the Destination Address field for Busy Tone, enter the extension that you dialed in [Step 47c](#). from the third phone.
- Step 49** On the Tones page, for the Error/Reorder Tone event, confirm that the Acquire Tone check box is checked and do the following substeps to verify that the tone is correct.
  - a. From an available phone, dial an extension that does not exist.
  - b. Confirm that you hear the reorder or error tone.
  - c. Hang up the phone.
- Step 50** On the Tones page, in the Destination Address field for Error/Reorder Tone, enter the extension that you dialed in [Step 49a](#).
- Step 51** On the Tones page, for the Ringback Tone event, confirm that the Acquire Tone check box is checked and do the following substeps to verify that the tone is correct.
  - a. From an available phone, dial an extension that does exist

- b. Confirm that you hear the ringback tone.
- c. Hang up the phone.

**Step 52** On the Tones page, in the Destination Address field for Ringback Tone, enter the extension that you dialed in [Step 51a](#).

**Step 53** Click **Learn**.



**Note** When running learn tones, the PIMG unit will restart after learning the first tone. For details, see the caveat [CSCsh53791](#).

**Step 54** When the process is complete, check the check box for each newly learned tone and click **Apply**.

**Step 55** Hang up the phones that you used in [Step 47](#).

**Step 56** On the Configure menu, click **Restart**.

**Step 57** On the Restart page, click **Restart Unit Now**.

**Step 58** When the PIMG unit has restarted, in the View menu, click **Refresh**.

**Step 59** Repeat [Step 2](#) through [Step 58](#) on all remaining PIMG units.


## Creating a New Integration with the NEC NEAX 2400 Phone System

After ensuring that the NEC NEAX 2400 phone system and Cisco Unity Connection are ready for the integration, do the following procedures 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, on the Phone System menu, click **New Phone System**. The Phone System Integration Wizard appears.
- Step 4** On the Select Phone System Manufacturer page, in the Manufacturer field, click **NEC** and click **Next**.
- Step 5** On the Select Phone System Model page, in the Model field, click **NEAX 2400** and click **Next**.
- Step 6** On the Set Up Phone System page, in the Phone System Name field, accept the default name or enter the descriptive name that you want, and click **Next**.
- Step 7** On the Select Port Group Template page, in the Port Group Template field, click **Digital PIMG to NEC NEAX 2400** and click **Next**.
- Step 8** On the Set Up Port Group page, enter the following settings and click **Next**.

**Table 17 Settings for the Set Up Port Group Page**

Field	Setting
Port Group Name	<a descriptive name for the port group; accept the default name or enter the name that you want>
Number of Ports	<b>8</b> (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.)
IP Address or Host Name	<the IP address of the PIMG unit that you are integrating with Cisco Unity Connection>
Test Address	Click this button to test the IP address that you entered. The results of the test appear in the field to the right of the button.
Port	<the SIP port of the PIMG unit that Cisco Unity Connection will connect to; we recommend that you use the default setting>
	 <b>Caution</b> This setting must match the setting for the Server Port field of the PIMG unit. Otherwise the integration will not function correctly.

- Step 9** On the Confirm Phone System Settings page, confirm the settings that you have entered and click **Finish**.
- Step 10** On the Phone System Creation Summary page, click **Close**.
- Step 11** In Cisco Unity Connection Administration, expand **Telephony Integrations**, then click **Port**.
- Step 12** 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 13** 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 18 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.

**Table 18** Settings for the Voice Messaging Ports (continued)

Field	Considerations
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 14** Click **Save**.
- Step 15** Click **Next**.
- Step 16** Repeat [Step 13](#) through [Step 15](#) for all remaining voice messaging ports for the phone system.
- Step 17** If another phone system integration exists, in Cisco Unity Connection Administration, expand **Telephony Integrations**, then click **Trunk**. Otherwise, skip to [Step 21](#).
- Step 18** On the Search Phone System Trunks page, on the Phone System Trunk menu, click **New Phone System Trunk**.
- Step 19** On the New Phone System Trunk page, enter the following settings for the phone system trunk and click **Save**.

**Table 19** Settings for the Phone System Trunk

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

- Step 20** Repeat [Step 18](#) and [Step 19](#) for all remaining phone system trunks that you want to create.
- Step 21** If prompted to restart Cisco Unity Connection, in the Windows task bar, right-click the **Cisco Unity Connection** icon and click **Restart > Voice Processing Server Role**.
- Step 22** When prompted to confirm stopping the Voice Processing server role, click **Yes**.
- Step 23** In Cisco Unity Connection Administration, 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**.
- Step 25** Log off Cisco Unity Connection Administration.

# Testing the Integration

To test whether Cisco Unity Connection and the phone system are integrated correctly, do the following procedures in the order listed.

If any of the steps indicate a failure, refer to the following documentation as applicable:

- The installation guide for the phone system.
- The setup information earlier in this guide.

## To Set Up the Test Configuration

**Step 1** Set up two test extensions (Phone 1 and Phone 2) on the same phone system that Cisco Unity Connection is connected to.

**Step 2** Set Phone 1 to forward calls to the Cisco Unity Connection pilot number when calls are not answered.



**Caution** The phone system must forward calls to the Cisco Unity Connection pilot number in no fewer than four rings. Otherwise, the test may fail.

**Step 3** To create a test user for testing, in Cisco Unity Connection Administration, expand **Users**, then click **Users**.

**Step 4** On the Search Users page, on the User menu, click **New User**.

**Step 5** On the New User page, enter the following settings.

**Table 20** Settings for the New User Page

Field	Setting
User Type	<b>User with Voice Mailbox</b>
Based on Template	<the applicable user template>
Alias	<b>testuser</b>
First Name	<b>Test</b>
Last Name	<b>User</b>
Display Name	<b>Test User</b>
Extension	<the extension of Phone 1>

**Step 6** Click **Save**.

**Step 7** On the Edit User Basics page, in the Voice Name field, record a voice name for the test user.

**Step 8** In the Phone System field, confirm that the phone system selected is the phone system that Phone 1 is connected to.

**Step 9** Uncheck the **Set for Self-enrollment at Next Login** check box.

**Step 10** Click **Save**.

**Step 11** On the Edit menu, click **Message Waiting Indicators**.

**Step 12** On the Message Waiting Indicators page, click the message waiting indicator. If no message waiting indication is in the table, click **Add New**.

**Step 13** On the Edit Message Waiting Indicator page, enter the following settings.

**Table 21 Settings for the Edit MWI Page**

Field	Setting
Enabled	Check this check box to enable MWIs for the test user.
Display Name	Accept the default or enter a different name.
Inherit User's Extension	Check this check box to enable MWIs on Phone 1.

**Step 14** Click **Save**.

**Step 15** On the Edit menu, click **Transfer Options**.

**Step 16** On the Transfer Options page, click the active option.

**Step 17** On the Edit Transfer Option page, under Transfer Action, click the **Extension** option and enter the extension of Phone 1.

**Step 18** In the Transfer Type field, click **Release to Switch**.

**Step 19** Click **Save**.

**Step 20** Minimize the Cisco Unity Connection Administration window.

Do not close the Cisco Unity Connection Administration window because you will use it again in a later procedure.

**Step 21** On the Cisco Unity Connection desktop, double-click the **Tools Depot** icon.

**Step 22** In the left pane of the Tools Depot window, expand **Switch Integration Tools**, then double-click **Port Status Monitor**. The Port Status Monitor window appears.

**Step 23** On the Ports menu, click **Start All**, and arrange the port monitors so that you can notice which port will handle the calls that you will make.

---

**To Test an External Call with Release Transfer**

**Step 1** From Phone 2, enter the access code necessary to get an outside line, then enter the number outside callers use to dial directly to Cisco Unity Connection.

**Step 2** In the Port Status Monitor, note which port handles this call.

**Step 3** When you hear the opening greeting, enter the extension for Phone 1. Hearing the opening greeting means that the port is configured correctly.

**Step 4** Confirm that Phone 1 rings and that you hear a ringback tone on Phone 2. Hearing a ringback tone means that Cisco Unity Connection correctly released the call and transferred it to Phone 1.

**Step 5** Leaving Phone 1 unanswered, confirm that the state of the port handling the call changes to "Idle." This state means that release transfer is successful.

**Step 6** Confirm that, after the number of rings that the phone system is set to wait, the call is forwarded to Cisco Unity Connection and that you hear the greeting for the test user. Hearing the greeting means that the phone system forwarded the unanswered call and the call-forward information to Cisco Unity Connection, which correctly interpreted the information.

**Step 7** On the Port Status Monitor, note which port handles this call.

- Step 8** Leave a message for the test user and hang up Phone 2.
  - Step 9** In the Port Status Monitor, confirm that the state of the port handling the call changes to “Idle.” This state means that the port was successfully released when the call ended.
  - Step 10** Confirm that the MWI on Phone 1 is activated. The activated MWI means that the phone system and Cisco Unity Connection are successfully integrated for turning on MWIs.
- 

#### To Test Listening to Messages

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- Step 1** From Phone 1, enter the internal pilot number for Cisco Unity Connection.
  - Step 2** When asked for your password, enter the password for the test user. Hearing the request for your password means that the phone system sent the necessary call information to Cisco Unity Connection, which correctly interpreted the information.
  - Step 3** Confirm that you hear the recorded voice name for the test user (if you did not record a voice name for the test user, you will hear the extension number for Phone 1). Hearing the voice name means that Cisco Unity Connection correctly identified the user by the extension.
  - Step 4** Listen to the message.
  - Step 5** After listening to the message, delete the message.
  - Step 6** Confirm that the MWI on Phone 1 is deactivated. The deactivated MWI means that the phone system and Cisco Unity Connection are successfully integrated for turning off MWIs.
  - Step 7** Hang up Phone 1.
  - Step 8** On the Port Status Monitor, confirm that the state of the port handling the call changes to “Idle.” This state means that the port was successfully released when the call ended.
- 

#### To Set Up Supervised Transfer on Cisco Unity Connection

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- Step 1** In Cisco Unity Connection Administration, on the Edit Transfer Option page for the test user, in the Transfer Type field, click **Supervise Transfer**.
  - Step 2** In the Rings to Wait For field, enter **3**.
  - Step 3** Click **Save**.
  - Step 4** Minimize the Cisco Unity Connection Administration window.  
Do not close the Cisco Unity Connection Administration window because you will use it again in a later procedure.
- 

#### To Test Supervised Transfer

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- Step 1** From Phone 2, enter the access code necessary to get an outside line, then enter the number outside callers use to dial directly to Cisco Unity Connection.
- Step 2** On the Port Status Monitor, note which port handles this call.
- Step 3** When you hear the opening greeting, enter the extension for Phone 1. Hearing the opening greeting means that the port is configured correctly.

- Step 4** Confirm that Phone 1 rings and that you do not hear a ringback tone on Phone 2. Instead, you should hear the indication your phone system uses to mean that the call is on hold (for example, music).
  - Step 5** Leaving Phone 1 unanswered, confirm that the state of the port handling the call remains “Busy.” This state and hearing an indication that you are on hold mean that Cisco Unity Connection is supervising the transfer.
  - Step 6** Confirm that, after three rings, you hear the greeting for the test user. Hearing the greeting means that Cisco Unity Connection successfully recalled the supervised-transfer call.
  - Step 7** During the greeting, hang up Phone 2.
  - Step 8** On the Port Status Monitor, confirm that the state of the port handling the call changes to “Idle.” This state means that the port was successfully released when the call ended.
  - Step 9** Exit the Port Status Monitor.
- 

#### To Delete the Test User

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- Step 1** In Cisco Unity Connection Administration, expand **Users**, then click **Users**.
  - Step 2** On the Search Users page, check the check box to the left of the test user.
  - Step 3** Click **Delete Selected**.
- 

## (Multiple Integrations Only) Adding New User Templates

When you create the first phone system integration, this phone system is automatically selected in the default user template. The users that you add after creating this phone system integration will be assigned to this phone system by default.

However, for each additional phone system integration that you create, you must add the applicable new user templates that will assign users to the new phone system. You must add the new templates before you add new users who will be assigned to the new phone system.

For details on adding new user templates, refer to the “Adding, Changing, or Deleting an Account Template” chapter in the *Cisco Unity Connection User Moves, Adds, and Changes Guide* at [http://www.cisco.com/en/US/products/ps6509/prod\\_maintenance\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps6509/prod_maintenance_guides_list.html).

For details on selecting a user template when adding a new user, refer to the applicable chapter for adding user accounts in the *Cisco Unity Connection User Moves, Adds, and Changes Guide* at [http://www.cisco.com/en/US/products/ps6509/prod\\_maintenance\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps6509/prod_maintenance_guides_list.html).

# Appendix: Documentation and Technical Assistance

## Conventions

The *NEC NEAX 2400 PIMG Integration Guide for Cisco Unity Connection 1.2* uses the following conventions.

**Table 22** *NEC NEAX 2400 PIMG Integration Guide for Cisco Unity Connection 1.2 Conventions*

Convention	Description
boldfaced text	Boldfaced text is used for: <ul style="list-style-type: none"> <li>Key and button names. (Example: Click <b>OK</b>.)</li> <li>Information that you enter. (Example: Enter <b>Administrator</b> in the User Name box.)</li> </ul>
< > (angle brackets)	Angle brackets are used around parameters for which you supply a value. (Example: In the Command Prompt window, enter <b>ping &lt;IP address&gt;</b> .)
- (hyphen)	Hyphens separate keys that must be pressed simultaneously. (Example: Press <b>Ctrl-Alt-Delete</b> .)
> (right angle bracket)	A right angle bracket is used to separate selections that you make: <ul style="list-style-type: none"> <li>On menus. (Example: On the Windows Start menu, click <b>Programs &gt; Cisco Unified Serviceability &gt; Real-Time Monitoring Tool</b>.)</li> <li>In the navigation bar of Cisco Unity Connection Administration. (Example: In Cisco Unity Connection Administration, expand <b>System Settings &gt; Advanced</b>.)</li> </ul>
[x] (square brackets)	Square brackets enclose an optional element (keyword or argument). (Example: [reg-e164])
[x   y] (vertical line)	Square brackets enclosing keywords or arguments separated by a vertical line indicate an optional choice. (Example: [transport tcp   transport udp])
{x   y} (braces)	Braces enclosing keywords or arguments separated by a vertical line indicate a required choice. (Example: {tcp   udp})

The *NEC NEAX 2400 PIMG Integration Guide for Cisco Unity Connection 1.2* also uses the following conventions:



### Note

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the document.

**Caution**

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

For descriptions and URLs of Cisco Unity Connection documentation on Cisco.com, see the *About Cisco Unity Connection Documentation*. The document is shipped with Cisco Unity Connection and is available at

[http://www.cisco.com/en/US/products/ps6509/products\\_documentation\\_roadmaps\\_list.html](http://www.cisco.com/en/US/products/ps6509/products_documentation_roadmaps_list.html).

## Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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