



Setting Up an NEC NEAX 2400 Digital PIMG Integration with Cisco Unity Connection

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Setting Up an NEC NEAX 2400 Digital PIMG Integration

Task List for NEC NEAX 2400 PIMG Phone System Integration

Before doing the following tasks to integrate Unity Connection with the NEC NEAX 2400 phone system using PIMG units (media gateways), confirm that the Unity Connection server is ready for the integration after completing the server installation, following the tasks in the “[Installing Cisco Unity Connection](#)” chapter of the *Install, Upgrade, and Maintenance Guide for Cisco Unity Connection Release 15*, available at https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/15/install_upgrade/guide/b_15cuciumg.html.

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.
2. Plan how the voice messaging ports are used by Unity Connection. See the [Planning the Usage of Voice Messaging Ports](#) chapter.
3. Program the NEC NEAX 2400 phone system and extensions. See the [Programming NEC NEAX 2400 PIMG Phone System Integration](#) section.
4. Set up the PIMG units. See the [Setting Up Digital PIMG Units](#) section.
5. Create the integration. See the [Configuring Unity Connection for Integration with NEC NEAX 2400 Phone System, on page 20](#) section.
6. Test the integration. See the [Testing the Integration](#) chapter.
7. If this integration is a second or subsequent integration, add the applicable new user templates for the new phone system. See the [Integrations with Multiple Phone Systems](#) chapter.

Requirements

This 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, see the “[Introduction](#)” chapter.
- The voice messaging ports in the phone system connected by digital lines to the ports on the PIMG units.

To simplify troubleshooting, we recommend that you connect the voice messaging ports on the phone system to the ports on the PIMG units in a planned manner. For example, connect the first phone system voice messaging port to the first port on the first PIMG unit, connect the second phone system voice messaging port to the second port on the first PIMG unit, and so on. Alternatively, if you have multiple PIMG units, you can reduce answer times in the event of a PIMG unit failure by connecting the phone system ports to the PIMG units in a round-robin fashion. For example, connect the first phone system voice messaging port to the first port on the first PIMG unit, connect the second phone system voice messaging port to the first port on the second PIMG unit, and so on.

- The PIMG units connected to the same LAN or WAN that 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.

Unity Connection Server

- Unity Connection installed following the tasks in the “[Installing Cisco Unity Connection](#)” chapter of the *Install, Upgrade, and Maintenance Guide for Cisco Unity Connection Release 15*, available at https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/15/install_upgrade/guide/b_15cuciumg.html.
- A license that enables the applicable number of voice messaging ports.

Programming NEC NEAX 2400 PIMG Phone System Integration

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 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.

Do the following steps to program the NEC NEAX 2400 phone system using Command Line Interface

Step 1 Sign in 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 1: Assignment of System Data Settings

| Field | Setting |
|-------|-------------------|
| Sys | Enter 1 . |
| Index | Enter 78 . |
| Data | Enter 0B . |

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 connects to the PIMG unit. Confirm that the station number (extension) is not already assigned. Otherwise, the integration cannot 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 2: Assignment of Key Data Settings for Key 1

| Field | Setting |
|-------|------------------|
| KYN | Enter 1 . |
| KYI | Enter 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 3: Assignment of Key Data Settings for Key 5

| Field | Setting |
|-------|------------------|
| KYN | Enter 5 . |
| FKI | Enter 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 4: Assignment of Key Data Settings for Key 6

| Field | Setting |
|-------|-------------------|
| KYN | Enter 6 . |
| FKY | Enter 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 5: Service Feature Assignment Settings

| Field | Setting |
|-------|-----------------------|
| TN:1 | Enter SFI:74 . |
| TN:1 | Enter 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 Unity Connection call transfer types shown in [Table 6: Call Transfer Types](#).

Table 6: 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. |

Setting Up Digital PIMG Units

Do the following procedures to set up the digital 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 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.

Downloading the PIMG Firmware Update Files for Digital PIMG Units

<http://software.cisco.com/download/navigator.html?mdfid=280082558&i=rm>.



Note To access the software download page, you must be signed in 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.

1. In the tree control on the Downloads Home page, expand Unified Communications> **Unified Communications Applications** > **Messaging** > **Cisco Unity** and select **Cisco Unity Telephony Integration**.
2. On the Log In page, enter your username and password, then select **Log In**.
3. On the Select a Release page, under Latest Releases, select the most recent release.
4. In the right column, select the version of the firmware for digital PIMG units.
5. On the Download Image page, select **Download**.
6. On the Supporting Document(s) page, select **Agree**.
7. In the File Download dialog box, select **Save**.
8. In the Save As dialog box, browse to the Windows workstation that have access the PIMG units, browse to a directory where you want to save the file, and select **Save**.
9. In the Download Complete dialog box, select **Open**. The window for extracting the PIMG firmware update files appears and select **Extract**.
10. In the Extract dialog box, browse to the directory where you want the extracted files, and select **Extract**.
11. Close the window for the extracting application.

On a Windows workstation that have access to the PIMG units, go to the following link:

Setting 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, select **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 sign in, enter the following case-sensitive settings.

Table 7: Sign-in Settings

| Field | Setting |
|----------|--------------------------|
| Username | Enter admin . |
| Password | Enter IpodAdmin . |

Step 5 Select **OK**.

Step 6 On the System menu, select **Upgrade**.

Step 7 On the Upgrade page, select **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 Select **Ami<xx> .app** (where <xx> is multiple digits), and select **Open**.

Step 10 On the Upgrade page, select **Install File**.

Step 11 After the file is installed, a message prompting you to restart the PIMG unit appears. Select **Cancel**.

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, select **Import/Export**.

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

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

- Step 16** Select **DNI_Cfg_Generic.ini**, and select **Open**.
- Step 17** On the Import/Export page, select **Import File**.
- Step 18** After the file is imported, a message prompting you to restart the PIMG unit appears. Select **OK**.
- Step 19** In the web browser, go to **http://10.12.13.74**.
- Step 20** To sign in, enter the following case-sensitive settings.

Table 8: Sign-in Settings

| Field | Setting |
|----------|--------------------------|
| Username | Enter admin . |
| Password | Enter IpodAdmin . |

- Step 21** Select **OK**.
- Step 22** Do the following substeps to configure an RTP port range of 16384 to 32767.
- You must set the RTP port range for the PIMG units if your system uses an RTP port range of 16384 to 32767. Otherwise, Unity Connection cannot answer calls and callers hear ringing or silence.

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

- a) On the Configuration menu, select **Import/Export**.
- b) On the Import/Export page, under Export Settings, select **Export All Settings**.
- c) In the File Download dialog box, select **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 select **Save**.
- e) In the Download Complete dialog box, select **Open**. Notepad opens the file Config.ini that you saved.
- f)
- g)
- h) Locate the line with the following parameter:


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


```
gwRTPStartPort = 16384
```
- j) Locate the line with the following parameter:


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


```
gwRTPEndPort = 32767
```
- l) Save the file, and exit Notepad.
- m) On the Configuration menu of the PIMG unit, select **Import/Export**.
- n) On the Import/Export page, under Browse for Import File, select **Browse**.
- o) In the Choose File dialog box, browse to the file Config.ini that you saved.

- p) Select **Config.ini**, and select **Open**.
- q) On the Import/Export page, select **Import File**.
- r) When prompted to restart the PIMG unit, select **OK**.
- s) When the PIMG unit has restarted, in the web browser, go to **http://10.12.13.74**.
- t) To sign in, enter the following case-sensitive settings.

Table 9: Sign-in Settings

| Field | Setting |
|----------|--------------------------|
| Username | Enter admin . |
| Password | Enter IpodAdmin . |

- u) Select **OK**.

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

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

Table 10: 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 Select **Change**.

Step 26 On the Configuration menu, select **Routing Table**.

Step 27 On the Routing Table page, under Router Configuration, select **VoIP Host Groups**.

Step 28 Under VoIP Host Groups, enter the following settings for the first VoIP Host Group.

Table 11: First VoIP Host Group Settings

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

Step 29 For Unity Connection without a cluster, under Host List, enter the host name or IP address of the Unity Connection server and the server port in the format <host name or IP address>:5060.

For Unity Connection with a cluster configured, under Host List, enter the host name or IP address of the subscriber server (the second Unity Connection server that you installed) and the server port in the format <host name or IP address>:5060.

Step 30 For Unity Connection without a cluster, continue to [Step 32](#). For Unity Connection with a cluster configured, select **Add Host**.

Step 31 In the second field, enter the host name or IP address of the publisher server (the first Unity Connection server that you installed) and the server port in the format <host name or IP address>:5060.

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

Step 32 Select **Submit**.

Step 33 Under Router Configuration, select **TDM Trunk Groups**.

Step 34 Under TDM Trunk Groups, select **Add Trunk Group**.

Step 35 Under TDM Trunk Groups, enter the following settings for the first TDM trunk group.

Table 12: First TDM Trunk Group Settings (Inbound Calls)

| Field | Settings |
|----------------------|--|
| Name | Enter Inbound_PBX_Calls or another unique name. This TDM trunk group handles all incoming calls from the phone system. |
| Selection Direction | Select Ascending . |
| Selection Mode | Select Linear . |
| Port/Channel Content | Enter the numbers of the PIMG ports that 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, select **Add Trunk Group**.

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

Table 13: Second TDM Trunk Group Settings (MWIs)

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

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

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

Table 14: Third TDM Trunk Group Settings (Outbound Calls)

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

Step 40 Select **Submit**.

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

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

Step 43 Select **Add Rule**.

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

Table 15: 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 handles all MWI calls from Unity Connection. |
| Request Type | Select Message . |
| Originating VoIP Host Address | Enter *. |

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

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

Table 16: Inbound VoIP Request Matching Settings

| Field | Settings |
|----------------|----------|
| Calling Number | Enter *. |
| Calling Name | Enter *. |
| Called Number | Enter *. |
| Called Name | Enter *. |

| Field | Settings |
|-----------------|----------|
| Redirect Number | Enter *. |
| Redirect Name | Enter *. |

Step 46 Under Outbound Routes, enter the following settings.

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

Table 17: Outbound Routes Settings

| Field | Settings |
|---------------------------------------|---|
| Device Selection | |
| Outbound Destination | Select TDM . |
| Trunk Group | Select the name of the TDM trunk group that you created for MWIs in Step 37 . For example, select “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 . |
| Select Primary/Alternate Route | |
| Primary | Select Primary . |

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

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

Table 18: 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 handles all outbound calls from Unity Connection. |
| Request Type | Select Call . |

| Field | Settings |
|-------------------------------|----------|
| Originating VoIP Host Address | Enter *. |

Step 49

Under Inbound VoIP Request Matching, enter the following settings.

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

Table 19: 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.

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

Table 20: Outbound Routes Settings

| Field | Settings |
|---------------------------------------|---|
| Device Selection | |
| Outbound Destination | Select TDM . |
| Trunk Group | Select the name of the TDM trunk group that you created for outbound calls in Step 39 . For example, select “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 | |

| Field | Settings |
|---------|-------------------------|
| Primary | Select Primary . |

Step 51 Select **Submit**.

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

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

Table 21: 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 handles all incoming calls from the phone system. |
| Request Type | Select Call . |
| Trunk Group | Select the name of the TDM trunk group that you created for incoming calls from the phone system in Step 35 . For example, select “Inbound_PBX_Calls.” |

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

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

Table 22: Inbound TDM Request Matching Settings

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

Step 55 Under Outbound Routes, enter the following settings.

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

Table 23: Outbound Routes Settings

| Field | Settings |
|-------------------------|----------------------|
| Device Selection | |
| Outbound Destination | Select VoIP . |

| Field | Settings |
|---------------------------------------|---|
| Host Group | Select the name of the VoIP host group that you created for Unity Connection in Step 28 . |
| 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 | Select Primary . |

Step 56 If you want to create more Inbound TDM rules, under Inbound TDM Rules, select **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 Select **Submit**.

Step 59 On the Configuration menu, select **TDM > Digital**.

Step 60 On the Digital Telephony page, in the Telephony Switch Type field, select NEC_NEAX.

Step 61 Select **Submit**.

Step 62 On the Configuration menu, select **TDM > General**.

Step 63 On the TDM General Settings page, enter the following settings.

Table 24: TDM General Settings Page Settings

| Field | Settings |
|-------------------------------|-------------------------|
| PCM Coding | Select 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. |

| Field | Settings |
|---|---|
| Turn MWI Off FAC | Leave this field blank. |
| Outbound Call Connect Timeout (ms) | Enter 10000 . |
| Wait for Ringback/Connect on Blind Transfer | Select Yes . |
| Hunt Group Extension | Enter the pilot number of the Unity Connection voice messaging ports. |
| Disconnect on Fax Cleardown Tone | Select No . |

Step 64 Select **Submit**.

Step 65 On the Configuration menu, select **TDM > Port Enable**.

Step 66 On the TDM Port Enabling page, select **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 Select **Submit**.

Step 69 On the Configuration menu, select **VoIP > General**.

Step 70 On the VoIP General Settings page, enter the following settings.

Table 25: 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 | Select UDP . |
| Call as Domain Name | Select No . |
| SIPS URI Scheme Enabled | Select No . |
| Invite Expiration (sec) | Enter 120 . |
| Server | |
| DNS Server Address | Enter the IP Address of the Domain Name Server that the PIMG unit uses. |
| DNS Translation of Phone Numbers | Select No . |
| Registration Server Address | Leave this field blank. |
| Registration Server Port | Enter 5060 . |

| Field | Setting |
|------------------------------------|---|
| Registration Expiration (sec) | Enter 3600 . |
| TCP/UDP | |
| UDP/TCP Transports Enabled | Select Yes . |
| TCP/UDP Server Port | Enter 5060 . |
| TCP Inactivity Timer (sec) | Enter 30 . |
| TLS | |
| TLS Transport Enabled | Select No . |
| TLS Server Port | Enter 5061 . |
| SSL TLS Protocol | Select SSLv3 TLSv1 . |
| Mutual TLS Authentication Required | Select Yes . |
| TLS Inactivity Timer (sec) | Enter 30 . |
| Verify TLS Peer Certificate Date | Select Yes . |
| Verify TLS Peer Certificate Trust | Select Yes . |
| Proxy | |
| Primary Proxy Server Address | Leave this field blank. Unity Connection |
| 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 . |

| Field | Setting |
|----------------------------------|---------------------|
| T2 Time (ms) | Enter 3000 . |
| T4 Time (ms) | Enter 5000 . |
| Monitoring | |
| Monitor Call Connections | Select No . |
| Call Monitor Interval (sec) | |
| Monitor VoIP Hosts | |
| VoIP Host Monitor Interval (sec) | |

Step 71 Select **Submit**.

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

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

Table 26: VoIP Media Settings Page Settings

| Field | Settings |
|----------------------------------|--|
| Audio | |
| Audio Compression | Select the preferred codec for audio compression. |
| RTP Digit Relay Mode | Select RFC2833 . |
| RTP Fax/Modem Tone Relay Mode | Select RFC2833 . |
| RTP Source IP Address Validation | Select Off . |
| RTP Source UDP Port Validation | Select Off . |
| Signaling Digit Relay Mode | Select Off . |
| Voice Activity Detection | Select Off . |
| RFC 3960 Early Media Support | Select On Demand . |
| Frame Size | Select the applicable setting: <ul style="list-style-type: none"> • G.711—20 • G.729AB—10 <p>Failure to use the correct setting results in recorded messages containing nothing but silence.</p> |

| Field | Settings |
|------------------------------|--|
| Frames Per Packet | Select the applicable setting: <ul style="list-style-type: none"> • G.711—1 • G.729AB—2 <p>Failure to use the correct setting results in recorded messages containing nothing but silence.</p> |
| Fax | |
| Fax IP-Transport Mode | |
| SRTP | |
| SRTP Preference | Select RTP Only . |
| MKI on Transmit Stream | Select Yes . |
| Key Derivation Enable | Select Yes . |
| Key Derivation Rate | Enter 16 . |
| Anti-replay Window Size Hint | Enter 64 . |
| Cipher Mode | Select AES_Counter_Mode . |
| Authentication Type | Select SHA1 . |
| Authentication Tag Length | Select SHA1_80_bit . |

Step 74 Select **Submit**.

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

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

Table 27: VoIP QOS Configurative Page Settings

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

Step 77 Select **Submit**.

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

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

Table 28: 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 use. |
| BOOTP Enabled | Select No. |
| SNTP Server IP Address | |

Step 80 Select **Submit**.

Step 81 On the Configuration menu, select **Tone Detection**.

Step 82 On the Tone Detection page, under Call Progress Tone - Learn, in the Learn Tone Event field, select **Busy** 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 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 Select **Learn**.

Step 85 On the Tone Detection page, under Call Progress Tone - Learn, in the Learn field, select **Error** 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 86 Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 85a](#).

Step 87 Select **Learn**.

Step 88 On the Tone Detection page, under Call Progress Tone - Learn, in the Learn field, select **Ringback** 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 89 Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 88a](#).

Step 90 Select **Learn**.

Step 91 Select **Submit**.

Step 92 Hang up the phones that you used in [Step 82](#).

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

Configuring Unity Connection for Integration with NEC NEAX 2400 Phone System

After ensuring that the NEC NEAX 2400 phone system, the PIMG units, and Unity Connection are ready for the integration, do the following procedure to set up the integration and to enter the port settings.

Creating an Integration

- Step 1** In Cisco Unity Connection Administration, expand **Telephony Integrations**, then select **Phone System**.
- Step 2** On the Search Phone Systems page, under Display Name, select the name of the default phone system.
- Step 3** On the Phone System Basics page, in the Phone System Name field, enter the descriptive name that you want for the phone system.
- Step 4** If you want to use this phone system as the default for TRaP connections so that administrators and users without voicemail boxes can record and playback through the phone in Unity Connection web applications, check the **Default TRAP Switch** check box. If you want to use another phone system as the default for TRaP connections, uncheck this check box.
- Step 5** Under Message Waiting Indicator Settings, select **Use Same Port for Enabling and Disabling MWIs**.
- Step 6** Select **Save**.
- Step 7** On the Phone System Basics page, in the Related Links drop-down box, select **Add Port Group** and select **Go**.
- Step 8** On the New Port Group page, enter the applicable settings and select **Save**.

Table 29: Settings for the New Port Group Page

| Field | Setting |
|-------------------------|---|
| Phone System | Select the name of the phone system that you entered in Step 3 . |
| Create From | Select Port Group Template and select 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 | Select 5060 . |
| SIP Transport Protocol | Select the SIP transport protocol that Unity Connection uses. |
| IP Address or Host Name | Enter the IP address of the PIMG unit that you are integrating with Unity Connection. |

| Field | Setting |
|-------|--|
| Port | <p>Enter the SIP port of the PIMG unit that Unity Connection connects to. We recommend that you use the default setting.</p> <p>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 cannot function correctly.</p> |

Step 9 On the Port Group Basics page, under Message Waiting Indicator Settings, uncheck the **Enable Message Waiting Indicators** check box and select **Save**.

Step 10 In the Related Links drop-down box, select **Add Ports** and select **Go**.

Step 11 On the New Port page, enter the following settings and select **Save**.

Table 30: Settings for the New Port Page

| Field | Considerations |
|-----------------|---|
| Enabled | Check this check box. |
| Number of Ports | <p>Enter 8.</p> <p>(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.)</p> <p>Note For a Unity Connection cluster, the server must have the number of voice messaging ports that are set up on the phone system for the PIMG integration so that this server can handle all voice messaging traffic for the cluster if one of the servers stops functioning. For example, if the phone system is set up with 16 voice messaging ports, this server must have 16 voice messaging ports.</p> |
| Phone System | Select the name of the phone system that you entered in Step 3 . |
| Port Group | Select the name of the port group that you added in Step 8 . |

Step 12 On the Search Ports page, select 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 31: 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 | (Serial integrations only) Uncheck this check box. Otherwise, the integration may not function correctly. (Digital and analog integrations only) 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 Unity Connection web applications. Assign Allow TRAP Connections to the least busy ports. |
| Outgoing Hunt Order | Enter the priority order in which Unity Connection uses 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, Unity Connection uses the port that has been idle the longest. |

Step 14 Select **Save**.

Step 15 Select **Next**.

Step 16 Repeat [Step 13](#) through [Step 15](#) for all remaining voice messaging ports for the phone system.

Step 17 In Cisco Unity Connection Administration, expand **Telephony Integrations**, then select **Phone System**.

Step 18 On the Search Phone Systems page, under Display Name, select the name of the phone system that you entered in [Step 3](#).

Step 19 Repeat [Step 7](#) through [Step 18](#) for each remaining PIMG unit integrated with 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 20 To create a port group for MWIs, do the following substeps.

Note All MWI requests are handled by the master PIMG unit and sent to the phone system over the RS-232 serial cable (without using voice messaging ports). So the following substeps create a separate port group without voice messaging ports and enable the port group for MWIs that are "not port specific" (they do not use ports).

a) In Cisco Unity Connection Administration expand **Telephony Integration** then select **Port Group** .

- b) On the Search Port Groups page, select **Add New**.
- c) On the New Port Group page, enter the applicable settings and select **Save**.

Table 32: Settings for the New Port Group Page (MWIs)

| Field | Setting |
|---------------------------|--|
| Phone System | Select the name of the phone system that you entered in Step 3. |
| Create From | Select Port Group Template and select SIP to DMG/PIMG/TIMG SIP to in the drop-down box. |
| Display Name | Enter a MWI Port Group or another descriptive name for the port group. |
| SIP Security Profile | Select 5060 . |
| SIP Transport Protocol | Select the SIP transport protocol that Unity Connection uses. |
| IPv4 Address or Host Name | Enter the IP address of the master PIMG unit. |
| IPv6 Address or Host Name | Do not enter a value in this field. IPv6 is not supported for PIMG integrations. |
| IP Address or Host Name | Enter the IP address of the master PIMG unit. |
| Port | Enter the SIP port of the master PIMG unit. 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 cannot function correctly. |

- d) On the Port Group Basics page, on the Edit menu, select **Advanced Settings**.
- e) On the Edit Advanced Settings page, under SIP MWI Requests, select **Not Port Specific** then select **Save**.
- f) On the Edit menu, select **Port Group Basics**.
- g) Under Port Group, select **Reset**.
- h) Under Message Waiting Indicator Settings, confirm that the **Enable Message Waiting Indicator** check box is checked and select **Save**.

Step 21 If another phone system integration exists, in Cisco Unity Connection Administration, expand **Telephony Integrations**, then select **Trunk**. Otherwise, skip to [Step 25](#).

Step 22 On the Search Phone System Trunks page, on the Phone System Trunk menu, select **New Phone System Trunk**.

Step 23 On the New Phone System Trunk page, enter the following settings for the phone system trunk and select **Save**.

Table 33: 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 connects to. |

| Field | Setting |
|-------------------|---|
| Trunk Access Code | Enter the extra digits that Unity Connection must dial to transfer calls through the gateway to extensions on the previously existing phone system. |

Step 24 Repeat [Step 22](#) and [Step 23](#) for all remaining phone system trunks that you want to create.

Step 25 In the Related Links drop-down list, select **Check Telephony Configuration** and select **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 26 In the Task Execution Results window, select **Close**.
