



# Setting Up an Avaya S8300/S8500/S8700 Digital PIMG Integration with Cisco Unity Connection

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## Setting Up an Avaya S8300/S8500/S8700 Digital PIMG Integration

### Task List for Avaya S8300/S8500/S8700 PIMG Integration

Before doing the following tasks to integrate Unity Connection with the Avaya S8300/S8500/S8700 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 11.x, available at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/11x/install\\_upgrade/guide/b\\_11xcuciumg/b\\_11xcuciumg\\_chapter\\_00.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/11x/install_upgrade/guide/b_11xcuciumg/b_11xcuciumg_chapter_00.html).

- 1 Review the system and equipment requirements to confirm that all phone system and Unity Connection server requirements have been met. See the [Requirements](#) section.
- 2 Plan how the voice messaging ports are used by Cisco Unity Connection. See the [Planning the Usage of Voice Messaging Ports](#) chapter.
- 3 Program the Avaya S8300/S8500/S8700 phone system and extensions. See the [Programming Avaya S8300/S8500/S8700 PIMG Phone System for Integration](#) section.
- 4 Set up the PIMG units. See the [Setting Up the Digital PIMG Units](#) section.
- 5 Create the integration. See the [Configuring Unity Connection for Integration with the Avaya S8300/S8500/S8700 Phone System](#) 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 [Adding New User Templates for Multiple Integrations](#) chapter.

## Requirements

This integration supports configurations of the following components:

### Phone System

- An Avaya S8300, Avaya S8500, or Avaya S8700 phone system. The voice messaging ports that connect to the PIMG units must be compatible with the 7434ND, 8434, 8434D, or 8434DX digital phones.  
You must use 2-wire line cards for these voice messaging ports. Otherwise, the voice messaging ports are not compatible with the 7434ND, 8434, 8434D, or 8434DX digital phones.
- Software version Communication Manager 2.0.
- 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 11.x, available at [https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/connection/11x/install\\_upgrade/guide/b\\_11xcuciumg.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/11x/install_upgrade/guide/b_11xcuciumg.html).
- A license that enables the applicable number of voice messaging ports.

## Programming Avaya S8300/S8500/S8700 PIMG Phone System for 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.

## Programming the Avaya S8300/S8500/S8700 Phone System

### Step 1

Create a coverage path which contains the PIMG unit hunt group number as the coverage point.

### Step 2

Assign the coverage path that you created in [Step 1](#) to the user stations that must forward to the voice messaging ports on the PIMG units when calls are not answered or when the user station is busy, based on one of the Unity Connection call transfer types shown in [Table 1: Call Transfer Types](#).

**Table 1: Call Transfer Types**

| Transfer Type                        | Usage   |
|--------------------------------------|---|
| Release transfer<br>(blind transfer) | Program the user station 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. |

### Step 3

Use the Add Station <extension number> command (for example, Add Station 2999) to assign an extension number for each voice messaging port, which is a digital line that connects to the PIMG unit. Set the voice messaging port options ([Table 2: Voice Messaging Port Options for All Lines](#)) and button assignments ([Table 3: Button Assignments for All Lines](#)), and press **Enter**.

**Note** We recommend that you distribute the voice messaging ports among multiple phone system line cards so that call processing can continue even if a line card becomes inactive.

**Table 2: Voice Messaging Port Options for All Lines**

| Option    | Setting   |
|-----------|---|
| Extension | Enter the extension number of the digital line. |

| Option                    | Setting   |
|---------------------------|---|
| Type                      | <p>Enter <b>7434ND</b> (recommended).</p> <p>You can also use the following settings. However, you must include the extension with each subscriber name when programming the phone system (for example, “3001 Jane Doe”). Otherwise, the integration cannot function correctly.</p> <ul style="list-style-type: none"> <li>• <b>8434</b></li> <li>• <b>8434D</b></li> <li>• <b>8434DX</b></li> </ul> <p><b>Note</b> If the setting that you want is not available, contact the phone system manufacturer.</p> |
| LWC Activation?           | Enter <b>y</b> .  |
| Restrict Last Appearance? | Enter <b>y</b> .  |
| Display Module            | Enter <b>y</b> .  |

**Table 3: Button Assignments for All Lines**

| Button Assignment | Setting                   |
|-------------------|---------------------------|
| 1                 | Enter <b>call-appr</b> .  |
| 2                 | Enter <b>call-appr</b> .  |
| 9                 | Enter <b>lwc-store</b> .  |
| 10                | Enter <b>lwc-cancel</b> . |

**Step 4**

Use the Add Hunt <hunt group number> command (for example, Add Hunt 1) to assign a the voice messaging ports to a hunt group. Set the following options.

**Table 4: Hunt Group Options**

| Option          | Setting                                    |
|-----------------|--|
| Group Number    | Enter the hunt group number.               |
| Group Extension | Enter the pilot number for the hunt group. |
| Group Type      | Enter <b>ucd</b> .                         |

| Option     | Setting                                    |
|------------|--|
| Group Name | Enter the display name for the hunt group. |
| Queue?     | Enter N.                                   |

**Step 5**

Enter the group member assignments for the voice messaging ports that answer calls and press **Enter**. If you plan to set the voice messaging ports to either answer calls or to dial out (for example, to set MWIs), make sure that you include in the hunt group only the voice messaging ports that are set to answer calls.

For smaller systems, include in the hunt group all voice messaging ports when the ports are set to both answer calls and dial out (for example, to set MWIs).

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## Setting Up the Digital PIMG Units

Do the following procedures to set up the digital PIMG units that are connected to the Avaya S8300/S8500/S8700 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**


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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 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.
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On a Windows workstation with a high-speed Internet connection that access to the PIMG units, go to the following link:

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## Setting Up the Digital PIMG Units (Firmware Version 6.x)

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**Step 1**

On the Windows workstation, add a temporary route to enable access to the PIMG units.

- a) On the Windows Start menu, select **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** To sign in, enter the following case-sensitive settings.

**Table 5: Sign-in Settings**

| Field    | Setting                  |
|----------|--------------------------|
| Username | Enter <b>admin</b> .     |
| Password | Enter <b>IpodAdmin</b> . |

- 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\_Lucent.ini.
- Step 16** Select **DNI\_Cfg\_Lucent.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 6: Sign-in Settings**

| Field    | Setting                  |
|----------|--------------------------|
| Username | Enter <b>admin</b> .     |
| Password | Enter <b>IpodAdmin</b> . |

**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 7: Sign-in Settings**

| Field    | Setting                  |
|----------|--------------------------|
| Username | Enter <b>admin</b> .     |
| Password | Enter <b>IpodAdmin</b> . |

u) Select **OK**.

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

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

**Table 8: Change Password Page Settings**

| Field            | Setting   |
|------------------|---|
| Old Password     | Enter <b>IpodAdmin</b> .<br>(This setting is case sensitive.) |
| New Password     | Enter your new password.<br>(This setting is case sensitive.) |
| Confirm Password | Enter your new password.<br>(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 9: First VoIP Host Group Settings**

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

- 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 10: First TDM Trunk Group Settings (Inbound Calls)**

| Field                | Settings   |
|----------------------|--|
| Name                 | Enter <b>Inbound_PBX_Calls</b> or another unique name.<br>This TDM trunk group handles all incoming calls from the phone system.                       |
| Selection Direction  | Select <b>Ascending</b> .  |
| Selection Mode       | Select <b>Linear</b> .   |
| 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 11: Second TDM Trunk Group Settings (MWIs)**

| Field               | Settings  |
|---------------------|---|
| Name                | Enter <b>MWIs</b> or another unique name.<br>This TDM trunk group handle outbound MWI calls (where applicable). |
| Selection Direction | Select <b>Ascending</b> .   |
| Selection Mode      | Select <b>Cyclic</b> .  |

| Field                | Settings   |
|----------------------|--|
| Port/Channel Content | Enter the numbers of the PIMG ports that dial out 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 12: Third TDM Trunk Group Settings (Outbound Calls)**

| Field                | Settings   |
|----------------------|--|
| Name                 | Enter <b>Outbound_PBX_Calls</b> or another unique name.<br>This TDM trunk group handles all outbound calls from Unity Connection.  |
| Selection Direction  | Select <b>Descending</b> .   |
| Selection Mode       | Select <b>Linear</b> .   |
| Port/Channel Content | Enter * for all channels in all ports.<br>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 13: First New Inbound VoIP Rule Settings (MWIs)**

| Field                         | Settings   |
|-------------------------------|--|
| Enable                        | Check this check box.  |
| Rule Label                    | Enter <b>MWI_Calls</b> or another name.<br>This inbound VoIP rule handles all MWI calls from Unity Connection. |
| Request Type                  | Select <b>Message</b> .  |
| 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 14: 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. The rule that you created in [Step 44](#) must be selected. Otherwise, any changes you make apply to another rule.

**Table 15: Outbound Routes Settings**

| Field                    | Settings  |
|--------------------------|---|
| <b>Device Selection</b>  |   |
| Outbound Destination     | Select <b>TDM</b> .   |
| Trunk Group              | Select the name of the TDM trunk group that you created for MWIs in <a href="#">Step 37</a> . For example, select "MWIs." |
| <b>CPID Manipulation</b> |   |
| Calling Number           | Enter <b>S</b> .  |
| Calling Name             | Enter <b>S</b> .  |
| Called Number            | Enter <b>D</b> .  |
| Called Name              | Enter <b>D</b> .  |
| Redirect Number          | Enter <b>R</b> .  |
| Redirect Name            | Enter <b>R</b> .  |

| Field                                 | Settings                |
|---------------------------------------|-------------------------|
| <b>Select Primary/Alternate Route</b> |                         |
| Primary                               | Select <b>Primary</b> . |

**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 16: Second New Inbound VoIP Rule Settings (Outbound Calls)**

| Field                         | Settings   |
|-------------------------------|--|
| Enable                        | Check this check box.  |
| Rule Label                    | Enter <b>Outbound_UC_Calls</b> or another name.<br>This inbound VoIP rule handle all outbound calls from Unity Connection. |
| Request Type                  | Select <b>Call</b> .   |
| 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 17: 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 18: Outbound Routes Settings**

| Field                                 | Settings  |
|---------------------------------------|---|
| <b>Device Selection</b>               |   |
| Outbound Destination                  | Select <b>TDM</b> .   |
| Trunk Group                           | Select the name of the TDM trunk group that you created for outbound calls in <a href="#">Step 39</a> . For example, select "Outbound_PBX_Calls." |
| <b>CPID Manipulation</b>              |   |
| Calling Number                        | Enter <b>S</b> .  |
| Calling Name                          | Enter <b>S</b> .  |
| Called Number                         | Enter <b>D</b> .  |
| Called Name                           | Enter <b>D</b> .  |
| Redirect Number                       | Enter <b>R</b> .  |
| Redirect Name                         | Enter <b>R</b> .  |
| <b>Select Primary/Alternate Route</b> |   |
| Primary                               | Select <b>Primary</b> .   |

**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 19: First Inbound TDM Rule Settings**

| Field        | Settings   |
|--------------|--|
| Enable       | Check this check box.  |
| Rule Label   | Enter <b>Inbound_Rule_1</b> or another name.<br>This inbound TDM rule handles all incoming calls from the phone system.  |
| Request Type | Select <b>Call</b> .   |
| Trunk Group  | Select the name of the TDM trunk group that you created for incoming calls from the phone system in <a href="#">Step 35</a> . 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 20: 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 21: Outbound Routes Settings**

| Field                                 | Settings  |
|---------------------------------------|---|
| <b>Device Selection</b>               |   |
| Outbound Destination                  | Select <b>VoIP</b> .  |
| Host Group                            | Select the name of the VoIP host group that you created for Unity Connection in <a href="#">Step 28</a> . |
| <b>CPID Manipulation</b>              |   |
| Calling Number                        | Enter S.  |
| Calling Name                          | Enter S.  |
| Called Number                         | Enter D.  |
| Called Name                           | Enter D.  |
| Redirect Number                       | Enter R.  |
| Redirect Name                         | Enter R.  |
| <b>Select Primary/Alternate Route</b> |   |

| Field   | Settings                |
|---------|-------------------------|
| Primary | Select <b>Primary</b> . |

- 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 Lucent.
- 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 22: TDM General Settings Page Settings**

| Field                                       | Settings  |
|---|---|
| PCM Coding                                  | Select <b>uLaw</b> .  |
| Minimum Call Party Delay (ms)               | Enter <b>500</b> .  |
| Maximum Call Party Delay (ms)               | Enter <b>2000</b> .   |
| Dial Digit on Time (ms)                     | Enter <b>100</b> .  |
| Dial Inter-Digit Time (ms)                  | Enter <b>100</b> .  |
| Dial Pause Time (ms)                        | Enter <b>2000</b> .   |
| Turn MWI On FAC                             | Leave this field blank.   |
| Turn MWI Off FAC                            | Leave this field blank.   |
| Outbound Call Connect Timeout (ms)          | Enter <b>10000</b> .  |
| Wait for Ringback/Connect on Blind Transfer | Select <b>Yes</b> .   |
| Hunt Group Extension                        | Enter the pilot number of the Unity Connection voice messaging ports. |
| Disconnect on Fax Cleardown Tone            | Select <b>No</b> .  |



- 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 23: VoIP General Settings Page Settings**

| Field                            | Setting   |
|----------------------------------|---|
| <b>User-Agent</b>                |   |
| Host and Domain Name             | Enter the host and domain name of the PIMG unit.                        |
| Transport Type                   | Select <b>UDP</b> .   |
| Call as Domain Name              | Select <b>No</b> .  |
| SIPS URI Scheme Enabled          | Select <b>No</b> .  |
| Invite Expiration (sec)          | Enter <b>120</b> .  |
| <b>Server</b>                    |   |
| DNS Server Address               | Enter the IP Address of the Domain Name Server that the PIMG unit uses. |
| DNS Translation of Phone Numbers | Select <b>No</b> .  |
| Registration Server Address      | Leave this field blank.   |
| Registration Server Port         | Enter <b>5060</b> .   |
| Registration Expiration (sec)    | Enter <b>3600</b> .   |
| <b>TCP/UDP</b>                   |   |
| UDP/TCP Transports Enabled       | Select <b>Yes</b> .   |
| TCP/UDP Server Port              | Enter <b>5060</b> .   |

| Field                              | Setting                                    |
|------------------------------------|--|
| TCP Inactivity Timer (sec)         | Enter <b>30</b> .                          |
| <b>TLS</b>                         |  |
| TLS Transport Enabled              | Select <b>No</b> .                         |
| TLS Server Port                    | Enter <b>5061</b> .                        |
| SSL TLS Protocol                   | Select <b>SSLv3 TLSv1</b> .                |
| Mutual TLS Authentication Required | Select <b>Yes</b> .                        |
| TLS Inactivity Timer (sec)         | Enter <b>30</b> .                          |
| Verify TLS Peer Certificate Date   | Select <b>Yes</b> .                        |
| Verify TLS Peer Certificate Trust  | Select <b>Yes</b> .                        |
| <b>Proxy</b>                       |  |
| 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 <b>10</b> .                          |
| <b>Timing</b>                      |  |
| T1 Time (ms)                       | Enter <b>400</b> .                         |
| T2 Time (ms)                       | Enter <b>3000</b> .                        |
| T4 Time (ms)                       | Enter <b>5000</b> .                        |
| <b>Monitoring</b>                  |  |

| Field                            | Setting           |
|----------------------------------|-------------------|
| Monitor Call Connections         | Select <b>No.</b> |
| 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 24: VoIP Media Settings Page Settings**

| Field                            | Settings   |
|----------------------------------|--|
| <b>Audio</b>                     |  |
| Audio Compression                | Select the preferred codec for audio compression.  |
| RTP Digit Relay Mode             | Select <b>RFC2833</b> .  |
| RTP Fax/Modem Tone Relay Mode    | Select <b>RFC2833</b> .  |
| RTP Source IP Address Validation | Select <b>Off</b> .  |
| RTP Source UDP Port Validation   | Select <b>Off</b> .  |
| Signaling Digit Relay Mode       | Select <b>Off</b> .  |
| Voice Activity Detection         | Select <b>Off</b> .  |
| RFC 3960 Early Media Support     | Select <b>On Demand</b> .  |
| Frame Size                       | Select the applicable setting: <ul style="list-style-type: none"> <li>• G.711—<b>20</b></li> <li>• G.729AB—<b>10</b></li> </ul> <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"> <li>• G.711—1</li> <li>• G.729AB—2</li> </ul> Failure to use the correct setting results in recorded messages containing nothing but silence. |
| <b>Fax</b>                   |   |
| Fax IP-Transport Mode        |   |
| <b>SRTP</b>                  |   |
| SRTP Preference              | Select <b>RTP Only</b> .  |
| MKI on Transmit Stream       | Select <b>Yes</b> .   |
| Key Derivation Enable        | Select <b>Yes</b> .   |
| Key Derivation Rate          | Enter <b>16</b> .   |
| Anti-replay Window Size Hint | Enter <b>64</b> .   |
| Cipher Mode                  | Select <b>AES_Counter_Mode</b> .  |
| Authentication Type          | Select <b>SHA1</b> .  |
| Authentication Tag Length    | Select <b>SHA1_80_bit</b> .   |

**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 25: VoIP QOS Configurative Page Settings**

| Field                 | Settings           |
|-----------------------|--------------------|
| Call Control QOS Byte | Enter <b>104</b> . |
| RTP QOS Byte          | Enter <b>184</b> . |

- Step 77** Select **Submit**.
- Step 78** On the Configuration menu, select **IP**.
- Step 79** On the IP Settings page, enter the following settings.

**Table 26: IP Settings Page Settings**

| Field                           | Settings   |
|---------------------------------|--|
| Client IP Address               | Enter the new IP address you want to use for the PIMG unit.<br>(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 <b>No</b> .   |
| 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.
- 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** 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.
- 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** 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.
- 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 the Avaya S8300/S8500/S8700 Phone System

After ensuring that the Avaya S8300/S8500/S8700 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 27: Settings for the New Port Group Page**

| Field        | Setting  |
|--------------|--|
| Phone System | Select the name of the phone system that you entered in <a href="#">Step 3</a> .               |
| Create From  | Select <b>Port Group Template</b> and select <b>SIP to DMG/PIMG/TIMG</b> in the drop-down box. |

| Field                   | Setting   |
|-------------------------|---|
| 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 <b>5060</b> .  |
| 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.   |
| Port                    | Enter the SIP port of the PIMG unit that Unity Connection connects to. We recommend that you use the default setting.<br><br>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. |

**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 28: Settings for the New Port Page**

| Field           | Considerations  |
|-----------------|---|
| Enabled         | Check this check box.   |
| Number of Ports | Enter <b>8</b> .<br><br>(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.)<br><br><b>Note</b> 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. |
| Phone System    | Select the name of the phone system that you entered in <a href="#">Step 3</a> .  |
| Port Group      | Select the name of the port group that you added in <a href="#">Step 8</a> .  |

**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 29: Settings for the Voice Messaging Ports**

| Field                        | Considerations  |
|------------------------------|---|
| Enabled                      | Check this check box to enable the port. The port is enabled during normal operation.<br>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.<br>(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 30: 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 <b>SIP to DMG/PIMG/TIMG SIP</b> to in the drop-down box.   |
| Display Name              | Enter a <b>MWI Port Group</b> or another descriptive name for the port group.  |
| SIP Security Profile      | Select <b>5060</b> .   |
| 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.<br><b>Caution</b> 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 31: 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. |

| Field             | Setting   |
|-------------------|---|
| To Phone System   | Enter the display name of the previously existing phone system that the trunk connects to.  |
| 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**.

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