



CHAPTER 5

Setting Up a Serial (SMDI, MCI, or MD-110) TIMG Integration with Cisco Unity

For detailed instructions on setting up a serial (SMDI, MCI, or MD-110) TIMG integration with Cisco Unity, see the following sections in this chapter:

- [Task List to Create a Serial \(SMDI, MCI, or MD-110\) TIMG Integration, page 5-1](#)
- [Requirements, page 5-2](#)
- [Programming the Phone System for a Serial Integration with Cisco Unity, page 5-3](#)
- [Setting Up the TIMG Units, page 5-4](#)
- [Creating an Integration with the Phone System, page 5-14](#)

Task List to Create a Serial (SMDI, MCI, or MD-110) TIMG Integration

Before doing the following tasks to integrate Cisco Unity with the phone system by using the T1 Media Gateway (TIMG), confirm that the Cisco Unity server is ready for the integration by completing the applicable tasks in the applicable Cisco Unity installation guide. If you are installing a new Cisco Unity server by using the applicable Cisco Unity installation guide, you may have already completed some of the following tasks.

1. Review the system and equipment requirements to confirm that all phone system and Cisco Unity server requirements have been met. See the [“Requirements” section on page 5-2](#).
2. Plan how the voice messaging ports will be used by Cisco Unity. See [Chapter 2, “Planning How the Voice Messaging Ports Will Be Used by Cisco Unity.”](#)
3. Program the phone system and extensions for a serial integration with Cisco Unity. See the [“Programming the Phone System for a Serial Integration with Cisco Unity” section on page 5-3](#).
4. Set up the TIMG units for a serial integration. See the [“Setting Up the TIMG Units” section on page 5-4](#).
5. Create the integration. See the [“Creating an Integration with the Phone System” section on page 5-14](#).



Caution

Do not edit the phone configuration file (also known as the switch ini file) to customize this integration. If you change the settings in this file, the integration may not function correctly.

6. Test the integration. See [Chapter 6, “Testing the Integration.”](#)
7. If you have a secondary server for Cisco Unity failover, integrate the secondary server. See [Chapter 7, “Integrating a Secondary Server for Cisco Unity Failover with a TIMG Integration.”](#)

Requirements

The serial (SMDI, MCI, or MD-110) TIMG integration supports configurations of the following components:

Phone System

- A phone system that supports the SMDI, MCI, or MD-110 serial protocols.
- T1 digital trunk interface card.
- The firmware must be configured to support T1 line-side signaling.
- T1 CAS connections to the TIMG units by using the FXS/FSO or E&M protocol.
- One or more TIMG units (media gateways).
- The serial data port on the phone system connected to the serial port on the master TIMG unit with an RS-232 serial cable (which is available from Cisco).

Specifications for the serial cable are in *Connecting PBX-IP Media Gateway (PIMG) to the Serial Port of a PBX* at <http://www.dialogic.com/support/helpweb/mg/tn117.htm>.

We recommend that the serial cable have the following construction:

- A maximum of 50 feet (15.24 m) in length
- 24 AWG stranded conductors
- Low capacitance—for example, no more than 12 pF/ft (39.4 pF/m) between conductors
- At least 65 percent braided shield over aluminized polymer sleeve around conductors
- UL-recognized overall cable jacket insulation with low dielectric constant
- Braided shield fully terminated to and enclosed by a metal connector backshell
- Gold-plated connector contacts
- The voice messaging ports in the phone system connected by T1 digital lines (DS1 or “dry T1” digital lines only) to the ports on the TIMG units.



Caution

T1 (or “wet T1”) connections to the PSTN must be through an MTU, CSU, or other device that provides line isolation. Otherwise, the TIMG units may be damaged.

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

- The phone system ready for the integration, as described in the documentation for the phone system.

Cisco Unity Server

- Cisco Unity installed and ready for the integration, as described in the applicable Cisco Unity installation guide at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_installation_guides_list.html.
- A license that enables the applicable number of voice messaging ports.

Centralized Voice Messaging

Cisco Unity supports centralized voice messaging by supporting various inter-phone system networking protocols including, for example, proprietary protocols such as Avaya DCS, Nortel MCDN, or Siemens CorNet, and standards-based protocols such as QSIG or DPNSS. For details, see the “Centralized Voice Messaging” section in the “Integrating Cisco Unity with the Phone System” chapter of the *Cisco Unity Design Guide Release 5.x* at

http://www.cisco.com/en/US/docs/voice_ip_comm/unity/5x/design/guide/5xcudgx.html.

Programming the Phone System for a Serial Integration with Cisco Unity

Instruct the phone system technician to set up the phone system in the manner directed in the following procedure.



Note

Application notes for programming certain phone systems are available in the appendixes at the end of this guide.

To Program the Phone System for a Serial TIMG Integration with Cisco Unity

Step 1 Program the phone lines connecting to the voice messaging ports on the TIMG units as a multiline hunt group.

Make sure that the phone system sends calls only to Cisco Unity voice messaging ports that are set to Answer Calls. Calls sent to a voice port not set to Answer Calls cannot be answered by Cisco Unity and may cause other problems.

Step 2 Enable hookflash transfer capability on each phone line that connects to the voice messaging ports on the TIMG units.

Step 3 Enable caller ID (through the serial data link to the master TIMG unit) on each subscriber extension.



Caution

The phone system just provide caller ID through the serial data link to the master TIMG unit. Otherwise, some integration features will not function correctly.

Step 4 For each subscriber extension, set the call forwarding options to the following:

- Unrestricted source
- Forward when the extension is not answered

- Forward when the extension is busy

Setting Up the TIMG Units

Do the following procedures to set up the TIMG units (media gateways) that are connected to the phone system.

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

- The phone system is connected to the TIMG units by using T1 digital lines and the applicable RS-232 serial cable.
- The TIMG units are connected to a power source.
- The TIMG units are ready to be connected to the LAN or WAN.



Caution

Because TIMG units have the same default IP address, you must set them up one at a time. Otherwise, you will experience IP address conflicts.

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 TIMG units.

To Download the TIMG Firmware Update Files for TIMG Units

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



Note

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

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

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

- Step 11** Click **Extract**.
- Step 12** In the Extract dialog box, browse to the directory where you want the extracted files, and click **Extract**.
- Step 13** Close the window for the extracting application.

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

- Step 1** On the Windows workstation, add a temporary route to enable access to the TIMG units.
- On the Windows Start menu, click **Run**.
 - Enter **cmd**, and press **Enter**. The Command Prompt window appears.
 - At the command prompt, enter **route add 10.12.13.74 <IP Address of Workstation>**, and press **Enter**.

For example, if the IP address of the workstation is 198.1.3.25, enter “route add 10.12.13.74<space>198.1.3.25” in the Command Prompt window.
 - Close the Command Prompt window.
- Step 2** Connect a TIMG unit to the network.
- Step 3** In the web browser, go to **http://10.12.13.74**.
- Step 4** To log in, enter the following case-sensitive settings.

Table 5-1 Login Settings

Field	Setting
Username	Enter admin .
Password	Enter IpodAdmin .

- Step 5** Click **OK**.
- Step 6** On the System menu, click **Upgrade**.
- Step 7** On the Upgrade page, under Browse for Upgrade File, click **Browse**.
- Step 8** In the Choose File dialog box, browse to the directory on the Windows workstation that has the extracted TIMG firmware update files.
- Step 9** Click **T1E1_<xx>.app** (where <xx> is multiple digits), and click **Open**.
- Step 10** On the Upgrade page, click **Install File**.
- Step 11** After the file is installed, a message prompting you to restart the TIMG unit appears. Click **Cancel**.



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

- Step 12** Repeat [Step 6](#) through [Step 11](#) for the file T1E1_<xx>.fsh.
- Step 13** On the System menu, click **Upgrade**.
- Step 14** On the Upgrade page, under Browse for Upgrade File, click **Browse**.
- Step 15** In the Choose File dialog box, browse to the file T1E1_<xx>.msd.

- Step 16** Click **T1E1_<xx>.msd**, and click **Open**.
- Step 17** On the Upgrade page, click **Install File**.
- Step 18** After the file is installed, a message prompting you to restart the TIMG unit appears. Click **OK**.
- Step 19** In the web browser, go to **http://10.12.13.74**.
- Step 20** To log in, enter the following case-sensitive settings.

Table 5-2 Login Settings

Field	Setting
Username	Enter admin .
Password	Enter IpodAdmin .

- Step 21** Click **OK**.
- Step 22** On the System menu, click **Password**.
- Step 23** On the Change Password page, enter the following settings.

Table 5-3 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 24** Click **Change**.
- Step 25** On the Configuration menu, click **Mgmt Protocols**.
- Step 26** On the Management Protocols page, enter the following settings.

Table 5-4 Management Protocols Page Settings

Field	Settings
E-mail Alarms Enabled	Click No .
SNMP Traps Enabled	Click No .
HTTP Server Enabled	Click Yes .
HTTPs Server Enabled	Click No .

- Step 27** Click **Submit**.
- Step 28** On the Configuration menu, click **Routing Table**.
- Step 29** On the Routing Table page, under Router Configuration, click **VoIP Host Groups**.
- Step 30** Under VoIP Host Groups, enter the following settings for the first VoIP Host Group.

Table 5-5 First VoIP Host Group Settings

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

Step 31 For Cisco Unity without failover, under Host List, enter the host name or IP address of the Cisco Unity server and the server port in the format <host name or IP address>:<server port>.

For Cisco Unity with failover configured, under Host List, confirm that field contains the host name or IP address of the primary Cisco Unity server and the server port in the format <host name or IP address>:<server port>.

For the server port of the first TIMG unit, enter a value (which is typically 5060) that matches the setting in UTIM of the SIP Port field for the TIMG unit. When you configure more than one TIMG unit, increase this setting by 1 for each successive unit. For example, unit 2 will be 5061, unit 3 will be 5062, and so on. This setting must match the setting in UTIM of the SIP Port field for the TIMG unit.

Step 32 For Cisco Unity without failover, continue to [Step 34](#). For Cisco Unity with failover configured, under Host List, click **Add Host**.

Step 33 In the second field, enter the host name or IP address of the secondary Cisco Unity server and the server port in the format <host name>:<server port>.

For the server port of the first TIMG unit, enter a value (which is typically 5060) that matches the setting in UTIM of the SIP Port field for the TIMG unit. When you configure more than one TIMG unit, increase this setting by 1 for each successive unit. For example, unit 2 will be 5061, unit 3 will be 5062, and so on. This setting must match the setting in UTIM of the SIP Port field for the TIMG unit.



Caution Do not add a third host under Host List or a second host group under VoIP Host Groups. Otherwise, failover may not function correctly.

Step 34 Click **Submit**.

Step 35 On the Configuration menu, click **TDM > T1/E1**.

Step 36 On the T1/E1 Configuration page, enter the following settings.

Table 5-6 T1/E1 Configuration Page Settings

Field	Settings
Line Settings	
Line Mode	Click T1 .
Signaling Mode	Click CAS .
Interface Mode	Click Terminal .
T1 Line	
Line Encoding	Enter the setting that matches the phone system programming.

Table 5-6 T1/E1 Configuration Page Settings (continued)

Field	Settings
Framing	Enter the setting that matches the phone system programming.
Selects Transmit Pulse Waveform	Enter the setting that matches the phone system programming.
T1 CAS Protocol	
T1 CAS Protocol	Enter the setting that matches the phone system programming.
Flash Hook	Enter the setting that matches the phone system programming.
Consult Call Dialtone Drop Code	Enter the setting that matches the phone system programming.
Consult Call Proceeding Drop Code	Enter the setting that matches the phone system programming.
Consult Call Busy Drop Code	Enter the setting that matches the phone system programming.
Consult Call Error Drop Code	Enter the setting that matches the phone system programming.
Consult Call Connected Drop Code	Enter the setting that matches the phone system programming.
Consult Call Disconnected Drop Code	Enter the setting that matches the phone system programming.
MWI confirmation Tone	Click No .
CPID Type	Click TypeII_CPID .
Initial Wait for Inband CPID	Enter 100 .
Inband CPID Complete Timeout	Enter 300 .
Failover Settings	
Enable Failover	<i>(Cisco Unity without failover)</i> Click No . <i>(Cisco Unity with failover configured)</i> Click Yes .

Step 37 Click **Submit**.

Step 38 On the Configuration menu, click **TDM > General**.

Step 39 On the TDM General Settings page, enter the following settings.

Table 5-7 TDM General Settings Page Settings

Field	Settings
PCM Coding	Click uLaw .
Minimum Call Party Delay (ms)	Enter 500 .
Maximum Call Party Delay (ms)	Enter 2000 .

Table 5-7 TDM General Settings Page Settings (continued)

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

Step 40 Click **Submit**.

Step 41 On the Configuration menu, click **TDM > Port Enable**.

Step 42 On the TDM Port Enabling page, click **No** for the ports that you want to disable on the TIMG unit.

Step 43 Confirm that **Yes** is selected for all other ports on the TIMG unit.

Step 44 Click **Submit**.

Step 45 On the Configuration menu, click **VoIP > General**.

Step 46 On the VoIP General Settings page, enter the following settings.

Table 5-8 VoIP General Settings Page Settings

Field	Setting
User-Agent	
Host and Domain Name	Enter the domain name of the TIMG unit.
Transport Type	Click UDP .
Call as Domain Name	Click No .
SIPS URI Scheme Enabled	Click No .
Invite Expiration (sec)	Enter 120 .
Server	
DNS Server Address	Enter the IP Address of the Domain Name Server that the TIMG unit will use.
Registration Server Address	Leave this field blank.
Registration Server Port	Enter 5060 .

Table 5-8 VoIP General Settings Page Settings (continued)

Field	Setting
Registration Expiration (sec)	Enter 3600 .
TCP/UDP	
UDP/TCP Transports Enabled	Click Yes .
TCP/UDP Server Port	Enter 5060 .
Proxy	
Primary Proxy Server Address	Leave this field blank.
Primary Proxy Server Port	Not applicable. Leave the default setting.
Backup Proxy Server Address	Not applicable. Leave the default setting.
Backup Proxy Server Port	Not applicable. Leave the default setting.
Proxy Query Interval	Enter 10 .
Timing	
T1 Time	Enter 500 .
T2 Time	Enter 4000 .
T4 Time	Enter 5000 .
Monitoring	
Monitor Call Connections	Click No .

Step 47 Click **Submit**.



Step 48 On the Configuration menu, click **VoIP > Media**.

Step 49 On the VoIP Media Settings page, enter the following settings.

Table 5-9 VoIP Media Settings Page Settings

Field	Settings
Audio	
Audio Compression	Click the preferred codec for audio compression: <ul style="list-style-type: none"> • G.711u—The TIMG unit will use only the G.711 mu-law codec. • G.729AB—The TIMG unit will prefer the G.729 codec but can also use the G.711 mu-law codec.
RTP Digit Relay Mode	Click RFC2833 .
Signaling Digit Relay Mode	Click Off .
Voice Activity Detection	Click On .

Table 5-9 VoIP Media Settings Page Settings (continued)

Field	Settings
Frame Size	<p>Click the applicable setting:</p> <ul style="list-style-type: none"> • G.711—20 • G.729AB—10 <p> Caution Failure to use the correct setting will result in recorded messages containing nothing but silence.</p>
Frames Per Packet	<p>Click the applicable setting:</p> <ul style="list-style-type: none"> • G.711—1 • G.729AB—2 <p> Caution Failure to use the correct setting will result in recorded messages containing nothing but silence.</p>

Step 50 Click **Submit**.

Step 51 On the Configuration menu, click **VoIP > QOS**.

Step 52 On the VoIP QOS Configuration page, enter the following settings.

Table 5-10 VoIP QOS Configurative Page Settings

Field	Settings
Call Control QOS Byte	Enter 104 (equivalent to DSCP AF31).
RTP QOS Byte	Enter 184 (equivalent to DSCP EF).

Step 53 Click **Submit**.

Step 54 On the Configuration menu, click **Serial > General**.

Step 55 On the Serial Port, COM 1 page, enter the following settings.

Table 5-11 Serial Port, COM 1 Page Settings

Field	Settings
Serial Port Baud Rate	Click the setting that is configured on the phone system. The default setting is 9600.
Serial Port Parity	Click the setting that is configured on the phone system. The default setting is None.

Table 5-11 Serial Port, COM 1 Page Settings (continued)

Field	Settings
Serial Port Data Bits	Click the setting that is configured on the phone system. The default setting is 8.
Serial Port Stop Bits	Click the setting that is configured on the phone system. The default setting is 1.

Step 56 Click **Submit**.

Step 57 On the Configuration menu, click **Serial > Switch Protocol**.

Step 58 On the Switch Protocol page, enter the following settings.

Table 5-12 Switch Protocol Page Settings

Field	Settings
Serial Port, COM 1	
Serial Mode (Master/Slave)	Click the applicable setting: <ul style="list-style-type: none"> • Master—Click this setting when this TIMG unit is connected to the data link serial cable from the phone system. There can be only one master TIMG unit in a phone system integration. • Slave—Click this setting when this TIMG unit is not connected to the data link serial cable from the phone system. There can be multiple slave TIMG units in a phone system integration.
Serial Interface Protocol	Click the serial protocol that your phone system uses: <ul style="list-style-type: none"> • SMDI • MCI • MD110
MCI Message Extension Length	<i>(For MCI protocol only)</i> Click the applicable number of extension digits.
MCI Message Type	<i>(For MCI protocol only)</i> Click the applicable message type.
Cpid Length	Click the applicable setting. Typically, the settings are 7 or 10.
Cpid Padding String	Enter the applicable string or leave this field blank. Typically, the setting is one of the following: <ul style="list-style-type: none"> • A string of zeros, where the number of zeros matches the setting of the Cpid Len field. • A prefix that is provided by the Centrex service.
Voice Mail Port Length	If the setting of the Serial Interface Protocol field is MD-110, enter 2 . Otherwise, accept the default of 7 .
System Number	Enter the applicable setting. Typically, the setting is 1.
MWI Response Timeout (ms)	Enter 2000 .

Table 5-12 Switch Protocol Page Settings (continued)

Field	Settings
IP Address of Serial Server	If the TIMG unit is the master, leave this field blank. If the TIMG unit is a slave, enter the IP address of the master TIMG unit (the TIMG unit that is connected to the data link serial cable from the phone system).
Serial Cpid Expiration (ms)	Enter 5000 .
Logical Extension Number	
<port number>	If the setting of the Serial Interface Protocol field is MCI or MD-110, enter the extension number for each port on the TIMG unit. If the setting of the Serial Interface Protocol field is SMDI, enter the logical port number. Typically, the setting is 1 for port 1, 2 for port 2, and so on beginning with the master TIMG unit and continuing through each of the slave TIMG units.

Step 59 Click **Submit**.

Step 60 On the Configuration menu, click **IP**.

Step 61 On the IP Settings, LAN1 page, enter the following settings.

Table 5-13 IP Settings, LAN1 Page Settings

Field	Settings
Client IP Address	Enter the new IP address that you want to use for the TIMG unit. (This is the IP address that you will enter in UTIM 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 TIMG units will use.
BOOTP Enabled	If you are using DHCP, click Yes . If you are not using DHCP, click No .

Step 62 Click **Submit**.

Step 63 On the Configuration menu, click **Tone Detection**.

Step 64 On the Tone Detection page, under Call Progress Tone - Learn, in the Learn Tone Event field, click **Busy** and do the following substeps to verify that the tone is correct.

- 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 65** Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 64c](#). from the third phone.
- Step 66** Click **Learn**.
- Step 67** On the Tone Detection page, under Call Progress Tone - Learn, in the Learn field, click **Error** and do the following substeps to verify that the tone is correct.
- From an available phone, dial an extension that does not exist.
 - Confirm that you hear the reorder or error tone.
 - Hang up the phone.
- Step 68** Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 67a](#).
- Step 69** Click **Learn**.
- Step 70** On the Tone Detection page, under Call Progress Tone - Learn, in the Learn field, click **Ringback** and do the following substeps to verify that the tone is correct.
- From an available phone, dial an extension that does exist.
 - Confirm that you hear the ringback tone.
 - Hang up the phone.
- Step 71** Under Call Progress Tone - Learn, in the Dial String field, enter the extension that you dialed in [Step 70a](#).
- Step 72** Click **Learn**.
- Step 73** Click **Submit**.
- Step 74** Hang up the phones that you used in [Step 64](#).
- Step 75** On the System menu, click **Restart**.
- Step 76** On the Restart page, click **Restart Unit Now**.
- Step 77** Repeat [Step 2](#) through [Step 76](#) on all remaining TIMG units.
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Creating an Integration with the Phone System


After ensuring that the phone system, the TIMG units, and the Cisco Unity server are ready for the integration, do the following procedures to set up the integration and to enter the port settings.

To Create an Integration

- Step 1** If UTIM is not already open, on the Windows Start menu of the Cisco Unity server, click **Programs > Cisco Unity > Manage Integrations**. UTIM appears.
- Step 2** In the left pane of the UTIM window, click **Cisco Unity Server**.
- Step 3** On the Integration menu of the UTIM window, click **New**. The Telephony Integration Setup Wizard appears.
- Step 4** On the Welcome page, click **Circuit-switched via Intel PIMG** and click **Next**.
- Step 5** On the Name the Phone System Integration page, accept the default name or enter the phone system name to identify this integration, then click **Next**.
- Step 6** On the Enter PIMG Settings page, click **Add**.

Step 7 In the Add PIMG dialog box, enter the following settings, then click **OK**.

Table 5-14 Settings for the Add PIMG Dialog Box

Field	Setting
Display Name	Accept the default name or enter another name to identify this TIMG unit.
PIMG Type	Click the applicable setting: <ul style="list-style-type: none"> • TIMG (Single Span) • TIMG (Dual Span) • TIMG (Quad Span) (requires ES15)
IP Address	Enter the IP address of this TIMG unit.
SIP Port	For the first TIMG unit, enter 5060 . When you configure more than one TIMG unit, increase this setting by 1 for each successive unit. For example, unit 2 will be 5061, unit 3 will be 5062, and so on. This setting must match the server port setting on the VoIP Host Group page of the TIMG unit.  Caution You must enter the documented setting. Otherwise, MWIs will not function correctly.
Phone Lines (Ports) Connected	Enter the applicable setting: <ul style="list-style-type: none"> • 24 (for single-span TIMG units) • 48 (for dual-span TIMG units) • 96 (for quad-span TIMG units; requires ES15) <p>If you want to use fewer than the default number of voice messaging ports, enter the number of ports (or phone lines) that you want to use with this TIMG unit.</p>

Step 8 Repeat [Step 6](#) and [Step 7](#) for each remaining TIMG unit that you are connecting to the Cisco Unity server.

You can press the following buttons to modify, delete, or verify the TIMG units that you are connecting to the Cisco Unity server.

Table 5-15 Buttons on the Enter PIMG Settings Page


Field	Setting
Add	Displays the Add PIMG dialog box to add another TIMG unit to the integration.
Modify	Displays the Modify PIMG dialog box so that you can modify the settings of the selected TIMG unit.
Delete	Deletes the selected TIMG unit from the integration.

Table 5-15 Buttons on the Enter PIMG Settings Page (continued)

Field	Setting
Ping Servers	Confirms that the IP address is correct for all TIMG units that are used by this integration.
Licensing	Displays a list of the licensed, used, and available voice messaging ports on the Cisco Unity server.

- Step 9** On the Enter PIMG Settings page, click **Next**.
- Step 10** On the PIMG Integration with the PBX page, click **Yes**.
- Step 11** In the This PIMG Is the Serial Master field, click the name of the TIMG unit that is connected to the serial cable from the phone system, then click **Next**.
- Step 12** On the Configure Cisco Unity SIP Settings page, enter the following settings, then click **Next**.

Table 5-16 Settings for the Configure Cisco Unity SIP Settings Page

Field	Setting
Contact Line Name	<p>(Cisco Unity without failover) Enter the voice messaging line name that subscribers use to contact Cisco Unity and that Cisco Unity will use to register with the TIMG units.</p> <p>(Cisco Unity with failover configured) Enter the name the primary Cisco Unity server. This setting must match the Port X Endpoint parameter settings in the TIMG administration. This setting must be the same for both the primary and the secondary Cisco Unity servers.</p>
Cisco Unity SIP Port	<p>Enter the IP port on Cisco Unity that callers and the SIP server use to connect to voice mail. We recommend using the default setting.</p> <p> Caution The setting must match the setting on the TIMG units. If there are multiple phone system integrations with Cisco Unity, this setting must be unique for all integrations. Otherwise, the integration will not function correctly.</p>
Preferred Codec	Click the codec that Cisco Unity will first attempt to use on outgoing calls.

- Step 13** If other integrations already exist, the Enter Trunk Access Code page appears. Enter the extra digits that Cisco Unity must use to transfer calls through the gateway to extensions on the other phone systems with which it is integrated. Then click **Next**.
- Step 14** On the Reassign Subscribers page, any subscribers whose phone system integration has been deleted and who are not currently assigned to a phone system integration will appear in the list.
- If no subscribers appear in the list, click **Next** and continue to [Step 15](#).
- Otherwise, select the subscribers that you want to assign to this phone system integration and click **Next**. You can use the following selection controls for selecting subscribers.

Table 5-17 Selection Controls for the Reassign Subscribers Page

Selection Control	Effect
Check All	Checks the check boxes for all subscribers in the list.
Uncheck All	Unchecks the check boxes for all subscribers in the list.
Toggle Selected	For the subscribers highlighted in the list, toggles between checking and unchecking the check boxes. If some highlighted subscriber check boxes are checked and others are unchecked, clicking this button will check all the check boxes. Clicking again will uncheck all the check boxes.

Step 15 On the Reassign Call Handlers page, any call handlers whose phone system integration has been deleted and that are not currently assigned to a phone system integration will appear in the list.

If no call handlers appear in the list, click **Next** and continue to [Step 16](#).

Otherwise, select the call handlers that you want to assign to this phone system integration and click **Next**. You can use the following selection controls for selecting call handlers.

Table 5-18 Selection Controls for the Reassign Call Handlers Page

Selection Control	Effect
Check All	Checks the check boxes for all call handlers in the list.
Uncheck All	Unchecks the check boxes for all call handlers in the list.
Toggle Selected	For the call handlers highlighted in the list, toggles between checking and unchecking the check boxes. If some highlighted call handler check boxes are checked and others are unchecked, clicking this button will check all the check boxes. Clicking again will uncheck all the check boxes.

Step 16 On the Completing page, verify the settings you entered, then click **Finish**.

Step 17 At the prompt to restart the Cisco Unity services, click **Yes**. The Cisco Unity services restart.

Alternatively, you can restart the Cisco Unity services in UTIM on the Tools menu by clicking **Restart Cisco Unity**.

To Enter the Voice Messaging Port Settings for the Integration

Step 1 After the Cisco Unity services restart, on the View menu, click **Refresh**.

Step 2 In the left pane of the UTIM window, expand the phone system integration that you are creating.

Step 3 In the left pane, click the name of the first TIMG unit.

Step 4 In the right pane, click the **Ports** tab.

Step 5 Enter the settings shown in [Table 5-19](#) for the voice messaging ports.

For best performance, use the first voice messaging ports for incoming calls and the last ports to dial out. This helps minimize the possibility of a collision, in which an incoming call arrives on a port at the same time that Cisco Unity takes the port off-hook to dial out.



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

Table 5-19 Settings for the Voice Messaging Ports

Field	Considerations
Extension	Enter the extension for the port as assigned on the phone system.
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.
Answer Calls	Check this check box to designate the port for answering calls. These calls can be incoming calls from unidentified callers or from subscribers.
Message Notification	Check this check box to designate the port for notifying subscribers of messages. Assign Message Notification to the least busy ports.
Dialout MWI <i>(not used by serial integrations)</i>	Do not check this check box. Otherwise, the integration may not function correctly.
AMIS Delivery <i>(available with the AMIS licensed feature only)</i>	Check this check box to designate the port for making outbound AMIS calls to deliver voice messages from Cisco Unity subscribers to users on another voice messaging system. Cisco Unity supports the Audio Messaging Interchange Specification (AMIS) protocol, which provides an analog mechanism for transferring voice messages between different voice messaging systems. This setting affects outbound AMIS calls only. All ports are used for incoming AMIS calls. Because the transmission of outgoing AMIS messages may tie up voice ports for long periods of time, you may want to adjust the schedule on the Network > AMIS > Schedule page so that outgoing AMIS calls are placed during closed hours or at times when Cisco Unity is not processing many calls.
TRAP Connection	Check this check box so that subscribers can use the phone as a recording and playback device in Cisco Unity web applications and e-mail clients. Assign TRAP Connection to the least busy ports.

- Step 6** Click **Save**.
- Step 7** Click the **SIP Info** tab.
- Step 8** Uncheck the **Register with SIP Server** check box and click **Save**.
- Step 9** At the prompt to restart the Cisco Unity services, click **No**.
- Step 10** Repeat [Step 3](#) through [Step 9](#) for all remaining TIMG units.
- Step 11** In the left pane, click **Properties** for the phone system.
- Step 12** In the right pane, click the **PIMG** tab.
- Step 13** Under Set Messaging Waiting Indicators (MWI) Using This Method, confirm that the **Out-of-Band - SIP NOTIFY** option is selected.
- Step 14** Click **Save**.

Step 15 At the prompt to restart the Cisco Unity services, click **Yes**.

Step 16 After the Cisco Unity services restart, exit UTIM.



Caution

Do not edit the phone configuration file (also known as the switch ini file) to customize this integration. If you change the settings in this file, the integration may not function correctly.

If the number of voice messaging ports on the Cisco Unity server is 72 or more, and the Cisco Unity server is running Windows Server 2003 or Exchange is the message store, do the following procedure.

To Adjust the Advanced Settings for 72 or More Voice Messaging Ports

Step 1 On the Cisco Unity server, on the Windows Start menu, click **Programs > Cisco Unity > Cisco Unity Tools Depot**.

Step 2 In the Tools Depot window, in the left pane, expand **Administration Tools** and double-click **Advanced Settings Tool**.

Step 3 If the Cisco Unity server is running Windows Server 2003, do the following substeps. Otherwise, continue to [Step 4](#).

- a. In the Cisco Unity Advanced Settings window, in the left pane, click **Messaging - 72 or More Voice Ports - Enable Low-Fragmentation Heap**.
- b. In the New Value drop-down box, click **1** and click **Set**.
- c. When prompted that the value has been set, click **OK**.

Step 4 If Exchange is the message store, do the following substeps. Otherwise, continue to [Step 5](#).

- a. In the Cisco Unity Advanced Settings window, in the left pane, click **Messaging - 72 or More Voice Ports - Number of MAPI Sessions Per Exchange Server**.
- b. In the New Value drop-down box, click the applicable setting, then click **Set**.

Number of Voice Messaging Ports	Setting
72 to 83	Click 2 .
84 to 95	Click 3 .
96 to 119	Click 4 .
120 to 143	Click 5 .
144	Click 6 .

- c. When prompted that the value has been set, click **OK**.

Step 5 Close the Tools Depot window.

Step 6 Restart the Cisco Unity server.

