CHAPTER 4

Troubleshooting Communication, Voice Quality and Other Equipment Issues

This chapter describes how to resolve communication and voice quality issues and hardware, firmware, and software issues that you might encounter with other equipment, such as the RMS, and includes the following sections:

Troubleshooting Communication Issues

This section provides information about communications issues that you may encounter and how to troubleshoot them. The following topics are included:

Analyzing Communications Problems Between All Locations on a Channel

Problem The multicast address for a channel is set to All and the users associated to the channel are from Locations A, B, and C. Users in Locations B and C can converse with each other on the channel, but users in Location A cannot hear the conversation.

Solution Although the multicast address for the channel is set to All, the address may not be configured to reach everyone in the domain. You may need to reconfigure the router to include Location A. If the location is configured properly, some other areas to look at include an IP access list that is blocking that channel, a firewall setting, or a multicast address that is not properly configured.

For more information about multicast troubleshooting, refer to the *IP Multicast Troubleshooting Guide* at the following URL:

http://cisco.com/en/US/tech/tk828/technologies_tech_note09186a0080094b55.shtml

Troubleshooting Communication Failures Between VTG Participants

Problem Participants in a particular VTG cannot communicate with each other.

Solution If Protocol Independent Multicast (PIM) on your router is set to sparse mode, this situation might indicate that you have not configured a rendezvous point (RP), or that all RPs are unreachable. If you set the PIM of the router to

sparse mode and do not configure an RP, the router drops the packets and your VTG participants do not hear any audio. To ensure that this problem does not occur, make sure that you configure an RP, or set the router to sparse-dense mode.

For more information about configuring the router, refer to the "Configuring the Cisco IPICS RMS Component" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*. For more information about multicast troubleshooting, refer to the *IP Multicast Troubleshooting Guide* at the following URL:

http://cisco.com/en/US/tech/tk828/technologies_tech_note09186a0080094b55.shtml

Resolving Communications Problems For Newly-Added PMC Users on a Channel

Problem Several PMC users have successfully communicated on a channel. However, subsequent PMC users, after successfully logging in to the same location and attempting to activate the same channel, can no longer listen or talk on the channel.

Solution The router that the channel uses may not have sufficient digital signal processor (DSP) resources. For this channel to accommodate more PMC users, you may need to add more DSPs. For more information about configuring the RMS, refer to the "Configuring the Cisco IPICS RMS Component" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

To help calculate the DSPs that you need based on your specific configuration, refer to the *High-Density Packet Voice Digital Signal Processor Modules* document, which is available at the following URL:

http://www.cisco.com/en/US/products/ps6024/index.html

Removing a Logged-Out PMC User from the Active Users List

Problem After completing a call, a PMC user logs out of the PMC application. When you view the list of active PMC users in the **Administration > Active Users > PMC** window, the status of the PMC user displays as **Logged-in**.

Solution The server did not receive a logout command from the PMC. This situation may occur if the PMC experienced a network connectivity disruption while the PMC user was logging out.

To log out the user and regain RMS and network resources, perform the following procedure:

Procedure

Step 1 From the Administration Console, navigate to the **Administration > Active Users > PMC** window.

The PMC Users pane displays the list of active PMC users.

Step 2 Locate the user ID of the logged-out PMC user.

Step 3 To manually log out this user, check the check box next to the PMC user ID.

Step 4 Click **Logout**.

The PMC user status changes from **Logged-in** to **Logging-out**.

Step 5 To update the status, click **Refresh**.

Cisco IPICS removes the user from the list of active users.

PMC Users Can Listen to Channels But Cannot Listen to VTGs

Problem PMC users can remotely join and listen to channels, but when they attempt to listen to a VTG that was created from those channels, the PMC users cannot hear any audio.

Solution In Cisco IPICS, an RMS provides support for only one Cisco IPICS location (a Cisco IPICS location is defined as a multicast domain). All of the locations and routers that are configured in the Cisco IPICS system must be able to communicate by using the multicast addresses that have been defined in the

global multicast address pool. All addresses in the multicast pool must be able to reach any RMS, PMC, or Cisco Unified IP Phone that is part of the Cisco IPICS system.

It is important that all RMS components be able to hear or subscribe to all addresses that are defined in the global multicast address pool. Otherwise, an RMS in one location may attempt to provide access to a VTG that is comprised of channels in another, unreachable location. In this case, one RMS cannot listen to the global multicast stream that has been generated by another RMS, so the SIP connection that was created for the user does not work.

To resolve this problem, take either of the following actions:

- From the multicast address pool, remove any multicast addresses that are not reachable by all RMS components, PMC clients, and Cisco Unified IP Phones.
- Deactivate any RMS components that cannot participate in the global multicast address pool. To deactivate an RMS component, navigate to the **Configuration > RMS** window in the Administration Console. Click the RMS that you need to deactivate; then, from the General tab, click **Deactivate**.

Configuring the RMS to Eliminate Automatic Channel Deactivation for SIP-Based Remote Connections

Problem Channels that are activated via a SIP-based remote connection may be deactivated by the RMS if there is no traffic activity after a 30 minute interval. If the PMC user activates several channels, the timing to deactivate is separate for each channel.

Solution The PMC automatically reactivates the connection after 30 seconds. Alternatively, you can reactivate the channel by clicking the **Activation** button on the PMC.

To minimize this problem, the system administrator should ensure that the RMS configuration includes the following commands:

Router(config)# **ip rtcp report interval 5001**

Router(config)# **gateway**

Router(config-gateway)# **media-inactivity-criteria rtcp**

Router(config-gateway)# **timer receive-rtcp 5**

For more information about the correct router configuration for Cisco IPICS, refer to the "Configuring the Cisco IPICS RMS Component" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Note These commands affect the timeouts for all Real-time Transport Protocol (RTP), or voice, traffic on the RMS, not just for Cisco IPICS related communications.

Eliminating Feedback Noise on VTG

Problem When a particular user talks in a VTG or channel, there is a continuous feedback noise.

Solution Feedback can occur when the audio from the conference plays through the end device of a user who is talking in the conference. For example, you might receive feedback noise if you are listening to a channel or VTG on a handheld radio and talking in that same VTG or channel by using a PMC. The audio from the (handheld radio) speaker feeds back into the microphone (on the PMC). The feedback noise can include sounds, such as metallic echoes or whistling noises.

To avoid feedback, users should turn off radios or speakers in the area in which they communicate on PMC client machines or Cisco Unified IP Phones.

Understanding Communication Problems Between Cisco IPICS End Point Devices and Radios That Require a Guard Tone

Problem When you use a channel that is configured with a radio connection, certain Cisco IPICS end point devices may be able to transmit and receive audio, but the audio may not transmit to radio users. This issue arises when the radio requires a low level guard tone (LLGT).

If the radio requires an LLGT but the LLGT is not statically configured on the LMR gateway, the audio that an IP phone or dial-in/dial-out user sends does not transmit to radio users. In this case, only the PMC, dial-in/dial-out, and other IP phone users can hear the transmission.

If the radio does not require an LLGT, transmissions flow as they would over a channel that does not have an associated radio connection. In this case, all end-users hear the IP phone or dial-in/dial-out user transmissions.

If the LMR gateway includes the LLGT static configuration, or if you have configured the correct guard tone for the channel, the PMC transmission is audible to all end-users.

Solution Make sure that you statically configure the LLGT for all radios that require an LLGT.

In addition, note that when you deactivate and then activate (shutdown and no shutdown) an E&M port on the LMR gateway, the router might not process an LLGT while the port is becoming active. This condition can cause short communication outages between radios that require an LLGT and other Cisco IPICS end points.

For additional information about LMRs, refer to the following documentation:

- The "Cisco IPICS LMR Gateway Configurations" chapter of the *Solution Reference Network Design (SRND) for Cisco IPICS, Release 2.1(1)*.
- The "Introducing Cisco IPICS" chapter of the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Troubleshooting Voice Quality Issues

This section describes problems that are related to voice quality and includes the following topics:

Voice Quality Degrades for PMC

Problem Voice quality degrades for PMC users who are connected via multicast or SIP. This problem may correspond to a period of high activity on the router.

Solution The PMC client devices may be sending IP packets that are incorrectly marked for voice priority.

For successful voice transmission, each IP packet must be properly marked in the Quality of Service (QoS) Differentiated Service Code Point (DSCP) to ensure the highest priority handling when the packets are transmitted between end points. When devices drop or enqueue packets that are not correctly marked for QoS, voice quality can degrade.

To help resolve this problem, check to make sure that the Microsoft QoS Packet Scheduler is installed on each PMC client machine. For additional details and information about how to install the Microsoft QoS Packet Scheduler, go to http://www.microsoft.com and search for QoS Packet Scheduler.

Troubleshooting Poor PMC Voice Quality

Problem Voice quality for PMC users is very poor and some PMC connections are failing.

Solution When you configure a channel, you choose the codec, which is the voice-compression algorithm that encodes the voice signal for transmission and then decodes it when the signal reaches the destination. Cisco IPICS allows you to choose between the G.729 codec and G.711 codec.

This problem is most common when you configure a channel to use the G.729 codec, because this codec requires greater DSP resources. G.729 is used for all SIP (remote) connections.

To resolve this problem, ensure that all the DS0 resources in your system are capable of supporting simultaneous G.729 connections.

If the DS0 resources cannot support simultaneous G.729 connections, limit the number of G.729 channels that you use. When it is possible, use G.711 rather than G.729, because G.711 uses fewer DSP resources. For more information about using codecs with Cisco IPICS, refer to the “Choosing a Codec” section in the “Cisco IPICS Infrastructure Considerations” chapter in the *Solution Reference Network Design (SRND) for Cisco IPICS Release 2.1(1)*.

You should also restrict the number of remote users who have access to all channels or VTGs, and associate only the required channels to a remote user.

Dial Engine Calls Experience Degraded Voice Quality

Problem Calls to or from the dial engine experience degraded voice quality.

Solution The dial engine supports only the G.711 ulaw codec. If your media connections use a different codec, such as G.729, a transcoder must perform the conversion to the G.711 ulaw codec before the voice stream reaches the dial engine. Transcoding can be enabled by using your SIP provider, by configuring an MTP in Cisco Unified Communications Manager, or it can be performed in the Cisco IOS SIP gateway with sufficient DSP resources.

For detailed information about configuring a transcoder in Cisco Unified Communications Manager, release 5.1(2b), refer to the "Transcoder Configuration" chapter in the *Cisco Unified CallManager Administration Guide, Release 5.1(3)* at the following URL:

http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

For more information about Cisco IOS gateway-related features and functionality, refer to the *Cisco Multiservice IP-to-IP Gateway* document at the following URL:

http://www.cisco.com/en/US/products/sw/voicesw/ps5640/tsd_products_support_series_home.html

This document provides information about the Cisco Multiservice IP-to-IP Gateway (IPIPGW), which facilitates connectivity between independent VoIP networks by enabling H.323 VoIP and videoconferencing calls from one IP network to another.

Resolving Interruption of Voice Communications When You Use VTGs and SIP-Connected PMC Client Machines

Problem Voice communications are interrupted when you use VTGs and SIP-connected PMC client machines. Symptoms may include one-way audio transmission, no voice transmission, dropped connections, and poor audio quality.

The **debug vpm signaling** command returns unexpected results (regarding M-lead to E-lead mapping) for voice ports that connect VTGs via T1 loopback ports.

When this problem occurs, Cisco IPICS may generate error messages in the ipics.log that appear similar to the following example:

```
2005-11-10 19:25:42,981 [pool-4-thread-1] ERROR IOSRMSCommunicator:433
- 10.32.65.127  getControllers() T1 is missing a required command:
'cablelength short 133ft'
2005-11-10 19:25:42,981 [pool-4-thread-1] ERROR IOSRMSCommunicator:437
- 10.32.65.127  getControllers() T1 controller 1/0/1 UNUSABLE. (Found
24 voice ports)
```

Solution Cisco IPICS requires that the **cablelength short** command be configured on all T1 controllers. This command allows you to set a cable length of 133 feet or less for a T1 link on the router.

For detailed RMS configuration information, refer to the "Configuring the Cisco IPICS RMS Component" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Troubleshooting Equipment Issues

The issues that are detailed in this section describe problems that you may encounter with the Cisco IPICS hardware. For issues that relate to communication difficulties, see the "Troubleshooting Communication Issues" section on page 4-1.

This section includes the following topics:

No Power to Cisco Unified IP Phones

Problem Cisco Unified IP Phones are not receiving power.

Solution When there is no power flowing to the Cisco Unified IP Phones, one of the following circumstances may be true:

- There is no Power over Ethernet (PoE) module in the router.
- The Cisco IOS software version is incorrect.

Note For information about the firmware that Cisco IPICS supports for use with Cisco Unified IP Phones, refer to the *Cisco IPICS Compatibility Matrix*.

To determine the cause of the power issue, enter the following command on the router:

[router] # **show power**

- If the command returns an "unsupported command" message, the Cisco IOS software version might be incorrect. Installing the correct Cisco IOS version may correct the problem.
- If the command returns information about the power, the cause of the problem might be that there is no PoE module in the router. Installing a PoE module should fix the problem.

Note You can also use an AC/DC adapter to deliver power to the phones. For more information, consult the product documentation for your model of Cisco Unified IP Phone.

Analyzing One-Way Audio Issues Between PMC Client Machines and Cisco Unified IP Phones

Problem Cisco Unified IP Phone users can hear PMC users on a channel, but the PMC users cannot hear the phone users.

Solution This situation could occur if the multicast address for a channel is assigned to another resource in your network. Make sure that you assign a unique multicast address to each channel and VTG and that no other resource in your network uses that multicast address. For more information, refer to the "Guidelines for Using IP Multicast Addresses with Cisco IPICS" section in the "Performing Cisco IPICS System Administrator Tasks" chapter in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Resolving One-Way Audio Problems on the Cisco Unified IP Phone That Occurs After You Receive or Place a Call

Problem After you connect to a channel or VTG by using a Cisco Unified IP Phone, you either receive a call or place an outgoing call. When you try to reconnect to the channel or VTG, you experience one-way audio (users can hear you, but you cannot hear other users).

Solution This issue may occur when you use certain models of the Cisco Unified IP Phone. In this case, when the Cisco IPICS multicast voice stream is interrupted by a voice call, the user becomes disconnected from the channel or VTG until the connection is re-enabled.

To resolve this issue, you must reselect the channel or VTG that you were connected to. Or, if you logged out of Cisco IPICS, you must log back in to the system. To reselect the channel or VTG, return to the channel or VTG list by pressing the **Back** softkey. Then, reselect the channel or VTG by pressing the **Select** softkey.

Correcting Channel Accessibility Issues with Cisco Unified IP Phones

Problem A Cisco Unified IP Phone cannot access a channel to which it was associated.

Solution The location information may be incorrectly configured. Cisco Unified IP Phones only support multicast connections. To use Cisco Unified IP Phones with Cisco IPICS, you must assign a location that is the same as the dial login default location. The server assigns the configured default location to a phone user when the user logs in to Cisco IPICS.
Cisco Unified IP Phone users can access only the associated channels that are assigned to their default location. If the configured default location is the ALL location, Cisco Unified IP Phones users can access only the channels that are assigned to the ALL location.

For more information about managing locations, refer to the "Managing Locations" section in the "Performing Cisco IPICS System Administrator Tasks" chapter in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Cisco Unified IP Phone Cannot Access the Cisco IPICS Service After Changing the Server IP Address

Problem After you change the server IP address with the **modify_ip** command, you attempt to log in to the Cisco IPICS service by using a Cisco Unified IP Phone. You select the Cisco IPICS service and enter your digit ID and PIN. The Cisco Unified IP Phone displays an error message or displays a blank prompt.

Solution Note the error message that displays on the Cisco Unified IP Phone and perform one of the following actions:

- If the "HTTP error 404" message or a blank prompt displays, the server IP address may not have been updated in Cisco Unified Communications Manager or Cisco Unified Communications Manager Express, and the Cisco IPICS service might be configured with an incorrect server IP address.

Note The Cisco IPICS service does not automatically update its configuration with the new server IP address.

To resolve this problem, configure the Cisco IPICS service so that it uses the new server IP address. For information about configuring your Cisco Unified IP Phone for the Cisco IPICS service, see the "Setting Up and Using a Cisco Unified IP Phone as a Cisco IPICS Push-to-Talk Device" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

- If the "Host Not Found" message displays, the Cisco Unified IP Phone firmware may not be compatible with Cisco IPICS. To resolve this problem, refer to the *Cisco IPICS Compatibility Matrix* for the firmware versions that are supported for use with Cisco IPICS, and upgrade the firmware if the current version is not compatible.

  For information about using Cisco Unified Communications Manager Administration to upgrade your firmware, refer to the *Cisco Unified Communications Manager Administration Guide* for your applicable version. You can find the Cisco Unified Communications Manager documentation at the following URL:

  http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

Resolving Interconnectivity Problems With Cisco Unified Wireless IP Phone 7920

Problem Multiple Cisco Unified Wireless IP Phone 7920 models are connected by an access point. During a conference, the wireless phones can communicate with other devices, but cannot communicate with other Cisco Unified Wireless IP Phone 7920 models.

Solution The Cisco Unified Wireless IP Phone 7920 models might be using a downlevel version of firmware. Ensure that your wireless phone is using a version of firmware that is supported by Cisco IPICS. Refer to the *Cisco IPICS Compatibility Matrix* for the supported firmware version.

Cisco MCS 7825-H2 Server Becomes Inoperable After Removing the Second Hard Drive

Problem You remove the second hard drive from a Cisco MCS 7825-H2 server while Cisco IPICS is running, and then reboot the system. Your system becomes inoperable after the reboot.

Solution In this situation, the server detects the second hard drive but reflects its status as **degraded** and does not allow the operating system to run from either the CD or the hard drive. To resolve this issue, you must fully reload the server. However, be aware that this procedure results in loss of data.

If you encounter this problem, make sure that you preserve your data by backing up your database before you reboot the server. For more information about backing up your database, see the "Performing Cisco IPICS Database Backup and Restore Operations" chapter in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Troubleshooting RMS Configuration Issues

The issues in this section describe problems you may encounter with the RMS configuration.

This section includes the following topics:

- Voice Loops in VTGs and Router Configuration Shows Incorrect Information, page 4-22
- Long Delays Between Pressing the PMC PTT Button and Media Establishment, page 4-24

Server Reboots Slowly Following RMS Configuration

Problem You define one or more RMS components and allocate a large number of DS0 voice ports to those components, then reboot the Cisco IPICS server. The server takes an excessively long time to reboot.

Solution During a server reboot, the server sends commands to the RMS to verify that the RMS components and DS0s are operational. The server also checks for any changed configuration in the RMS.

If a user adds many DS0s to the RMS, the server has to send numerous commands to the RMS after a reboot; for example, if a user adds 96 DS0s, the server sends between 800 and 1400 commands to the RMS. With higher performance routers, such as the Cisco 3800 series routers, the process of sending and receiving commands may take 10 to 20 seconds. With lower performance routers, such as the Cisco 2800 series routers, this process may take one to two minutes (60 to 120 seconds).

To solve this problem, perform one or more of the following actions:

- Upgrade your router for greater performance.
- Do not load the RMS with an excessive number of controllers and DS0s.

You Attempt to Deactivate an RMS but its Status Does Not Change

Problem You deactivate an RMS, but the status of the RMS displays as Stopping instead of Deactivated.

Solution This situation may occur if one or more VTGs are active. Cisco IPICS does not allow you to deactivate an RMS if any active VTGs are using the RMS resources. To resolve this issue, check if you have any active VTGs and deactivate them, if necessary, by performing the following procedure:

Procedure

Step 1 From the Administration Console, navigate to the **VTG Management > Virtual Talk Groups** window to check the status of the VTGs.

Step 2 In the Virtual Talk Groups window, read the Status column to check the status of your VTGs.

The status of this column displays as inactive or active.

Step 3 For any VTG that displays with an active status, perform the following steps to deactivate the VTG(s):

a. Click the link for the VTG name to display the VTG details.

b. Click **Deactivate VTG** to deactivate the VTG.

c. Click **Save**.

Step 4 After you deactivate all of the active VTGs, check the status of the RMS by navigating to the **Configuration > RMS** window.

The status of the RMS should display as Deactivated.

Step 5 If the status of the RMS still displays as Stopping, perform the following steps to activate and deactivate the RMS:

a. Navigate to the **Configuration > RMS** window.

b. Click the name of the RMS to select it.

c. Click the **General** tab.

d. To activate the RMS, click **Activate**.

e. To deactivate the RMS, click **Deactivate**.

f. Click **Save**.

The status of the RMS should now display as Deactivated.

VTG Activation Slow or RMS in Unreachable State After RMS Command Prompt Changed

Problem You customize the CLI prompt of the RMS with the **prompt** command. After you change the prompt, VTGs are slow to activate, remote user logins are slow or display errors frequently, or the RMS is often in an unreachable state.

Solution Changing the prompt on the RMS can cause operations such as VTG activation and deactivation to fail.

Cisco IPICS supports only the default prompts.

To avoid problems, enter the **no prompt** command in global configuration mode to retain the default prompt.

It is also possible that the link between the RMS and the Cisco IPICS server is on a network that has a long packet delay time or is experiencing excessive packet loss. An example of a link with an excessive delay would be a satellite uplink. If possible, use a link that has a lower packet delay time and/or a lower packet loss.

RMS Fails or Remains in Unreachable State

Problem The RMS fails or remains in an unreachable state. When you navigate to the **Serviceability > System Logs** window to check the system logs, the following error message displays in the Recent System Log Entries pane:

```
ERROR IOSRMSCommunicator:..java.net.ConnectException:Connection
refused.
```

Solution This problem may occur when multiple Cisco IPICS users log in to the RMS and use all of the available virtual teletype interface (VTY) lines. In this situation, the server cannot communicate with the router.

To verify that all of the VTY lines are in use, log in to the RMS; then, display information about the active VTY lines by entering the following command:

Router# **show users**

To clear a VTY line, enter the following command:

Router# **clear line** <*line-number*>

where:

<*line-number*> is the number of the line that you want to clear.

Newly-Added RMS Does Not Display Loopbacks

Problem The RMS that you added to Cisco IPICS does not display loopbacks in the **Configuration > RMS > <***router-name***> Loopbacks** window of the Administration Console.

Solution You may have attempted to add an RMS with a partial or unsupported controller configuration. Refer to "Configuring the Cisco IPICS RMS Component" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)* for information about connecting and configuring the T1/E1 controllers.

Router Remains in Unreachable State

Problem After updating the login information for an RMS, you cannot access it from the Cisco IPICS server. The **Configuration > RMS** window displays the status of the RMS as Unreachable.

Solution You may have activated the RMS with incorrect settings, such as a user name, password, or IP address. This situation causes the RMS to enter an unreachable state, and you cannot fix the incorrect settings or disable the RMS.

This situation can also occur when a formerly operational RMS (with configured loopbacks) already exists in Cisco IPICS and you update the settings to incorrect values.

To resolve the problem, perform the following procedure:

Procedure

Step 1 Navigate to the **Configuration > RMS** window in the Administration Console.

The RMS window displays.

Step 2 Select the router by checking the check box next to the router name in the Routers pane.

Step 3 Delete the router configuration from the server by clicking **Delete**.

Cisco IPICS removes the router from the system.

Step 4 Re-add the router to the configuration by following the procedure in the "Adding an RMS" section in the "Performing Cisco IPICS System Administrator Tasks" chapter in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

The Cisco IPICS Server Does Not Recognize All of the T1 Ports on the RMS

Problem The Cisco IPICS server does not recognize all of the DS0s on a T1 controller.

Solution Because the Cisco IPICS server does not recognize gaps in the RMS DS0 group configuration, make sure that you always configure sequential DS0 groups on the T1 controller. When DS0 groups are configured out of sequence, the server does not read the configuration that is defined beyond the last DS0 group number in the list.

See Example 4-1 for an example of misconfigured DS0s. If you configure DS0 groups 0 through 2 and then continue with DS0 group 4, the server will only recognize 3 ports on the RMS because DS0 group 3 is not defined. In this situation, the server does not recognize the T1 ports beyond the last sequential configuration (DS0 group 2):

Example 4-1 Out of Sequence Configuration

```
Router(config)#controller T1 1/0
Router(config-controller)#framing esf
Router(config-controller)#clock source internal
Router(config-controller)#linecode b8zs
Router(config-controller)#cablelength short 133
Router(config-controller)#DS0-group 0 timeslots 24 type e&m-lmr
Router(config-controller)#DS0-group 1 timeslots 1 type e&m-lmr
Router(config-controller)#DS0-group 2 timeslots 2 type e&m-lmr
(DS0-group 3 is not configured)
Router(config-controller)#DS0-group 4 timeslots 4 type e&m-lmr
Router(config-controller)#DS0-group 5 timeslots 5 type e&m-lmr
Router(config-controller)#DS0-group 6 timeslots 6 type e&m-lmr
...
```

To resolve this situation for this example, enter the following command on both T1s in the router:

Router(config-controller)# **DS0-group 3 timeslots 3 type e&m-lmr**

After you enter the CLI command on the router, perform the following procedure to merge and save the configuration:

Procedure

Step 1 Navigate to **Configuration > RMS** on the Administration Console.

The **Configuration > RMS** window displays.

Step 2 Check the check box next to the router to select it.

Step 3 Click **Configuration > Merge** to merge the configuration.

Step 4 Click the name of the router to select it.

The **Configuration > RMS >** <*rms-name*> window displays.

Step 5 Click **Save** to update the Cisco IPICS RMS configuration with the changes.

For additional details about configuring the RMS, refer to the "Configuring the Cisco IPICS RMS Component" appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.

Router Indicator Lights for the Loopback Are Not Green

Problem After you create a physical loopback on the router, the green Carrier Detect (CD) indicator lights do not illuminate.

Solution Check the loopbacks on your router to see if any of the following indicator lights are illuminated, and perform the following actions to correct the problem:

- CD—When this light is green, there are no problems with the loopback
- Alarm Indication (AL)—When this light is red, one of the following problems exist:
  - The cable is not connected

  - You have not mapped the pins correctly for a T1. The following is the proper pin configuration on the RJ45 connector:

    - Pins 1 and 2 must be mapped to pins 4 and 5.

    - Pins 4 and 5 must be mapped to pins 1 and 2.

- Loss of Frame (LP)—When this light is yellow, one of the following problems exist:
  - The cable has a loose connection
  - The cable is defective
- Both the AL and CD lights are on
  - The interface is shut down—Enable the interface by entering the following command in interface configuration mode on both ends of the T1 loopback interface:

    Router(config-if)# **no shutdown**
  - The framing is incorrect—Cisco recommends that you use the Extended Super Frame (ESF) framing method on both ends of the loopback.
  - The line code is incorrect—Cisco recommends the B8ZS encoding standard on both ends of the loopback

Voice Loops in VTGs and Router Configuration Shows Incorrect Information

Problem Users experience voice loops (continuous echoes) in VTGs. When you view the configuration by choosing **Show** from the **Configuration** drop-down list box in the **Configuration > RMS** window of the Administration Console, settings for voice ports or dial peers display that are not currently in use.

Solution When you add an RMS to a Cisco IPICS system, particularly an RMS that was previously associated with another Cisco IPICS system, you may observe differences between the output that displays with the router **show configuration** command and the configuration that displays when you choose **Show** from the **Configuration** drop-down list box. For example, some of the voice ports may show descriptions that contain an “INUSE” status in the Show Configuration window, even though they are not listed in the loopbacks.

By default, Cisco IPICS polls the RMS every 10 minutes, using the RMS comparator mechanism. The RMS comparator checks the responsiveness of the RMS if there have been any changes made to the configuration. If there have been changes to the RMS configuration and these changes are not reflected in the Cisco IPICS server, the RMS comparator automatically updates the configuration so that the two components are synchronized.

Tip You can change the polling period by entering a new value in the **RMS Polling Frequency** field in the **Options** window in the Administration drawer. For more information, refer to the "Managing Cisco IPICS Options" section in the "Performing Cisco IPICS System Administrator Tasks" chapter in the *Cisco IPICS System Administration Guide, Release 2.1(1)*.

To manually compare and update without waiting for the polling period, perform the following procedure:

Procedure

Step 1 Navigate to **Configuration > RMS** on the Administration Console.

The **Configuration > RMS** window displays.

Step 2 Check the check box next to the router to select it.

Step 3 Choose **Update** from the **Configuration** drop down list box to update the configuration.

Note Clicking **Update** reconfigures any currently active voice resources on the RMS and may cause a momentary connection loss.

Long Delays Between Pressing the PMC PTT Button and Media Establishment

Problem Intermittent delays of varying duration may occur from the time that you press the PMC PTT button to the time that the media is established between the remote PMC and multicast channels.

Solution This delay occurs because the RMS cannot perform Reverse Path Forwarding (RPF) checks on multicast RTP packet source addresses. RPF enables more efficient traffic flow and provides loop avoidance by defining the path that multicast packets take between the source and destination addresses.

To resolve this problem, make sure that the IP addresses that you configure for both the Loopback0 and the virtual interfaces (Vifs) are routable; this requirement is mandatory for both interfaces to ensure proper operation with Cisco IPICS. If the IP addresses for either of these interfaces are not routable, your SIP connectivity and/or your Cisco IPICS network connectivity will be affected.

For detailed information about how to configure the RMS, “Configuring the Cisco IPICS RMS Component” appendix in the *Cisco IPICS Server Administration Guide, Release 2.1(1)*.