



CHAPTER 6

Troubleshooting VQE Software Components

This chapter describes how to identify and remedy problems related to the Cisco VQE-S (VQE-S), the VQE-S Application Monitoring Tool (AMT), and the VQE Channel Provisioning Tool (VCPT). This chapter contains the following major topics:

- [Useful Linux Tools, page 6-1](#)
- [VQE Logging and Log Files, page 6-2](#)
- [VQE Files, Directories, and Permissions, page 6-3](#)
- [VQE-S and VQE Tools Server Troubleshooting, page 6-7](#)
- [RCC Troubleshooting, page 6-15](#)
- [Using the `vmreport` Command, page 6-29](#)
- [Gathering Information for a Service Request, page 6-30](#)
- [Stopping, Starting, and Restarting VQE-S, page 6-30](#)
- [Stopping, Starting, and Restarting VCDS, page 6-31](#)
- [Resetting the Root Password on the VQE-S or VQE Tools Server, page 6-31](#)

Useful Linux Tools

[Table 6-1](#) provides information on some Linux commands that are particularly useful for troubleshooting VQE software components.

Table 6-1 *Useful Linux Commands*

Command	Description	Notes
<code>arp</code>	Manipulates the ARP cache of the kernel	—
<code>ethtool</code>	Displays or changes Ethernet card settings	Detailed status on an Ethernet interface
<code>ifconfig</code>	Configures a network interface	Traditional interface configuration and status
<code>ip</code>	Shows or manipulates routing, devices, policy routing, and tunnels	Most useful interface to all Linux networking
<code>netstat</code>	Displays network connections, routing tables, interface statistics, masquerade connections, and multicast memberships	Provides traditional network state information

Table 6-1 Useful Linux Commands (continued)

Command	Description	Notes
ping	Sends ICMP ECHO_REQUEST to network hosts	—
tcpdump	Dumps and analyzes traffic on a network	Captures packet data

VQE Logging and Log Files

VQE-related log entries can provide useful information for troubleshooting. The VQE-related log files are described in these sections:

- [VQE Server and VQE Tools Logging and Log Files, page 6-2](#)
- [VQE-S AMT, VCDS AMT, and VCPT Logging and Log Files, page 6-3](#)

VQE Server and VQE Tools Logging and Log Files

The VQE Server (VQE-S) logging is based on the syslog-ng utility, which is part of the inetutils package in Linux. The following is a typical VQE-S log entry:

```
Oct 22 08:42:03 minnie vqes_mlb: <<%VQES_MLB-3-MLB_NIC_DOWN>> Network interface eth3 went down.
```

Every logged message contains the following five fields in this order:

- Timestamp (For example, Oct 22 08:42:03)
- Host name (For example, minnie)
- Name of process logging the message (For example, vqes_mlb)
- Identity string—FACILITY-SEVERITY-MNEMONIC (For example, <<%VQES_MLB-3-MLB_NIC_DOWN>>)
- Message text (For example, Network interface eth3 went down.)

For information on VQE system messages, see [Appendix C, “VQE System Messages.”](#)

By default, the VQE-S and VQE Tools system messages are written to the file /var/log/vqe/vqe.log. The location of the file is configured in the /etc/syslog.conf file. For information on configuring VQE-S logging, see the [“Change VQE-S Logging” section on page 4-33](#).

The VQE-S and VQE Tools log files are rotated by logrotate. The logrotate facility is configured to rotate a log file when it is larger than 20 MB. The old versions of the log files are rotated up to 20 times before being removed.



Note

If you move the VQE log file to another directory (for example, when backing up log files), be sure to stop the syslog-ng daemon before moving the vqe.log file. If syslog-ng is started with no vqe.log file in the /var/log/vqe directory, syslog-ng creates the vqe.log file.

In addition, you can send system messages to remote servers for centralized logging. For information on configuring remote syslog servers, see the [“Remote Syslog Hosts” section on page 2-27](#).

VQE-S AMT, VCDS AMT, and VCPT Logging and Log Files

The VQE-S AMT, VCDS AMT, and VCPT are all web applications that make use of the Apache Tomcat application server. Apache Tomcat uses the log4j logging system. For the VQE-S AMT, the VCDS AMT, and the VCPT, the logging output is configured by these log4j configuration files:

- For the VQE-S AMT and the VCDS AMT, the configuration file is located at `/usr/share/tomcat5/webapps/ems/WEB-INF/classes/ log4j.properties`.
- For the VCPT, the configuration file is located at `/usr/share/tomcat5/webapps/vcpt/WEB-INF/classes/ log4j.properties`.

By default, the log files for the VQE-S AMT, the VCDS AMT, and the VCPT are saved in these locations:

- For the VQE-S AMT and the VCDS AMT, the log files (`vqe.log`) are saved in the `/usr/share/tomcat5/logs` directory.
- For VCPT, the log files (`vcpt.log`) are saved in `/usr/share/tomcat5/logs` directory.

Table 6-2 lists the most important default log4j configuration settings for VQE-S AMT, VCDS AMT, and VCPT logging.

Table 6-2 Log4j Default Configuration for VQE-S AMT, VCDS AMT, and VCPT

Configuration Property	Default Setting
Logging priority level	Warning
Logging output	Log messages are written to both the console and the log file
Maximum size of the log file before it rotates	100 KB
Maximum number of backup files	4

For information on configuring the `log4j.properties` file, see the log4j documentation at these URLs:

<http://tomcat.apache.org/tomcat-5.5-doc/logging.html>

<http://logging.apache.org/log4j/1.2/manual.html>

VQE Files, Directories, and Permissions

If you encounter a problem related to VQE-related files, directories, or permissions, use the information in the following tables to resolve the issues:

- Table 6-3 provides information for the CDE that hosts the VQE-S.
- Table 6-4 provides information for the CDE that hosts VCPT, VCDS AMT, and VCDS.

These sections provide additional information on resolving problems:

- [Changing Permissions, page 6-5](#)
- [Replacing a Lost or Corrupt VQE File, page 6-5](#)

Table 6-3 VQE-S Files, Directories, and Permissions

File or Directory	Required Permissions, Owner, and Group	Description
/etc/opt/vqes (directory)	drwx----- vqes vqes	—
/etc/opt/vqes/vcdb.conf	-rw-r--r-- root root	VCDB configuration file
/etc/opt/vqes/vcdb.conf.sample	-r----- vqes vqes	VCDB sample configuration file
/etc/opt/vqes/vqe_channels.cfg	-rw-r--r-- vqes vqes	VQE-S channel configuration file
/opt/vqes (directory)	drwxr-xr-x vqes vqes	—
/opt/vqes/bin (directory)	drwxr-xr-x vqes vqes	VQE-S binary directory
/opt/vqes/bin/fbt_flush.sh	-r-xr----- root vqes	VQE-S feedback target flush script
/opt/vqes/bin/mlb	-r-xr-xr-x root root	VQE-S Multicast Load Balancer process
/opt/vqes/bin/mlb_ethtool	-r-sr-x--- root vqes	VQE-S Ethernet utility for Multicast Load Balancer
/opt/vqes/bin/process_monitor	-r-xr-xr-x root root	VQE-S Process Monitor process
/opt/vqes/bin/stun_server	-r-xr-xr-x root root	VQE-S STUN Server process
/opt/vqes/bin/vqe_cfgtool	-r-x----- vqes vqes	vqe_cfgtool command
/opt/vqes/bin/vqereport	-r-x----- root root	vqereport command
/opt/vqes/bin/vqes_cp	-r-x----- root root	VQE-S Control Plane process
/opt/vqes/bin/vqes_dp	-r-xr-xr-x root root	VQE-S Data Plane process
/opt/vqes/bin/vqes_bin.sha1sum	-r--r----- vqes vqes	SHA-1 checksums list
/etc/syslog-ng/syslog-ng.conf	-rw-r--r-- 1 root root	VQE-S syslog configuration file
/opt/syslog-ng/sbin/syslog-ng	-rwxr-xr-x root root	VQE-S syslog-ng process
/opt/vqes/bin/xmlrpc	-r-xr-xr-x vqes vqes	XML-RPC client utility
/var/log/vqe (directory)	drwxr-xr-x vqes vqes	VQE log file directory
/var/log/vqe/vqe.log	-rw----- vqes vqes	VQE system messages log file

Table 6-4 VQE Tools Files, Directories, and Permissions

File or Directory	Required Permissions, Owner, and Group	Description
/etc/opt/vqes (directory)	drwx----- root root	—
/etc/opt/vqes/vcdb.conf	-rw-r--r-- root root	VCDB configuration file
/etc/opt/vqes/vcdb.conf.sample	lrwxrwxrwx root root	Link to the VCDB sample configuration file
/etc/opt/vqes/vcdb.conf.tools.sample	-r----- vqes vqes	VCDB sample configuration file
/etc/opt/vqes/vqec_channels.cfg	-rw--r--r-- root root	VCDS channel configuration file
/etc/opt/vcpt (directory)	drwxr-xr-x root root	—
/etc/opt/vcpt/data (directory)	drwxr-xr-x root root	Directory for VCPT configuration files
VCPT configuration files in /etc/opt/vcpt/data	-rw-r--r-- root root	VCPT configuration files (Filenames are user-defined and vary.)

Table 6-4 VQE Tools Files, Directories, and Permissions (continued)

File or Directory	Required Permissions, Owner, and Group	Description
/etc/opt/vcpt/data/sdp (directory)	drwxr-xr-x root root	Directory for SDP-formatted files that VCPT creates for each valid VCPT configuration
SDP-formatted files in /etc/opt/vcpt/data/sdp	-rw-r--r-- root root	SDP-formatted files for each valid VCPT configuration
/opt/vqes (directory)	drwxr-xr-x vqes vqes	—
/opt/vqes/bin (directory)	drwxr-xr-x vqes vqes	—
/opt/vqes/bin/vcds_send_file	-r-x----- vqes vqes	Command to send a client database file and group attribute file to VCDS
/opt/vqes/bin/vqe_cfgtool	-r-x----- vqes vqes	vqe_cfgtool command
/opt/vqes/bin/vqereport	-r-x----- root root	vqereport command
/etc/syslog-ng/syslog-ng.conf	-rw-r--r-- 1 root root	VQE-S syslog configuration file
/opt/syslog-ng/sbin/syslog-ng	-rwxr-xr-x root root	VQE-S syslog-ng process
/var/log/vqe (directory)	drwxr-xr-x vqes vqes	VQE log directory
/var/log/vqe/vqe.log	-rw----- vqes vqes	VQE system messages log file

Changing Permissions

To change permissions on a file or directory, use the **chmod** command:

-
- Step 1** If needed, log in as root on the CDE that hosts VQE-S or that hosts VCPT.
- Step 2** To change permissions, issue the following command:

```
chmod mode file_or_dir_name
```

In the preceding command, the two arguments are as follows:

- *mode* specifies the correct permissions.
- *file_or_dir_name* specifies the file or directory whose permissions is set.

For example:

```
[root@system]# chmod 555 /opt/vqes/bin/vqes_cp
```

For information on setting permissions, see the man page for the **chmod** command.

Replacing a Lost or Corrupt VQE File

If a required VQE file that has not been backed up is lost or corrupted, you must reinstall the version of the VQE software that the CDE server is running. To preserve the current VQE configuration, the software reinstallation should be an ISO full upgrade. For information on VQE software installation, see the *Release Notes for Cisco CDA Visual Quality Experience Application, Release 3.6*.

If a configuration file located in the directories under /etc is lost or corrupted and was not backed up, you can do one of the following:

- Use the **vqe_cfgtool** command with the **-fix_config** option to discard the current copy of each /etc configuration file where there is a checksum mismatch and replace it with the original copy of the file that comes with the RPM package. Then apply the current VCDB configuration to the /etc configuration files using the **vqe_cfgtool** command and the **-apply** option.
- Get a copy of the factory default version of the configuration file from the /vqe-etc/etc-pristine directory. To restore the lost or corrupted file, copy the factory default configuration file to its correct location under /etc, and apply the current VCDB configuration to the /etc configuration files using the **vqe_cfgtool** command and the **-apply** option.

For information on the **vqe_cfgtool** command, see the [“Using the VQE Configuration Tool Command-Line Options”](#) section on page 7-18.

VQE-S and VQE Tools Server Troubleshooting

This section provides information on troubleshooting the following specific problems that can occur with a VQE-S or VQE Tools server. [Table 6-5](#) lists the troubleshooting topics by the category of the problem.

Table 6-5 Troubleshooting Topics by Problem Category

Problem Category	Troubleshooting Topics
Monitoring a VQE-S	Monitoring Received Multicast Streams, page 6-8
VQE-S and VQE Tools servers	Repeated Message on CDE Hosting VQE-S or VQE Tools, page 6-9
VQE-S	Repeated Message on CDE Hosting VQE-S or VQE Tools, page 6-9
VQE-S AMT	VQE-S AMT, VCDS AMT, or VCPT Unavailable, page 6-10
	Channels Are Not Displayed in VQE-S AMT, page 6-11
	VQE-S AMT Channels Status Summary Has No Graphs, page 6-12
VCDS AMT	VQE-S AMT, VCDS AMT, or VCPT Unavailable, page 6-10
VCPT or other channel-provisioning servers*	VQE-S AMT, VCDS AMT, or VCPT Unavailable, page 6-10
	VCPT Fails to Initialize, page 6-12
	Channel-Provisioning Server Cannot Send Channel Information to VQE-S: Trusted Provisioning Client Problem, page 6-13
	Channel-Provisioning Server Cannot Send Channel Information to VQE-S: SSL Certificates Problems, page 6-13
	Unable to Connect Error When VCPT Tries to Send Channel Information, page 6-14
	Internal Server Error When VCPT Tries to Send Channel Information to VQE-S, page 6-15

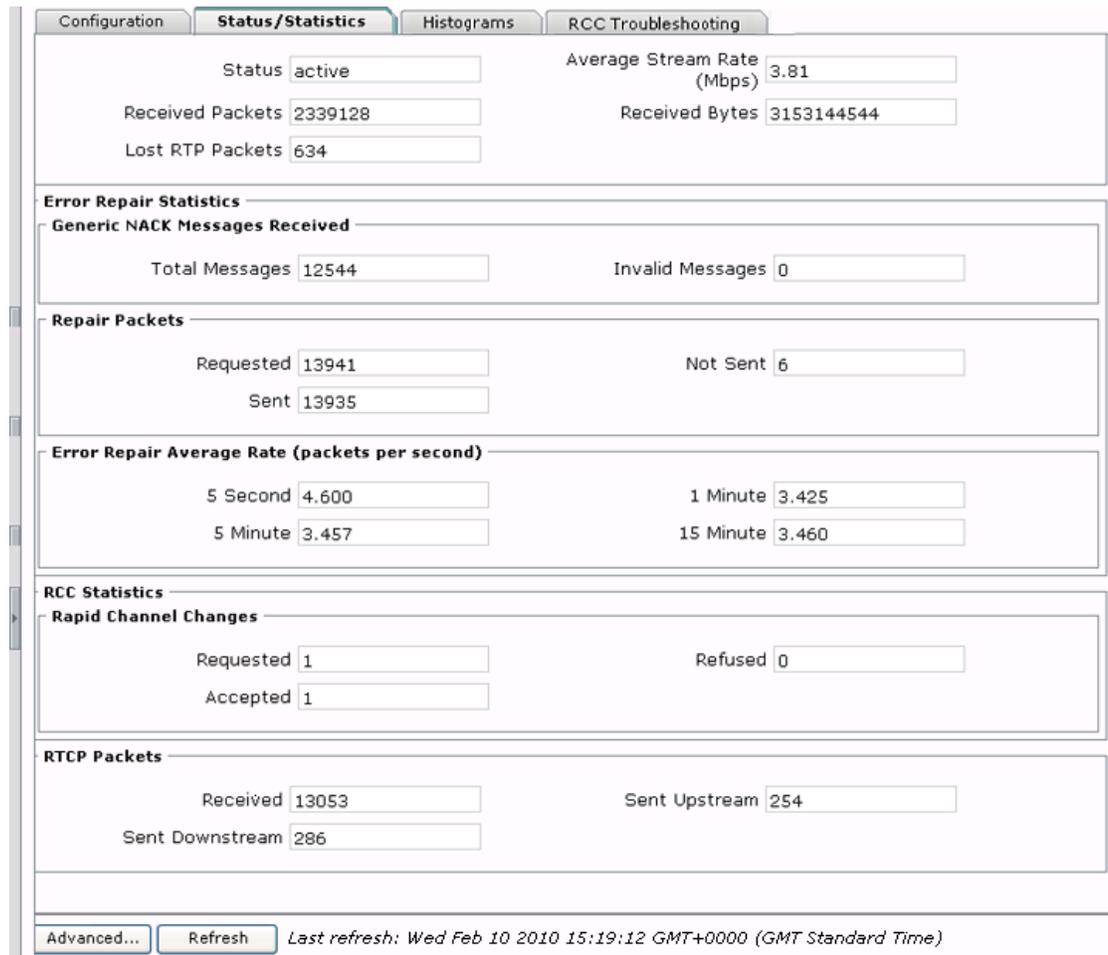
* Some VCPT troubleshooting topics apply to other channel-provisioning servers, such as Cisco IPTV Services Delivery Server (ISDS).

Monitoring Received Multicast Streams

For troubleshooting the VQE-S, using the VQE-S AMT to monitor received multicast streams is recommended.

We recommend that you use the VQE-S AMT to monitor received multicast streams. In the VQE-S AMT Channel Statistics window for each channel (see [Figure 6-1](#)), the Lost RTP Packets field for the Channel Input Stream is a per-channel counter that provides the number of missing RTP packets. The Lost RTP Packets counter increments when an RTP packet is sent for the original source stream of the channel but is not received by the VQE-S.

Figure 6-1 Lost RTP Packets



Repeated Message on CDE Hosting VQE-S or VQE Tools

Symptom: During initial system configuration, a new Cisco CDE hosting the VQE-S or VQE Tools boots successfully, the root password is set successfully, but the following message displays repeatedly:

```
SIOCGIFADDR: Cannot assign requested address
```

Explanation: This error can occur when you configure the CDE server manually (rather than use the `vqe_cfgtool`). The message may display so frequently that it is difficult to edit a file to continue the initial system configuration.

The message can be caused by an Ethernet interface configuration issue in the `ifcfg-eth#` files (`ifcfg-eth1`, `ifcfg-eth2`, and so on).

Remedy: Look for Ethernet interface address or other errors in the four `ifcfg-eth#` files. Use a text editor to correct any errors.

Use the `ifconfig -a` command to verify that the addresses specified in the `ifcfg-eth#` files have been assigned to the interfaces.

Continue with the initial configuration tasks.

Performing a Date and Time Change with NTP

When performing a date and time change with NTP, do the following:

-
- Step 1** Log in as root.
- Step 2** Stop the VQE-S services by issuing the following command:
- ```
[root@system]# service vqes stop
```
- Step 3** Stop the ntpd service by issuing the following command:
- ```
[root@system]# service ntpd stop
```
- Step 4** If needed, set the time zone with the `vqe_cfgtool` command using the `-config` option. Use the System Parameters menu on the Configuration Tool and the Timezone choice.
- Step 5** Set the system date and time to a date and time close to the NTP server date and time by issuing the following command:
- ```
date -s "date_time_string"
```
- For example:
- ```
[root@system]# date -s "16:55:30 July 7, 2008"
```
- Step 6** Synchronize the clock to the configured NTP servers by issuing the following command:
- ```
[root@system]# ntpd -q
```
- If the system clock is off by a lot, the command takes considerable time to return.
- Step 7** Start the ntpd service by issuing the following command:
- ```
[root@system]# service ntpd start
```

Step 8 Synchronize the hardware clock by issuing the following command:

```
[root@system]# /sbin/hwclock --systohc
```

Step 9 Check NTP synchronization by issuing the following command:

```
[root@system]# ntpq -p
```

Step 10 Reboot the VQE-S by issuing the following command:

```
[root@system]# init 6
```

Performing a Date and Time Change with the Linux date Command

When performing a time and date change with the Linux **date** command only, perform the following commands:

Step 1 Log in as root.

Step 2 Stop the VQE-S services by issuing the following command:

```
[root@system]# service vqes stop
```

Step 3 If needed, set the time zone with the **vqe_cfgtool** command using the **-config** option. Use the System Parameters menu on the Configuration Tool and the Timezone choice.

Step 4 Set the system date and time by issuing the following command:

```
date -s "date_time_string"
```

For example:

```
[root@system]# date -s "16:55:30 July 7, 2008"
```

Step 5 Synchronize the hardware clock by issuing the following command:

```
[root@system]# /sbin/hwclock --systohc
```

Step 6 Reboot the VQE-S by issuing the following command:

```
[root@system]# init 6
```

VQE-S AMT, VCDS AMT, or VCPT Unavailable

Symptom: The browser displays the message *Page Cannot Be Found* (status code 404) or *Service Temporarily Unavailable* (status code 503) even if the user enters a valid IP address or fully qualified domain name to browse the VQE-S AMT, VCDS AMT, or VCPT.

Explanation: The VQE-S AMT, VCDS AMT, and VCPT require the Apache HTTP server service (httpd) and the Apache Tomcat application server service (tomcat5) to be running. When you attempt to browse to the VQE-S AMT, VCDS AMT, or VCPT and one of these services is not running, the status codes are typically as follows:

- “Page Cannot Be Found” (status code 404)—indicates that httpd is not running.
- “Service Temporarily Unavailable” (status code 503)—indicates that tomcat5 is not running.

To check whether the httpd service is running, log in as root and issue the following command:

```
[root@system]# /sbin/service httpd status
```

```
httpd (pid 15836 13179 2593 2592 2591 2590 2589 2588 2587 2586 2576) is running...
```

To check whether the tomcat5 service is running, log in as root and issue the following command:

```
[root@system]# service tomcat5 status
```

```
Tomcat is running...
```

Remedy: If either httpd or tomcat5 is not running, log in as root and start the services that are stopped as follows:

```
[root@system]# service httpd start
```

```
[root@system]# service tomcat5 start
```

Verify that the httpd and tomcat5 services are running, as shown earlier in the Explanation section. If the httpd or tomcat5 processes continue to fail, check the log files for the services to determine the cause.

- httpd log file is `/etc/httpd/logs/error_log`.
- tomcat5 log files are `/var/log/tomcat5/catalina.date.log`.

For information on the log files for each service, see the vendor documentation for the Apache HTTP server or for the Apache Tomcat application server.

Channels Are Not Displayed in VQE-S AMT

Symptom: The VQE-S AMT does not display the channels after channels are defined in VCPT and channel information is pushed to the servers.

Explanation: The most likely reason why the VQE-S AMT does not display the channels is that the VQE-S was not associated with the channels in VCPT.

To determine whether the channels are associated with this VQE-S, follow these steps:

-
- Step 1** Log in to VCPT.
 - Step 2** Click the **Association** tab.
 - Step 3** Select the VQE Server in the Select Server pull-down menu.

The channels should be in the Selected group. Also, make sure the VQE-S is defined with the role VQE-S. If the role is wrong, correct it with VCPT from the Servers tab. For information on updating server information, see the [“Viewing or Updating Server Information”](#) section on page 3-17.

If the channels are correctly associated with the VQE-S, it is possible that there were problems when the VQE-S attempted to process the channels. Check the VQE-S log files for errors in channel processing. For information on these log files, see the [“VQE Server and VQE Tools Logging and Log Files”](#) section on page 2.

Remedy: If the channels have not been associated with the VQE-S in VCPT, associate the channels with the VCPT from the Association tab. For information on associating channels with servers, see the [“Defining Channel Associations for a Server”](#) section on page 3-19.

VQE-S AMT Channels Status Summary Has No Graphs

Symptom: In the AMT VQE-S Status window (Figure 4-2), the Channels Status Summary does not have graphs for the channels.

Explanation: If one or more channels are successfully created in the VQE-S AMT, the channels should appear in a Channels Status Summary graph of active, inoperative, and inactive channels in the VQE-S Status window. To be displayed, the graphs require that Adobe Flash Player be installed on the computer that hosts the browser accessing the VQE-S AMT.

Remedy: Download and install Adobe Flash Player on the computer that hosts the browser used to access the VQE-S AMT. The software is free and can be found at this URL:

<http://get.adobe.com/flashplayer/>

It is recommended that you close all other open browser windows before performing the installation.

VCPT Fails to Initialize

Symptom: VCPT fails to initialize when the VQE Tools server starts. The following error message is displayed:

```
Initialization Failed. VCPT Data directory is missing, please refer to the Cisco CDA VQE
Application User Guide - Working with VCPT Configuration Files section."
```

Explanation: For VCPT to initialize successfully, the following directories must exist:

- /etc/opt/vcpt/data
- /etc/opt/vcpt/data/sdp

One or both of these directories are missing and may have been accidentally deleted.

Remedy: To recreate the directories and start VCPT, follow these steps:

-
- Step 1** Login as root.
- Step 2** Determine which directory or directories are missing.
- Step 3** Create each missing directory using the permissions, owner, and group specified in Table 6-4 for that directory.
- Step 4** If up-to-date VCPT configuration files for the /etc/opt/vcpt/data directory are available in a set of backup files, the backup files can be copied to the /etc/opt/vcpt/data directory.



Note There is no need to copy backup files for the set of SDP-formatted files in the /etc/opt/vcpt/data/sdp directory. The VCPT creates the SDP-formatted files when a request is made to send channel information to the VQE-S or VCDS servers.

- Step 5** Restart the Apache Tomcat application server:
- ```
[root@system]# service tomcat5 restart
```
- The VCPT is a web application and should initialize successfully.
- Step 6** To verify that the VCPT is accessible from a web browser, enter as the URL the IP address of the Cisco CDE that hosts VCPT:
- ```
https://ip_address_of_VCPT_host
```

Log in with a Linux username and password.

If you are able to log in successfully, the VCPT is running correctly.

Channel-Provisioning Server Cannot Send Channel Information to VQE-S: Trusted Provisioning Client Problem

Symptom: The channel-provisioning server (for example, VCPT or Cisco IPTV Services Delivery Server [ISDS]) cannot send channel information to a VQE-S.

Explanation: When the channel-provisioning server attempts to send channel information to a VQE-S, the send operation fails. On the VQE-S, the VQE Configuration Tool parameter Trusted Provisioning Client is not configured with the IP addresses for the channel-provisioning server.

If VCPT is the channel-provisioning server and the send operation fails because the Trusted Provisioning Client parameter is not configured with the IP addresses of the Ethernet interfaces on the VCPT host, VCPT displays the following in the Status of Last Send column in its VCPT Servers Summary window:

```
Failed - Connection refused
```

In addition, the following error message is written to the VCPT log file (/usr/share/tomcat5/logs/vcpt.log):

```
ERROR: Unable to send the SDP File java.net.ConnectException: Connection refused
```

Remedy: Use the VQE Configuration Tool to configure the System Parameter > Trusted Provisioning Client with the IP addresses of the channel-provisioning servers. For information on using the Configuration Tool, see the [“Using the VQE Configuration Tool” section on page 7-3](#).

**Note**

If VCPT is the channel-provisioning server, the IP addresses of all Ethernet interfaces (that have been assigned IP addresses) on the VCPT host must be configured as trusted provisioning clients on the VQE-S host.

**Note**

If ISDS is the channel-provisioning server, for the Trusted Provisioning Clients, use the Broadcast System IP Address, which is configured on the ISDS VASP List. The VASP List can be found on the ISDS Administrative Console under ISDS > Network Element Provisioning > VASP.

Channel-Provisioning Server Cannot Send Channel Information to VQE-S: SSL Certificates Problems

Symptom: The channel-provisioning server (for example, VCPT or ISDS) cannot send channel information to a VQE-S.

Explanation: When the channel-provisioning server attempts to send channel information to a VQE-S, the send operation fails. On the VQE-S or the channel-provisioning server or both, the Secure Sockets Layer (SSL) certificates are not valid or the needed items have not been copied to the correct locations.

If VCPT is the channel-provisioning server and the send operation fails because of SSL certificate problems, VCPT displays the following in the Status of Last Send column in its VCPT Servers Summary window:

```
Failed - Unable to find valid certification path to requested target
```

In addition, the following error message is written to the VCPT log file (/usr/share/tomcat5/logs/vcpt.log):

```
ERROR: Unable to send the SDP File javax.net.ssl.SSLHandshakeException:
sun.security.validator.ValidatorException: PKIX path building failed:
sun.security.provider.certpath.SunCertPathBuilderException: unable to find valid
certification path to requested target
```

Remedy: Make sure all SSL certificate-related items have been created correctly and the needed items have been copied to the correct locations on the VQE-S and on the channel-provisioning server. For information on setting up SSL certificates, see the [“Setting Up SSL Certificates” section on page 2-5](#).

After the certificate-related items have been copied to the correct locations on the VQE-S and on the channel-provisioning server, restart the httpd and tomcat5 services on both servers. For example, login as root and issue the following commands on both servers:

```
[root@system]# service httpd restart
[root@system]# service tomcat5 restart
```



Note

If the tomcat5 service is not running when you try to restart it, an exception is displayed on the console when the attempt is made to stop the service. The exception can be ignored.

Unable to Connect Error When VCPT Tries to Send Channel Information

Symptom: When the VCPT tries to send channel information to a VQE-S or VCDS, the send operation fails. In VCPT, the Servers tab displays “Failed - Unable to connect with Server” in the Status of Last Send column.

Explanation: Possible causes for the failed send operation are that the Apache HTTP server service (httpd) or the Apache Tomcat application server service (tomcat5) on the target VQE-S or VQE Tools server (hosting VCDS) is not running.

To check whether the httpd service is running, log in as root and issue the following command:

```
[root@system]# service httpd status
```

```
httpd (pid 15836 13179 2593 2592 2591 2590 2589 2588 2587 2586 2576) is running...
```

To check whether the tomcat5 service is running, log in as root and issue the following command:

```
[root@system]# service tomcat5 status
```

```
Tomcat is running...
```

Remedy: If either httpd or tomcat5 is not running, log in as root and start the services that are stopped as follows:

```
[root@system]# service httpd start
```

```
[root@system]# service tomcat5 start
```

Verify that the httpd and tomcat5 services are running, as shown earlier in the Explanation section. If the httpd or tomcat5 processes continue to fail, check the log files for the services to determine the cause.

- httpd log file is `/etc/httpd/logs/error_log`.
- tomcat5 log files are `/var/log/tomcat5/catalina.date.log`.

For information on the log files for each service, see the vendor documentation for the Apache HTTP server or for the Apache Tomcat application server.

Internal Server Error When VCPT Tries to Send Channel Information to VQE-S

Symptom: When VCPT tries to send channel information to the VQE-S, you get an “Internal Server Error.” Java exceptions in the `catalina.out` file indicate that there is an address conflict or unreachable address.

Explanation: The Internal Server Error is displayed when you use the VCPT to send channel information to a VQE-S. The Status of Last Send column on the VCPT Servers tab shows the error.

From the CDE that hosts the VQE-S, you are able to successfully **ping** the machine running the web browser used for the VQE-S AMT, and **ping** the CDE hosting VCPT.

In the `/usr/share/tomcat5/logs/catalina.out` file of the Apache Tomcat application server, there are Java exceptions indicating an address conflict or unreachable address. For example:

```
java.net.BindException: Address already in use
at java.net.PlainSocketImpl.socketBind(Native Method)
at java.net.PlainSocketImpl.bind(Unknown Source)
...
java.net.SocketException: Network is unreachable
at java.net.PlainSocketImpl.socketConnect(Native Method)
at java.net.PlainSocketImpl.doConnect(Unknown Source)
```

Remedy: The Internal Server Error can be caused by one or more errors in the `/etc/hosts` file on the CDE that hosts the VQE-S. Check the `/etc/hosts` file for typing or syntax errors, correct them, and save the file. Reboot the CDE.

If you still receive the same Internal Server Error and Java exceptions, check the following files to see if you can find some indication for what is causing the error.

- `/var/log/vqe/vqe.log`
- `/var/log/httpd/error_log`
- `/var/log/httpd/access_log`
- `/usr/share/tomcat5/logs/catalina.out`
- `/var/log/messages`

RCC Troubleshooting

Symptom: If a rapid channel change (RCC) fails or there is degradation in the performance of an RCC, video freeze or macroblocking may be observed. The following section describes how to troubleshoot RCC problems from the VQE-S.

VQE-S RCC Troubleshooting

The section lists possible explanations for RCC problems and provides a remedy for each explanation:

- [Channel is not configured on the VQE-S, page 6-16](#)
- [Channel is not active on the VQE-S, page 6-16](#)
- [RCC is disabled on the channel, page 6-17](#)
- [No connectivity between the VQE-C and the FBT on the VQE-S, page 6-18](#)
- [No connectivity between the VQE-C and the VQE-S, page 6-18](#)
- [RCC refused by the VQE-S control or data planes, page 6-18](#)
- [RCC refused by the VQE-S—invalid e-factor, page 6-19](#)
- [RCC refused by the VQE-S—insufficient bandwidth, page 6-19](#)
- [MPEG Parser is unable to locate the burst start point, page 6-20](#)
- [VQE-S MPEG Parser is unable to locate the ECM PID, page 6-21](#)
- [Burst start point not found within the backfill range, page 6-21](#)
- [No burst start point found—stream is invalid, page 6-22](#)

To perform the troubleshooting activities described in this section you need to log in to the VQE-S AMT. For information on accessing the VQE-S AMT, see [“Logging into and Navigating in the VQE-S AMT” section on page 4-2](#).

To troubleshoot RCC problems, enable debugging of RCC messages on the VQE-S and analyze the debug logs. To enable debugging, see the [“Change VQE-S Debugging” section on page 4-33](#). The debug messages are written to the file `/var/log/vqe/vqe.log`. Alternatively, to view RCC failures, click the channel name in the navigation tree in the VQE-S AMT and click the **RCC Troubleshooting** tab. The RCC Troubleshooting tab displays the last twenty RCC failures on this channel.

Channel is not configured on the VQE-S

Explanation: An RCC fails if the new channel is not configured on the VQE-S. To verify that a channel is configured on the VQE-S, click the **Channel** node in the navigation tree, and verify that the new channel is listed in the channel lineup.

Remedy: If the channel is not displayed in the channel lineup, add the channel to the channel configuration using the VCPT. For more information on adding channels, see the [“Adding a Channel” section on page 8](#). After the channel has been added to the channel configuration, send the updated configuration to the VQE-S and the VCDS. For information on deploying channel configurations, see the [“Sending or Pushing Channel Information to Servers” section on page 5](#).

Channel is not active on the VQE-S

Explanation: An RCC fails if the new channel is not active on the VQE-S or if the channel is not receiving RTP packets. To verify that a channel is active on the VQE-S and receiving RTP packets, do the following:

-
- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
 - Step 2** Click the channel in the lineup.
 - Step 3** Click the **Status/Statistics** tab.

- Step 4** Verify that the Status field is set to active.
- Step 5** Verify that the value of the Received Packets field is greater than zero.
- Step 6** Take note of the value of the Average Stream Rate(Mbps) field.
- Step 7** Click the **Configuration** tab.
- Step 8** Take note of the value of the Multicast IP Address field.
- Step 9** Take note of the value of the Bit Rate(Kbps) field for the original stream.
- Step 10** Verify that the Average Stream Rate(Mbps) for the original stream is within 10% of the configured Bit Rate (Kbps) for the original stream.

Remedy: If there is a mismatch between the expected bit rate and the actual bit rate, ensure that the configured bit rate represents the peak bit rate expected on the channel.

If the Status of the channel is inactive or if the number of received packets is zero, check that the interface on which the channel has joined is properly configured. To verify that the interface has been configured correctly, do the following:

- Step 1** Click the **Interfaces** node in the navigation tree.
- Step 2** In the Multicast Group table, locate the multicast address of the channel and identify the name of the interface associated with the channel.
- Step 3** Verify that the interface has been configured correctly.



Note 10 or 100 Mbps interfaces are not supported on the VQE-S.

If the interface is configured correctly, verify that the multicast stream is being received by the networking stack. To output a record of all TCP traffic to and from an Ethernet interface to the screen, use secure shell (SSH) to connect to the VQE-S and run the command `/sbin/tcpdump -i <ethx> host <multicast_address>` on the interface as user root.

RCC is disabled on the channel

Explanation: An RCC fails if RCC is disabled on the new channel. To verify that RCC is enabled on a channel, do the following:

- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
- Step 2** Click the new channel in the lineup.
- Step 3** Click the **Configuration** tab.
- Step 4** Verify that the Rapid Channel Change field is set to true.

Remedy: If the Rapid Channel Change parameter is set to false for the channel, update the channel configuration in VCPT by clicking the Enable Rapid Channel Change check box. For information on updating channel information, see the [“Viewing or Updating Channel Information”](#) section on page 12.

After RCC has been enabled in the channel configuration, send the updated configuration to the VQE-S and the VCDS. For information on deploying channel configurations, see the [“Sending or Pushing Channel Information to Servers”](#) section on page 5.

No connectivity between the VQE-C and the FBT on the VQE-S

Explanation: An RCC fails if there is no connectivity between the VQE-C and the feedback target (FBT) of the new channel on the VQE-S.

To verify that the VQE-C can connect to the feedback target of the new channel, do the following:

-
- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
 - Step 2** Click the new channel in the lineup.
 - Step 3** Click the **Configuration** tab.
 - Step 4** Take note of the IP address in the Feedback Target Address field.
 - Step 5** Ping the feedback target IP address from the VQE-C to verify that it is reachable.
-

Remedy: If there is no connectivity between the VQE-C and the FBT on the VQE-S, check that the channel is active. A channel that is inactive does not have a FBT that is reachable. If the channel is active and a FBT for this channel does not exist, check the VQE system messages in the `/var/log/vqe/vqe.log` file for a FBT failure message.

No connectivity between the VQE-C and the VQE-S

Explanation: An RCC fails if there is no connectivity between the VQE-C and the VQE-S.

To verify that the VQE-C can connect to the service interfaces of the VQE-S, do the following:

-
- Step 1** Click the **Interfaces** node in the navigation tree.
 - Step 2** In the Interfaces Summary Table, take note of the IP address of each service interface.
 - Step 3** Ping the IP address of each service interface from the VQE-C to ensure it is reachable.
-

Remedy: If there is no connectivity between the VQE-C and the VQE-S service interfaces, fix problems in the network relating to cabling, interface configurations, and routing tables.

RCC refused by the VQE-S control or data planes

An RCC fails if the RCC is refused by the VQE-S control plane (CP) or data plane (DP). To verify that an RCC has not been refused for a channel by the VQE-S CP or DP, do the following:

-
- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
 - Step 2** Click the new channel in the lineup.
 - Step 3** Click the **Advanced** button.

- Step 4** Under RCC Debug Counters, verify that the values of the Refused RCC—RCC disabled on DP and Refused RCC—RCC disabled on CP counters are zero.

Explanation: If the counter Refused RCC-RCC disabled on DP counter has been incremented, the RCC has been refused by the VQE-S DP.

Remedy: If an RCC has been refused by the VQE-S DP, verify that the following line is not included in the `/etc/opt/vqes/vcdb.conf` file:

```
vqe.vqes.rcc_disable="true"
```

If the line is present in the file, remove the line, and use the `vqe_cfgtool` command with the `-apply` option to apply the change to the VQE-S.



Note

The parameter `vqe.vqes.rcc_disable` is a hidden parameter and should only be used on the direction of the a Cisco technical support representative.

If the counter Refused RCC-RCC disabled on CP is incremented, the RCC has been refused by the VQE-S CP. If the Refused RCC - RCC disabled on CP counter has been incremented, contact your Cisco technical support representative.

RCC refused by the VQE-S—invalid e-factor

Explanation: An RCC fails if the VQE-S refuses the RCC request because the e-factor is invalid. To verify that a valid e-factor has been configured on the VQE-S, check that the value of the VCDB parameter `vqe.vqes.excess_bw_fraction` is within the defined range of 3 to 500 in the `/etc/opt/vqes/vcdb.conf` file.

Remedy: If the e-factor value is outside of the permitted range, change the value of the parameter `vqes.excess_bw_fraction` in the `/etc/opt/vqes/vcdb.conf` file, and use the `vqe_cfgtool` command with the `-apply` option to apply the change to the VQE-S.

RCC refused by the VQE-S—insufficient bandwidth

Explanation: An RCC fails if the VQE-S refuses an RCC because there is not enough bandwidth available on the access link to the VQE-C to perform the RCC.

To verify that there is sufficient bandwidth available to perform an RCC, do the following:

-
- Step 1** Click the **Error Repair and RCC** node in the navigation tree to expand the channel lineup.
 - Step 2** Click the **Statistics** tab.
 - Step 3** Click the **Advanced** button.
 - Step 4** Verify that the total bandwidth available as displayed in the System available output b/w (Mbps) counter under the section CP Output Bandwidth Stats matches the expected total bandwidth of the service interfaces. For example, if two Gigabit Ethernet interfaces are configured and used for the access link, then the value of the System available output b/w (Mbps) counter should be 2000 Mbps.
 - Step 5** Verify that the value of the Committed RCC output b/w (Mbps) counter is less than the value of the RCC output b/w budget (Mbps) counter.
 - Step 6** Click the **Interfaces** node in the navigation tree.

- Step 7** Verify that all service interfaces have a role of *service* and have a status of *Up*. Verify that each service interface is a 1000 Mbps interface.
-

Remedy: If a service interface is a 10 Mbps or a 100 Mbps interface, you need to upgrade to a 1000 Mbps interface. If the committed budget for RCC is close to the maximum budget for RCC, you are close to reaching the scalability limit of the VQE-S.

MPEG Parser is unable to locate the burst start point

An RCC fails if the VQE-S MPEG parser is unable to locate the burst start point (that is, the Transport Stream Random Access Point [TSRAP]). To verify that the VQE-S is correctly identifying the burst start point, do the following:

- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
- Step 2** Click the new channel in the lineup.
- Step 3** Click the **Advanced** button.
- Step 4** Locate the MPEG Parser: Locating a Random Access Point section.
- Step 5** Verify that the value of the Num RAPs found by Adaptation Field RAI bit counter and Num RAPs found by locating I-frame or IDR counter is zero.
-

Explanation: If the value of the Num RAPs found by Adaptation Field RAI counter and the Num RAPs found by locating I-frame or IDR counter has been incremented, it is likely that the VQE-S is unable to find a TSRAP. The VQE-S is optimized to skip the parsing of the Elementary Stream (ES) which contains the actual group of pictures (GOPs). Instead, the VQE-S uses the `random_access_indicator` (RAI) bit in the MPEG2-TS packet header. However, in some deployments, the RAI bit is not set. Without an RAI, random access points (RAPs) may be overlooked as valid RCC burst start points.

Remedy: To prevent the VQE-S from skipping the ES, add the following line to the `/etc/opt/vqes/vcdb.conf` file:

```
vqe.vqes.max_rai_gap="0"
```

Use the `vqe_cfgtool` command with the `-apply` option to apply the change to the VQE-S.

Explanation: If RCCs continue to fail, it may be that the VQE-S is still unable to find a TSRAP. The VQE-S is also optimized to skip to the beginning of the next MPEG Packetized Elementary Stream (PES) once it determines the picture type. In some deployments, more than one GOP is contained in the PES header. If multiple GOPs are skipped, some RAPs may be overlooked as valid RCC burst start points.

Remedy: To prevent the VQE-S from skipping multiple GOPs in a PES header, add the following line to the `/etc/opt/vqes/vcdb.conf` file:

```
vqe.vqes.mpeg_search_limit_disable="true"
```

Use the `vqe_cfgtool` command with the `-apply` option to apply the change to the VQE-S.

VQE-S MPEG Parser is unable to locate the ECM PID

Explanation: When the new channel is scrambled, an RCC fails if the VQE-S MPEG parser is unable to locate the Entitlement Control Messages (ECM) Packet identifier (PID). To verify that the VQE-S is correctly locating the ECM PID, do the following:

-
- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
 - Step 2** Click the new channel in the lineup.
 - Step 3** Click the **Advanced** button.
 - Step 4** Locate the MPEG Parser: PIDs section.
 - Step 5** Verify that the list of PIDs includes a PID Type (ES Video), with a Stream Type of H.262 or H.264.
 - Step 6** Verify that the list of PIDs includes a PID Type (ECM PID).
 - Step 7** Verify that none of the error counters associated with either the ES Video PID or the ECM PID have been incremented.
-

Remedy: If either the ES Video PID or the ECM PID are not included under the list of PIDs, or if the error counters associated with either PID have been incremented, check the stream configuration and contact your Cisco technical support representative.

Burst start point not found within the backfill range

Explanation: An RCC is rejected by the VQE-S if it is unable to find a burst start point (TSRAP) within the backfill range sent by the VQE-C. The VQE-C sends the parameters `min_rcc_backfill` and `max_rcc_backfill` in its RCC request. The VQE-S must find a TSRAP within the range provided by these two parameters. If none is found, the RCC is rejected.

The following is an example of a VQE-C PLI APP message (that is, a request for an RCC) taken from a VQE-S log file:

```
Feb 5 10:35:53 saturn-iptv vqes_cp: <{vqes-era}>Computed PLII APP
received=TRUE, min_rcc_backfill=200, max_rcc_backfill=2105; use
min_ref_a=1233848151597, max_age=1233848153492, idr=0
```

In this example, the VQE-C sends a `min_rcc_backfill` value of 200 ms and a `max_rcc_backfill` value of 2105 ms.

The following is an example of the message sent from the VQE-S in response to the RCC request:

```
Feb 5 10:35:53 saturn-iptv vqes_cp: <{vqes-era}>Candidate TSRAP #0
(96598729:1), ref_time=1233848153147(0.545301 secs ago), is_idr:1,
rai:0, pts:10970145, pts_pcr_offset:74430[90kHz ticks]
```

In this example, the VQE-S indicates that it is selecting a burst start point that is 545 ms old and therefore, within the defined range.

If several RCCs have been rejected, check the VQE-S logs to verify that the backfill range for each rejected RCC was sufficiently large enough for the VQE-S to find burst start point within the backfill range.

Remedy: It is usually not a viable option to change the size of a GOP stream. Instead, consider increasing the size of the packet pool. For more information on sizing the packet pool, see *VQE-C System Integration Guide*.

No burst start point found—stream is invalid

Explanation: An RCC is rejected by the VQE-S if it is unable to locate a burst start point (TSRAP) in the stream sent by the stream source for one of the following reasons:

- Stream is of a type not supported by the VQE-S— VQE-S supports streams of type MPEG-2 part 2 (H.262) and MPEG-4 part 10 (H.264). The VQE-S does not support other stream types such as MPEG-4 part 2 (H.263) or DigiCipher II (DC II).
- Stream is empty or it is sent with null-padded packets.
- Stream is using a Conditional Access System (CAS) that is not ETSI ETR 289 compliant.
- Stream does not contain Program Map Tables (PMT) or Program Association Tables (PAT)—Priming information required by the VQE-S to perform the RCC is missing.
- Details of the PMT and PAT do not match the details of the stream—Priming information required by the VQE-S to perform the RCC is incorrect.

To verify that the VQE-S is correctly locating the burst start point, do the following:

-
- Step 1** Click the **Channel** node in the navigation tree to expand the channel lineup.
 - Step 2** Click the new channel in the lineup.
 - Step 3** Click the **Advanced** button.
 - Step 4** Locate the RCC Debug Counters.
 - Step 5** Verify that the RCC Refused—No RAP for stream counter did not increment during the RCC.
-

Remedy: If the RCC Refused—No RAP for stream counter has incremented, verify that the stream source is providing a valid stream for the channel and contact your Cisco technical support representative.

VQE-C RCC Troubleshooting

As a starting point, use the **show counters** command on the VQE-C command line interface (CLI) to identify how many previous RCC requests have been attempted by the VQE-C and how many have failed. For those RCC requests that have aborted, the output of the **show counters** command provides RCC failure reasons and indicates the number of failures associated with each reason. The following is a sample output from the **show counters** command:

```
vqec# show counters
... Omitted contents ...
--- RCC status ---
-- Channel Change Counters --
requests:          8
rcc requests:      6
rcc with loss:     0
rcc aborts:        4
  server   stun    response  response  burst    burst
  rejects  timeout  timeout  invalid   start    activity  other
  0        0        0        0        0        4        0
...
```

In this example, the RCC requests field presents the number of channel change requests made by the VQE-C. The RCC with loss field indicates the number of RCCs that did not abort but for which the post-repair loss rcc counter incremented. The number of RCCs aborted per failure reason is presented under the rcc aborts field. The following failure reason counters are presented:

- Server rejects—Number of times an RCC request was rejected by the VQE-S.
- Stun timeout—Number of times a STUN response was not received from the VQE-S.
- Response timeout—Number of times an APP packet (that is, priming information) was not received from the VQE-S.
- Response invalid—Number of times an APP packet received contained invalid contents.
- Burst start—Number of times the first repair packet was not received on time.
- Burst activity—Number of times a burst activity timed out prior to completion.

For further information on using the **show counters** command, see *VQE-C CLI Command Reference*.

The following sections describe how to troubleshoot RCC problems from the VQE-C:

- [RCC not enabled on the VQE-C, page 6-24](#)
- [Problem with priming information sent from the VQE-S, page 6-24](#)
- [First packets from repair burst not received within expected time period, page 6-25](#)
- [No multicast stream, page 6-25](#)
- [Output loss during RCC, page 6-25](#)
- [Output packets dropped, page 6-28](#)

Each section presents possible explanations for RCC problems and provides a remedy for the explanation.

RCC not enabled on the VQE-C

Explanation: RCC must be enabled on the VQE-C for RCC to operate. Use the **show rcc** command on the VQE-C CLI to verify that RCC is enabled. The following is a sample output from the **show rcc** command:

```
vqec# show rcc
rcc: enabled
```

Remedy: If RCC is disabled, use the **rcc enable** command from the VQE-C CLI in configuration mode to enable RCC. For more information on enabling RCC, see *VQE-C System Integration Guide*. RCC must also be enabled on the new channel. To verify that RCC is enabled on a channel, either check the channel configuration in the channel lineup from VQE-S AMT or use the **show channel** command on the VQE-C CLI and verify that the RCC field is set to enabled. For more information on verifying the status of RCC from the VQE-S AMT, see the [“RCC is disabled on the channel” section on page 17](#).

Problem with priming information sent from the VQE-S

Explanation: An RCC may be unsuccessful on the VQE-C because of a problem with the APP packets (that is, priming information) sent by the VQE-S. Possible explanations are as follows:

- APP packet was not received within the `rcc_start_timeout` interval set at the VQE-C.
- APP packet was received by the VQE-C, but was empty.
- APP packet was received by the VQE-S, but was invalid.

To verify from the VQE-C that an RCC has succeeded, use the **show tuner <tuner name> rcc** command and verify that the RCC result field has a value of success. The following is a sample output from the **show tuner <tuner name> rcc** command:

```
vqec# show tuner name tuner1 rcc
Tuner name:                tuner1
... Omitted contents ...
--- RCC status ---
rcc enabled:                true
rcc result:                 success
cp failure reason:         NONE
dp failure reason:         NONE
...
```

If the `rcc result` field displays a value of failure, check the values of the `cp failure reason` field and the `dp failure reason` field.

Remedy: The `cp failure reason` field displays the reason why the RCC was aborted by the control plane (CP). If the field displays a value of `APP_Timeout`, the APP packet was not received within the RCC start timeout period set at the VQE-C. See the [“VQE-S RCC Troubleshooting” section on page 16](#) for possible explanations why APP packets are not sent by the VQE-S within the timeout period.

The `dp failure reason` displays the reason why the RCC was aborted by the data plane (DP). If the field displays a value of `NULL_APP`, an empty APP packet was received. In this case, the VQE-S was unable to process the RCC. To identify why an RCC was refused by the VQE-S, view the Refused RCC counters on the Advanced window of the Error Repair and RCC tab of the VQE-S AMT. For more information on identifying reasons why the VQE-S rejects an RCC, see the [“VQE-S RCC Troubleshooting” section on page 16](#). If the value of the `dp failure reason` is `INVALID_APP`, one or more of its fields in the APP packet was not set correctly by the VQE-S.

First packets from repair burst not received within expected time period

Explanation: The VQE-C aborts an RCC if it does not receive the first repair packet (specified in the APP packet) from the VQE-S within the period of time specified by the VQE-C System Configuration parameter `rcc_start_timeout` and presents a `FIRST_REPAIR_TIMEOUT` error message on the CLI.

In a deployment that includes a NAT device between the STB and the VQE-S, the VQE-C must be configured to use NAT mode, as specified by the VQE-C System Configuration parameter `sig_mode`.

Remedy: Use Wireshark to determine that the unicast repair burst is being sent from the VQE-S and to determine that the repair burst is reaching the STB hosting the VQE-C. If the repair burst is reaching the VQE-C, the VQE-S is operating as intended, and the problem is occurring within the STB.

Furthermore, if the round-trip time on the network is large or inconsistent, it may help to increase the value of the VQE-C System Configuration parameter `rcc_start_timeout`, which increases the amount of time the VQE-C waits for a repair burst to start before failing with a `FIRST_REPAIR_TIMEOUT` error. For more information on configuring the `rcc_start_timeout` parameter, see *VQE Client System Configuration Guide*.

No multicast stream

Explanation: When an RCC unicast burst is received but no multicast burst is received for the primary stream, the RCC appears to start and then stop. To verify that multicast bursts are received after the initial RCC unicast burst, use the `show tuner name <tuner_name> rcc` command on the VQE-C CLI to identify the time the primary packet was received. Verify that the value of the `PRIM` field under Actual Relative Times is a non-zero value. In addition, verify that the first primary sequence field under Output statistics contains a non-zero value. For further information on using the `show tuner name <tuner_name> rcc` command, see *VQE-C CLI Command Reference*. The following is a sample output from the command:

```
vqec> show tuner name 0 rcc
Tuner name: 0
... Omitted contents ...
---Actual relative times (ms)---
  CC      Pli      APP      Rep      Join      Prim      ER      Join-lat
  0        7       11       33      149       204      2422     30
... Omitted contents ...
--- Output statistics ---
first primary sequence: 13767
first repair sequence: 167261298
...
```

In the sample output, the `Prim` field under the Actual relative times (ms) section contains a non-zero value. The first primary sequence field under Output statistics also contains a non-zero value.

Remedy: If the multicast burst for the primary stream is not received, verify that IGMP is setup correctly in your network configuration.

Output loss during RCC

Explanation: Video freeze or macroblocking may be observed during an RCC if output loss occurs at the VQE-C. To check for output losses on a tuner, use the `show tuner name <tuner_name> rcc` command. The following is a sample output from this command:

```
vqec> show tuner name 0 rcc
Tuner name: 0
... Omitted contents ...
--- Output statistics ---
  first primary sequence: 3125
```

```

rcc output loss packets: 0
rcc output loss holes: 0
rcc duplicate packets: 26
repairs in 1st nack: 0
first packet output time 34
last packet output time 2363
first packet decode time 183
...

```

Under Output Statistics, the rcc output loss packets field displays the number of missing packets on the output stream and the rcc output loss holes field displays the number of missing packet holes on the output stream. If no output loss has occurred, the value of both fields should be zero. If losses are observed in the network, check your network configuration.

The following are possible explanations why RCC output losses may occur:

- [IGMP join latency, page 6-26](#)
- [Packet pool is not size appropriately, page 6-27](#)
- [Excess bandwidth fraction is larger than the available bandwidth, page 6-27](#)
- [Previous stream is still flowing, page 6-28](#)

IGMP join latency

Explanation: Video freeze or macroblocking may be observed during an RCC if the IGMP join latency is longer than expected. IGMP join latency is the time between a request to join a multicast group and the receipt of the first byte of data for a multicast group. The actual join latency should be less than the or equal to the value of the VCDB parameter `vqe.vqes.igmp_join_variability`. This parameter sets the amount of variability between the fastest and slowest IGMP joins for RCC.

To identify the actual IGMP Join Latency, use the `show tuner name <tuner_name> rcc` command on the VQE-C CLI. For information on using this command, see *VQE-C CLI Command Reference*. The following is a sample output from the `show tuner name <tuner_name> rcc` command:

```

vqec> show tuner name 0 rcc
Tuner name: 0
... Omitted contents ...
---Actual relative times (ms)---
CC      Pli      APP      Rep      Join      Prim      ER      Join-lat
0       7        11       33       149       204       2422    30
...

```

In the sample output, the Join-lat field is displayed under Actual relative times (ms).

Remedy: If Join-lat is greater than the value of the VCDB parameter `vqe.vqes.igmp_join_variability`, determine the maximum igmp join latency that will be experienced on your network, and set the VCDB parameter `vqe.vqes.igmp_join_variability` to this value in the `/etc/opt/vqes/vcdb.conf` file. Use the `vqe_cfgtool` command with the `-apply` option to apply the change to the VQE-S.



Note

Increasing the value of the VCDB parameter `vqe.vqes.igmp_join_variability` increases the VQE-C memory requirements and may lead to RCCs being refused.

A historical view of the IGMP join latencies across STBs is provided by the STB IGMP Join Latency histogram on the VQE-S AMT. To view this histogram, do the following:

Step 1 Click the **System** node in the navigation tree.

- Step 2** Click the **Histograms** tab.
The Set-top Box IGMP Latency Histogram is displayed.
- Step 3** Move the slider below the histogram to change the way in which the histogram is displayed.
-

Packet pool is not size appropriately

Explanation: If the packet pool is not sized appropriately, video freeze or macroblocking may be observed during an RCC, and may continue after an RCC has been cancelled. The packet pool is a fixed size memory buffer pool for storing packet data. To verify that the packet pool buffer is sized appropriately, use the **show pak-pool** command from the VQE-C CLI. The following is a sample output from the **show pak-pool** command:

```
vqec# show pak-pool
global input pak pool stats:
  max entries:           1200
  used entries:          76
  high water entries:    1047
  fail pak alloc drops:  0
```

The high water entries field records a high number of packets allocated in the packet pool memory. The max entries field displays the maximum number of packets that can be allocated from the packet memory pool. If the high water mark value is close in value to the max entries value, the VQE-C has reached the currently configured limit of the packet pool.

Remedy: The system configuration parameter `pakpool_size` should be sized appropriately for streams and for associated network characteristics. For more information on sizing the packet pool, see *VQE-C System Integration Guide*.

Excess bandwidth fraction is larger than the available bandwidth

Explanation: Video freeze or macroblocking may be observed during an RCC if there is not enough bandwidth available on the access link to perform an RCC. To verify that the excess bandwidth factor has not exceeded the available bandwidth, check the values of the VCDB parameter `vqe.vqes.excess_bandwidth_fraction` or, in the case of a high definition channel, the VCDB parameter `vqe.vqes.excess_bw_fraction_high_def`. Verify that the values of these parameters are appropriate for the capacity of the access link.



Note

The VQE-S does not take FEC into account when calculating available bandwidth. If your deployment uses FEC, consider the bandwidth used by FEC when determining the excess bandwidth fraction.

In your deployment, if the e-factor is determined on a per-client basis, verify that the e-factor calculated based on the VQE-C parameters `max_recieve_bandwidth_sd` and `max_receive_bandwidth_hd` is appropriate for the capacity of the access link.

Remedy: If a global e-factor value is used, modify the value of the VCDB parameter `vqe.vqes_excess_bandwidth_fraction` or the VCDB parameter `vqe.vqes.excess_bw_fraction_high_def`. If the e-factor is determined on the per-client basis, modify the value of the VQE-C parameters `max_receive_bandwidth_sd` or `max_receive_bandwidth_hd` to accurately reflect the maximum receive bandwidth.

Previous stream is still flowing

Explanation: Video freeze or macroblocking may be observed during an RCC if the previous stream is still flowing into the VQE-C. If `igmp_immediate_leave` is not configured in the DSLAM, the combined bandwidth of the multicast stream of the previous channel and the bandwidth allocated for RCC on the new stream (the multicast bitrate of the new stream * [1 + VQE e-factor used for the RCC]) exceeds the bandwidth of the access link. In this scenario, some of the bandwidth is still being consumed by the previous stream, and there is not enough bandwidth remaining on the access link for the unicast burst required to start the RCC for the new channel. The problem disappears as soon as the VQE-C joins the multicast stream for the new channel, usually several hundred milliseconds to several seconds after the start of the unicast burst.

If you want to verify that the previous stream has stopped flowing, connect to the access link using packet capture software such as Wireshark to identify which streams are flowing.

Remedy: If the previous stream is still flowing, configure `igmp immediate leave` processing in the DSLAM. Some DSLAMS may not stop the previous stream when an IGMP leave message is received. Instead, the DSLAM may wait until a new multicast stream has been joined before stopping the previous stream. The VQE-C configuration parameter, `rcc_extra_igmp_ip`, allows you to specify a multicast IP address that the VQE-C can join briefly on leaving an old channel and joining a new channel as part of an RCC to stop the flow of the multicast stream of the old channel. For more information on configuring the `rcc_extra_igmp_ip` VCDB parameter, see *VQE Client System Configuration Guide*.

Output packets dropped

Explanation: Video freeze or macroblocking may be observed during an RCC if the capacity of the output packet queue is exceeded and output packets are dropped. To verify that output packets have not been dropped, use the `show tuner name <tuner_name> detail` command to view the value of the `qdrops` field under tuner status.

```
vqec# show tuner name 0 detail
Tuner name: 0
... Omitted contents ...
--- NAT status ---
... Omitted contents ...
qinputs: 92026859
qdrops: 82586551
qdepth: 300
qoutputs: 9440008
...
```

If the `qdrops` field has been incremented, the set-top box (STB) decoder is not serving the VQE-C buffer fast enough to display the stream.

Remedy: If output packets are being dropped, increase the value of the `output_pakq_limit` parameter on the VQE-C. For more information on configuring the `output_pakq_limit`, see the *VQE-C System Integration Guide*.

Using the `vgereport` Command

The `vgereport` command can be useful for VQE troubleshooting. You can use the `vgereport` command to gather information on the software and hardware configuration of the VQE system. The information can be used by the VQE administrator or Cisco technical support representative to diagnose problems with VQE software or with the Cisco CDE hardware.



Caution

The `vgereport` command can take up to 15 minutes to complete and may cause VQE services (such as Unicast Retransmission) to be degraded for the duration of the execution.

The syntax for the `vgereport` command is as follows:

```
vgereport [-h | -help]
```

Syntax Description

-h -help	Displays help information.
-------------------	----------------------------

Usage Guidelines

The `vgereport` command generates a report file that, when the command finishes, is located in `/root/hostname.dateandtime.tar.bz2`. If appropriate, the report file can be attached to field issue reports for Cisco technical support representatives.



Note

You must log in as root to execute the `vgereport` command.

The `vgereport` command can be executed on the CDE that hosts the VQE-S or on the CDE that hosts VCPT. The `vgereport` executable is located at `/opt/vqes/bin/vgereport`.

All information gathered is considered confidential, and Cisco uses this information for diagnostic purposes only.

Examples

The following example shows the execution of the `vgereport` command and some abbreviated output:

```
[root@system ~]# /opt/vqes/bin/vgereport
```

```
This utility will go through and collect some detailed information about the hardware and
setup of your VQE system. This information will be used to diagnose problems with your
system and will be considered confidential information. Cisco will use this information
for diagnostic purposes ONLY.
```

```
Please wait while we collect information about your system.
```

```
This process may take a while to complete...
```

```
No changes will be made to your system during this process.
```

```
NOTE: You can safely ignore a failed message. This only means a file we were checking for
did not exist.
```

```
Press ENTER to continue, or CTRL-C to quit.
```

```
*****
Collect Redhat sysreport
```

```
*****
Collect information of installed RPM packages
...
```

```

output omitted
...
Report file /root/<hostname>.20071115164635.tar.bz2 has been generated, please send it to
Cisco support.

```

Gathering Information for a Service Request

If you are experiencing a problem with Cisco VQE and need to submit a service request to Cisco, please gather and provide the following information to assist Cisco technical support representatives in diagnosing your issue:

- Report file that is generated from the **vqereport** command for issues involving the VQE-S or VQE Tools server.
- For an issue involving VQE-C, output from the following commands:
 - **show tuner all detail**
 - **show pak-pool**
 - **show counters**
 - **show channel**
 - **show system**

For information on the **vqereport** command, see the “Using the vqereport Command” section on page 29.

For information on submitting a service request, see the monthly *What’s New in Cisco Product Documentation* at:

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

Stopping, Starting, and Restarting VQE-S

The VQE-S application is a service that is started with the Linux **service** command.

To stop, start, or restart the VQE-S application, follow these steps:

Step 1 Log in as root.

Step 2 Depending on what is required, issue one of the following commands:

- To stop the VQE-S, issue the following command:

```
[root@system]# service vqes stop
```

- To start the VQE-S, issue the following command:

```
[root@system]# service vqes start
```

- To restart (stop and then start) the VQE-S, issue the following command:

```
[root@system]# service vqes restart
```

Stopping, Starting, and Restarting VCDS

The VCDS application is a service that is started with the Linux **service** command.

To stop, start, or restart the VCDS application, follow these steps:

Step 1 Log in as root.

Step 2 Depending on what is required, issue one of the following commands:

- To stop VCDS, issue the following command:

```
[root@system]# service vcds stop
```

- To start VCDS, issue the following command:

```
[root@system]# service vcds start
```

- To restart (stop and then start) VCDS, issue the following command:

```
[root@system]# service vcds restart
```

Resetting the Root Password on the VQE-S or VQE Tools Server

To reset the password on the VQE-S or the VQE Tools server, you need to boot into single-user mode from the GRUB loader and reset the password. To reset the password, do the following:

Step 1 Connect to the serial console and reboot the VQE-S or the VQE Tools server by issuing the following command:

```
# reboot
```

The server reboots.

Step 2 Press any key when the following message is displayed.

```
Press any key to continue.  
Press any key to continue.  
Press any Key to continue.
```

Red Hat Linux is selected as the operating system and the Grub Loader screen is displayed.

Step 3 Select the entry "Red Hat Enterprise Linux Server (2.6.18-157.el5)" if not already selected, and press **e**.

Step 4 Using the arrow keys, move the cursor to select the following line:

```
kernel /boot/vmlinuz-2.6.15-1-686 root=dev/sda1 ro
```

Step 5 Press **e** to enter edit mode.

Step 6 Using the arrow keys, move the cursor to the end of the line, press the **Spacebar** and enter **single**.

For example:

```
grub edit > kernel /boot/vmlinuz-2.6.15-1-686 root=dev/sda1 ro single
```

“single” is appended to the end of the line.

Step 7 Press **Enter** to exit edit mode and return to the Grub Loader screen.

- Step 8** Press **b** to boot the Linux kernel into single user mode.
The `sh-3.2#` prompt is displayed.
- Step 9** Enter **passwd** and specify the new password. For example:
`sh-3.2# passwd new-password`
- Step 10** Issue the following command to reboot the VQE-S or the VQE Tools sever:
`# reboot`

The system reboots.
- Step 11** Login to the server using the new password.
Your root password has been changed.
-