



CHAPTER 4

Using the VQE-S Application Monitoring Tool

This chapter describes how to use Cisco VQE-S Application Monitoring Tool (VQE-S AMT or AMT). The tasks that you can perform with VQE-S AMT are listed in [Table 4-1](#).

Table 4-1 VQE-S AMT Tasks

VQE-S AMT Task	Section Where Described
Logging in to VQE-S AMT	Logging in to and Navigating in VQE-S AMT, page 4-1
Monitor the health of the VQE-S processes	Monitoring the Health of the VQE-S Processes, page 4-4
View channel configuration details, status, and statistics	Viewing Channel Configuration and Status, page 4-6
Monitor statistics for Unicast Retransmission and RCC	Monitoring Unicast Retransmission and RCC, page 4-11
View configuration details, status, and statistics for Multicast Load Balancer	Monitoring Multicast Load Balancer, page 4-14
View configuration details, status, and statistics for VQE-S RTCP Exporter	Monitoring RTCP Exporter, page 4-16
View STUN Server Statistics	Monitoring the STUN Server, page 4-17
Configure VQE-S logging levels	Configuring VQE-S Logging, page 4-18
Configure VQE-S debugging levels	Configuring VQE-S Debugging, page 4-19



Note

VQE-S AMT supports configuration capabilities for logging levels and debugging options. However, the configured values do not persist when AMT is restarted.

Logging in to and Navigating in VQE-S AMT

Before logging into VQE-S AMT, you need a valid Linux username and password on the Cisco CDE110 hosting AMT. The username does not have to belong to any special group. Creation of the username is the responsibility of the Cisco CDE110 system administrator.

VQE-S AMT supports two web browsers: Microsoft Internet Explorer version 6.0 or later, and Mozilla Firefox version 2.0 or later. The minimum screen resolution required for VQE-S AMT is 1024 x 768 pixels.

VQE-S AMT uses secure HTTPS. Access by multiple simultaneous browsers is supported.

To display the Channels Status Summary graph of active, inoperative, and inactive channels in the AMT VQE-S Status window, Adobe Flash Player must be installed on the computer that hosts the browser accessing AMT. Adobe Flash Player is free and can be found at this URL:

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

To login to VQE-S AMT, follow these steps:

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- Step 1** Point your web browser to the Cisco CDE110 that hosts VQE-S AMT using an IP address or fully qualified domain name:

`https://ip_address`

or

`https://fully_qualified_domain_name`

The AMT login dialog box is displayed.

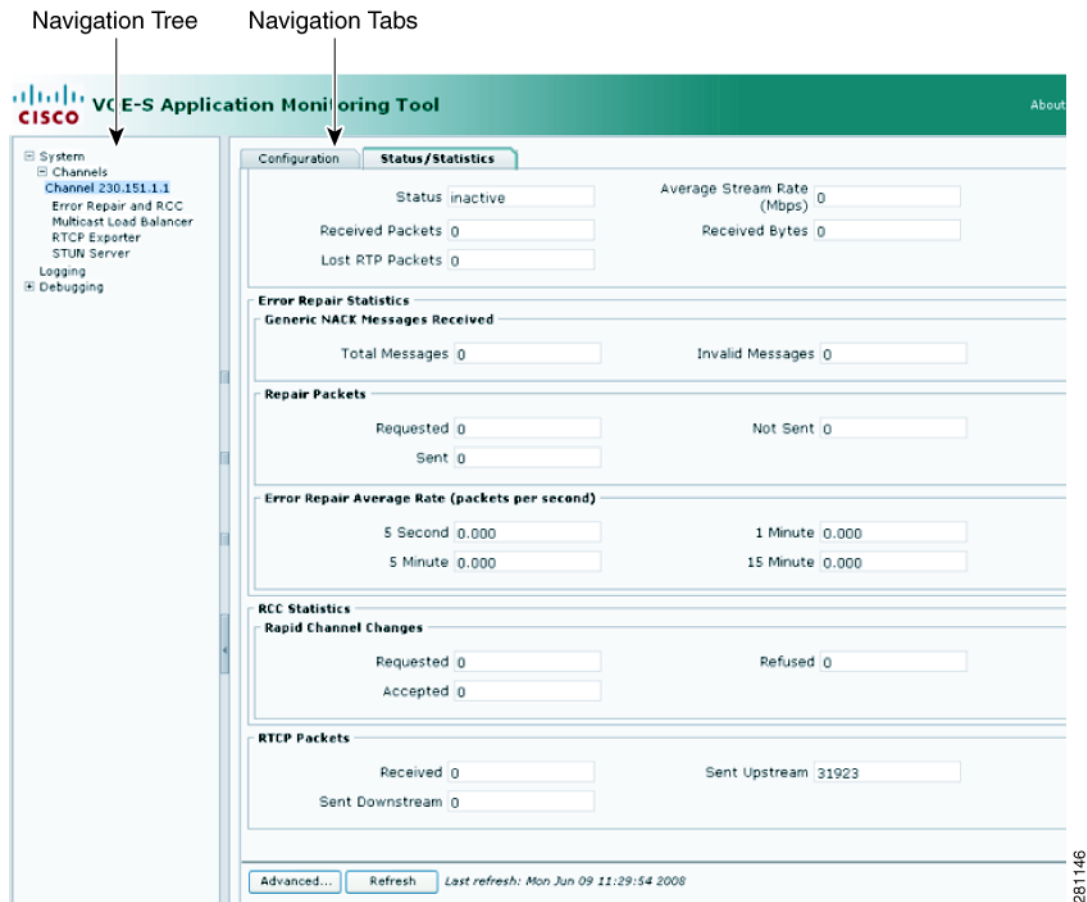
- Step 2** Enter a Linux username and password.

- Step 3** Click **OK**.

If the username and password are valid, the AMT VQE-S Status window is displayed.

Figure 4-1 shows the VQE-S AMT navigation controls and buttons.

Figure 4-1 VQE-S AMT Navigation



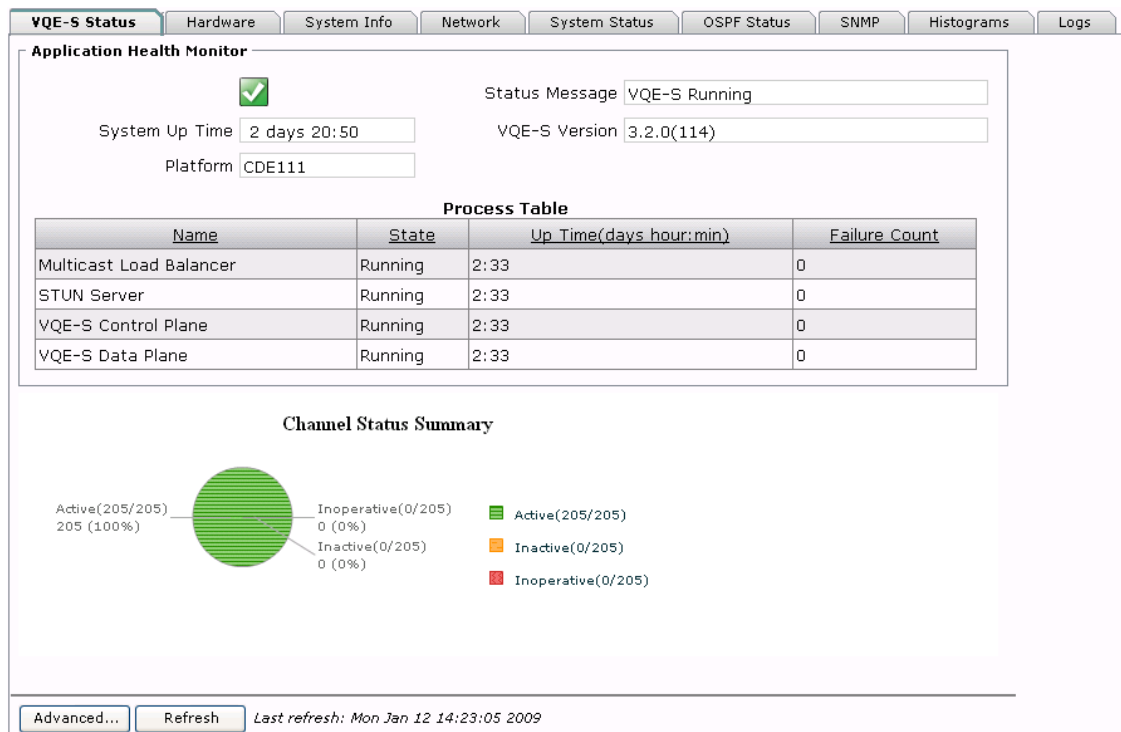
VQE-S AMT (Figure 4-1) provides these controls and buttons for navigating and displaying VQE data:

- **Navigation tree**—Use the collapsible and expandable tree to display the VQE-S AMT items that can be viewed or configured. The navigation tree can be hidden by clicking the < arrow in its right border.
 - A parent node in the tree (such as Channels) usually provides summary data.
 - A child node in the tree (such as an individual channel name) provides data on the specific child node.
- **Navigation Tabs**—Click the tabs to display VQE data for viewing or VQE parameters for configuring in the main window. Some but not all VQE items have Configuration and Statistics tabs that display the relevant data or parameters.
- **Advanced**—Click to get additional, detailed information on the current VQE-S AMT items. The advanced data is intended for Cisco Technical Support and are not described in this document.
- **Refresh** —Click to update the displayed data. VQE-S AMT statistical data are not automatically updated when VQE-S real-time counters are incremented. The Last refresh date-and-time information to the right of the **Refresh** button indicates when the last update of displayed data occurred.

Monitoring the Health of the VQE-S Processes

When you click the **System** node in the navigation tree and the **VQE-S Status** tab, VQE-S AMT displays the VQE-S Status window (Figure 4-2). The Application Health Monitor and a Channel Status Summary are displayed in the VQE-S Status window.

Figure 4-2 VQE-S Status Window



In the Application Health Monitor, a green icon with a checkmark indicates the VQE-S system is running and healthy. A red icon with an X indicates one or more problems with the VQE-S processes.

Using the Application Health Monitor, you can view the following status information:

- **System Up Time**—Time that Cisco CDE110 hosting VQE-S has been running.
- **Platform**—Cisco CDE110 hardware platform that is hosting this VQE-S. Platform can be one of the following:
 - Cisco CDE110 (models CDE110-1-036TXA-K9 and CDE110-1-036TXD-K9)
 - Cisco CDE111 (models CDE111-2-146TXA-K9 CDE111-2-146TXD-K9)
 - UNKNOWN if the hardware platform cannot be determined
- **Status Message**—Current status of the VQE-S software or information on problems (for example, the message “Config File Parsing Failed”)
- **VQE-S Version**—Current version of the VQE-S software.
- **Process Table**—Information on these VQE-S processes:
 - Multicast Load Balancer
 - STUN Server

- Data Plane
- Control Plane

In the Process Table, Failure Count is the number of times the process has failed and been restarted by VQE-S Process Monitor. Process Monitor is responsible for starting and monitoring the preceding processes.

The Channels Status Summary section provides the number of and a graph for active, inoperative, and inactive channels.

In addition to the VQE-S Status tab, you can get information on the VQE-S system on the five other tabs. [Table 4-2](#) lists the information that is available from each tab accessible from the System node.

Table 4-2

System Node Tab	Information Provided
VQE-S Status	Application Health Monitor and Channel Status Summary
Hardware	Processor and memory on the Cisco CDE110 that hosts VQE-S Each CDE110 has two physical processors and four virtual processors.
System Info	Hostname, operating system version, date and time, Network Time Protocol servers, Domain Name System servers, and iptables information (trusted channel-provisioning servers).
Network	Output from the ifconfig and ip addr show lo commands. • The configuration information displayed by ifconfig is for the four CDE110 Ethernet interfaces and the CDE110 loopback addresses. • The loopback addresses displayed by ip addr show lo are the feedback target addresses for the configured channels.
System Status	Detailed information on host uptime, currently running processes, and file system disk space.
OSPF Status	Output from a number of commands that show OSPF information, including status, neighbors, interfaces, database, and routes.
SNMP	SNMP information on the VQE-S host taken from the <code>snmpd.conf</code> file.
Histograms	Set-top box IGMP latency data is displayed in graphs and tables.
Logs	Most recent 300 lines from the following VQE-related log files are displayed: • VQE-S log (<code>/var/log/vqe/vqe.log</code>) • System messages log (<code>/var/log/messages</code>) • HTTPD error log (<code>/var/log/httpd/error_log</code>) • SSL error log (<code>/var/log/httpd/ssl_error_log</code>) • Tomcat log (<code>/usr/share/tomcat5/logs/catalina.out</code>)

Viewing Channel Configuration and Status

When you click the **Channels** node in the navigation tree, VQE-S AMT displays the Channel Lineups window (Figure 4-3).

Figure 4-3 Channel Lineups Window

Channel Lineups Last update: 2008-07-08T14:44:14, Total Channels: 250, Active Channels: 240 Aggregated Bandwidth: 1215000(kbits/sec), Total Receivers: 1040							
Name	Status	Original Multicast	Feedback Target	Bit Rate (Kbps)	Repair Enabled	RCC Enabled	Member Receiver Population
Channel 229.1.1.1	✓	229.1.1.1:53170	11.112.1.1:53171	4000	true	true	400
Channel 229.1.1.10	✓	229.1.1.10:53206	11.112.1.10:53207	13000	true	true	0
Channel 229.1.1.11	✓	229.1.1.11:53210	11.112.1.11:53211	4000	true	true	0
Channel 229.1.1.12	✓	229.1.1.12:53214	11.112.1.12:53215	4000	true	true	0
Channel 229.1.1.13	✓	229.1.1.13:53218	11.112.1.13:53219	4000	true	true	0
Channel 229.1.1.14	✓	229.1.1.14:53222	11.112.1.14:53223	4000	true	true	0
Channel 229.1.1.15	✓	229.1.1.15:53226	11.112.1.15:53227	2000	true	true	0

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Using the Channel Lineups window, you can do the following:

- Click on a column heading to reorder the channels in the list. For example, clicking on **Feedback Target** orders the entries by feedback target: the combination of an IP address and RTCP port number.
- Double-click on any item in a channel's row to display the full details for the channel in a new window.
- Click the **Re-Activate** button to cause VQE-S to create all channels that are not currently created in the VQE-S software.

In Figure 4-3, the channel-lineup summary data indicates when the lineup was last updated (for example, with VCPT) and provides totals for all channels and active channels as well as aggregated bandwidth and total receivers:

Last update: 2007-08-06T14:15:31, Total Channels: 10, Active Channels: 9
Aggregated Bandwidth: 88000 (kbits/sec), Total Receivers: 0

The Channel Lineups window has the same information that is defined for channels using VCPT but has the following additions. For information on the other data that appears in the Channel Lineups table, see Table 3-3 on page 3-8.

- Status—Indicates channel status as follows:
 - Green with a checkmark—Channel is active. VQE-S is receiving the multicast stream.
 - Yellow with exclamation mark (!)—Channel is inactive. The channel is successfully initialized, but VQE-S is not receiving the multicast stream.
 - Red with an X—Channel is inoperative (for example, the channel is not configured correctly).
- Member Receiver Population—Provides the number of VQE Clients that are currently receiving this multicast stream.

Viewing Channel Configuration

When you click on a channel name in the navigation tree and then click the **Configuration** tab, VQE-S AMT displays the Channel Configuration window (Figure 4-4).

Figure 4-4 Channel Configuration Window

The screenshot shows the 'Channel Configuration' window with the following fields:

- Channel Configuration:**
 - Channel Name: Channel 229.1.1.1
 - Mode: Lookaside
 - Feedback Target Address: 11.112.1.1
 - Error Repair: true
 - Rapid Channel Change: true
 - Post Repair Loss RLE Enabled: true
- Original Source Stream:**
 - Multicast IP Address: 229.1.1.1
 - Port: 53170
 - Protocol: RTP
 - RTCP Port: 53171
 - IP Source Filter: 9.3.13.2
 - Bit Rate(Kbps): 4000
 - RTCP XR Enabled: true
- Unicast Retransmission Stream:**
 - Retransmission IP Address: 11.112.1.1
 - RTP Port: 10002
 - RTCP Port: 10003

At the bottom, there is a 'Refresh' button and a timestamp: 'Last refresh: Fri Jun 20 10:24:41 2008'. A vertical label '281141' is on the right side.

The Channel Configuration window has the information listed in Table 4-3.

Table 4-3 Channel Configuration

Field	Description
Channel Configuration	
Channel Name	Name of the channel.
Feedback Target Address	Feedback Target IP address assigned on the VQE-S host.
Rapid Channel Change	- true—RCC is enabled for this channel. - false—RCC is not enabled for this channel.
Mode	Currently only Lookaside mode is supported.
Error Repair	- true—Unicast Retransmission is enabled for this channel. - false—Unicast Retransmission is not enabled for this channel.
Post Repair Loss RLE Enabled	- true—RTCP Extended Reports will include the Loss RLE (run-length encoded) report block type. - false—RTCP Extended Reports will not include the Loss RLE report block type.
Original Source Stream	
Multicast IP Address	Multicast IP address for the channel's original source stream.

Table 4-3 **Channel Configuration (continued)**

Field	Description
Protocol	Currently only RTP is supported.
IP Source Filter	Source IP address of the channel's original source stream.
RTCP XR Enabled	- true—RTCP Extended Reports are enabled. - false—RTCP Extended Reports are not enabled.
Port	Number of the port for the original source stream. When the protocol is RTP, this is the RTP port number.
RTCP Port	Number of the RTCP port for the original source stream.
Bit Rate (Kbps)	Bit rate configured for the original source stream.
Unicast Retransmission Stream	
Retransmission IP Address	IP address of the Unicast Retransmission stream.
RTCP Port	Number of the RTCP port for the Unicast Retransmission stream.
RTP Port	Number of the RTP port for the Unicast Retransmission stream.

Viewing Channel Statistics

When you click on a channel name in the navigation tree and then click the Statistics tab, VQE-S AMT displays the Channel Statistics window ([Figure 4-5](#)).

Figure 4-5 Channel Statistics Window

The screenshot shows the 'Status/Statistics' tab of the Channel Statistics Window. It displays various metrics for a channel, including its status, received packets, average stream rate, error repair statistics, and RTCP packets. The window is organized into several sections with expandable/collapsible headers.

Configuration		Status/Statistics	
Status	active	Average Stream Rate (Mbps)	3.81
Received Packets	2339128	Received Bytes	3153144544
Lost RTP Packets	634		
Error Repair Statistics			
Generic NACK Messages Received			
Total Messages	12544	Invalid Messages	0
Repair Packets			
Requested	13941	Not Sent	6
Sent	13935		
Error Repair Average Rate (packets per second)			
5 Second	4.600	1 Minute	3.425
5 Minute	3.457	15 Minute	3.460
RCC Statistics			
Rapid Channel Changes			
Requested	1	Refused	0
Accepted	1		
RTCP Packets			
Received	13053	Sent Upstream	254
Sent Downstream	286		
Advanced... Refresh Last refresh: Fri Jun 20 14:40:43 2008			

The Channel Statistics window has the information listed in [Table 4-4](#).

Table 4-4 Channel Statistics

Field	Description
Channel Input Stream	
Status	- active—VQE-S is receiving the multicast stream. - inactive—The channel is successfully initialized, but VQE-S is not receiving the multicast stream. - inoperative—The channel is not, for example, configured correctly.
Received Packets	Number of RTP packets received by VQE-S for this multicast stream.

Table 4-4 Channel Statistics (continued)

Field	Description
Lost RTP Packets	Number of RTP packets sent but not received by VQE-S for this multicast stream. Lost RTP Packets, in general, specifies the number of missing input RTP packets for a channel, as determined by missing sequence numbers. Some lost packets can occur when a channel is first received because a few packets may be dropped internally by the VQE-S in the course of initializing the channel. Once the channel has been initialized (typically less than a one second delay), further increments in this counter may reflect lost packets in the network between the source of the RTP stream and the VQE-S.
Average Stream Rate (Mbps)	Average megabits per second received by VQE-S for this multicast stream.
Received Bytes	Number of bytes received by VQE-S for this multicast stream.
Error Repair Statistics—Generic NACK Messages Received	
Total Messages	Number of NACK messages received by VQE-S from VQE-C for this multicast stream.
Invalid Messages	Number of invalid messages received by VQE-S from VQE-C for this multicast stream. Invalid messages are received messages that, for example, cannot be parsed.
Repair Packets	
Requested	Number of RTP packets VQE Clients have requested for Error Repair for this multicast stream.
Sent	Number of RTP packets sent by VQE-S that have succeeded in repairing an error for this multicast stream.
Not Sent	Number of failed RTP packets that were not repaired by VQE-S for this multicast stream. VQE-S may not be able to send an Error Repair packet for the following reasons: • The most likely cause is that the Error Repair requests were bursty and exceeded the Error Repair rate-policer limit at one point. • The requested RTP packets were not found in the VQE-S memory cache. • The VQE-S failed to send the RTP packets because of a socket sendto() failure.
Error Repair Average Rate (packets per second)	
5 second, 5 minute, 1 minute, 15 minute	For each time interval, the average number of packets per second that VQE-S has sent to VQE Clients to repair errors for this multicast stream. Averages are calculated for each time interval over a period of time that is greater than the interval. For example, the five second calculation might be an average of 12 five-second intervals over a one minute period.
RCC Statistics—Rapid Channel Changes	
Requested	Number of Rapid Channel Changes requested for this channel.
Accepted	Number of Rapid Channel Changes requested for this channel where the VQE-S has accepted the request and sent IPTV packets and other channel data to a VQE Client on the set-top box.

Table 4-4 Channel Statistics (continued)

Field	Description
Refused	Number of Rapid Channel Changes requested for this channel where VQE-S refused the request. For example, VQE-S may refuse an RCC request for the following reasons: • If the VQE-S did not find an I-frame that is a suitable starting point for the RCC burst • If the VQE-S exceeded the output interface bandwidth limit or CPU load limit If the CPU load limit is exceeded, the Advanced Channel Debug Stats counter “Refused RCC - no core resources on DP” shows when the limit is exceeded.
Failed	Number of Rapid Channel Changes that have failed. A VQE-C has made an RCC request, and VQE-S has accepted the request and sent IPTV packets and other channel data to a VQE Client. But the RCC failed. For example, an RCC can fail if the VQE-C stops receiving the packets from the VQE-S earlier than expected.
RTCP Packets	
Received	Number of RTCP packets received by VQE-S for this multicast stream.
Sent Downstream	Number of RTCP packets that VQE-S sent downstream for this multicast stream.
Sent Upstream	Number of RTCP packets that VQE-S sent upstream for this multicast stream.

Monitoring Unicast Retransmission and RCC



Note

In VQE-S AMT, Error Repair is the term used for Unicast Retransmission.

You can use VQE-S AMT to view Error Repair and RCC statistics.

Viewing Error Repair and RCC Configuration

When you click **Error Repair and RCC** in the navigation tree and click the **Configuration** tab, VQE-S AMT displays the Error Repair and RCC Configuration window ([Figure 4-6](#)).

Figure 4-6 Error Repair and RCC Configuration Window

The Error Repair and RCC Configuration window has the information listed in [Table 4-5](#). Each of the parameters listed in the table can be configured with the VQE Configuration Management System. For information on configuring VQE-S, see [Chapter 6, “Configuring VQE Server and VQE Tools.”](#)

Table 4-5 Error Repair and RCC Configuration

Field	Description
Error Repair/RCC Configuration	
RCC Mode	RCC mode can be aggressive or conservative. This value is configured with the <code>vqe.vqes.rcc_mode</code> parameter in VCDB. For information on this parameter, see Table A-3 on page A-4 .
IGMP Join Variability (msec)	Amount of variability (in milliseconds) between the fastest and slowest IGMP joins for RCC. This value is configured with the <code>vqe.vqes.igmp_join_variability</code> parameter. For information on this parameter, see Table A-3 on page A-4 .
Excess Bandwidth Fraction	Percent of channel bandwidth that will be available on the access link for Unicast Retransmission and Rapid Channel Change. This value is configured with the <code>vqe.vqes.excess_bw_fraction</code> parameter. For information on this parameter, see Table A-4 on page A-6 .
Maximum Interval between MPEG RAPs (msec)	Maximum time interval (in milliseconds) between MPEG RAPs (random access points) for the entire channel lineup. This value is configured with the <code>vqe.vqes.rap_interval</code> parameter in VCDB. For information on this parameter, see Table A-3 on page A-4 .
Differentiated Services Code Point Configuration	
RTCP Packets	DCSP value for RTCP packets that VQE-S transmits. This value is configured with the <code>vqe.vqes.rtcp_dscp</code> parameter in VCDB. For information on this parameter, see Table A-1 on page A-2 .
Retransmitted RTP Packets	DCSP value for RTP packets that VQE-S transmits. This value is configured with the <code>vqe.vqes.rtp_trans_dscp</code> parameter in VCDB. For information on this parameter, see Table A-1 on page A-2 .

Viewing Error Repair and RCC Statistics

When you click **Error Repair and RCC** in the navigation tree and click the **Statistics** tab, VQE-S AMT displays the Error Repair and RCC Statistics window (Figure 4-7). The statistics are for this VQE-S and are similar to the Error Repair and RCC statistics displayed for individual channels but are for all channels in the current channel lineup.

The Error Repair and RCC statistics are reset to 0 when VQE-S restarts or when the channel lineup changes.

Figure 4-7 Error Repair and RCC Statistics Window

The screenshot shows the 'Error Repair and RCC Statistics' window. It features a 'Statistics' tab and displays various performance metrics. The 'Generic NACK Messages Received' section shows a total of 29,474,694 messages and 0 invalid messages. The 'Repair RTP Packets' section shows 390,483,172 requested packets, 390,127,848 sent packets, and 355,324 not sent packets. The 'Inbound Error Repair Request Average Rate' and 'Outbound Error Repair Average Rate' sections provide data for 5-second, 5-minute, 1-minute, and 15-minute intervals. The 'RCC Statistics' section shows 104,661 requested rapid channel changes, 86,628 accepted, 18,033 refused, and 0 failed.

The Error Repair and RCC Statistics window has the information listed in Table 4-6.

Table 4-6 Error Repair and RCC Statistics

Field	Description
Generic NACK Messages Received	
Total Messages	Number of NACK messages received by this VQE-S from VQE Clients.
Invalid Messages	Number of invalid messages received by this VQE-S from VQE Clients. Invalid messages are received messages that, for example, cannot be parsed.
Repaired RTP Packets	
Requested	Number of RTP packets VQE Clients have requested for Error Repair from this VQE-S.

Table 4-6 Error Repair and RCC Statistics (continued)

Field	Description
Sent	Number of RTP packets sent by this VQE-S that have succeeded in repairing an error.
Not Sent	Number of failed RTP packets that were not repaired by VQE-S. VQE-S may not be able to send an Error Repair packet for the following reasons: • The most likely cause is that the Error Repair requests were bursty and exceeded the Error Repair rate-policer limit at one point. • The requested RTP packets were not found in the VQE-S memory cache. • The VQE-S failed to send the RTP packets because of a socket sendto() failure.
Inbound and Outbound Error Repair Average Rate (packets per second)	
5 second, 5 minute, 1 minute, 15 minute	For each time period, the average number of packets per second that VQE-S has received (inbound) or sent (outbound) to VQE Clients to repair errors (Unicast Retransmission).
RCC Statistics—Rapid Channel Changes	
Requested	Number of Rapid Channel Changes requested for this channel.
Accepted	Number of Rapid Channel Changes requested for this channel where the VQE-S has accepted the request and sent IPTV packets and other channel data to a VQE Client on the set-top box.
Refused	Number of Rapid Channel Changes requested for this channel where VQE-S has refused the request. For example, VQE-S may refuse an RCC request for the following reasons: • If the VQE-S did not find an I-frame that is a suitable starting point for the RCC burst • If the VQE-S exceeded the output interface bandwidth limit or CPU load limit If the CPU load limit is exceeded, the Advanced Channel Debug Stats counter “Refused RCC - no core resources on DP” shows when the limit is exceeded.
Failed	Number of Rapid Channel Changes that have failed. A VQE-C has made an RCC request, and VQE-S has accepted the request and sent IPTV packets and other channel data to a VQE Client. But the RCC failed. For example, an RCC can fail if the VQE-C stopped receiving RCC packets from the VQE-S earlier than was expected.

Monitoring Multicast Load Balancer

When you click **Multicast Load Balancer** in the navigation tree, VQE-S AMT displays two tables associated with the Multicast Load Balancer component of VQE-S: the Interface Table and the Multicast Table. [Figure 4-8](#) shows both tables.

Multicast Load Balancer distributes traffic for incoming multicast streams and outgoing Error Repair over the Ethernet interfaces on the Cisco CDE110 that hosts VQE-S. The interfaces must be correctly configured and operational (up) to participate in this load balancing.

Multicast Load Balancer determines the best interface on which to join or leave the multicast group, distributing the joins across available interfaces to avoid oversubscription. Load Balancer also monitors the status of these interfaces, moving the streams to other interfaces in case of interface failure.

Figure 4-8 Interface Table and the Multicast Table

Interface Table						
IP	Name	Status	Max BW (Mbps)	Available BW(Mbps)	Ingress BW Reserved for Unicast	Multicast Membership
5.8.45.2	eth2	up	100	8	20%	9

Multicast Table			
Multicast Address	Name	Source Filter	Data Bandwidth (Mbps)
230.151.1.8	eth2	5.8.37.2	16.0
230.151.1.9	eth2	5.8.37.2	20.0
230.151.1.10	eth2	5.8.37.2	12.0
230.151.1.1	eth2	5.8.37.2	4.0
230.151.1.2	eth2	5.8.37.2	4.0
230.151.1.3	eth2	5.8.37.2	4.0
230.151.1.4	eth2	5.8.37.2	4.0
230.151.1.5	eth2	5.8.37.2	2.5
230.151.1.6	eth2	5.8.37.2	5.5

Refresh Last refresh: Thu Aug 09 14:40:31 2007

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The Interface Table (Figure 4-8) has the information listed in Table 4-7. The information is about the Ethernet interfaces on the Cisco CDE110 that are currently participating in multicast load balancing.

Table 4-7 Interface Table

Column	Description
IP	IP address assigned to this Ethernet interface.
Name	Name that is assigned to this Ethernet interface by Linux. For information on these names, see “Configuring the Linux Operating System for VQE-S” section on page D-3.
Status	Either up or down.
Max BW	Maximum speed of the interface.
Available BW	Interface bandwidth that is currently not being used.
Ingress BW Reserved for Unicast	Percent of the interface’s ingress bandwidth that is reserved for Error Repair requests from VQE Clients. This value is configured by the burst-rate option in the VQE-S configuration file.
Multicast Membership	Number of channels that are currently using this interface for Error Repair.

The Multicast Table (Figure 4-8) has the information listed in Table 4-8. The information is about the multicast streams on this VQE-S that are currently participating in multicast load balancing.

Table 4-8 Multicast Table

Column	Description
Multicast Address	IP address for this multicast group.
Name	Name of the interface that is being used for this multicast stream.
Source Filter	IP address of the multicast group's original source stream.
Data Bandwidth	Bandwidth specified for this multicast steam in VCPT's Bit Rate field.

Monitoring RTCP Exporter

When you click **RTCP Exporter** in the navigation tree and click the **Configuration** tab, VQE-S AMT displays the VQE-S RTCP Exporter parameters. RTCP Exporter currently has no parameters that can be configured with VQE-S AMT, and the parameters are for viewing only. For information on configuring RTCP Exporter, see the [“Configuring VQE-S RTCP Exporter”](#) section on page 2-30.

When you click **RTCP Exporter** in the navigation tree and click the **Statistics** tab, VQE-S AMT displays the RTCP Exporter Statistics window ([Figure 4-9](#)).

Figure 4-9 RTCP Exporter Statistics Window

The screenshot shows the RTCP Exporter Statistics window with two tabs: Configuration and Statistics. The Statistics tab is active, displaying two sections: VQM Application Configuration and RTCP Exporter Stats.

VQM Application Configuration:

- VQM Host: 9.1.40.2
- VQM TCP Port: 1024
- Enabled: true
- Configuration Status: Enabled, configuration valid
- Operational Status: Not exporting due to socket failure

RTCP Exporter Stats:

- Packets Exported: 0
- Packets Dropped: 7990002

At the bottom, there are buttons for "Advanced..." and "Refresh", and a timestamp: "Last refresh: Thu Aug 09 14:43:09 2007".

The RTCP Exporter Statistics window has the information listed in [Table 4-9](#). The statistics are for this VQE Server's RTCP Exporter.

Table 4-9 RTCP Exporter Statistics

Field	Description
VQM Application Configuration	
VQM Host	IP address of the host on which the video-quality monitoring (VQM) application resides.
VQM TCP Port	TCP port number on which the VQM application listens for video quality data from RTCP Exporter.

Table 4-9 RTCP Exporter Statistics

Field	Description
Enabled	Either true (enabled) or false (not enabled).
Configuration Status	Either enabled or not enabled. It is possible for the value in the Enabled field to be true, and the value in the Configuration Status field to be not enabled (for example, if the host IP address or TCP port are not valid).
Operational Status	Message providing information on the operational status of RTCP Exporter.
RTCP Exporter Stats	
Packets Exported	Number of RTCP compound packets that have been exported to a VQM host.
Packets Dropped	Number of RTCP compound packets that have been dropped rather than exported to a VQM host. In heavy load situations, RTCP Exporter may intentionally drop RTCP packets. Details on dropped packets (number of dropped packets and the position and time where this loss occurred) is contained in the collection of reports exported by this VQE-S.

For information on RTCP Exporter and the video-quality monitoring application, see the [“VQE-S RTCP Exporter for Video-Quality Monitoring”](#) section on page 1-21.

Monitoring the STUN Server

When you click **STUN Server** in the navigation tree, VQE-S AMT displays the STUN Server Statistics window ([Figure 4-10](#)).

Figure 4-10 STUN Server Statistics Window

Statistics

STUN Server Statistics

Total Requested 0 Response Failed 0

Successfully Sent 0 Sent Failed 0

Advanced... Refresh Last refresh: Wed Nov 21 10:27:54 2007

1010101

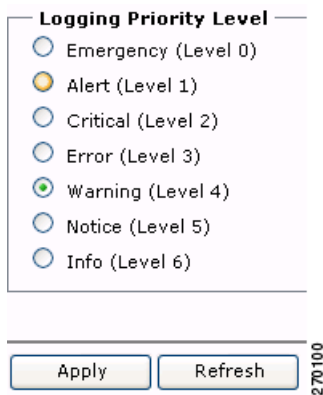
The STUN Server Statistics window has the information listed in [Table 4-10](#).

Table 4-10 STUN Server Statistics

Field	Description
Total Requested	Number of STUN binding requests that the VQE-C STUN Client sent to the STUN Server.
Successfully Sent	Number of responses to STUN binding requests that the STUN Server successfully sent to the VQE-C STUN Client.
Response Failed	Number of instances where the STUN Server fails to generate a binding response because of an internal error.
Sent Failed	Number of instances where the STUN Server successfully generates a binding response but fails to send it to the VQE-C STUN Client (for example, because of a socket error).

Configuring VQE-S Logging

When you click **Logging** in the navigation tree, VQE-S AMT displays the logging priority levels (Figure 4-11) for VQE-S. The priority levels allow you to control the logging level for system messages for all VQE-S processes (Process Monitor, Control Plane, Data Plane, and Multicast Load Balancer). By default, all VQE-S system messages are written to the file `/var/log/vqe/vqe.log`.

Figure 4-11 Logging Priority Levels

To configure a VQE-S logging priority level, click the button next to the level you want and click **Apply**.

In VQE-S AMT, the logging priority levels are listed from least verbose to most verbose. The Emergency level generates the smallest number of messages, and the Info level generates the greatest number of messages. The default value is Warning.

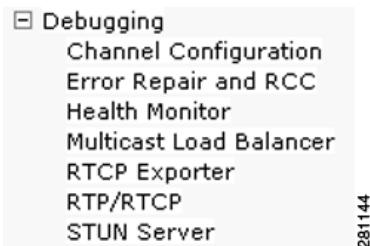
When you select a logging level, log messages are generated for the levels below that level. For example, when the level is set to Error, messages are generated for Emergency, Alert, Critical, and Error.

The selected logging priority level does not persist when VQE-S is stopped. When VQE-S restarts, the logging priority level goes back to the default (Warning). To set a logging priority level that does persist, use the VQE-S parameter `vqe.vqes.log_priority`. For information on this parameter, see [Table A-1 on page A-2](#).

Configuring VQE-S Debugging

When you click **Debugging** in the navigation tree and click a debug component, the debugging options for that component are displayed. [Figure 4-12](#) shows the debug components. The options allow you to control the types of debugging messages that are written to the syslog file. By default, debug messages are written to the file `/var/log/vqe/vqe.log`.

Figure 4-12 Debug Components



To configure VQE-S debugging, follow these steps:

- Step 1** In the VQE-S AMT navigation tree, click the + sign next to **Debugging** and click the component for which you want debug messages.
- The debug flags and filters for that component are displayed. For example, [Figure 4-13](#) shows the flags and filters for the RTP/RTCP category.

Figure 4-13 RTP/RTCP Flags and Filters

Debug Flags		
Debug Flag Name	On/Off	Filter Status
RTP_DEBUG_VERBOSE	☐	☐
RTP_DEBUG_ERRORS	☐	☐
RTP_DEBUG_EVENTS	☐	☐
RTP_DEBUG_PACKETS	☐	☐

Debug Filters

☒ None

☐ Multicast IP: . . . Port:

☐ Client IP: . . .

Last refresh: Thu Aug 09 14:54:59 2007



Note

In the Debug Filters for the STUN Server, only the Client IP filter is supported. The Multicast IP filter is not supported because the STUN Server has no knowledge of channels. Filtering on the Client IP address will provide debug messages for the specified client.

- Step 2** To enable a debugging flag, click the check box in the On/Off column, or to disable an enabled flag click the check box to uncheck it.

**Note**

For the next step, be aware that not all debug flags support debug filters (in the Filter Status column). If debug filters are not supported, the check box next to the flag is grayed out.

- Step 3** For an enabled debugging flag, if you want to filter debugging messages by a specific channel or VQE Client, do the following:
- a. In the Filter Status column, click the check box for the option.
 - b. In the Debug Filters section, click either **Multicast IP** or **Client IP**:
 - For Multicast IP, enter the channel's source stream IP address and (RTP/UDP) port number.
 - For Client IP, enter the VQE Client's IP address.

- Step 4** Click **Apply**.

The selected debugging options are enabled.

The selected debugging options do not persist when VQE-S is stopped. When VQE-S restarts, debugging goes back to the default—no options are enabled.
