Release Notes for Cisco CDA Visual Quality Experience Application, Release 3.4

Revised: January 20, 2010

Note In these release notes, unless it is explicitly noted that text applies to a specific VQE 3.4.X release, all statements concerning Cisco VQE, Release 3.4, apply to each VQE 3.4 release (3.4.1, 3.4.2, and so forth).

Contents

These release notes contain the following sections:

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Introduction

Cisco CDA Visual Quality Experience Application (VQE), Release 3.4, offers service providers a set of technologies and products associated with the delivery of IPTV video services. VQE is designed to improve the quality of IPTV services and subscribers' viewing experiences. VQE is part of a Cisco end-to-end solution that builds video awareness into the network infrastructure. For Release 3.4, Cisco VQE technology is intended for wireline operators who offer managed broadcast (multicast) IPTV services using xDSL.

Cisco Content Delivery Application (CDA) Visual Quality Experience Application, Release 3.4, includes these major software components:

- VQE Server (VQE-S)—Software that runs on a Linux-based Cisco Content Delivery Engine 110 (CDE110 or CDE111) appliance located in the intelligent edge of the service-provider's network.
- VQE Client (VQE-C)—Software embedded in the subscriber's CPE—typically a set-top box.

These release notes cover VQE Server and VQE Client software and two related software components: VQE Channel Provisioning Tool (VCPT) and VQE Client Configuration Delivery Server (VCDS).

For a list of Cisco VQE documentation, see the "Related Documentation" section on page 50.

New and Changed Features and Functionality

The following sections provide a summary of new and changed VQE features and functionality relevant for VQE Release 3.4:

Enhancements and Changes for Cisco VQE Release 3.4.4

Cisco VQE Release 3.4.4 is a maintenace release for the VQE Server and the VQE Tools sever only. It contains no new software for the VQE Client, and has no new enhancements.

Enhancements and Changes for Cisco VQE Release 3.4.3

Cisco VQE Release 3.4.3 has no new enhancements.

Enhancements and Changes for Cisco VQE Release 3.4.2

Cisco VQE Release 3.4.2 has no new enhancements.

Enhancements and Changes for Cisco VQE Release 3.4.1

Cisco VQE Release 3.4.1 has the following enhancements and changes:

- On the VQE-S, two or more physical, Ethernet interfaces, can be combined into a single, logical bond interface, which has the combined capacity of the underlying Ethernet interfaces. VQE-S traffic (ingest and services), VQE-S ingest traffic, VQE-S services traffic, and VQE-S management traffic can use a bond interface for traffic.
- On the VQE-S, the following enhancements are added to the VQE-S AMT:
  - Configuration information relating to each bond interface (for example, IP address) is displayed in the Interface Summary Table.
  - A new histogram, Average Channel Change Time, displays the average channel change time for successful rapid channel changes (RCCs), unsuccessful RCCs, and non-rapid CCs for each channel.
  - A new histogram, Channel Change Time, is provided for each channel. It displays the total number of CCs, the number of successful RCCs, the number of unsuccessful RCCs, and the number of non-rapid CCs for a specified time period. The Channel Change time histogram is only supported for VQE-C integrations that have implemented the RCC instrumentation as described in the *VQE-C System Integration Guide*.
  - A new RCC Failures table displays improved debug information relating to RCC failures.
  - A new per-channel counter tracks the number of RCCs for which the VQE-S PTS value does not match the VQE-C PTS value.
- On the VQE-S, the restriction limiting the number of dedicated ingest interfaces to one ingest interface is removed.
- The VQE-S is enhanced to support ingress/egress bandwidth tradeoff. On the CDE111 platform, support for input bandwidth has increased from 1 Gbps to 2 Gbps.
- On the VQE-S the following new VCDB parameters are provided:
  - network.interface.mgmt_interfaces
  - network.bond1.addr
  - network.bond2.addr
  - network.bond3.addr
  - network.bond1.members
  - network.bond2.members
  - network.bond3.members
- On the VQE-S, static and dynamic (OSPF) routing can co-exist.
  - For the VCDB parameter network.route.type, if network.route.type="ospf", ospf and static routing are enabled on the VQE server. If network.route.type="static", static routing is enabled and ospf routing is disabled.
  - On the VQE Configuration Tool, a new menu item OSPF Enable is introduced under OSPF Parameters and the VQE-S Traffic Routing Type menu under Network Parameters is removed. If OSPF Enable is set to “true”, OSPF and static routing are enabled. If OSPF Enable is set to "false", static routing is enabled and ospf routing is disabled.
- On the VQE-S, if a static route is configured for the management network, the Multicast Load Balancer (MLB) will monitor the status of this route. If the MLB detects that the underlying interface is administratively down, the MLB will attempt to re-create the route once the interface is brought back up.

- On the VQE-S and VQE Client, an additional Extended Report (XR) packet type, Multicast Acquisition (MA) report block, is supported. The new Multicast Acquisition report block type is capable of supporting information on the total channel change time, the expected RCC presentation timestamp and the actual RCC presentation timestamp. The availability of this timing information will be dependent on the specific VQE-C platform integration.
- The VQE-S and the VQE Tools server have been enhanced to block management traffic from non-management interfaces. On non-management interfaces, the VQE-S or the VQE Tools server blocks all protocol ports that, by default, are used for management traffic.
- On the VQE Tools sever, a new AMT application, VCDS AMT, is available for monitoring VCDS processes (for example, current number of connections), VQE Tools server system status (for example, system uptime), and VCDS configuration data (for example, number of channels in channel lineup).
- The VCPT tool is enhanced to allow channel configuration files to be exported to a remote server via password-less secure copy (SCP) operation. A script (scpkey) is provided to assist users generate a secure shell (SSH) key file for the remote server. Through integration with a middleware solution, a remote server can be used to distribute network and channel configuration files to the VQE-C. The remote server can also be extended to deploy an override configuration file, containing per-subscriber configuration changes, to an external application on the STB that, in turn, delivers the override configuration file to the VQE-C. The following ten VQE Client configuration parameters are applicable to the Override Configuration file, and are applied to the VQE-C on the next channel change of all tuners on the STB:
  - error_repair_enable
  - fec_enable
  - jitter_buff_size
  - max_receive_bandwidth_hd
  - max_receive_bandwidth_hd_rcc
  - max_receive_bandwidth_sd
  - max_receive_bandwidth_sd_rcc
  - min_hd_stream_bitrate
  - qoe_enabled
  - rcc_enable
- The VQE Client supports the monitoring and reporting of a subset of TR-135 statistics. New counters and configuration parameters for controlling the collection of statistics are introduced.
- The VQE Client supports statistics counters that can be utilized to implement SNMP MIB views .
- On the VQE Client, the following new parameters are provided:
  - override_cfg_pathname
  - index_cfg_pathname
  - max_receive_bandwidth_sd_rcc
  - max_receive_bandwidth_hd_rcc
- On the VQE Client, changes to the following parameters are applied on a channel change of the STB rather than on VQE Client initialization.
  - error_repair_enable
  - error_repair_policer.burst

  - error_repair_policer.enable
  - error_repair_policer.rate
  - fastfill_enable
  - fec_enable
  - jitter_buff_size
  - max_fastfill
  - max_receive_bandwidth_hd
  - max_receive_bandwidth_hd_rcc
  - max_receive_bandwidth_sd
  - max_receive_bandwidth_sd_rcc
  - min_hd_steam_bitrate
  - rcc_enable
  - rcc_start_timeout
  - reorder_delay_abs
  - repair_trigger_point_abs
  - rtcp_dscp_value
  - so_rcvbuf
- On the VQE Client, changes to the following parameters are applied immediately rather than on VQE Client initialization.
  - update_interval_max
  - update_window
- On the VQE Client, the parameter vqec_enable has been deprecated and replaced by qoe_enable.

System Requirements

VQE Server runs on one Content Delivery Engine 110 (CDE110) appliance. VQE Channel Provisioning Tool and VQE Client Configuration Delivery Server (VCDS) run on a separate CDE110 appliance.

The CDE110 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 and CDE111-2-146TXD-K9)

The Cisco CDE110 comes with the required software pre-installed—either VQE Server software or Tools (VQE Channel Provisioning Tool and VQE Client Configuration Delivery Server) software. In each case, the required Linux, Apache web server, and other software is also pre-installed.

To access the VQE-S Application Monitoring Tool (VQE-S AMT), the VCDS Application Monitoring Tool (VCDS AMT), or the VQE Channel Provisioning Tool, you need a web browser. For these tools, the following web browsers are supported:

- Microsoft Internet Explorer version 6.0 or later
- Mozilla Firefox version 2.0 or later

The minimum screen resolution required for VQE-S AMT, VCDS AMT, and VCPT is 1024 x 768 pixels.

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/

Important Notes

The following important note applies to all VQE Release 3.4 installations:

- Configuring Management Interfaces When Using a VQE Incremental Upgrade, page 6
- Security Restrictions for Logins and Root Privileges, page 6

The following important notes apply *only if you are upgrading from VQE Release 2.1 to Release 3.4*:

- Significant Changes to Be Aware of When Upgrading from VQE Release 2.1 to Release 3.4, page 7
- Significant Changes to the Set of Parameters Used to Configure VQE, page 8

Configuring Management Interfaces When Using a VQE Incremental Upgrade

If a VQE incremental upgrade is used to upgrade from an earlier VQE Release 3.X to Release 3.4, all Ethernet interfaces on the VQE-S or VQE Tools host will be, by default, used as management interfaces. Therefore, management traffic is allowed on all Ethernet interfaces. *You must use the VQE Configuration Tool to limit the interfaces where management traffic will be allowed.*

For information on designating Ethernet interfaces as management interfaces, see the "Interface for a Management Network" section in Chapter 2 of the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

For information on using the VQE Configuration Tool, see Chapter 7, "Configuring VQE Server and VQE Tools," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

Security Restrictions for Logins and Root Privileges

For security reasons, the following restrictions apply to VQE.

- The root user cannot use Secure Shell (SSH) to log in to a CDE110 that hosts VQE-S or VCPT. Also, the root user cannot log in to VQE-S AMT, VCDS AMT or VCPT. The vqe user should be used instead. The vqe user is a pre-created Linux user ID and has its password set during CDE110 initial system configuration.
- Only users in the wheel group can use the **su** or **sudo** commands. By default, the vqe user is in the wheel group.

If you want to add user accounts to the wheel group so that additional users can use **su** and **sudo**, log in as root and issue the following command:

usermod -G wheel *username*

In the preceding, *username* specifies the user who will be added to the wheel group.

Significant Changes to Be Aware of When Upgrading from VQE Release 2.1 to Release 3.4

If you are upgrading from Cisco VQE Release 2.1 to Release 3.4, be aware of these significant changes that were implemented in Cisco VQE Release 3.0 and later releases.

The mechanisms used for configuring the Cisco Content Delivery Engine 110 (CDE110) servers that host VQE Server and VQE Tools have changed:

- Starting with Cisco VQE Release 3.0, the VQE Configuration Management System (CMS) is used to configure VQE, system, and network parameters on both the VQE Server and VQE Tools hosts. For information on the VQE Configuration Management System (CMS), see Chapter 7, "Configuring VQE Server and VQE Tools," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*
- Starting with VQE Release 3.0, the vqes.conf file is no longer used on the VQE Server host. (This file was not used on the VQE Tools host.) The vqes.conf file has been replaced by the VQE Configuration Database (VCDB) and vcdb.conf file, which is used on both the VQE Server and VQE Tools hosts. For information on VCDB and the vcdb.conf file, see Chapter 7, "Configuring VQE Server and VQE Tools," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*
  - The set of VQE-S options that were used in the Release 2.1 vqes.conf file have been replaced by the set of VCDB parameters that are used vcdb.conf file.
  - For information on the correspondence between the VQE Release 2.1 options and parameters for Release 3.0 and later releases, see the "Significant Changes to the Set of Parameters Used to Configure VQE" section in the *Release Notes for Cisco CDA Visual Quality Experience Application, Release 3.4*.
  - For complete information on the set of VCDB parameters, see Appendix A, "VQE, System, and Network Parameters," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4,* and see also the /etc/opt/vqes/vcdb.conf.sample file.

Starting with Cisco VQE Release 3.0, the major VQE and system processes are implemented as Linux services. Table 1 lists the VQE and system services. The services are managed using the Linux **service** command. The /etc/inittab file is no longer used for starting the process_monitor process. For information on configuring, starting, and monitoring the VQE and system services, see Appendix D, "Manual Initial VQE System Configuration," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

Table 1 Cisco VQE Release 3.4: VQE and System Services

Service	Description
vqes	Used on the VQE Server host only, VQE-S service (process_monitor process) starts and monitors the other VQE-S processes—Control Plane, Data Plane, Multicast Load Balancer, and STUN Server.
vcds	Used on the VQE Tools host only, VQE Client Configuration Delivery Server (VCDS) service
sshd	Secure Shell daemon.
httpd	HyperText Transfer Protocol daemon (the Apache web server).
tomcat5	Apache Tomcat application server.
snmpd	(Optional) SNMP daemon.

Table 1 Cisco VQE Release 3.4: VQE and System Services (continued)

Service	Description
snmpsa	(Optional) SNMP subagent.
ntpd	(Optional) Network Time Protocol (NTP) daemon.
If OSPF is selected as the routing type	
watchquagga	The Quagga watchdog process. If the ospfd or zebra daemon crashes or hangs, watchquagga restarts it automatically.
ospfd	The OSPF daemon.
zebra	The zebra daemon.

Significant Changes to the Set of Parameters Used to Configure VQE

Starting with VQE Release 3.0, the number of parameters used to configure the VQE-S and VQE Tools servers has been simplified and enhanced to make the configuration tasks easier to accomplish. In previous VQE releases (such as Release 2.1), the vqes.conf options included many internal options that are useful for Cisco engineering testing but are unlikely to be useful in a deployment. These internal options are not available in the VQE Release 3.4 vcdb.conf file.

Note If you use an ISO full upgrade to upgrade from VQE Release 2.1 to VQE Release 3.4, these internal options are not carried over into your VQE Release 3.4 configuration.

Table 2 lists the vqes.conf options that were used in VQE Release 2.1 and the corresponding VCDB parameters that are used in VQE Release 3.4. If you use an ISO full upgrade to upgrade from VQE Release 2.1 to VQE Release 3.4, the vqes.conf options in Table 2 are translated into VCDB parameters and carried over into your VQE Release 3.4 configuration.

If a vqes.conf option is not shown in Table 2, no VCDB (vcdb.conf) parameter is available for this option in VQE Release 3.4.

Table 2 Old vqes.conf Options and Corresponding VCDB Parameters

Old vqes.conf Option	Corresponding VCDB Parameter
VQE-S Control Plane Options	
burst-rate	vqe.vqes.excess_bw_fraction
client-er-policing	vqe.vqes.client_er_policing
client-er-tb-depth	vqe.vqes.client_er_tb_depth
client-er-tb-rate-ratio	vqe.vqes.client_er_tb_rate_ratio
er-cache-time	vqe.vqes.er_cache_time
exporter-enable	vqe.vqes.exporter_enable
log-level	vqe.vqes.log_priority (In VQE Release 3.0 and later releases, this parameter specifies the logging level for all VQE-S processes.)
rtp-hold-time	vqe.vqes.rtp_hold_time
vqm-host	vqe.vqes.vqm_host

Table 2 Old vqes.conf Options and Corresponding VCDB Parameters (continued)

Old vqes.conf Option	Corresponding VCDB Parameter
vqm-port	vqe.vqes.vqm_port
VQE-S Data Plane Process Options	
rtp-inactivity-tm	vqe.vqes.rtp_inactivity_timeout
Multicast Load Balancer Process Options	
interface	vqe.vqes.vqe_interfaces
unicast-reservation	vqe.vqes.unicast_reservation

In VQE Release 2.1, the STUN Server was enabled by specifying `run = true;` in the STUN Server process definition in vqes.conf. Starting with VQE Release 3.1, the STUN Server is enabled by default, and the VCDB parameter vqe.vqes.stun_enable is used to enable or disable the STUN Server.

For complete information on the set of VCDB parameters, see Appendix A, "VQE, System, and Network Parameters," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4* and also see the /etc/opt/vqes/vcdb.conf.sample file.

Limitations and Restrictions

Cisco CDA Visual Quality Experience Application, Release 3.4, technology is intended for wireline operators who offer managed broadcast (multicast) IPTV services using xDSL.

See the following sections for information on other limitations and restrictions in Cisco VQE, Release 3.4:

- "VQE SDP Channel Information Compatibility" section on page 9
- "Changing System Time Causes Unicast Retransmission and RCC Disruptions" section on page 10
- "Routes May Not Be Carried Forward from VQE Release 2.1 to Release 3.4" section on page 12
- "Load Balancing May Not Work Correctly When More Than 16 Interfaces Are Attached to an Edge Router" section on page 12
- "For OSPF Routing, Ethernet Interfaces Require a Direct Layer-3 Connection to Router" section on page 13

VQE SDP Channel Information Compatibility

Cisco VQE channel configuration information in Session Description Protocol (SDP) format is sent to VQE Servers and VQE Clients. VQE-S and VQE-C create channel configuration files from the information received.

Note The SDP channel configuration information for VQE Release 3.0, 3.1, 3.2, 3.3, and 3.4 is compatible. In this section, these releases are referred to as Release 3.X. If a later VQE Release 3.X feature is used with an earlier VQE Release 3.X that does not support the feature, the feature is ignored.

Set-top boxes with VQE-C Release 2.1 or 3.X can be used in the same deployment. VQE-C Release 2.1 and 3.X can read Release 2.1 and 3.X channel configuration files.

Table 3 and the notes that follow the table provide the SDP channel information configuration compatibility requirements for VQE Release 2.1 and 3.X.

Table 3 SDP Channel Information Compatibility Requirements

VQE Version SDP	VQE-S 2.1	VQE-C 2.1	VQE-S 3.X	VQE-C 3.X
VQE 2.1 SDP	Yes	Yes	Yes **	Yes **
VQE 3.X SDP	Yes *	Yes *	Yes	Yes

* When VQE-S or VQE-C Release 2.1 receives a channel configuration for a VQE Release 3.X feature that it does not support, the new feature is ignored, but all Release 2.1 functionality will operate without change.

** Release 2.1 channel configuration files created with VCPT are usable with the Release 3.X versions of VQE-S, VCDS, and VQE-C. When a Release 2.1 channel configuration file is used, new VQE Release 3.X functionality will not be used because it is not configured.

Note Release 3.X of VQE Channel Provisioning Tool (VCPT) opens and automatically converts Release 2.1 SDP to Release 3.X SDP.

For information on the migrating channel-related files from VQE Release 2.1 to Release 3.4, see the "Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.4" section on page 45.

Changing System Time Causes Unicast Retransmission and RCC Disruptions

When the system time is changed on a VQE-S server that is actively repairing network errors, all Unicast Retransmissions will stop indefinitely, and output gaps will be seen on the VQE Clients.

- When the system time is moved forward, the VQE-S receives requests for Unicast Retransmission and Rapid Channel Change (RCC) but does not send the repairs/RCCs to the VQE Clients on the set-top boxes.
- When the system time is moved backward, all channels go to an inactive state and no Unicast Retransmission and RCC operations are performed.

For a VQE-S server that is actively repairing network errors, an explicit system time change (that is, by using the **date** command) will always result in the failure of Unicast Retransmission and RCC operations until corrective action is taken.

Workaround: Any time change performed on the VQE-S system should be done during a maintenance window. The procedures for changing the date and time vary depending on whether Network Time Protocol (NTP) or the Linux **date** command is used. See one of the following sections:

- "Performing a Date and Time Change with NTP" section on page 11
- "Performing a Date and Time Change with the Linux date Command" section on page 11

Note Using the local clock *is not* the recommended procedure for running with accurate time. Using NTP is recommended to keep the VQE-S services operational.

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's **-config** option. Use the Configuration Tool's System Parameters menu 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 external NTP servers by issuing the following command:

```
[root@system]# ntpd -q
```

If the system clock is off by a lot, the command will take 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

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

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

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

Performing a Date and Time Change with the Linux date Command

When performing a time/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's **-config** option. Use the Configuration Tool's System Parameters menu 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 server by issuing the following command:

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

Routes May Not Be Carried Forward from VQE Release 2.1 to Release 3.4

When upgrading from VQE Release 2.1 to Release 3.4 with an ISO full upgrade for a VQE-S host or a VQE Tools host, some or all of the routes, including the management route, may not be carried forward from Release 2.1 to Release 3.4.

Since there are many ways routes could possibly have been configured on a Release 2.1 system, such as using multiple route files, ISO full upgrades cannot support all possible configurations. ISO full upgrades do carry forward to VQE Release 3.4 the routes that were configured through the VQE 2.1 Startup Configuration Utility. All other route configurations are considered best effort.

Note This is a one-time issue when upgrading from VQE Release 2.1 to Release 3.4. When the Release 3.4 VQE Configuration Database (VCDB) is used, VQE supports upgrade of routes configured with VCDB.

Workaround: Add any missing routes using the VQE CMS system and VCDB. For information on the VQE CMS, see Chapter 6, "Configuring VQE Server and VQE Tools," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

Load Balancing May Not Work Correctly When More Than 16 Interfaces Are Attached to an Edge Router

With Cisco routers, there is a limitation in the edge router: Only the first 16 route matches for Feedback Target addresses are considered when routing requests to the VQE-S servers from the access network. If more than 16 interfaces to service Unicast Retransmission and RCC request are attached to the edge router and are serving the same Feedback Target addresses, load balancing across the VQE-S servers will not work correctly.

As an example, if four VQE-S servers that each have five Ethernet interfaces serving the same Feedback Target addresses are attached to the edge router, there is a total of 20 Ethernet interfaces serving the same Feedback Target addresses and load balancing across the VQE-S servers will not work correctly.

For OSPF Routing, Ethernet Interfaces Require a Direct Layer-3 Connection to Router

For OSPF routing on the VQE-S server, the Ethernet interfaces used for VQE-S traffic *must have* a direct Layer-3 connection to the edge router.

Resolved and Open Caveats

The following sections provide information on resolved and open caveats:

Resolved Caveats for Release 3.4.4

The following caveats have been resolved in Cisco VQE, Release 3.4.4.

CSCtd92045

On the VQE-S, where more than eight routes are configured in the VQE Configuration Database (VCDB), only the first eight routes are setup in the routing table.

CSCte29135

TheVQE-S Application Monitoring Tool (AMT) Rapid Channel Change (RCC) histograms may display channel changes times that are longer than the actual channel change times. The channel change times displayed may reflect the time that the channel change request was made on the remote control, rather than the time the VQE Client receives the channel change request.

Resolved Caveats for Release 3.4.3

The following caveats have been resolved in Cisco VQE, Release 3.4.3.

CSCtc59483

When the VQE-S AMT is launched from a Microsoft Internet Explorer web browser running software version 6.0 or later, a blank screen is displayed when the Interfaces node, or any node under Interfaces, is selected from the navigation tree.

CSCtc15099

On the VQE-S AMT, some successful RCCs are reported in the Rapid Channel Change Errors table even though a small amount (less than 50 ms) of video is missing. The same successful RCCs also appear in the Unsuccessful RCC bucket of the Channel Change Time histogram.

CSCtd15210

When the VQE Client experiences a loss of more than 100 ms of consecutive packets, error repair may stop working, and errors may not be detected. When an event occurs which is larger than 100 ms of consecutive packets drops, the PCM is shortened by the size of the drop. If the jitter buffer is too small, it cannot detect repair losses. The problem was found in a scenario where the drop event was approximately 300 ms (that is, 300 packets at a stream rate of roughly 10 Mbps). The size of the PCM is roughly 650 packets. Each 300 ms consecutive packet outages reduces the PCM by 300 ms. The problem does not exist for outages that are longer than the size of the PCM.

CSCtd26742

On the VQE Client, when sending output stream packets from the kernel module to user space to be read by the user-space tuner_recvmsg() API, it is possible that, during a channel change, the socket which sends the output stream to the user space is not flushed. This could result in the last few packets from the previous channel being sent out by VQE Client as the first few packets of the new channel.

CSCtd45584

The VQE client SDK fails to compile for kernel mode for Linux kernel version 2.6.23. This affects kernel mode and not user mode builds.

Resolved Caveats for Release 3.4.2

The following caveats have been resolved in Cisco VQE, Release 3.4.2.

CSCtb56244

The VQE Client attributes max_receive_bandwidth_sd_rcc, max_receive_bandwidth_hd_rcc, and qoe_enable attributes are not sent to VQE Client when the configuration delivery infrastructure (CDI) is used to make configuration changes on a per-STB basis.

CSCtb72979

It is not possible to connect to the VQE Application Monitoring Tool (VQE-S AMT) via a secure shell (ssh) tunnel. Access to the VQE-S AMT should be through an external web browser. The ip tables do not allow local access to port 443 (that is, HTTP port). Attempting to access the VQE-S AMT through an ssh tunnel will be denied.

CSCtb86129

The VQE Client displays an RCC status of INVALID_APP. The following syslog message is displayed in the log file:

```
<<VQEC-3-VQEC_ERROR> : Unable to decode tlv data.>
```

This occurs only when using a VQE Server running a VQE software release 3.4.1 with a VQE Client running VQE software release 3.3 or an earlier release.

Resolved Caveats for Release 3.4.1

The following caveat has been resolved in Cisco VQE, Release 3.4.1.

CSCsz50737

On a VQE-S host, TSRAP caching fails with a "ECM Cache not yet ready" message. This occurs when the odd and even keys on the ECM PID do not alternate at a frequent interval.

Open Caveats for Release 3.4.1, 3.4.2, 3.4.3, and 3.4.4

Cisco VQE Releases 3.4.1, 3.4.2, 3.4.3, and 3.4.4 contains the following open caveats:

CSCtb32040

When an Ethernet interface that is a member of a bond interface is brought down administratively on a VQE-S server using the Linux **ifdown** command, the VQE-S server indicates that the link is down on the Linux side of the link, but fails to communicate that the link is down to the other side (that is, to the edge router). This causes the edge router to black hole traffic since the edge router considers the link to be still up.

Workaround: If an Ethernet interface that is a member of bond interface needs to be brought down administratively, use the **ifconfig ethx** down command to ensure the link state is communicated correctly to the other side of the link.

CSCtb25609

The system hangs and a traceback appears on the system console, beginning with the following message:

```
BUG: soft lockup - CPU#2 stuck for 10s!
```

This problem only occurs when interface bonding is configured on the VQE-S server and a bond interface or a member of the bond interface has been repeatedly and rapidly "bounced" (that is, transitioned from up to down and then to up again) using the Linux **ifup** and **ifdown** commands.

When this problem occurs, output similar to the following output will appear repeatedly on the system console:

```
BUG: soft lockup - CPU#2 stuck for 10s! [bond2:2710]
CPU 2:
Modules linked in: iptable_filter ip_tables bonding ipv6 xfrm_nalgo crypto_api imb(U)
ipt_REJECT xt
_tcpudp x_tables dm_mirror dm_log dm_multipath scsi_dh dm_mod parport_pc lp parport
i5000_edac edac
_mc ide_cd e1000e i2c_i801 shpchp cdrom i2c_core serio_raw pcspkr sg usb_storage ata_piix
libata mp
tsas mptscsih mptbase scsi_transport_sas sd_mod scsi_mod ext3 jbd ehci_hcd ohci_hcd
uhci_hcd
Pid: 2710, comm: bond2 Tainted: G      2.6.18-157.el5 #1
RIP: 0010:[<ffffffff8006316d>] [<ffffffff8006316d>] __read_lock_failed+0x5/0x14
RSP: 0018:ffff810255c07df0  EFLAGS: 00000297
RAX: ffff81025fd0e458 RBX: ffff81025c6db500 RCX: 0000000000000002
RDX: ffff81025fd0e458 RSI: 0000000000000282 RDI: ffff81025c6db52c
RBP: ffff81025e21a040 R08: ffff810255c06000 R09: 000000000000003e
R10: ffff8101087b4008 R11: 0000000000000000 R12: ffff81025e21a040
R13: ffffffff8008c5cb R14: ffff81025e21a040 R15: 0000000000000000
FS:  0000000000000000(0000) GS:ffff8101085ef2c0(0000) knlGS:0000000000000000
CS:  0010 DS: 0018 ES: 0018 CR0: 000000008005003b
CR2: 00007fff43646f60 CR3: 000000025322c000 CR4: 00000000000006e0
Call Trace:
 [<ffffffff80065b45>] _read_lock+0xb/0xc
 [<ffffffff8838418e>] :bonding:bond_mii_monitor+0x1d/0x497
 [<ffffffff88384171>] :bonding:bond_mii_monitor+0x0/0x497
```

```
[<ffffffff8004de1c>] run_workqueue+0x94/0xe4
[<ffffffff8004a680>] worker_thread+0x0/0x122
[<ffffffff800a0419>] keventd_create_kthread+0x0/0xc4
[<ffffffff8004a770>] worker_thread+0xf0/0x122
[<ffffffff8008cde1>] default_wake_function+0x0/0xe
[<ffffffff800a0419>] keventd_create_kthread+0x0/0xc4
[<ffffffff800a0419>] keventd_create_kthread+0x0/0xc4
[<ffffffff80033282>] kthread+0xfe/0x132
[<ffffffff8005efb1>] child_rip+0xa/0x11
[<ffffffff800a0419>] keventd_create_kthread+0x0/0xc4
[<ffffffff80033184>] kthread+0x0/0x132
```

Workaround: Avoid performing an administrative shutdown of any Ethernet interfaces that are members of a bond interface or of any Bond interfaces.

CSCtb33830

In some cases, when the VQE-S server is restarted after a configuration change, the VQE-S server fails to start the first time and it produces a series of error messages in the log file, which begin with the following message:

```
<VQES_CP-2-CP_INIT_FAILURE_CRIT> Control Plane initialization failed due to failing to
initialize the xmlrpc server module.
```

The following output displays an example of the type of error messages that will appear in the log file when the VQE-S server fails to start.

```
Aug 10 20:29:19 localhost vqes_cp: <VQES_CP-2-CP_INIT_FAILURE_CRIT> Control Plane
initialization failed due to failing to initialize the xmlrpc server module.
Aug 10 20:29:19 localhost vqes_dp: <VQE_RPC-4-RPC_PROCESS_EXIT> RPC server process has
exited: RPC client process is not available
Aug 10 20:29:19 localhost vqes_mlb: <VQES_MLB-4-MLB_CLIENT_DISCONNECT> Client 13
disconnected unexpectedly, there might be some stale multicast memberships.
Aug 10 20:29:19 localhost vqes_mlb: <VQES_MLB-4-MLB_CLIENT_DISCONNECT> Client 14
disconnected unexpectedly, there might be some stale multicast memberships.
Aug 10 20:29:27 localhost vqes_pm: <VQES_PM-3-PM_PROCESS_STOPPED> Process VQE-S Data Plane
has stopped, attempting to restart it.
Aug 10 20:29:51 localhost vqes_cp: <VQES_CP-3-VQE_FBT_REQ_ERROR> Failed to complete
operation on a Feedback Target address: flushing <ALL> .
```

Workaround: None. Once this problem occurs, the VQE-S server will automatically restart successfully, without any user intervention.

CSCtb19961

On a CDE111 model, the flash drive /dev/sdb device is known to disappear from the disk table listing, usually after a reboot of the VQE-S or VQE Tools server. This affects the remote ISO upgrade procedure which relies on the flash drive to successfully upgrade the VQE software.

Workaround: If the remote ISO upgrade or install procedure fails due to either the flash drive or secondary disk being missing, reboot the VQE-S or VQE Tools server and re-run the installer.

CSCtb39744

The system reboots and prints out a message to the kernel indicating a null pointer deference issue. This occurs when attempting to read the /sys/class/pci_bus/0000:ff/cpuaffinity file (that is, when using the Linux **cat** command).

Workaround: Avoid performing any read operations on the /sys/class/pci_bus/0000:ff/cpuaffinity file.

CSCtb11357

The Linux bond driver selects the mac address of the lowest Ethernet interface in the bond group as the mac address for the entire bond. When the lowest Ethernet interface is removed from the bonding group, it's mac address is still in use by the bond and the interface is unusable at this point.

Workaround: In order to reuse the interface whose bond address is still in use, the VQE-S server has to be rebooted. This forces the Linux bond driver to choose the mac address of the next lowest interface in the bonding group as the mac address of the bond, thus releasing the interface that was previously part of the bond.

CSCtb42701

An "Invalid Picture Type in ES" message is displayed in the Advanced Channel Stats MPEG Parser: Error Status Listing. Under rare circumstances this may lead to longer channel change times.

The Stream is MPEG2, it is partially scrambled and the picture_start_code is not part of the same TS packet that the PES header is in.

Workaround: None

Known Problems

These known problems exist in Cisco VQE, Release 3.4.

Random "rtc: lost some interrupts at 8192Hz." Messages Displayed on Serial Console

A message or block of messages indicating "rtc" has lost some interrupts can appear sporadically on the serial console, usually after entering a command, but the message is unrelated to any specific command.

No workaround is needed. This does not appear to have any operational impact and is believed to be informational only related to an underlying Linux process.

Deprecated sysctl Message Displayed on Serial Console

On the serial console, the system will occasionally display a message of the form:

```
process `sysctl' is using deprecated sysctl (syscall)
net.ipv6.neigh.eth4.retrans_time; Use net.ipv6.neigh.eth4.retrans_time_ms instead.
```

No workaround is needed. This has no known operational impact and is a Red Hat Linux binary message.

After a VQE Downgrade, Web Browser Displays Incorrect Fields for VQE-S AMT, VCDS AMT, or VCPT

After you have downgraded VQE software and then use the downgraded VQE release, it is possible that incorrect fields will be displayed for VQE-S AMT, VCDS AMT, or VCPT. In this situation, you are seeing the fields that were provided by your previous VQE release and that have been cached by the web browser.

The correct VQE-S AMT or VCPT fields will be displayed after you delete the files in your web browser cache.

Installing VQE Release 3.4 Software

New Cisco CDE110 servers have Linux operating system, VQE-S and VQE Tools, and other needed software pre-installed. Table 4 shows the options for upgrading and installing software that Cisco VQE Release 3.4 supports.

Table 4 Options for Upgrading and Installing VQE Release 3.2 Software

Upgrade or Installation Type	Where to Get Information
To upgrade from VQE Release 2.1 to Release 3.4	"Using an ISO Full Upgrade to Upgrade from VQE Release 2.1 to Release 3.4" section on page 23 **Note** VQE incremental upgrades are not supported for the Release 2.1 to 3.4 upgrade.
To install a complete set of new VQE Release 3.4 software files on a VQE Release 2.1 system (equivalent of a factory install of VQE Release 3.4)	"Using an ISO Clean Installation to Install VQE Release 3.4 on a VQE Release 2.1 System" section on page 27
To upgrade from an earlier VQE Release 3.X release to Release 3.4	"Upgrading VQE Software from an Earlier VQE Release 3.X to Release 3.4" section on page 30
To install a complete set of new VQE Release 3.4 software files on an earlier VQE Release 3.X system (equivalent of a factory install of VQE Release 3.4)	"Using an ISO Clean Installation to Install VQE Release 3.4 on an Earlier VQE Release 3.X System" section on page 36
To remotely perform an ISO clean installation or ISO full upgrade of VQE Release 3.4 software	"Performing an ISO Clean or ISO Full Upgrade Installation from a Remote Location" section on page 39

For overview information on the software installation types, see the "VQE Software Installation Types" section on page 19.

The VQE Configuration Management System (VQE CMS) plays a significant role in software upgrade installations. If you are not familiar with the VQE CMS, read Chapter 6, "Configuring VQE Server and VQE Tools," in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

VQE Software Installation Types

The following sections provide overview information on the VQE software installation types:

- "ISO Clean Installation" section on page 19
- "ISO Full Upgrade" section on page 20
- "VQE Incremental Upgrade" section on page 20

The term "ISO installation" comes from the ISO file system format that is used to burn the CD.

ISO Clean Installation

An *ISO clean installation* is used to install VQE software on a new CDE110 server. An ISO clean installation can also be used on an existing VQE system to restore the server to a factory default state. An ISO clean installation reformats the hard drive and reinstalls the operating system and other packages, such as the VQE software. All old configurations are removed.

After the ISO clean installation is complete, the system automatically reboots and allows you to log in as root. Next the VQE Startup Configuration Utility automatically runs. This utility allows you to specify initial configuration values for the CDE110 server and the VQE software. Using this input, the VQE Startup Configuration Utility generates initial VQE Configuration Database (VCDB) contents and reboots the CDE110 server. When the server comes back up, the VQE Configuration Engine applies the changes in VCDB to the configuration files under the /etc directory.

When an ISO clean installation is performed at the factory on a new CDE110 server, after the installation is complete, the server reboots and is powered down. When the CDE110 is powered on for the first time at the user site, the VQE Startup Configuration Utility automatically runs.

ISO clean installation software includes Cisco VQE, Redhat Linux, Apache web server, and other required facilities. The ISO installation software is distributed on one CD for VQE-S, and on one CD for VQE Tools. As an alternative, VQE software can be downloaded from Cisco.com. When you are burning a CD with the ISO software, use ISO format and a CD-R disk.

ISO Full Upgrade

An *ISO full upgrade* is used to upgrade VQE software on an existing CDE110 server and preserves the existing VQE configurations. An ISO full upgrade reformats the hard drive and reinstalls the operating system and other packages, such as the VQE software. An ISO full upgrade backs up the VQE-S, system, and network configurations, which are in the existing files under /etc. For parameters that will be under the control of the VQE CMS, it restores the parameter values (from the existing /etc configuration files) in the set of newly installed /etc configuration files.

ISO full upgrade software includes Cisco VQE, Redhat Linux, Apache web server, and other required facilities. The ISO installation software is distributed on one CD for VQE-S, and on one CD for VQE Tools. As an alternative, VQE software can be downloaded from Cisco.com. When you are burning a CD with the ISO software, use ISO format and a CD-R disk.

VQE Incremental Upgrade

A *VQE incremental upgrade* can be used to upgrade a CDE110 server where the Cisco VQE software—either VQE-S or VQE Tools—has previously been installed. A VQE incremental upgrade requires a CDE110 server with an existing operating system. A VQE incremental upgrade backs up the VQE-S, system, and network configurations, which are in the existing files under /etc. For parameters that will be under the control of the VQE CMS, a VQE incremental upgrade restores the parameter values (from the existing /etc configuration files) in the set of newly installed /etc configuration files.

A VQE incremental upgrade is done with an executable installer—a single executable file that includes all VQE-S packages needed for the upgraded VQE software version. Each VQE incremental upgrade requires that the system already has a previously released complete VQE software package installed, including configuration files. Otherwise, the VQE incremental upgrade installer quits and informs you to use an ISO installation.

A VQE incremental upgrade assures that the existing software version is complete. It does not remove any extra software that is installed on your system and that is not required to run the VQE software. However, use non-Cisco release software may produce unpredictable results and is not recommended.

Downloading VQE Software from Cisco.com

You must be a registered Cisco.com user to download software from Cisco.com. To download a VQE software from Cisco.com, do the following:

Step 1 Browse to the software downloads area for VQE:

http://tools.cisco.com/support/downloads/pub/Redirect.x?mdfid=280836689

Step 2 Click the **+** sign to expand Cisco Content Delivery Applications.

Step 3 Depending on the type of server where software is being upgraded, click one of the following:

- Cisco Visual Quality Experience (VQE) Channel Provisioning Tools (VQE Tools)
- Cisco Visual Quality Experience Application (VQE-S)

Step 4 If needed, log in to Cisco.com.

Step 5 Click the software release that you need.

Step 6 Click the ISO installation software or VQE incremental upgrade installer that you need.

Step 7 Click **Download**.

Step 8 Follow the directions for downloading the ISO installation software or VQE incremental upgrade installer. Download the software to the /tmp directory.

Step 9 If you want release information, download any Release Notes or README file that is relevant to the software.

Step 10 If you downloaded ISO installation software and require a software CD, you must burn the software onto a CD. When burning the CD, use ISO format and a CD-R disk.

Backing Up VQE Release 2.1 Files Before Upgrading or Installing Software

When upgrading from VQE Release 2.1 to Release 3.4 or when installing VQE Release 3.4 software on a VQE 2.1 system, the following tables list the VQE Release 2.1 files that you should backup prior to performing an ISO full upgrade or ISO clean installation.

- Table 5 shows the files that must be backed up for the CDE110 that hosts VQE-S.
- Table 6 shows the files that must be backed up for the CDE110 that hosts VQE Tools (VCPT and VCDS).

In addition to the files listed in these tables, there may be backup or alternate files in the /etc/opt/vqes directory or another location. These files must be backed up if you want them available on the upgraded CDE110.

If additional functions are enabled on the CDE110, there may be additional files not listed in these tables that need to be backed up.

The easiest way to back up the /etc configuration files is to use the **tar** command to create a TAR file archive of all directories and files under /etc.

Caution An ISO clean installation or ISO full upgrade will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Before upgrading or installing software on a CDE110, be sure to backup all needed files to a safe location (for example, on a server separate from the CDE110s being upgraded).

Before the hard disk is formatted, an ISO full upgrade does a backup of configuration files under the /etc directory. After the hard disk is formatted, an ISO full upgrade restores your VQE 2.1 configurations in the files under /etc—but only configuration items for which a VQE Configuration Database (VCDB) parameter exists are restored. Nevertheless, it is recommended that you manually backup these files to another server before proceeding with an ISO full upgrade in case of a catastrophic failure.

Table 5 VQE-S Server: Files That Must Be Backed Up

File	Notes
/etc/hosts	--
/etc/ntp.conf	If additional Network Time Protocol configuration has been enabled, files in other locations may need to be backed up.
/etc/resolv.conf	--
/etc/sysconfig/network	--
/etc/sysconfig/network-scripts/ifcfg-eth#	There are four of these files, where # is the number of the Ethernet interface. For example: ifcfg-eth1.
/etc/sysconfig/network-scripts/route-eth#	There are four of these files, where # is the number of the Ethernet interface. For example: route-eth1
/etc/opt/vqes/vqes.conf	VQE-S configuration file.
/etc/opt/vqes	There may be additional backup or alternate files in the vqes directory (or another location).
/etc/opt/vqes/vqe_channels.cfg	VQE-S channel configuration file.
/etc/opt/vqes/vqes_syslog.conf	VQE-S syslog configuration file.
/usr/share/tomcat5/webapps/ems/WEB-INF/vqe.conf	VQE-S AMT configuration file with XML-RPC port numbers for management servers. If your deployment has not changed the default XML-RPC port numbers, the vqe.conf file does not have to be backed up.
/usr/share/tomcat5/webapps/ems/WEB-INF/classes/log4j.properties	VQE-S AMT log4j logging configuration file. If your deployment has not changed the default log4j configuration, the log4j.properties file does not have to be backed up.

Table 6 VQE Tools Server: Files That Must Be Backed Up

File	Notes
/etc/hosts	--
/etc/ntp.conf	If additional Network Time Protocol configuration has been enabled, files in other locations may need to be backed up.
/etc/resolv.conf	--
/etc/sysconfig/network	--

Table 6 VQE Tools Server: Files That Must Be Backed Up (continued)

File	Notes
/etc/sysconfig/network-scripts/ifcfg-eth#	There are four of these files, where # is the number of the Ethernet interface. For example: ifcfg-eth1.
/etc/sysconfig/network-scripts/route-eth#	There are four of these files, where # is the number of the Ethernet interface. For example: route-eth1.
VCPT configuration files in /etc/opt/vcpt/data	VCPT configuration files are in this directory. Filenames are user-defined and vary.
/etc/opt/vqes	There may be additional backup or alternate files in the vqes directory (or another location).
/etc/opt/vqes/vqec_channels.cfg	VQE-C channel configuration file.
/usr/share/tomcat5/webapps/vcpt/WEB-INF/classes/log4j.properties	VCPT log4j logging configuration file. If your deployment has not changed the default log4j configuration, the log4j.properties file does not have to be backed up.

Using an ISO Full Upgrade to Upgrade from VQE Release 2.1 to Release 3.4

To upgrade from VQE Release 2.1 to Release 3.4 requires that you perform an ISO full upgrade of the VQE Release 3.4 software on the Cisco CDE110 that hosts VQE-S and on the (optional) CDE110 that hosts the VQE Tools (VCPT and VCDS).

An ISO full upgrade *does* backup and restore your VQE 2.1 configurations in files under /etc if the parameter will be under the control of the VQE Configuration Management System (CMS) in Release 3.4. Use an ISO full upgrade if your deployment *does* require that these VQE 2.1 configurations be preserved.

Note *ISO full upgrades must be performed using the CDE110 serial port (not the CDE110 video and keyboard ports).* For these installations, the serial port connection can be through a terminal server or through a directly connected PC.

For terminal emulation software configuration, see "Configuring Terminal Emulation Software" in Chapter 2 of the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

Note When using an ISO full upgrade, there is a known problem related to route configurations. See "Routes May Not Be Carried Forward from VQE Release 2.1 to Release 3.4" section on page 12.

To perform an ISO full upgrade to upgrade from VQE 2.1 to 3.4, do the following:

Step 1 Read and follow the directions in the "Backing Up VQE Release 2.1 Files Before Upgrading or Installing Software" section on page 21.

Caution An ISO full upgrade will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Be sure to backup configuration files as described in the "Backing Up VQE Release 2.1 Files Before Upgrading or Installing Software" section on page 21.

Step 2 If you do not have the ISO software installation CD, see the "Downloading VQE Software from Cisco.com" section on page 21 for instructions on downloading the software and making a CD.

Step 3 Insert the ISO software installation CD in the CDE110 CD/DVD Combo drive.

Step 4 Power on or power cycle the CDE110.

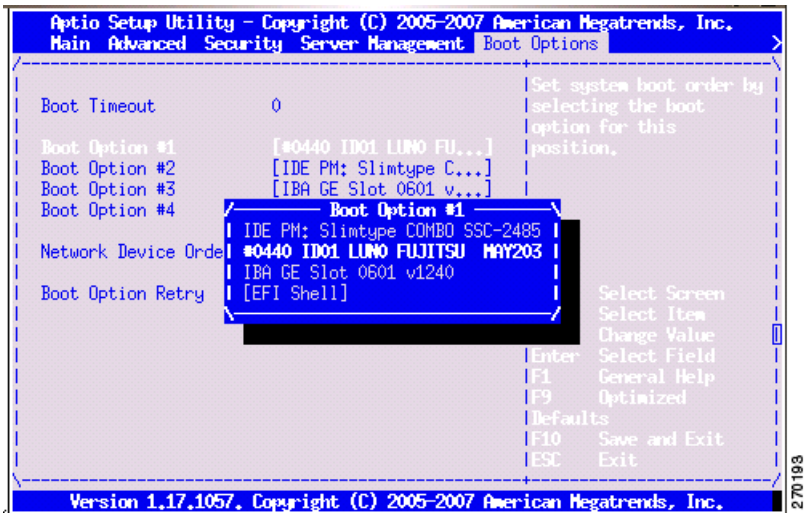
Changing the Boot Sequence to Start from the CD/DVD Combo Drive

Note Changing the boot sequence to start with the CD/DVD drive is a one-time operation for changing the boot sequence.

Step 5 When the system boots and displays "Press <F2> to enter SETUP," press F2 to enter the BIOS Setup.

Step 6 When the BIOS Setup utility is displayed, use the arrow keys to move to the **Boot Options** menu (Figure 1).

Figure 1 Boot Options Menu



Step 7 So that the CD/DVD Combo drive is first in the boot order, you need to change the boot sequence to the following:

1. IDE PM: SlimType COMBO SSC-2485
2. #0440 ID01 LUN0 FUJITSU MAY203
3. IBA GE Slot 0600
4. [EFI SHELL]

Note Because the components used in the CDE110 can vary, the name of the CD/DVD Combo drive may be different from what is shown in the preceding list.

To change the boot sequence, use the arrow keys to move to the boot option you will change (for example, Boot Option #1) and press Enter. Then use the arrow keys to move to the required boot device and press Enter.

The updated Boot Option is displayed.

Step 8 To save and exit the BIOS Setup, press F10. (As an alternative to pressing F10, use the arrow keys to move to **Exit** in the BIOS Setup menu and select **Save Changes and Exit**.)

The Setup Confirmation message "Save Configuration Changes and exit now?" is displayed.

Step 9 Select Yes and press Enter.

The CDE110 restarts.

Loading the VQE Software

When the VQE installation software runs, the `boot:` prompt is displayed.

Step 10 Type upgrade and then press Enter. For example:

```
boot: upgrade
```

Note If you enter invalid input at the boot: prompt, the installer displays "Could not find kernel image" and your input.

This message is harmless. Enter correct input (upgrade) and proceed with the installation.

The installation software checks that VQE software and configuration files exist. If either of these checks fail, the installation is terminated.

If the VQE software and configuration files exist, the following message is displayed before the actual upgrade process starts.

```
You are performing VQE upgrade on hostname. It currently has Cisco VQE Server_or_Tools
Release xxx installed. If this is incorrect, please power off the server within 60
seconds.
```

You can power off the server to stop the ISO full upgrade if the wrong CD has been used for the installation.

When you select an ISO full upgrade and the installation begins, no further user input is required or possible.

An ISO full upgrade does the following:

- Backs up the /etc configuration files to the vqe-*release-hostname-timestamp*.tar.gz file by creating a tar file archive of the following files: all files under /etc, vqes.conf, the password file, Session Description Protocol (SDP) file, and so forth. Saves the tar file archive in a temporary set of files.
- Formats the hard drive.
- Installs the Linux operating system and add-on RPMs of VQE packages and configuration files.
- Restores (from the tar file archive) the following /etc configuration files that were present on your VQE Release 2.1 host:
  - On a VQE-S host, the channel configuration file (/etc/opt/vqes/vqe_channels.cfg)

  - On a VQE Tools host, the channel configuration file (/etc/opt/vqes/vqec_channels.cfg) and all VCPT configuration files in /etc/opt/vcpt/data
  - On both VQE-S and VQE Tools hosts, all files in the /etc/opt/certs directory (files related to Secure Sockets Layer certificates)

Note Except for the preceding files, all other /etc configuration files from a Release 2.1 VQE host *are not copied* to the directories under /etc.

- Saves the other files shown in Table 7 to the CDE110 hard drive.

Table 7 ISO Full Upgrade VQE Release 2.1 to 3.4: Other Saved Files

File in the Tar File Archive	Directory Location Where Saved
backed up /etc files	/vqe-etc/etc-save/
vqe-*release-hostname-timestamp*.tar.gz (tar file)	/vqe-etc/

- Examines configuration files under /etc that in Release 3.4 will be configurable by the VQE CMS and VCDB parameters, and generates VCDB contents for these files.
  - If a VCDB parameter exists for a configuration option that was in the Release 2.1 /etc files, that configuration item *will be preserved* in the Release 3.4 /etc files.
  - If a VCDB parameter does not exist for a configuration option that was in the Release 2.1 /etc files, that configuration item *will not be preserved* in the Release 3.4 /etc files.
- Performs installation post processing
  - Installs a new vcdb.conf.sample file in the /etc/opt/vqes/ directory.
  - Saves the factory default configuration files under /etc to the directory /vqe-etc/etc-pristine.
- Performs a final reboot. As part of the final reboot, runs the VQE Configuration Engine to apply the VCDB values (which the installation software generated earlier) to the VQE 3.4 configuration files under /etc.

Step 11 When the final reboot is finished, you must login as root and reset the password for root, and reset the password for the vqe user name. If there were other user accounts, they are not carried forward to VQE Release 3.4. It is possible for you to manually recreate the other user accounts. *However, making manual changes in this manner is not supported or recommended.*

Step 12 When the final reboot is finished, check the /var/log/vqe/vqe.log file to ensure that no significant errors occurred during the ISO full upgrade.

Step 13 Remove the ISO CD from the CDE110 CD/DVD Combo drive and close the CD/DVD tray.

Note Leave the BIOS settings set so that the CDE110 boots first from the CD/DVD Combo drive.

Step 14 If you have made changes to Release 2.1 /etc configuration parameters that are not now under the control of the VQE CMS, the ISO full upgrade does not preserve the changes in Release 3.4. It is possible for you to manually recreate the customized configurations in the Release 3.4 /etc configuration files. *However, making manual changes in this manner is not supported or recommended.*

You can examine the /vqe-etc/etc-diff file to determine the /etc file parameters (beyond the control of the VQE CMS) that have been changed.

For information on migrating channel-related files from VQE Release 2.1 to VQE Release 3.4, see the "Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.4" section on page 45.

Using an ISO Clean Installation to Install VQE Release 3.4 on a VQE Release 2.1 System

To install a complete new set of VQE Release 3.4 software on a VQE Release 2.1 system, perform an ISO clean installation of the VQE Release 3.4 software on the Cisco CDE110 that hosts VQE-S and on the (optional) CDE110 that hosts the VQE Tools (VCPT and VCDS).

An ISO clean installation *does not* backup or restore your current VQE 2.1 configurations. Use an ISO clean installation only if your deployment *does not* require that the VQE 2.1 configurations be preserved.

Caution If you use an ISO clean installation for installing VQE Release 3.4, your VQE Release 2.1 configurations will *not* be backed up or restored. Use an ISO clean installation only when there is no requirement to preserve VQE Release 2.1 configuration values.

To preserve your VQE Release 2.1 configuration values, use an ISO full upgrade. See the "Using an ISO Full Upgrade to Upgrade from VQE Release 2.1 to Release 3.4" section on page 23.

This section explains how to perform an ISO clean installation to install VQE Release 3.4 on a VQE Release 2.1 system. An ISO clean installation reformats the hard drive and reinstalls the operating system and other packages, such as the VQE software. All old configurations are removed.

Note *ISO clean installations must be performed using the CDE110 serial port (not the CDE110 video and keyboard ports).* For these installations, the serial port connection can be through a terminal server or through a directly connected PC.

For terminal emulation software configuration, see "Configuring Terminal Emulation Software" in Chapter 2 of the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

To perform an ISO clean installation to install VQE Release 3.4 on a VQE 2.1 system, do the following:

Caution An ISO clean installation will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Be sure to backup configuration files as described in the "Backing Up VQE Release 2.1 Files Before Upgrading or Installing Software" section on page 21. With this backup of the configuration files, you will have the VQE 2.1 configuration files available for reference if you need them after the ISO clean installation is complete.

Step 1 If you do not have the ISO software installation CD, see the "Downloading VQE Software from Cisco.com" section on page 21 for instructions on downloading the software and making a CD.

Step 2 Insert the ISO software installation CD in the CDE110 CD/DVD Combo drive.

Step 3 Power on or power cycle the CDE110.

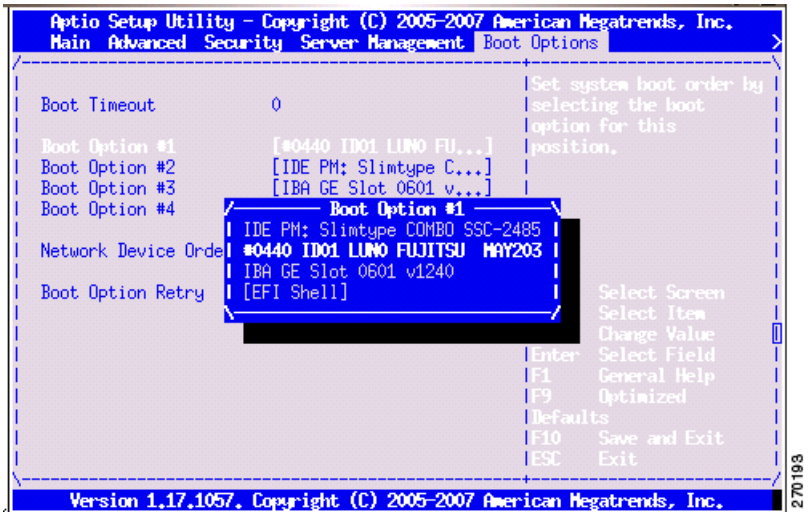
Changing the Boot Sequence to Start from the CD/DVD Combo Drive

Note Changing the boot sequence to start with the CD/DVD drive is a one-time operation for changing the boot sequence.

Step 4 When the system boots and displays "Press <F2> to enter SETUP," press F2 to go into enter the BIOS Setup.

Step 5 When the BIOS Setup utility is displayed, use the arrow keys to move to the **Boot Options** menu (Figure 1).

Figure 2 Boot Options Menu



Step 6 So that the CD/DVD Combo drive is first in the boot order, you need to change the boot sequence to the following:

1. IDE PM: SlimType COMBO SSC-2485
2. #0440 ID01 LUN0 FUJITSU MAY203
3. IBA GE Slot 0600
4. [EFI SHELL]

Note Because the components used in the CDE110 can vary, the name of the CD/DVD Combo drive may be different from what is shown in the preceding list.

To change the boot sequence, use the arrow keys to move to the boot option you will change (for example, Boot Option #1) and press Enter. Then use the arrow keys to move to the required boot device and press Enter.

The updated Boot Option is displayed.

Step 7 To save and exit the BIOS Setup, press F10. (As an alternative to pressing F10, use the arrow keys to move to **Exit** in the BIOS Setup menu and select **Save Changes and Exit**.)

The Setup Confirmation message "Save Configuration Changes and exit now?" is displayed.

Step 8 Select Yes and press Enter.

The CDE110 restarts.

Loading the VQE Software

When the VQE installation software runs, the `boot:` prompt is displayed.

Step 9 Type clean and then press Enter. For example:

```
boot: clean
```

Note If you enter invalid input at the boot: prompt, the installer displays "Could not find kernel image" and your input.

This message is harmless. Enter correct input (clean) and proceed with the installation.

When you select an ISO clean installation and the installation begins, no further user input is required or allowed until the initial configuration of the CDE110 server.

An ISO clean installation does the following:

1. Formats the hard disk.
2. Installs the Linux operating system and all packages.
3. Reboots.
4. Installs the add-on RPM of VQE packages and configuration files.
5. Performs installation post processing.
   a. Installs a new vcdb.conf.sample file in the /etc/opt/vqes/ directory.
   b. Saves the factory default configuration files under /etc to the directory /vqe-etc/etc-pristine.
6. Reboots the server.

Step 10 Remove the ISO software installation CD from the CDE110 CD/DVD Combo drive and close the CD/DVD tray.

Note Leave the BIOS settings set so that the CDE110 boots first from the CD/DVD Combo drive.

Step 11 When the CDE110 completes the final reboot, you are required to log in as root and change the password for root:

```
localhost.localdomain login: root
You are required to change your password immediately (root enforced)

You can now choose the new password or passphrase.

A valid password should be a mix of upper and lower case letters,
digits, and other characters.  You can use an 8 character long
password with characters from at least 3 of these 4 classes, or
a 7 character long password containing characters from all the
classes.  An upper case letter that begins the password and a
digit that ends it do not count towards the number of character
classes used.

A passphrase should be of at least 3 words, 12 to 40 characters
long and contain enough different characters.


Enter new password:
```

```
Re-type new password:
```

Step 12 Enter the new password for root.

When you change the root password, the VQE Startup Configuration Utility runs:

```
Welcome to the Cisco VQE startup configuration utility.  This utility is
intended to facilitate the initial setup of the VQE system.  This is not
intended as a complete configuration tool, but merely to assist in the most
common configuration needs, therefore you may still need to customize the VQE
configuration for your specific needs after this utility is complete.
```

The VQE Startup Configuration Utility allows you to specify initial configuration values for the CDE110 server and the VQE software. Using this input, the startup utility generates initial VQE Configuration Database (VCDB) contents and reboots the CDE110 server. When the server comes back up, VQE Configuration Engine applies the changes in VCDB to the configuration files under the /etc directory.

For information on using the startup utility, see Chapter 2, "Getting Started with the VQE Startup Configuration Utility" in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

For information on the VQE Configuration Database and Configuration Engine, see Chapter 7, "Configuring VQE Server and VQE Tools" in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

For information on migrating channel-related files from VQE Release 2.1 to VQE Release 3.4, see the "Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.4" section on page 45.

Terminal Client Software Behavior. When using the Cisco VQE Startup Configuration Utility with a CDE110 serial port connection and terminal client software, different terminal client facilities have varying behavior for the Backspace and Delete Keys:

- With console/konsole on Linux, or putty on Windows, pressing Backspace usually works correctly.
- With HyperTerminal on Windows, pressing Ctrl-Backspace usually works correctly.
- With HyperTerminal on Windows, pressing Backspace (without Ctrl) produces errors.
- With UNIX xterm shell, pressing Backspace produces errors. With the UNIX xterm shell, the Delete key (not Backspace) should be used to remove characters.

Other terminal client facilities may produce different behaviors for the Backspace and Delete keys.

Upgrading VQE Software from an Earlier VQE Release 3.X to Release 3.4

To upgrade from an earlier VQE Release 3.X to Release 3.4 requires that you perform one of the following types of software installation on the Cisco CDE110 that hosts VQE-S and on the (optional) CDE110 that hosts the VQE Tools (VCPT and VCDS).

- A VQE incremental upgrade installs a limited set of files—only those files that are needed to upgrade to the VQE 3.4 software. This is the recommended upgrade path because it is relatively fast (approximately a minute) and simple to perform. A VQE incremental upgrade preserves your earlier VQE 3.X configurations in VCDB and in the configuration files under /etc. If a configuration parameter is not configured by the earlier VQE 3.X configurations in VCDB, it will not be preserved.

- An ISO full upgrade installs a complete new set of VQE, Linux, Quagga, and other files. An ISO full upgrade *does* backup and restore your earlier VQE 3.X configurations in files under /etc if the parameter will be under the control of the VQE CMS in Release 3.4. Use an ISO full upgrade if your situation *does* require that you install a complete new set of files and that earlier VQE 3.X configurations be preserved.

Note If you want to preserve your earlier VQE 3.X configurations for VQE Release 3.4, you must use a VQE incremental upgrade or an ISO full upgrade.

When using a VQE incremental upgrade to upgrade an earlier VQE 3.X release to Release 3.4, read each of the following sections, in the order shown:

1. "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31
2. "Using a VQE Incremental Upgrade to Upgrade from an Earlier VQE Release 3.X to Release 3.4" section on page 32.

When using an ISO full upgrade to upgrade from an earlier VQE 3.X release to Release 3.4, read each of the following sections, in the order shown:

1. "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31
2. "Using an ISO Full Upgrade to Upgrade from an Earlier VQE Release 3.X to Release 3.4" section on page 33

Backing Up VQE Release 3.X Files Before Upgrading or Installing Software

Caution An ISO clean installation or ISO full upgrade will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Before upgrading or installing software on a CDE110, be sure to backup all needed files to a safe location (for example, on a server separate from the CDE110s being upgraded).

Before the hard disk is formatted, an ISO full upgrade does a backup of configuration files under the /etc directory. After the hard disk is formatted, an ISO full upgrade restores your VQE 3.X configurations in the files under /etc—but only configuration items for which a VQE Configuration Database (VCDB) parameter exists are restored. It is recommended that you manually backup these files to another server before proceeding with an ISO full upgrade in case of a catastrophic failure.

When upgrading to or downgrading from one VQE Release 3.X to another Release 3.X, the following tables list the VQE Release 3.X files that you should backup prior to performing an ISO clean installation or ISO full upgrade.

- Table 8 shows the files that must be backed up for the CDE110 that hosts VQE-S.
- Table 9 shows the files that must be backed up for the CDE110 that hosts VQE Tools (VCPT and VCDS).

The easiest way to back up the /etc configuration files is to use the **tar** command to create a TAR file archive of all directories and files under /etc.

Note In addition to the files listed in these tables, there may be backup or alternate files in the /etc/opt/vqes directory or another location. These files must be backed up if you want them available on the upgraded CDE110.

If additional functions are enabled on the CDE110, there may be additional files not listed in these tables that need to be backed up.

Table 8 VQE-S Server: Files That Must Be Backed Up

File	Notes
all directories and files under /etc	These are the files needed to configure the CDE110 system except for the VQE-S AMT web application.
/usr/share/tomcat5/webapps/ems/WEB-INF/vqe.conf	VQE-S AMT configuration file with XML-RPC port numbers for management servers. If your deployment has not changed the default XML-RPC port numbers, the vqe.conf file does not have to be backed up.
/usr/share/tomcat5/webapps/ems/WEB-INF/classes/log4j.properties	VQE-S AMT log4j logging configuration file. If your deployment has not changed the default log4j configuration, the log4j.properties file does not have to be backed up.

Table 9 VQE Tools Server: Files That Must Be Backed Up

File	Notes
all directories and files under /etc	These are the files needed to configure the CDE110 system except for the VCPT web application.
/usr/share/tomcat5/webapps/vcpt/WEB-INF/classes/log4j.properties	VCPT log4j logging configuration file. If your deployment has not changed the default log4j configuration, the log4j.properties file does not have to be backed up.

Using a VQE Incremental Upgrade to Upgrade from an Earlier VQE Release 3.X to Release 3.4

This section explains how to use a VQE incremental upgrade to upgrade from an earlier VQE Release 3.X to Release 3.4. A VQE incremental upgrade preserves your earlier VQE 3.X configurations in VCDB and in the configuration files under /etc. If a configuration parameter is not configured by the earlier VQE 3.X configurations in VCDB, it will not be preserved.

Before running a VQE incremental upgrade installer, perform the following tasks:

1. Downloading VQE Software from Cisco.com, page 21
2. Backing Up VQE Release 3.X Files Before Upgrading or Installing Software, page 31

To run the VQE incremental upgrade installer to upgrade an earlier VQE Release 3.X release to Release 3.4, do the following:

Caution To be safe in case of a catastrophic failure, be sure to backup configuration files as described "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31.

Step 1 If needed, log in as root on the CDE110 server where the VQE incremental upgrade installer was downloaded.

When you run a VQE incremental upgrade installer, you must have root privileges.

Step 2 Run the VQE incremental upgrade installer. For example:

```
[root@system]# /tmp/vqes-3.4.x-x.bin
```

The VQE incremental upgrade installer determines the current VQE software version, performs a sanity check on the existing VQE software, checks for the existence of needed configuration files, and does one of the following:

- If the preceding checks determine that there is a problem, the VQE incremental upgrade installer informs you that an ISO installation is required and exits.
- If the preceding checks determine that all is well, the VQE incremental upgrade installer displays:

```
You are currently running VQE version 3.x.x.
Do you want to install version 3.4.x (build xx) now? y/[n]:
```

Step 3 To install the software, enter y and press **Enter**.

The VQE incremental upgrade does the following:

- Upgrades/installs/uninstalls RPMs (as needed) and installs associated default configuration files.
- Performs installation post processing as follows:
  - Installs a new vcdb.conf.sample in the directory /etc/opt/vqes/.
  - Saves a set of factory default /etc configuration files associated with the RPM installation in the directory /vqe-etc/etc-pristine/.
- Runs the VQE Configuration Engine to apply VCDB values to the configuration files under /etc.

After the upgrade process completes, you can examine the /var/log/upgrade.log file to look for warning and error messages, and to find out if there were any configuration files (from your previous installation) whose contents were not completely applied to the new release.

The set of /etc configuration files from your previous installation are archived in a tar file in /vqe-etc/ prior to the upgrade. You can manually apply the values from these old configuration files if these configurations must be restored.

Using an ISO Full Upgrade to Upgrade from an Earlier VQE Release 3.X to Release 3.4

This section explains how to use an ISO full upgrade to upgrade from an earlier VQE Release 3.X to Release 3.4 and preserve your earlier VQE Release 3.X configurations.

Before performing an ISO full upgrade, perform the following tasks:

1. If you do not have an ISO software installation CD with VQE Release 3.4 software, see Downloading VQE Software from Cisco.com, page 21

2. Backing Up VQE Release 3.X Files Before Upgrading or Installing Software, page 31

Note *ISO full upgrades must be performed using the CDE110 serial port (not the CDE110 video and keyboard ports).* For these installations, the serial port connection can be through a terminal server or through a directly connected PC.

For terminal emulation software configuration, see "Configuring Terminal Emulation Software" in Chapter 2 of the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

To perform an ISO full upgrade to upgrade from an earlier VQE Release 3.X to Release 3.4, do the following:

Caution An ISO full upgrade will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Be sure to backup configuration files as described in the "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31.

Step 1 Insert the ISO software installation CD in the CDE110 CD/DVD Combo drive.

Step 2 Power on or power cycle the CDE110.

When the VQE installation software runs, the `boot:` prompt is displayed.

Step 3 Type upgrade and then press Enter. For example:

```
boot: upgrade
```

Note If you enter invalid input at the boot: prompt, the installer displays "Could not find kernel image" and your input.

This message is harmless. Enter correct input (upgrade) and proceed with the installation.

The installation software checks that VQE software and configuration files exist. If either of these checks fail, the installation is terminated.

If the VQE software and configuration files exist, the following message is displayed before the actual upgrade process starts.

```
You are performing VQE upgrade on hostname. It currently has Cisco VQE Server_or_Tools
Release xxxx installed. If this is incorrect, please power off the server within 60
seconds.
```

You can power off the server to stop the ISO full upgrade if the wrong CD has been used for the installation.

When you select an ISO full upgrade and the installation begins, no further user input is required or possible.

An ISO full upgrade does the following:

- Checks whether the /etc configuration files have been changed manually (without the use of the VCDB). If manual changes are detected, the ISO full upgrade installer does the following:
  - Logs the names of files that have been manually changed. The log file is /var/log/upgrade.log.

  - Writes **diff** command output showing the manually changed items into the /vqe-etc/etc-diff file.

Note If there are manually edited files in the existing /etc directories, the changes were made by an administrator without the use of VCDB. If you want to continue to have these differences present in your configuration files, you need to carefully edit the relevant configuration files so that they include the items that are different.

- Backs up the /etc configuration files to the vqe-*release-hostname-timestamp*.tar.gz file by creating a tar file archive of the following files: /vqe-etc/etc-diff, /var/log/upgrade.log and all files under /etc. Saves the tar file archive in a temporary set of files.
- Formats the hard drive.
- Installs the Linux operating system and add-on RPMs of VQE packages and configuration files.
- Restores (from the tar file archive) the following /etc configuration files that were present on your earlier VQE Release 3.X host:
  - On a VQE-S host, the VCDB configuration file (/etc/opt/vqes/vcdb.conf)
  - On a VQE-S host, the channel configuration file (/etc/opt/vqes/vqe_channels.cfg)
  - On a VQE Tools host, the channel configuration file (/etc/opt/vqes/vqec_channels.cfg) and all VCPT configuration files in /etc/opt/vcpt/data
  - On both VQE-S and VQE Tools hosts, all files in the /etc/opt/certs directory (files related to Secure Sockets Layer certificates)

Note Except for the preceding files, all other /etc configuration files from an earlier Release 3.X VQE host *are not copied* to the directories under /etc.

- Saves the other files shown in Table 10 to the CDE110 hard drive.

Table 10 ISO Full Upgrade: Other Saved Files

File in the Tar File Archive	Directory Location Where Saved
backed up /etc configuration files including vcdb.conf	/vqe-etc/etc-save/
upgrade.log file	/var/log/upgrade.log
diff command output (generated earlier) in the etc-diff file	/vqe-etc/etc-diff file
vqe-*release-hostname-timestamp*.tar.gz (tar file)	/vqe-etc/

- Performs installation post processing
  - Installs a new vcdb.conf.sample file in the /etc/opt/vqes/ directory.
  - Saves the factory default configuration files under /etc to the directory /vqe-etc/etc-pristine.
- Performs a final reboot. As part of the final reboot, runs the VQE Configuration Engine to apply the VCDB values (from earlier VQE Release 3.X vcdb.conf that was restored earlier) to the VQE 3.4 configuration files under /etc (including vcdb.conf).

Step 4 When the CDE110 completes the final reboot, you are required to log in as root and change the password for root:

```
localhost.localdomain login: root
You are required to change your password immediately (root enforced)

You can now choose the new password or passphrase.

A valid password should be a mix of upper and lower case letters,
digits, and other characters.  You can use an 8 character long
password with characters from at least 3 of these 4 classes, or
a 7 character long password containing characters from all the
classes.  An upper case letter that begins the password and a
digit that ends it do not count towards the number of character
classes used.

A passphrase should be of at least 3 words, 12 to 40 characters
long and contain enough different characters.


Enter new password:
Re-type new password:
```

Step 5 Enter the new password for root.

Step 6 Set the password for the vqe user ID.

Note No passwords are copied over to the new set of installed files.

Step 7 Check the /var/log/vqe/vqe.log file to ensure that no significant errors occurred during the ISO full upgrade.

Step 8 Remove the ISO software installation CD from the CDE110 CD/DVD Combo drive and close the drive tray.

Step 9 If you made changes to your earlier VQE Release 3.X /etc configuration parameters that are not now under the control of the VQE CMS, the ISO full upgrade does not preserve these changes in Release 3.4. It is possible for you to manually recreate the customized configurations in the Release 3.4 /etc configuration files. *However, making manual changes in this manner is not supported or recommended.*

You can examine the /vqe-etc/etc-diff file to determine the /etc file parameters (beyond the control of the VQE CMS) that have been changed.

VCPT configuration files and VQE-S and VQE-C channel configuration files from an earlier VQE Release 3.X can be used without modification with VQE Release 3.4.

Using an ISO Clean Installation to Install VQE Release 3.4 on an Earlier VQE Release 3.X System

This section explains how to use an ISO clean installation to install VQE Release 3.4 on an earlier VQE Release 3.X system.

Caution If you use an ISO clean installation for installing VQE Release 3.4, your previous VQE configurations will *not* be backed up or restored. Use an ISO clean installation only when there is *no requirement to preserve* previous VQE configuration values.

An ISO clean installation installs a complete new set of VQE, Linux, Quagga, and other files. An ISO clean installation *does not* backup or restore your current VQE 3.X configurations. An ISO clean installation reformats the hard drive and reinstalls the operating system and other packages, such as the VQE software. All old configurations are removed.

Before performing an ISO clean installation, perform the following tasks:

1. If you do not have an ISO software installation CD with VQE Release 3.2 software, see Downloading VQE Software from Cisco.com, page 21.
2. Backing Up VQE Release 3.X Files Before Upgrading or Installing Software, page 31

Note *ISO clean installations must be performed using the CDE110 serial port (not the CDE110 video and keyboard ports).* For these installations, the serial port connection can be through a terminal server or through a directly connected PC.

For terminal emulation software configuration, see "Configuring Terminal Emulation Software" in Chapter 2 of the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

To perform an ISO clean installation to install VQE Release 3.4 on an earlier VQE Release 3.X system, do the following:

Caution An ISO clean installation will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Be sure to backup configuration files as described "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31. With this backup of the configuration files, you will have the earlier VQE 3.X configuration files available for reference if you need them after the ISO clean installation is complete.

Step 1 Insert the ISO software installation CD in the CDE110 CD/DVD Combo drive.

Step 2 Power on or power cycle the CDE110.

When the VQE installation software runs, the `boot:` prompt is displayed.

Step 3 Type clean and then press Enter. For example:

```
boot: clean
```

Note If you enter invalid input at the boot: prompt, the installer displays "Could not find kernel image" and your input.

This message is harmless. Enter correct input (clean) and proceed with the installation.

When you select an ISO clean installation and the installation begins, no further user input is required or allowed until the initial configuration of the CDE110 server.

An ISO clean installation does the following:

1. Formats the hard disk.
2. Installs the Linux operating system and all packages.
3. Reboots.

4. Installs the add-on RPM of VQE packages and configuration files.
5. Performs installation post processing.
   a. Installs a new vcdb.conf.sample file in the /etc/opt/vqes/ directory.
   b. Saves the factory default configuration files under /etc to the directory /vqe-etc/etc-pristine.
6. Reboots the server.

Step 4 Remove the ISO CD from the CDE110 CD/DVD Combo drive and close the drive tray.

Step 5 When the CDE110 completes the final reboot, you are required to log in as root and change the password for root:

```
localhost.localdomain login: root
You are required to change your password immediately (root enforced)

You can now choose the new password or passphrase.

A valid password should be a mix of upper and lower case letters,
digits, and other characters.  You can use an 8 character long
password with characters from at least 3 of these 4 classes, or
a 7 character long password containing characters from all the
classes.  An upper case letter that begins the password and a
digit that ends it do not count towards the number of character
classes used.

A passphrase should be of at least 3 words, 12 to 40 characters
long and contain enough different characters.


Enter new password:
Re-type new password:
```

Step 6 Enter the new password for root.

When you change the root password, the VQE Startup Configuration Utility runs:

```
Welcome to the Cisco VQE startup configuration utility.  This utility is
intended to facilitate the initial setup of the VQE system.  This is not
intended as a complete configuration tool, but merely to assist in the most
common configuration needs, therefore you may still need to customize the VQE
configuration for your specific needs after this utility is complete.
```

The VQE Startup Configuration Utility allows you to specify initial configuration values for the CDE110 server and the VQE software. Using this input, the startup utility generates initial VQE Configuration Database (VCDB) contents and reboots the CDE110 server. When the server comes back up, VQE Configuration Engine applies the changes in VCDB to the configuration files under the /etc directory.

For information on using the startup utility, see Chapter 2, “Getting Started with the VQE Startup Configuration Utility” in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

For information on the VQE Configuration Database and Configuration Engine, see Chapter 7, “Configuring VQE Server and VQE Tools” in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

Terminal Client Software Behavior. When using the Cisco VQE Startup Configuration Utility with a CDE110 serial port connection and terminal client software, different terminal client facilities have varying behavior for the Backspace and Delete Keys:

- With console/konsole on Linux, or putty on Windows, pressing Backspace usually works correctly.
- With HyperTerminal on Windows, pressing Ctrl-Backspace usually works correctly.
- With HyperTerminal on Windows, pressing Backspace (without Ctrl) produces errors.

- With UNIX xterm shell, pressing Backspace produces errors. With the UNIX xterm shell, the Delete key (not Backspace) should be used to remove characters.

Other terminal client facilities may produce different behaviors for the Backspace and Delete keys.

Performing an ISO Clean or ISO Full Upgrade Installation from a Remote Location

Because of the cost and time delay, it is sometimes not desirable for the service-provider technician to be physically present at the CDE110 server when an ISO clean or ISO full upgrade installation is performed. Prior to VQE Release 3.3.1, these installation types required that an ISO software installation CD be inserted into the CDE110 server.

Starting with VQE Release 3.3.1, an ISO clean or ISO full upgrade installation can be performed from a remote location without inserting an ISO software installation CD into the CDE110 server. The remote ISO installation is available for both VQE Server and VQE Tools software.

The following sections explain how to perform a remote ISO software installation:

- Prerequisites and Restrictions for a Remote ISO Software Installation, page 39
- Remotely Performing an ISO Clean or ISO Full Upgrade Installation, page 40

Prerequisites and Restrictions for a Remote ISO Software Installation

Before proceeding, read and understand these sections on ISO clean and ISO full upgrade installations:

- ISO Clean Installation, page 19
- ISO Full Upgrade, page 20

To perform an ISO software installation from a remote location, the following prerequisites and requirements must be met for the CDE110 server on which the software will be installed:

- The CDE110 server must have a factory-installed flash drive. Only CDE110 model numbers CDE111-2-146TXA-K9 and CDE111-2-146TXD-K9 have a factory-installed flash drive. If the CDE110 does not have the needed second drive (for example, flash drive), the installation software displays this error message:

```
ERROR: No second disk detected on CDE-111...
This could indicate a hardware failure.
Please contact Cisco Technical Support.
```

Note CDE110 model numbers CDE110-1-036TXA-K9 and CDE110-1-036TXD-K9 *do not* have a factory-installed flash drive. On these models, an ISO clean or ISO full upgrade installation from a remote location *is not possible*.

- The CDE110 server must be running and have a functioning hard disk drive and flash drive.
- Remote access to the CDE110 server must be through the server serial port. Typically, remote access is through a terminal server connected to a serial port on the front or back of the Cisco CDE110. For terminal emulation software configuration, see “Configuring Terminal Emulation Software” in Chapter 2 of the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*.

- There must be a mechanism to remotely power cycle the CDE110 server. This mechanism is needed to make sure that the technician can restart the installation process should the server become irresponsive during the installation.
- The VQE software currently installed on the CDE110 server must be for VQE Release 3.3.1 or a later release. If the CDE110 does not have the needed VQE software release, the installation software displays an error message. For example:

```
ERROR: Remote ISO installation is not supported for Versions below 3.3
ISO Image Version : Cisco VQE Server Release 3.2.2 (Build 7)
```

Because the remote installation software is not present in VQE releases earlier than Release 3.3.1, the following restrictions apply to an ISO clean or ISO full upgrade installation from a remote location:

- If the software currently installed on the CDE110 server is for a VQE release earlier than Release 3.3.1, an ISO clean or ISO full upgrade installation from a remote location *is not possible*.
- A downgrade using an ISO clean installation from VQE Release 3.3.X to a version of VQE earlier than Release 3.3.1 *is not possible.*

However, you can remotely perform an ISO clean or ISO full upgrade installation *to upgrade* from VQE Release 3.3.X or 3.4.X to a later VQE release. For example, you can use a ISO clean or ISO full upgrade installation to upgrade from Release 3.3.2 or Release 3.4.1.

You can remotely perform an ISO clean installation *to downgrade* from VQE Release 3.3.X or 3.4.X to any earlier VQE 3.3.X or 3.4.X release. For example, a remote ISO clean installation from Release 3.4.1 to Release 3.3.2 is allowed. Be aware that using an ISO clean installation always removes all old configurations. An ISO full downgrade installation is not currently supported.

Remotely Performing an ISO Clean or ISO Full Upgrade Installation

The remote ISO installation script logs success and failure messages concerning the remote installation to its log file /var/log/vqe/remote_iso_install.log.

To perform an ISO clean or ISO full upgrade installation, do the following:

Step 1 Login to the remote CDE110 server on which the software will be installed.

Caution An ISO clean installation or ISO full upgrade installation will format the hard disk on the CDE110. *Formatting causes all data on the hard disk to be erased.*

Step 2 Backup files on the CDE110 server as described in the "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31.

Caution To be safe in case of a catastrophic failure, be sure to backup configuration files as described "Backing Up VQE Release 3.X Files Before Upgrading or Installing Software" section on page 31.

Step 3 To copy the ISO software to the remote CDE110 server, use a facility such as NFS, FTP, or SCP. The network copy operation must be from a separate machine that can provide the ISO image file. The ISO software can be copied to any CDE110 directory, such as /tmp.

For information on downloading the ISO software, see the "Downloading VQE Software from Cisco.com" section on page 21.

Step 4 Run the remote installation script /usr/bin/vqe_remote_iso_install. For example:

```
[root@system]# /usr/bin/vqe_remote_iso_install
```

The network installation script prompts you for the following:

- Full pathname of the ISO software file
- Whether you want to perform an ISO clean installation or ISO full upgrade installation
- After you verify the installation options, whether you want to continue with the installation

Note For each prompt, the default (if any) is in brackets. Press **Enter** to accept the default.

At the end of the script, you are given an opportunity to press **Ctrl-C** to abort the installation.

The following example shows output from the script when an upgrade installation is selected.

```
This script will perform the remote iso installation on this server.

Please Enter Full Path of the ISO Image : /tmp/vqes-3.x.x-xx.xxx_xx.iso

Please enter the installation type : clean/[upgrade] : Enter

Setting up Second Disk for Remote ISO Installation... |  Done

Please validate the installation options and enter "y" at prompt to proceed
NOTE: Server will be REBOOTED if you choose to proceed with the installation

Install Type         : upgrade
Current Version      : Cisco VQE Server Release 3.3.X (Build XX)
Post-Install Version : Cisco VQE Server Release 3.3.X (Build XX)
Install Setup Log    : /var/log/vqe/remote_iso_install.log

Do you want to proceed with the installation? y/[n]: y

Proceeding with upgrade install...

Logfile for Remote Installation Setup will be available after installation
at : /var/log/vqe/remote_iso_install.log


Setting up filesystems for remote iso install... \  Done

Rebooting Server in 5 seconds to start Remote ISO Installation...
Press CTRL-C if you want to abort now.


Broadcast message from root (pts/0) (Sun Mar 29 22:05:38 2009):

The system is going down for reboot NOW!
```

Step 5 When the CDE110 reboots, the ISO clean installation or ISO full upgrade installation begins. Depending on the type of installation you are performing, go to one of the following sections:

- For an ISO clean installation, go to the procedure in the next section, "Remotely Performing an ISO Clean Installation" section on page 41.
- For an ISO full upgrade installation, go to the procedure in the "Remotely Performing an ISO Full Upgrade Installation" section on page 43.

Remotely Performing an ISO Clean Installation

(Continued from Step 5 in the preceding section)

When the ISO clean installation begins, no further user input is required or allowed until the initial configuration of the CDE110 server.

An ISO clean installation does the following:

1. Formats the hard disk.
2. Installs the Linux operating system and all packages.
3. Reboots.
4. Installs the add-on RPM of VQE packages and configuration files.
5. Performs installation post processing.
   a. Installs a new vcdb.conf.sample file in the /etc/opt/vqes/ directory.
   b. Saves the factory default configuration files under /etc to the directory /vqe-etc/etc-pristine.
6. Reboots the server.

Step 1 When the CDE110 completes the final reboot, you are required to log in as root and change the password for root:

```
localhost.localdomain login: root
You are required to change your password immediately (root enforced)

You can now choose the new password or passphrase.

A valid password should be a mix of upper and lower case letters,
digits, and other characters.  You can use an 8 character long
password with characters from at least 3 of these 4 classes, or
a 7 character long password containing characters from all the
classes.  An upper case letter that begins the password and a
digit that ends it do not count towards the number of character
classes used.

A passphrase should be of at least 3 words, 12 to 40 characters
long and contain enough different characters.


Enter new password:
Re-type new password:
```

Step 2 Enter the new password for root.

When you change the root password, the VQE Startup Configuration Utility runs:

```
Welcome to the Cisco VQE startup configuration utility.  This utility is
intended to facilitate the initial setup of the VQE system.  This is not
intended as a complete configuration tool, but merely to assist in the most
common configuration needs, therefore you may still need to customize the VQE
configuration for your specific needs after this utility is complete.
```

The VQE Startup Configuration Utility allows you to specify initial configuration values for the CDE110 server and the VQE software. Using this input, the startup utility generates initial VQE Configuration Database (VCDB) contents and reboots the CDE110 server. When the server comes back up, VQE Configuration Engine applies the changes in VCDB to the configuration files under the /etc directory.

For information on using the startup utility, see Chapter 2, “Getting Started with the VQE Startup Configuration Utility” in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

For information on the VQE Configuration Database and Configuration Engine, see Chapter 6, “Configuring VQE Server and VQE Tools” in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4.*

Terminal Client Software Behavior. When using the Cisco VQE Startup Configuration Utility with a CDE110 serial port connection and terminal client software, different terminal client facilities have varying behavior for the Backspace and Delete Keys:

- With console/konsole on Linux, or putty on Windows, pressing Backspace usually works correctly.
- With HyperTerminal on Windows, pressing Ctrl-Backspace usually works correctly.
- With HyperTerminal on Windows, pressing Backspace (without Ctrl) produces errors.
- With UNIX xterm shell, pressing Backspace produces errors. With the UNIX xterm shell, the Delete key (not Backspace) should be used to remove characters.

Other terminal client facilities may produce different behaviors for the Backspace and Delete keys.

Remotely Performing an ISO Full Upgrade Installation

(Continued from Step 5 in the "Remotely Performing an ISO Clean or ISO Full Upgrade Installation" section on page 40)

The ISO full upgrade installation software checks that VQE software and configuration files exist. If either of these checks fail, the installation is terminated.

If the VQE software and configuration files exist, the following message is displayed before the actual upgrade process starts.

```
You are performing VQE upgrade on hostname. It currently has Cisco VQE Server_or_Tools
Release xxx installed. If this is incorrect, please power off the server within 60
seconds.
```

When you select an ISO full upgrade and the installation begins, no further user input is required or possible.

An ISO full upgrade does the following:

- Checks whether the /etc configuration files have been changed manually (without the use of the VCDB). If manual changes are detected, the ISO full upgrade installer does the following:
  - Logs the names of files that have been manually changed. The log file is /var/log/upgrade.log.
  - Writes **diff** command output showing the manually changed items into the /vqe-etc/etc-diff file.

Note If there are manually edited files in the existing /etc directories, the changes were made by an administrator without the use of VCDB. If you want to continue to have these differences present in your configuration files, you need to carefully edit the relevant configuration files so that they include the items that are different.

- Backs up the /etc configuration files to the vqe-*release-hostname-timestamp*.tar.gz file by creating a tar file archive of the following files: /vqe-etc/etc-diff, /var/log/upgrade.log and all files under /etc. Saves the tar file archive in a temporary set of files.
- Formats the hard drive.
- Installs the Linux operating system and add-on RPMs of VQE packages and configuration files.
- Restores (from the tar file archive) the following /etc configuration files that were used for the earlier VQE Release:
  - On a VQE-S host, the VCDB configuration file (/etc/opt/vqes/vcdb.conf)
  - On a VQE-S host, the channel configuration file (/etc/opt/vqes/vqe_channels.cfg)

  - On a VQE Tools host, the channel configuration file (/etc/opt/vqes/vqec_channels.cfg) and all VCPT configuration files in /etc/opt/vcpt/data
  - On both VQE-S and VQE Tools hosts, all files in the /etc/opt/certs directory (files related to Secure Sockets Layer certificates)

Note Except for the preceding files, all other /etc configuration files from the earlier VQE Release *are not copied* to the directories under /etc.

- Saves the other files shown in Table 10 to the CDE110 hard drive.

Table 11 ISO Full Upgrade: Other Saved Files

File in the Tar File Archive	Directory Location Where Saved
backed up /etc configuration files including vcdb.conf	/vqe-etc/etc-save/
upgrade.log file	/var/log/upgrade.log
diff command output (generated earlier) in the etc-diff file	/vqe-etc/etc-diff file
vqe-*release-hostname-timestamp*.tar.gz (tar file)	/vqe-etc/

- Performs installation post processing
  - Installs a new vcdb.conf.sample file in the /etc/opt/vqes/ directory.
  - Saves the factory default configuration files under /etc to the directory /vqe-etc/etc-pristine.
- Performs a final reboot. As part of the final reboot, runs the VQE Configuration Engine to apply the VCDB values (from earlier VQE release vcdb.conf that was restored) to the new VQE configuration files under /etc (including vcdb.conf).

Step 1 When the CDE110 completes the final reboot, you are required to log in as root and change the password for root:

```
localhost.localdomain login: root
You are required to change your password immediately (root enforced)

You can now choose the new password or passphrase.

A valid password should be a mix of upper and lower case letters,
digits, and other characters.  You can use an 8 character long
password with characters from at least 3 of these 4 classes, or
a 7 character long password containing characters from all the
classes.  An upper case letter that begins the password and a
digit that ends it do not count towards the number of character
classes used.

A passphrase should be of at least 3 words, 12 to 40 characters
long and contain enough different characters.


Enter new password:
Re-type new password:
```

Step 2 Enter the new password for root.

Step 3 Set the password for the vqe user ID.

Note No passwords are copied over to the new set of installed files.

Step 4 Check the /var/log/vqe/vqe.log file to ensure that no significant errors occurred during the ISO full upgrade.

Step 5 If you made changes to earlier VQE Release /etc configuration parameters that are not now under the control of the VQE CMS, the ISO full upgrade does not preserve these changes in new VQE Release. It is possible for you to manually recreate the customized configurations in the new VQE Release /etc configuration files. *However, making manual changes in this manner is not supported or recommended.*

You can examine the /vqe-etc/etc-diff file to determine the /etc file parameters (beyond the control of the VQE CMS) that have been changed.

Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.4

VQE can use three types of channel-related configuration files:

- One or more *VCPT configuration files* in /etc/opt/vcpt/data on the CDE110 that hosts VCPT. These are XML files with user-defined filenames.
- One *VQE-S channel configuration file* in /etc/opt/vqes/vqe_channels.cfg on the CDE110 that hosts VQE-S.
- One *VQE-C channel configuration file* in /etc/opt/vqes/vqec_channels.cfg on the CDE110 that hosts VCPT.

The following sections provide information on migrating channel-related files from VQE Release 2.1 to VQE Release 3.4:

- "Creating VCPT Configuration Files for Release 3.4"
- "Creating VQE-S and VQE-C Channel Configuration Files for Release 3.4"

Note VCPT configuration files and VQE-S and VQE-C channel configuration files from an earlier VQE Release 3.X release can be used without modification with VQE Release 3.4.

VQE-S and VQE-C channel configuration files have some compatibility restrictions. For information on these restrictions, see the "VQE SDP Channel Information Compatibility" section on page 9.

Creating VCPT Configuration Files for Release 3.4

VCPT Release 3.4 is able to open and use valid VCPT 2.1 configuration files. When VCPT Release 3.4 opens a VCPT 2.1 configuration file, the fields for Release 3.4 functionality items related to Rapid Channel Change and Extended RTCP Reports are blank. When you save the Release 2.1 file, VCPT converts the files to the Release 3.4 format, updating the file so that any changed channel values (including those related to Rapid Channel Change and Extended RTCP Reports) are saved.

Creating VQE-S and VQE-C Channel Configuration Files for Release 3.4

Release 2.1 channel configuration files created with VCPT are usable with the Release 3.4 version of VQE-S and VQE-C. When a Release 2.1 channel configuration file is used, new VQE Release 3.4 functionality will not be used because it is not configured.

When migrating from VQE Release 2.1 to VQE Release 3.4, the easiest way to create a valid Release 3.4 channel configuration file for VQE-S and VQE-C is to open a Release 3.4 channel-provisioning server configuration file and send the channel information to the Release 3.4 VQE Servers and VQE Client Configuration Delivery Servers (VCDS). For example with VCPT, do the following:

1. Create a VCPT Release 3.4 configuration file for the channel lineup. (See the previous section "Creating VCPT Configuration Files for Release 3.4").
2. With that VCPT Release 3.4 configuration file open in VCPT, use VCPT to send the channel information to the VQE-S servers and VCDS servers.

When VQE-S and VCDS receive the channel information, VQE-S and VCDS use it to create valid Release 3.4 channel configuration files for VQE-S or VQE-C, respectively.

As an alternative to the above method for creating a Release 3.4 channel configuration file, you can use VCPT to create a new VCPT Release 3.4 configuration file by manually entering your existing VQE Release 2.1 channel, server, and association information into the new VCPT configuration file.

Supporting Software Hardening Guides and VQE

Customers who wish to apply the security recommendations published by SysAdmin, Audit, Network, Security Institute (SANS) or National Security Agency (NSA), as described in the documents referenced in the following sections, should be aware of some issues in using these recommendations that may affect the correct operation of the VQE-S.

The following sections describe the particular areas where customers should exercise care in following the security recommendations in these hardening guides:

Linux Security Checklist

Document: *Linux Security Checklist,* Version 2

Document URL:

http://www.sans.org/score/checklists/linuxchecklist.pdf

For the Linux operating system, the following are SANS requirements where it appears that if the user were to follow the specific recommendations of the guide it would likely break behavior that VQE implements.

- Page 2, item 2: "System Patches". Customers should obtain all system patches through Cisco support, and not directly from RedHat. Cisco will provide timely patches and notifications to customers to address security concerns that may arise within the components of the linux distribution.

- Page 3, item 3: “Disabling Unnecessary Services”. All unnecessary services have been disabled on the shipped product. VQE customers should not normally need to disable any of the services that are enabled by default after the product is installed.
- Page 3, item 5: “Default Password Policy”. The default password settings for the VQE-S are set in /etc/pam.d/system-auth-ac rather than in /etc/login.defs See 'man pam_passwdqc' for more information.
- Page 7, item 13: “System Logging”. The VQE-S includes a modified version of syslogd, which is customized in order to support certain VQE-S functions. VQE customers must therefore not replace syslog with syslog-ng, as suggested in this item.
- Page 11, item 20: “Selinux”. Selinux functionality is disabled on the VQE-S in its factory configuration, and it should not be enabled. Enabling the Selinux functions on the VQE-S may have unexpected consequences.

The 60 Minute Network Security Guide

The NSA’s *The 60 Minute Network Security Guide* has guidance relevant to the Apache web server and the VQE Server software.

Document: *The 60 Minute Network Security Guide*, Version 2.1

Document URL: http://www.nsa.gov/ia/_files/support/I33-011R-2006.pdf

If VQE customers follow instructions in the "Unix Web Servers" section of *The 60 Minute Network Security Guide*, it will not break the VQE web application system.

The following guidance applies to VQE Server software except for the Apache web server, which was discussed in the preceding paragraph.

- Page 10 and 40: “Follow The Concept Of Least Privilege”. This section recommends reducing the privileges of common system utilities such as configuration tools and script interpreters. Some of these utilities may be used by the VQE-S software and their permissions should not be modified.
- Page 35, item 2: “Services and Port”. All unnecessary services have been disabled on the shipped product. VQE customers should not normally need to disable any of the services that are enabled by default after the product is installed.
- Page 36, item 2: “Permissions”. Some VQE-S services require SUID/SGID permissions. The permissions of these files, along with every other VQE-S related file, should not be modified.
- Page 37, “Core Dumps”. The VQE-S stores crash related information in the core dump files. By removing the core file, valuable debugging information is discarded. Settings related to the creation and storage of core dumps should not be modified. Additionally, core dumps should only be removed after consultation with your Cisco Technical Support Contact.
- Page 39, “Logs”. The VQE-S uses a customized version of syslogd in order to log VQE related messages. Using a remote host to log syslog messages from the VQE-S is not supported at this time.
- Page 39, “Chroot Environment”. The VQE-S application requires a specific level of permissions and should not be set to run in a chroot environment.

Notices

The following notices pertain to this software license.

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This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

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The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit. See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

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Original SSLeay License:

This package is an SSL implementation written by Eric Young (eay@cryptsoft.com).

The implementation was written so as to conform with Netscapes SSL.

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GNU General Public License Information

Cisco CDA Visual Quality Experience Application (VQE), Release 3.4, includes Cisco-modified software derived from the following packages that are licensed under version 2 of the GNU General Public License (GPLv2):

- irqbalance
- logrotate
- quagga

- syslogd

Cisco will make the source code of these modified packages available upon request, in accordance with the terms of the GPLv2 license. Interested parties may obtain the source code by making a written request to:

Cisco Legal Department
300 E. Tasman Drive,
San Jose, California 95134

Please include the product name, version number, date of purchase, and specifics regarding the code you are requesting.

Related Documentation

Refer to the following documents for additional information about Cisco VQE and the Cisco CDE110 appliance:

- *Cisco CDA Visual Quality Experience Application User Guide, Release 3.4*
  http://www.cisco.com/en/US/docs/video/cds/cda/vqe/3_4/user/guide/vqe_guide3_4.html
- *Cisco CDA Visual Quality Experience Application User Guide (pdf file), Release 3.4*
  http://www.cisco.com/en/US/docs/video/cds/cda/vqe/3_4/user/guide/vqe_userguide3_4.pdf
- *Cisco CDA Visual Quality Experience Client System Configuration Guide*
  http://www.cisco.com/en/US/docs/video/cds/cda/vqe/vqec/configuration/guide/vqec_cnfg.html
- *Cisco Content Delivery Engine 110 Hardware Installation Guide*
  http://www.cisco.com/en/US/docs/video/cds/cde/cde110/installation/guide/cde110_install.html
- *Regulatory Compliance and Safety Information for the Cisco Content Delivery Engine 110*
  http://www.cisco.com/en/US/docs/video/cds/cde/regulatory/compliance/cde110_rcsi.pdf

The entire Content Delivery Systems documentation suite is available on Cisco.com at:

http://www.cisco.com/en/US/products/ps7191/Products_Sub_Category_Home.html

The VQE Client (VQE-C) documentation is included in the VQE-C software TAR file. If you are a registered Cisco.com user, the file can be downloaded from the following location:

http://www.cisco.com/kobayashi/sw-center/content-delivery/cda.shtml

Table 12 lists the VQE Client documentation that is provided.

Table 12 VQE Client Documentation

VQE-C Document	Description
VQE-C Release Notes	Provides release-specific information for VQE-C.
VQE-C System Integration Reference	Provides information on VQE-C components, architecture, integration, and APIs. Also includes a VQE-C quick-start guide.

Table 12 VQE Client Documentation

VQE-C Document	Description
Cisco CDA Visual Quality Experience Client System Configuration Guide *	Explains certain factors to consider when configuring and deploying VQE-C. Also provides reference information on the VQE-C configuration file parameters.
VQE-C CLI Command Reference	Provides reference information on the VQE-C command-line interface.

* This document is available only on Cisco.com. See the list of URLs preceding this table.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

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

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