



Release Notes for Cisco CDA Visual Quality Experience Application, Release 3.2

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Note

We highly recommend that Cisco VQE, Release 3.2.2, be used rather than Release 3.2.1 because Release 3.2.2 resolves some significant defects that are present in Release 3.2.1.



Note

In these release notes, unless it is explicitly noted that text applies to a specific VQE 3.2.X release, all statements concerning Cisco VQE, Release 3.2, apply to each VQE 3.2 release (3.2.1, 3.2.2, and so forth).

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Introduction

Cisco CDA Visual Quality Experience Application (VQE), Release 3.2, 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 3.2, 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 3.2, includes these major software components:

- VQE Server (VQE-S)—Software that runs on a Linux-based Cisco Content Delivery Engine 110 (CDE110) 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 software and two related software components: VQE Channel Provisioning Tool (VCPT) and VQE Client Channel Configuration Delivery Server (VCDS).

For information on VQE Server, VQE Channel Provisioning Tool, and VQE Client Channel Configuration Delivery Server, see the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.2*.

For information on VQE Client, see the documentation that is provided in the TAR file containing the VQE Client software.

New and Changed Features and Functionality

The following sections provide a summary of new and changed VQE features and functionality relevant for VQE Release 3.0 through 3.2:

- [“VQE Release 3.2 New and Changed Features and Functionality” section on page 2](#)
- [“VQE Release 3.1 New and Changed Features and Functionality” section on page 3](#)
- [“VQE Release 3.0 New and Changed Features and Functionality” section on page 3](#)

VQE Release 3.2 New and Changed Features and Functionality

The new features and functionality in VQE Release 3.2 include the following:

- On a VQE Tools server where VCDS is receiving channel information from a VCPT, it is a requirement to configure all VCPT Ethernet interfaces (that have been assigned IP addresses) as trusted HTTPS clients.
- New VQE Configuration Database (VCDB) parameters:
 - `vqe.vqes.fastfill_enable`
 - `system.iptables.trusted_provisioner`
 - `network.eth5.addr, network.eth6.addr`

- The VCDB parameter `vqe.iptables.trusted_vcpt` has been deprecated. Instead use `system.iptables.trusted_provisioner`.
- Addition of a Platform field to the VQE Status window
- Support for new Cisco CDE110 models (CDE111-2-146TXA-K9 and CDE111-2-146TXD-K9). For hardware information on these models, see the *Cisco Content Delivery Engine 110 Hardware Installation Guide*.

VQE Release 3.1 New and Changed Features and Functionality

If you are upgrading from VQE Release 2.1 to Release 3.2, the new features and changed functionality introduced in VQE Release 3.1 will affect your deployment:

- A dynamic routing feature, which uses the Open Shortest Path First (OSPF) protocol, is supported for VQE-S traffic on the VQE-S server. In previous VQE releases, only static routing was supported. The use of OSPF routing eliminates the limitations of static routing.
- On the VQE-S server, the Quagga routing package provides the OSPF routing capability.
- The VQE Startup Configuration Utility and the Configuration Tool have been enhanced to support OSPF configuration on the VQE-S server.
- VQE-S Application Monitoring Tool (AMT) has been enhanced to provide information on OSPF routing.
- VQE-S performance has been improved and now provides up to 2 Gbps of output bandwidth.
- VQE Release 3.1 software installation mechanisms include a VQE incremental upgrade and an ISO full upgrade that can be used to upgrade from VQE Release 3.0 to Release 3.1.

For information on configuring OSPF and using the VQE Startup Configuration Utility, the VQE Configuration Tool, and VQE-S AMT, see the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.2*.

VQE Release 3.0 New and Changed Features and Functionality

If you are upgrading from VQE Release 2.1 to Release 3.2, the new features and changed functionality introduced in VQE Release 3.0 will affect your deployment:

- Rapid Channel Change (RCC)
- RCC support in VQE Channel Configuration Tool (VCPT) and VQE Application Monitoring Tool (AMT)
- VQE Configuration Management System (CMS) including:
 - VQE Configuration Database (VCDB)
 - VQE Configuration Tool and VQE Configuration Engine
 - VCDB Parser
 - `vqe_cfgtool` command
- Support for Differentiated Services Code Point (DSCP) values on IPTV-related packets

Support for RTP Control Protocol (RTCP) Extended Reports and the Extended Report (XR) packet type. Three XR report block types are supported:

- Loss RLE (run-length encoded)

- Statistics Summary
- Post-Repair Loss RLE

The changed functionality in VQE Release 3.0 includes the following:

- The set of VQE parameters have been simplified and enhanced with the addition of system and network parameters. See the “[Significant Changes to the Set of Parameters Used to Configure VQE](#)” section on page 6.
- The Cisco VQE Startup Configuration Utility for VQE-S and VQE Tools initial configuration has been improved to make use of VQE CMS functionality and includes new configuration capabilities.
- For security purposes, Cisco VQE Release 3.0 and later releases require that the VQE-S host be configured with the IP addresses of the trusted channel-provisioning servers (for example, VCPT). See the “[Configuring Trusted Channel-Provisioning Servers for VQE-S Is Required](#)” section on page 7.
- The major VQE and system processes are implemented as Linux services. The services are managed using the Linux **service** command. The `/etc/inittab` file is no longer used for starting the `process_monitor` process.

System Requirements

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

The Cisco CDE110 comes with the required software pre-installed—either VQE Server software or Tools (VQE Channel Provisioning Tool and VQE Client Channel 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 or 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 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 notes apply *only if* you are upgrading from VQE Release 2.1 to Release 3.2:

- [Significant Changes to Be Aware of When Upgrading from VQE Release 2.1 to Release 3.2, page 5](#)
- [Significant Changes to the Set of Parameters Used to Configure VQE, page 6](#)
- [Configuring Trusted Channel-Provisioning Servers for VQE-S Is Required, page 7](#)

The following important note applies to all VQE Release 3.2 installations:

- [Security Restrictions for Logins and Root Privileges, page 8](#)

Significant Changes to Be Aware of When Upgrading from VQE Release 2.1 to Release 3.2

If you are upgrading from Cisco VQE Release 2.1 to Release 3.2, 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 6, “Configuring VQE Server and VQE Tools,” in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.2*.
- 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 6, “Configuring VQE Server and VQE Tools,” in the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.2*.
 - 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 on page 6](#).
 - 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 3.2*, 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 3.2*.

Table 1 Cisco VQE Release 3.2: 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 Channel 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.
snmpsa	(Optional) SNMP subagent.

Table 1 Cisco VQE Release 3.2: VQE and System Services (continued)

Service	Description
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 3.2 vcdb.conf file.



Note

If you use an ISO full upgrade to upgrade from VQE Release 2.1 to VQE Release 3.2, these internal options are not carried over into your VQE Release 3.2 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 3.2. If you use an ISO full upgrade to upgrade from VQE Release 2.1 to VQE Release 3.2, the vqes.conf options in Table 2 are translated into VCDB parameters and carried over into your VQE Release 3.2 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 3.2.

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
vqm-port	vqe.vqes.vqm_port

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

Old <i>vqes.conf</i> Option	Corresponding VCDB Parameter
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 3.2* and also see the `/etc/opt/vqes/vcdb.conf.sample` file.

Configuring Trusted Channel-Provisioning Servers for VQE-S Is Required

For security purposes, Cisco VQE Release 3.0 and later releases require that the VQE-S host be configured with the IP addresses of the trusted channel-provisioning servers (for example, VCPT).



Note

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

This configuration can be accomplished with the Cisco VQE Startup Configuration Utility or with the VCDB parameter `system.iptables.trusted_provisioner`. For information on VQE-S host configuration, see the *Cisco CDA Visual Quality Experience Application User Guide, Release 3.2*.



Note

If the IP address of the trusted channel-provisioning server is not configured on the VQE-S host, VQE-S will reject attempts by the channel-provisioning server to send channel information to the VQE-S host.

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 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.

Limitations and Restrictions

Cisco CDA Visual Quality Experience Application, Release 3.2, 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 3.2:

- [“VQE SDP Channel Information Compatibility” section on page 8](#)
- [“Changing System Time Causes Unicast Retransmission and RCC Disruptions” section on page 9](#)
- [“Routes May Not Be Carried Forward from VQE Release 2.1 to Release 3.2” section on page 11](#)
- [“Load Balancing May Not Work Correctly When More Than 16 Ethernet Interfaces Are Attached to an Edge Router” section on page 11](#)
- [“For OSPF Routing, Ethernet Interfaces Require a Direct Layer-3 Connection to Router” section on page 12](#)

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, and 3.2 is identical. In this section, these releases are referred to as Release 3.X.

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. (All Release 3.0, 3.1, and 3.2 SDP is identical).

For information on the migrating channel-related files from VQE Release 2.1 to Release 3.2, see the [“Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.2”](#) section on page 39.

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 10
- [“Performing a Date and Time Change with the Linux date Command”](#) section on page 10

**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 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 --systemhwc
```
- 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 --systemh
```

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 3.2

When upgrading from VQE Release 2.1 to Release 3.2 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 3.2.

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 3.2 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 3.2. When the Release 3.2 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 3.2*.

Load Balancing May Not Work Correctly When More Than 16 Ethernet 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 Ethernet 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.

Open and Resolved Caveats

The following sections provide information on open and resolved caveats:

- [“Open Caveats for Release 3.2.2” section on page 12](#)
- [“Resolved Caveats for Release 3.2.2” section on page 14](#)
- [“Open Caveats for Release 3.2.1” section on page 15](#)
- [“Resolved Caveats for Release 3.2.1” section on page 18](#)

Open Caveats for Release 3.2.2

Cisco VQE, Release 3.2.2, contains the following open caveats:

CSCsi67816

Manual startup or restart of tomcat5 service daemon fails.

The symptom is that the VQE-S Application Management Tool (AMT) does not work and simple restarts of the tomcat5 service fail to clear the problem. The tomcat 5 service is required for the VQE-S AMT to operate.

In some conditions, an attempt to restart the tomcat5 service fails and leaves tomcat5 in an inoperable state even though the process itself may appear to be running. The root cause of the problem is not known. However, the issue only seems to occur when the tomcat5 service has been started, or restarted, from within a Linux shell environment that has been reached with the **su** command rather than through a direct login.

Workaround: Perform the following:

1. Login to the VQE-S system directly as root. For example, use the following command:
ssh -l root vqes-system
2. Restart the tomcat5 service with the following command:
service tomcat5 restart

CSCsl75266

In VCPT, a validation error is displayed when all fields have correct data.

When a channel is cloned and all data is updated so that it is unique, VCPT displays a validation error.

Workaround: When the error is displayed, position the cursor in the field that is highlighted as red. The validation error will be removed, and the Create button will be accessible.

CSCs177161

The error provided for a VQE-S misconfiguration is missing details about what is invalid in the configuration file.

When a newline is entered at the end of a string for a variable in the vqes.conf file, the invalid configuration error occurs.

Workaround: Remove the newline and ensure that any modifications to string variables in the vqes.conf file do not have a newline in the string.

CSCs165623

In a channel lineup where two different channels share the same multicast address (but different ports), one or both of the channels fail to receive data on the VQE-S, or only receive packets intermittently.

Multiple channels with the same multicast address but different RTP ports can be sent to VQE-S and will be accepted. This configuration causes errors within the Multicast Load Balancer, which in turn may cause one or both of the channels to fail to be received on the VQE-S.

Workaround: Change the channel configuration so that each channel uses a unique multicast address.

CSCsj70513

An “Invalid module format” error is thrown on ipmi/imb.ko.

The following errors are shown on the CDE110 system console and saved in first_boot_addon.log file during VQE-S installation first boot phase:

```
+ /usr/local/ism/driver/imbload start
insmod: error inserting '/usr/local/ism/driver/imb.ko': -1 Invalid module format
/bin/mknod: missing operand after `0'
Try `/bin/mknod --help' for more information.
```

The error always occurs during the first boot phase of initial VQE-S install. The VQE-S installation patches the Linux kernel during first boot phase, and installs the Intel IPMI driver for the new kernel. The IPMI driver tries to load before the new kernel is loaded and causes the error messages shown on console and in first_boot_addon.log.

Workaround: No work around is required. The system will function correctly since the patched kernel will be used once the installation is complete and system is reloaded.

CSCsj95844

The **ifup** command produces a core dump of the arping process.

The **ifup** command used to activate an Ethernet interface executes a system utility named **arping** to do duplicate address detection on the network. In certain cases, the **arping** utility may stop unexpectedly while running an interface up or interface down operation. A message indicating that the duplicate address detection check has failed is displayed. However, the interface up operation will continue to run and apply configuration changes as expected. A second message to the console will indicate that **arping** has segfaulted. A core dump file of the **arping** process will be found in /var/core.

This failure can occur whenever an interface is started using the **/sbin/ifup** command and the VQE-S application is running.

Workaround: Retry the interface up operation by first issuing the interface down command **/sbin/ifdown ethX**. Then issue the interface up command **/sbin/ifup ethX** again.

Resolved Caveats for Release 3.2.2

The following caveats have been resolved in Cisco VQE, Release 3.2.2.

CSCsx29266

RTCP App packets contain incorrect Conditional Access system PID values.

CSCsx56209

VQE Configuration Tool (**vqe_cfgtool**) removes the eth5 and eth6 interfaces from the ospfd and zebra configuration files.

CSCsx07427

If the VCDS or VQE-S services are restarted during a channel configuration information send operation from VCPT, the VCDS or VQE-S services will not start.

CSCsx07433

When the contents of the VCDS data file(s) have been modified or corrupted, VCDS fails to start with the following errors:

```
localhost vqe_rtsp: <VQE_RTSP-4-RTSP_CONTENT_MODIFIED_WARN> File <file_name> has been
modified.
localhost vqe_rtsp: <VQE_RTSP-3-RTSP_INIT_ERR> VCDS initialization has failed due to
failing to load the contents for RTSP server.
```

CSCsx05176

VCDS fails to restart because the socket address is in use.

If the vcds service is restarted during a period of heavy network traffic, the following error messages are written to the syslog file about the socket being used when the vcds service is restarted.

```
localhost vqe_rtsp: <VQE_RTSP-5-RTSP_NAME_PORT_NOTICE> VCDS is running on server
phantom-iptv and using port 8554.
localhost vqe_rtsp: <VQE_RTSP-3-RTSP_INIT_ERR> VCDS initialization has failed due to
binding the receiving socket. Cause: Address already in use
localhost vqe_rtsp: <VQE_RTSP-3-RTSP_PROCESS_ERR> VCDS has failed to process RTSP requests
due to error occurred in the RTSP process loop.
localhost vqe_rtsp: <{vqe_rtsp}>The reason for the failure is Socket Operation Failed
```

CSCsx15873

On a VQE-S host, some channels are inoperative after an upgrade to Cisco VQE, Release 3.2.1.

When the vcd.conf parameter vqe.vqes.excess_bw_fraction is set to a value greater than 15, some channels are inoperative after an upgrade to Cisco VQE, Release 3.2.1, from an earlier VQE release.

Open Caveats for Release 3.2.1

VQE Release 3.2.1 contains the following open caveats:

CSCsx29266

RTCP App packets contain incorrect Conditional Access system PID values.

In RTCP APP packets, the CAS PID is set incorrectly.

Workaround: Upgrade to Cisco VQE, Release 3.2.2.

CSCsx56209

VQE Configuration Tool (**vqe_cfgtool**) removes the eth5 and eth6 interfaces from the ospfd and zebra configuration files.

On CDE110 models CDE111-2-146TXA-K9 and CDE111-2-146TXD-K9 (which have the Intel PRO/1000 PT Dual Port Server Adapter providing the eth5 and eth6 interfaces), when OSPF routing parameters are configured, **vqe_cfgtool -apply** removes the configuration for the eth5 and eth6 interfaces in the ospfd and zebra configuration files.

Workaround: Upgrade to Cisco VQE, Release 3.2.2.

CSCsx07427

If the VCDS or VQE-S services are restarted during a channel configuration information send operation from VCPT, the VCDS or VQE-S services will not start. The reason the services will not restart is that the channel information is not complete.

Workaround: Depending on the service that has failed, do one of the following:

- For the VQE-S service:
 1. Use VCPT to send valid channel configuration information to the VQE-S server.
 2. Start the vqes service: **service vqes start**
- For the VCDS service:
 1. Remove the files /etc/opt/vqes/vqec_channels.cfg and /etc/opt/vqes/vqec_channels.cfg.md5.
 2. Use VCPT to send valid channel configuration information to the VCDS server.
 3. Start the vcds service: **service vcds start**

CSCsx07433

When the contents of the VCDS data file(s) have been modified or corrupted, VCDS fails to start with the following errors:

```
localhost vqe_rtsp: <VQE_RTSP-4-RTSP_CONTENT_MODIFIED_WARN> File <file_name> has been modified.
```

```
localhost vqe_rtsp: <VQE_RTSP-3-RTSP_INIT_ERR> VCDS initialization has failed due to failing to load the contents for RTSP server.
```

Workaround: Perform the following:

1. On the VQE Tools server, remove the following files if they are present:
 - /etc/opt/vqes/vqec_channels.cfg
 - /etc/opt/vqes/vqec_channels.cfg.md5

2. Start the VCDS service: **service vcds start**
3. Use VCPT to send valid channel configuration information to the VCDS.

CSCsx05176

VCDS fails to restart because the socket address is in use.

If the vcds service is restarted during a period of heavy network traffic, the following error messages are written to the syslog file about the socket being used when the vcds service is restarted:

```
localhost vqe_rtsp: <VQE_RTSP-5-RTSP_NAME_PORT_NOTICE> VCDS is running on server
phantom-iptv and using port 8554.
localhost vqe_rtsp: <VQE_RTSP-3-RTSP_INIT_ERR> VCDS initialization has failed due to
binding the receiving socket. Cause: Address already in use
localhost vqe_rtsp: <VQE_RTSP-3-RTSP_PROCESS_ERR> VCDS has failed to process RTSP requests
due to error occurred in the RTSP process loop.
localhost vqe_rtsp: <{vqe_rtsp}>The reason for the failure is Socket Operation Failed
```

Workaround: Start the vcds service manually, or wait for the system to automatically restart the vcds service.

CSCsx15873

On a VQE-S host, some channels are inoperative after an upgrade to Cisco VQE, Release 3.2.1.

When the vcdb.conf parameter vqe.vqes.excess_bw_fraction is set to a value greater than 15, some channels are inoperative after an upgrade to Cisco VQE, Release 3.2.1 from an earlier VQE release.

Workaround: Set the vcdb.conf parameter vqe.vqes.buff_size_e_min to a value less than the current value of vqe.vqes.excess_bw_fraction.

As an alternative, reduce the number of channels configured on the VQE-S.

CSCsi67816

Manual startup or restart of tomcat5 service daemon fails.

The symptom is that the VQE-S Application Management Tool (AMT) does not work and simple restarts of the tomcat5 service fail to clear the problem. The tomcat 5 service is required for the VQE-S AMT to operate.

In some conditions, an attempt to restart the tomcat5 service fails and leaves tomcat5 in an inoperable state even though the process itself may appear to be running. The root cause of the problem is not known. However, the issue only seems to occur when the tomcat5 service has been started, or restarted, from within a Linux shell environment that has been reached with the **su** command rather than through a direct login.

Workaround: Perform the following:

1. Login to the VQE-S system directly as root. For example, use the following command:
ssh -l root vqes-system
2. Restart the tomcat5 service with the following command:
service tomcat5 restart

CSCsi75266

In VCPT, a validation error is displayed when all fields have correct data.

When a channel is cloned and all data is updated so that it is unique, VCPT displays a validation error.

Workaround: When the error is displayed, position the cursor in the field that is highlighted as red. The validation error will be removed, and the Create button will be accessible.

CSCs177161

The error provided for a VQE-S misconfiguration is missing details about what is invalid in the configuration file.

When a newline is entered at the end of a string for a variable in the vqes.conf file, the invalid configuration error occurs.

Workaround: Remove the newline and ensure that any modifications to string variables in the vqes.conf file do not have a newline in the string.

CSCs165623

In a channel lineup where two different channels share the same multicast address (but different ports), one or both of the channels fail to receive data on the VQE-S, or only receive packets intermittently.

Multiple channels with the same multicast address but different RTP ports can be sent to VQE-S and will be accepted. This configuration causes errors within the Multicast Load Balancer, which in turn may cause one or both of the channels to fail to be received on the VQE-S.

Workaround: Change the channel configuration so that each channel uses a unique multicast address.

CSCsj70513

An “Invalid module format” error is thrown on ipmi/imb.ko.

The following errors are shown on the CDE110 system console and saved in first_boot_addon.log file during VQE-S installation first boot phase:

```
+ /usr/local/ism/driver/imbload start
insmod: error inserting '/usr/local/ism/driver/imb.ko': -1 Invalid module format
/bin/mknod: missing operand after `0'
Try `/bin/mknod --help' for more information.
```

The error always occurs during the first boot phase of initial VQE-S install. The VQE-S installation patches the Linux kernel during first boot phase, and installs the Intel IPMI driver for the new kernel. The IPMI driver tries to load before the new kernel is loaded and causes the error messages shown on console and in first_boot_addon.log.

Workaround: No work around is required. The system will function correctly since the patched kernel will be used once the installation is complete and system is reloaded.

CSCsj95844

The **ifup** command produces a core dump of the arping process.

The **ifup** command used to activate an Ethernet interface executes a system utility named **arping** to do duplicate address detection on the network. In certain cases, the **arping** utility may stop unexpectedly while running an interface up or interface down operation. A message indicating that the duplicate address detection check has failed is displayed. However, the interface up operation will continue to run and apply configuration changes as expected. A second message to the console will indicate that **arping** has segfaulted. A core dump file of the **arping** process will be found in /var/core.

This failure can occur whenever an interface is started using the **/sbin/ifup** command and the VQE-S application is running.

Workaround: Retry the interface up operation by first issuing the interface down command `/sbin/ifdown ethX`. Then issue the interface up command `/sbin/ifup ethX` again.

Resolved Caveats for Release 3.2.1

None of the open caveats listed in the release notes for Cisco VQE, Release 3.1, have been resolved for Release 3.2.1.

Known Problems

These known problems exist in Cisco VQE, Release 3.2.

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 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 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 3.2 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 3.2 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 3.2	“Using an ISO Full Upgrade to Upgrade from VQE Release 2.1 to Release 3.2” section on page 23  Note VQE incremental upgrades are not supported for the Release 2.1 to 3.2 upgrade.
To install a complete set of new VQE Release 3.2 software files on a VQE Release 2.1 system (equivalent of a factory install of VQE Release 3.2)	“Using an ISO Clean Installation to Install VQE Release 3.2 on a VQE Release 2.1 System” section on page 27
To upgrade from VQE Release 3.0 or 3.1 to Release 3.2	“Upgrading VQE Software from Release 3.0 or 3.1 to Release 3.2” section on page 30
To install a complete set of new VQE Release 3.2 software files on a VQE Release 3.0 or 3.1 system (equivalent of a factory install of VQE Release 3.2)	“Using an ISO Clean Installation to Install VQE Release 3.2 on a VQE Release 3.0 or 3.1 System” section on page 36

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 3.2*.

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, 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 3.2 or when installing VQE Release 3.2 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/VCDServer.cfg	VCDS configuration file.
/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 3.2

To upgrade from VQE Release 2.1 to Release 3.2 requires that you perform an ISO full upgrade of the VQE Release 3.2 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 3.2. 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 3.2*.

**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 3.2](#)” section on page 11.

To perform an ISO full upgrade to upgrade from VQE 2.1 to 3.2, 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

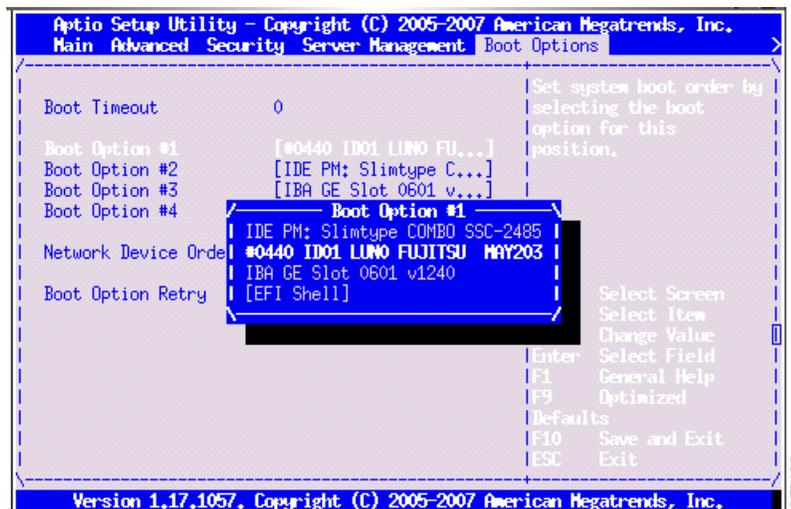


Note

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 3.2: 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 3.2 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 3.2 /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 3.2 /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 3.2 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 3.2. 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 3.2. It is possible for you to manually recreate the customized configurations in the Release 3.2 /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 3.2, see the [“Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.2”](#) section on page 39.

Using an ISO Clean Installation to Install VQE Release 3.2 on a VQE Release 2.1 System

To install a complete new set of VQE Release 3.2 software on a VQE Release 2.1 system, perform an ISO clean installation of the VQE Release 3.2 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 3.2, 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 3.2”](#) section on page 23.

This section explains how to perform an ISO clean installation to install VQE Release 3.2 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 3.2*.

To perform an ISO clean installation to install VQE Release 3.2 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

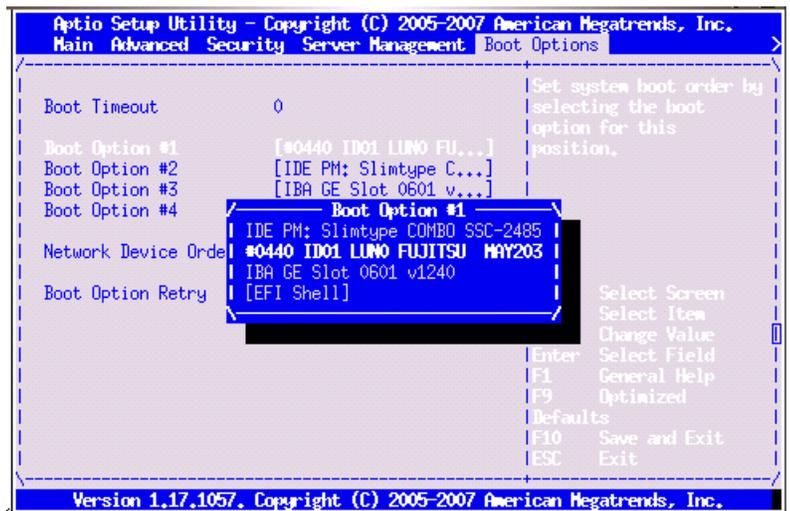


Note

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 3.2*.

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 3.2*.

For information on migrating channel-related files from VQE Release 2.1 to VQE Release 3.2, see the [“Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.2”](#) section on page 39.

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 Release 3.0 or 3.1 to Release 3.2

To upgrade from VQE Release 3.0 or 3.1 to Release 3.2 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 3.2 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 VQE 3.0 or 3.1 configurations in VCDB and in the configuration files under /etc. If a configuration parameter is not configured by the VQE 3.0 or 3.1 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 VQE 3.0 or 3.1 configurations in files under /etc if the parameter will be under the control of the VQE CMS in Release 3.2. Use an ISO full upgrade if your situation *does* require that you install a complete new set of files and that the VQE 3.0 or 3.1 configurations be preserved.

**Note**

If you want to preserve your current VQE 3.0 or 3.1 configurations for VQE Release 3.2, you must use a VQE incremental upgrade or an ISO full upgrade.

When using a VQE incremental upgrade to upgrade VQE Release 3.0 or 3.1 to Release 3.2, read each of the following sections, in the order shown:

1. [“Backing Up VQE Release 3.0 or 3.1 Files Before Upgrading or Installing Software” section on page 31](#)
2. [“Using a VQE Incremental Upgrade to Upgrade from VQE Release 3.0 or 3.1 to Release 3.2” section on page 32.](#)

When using an ISO full upgrade to upgrade from VQE Release 3.0 to Release 3.1, read each of the following sections, in the order shown:

1. [“Backing Up VQE Release 3.0 or 3.1 Files Before Upgrading or Installing Software” section on page 31](#)
2. [“Using an ISO Full Upgrade to Upgrade from VQE Release 3.0 or 3.1 to Release 3.2” section on page 33](#)

Backing Up VQE Release 3.0 or 3.1 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 3.0 or 3.1 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 from VQE Release 3.0 or 3.1 to Release 3.2, the following tables list the VQE Release 3.0 or 3.1 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 VQE Release 3.0 or 3.1 to Release 3.2

This section explains how to use a VQE incremental upgrade to upgrade from VQE Release 3.0 or 3.1 to Release 3.2. A VQE incremental upgrade preserves your VQE 3.0 configurations in VCDB and in the configuration files under /etc. If a configuration parameter is not configured by the VQE 3.0 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 3.0 or 3.1 Files Before Upgrading or Installing Software, page 31](#)

To run the VQE incremental upgrade installer to upgrade VQE Release 3.0 or 3.1 to Release 3.2, 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 3.0 or 3.1 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-3.2.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 3.2.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 VQE Release 3.0 or 3.1 to Release 3.2

This section explains how to use an ISO full upgrade to upgrade from VQE Release 3.0 or 3.1 to Release 3.2 and preserve your VQE Release 3.0 or 3.1 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 3.2 software, see [Downloading VQE Software from Cisco.com, page 21](#)
2. [Backing Up VQE Release 3.0 or 3.1 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 3.2*.

To perform an ISO full upgrade to upgrade from VQE Release 3.0 or 3.1 to 3.2, 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 3.0 or 3.1 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 VQE Release 3.0 or 3.1 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 a Release 3.0 or 3.1 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 (Release 3.0 or 3.1 vcdb.conf that was restored earlier) to the VQE 3.2 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 VQE Release 3.0 or 3.1 `/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 3.2. It is possible for you to manually recreate the customized configurations in the Release 3.2 `/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 VQE Release 3.0 or 3.1 can be used without modification with VQE Release 3.2.

Using an ISO Clean Installation to Install VQE Release 3.2 on a VQE Release 3.0 or 3.1 System

This section explains how to use an ISO clean installation to install VQE Release 3.2 on a VQE Release 3.0 or 3.1 system.



Caution

If you use an ISO clean installation for installing VQE Release 3.2, 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 3.0 or 3.1 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 3.0 or 3.1 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 3.2*.

To perform an ISO clean installation to install VQE Release 3.2 on a VQE Release 3.0 or 3.1 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 “[Backing Up VQE Release 3.0 or 3.1 Files Before Upgrading or Installing Software](#)” section on page 31. With this backup of the configuration files, you will have the VQE 3.0 or 3.1 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 3.2*.

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 3.2*.

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.

Migrating Channel-related Files from VQE Release 2.1 to VQE Release 3.2

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 3.2:

- [“Creating VCPT Configuration Files for Release 3.2”](#)
- [“Creating VQE-S and VQE-C Channel Configuration Files for Release 3.2”](#)



Note

VCPT configuration files and VQE-S and VQE-C channel configuration files from VQE Release 3.0 or 3.1 can be used without modification with VQE Release 3.2.

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 8.

Creating VCPT Configuration Files for Release 3.2

VCPT Release 3.2 is able to open and use valid VCPT 2.1 configuration files. When VCPT Release 3.2 opens a VCPT 2.1 configuration file, the fields for Release 3.2 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 3.2 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 3.2

Release 2.1 channel configuration files created with VCPT are usable with the Release 3.2 version of VQE-S and VQE-C. When a Release 2.1 channel configuration file is used, new VQE Release 3.2 functionality will not be used because it is not configured.

When migrating from VQE Release 2.1 to VQE Release 3.2, the easiest way to create a valid Release 3.2 channel configuration file for VQE-S and VQE-C is to open a Release 3.2 channel-provisioning server configuration file and send the channel information to the Release 3.2 VQE Servers and VQE Client Channel Configuration Delivery Servers (VCDS). For example with VCPT, do the following:

1. Create a VCPT Release 3.2 configuration file for the channel lineup. (See the previous section [“Creating VCPT Configuration Files for Release 3.2”](#)).
2. With that VCPT Release 3.2 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 3.2 channel configuration files for VQE-S or VQE-C, respectively.

As an alternative to the above method for creating a Release 3.2 channel configuration file, you can use VCPT to create a new VCPT Release 3.2 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, page 40](#)
- [The 60 Minute Network Security Guide, page 40](#)

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 implementation was written so as to conform with Netscapes SSL.

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Cisco CDA Visual Quality Experience Application (VQE), Release 3.2, 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 3.2*
http://www.cisco.com/en/US/docs/video/cds/cda/vqe/3_2/user/guide/vqe_userguide3_2.pdf
- *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 11 lists the VQE Client documentation that is provided.

Table 11 VQE Client Documentation

VQE-C Document	Description
<i>VQE-C Release Notes</i>	Provides release-specific information for VQE-C.
<i>VQE-C System Integration Reference</i>	Provides information on VQE-C components, architecture, integration, and APIs. Also includes a VQE-C quick-start guide.
<i>VQE-C System Configuration Guide</i>	Explains certain factors to consider when configuring and deploying VQE-C. Also provides reference information on the VQE-C configuration file parameters.
<i>VQE-C CLI Command Reference</i>	Provides reference information on the VQE-C command-line interface.

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:

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