HP ServiceGuard Quorum Server Version A.02.00 Release Notes, Third Edition

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1 HP ServiceGuard Quorum Server Version A.02.00 Release Notes, Third Edition

Announcements

ServiceGuard cluster products are specialized facilities for protecting mission-critical applications from a wide variety of hardware and software failures. The HP ServiceGuard Quorum Server (QS) provides arbitration services for ServiceGuard clusters when a cluster partition is discovered. Should equal-sized groups of nodes become separated from each other, the Quorum Server allows one group to achieve quorum and form the cluster, while the other group is denied quorum and cannot start a cluster.

The following version of HP ServiceGuard Quorum Server is now being made available:

- Product B8467BA — A.02.00 — software and license

HP ServiceGuard Quorum Server A.02.00 is being released for use with ServiceGuard clusters running on HP-UX 11.0 and 11i (both Integrity Servers and HP 9000 servers) and Linux (Red Hat or SuSE). The Quorum Server is included on the HP ServiceGuard Distributed Components CD (B8466BA). These Release Notes are included on that CD.

The Quorum Server is also available from HP's software web site:

http://software.hp.com

NOTE   B8466BA (ServiceGuard Distributed Components) and B8467BA (ServiceGuard Quorum Server) are not products you can order.

What's in this Version

This version of the Quorum Server runs on both HP-UX and Linux systems, and supports multiple HP-UX and/or Linux clusters.

The Quorum Server can now be configured in a package in a cluster. The Quorum Server cannot reside in the same cluster that uses it, and you should you never configure two clusters that use each other's Quorum Server packages.

The HP-UX Quorum Server runs on an HP 9000 and on Integrity servers. The Linux version runs on Compaq Proliant servers and on HP Net Servers, if the operating system is supported by HP for net servers. Complete details about supported Quorum Server configurations are found in the *HP 9000 Servers Configuration Guide* and in the *MC/ServiceGuard for Linux Cluster Configuration Guide*, available through your HP representative.

Documentation for This Version

These release notes are shipped with the Quorum Server Version A.02.00. They are found on the HP ServiceGuard Distributed Components CD in the following directory:
`Documentation/QuorumServer/A.02.00/ReleaseNotes`

Updated versions may be available on the web at `http://docs.hp.com/hpux/ha` or `http://docs.hp.com/linux`.

Complete information about configuring and using Quorum Server appears in the user's guide *Managing MC/ServiceGuard* for your ServiceGuard release. (Address below.)

Further Information

The most recent versions of user's guides, release notes, and white papers about ServiceGuard and related topics are available on these Hewlett-Packard web pages:

`http://www.hp.com/hpux/ha` (**High Availability**) and `http://www.hp.com/linux` (**Linux-specific**)

Support information, including current information about patches and known problems, is available from the Hewlett-Packard IT Resource Center:

`http://itrc.hp.com (Americas and Asia Pacific)` **or**
`http://europe.itrc.hp.com (Europe)`

Compatibility Information and Installation Requirements

Read this entire document and any other Release Notes or READMEs you may have before you begin an installation.

Compatibility with ServiceGuard Versions

The following table explains which ServiceGuard versions should be used with the supported versions of QS. Note that the IA64 version is functionally equivalent to the PA RISC version and that there is not a A.01.01 version of Quorum Server for PA RISC.

Table 1-1   **Compatibility of Quorum Server with ServiceGuard**

Quorum Server Version	Main Features of the Release	Compatible OS Releases	ServiceGuard Versions
A.02.00 (Current Version)	Common features and interoperability of both HP-UX and Linux	• HP-UX 11.0, 11i versions 1.0, 1.5, v1.6, and 2.0 (Integrity and HP 9000 servers) • Red Hat Linux, version 7.1 or later, with kernel version 2.4.2 or later. • SuSE Linux, SLES (Linux Enterprise Server), version 8, United Linux version 1.0, with kernel version 2.4.19-64GB-S MP.	11.13 and later
A.01.01	First support for HP-UX IA64	HP-UX (IA64)	11.14.01
A.01.00	First support for HP-UX	HP-UX (PA)	11.13 and 11.14
A.01.00 Linux	First release for use as tie-breaker	Linux Red Hat	A.11.13 and A.11.13.01 for Linux

NOTE   The earlier versions of Quorum Server (Versions 1.0 and 1.1) are not compatible with ServiceGuard 11.14.02 or later. For ServiceGuard versions 11.14.02 or later, use this A.02.00 version of the Quorum Server.

System Requirements

The Quorum Server process runs on an HP-UX or Linux server *outside of the cluster for which it is providing quorum services*. The Quorum Server listens to connection requests from the ServiceGuard nodes on port # 1238. The server maintains a special area in memory for each cluster, and when a node obtains the cluster lock, this area is marked so that other nodes will recognize the lock as "taken." It may provide quorum services for more than one cluster. Consult the *HP 9000 Servers Configuration Guide* (available through your HP representative) for additional information about supported platforms.

Memory and Disk Requirements

Memory: 7.0 MB

Disk space: 1 MB

Installing the Quorum Server

The QS software, which has to be running during cluster configuration, must be installed on a system other than the nodes on which your cluster will be running. This could be a single Linux or HP-UX system, or it could be a separate cluster.

If you are updating from an older version of Quorum Server, see instructions below for updating.

Order is important if you are updating Quorum Server and also updating ServiceGuard to 11.14.02 or later. You must update Quorum Server first, *before* updating ServiceGuard. See migration instructions, below.

NOTE   It is recommended that the node on which the QS is running be in the same subnet as the clusters for which it is providing services. This will help prevent any network delays which could affect Quorum Server operation. If you use a different subnet, you may experience network delays which may cause Quorum Server timeouts. To prevent these timeouts, you can use the QS_TIMEOUT_EXTENSION parameter in the cluster ASCII file to increase the Quorum Server timeout interval.

If the network used to connect to the Quorum Server is a cluster heartbeat network, ensure that at least one other network is also a heartbeat network so that both Quorum Server and heartbeat communication are not likely to fail at the same time.

Installing on HP-UX

Use the `swinstall` command to install the QS, product number B8467BA, on the system or systems where it will be running. You install the Quorum Server on a node outside the cluster (or clusters) that it serves. The only installation required on the clusters that *use* the Quorum Server lock is ServiceGuard itself.

If you are updating from an earlier version of Quorum Server, skip to the upgrading instructions below.

You can install in one of two ways:

- To install from the HP ServiceGuard Distributed Components CD:

    1. Mount the CD ROM, using `/SD-CDROM` as the mount directory.

    2. Run the swinstall command.

    3. When the window opens, set the Source Depot Type to Local CDROM.

    4. For the Source Depot Path, fill in the appropriate build:

        `/SD-CDROM/QuorumServer/HP-UX/11.00/quorumserver.depot`

        `/SD-CDROM/QuorumServer/HP-UX/11.11/quorumserver.depot`

        `/SD-CDROM/QuorumServer/HP-UX/11.22/quorumserver.depot`

        `/SD-CDROM/QuorumServer/HP-UX/11.23/eng.Notice.txt`

    5. A window opens with the following highlighted: `B8467BA A.02.00.00 Quorum Server`. Select this entry, then start the install.

- To install from the web, go to `http://software.hp.com`. Click "High Availability," then select "HP ServiceGuard Quorum Server for HP-UX."

1. Download B8467BA version A.02.00, and store it on your disk. (You can remove the depot from your disk after you finish installing.)

2. Run the swinstall command on this depot. Select `B8467BA A.02.00.00 Quorum Server`.

The QS executable file, `qs`, is installed in the `/usr/lbin` directory. When the installation is complete, you need to create an authorization file on the server where the QS will be running to allow specific host systems to obtain quorum services. The *required* pathname for this file is `/etc/cmcluster/qs_authfile`. Enter into the file the names of all cluster nodes that will access quorum services from this Quorum Server. Use one line per node, as in the following example:

```
ftsys9.localdomain.com
ftsys10.localdomain.com
```

To allow access by all nodes, enter a plus sign (+).

Also, create a directory for the QS log file. The recommended pathname is `/var/adm/qs/qs.log`. (You may need to create the /var/adm/qs directory.)

Installing on Linux

To install your software on Red Hat Linux or SuSE Linux, mount the distribution CD, change into the Quorum Server directory, and run the rpm command, as follows:

cd /mnt/cdrom/QuorumServer/Linux

(Red Hat) # **rpm -i qs-A.02.00.00-0.product.redhat.i386.rpm**

(SuSE) # **rpm -i qs-A.02.00.00-0.product.suse.i386.rpm**

The Quorum Server executable file, `qs`, is installed on Red Hat in the `/usr/local/qs/bin` directory, and on SuSE in the `/opt/qs/bin` directory.

When the installation is complete, you need to create an authorization file on the server where the QS will be running to allow specific host systems to obtain quorum services. The *required* pathname for this file is:

Red Hat: `/usr/local/qs/conf/qs_authfile`

SuSE: `/opt/qs/conf/qs_authfile`

Enter into the file the names of all cluster nodes that will access cluster services from this Quorum Server. Use one line per node, as in the following example:

```
ftsys9.localdomain.com
ftsys10.localdomain.com
```

To allow access by all nodes, enter a plus sign (+).

Also, create a directory for the QS log file. The recommended pathname is /var/log/qs/qs.log. (You may need to create the /var/log/qs directory.)

Creating a Package for the Quorum Server

You can run the Quorum Server as a package in another cluster. In fact, a QS package running on one cluster can provide quorum services for any number of other clusters. You can add the Quorum Server to an existing cluster by creating a package with QS as the monitored service. Use the following procedure:

1. Install the Quorum Server software on all nodes, as described above.

2. In the configuration directory ($SGCONF), create a subdirectory for the QS package, then change into it:

   # **mkdir qs-pkg**

   # **cd qs-pkg**

3. Create a package ASCII file by using the cmmakepkg command:

   # **cmmakepkg -P qs-pkg.config**

4. Edit the file using the parameters in the following table.

Table 1-2   **Package ASCII File Parameters for qs-pkg**

Parameter	Value
PACKAGE_NAME	qs-pkg
PACKAGE_TYPE	FAILOVER
FAILOVER_POLICY	CONFIGURED_NODE
FAILBACK_POLICY	MANUAL
NODE_NAME	*

Table 1-2 **Package ASCII File Parameters for qs-pkg (Continued)**

Parameter	Value
AUTO_RUN	YES
LOCAL_LAN_FAILOVER_ALLOWED	YES
NODE_FAIL_FAST_ENABLED	NO
RUN_SCRIPT	$SGCONF/qs-pkg/qs-pkg.ctl
RUN_SCRIPT_TIMEOUT	NO_TIMEOUT
HALT_SCRIPT	$SGCONF/qs-pkg/qs-pkg.ctl
HALT_SCRIPT_TIMEOUT	NO_TIMEOUT
SERVICE_NAME	qs
SERVICE_FAIL_FAST_ENABLED	NO
SERVICE_HALT_TIMEOUT	10
SUBNET	Specify your subnet here.

5. Create a control script in the same directory:

   # **cmmakepkg -s qs-pkg.ctl**

6. Edit the file using the parameters in the following table.

Table 1-3 **Package Control Script Parameters for qs-pkg**

Parameter	Value
IP[0]	IP address to be used when accessing the Quorum Server
SUBNET[0]	Specify your subnet here
SERVICE_NAME[0]	"qs"
SERVICE_CMD[0]	HP-UX: "/usr/lbin/qs >> /var/adm/qs/qs.log 2>&1" Linux: Red Hat: "/usr/local/qs/bin/qs >> /var/log/qs/qs.log 2>&1" SuSE: "/opt/qs/bin/qs >> /var/log/qs/qs.log 2>&1"

Table 1-3   **Package Control Script Parameters for qs-pkg (Continued)**

Parameter	Value
SERVICE_RESTART	"-R"

7. Run the cluster and start the Quorum Server package.

Running the Quorum Server and Specifying a Log File

The Quorum Server must be running during the following cluster operations:

- when the cmquerycl command is issued.

- when the cmapplyconf command is issued.

- when there is a cluster re-formation.

By default, Quorum Server run-time messages go to stdout and stderr. It is suggested that you create a directory /var/adm/qs, then redirect stdout and stderr to a file in this directory, for example, /var/adm/qs/qs.log.

You must have root permission to execute the Quorum Server. On a single system, configure the Quorum Server to start up any time the system on which it is installed restarts or reboots. Do this by creating an entry like the following in the /etc/inittab file:

- For HP-UX:

    qs:345:respawn:/usr/lbin/qs >> /var/adm/qs/qs.log 2>&1

- For Red Hat Linux (all in one line):

qs:345:respawn:/usr/local/qs/bin/qs >> /var/log/qs/qs.log 2>&1

- For SuSE Linux:

qs:345:respawn:/opt/qs/bin/qs >> /var/log/qs/qs.log 2>&1

Start the Quorum Server as follows:

```
# init q
```

When the command is complete, the prompt appears.

Verify the Quorum Server is running by checking the qs.log file.

For HP-UX, enter: # **cat /var/adm/qs/qs.log**

For Linux, enter: # **cat /var/log/qs/qs.log**

The log should contain entries like the following indicating the Quorum Server has started:

```
Oct 04 12:25:06:0:main:Starting Quorum Server
Oct 04 12:25:09:0:main:Server is up and waiting for connections
at port 1238
```

Quorum Server Parameters in Cluster Configuration

You need to configure the Quorum Server in the cluster configuration ASCII file. Use a command like the following to obtain a cluster ASCII file that includes Quorum Server parameters:

cmquerycl -q <*QS_Host*> -n <*Node1*> -n <*Node2*> -C <*ClusterName*>.config

The ASCII file will contain the QS_HOST, QS_POLLING_INTERVAL, and QS_TIMEOUT_EXTENSION parameters in the cluster configuration ASCII file. The default QS timeout is calculated by the system based on ServiceGuard parameters, including the NODE_TIMEOUT and HEARTBEAT_INTERVAL. If you experience Quorum Server timeouts, you can either increase these parameters or use the QS_TIMEOUT_EXTENSION parameter in the cluster configuration ASCII file to increase the Quorum Server timeout value. This will extend the amount of time SG will allow to access the QS node.

NOTE   Increasing these values will impact the failover time accordingly.

Refer to "Installing the Quorum Server" on page 11 for more information about identifying the Quorum Server during cluster configuration.

Updating the Authorization File

The Quorum Server reads the authorization file at startup.

In HP-UX, the authorization file is /etc/cmcluster/qs_authfile.

In Linux Red Hat, it is /usr/local/qs/conf/qs_authfile. In Linux SuSE, it is /opt/qs/conf/qs_authfile.

If you modify this file, you need to run the following command to force a re-read of the file:

*   For HP-UX: **# /usr/lbin/qs -update**
*   For Linux:

    —   Red Hat **# /usr/local/qs/bin/qs -update**

    —   SuSE: **# /opt/qs/bin/qs -update**

De-Installing Quorum Server (HP-UX)

To deinstall your software, run the HP-UX swremove command, as follows:

swremove B8467BA

De-Installing Quorum Server (Linux)

To deinstall your software, run the Linux rpm -e command, as follows:

rpm -e qs

(HP-UX) Updating the Quorum Server from A.01.00 or A.01.01.00

An update from an older version of the Quorum Server to Version A.02.00 can be done while the cluster is running.

The Quorum Server update must be done *before* you update ServiceGuard to Version 11.14.02 or later.

1. Comment out the QS entry in /etc/inittab, and run the following command:

    # /sbin/init q

2. De-install the existing Quorum Server:

```
# swremove B8467BA
```

3. Install Quorum Server A.02.00:

```
# swinstall B8467BA
```

4. Un-comment any Quorum Server entry you made in the /etc/inittab file.

5. Start the Quorum Server:

```
# /sbin/init q
```

(Red Hat Linux) Updating the Quorum Server from A.01.00

1. Remove the Quorum Server entry in /etc/inittab and run the following command:

```
# init q
```

2. De-install the existing Quorum Server:

```
# rpm -e qs-A.01.00
```

This command will remove the file /var/log/qs/qs.log. If this is your log file, you may want to save it before running this command.

3. Install Quorum Server A.02.00.00:

```
# rpm -i qs-A.02.00.00-0.product.redhat.i386.rpm
```

De-installing A.02.00.00 will not remove the file /var/log/qs/qs.log

4. Add an entry like the following to the /etc/inittab file (all in one line):

```
qs:2345:respawn:/usr/local/qs/bin/qs>>/var/log/qs/qs.log
2>&1
```

(Since the Quorum Server is now a real-time process, you no longer need to use the "nice" option.)

5. Re-start the Quorum Server:

```
# init q
```

Replacing a Failed Quorum Server System

Use the following procedure to replace a defective Quorum Server system. If you use this procedure, you do not need to change the configuration of any cluster nodes.

1. Remove the old Quorum Server system from the network.

2. Set up the new system and configure it with the old Quorum Server's IP address and hostname.

3. Install and configure the Quorum Server software on the new system. Be sure to include in the new QS authorization file on all of the nodes that were configured for the old Quorum Server.

   In HP-UX, the authorization file is `/etc/cmcluster/qs_authfile`.

   In Linux Red Hat, the authorization file is `/usr/local/qs/conf/qs_authfile`.

   In Linux SuSE, the authorization file is `/opt/qs/conf/qs_authfile`.

   Refer to the qs(1) man page for details about configuring the QS authorization file.

4. Start the Quorum Server as follows:

   • Edit the `/etc/inittab` file to add the Quorum Server entries, as shown in "Running the Quorum Server and Specifying a Log File" on page 16 above.

   • Use the `init q` command to run the Quorum Server.

   Refer to the qs(1) man page for more details.

5. All nodes in all clusters that were using the old Quorum Server will connect to the new Quorum Server. Use the cmviewcl -v command from any cluster that is using the Quorum Server to verify that the nodes in that cluster have connected to the QS.

6. The Quorum Server log file on the new Quorum Server will show a log message like the following for each cluster that uses the Quorum Server:

   ```
   Request for lock /sg/<ClusterName> succeeded. New lock
   owners: N1, N2
   ```

7. To check that the Quorum Server has been correctly configured and to verify the connectivity of a node to the Quorum Server, you can execute the following command from your cluster nodes as follows:

cmquerycl -q *<QSHostName>* -n *<Node1>* -n *<Node2>* ...

The command will output an error message if the specified nodes cannot communicate with the Quorum Server.

NOTE   While the old Quorum Server is down and the new one is being set up, these things can happen:

- These three commands will not work: `cmquerycl -q`, `cmapplyconf -C`, and `cmcheckconf -C`.

- The `cmruncl`, `cmhaltcl`, `cmrunnode`, and `cmhaltnode` commands may fail if some nodes in the cluster cannot communicate with others.

- If there is a node or network failure that creates a 50-50 membership split, the Quorum Server will not be available as a tie-breaker, and the cluster will fail

WARNING   **Make sure that the old system does not re-join the network with the old IP address.**

Patches, Fixes, and Known Problems in this Version

This section describes patches that are required, defects that have been fixed in version A.02.00 of Quorum Server, and known problems.

Patches

There are no patches required for version A.02.00 at the time of publication. Contact your Hewlett-Packard support representative for up-to-the-moment information. Patches can be created, superseded, or withdrawn at any time without notice. An updated list of patches is available on the Hewlett-Packard IT Resource Center site: `http://itrc.hp.com (Americas and Asia Pacific)` or `http://europe.itrc.hp.com (Europe)`

Fixes

There are no fixes in version A.02.00.

Known Problems and Workarounds

There are no known problems with HP ServiceGuard Quorum Server A.02.00 at the time of publication. Contact your Hewlett-Packard support representative for up-to-the-moment information. Patches can be created, superseded, or withdrawn at any time without notice. An updated list of patches is available on the Hewlett-Packard IT Resource Center site: `http://itrc.hp.com (Americas and Asia Pacific)` or `http://europe.itrc.hp.com (Europe)`

Software Availability in Native Languages

HP ServiceGuard Quorum Server Version A.02.00 does *not* provide Native Language Support. However, separate native language versions of documentation are available as a part of product B8467BA with the following options:

- ABA: English

- ABJ: Japanese

- AB0: Traditional Chinese

- AB1: Korean

- AB2: Simplified Chinese

All versions of these release notes are provided on the Distributed Components CD.