NQE Release Overview
RO–5237 3.3

Document Number 007–3795–001

Contents

Introduction [1]

The Network Queuing Environment (NQE) is a framework for distributing work across a network of heterogeneous systems. NQE consists of the following components:

- Cray Network Queuing System (NQS).

- NQE clients.

- Network Load Balancer (NLB), which uses the system load information received from NQE execution servers to offer NQS an ordered list of servers to run a request; NQS uses the list to distribute the request.

- NQE database and its scheduler. The NQE database provides an alternate mechanism for distributing work. Requests are submitted and stored centrally. The NQE scheduler examines each request and determines when and where the request is run.

- File Transfer Agent (FTA), which provides asynchronous and synchronous file transfer. You can queue your transfers so that they are retried if a network link fails.

NQE does not enforce restrictions on the number of client commands that can be used simultaneously to submit jobs, delete or signal jobs, and obtain status of jobs.

> **Note:** Customers with valid NQE 3.1 FLEXlm or newer licenses do not need new licenses for the NQE 3.3 release.

1.1 NQE 3.3 Release Highlights

The following major features are supported with this NQE release:

- Support was added for the following operating system release levels: UNICOS/mk 2.0.2, IRIX 6.5, UNICOS 10.0, and HP-UX 10.10. (HP-UX 10.10 was initially supported in the NQE 3.2.2 release.)

- Miser integration on Origin systems is supported. NQE will support the submission of jobs that specify Miser resources.

- Array services support was added for UNICOS systems.

- Support was added for checkpointing and restarting the jobs that run on UNICOS/mk systems. (This feature was initially supported in the NQE 3.2.1 release.)

- All `nqeinfo` file variables are now documented in the new `nqeinfo`(5) man page.

- Distributed Computing Environment (DCE) ticket forwarding and inheritance. This feature lets users submit jobs in a DCE environment without providing passwords. The DCE password model is supported on all NQE 3.3 platforms. IRIX systems now support access to DCE resources.

- The NQE database has been enhanced to provide for an increased number of simultaneous connections for clients and execution servers to the NQE database; this feature increases the capability to handle large clusters.

- T3E mixed mode scheduling is supported.

- Political scheduling support for CRAY T3E systems running the UNICOS/mk operating system.

- NQS is now notified when a job fails because applications running on T3E systems are killed when a PE assigned to the application goes down.

- The ability to start and stop one or more specific NQE components at a time was added to the `nqeinit` and `nqestop` scripts.

- Year 2000 support for NQE has been completed.

- Overall performance of the Network Load Balancer (NLB) collector under UNICOS was increased; new information is provided.

- The capabilities of the NQE database scheduler (LWS) have been extended.

- The security enhancements to UNICOS/mk systems are supported with this NQE release.

- Several new command options have been added.

For a complete list of NQE 3.3 features, see Chapter 2, page 7.

> **Note:** If you are a UNICOS customer who did not order the NQE 3.1.*x* or NQE 3.2.*x* release package, please read Section 1.5 for an explanation of changes that were made to the NQE package beginning with the NQE 3.1 release.

1.2 Operating Systems Supported by NQE 3.3

NQE 3.3 provides support for the following operating systems and release levels:

- AIX 4.2

- Digital UNIX 4.0

- HP-UX 10.10

- IRIX 6.2, IRIX 6.3, IRIX 6.4, and IRIX 6.5

- Solaris 2.5

- UNICOS 9.0.*x* and UNICOS 10.0

- UNICOS/mk 2.0.2

1.3 Evaluation Software Package

Cray Research encourages customer evaluation of our NQE software. NQE is available for downloading and evaluating free of charge. However, you must accept a software license agreement and complete a customer information sheet before a temporary license key is electronically mailed to you and the product is downloaded. To obtain a evaluation copy of NQE, you can click on the `LICENSE AGREEMENT FORM` link at the following URL:

`http://www.cray.com/products/software/nqe/download.html`

1.4 Upgrade Software Package

If you have a current NQE license and want to download the latest version of NQE, you can click on the `UPGRADE` link at the following URL:

`http://www.cray.com/products/software/nqe/download.html`

1.5 NQE Package Changes for UNICOS Systems As of NQE 3.1 Release

With the NQE 3.1 release, Cray Research made several changes to NQE and its related products. First, the basic package changed. The new package consolidates support for NQS, FTA, and our advanced UNICOS Network Queuing Extensions (NQX).

Beginning with the NQE 3.1 release package, NQE is available for all platforms simultaneously, including UNICOS and UNICOS/mk operating systems along with the leading UNIX operating systems: IRIX, SunOS, Solaris, HP-UX, Digital UNIX, and AIX. You can now upgrade all of your NQE servers and clients at the same time.

For UNICOS customers, the changed NQE package completely replaces NQX, which is no longer offered separately. Prior to the NQE 3.1 release, NQX was the software product that provided NQE capability for UNICOS systems. Because the changed NQE package consolidates support for all platforms, the name NQX has been dropped, and NQX software licenses have been transferred to NQE/UNICOS licenses. A new FLEXlm license is required for NQE 3.3 only if you did not order the NQE 3.x or NQE 3.2.x release.

Also for UNICOS customers, previously, NQS and FTA were bundled with the UNICOS system and licensed under the UNICOS license agreement. As of the NQE 3.1 release, NQE is the mechanism for providing NQS and FTA for UNICOS systems. A subset of NQE containing NQS and FTA is available to all UNICOS customers for use on Cray PVP systems. NQS and FTA will continue to be licensed as part of UNICOS with no additional cost. Cray PVP systems running UNICOS do not need a FLEXlm license to run only the NQE subset.

For additional licensing information, see Chapter 5.

1.6 Additional Notes for UNICOS and UNICOS/mk Sites

For UNICOS and UNICOS/mk systems, to simplify your NQE ordering process, your NQE 3.3 release package also includes an NQE 3.3 release CD-ROM for IRIX, AIX, Digital UNIX, HP-UX, and Solaris platforms. If your installation is not running NQE on these other platforms, this is an opportunity to try NQE at no cost or risk. You can get a temporary evaluation license for NQE 3.3 to test NQE in your environment.

If your site already has an NQE license for these other platforms, and if you have not already ordered your license.dat file for these platforms, you can order your permanent license by contacting the order desk at the Cray Research Distribution Center through email (orderdsk@cray.com), by telephone (1–800–284–2729, extension 35907), or by fax (+1–612–452–0141). (Customers with valid NQE 3.1 or newer FLEXlm licenses do not need new licenses for the NQE 3.3 release.) If you would like information about evaluation or permanent licensing of NQE for these other platforms, see Section 5.4, page 40, for ways to contact us.

1.7 Content of This Document

This NQE release overview describes the following:

- New features of NQE

- Compatibilities and differences that users should be aware of for this release

- Customer services, including information about NQE documentation, training, customer support, and how to subscribe to the NQE mailing list

- NQE release package, including information about the release package content, licensing, and ordering

All publications referenced in this document are Cray Research publications, unless otherwise noted.

1.8 Reader Comments

If you have comments about the technical accuracy, content, or organization of this document, please tell us. You can contact us in any of the following ways:

- Send us electronic mail from a UNICOS or UNIX system, using the following UUCP address:

  ```
  uunet!cray!publications
  ```

- Send us electronic mail from any system connected to the Internet, using the following Internet address:

  ```
  publications@timbuk.cray.com
  ```

- Call our Software Publications Group in Eagan, Minnesota, through the Customer Service Call Center, using either of the following numbers:

  - 1–800–950–2729 (toll free from the United States and Canada)

  - +1–612–683–5600

- Send a facsimile of your comments to the attention of "Software Publications Group" in Eagan, Minnesota, at fax number +1–612–683–5599.

We value your comments and will respond to them promptly.

New Features [2]

This chapter describes new features of NQE.

> **Note:** Because our customers may be upgrading to NQE 3.3 from various NQE release levels, to give you a complete picture of the NQE features that may be new to you, this chapter describes the following:

- Features that were added in the NQE 3.3 release

- Features that were added in the NQE 3.2 release

- Features that were added in the NQE 3.1 release

- Features that were added in the NQE 3.0.1 release

- Features that were added in the NQE 3.0 release

- Features that were added in the NQE 2.0 release

For compatibilities and differences that users may see when upgrading to the NQE 3.3 release, see Chapter 3, page 21.

2.1 Features Added in the NQE 3.3 Release

> **Note:** Customers with valid NQE 3.1.x or NQE 3.2.x FLEXlm licenses do not need new licenses for the NQE 3.3 release.

The following features were added in the NQE 3.3 release:

- Support was added for the following operating system levels: UNICOS/mk 2.0.2, UNICOS 10.0, IRIX 6.5, and HP-UX 10.10. (HP-UX 10.10 was initially supported in the NQE 3.2.2 release.) For a complete list of operating systems and release levels supported with the NQE 3.3 release, see Section 1.2, page 3.

- Miser integration on Origin systems is supported. NQE will support the submission of jobs that specify Miser resources.

- Distributed Computing Environment (DCE) support was enhanced as follows:

  - Ticket forwarding and inheritance is now supported on selected platforms. This feature lets users submit jobs in a DCE environment without providing passwords. Ticket forwarding is supported on all

NQE platforms except Digital UNIX systems. Ticket inheritance is supported only on UNICOS and IRIX systems.

– IRIX systems now support access to DCE resources for jobs submitted to NQE.

Support for tasks that use a password for DCE authentication is available on all NQE 3.3 platforms.

- The following NQE database enhancements were made:

  – There can be a maximum of 36 simultaneous client and execution server connections to the NQE database.

  – The MAX_SCRIPT_SIZE variable was added to the nqeinfo file, which lets an administrator limit the size of the script file submitted to the NQE database. If the MAX_SCRIPT_SIZE variable is set to 0 or is not set, a script file of unlimited size is allowed. The script file is stored in the NQE database; if the file is bigger than MAX_SCRIPT_SIZE, it can affect the performance of the NQE database.

  – The compactdb(8) command was added to let administrators compress the NQE database, nqedb, on demand.

- The user exit template for T3E mixed mode scheduling is available on /usr/src/lib/libuex/nqs_uex_jobselect.template.4. T3E systems can have PEs with various memory sizes and clock speeds. NQS can identify jobs with special PE needs and apply those needs to scheduling decisions.

- Applications running on a CRAY T3E system are killed when a PE assigned to the application goes down. NQS is now notified when a job is terminated by a SIGPEFAILURE signal (UNICOS/mk systems only). NQS will requeue the job and either restart or rerun the job, as applicable, when the job is selected by the NQS scheduling code to be initiated.

- Overall performance of the Network Load Balancer (NLB) collector under UNICOS was increased; new information is provided.

- The capabilities of the NQE database scheduler (LWS) have been extended.

- The security enhancements to UNICOS/mk systems are supported with this NQE release.

- The csuspend utility has the following two new command line options: -l *loopcount* and -p *period*. These two new options suspend or enable batch processing based on interactive use. The amount of interactive use is

determined by calls to sar. These options give the administrator greater control over how sar is used and, consequently, the frequency of checking on whether to suspend or start NQE.

- The qstart(8) and qstop(8) commands now let an administrator execute programs immediately before and after the NQS daemon starts (NQE_ETC/qstart.pre and NQE_ETC/qstart.pst, where NQE_ETC is defined in the nqeinfo file) and immediately before and after the NQS daemon is shut down (NQE_ETC/qstop.pre and NQE_ETC/qstop.pst, where NQE_ETC is defined in the nqeinfo file). The administrator must create the files, and they must be executable.

- All nqeinfo file variables are now documented on the new nqeinfo(5) man page; this man page is also accessible through the Help facility of the NQE configuration (nqeconfig) utility.

- The ability to start and stop one or more specific NQE components at a time was added to the nqeinit and nqestop scripts.

- Support was added for checkpointing and restarting the jobs that run on UNICOS/mk systems. This feature was initially supported in the NQE 3.2.1 release.

- Array Services support was added for UNICOS systems. Array Services let you manage related processes as a single unit, including processes running across multiple machines. Array Services use array sessions to group these related processes together through use of a unique identifier called an array session handle (ASH). A global ASH is needed when the processes within an array session are not all running on the local node. The NQE request server now asks for a global ASH before initiating the job. NQE logs the global ASH associated with the job in a log message in the user's job log. The global ASH associated with a job is shown in a Global ASH: field in an NQE job log display. A job log display can be requested by supplying the NQE job identifier when using the qstat -j or cqstatl -j command, or the job log can be displayed through the NQE graphical user interface (GUI) by clicking on a specific job within the Status display and then selecting the Actions->Job Log menu. The global ASH for a job is also entered into the NQS log file.

- Political scheduling support for CRAY T3E systems running the UNICOS/mk operating system. This includes obtaining fair-share information by using the multilayered user fair-share scheduling environment (MUSE) and scheduling a job for immediate execution with preferential CPU priority (prime job). (This feature was initially supported in the NQE 3.2.1 release.)

Fair-share scheduling within NQS continues to be enabled by using the `qmgr set sched_factor share` command with a nonzero share weighting value. If the CRAY T3E political scheduling daemon is available, NQS provides a list of user ID/account ID (UID/ACID) pairs to the political scheduling daemon. The MUSE factors returned to NQS are used in the NQS priority formula to calculate NQS job ordering priorities.

An optional `prime` keyword has been added to the `qmgr schedule request now` command. The `prime` keyword sets a prime job status for the request, which gives the request preferential CPU scheduling. If the job is already running, NQS notifies the political scheduling daemon that this job needs prime job status. If the job is queued, NQS initiates the job immediately and then notifies the political scheduling daemon. The `qstat -f` command display will show the job priority as `SCHEDULED NOW PRIME`, and the `psview -rRM` display will show the job as a prime job.

If a job has prime job status, the `qmgr schedule request system` command is used to remove the `NOW` state of the job with NQS and to remove the prime job status. Consequently, the job will no longer receive preferential CPU scheduling.

- Support was added to enforce the `pmppmemlim` and `jmppmemlim` batch UDB limits on CRAY T3E systems. These limits are used to restrict the amount of memory made available to processes and jobs running on CRAY T3E application PEs. The NQS system that resides on a CRAY T3E system will obtain these limits from the system's UDB. (This feature was initially supported in the NQE 3.2.1 release.)

- The `TCL_RCFILE` and `TK_RCFILE` configuration variables have been removed from the `nqeinfo` file. This eliminates the need for the `$HOME` environment variable to be set in system startup and shutdown scripts.

- The `NQE_DEFAULT_COMPLIST` configuration variable in the `nqeinfo` file has replaced the `NQE_TYPE` configuration variable, which defines the list of NQE components to be started or stopped. The NQE 3.3 release is shipped with the `NQE_DEFAULT_COMPLIST` variable set to the following components:

  `NQS, COLLECTOR, NLB`

- NQS now sets the `USER` environment variable to the same value as the `LOGNAME` environment variable before it initiates a job. This was added to accommodate the platforms that use the `USER` environment variable instead of `LOGNAME`.

- NQS now supports per-request limits for CPU usage, memory usage, and the number of processors when running on IRIX platforms. The per-request usage of these resources is displayed by the NQE GUI and the `cqstatl` and `qstat` commands. Requests that exceed the limits will be terminated. The periodic checkpointing of requests based on accumulated CPU time is also supported.

- The CPU and memory scheduling weighting factors are added for application PEs. They can be specified with the `qmgr set sched_factor` command as `mpp_cpu`, `mpp_pe`, and `user_priority` options. The NQS scheduling weighting factors are used with the NQS priority formula to calculate the intraqueue job initiation priority for NQS runnable jobs. This feature also restores the user-specified priority scheduling functionality (specified by the `cqsub -p` and `qsub -p` commands).

- The `-f` option was added to the `qdel(1)` command; this option specifies that no request output will be returned to the user. This option behaves similarly to the `-k` option except that the user's standard error, standard output, and job log files are not returned to the user or stored at the execution node in the NQS failed directory.

- Year 2000 support for NQE has been completed.

- The project ID is added to the end of the current accounting records in the NQS accounting file (`nqsacct`) written by the NQS daemon accounting on IRIX systems.

- NQE documentation was revised for this release; for additional information, see Section 4.1, page 27.

2.2 Features Added in the NQE 3.2 Release

The following features were added in the NQE 3.2 release:

- NQE supports all Origin systems, including the Origin200 and the Origin2000 models.

- Support was added for the following operating system levels: Digital UNIX 4.0, IRIX 6.3, IRIX 6.4, Solaris 2.5, and UNICOS/mk 1.4. Also, IRIX 5.3 is again supported.

Note: On Solaris 2.5 systems using the Distributed Computing Environment (DCE) with NQE 3.2, when a user submits a request using the "per-process working set size limit" option (`-lw` if using the command line interface), the user must specify `7mw` or larger, or the request will not be accepted.

- For IRIX systems, in addition to the existing NQE installation process, the `inst` installation utility is supported to install NQE.

- Performance improvements were made to the NQE GUI to improve response time.

- Support was added for checkpointing of jobs running on a Cray PVP system that invoke CRAY T3D processes.

- Support was added for checkpointing and restarting of jobs running on IRIX 6.4 systems.

- NQE no longer enforces restrictions on the number of client commands that can be used simultaneously to submit jobs, delete or signal jobs, and obtain the status of jobs.

- The `craylmd` vendor license daemon was removed.

    Note: Customers with valid NQE 3.1 FLEXlm licenses do not need new licenses for the NQE 3.2 release.

- A site that is licensed to use full NQE may use all clients on all NQE platforms. However, on systems running only the NQE subset (only the NQS and FTA components), only the standard "q" commands (not the client commands) on the native platform are supported.

- NQS recovers UNICOS PVP jobs that are terminated because of hardware problems. If a job is terminated through receipt of a `SIGRPE` or `SIGUME` signal, NQS requeues the job rather than deleting it if the job is rerunnable or if the job is restartable and has a restart file. For compatibilities and differences information, see Section 3.2.3, page 22.

- The `-Rf` option is supported on the `cqsub`(1) command. The `-Rf` option forces the request to be restarted from a checkpoint image. This option is supported on UNICOS systems only.

- For the NQE database, the system object `trace_level` attribute was added, and the `NQEDB_TRACE_LEVEL` environment variable was removed. System object trace levels are now set either through a `TRACE_LEVEL` event or by setting the system object `trace_level` attribute to the desired value and

posting a TINIT event to that system object. The nqedbmgr post event and the nqedbmgr ask commands may be used to change the trace level.

- The -f option was added to the ftad(8) command so that a system administrator may specify the nqeinfo file to be used for configuration information.

- The variable HOSTNAME_TIMEOUT was added to the nqeinfo file. HOSTNAME_TIMEOUT specifies, in minutes, the interval in which to refresh the values (cached in a linked list) that were returned by calls made to the gethostbyname function. If you specify a value of 0, the list is not refreshed. If you specify a value of -1, no list will be generated, and the gethostbyname function will be called directly. You can use the nqeconfig(8) command to configure HOSTNAME_TIMEOUT.

- The DCE integrated login capability is supported on Digital UNIX systems. A future NQE release will support this capability on the other systems that support DCE.

- Support was added for the multilevel security feature (Cray ML-Safe) on UNICOS/mk systems.

- NQE documentation was revised for this release as follows:

  - Printed documentation:

    The *NQE Release Overview and Installation Bulletin*, publication RO–5237, was separated into the following two documents as of the NQE 3.2 release:

    - *NQE Release Overview*, publication RO–5237 3.2

    - *NQE Installation*, publication SG–5236 3.2

    These two publications are provided in printed form with the NQE release package.

  - Online documentation:

    All NQE 3.2 publications were revised in online form:

    - *Introducing NQE*, publication IN–2153 2/97

    - *NQE User's Guide*, publication SG–2148 3.2

    - *NQE Administration*, publication SG–2150 3.2

    - *NQE Release Overview*, publication RO–5237 3.2

- *NQE Installation*, publication SG–5236 3.2

All NQE 3.2 publications are available from the Cray Research Online Software Publications Library, which is now available publicly at the following URL:

```
http://www.cray.com/swpubs/
```

All NQE 3.2 publications are also provided on the Cray DynaWeb CD-ROM that is included with your NQE 3.2 release package.

PostScript files of all NQE 3.2 publications are available as follows:

- On the Cray DynaWeb CD-ROM that is included with the NQE 3.2 release package

- Through anonymous FTP at the following location:

```
ftp.cray.com/pub/nqe/doc/manuals
```

Man pages were revised; also, the nqsdaemon(8) man page was added to the NQE man page set. Man pages are provided in online form only as part of the NQE release package.

2.3 Features Added in the NQE 3.1 Release

The following features were added in the NQE 3.1 release:

- For UNICOS and UNICOS/mk systems, beginning with the NQE 3.1 release, NQE is released asynchronously from UNICOS and UNICOS/mk; NQS and FTA are packaged in the NQE product for all platforms. Documentation that was previously provided in the *Network Queuing System (NQS) User's Guide*, publication SG–2105, the *UNICOS NQS and NQE Administrator's Guide*, publication SG–2305, and the *FTA User and Administrator Manual*, publication SG–2144, has been incorporated into the NQE documentation set.

  For Cray Research software licensing information, see Section 5.3.2, page 37.

  Note: Cray PVP systems that do not have an NQE license are limited to accessing and using only the NQE subset (NQS and FTA components).

- The vendor license daemon is named craylmd on all supported platforms. This was a change for some platforms.

- A new NQE version maintenance utility was provided; it is invoked by using the nqemaint(8) command.

- A new NQE configuration utility was provided; it is invoked by using the nqeconfig(8) command. This NQE configuration utility may be used to modify NQE configuration values (the nqeinfo file contents) and specify additional variables not included in the default configuration.

  For workstation platforms, nqeconfig(8) is also automatically invoked and used during the NQE installation process.

- The cload(1) command was removed; the functionality is provided through the NQE GUI Load window. The NQE GUI is invoked by using the nqe(1) command.

- For NQE 3.1 running on AIX 4.2 systems, support was added for using the Distributed Computing Environment (DCE) processing capability when submitting a job to NQE. The NQE_AUTHENTICATION variable and the NQE_DCE_BIN variable support this feature.

- For UNICOS systems, DCE 1.1 is the supported DCE release. In addition to the DCE/DFS features added in the NQE 3.0 release, support for DCE/DFS ticket refresh was added for UNICOS systems. The NQE_DCE_REFRESH variable, which defines the refresh interval (in minutes), was added.

- On UNICOS and UNICOS/mk systems that run the full NQE release, the nlbconfig(8) utility is used instead of the fta.conf(5) utility to configure FTA. However, the fta.conf(5) utility is still used on Cray PVP systems that are running UNICOS with only the NQE subset (NQS and FTA components).

- Online documentation was made available using the Cray DynaWeb server. The Cray DynaWeb server lets users access information using a World Wide Web browser, such as Netscape. CrayDoc is no longer installed as part of the NQE release. Documentation for the Cray DynaWeb server includes the *Online Software Publications Installation Guide*, publication SG–6105, and the *Online Software Publications Administrator's Guide*, publication SG–6104.

2.4 Features Added in the NQE 3.0.1 Release

The NQE 3.0.1 release supports Silicon Graphics workstations, POWER CHALLENGE systems, and POWER CHALLENGEarray systems running the IRIX 6.2 operating system. The array sessions and project names features are supported on the POWER CHALLENGEarray product when it is used in a POWERnode configuration.

- Array sessions support was added. NQE logs the global ASH associated with the job in a log message in the user's job log. The global ASH associated with a job is shown in a `Global ASH:` field in an NQE job log display. A job log display can be requested by supplying the NQE job identifier when using the `qstat -j` or `cqstatl -j` command, or the job log can be displayed through the NQE GUI by clicking on a specific job within the `Status` display and then selecting the `Actions->Job Log` menu. The global ASH for a job is also entered into the NQS log file.

- Project names support was added. For NQE jobs that are both submitted and executed on the local host, NQE sets an appropriate project name against which the job will run. If an explicitly requested project name is provided, NQE uses that project name. If an explicitly requested project name is not provided, NQE uses the value of the `NQS_ACCOUNTNAME` environment variable. If the `NQS_ACCOUNTNAME` environment variable is not set, NQE uses the project name in effect at job submission.

  For NQE jobs that execute on a remote host, NQE determines the appropriate project name for the job as follows: If an explicitly requested project name is provided, that project name is used. If an explicitly requested project name is not provided, the user's default project name on the remote host is used.

  A user can explicitly request a project name when submitting an NQE job by using the `qsub -A` or `cqsub -A` command or by setting the NQE GUI `Submit->Configure->General Options->Account/Project name` field. The project name associated with a job is shown in an `Account/Project:` field in NQE full status displays. A full status display can be requested by supplying the NQE job identifier when using the `qstat -f` or `cqstatl -f` command, or it can be requested through the NQE GUI by double clicking on a selected job within the `Status` display.

2.5 Features Added in the NQE 3.0 Release

The NQE 3.0 release supports all platforms except UNICOS and UNICOS/mk systems. The new features in NQE 3.0 are supported on UNICOS and UNICOS/mk systems as of the NQE 3.1 release.

The following features were added in the NQE 3.0 release:

- The NQE GUI was added; it is invoked by the `nqe`(1) command. The NQE GUI lets you do the following:

  - Use the `Submit` window to open and edit a job script; to save changes made to a job script; to submit a request to NQE; to view, segment,

delete, or reset your NQE GUI log; and to set or unset your password. A
launching capability enables you to submit a request periodically at
specific, even repeating, intervals. Also use the Submit window to set
(configure) and to save your job-related options (*job profiles*).

– Use the Status window to verify the status of your requests and FTA
file transfers. Also use the Status window to delete a request, to send a
specified signal to a request, to get a detailed status of a request, and to
set or unset your password. Context-sensitive help is provided with the
status windows; as you glide your mouse cursor over a menu or field
name in a window, a brief description of the menu or field appears at the
bottom of the display.

– Use the Load window to view a continually updated display of the
system load for machines in the execution server complex. You also can
view data about a specific configured host, and you can view the data
that is provided on the main window but have it grouped by host rather
than by data type.

– Use the Config window to set (configure) specific user preferences and
to view how NQE-related variables are currently set.

• The nqeinfo file is supported on NQE clients. NQS_SERVER may be set in
the nqeinfo file, which eliminates the need for client users to set the
NQS_SERVER environment variable if they want to use the default setting.

• The cqstat(1) command was removed and replaced with the new NQE
GUI Status window capability.

• Support was added for the NQE database, which is an mSQL database, and
the NQE scheduler. You can use the NQE GUI to submit requests to the
NQE database and to obtain a status of requests that you have submitted.
You can also use the command line interface for NQE database requests; the
following command line interface changes were made to support this feature:

– The -d option was added to the cqdel, cqstatl, and cqsub user
commands to specify the request's destination (NQE database or NQS);
the default destination is NQS.

– The -u option of the cqdel, cqstatl, and cqsub user commands was
expanded to support specifying the NQE database user name.

– The nqedbmgr(8) command was added for administration of the NQE
database.

- The NQE scheduler is written in Tcl. This feature lets a site create its own scheduler rather than using NLB destination selection and NQS.

- Support was added for cluster-wide rerun of requests submitted to the NQE database.

- Support was added for using the Distributed Computing Environment (DCE) processing capability when submitting a job to NQE. The `NQE_AUTHENTICATION` variable and the `NQE_DCE_BIN` variable were added to support this feature.

- FTA was enhanced to support byte-level recovery. You can also use the NQE GUI `Status` window to verify the status of your FTA file transfers. The following three FTA variables were added: `NQE_FTA_NLBCOLLECT`, which activates logging of transfer information to the NLB; `NQE_FTA_SMARTE_RESTART`, which enables FTA to do byte-level restarts of partially complete transfers; and `NQE_FTA_STAT_INTERVAL`, which determines the time interval (in seconds) between progress updates sent to the NLB.

- Support was added to change job resource limits (`qalter -l` option).

- The `PPermfile_limit` option was added to the `qmgr MODify Request` subcommand so that you can modify the NQS per-process permanent file space limit for a request that was already submitted.

- A new customized collector feature lets you store arbitrary information in the NLB. This information is periodically sent to the NLB, along with the data that is usually stored and updated by NQE. After the customized data is in the NLB, it can be used in policies or displays just as any other data. NQE collects and stores the customized data, but you define, generate, and update it. The `ccollect -C` *filename* option and the `NQE_CUSTOM_FILE_LIST` variable were added to support this new feature. The `ccollect(8)` command was modified to support this feature.

- The `ilb` utility was added in this release. It executes a command on a machine chosen by the NLB. To use the utility, enter the `ilb(1)` command followed by the command you want to execute. The NLB is queried to log you on to the appropriate machine. After the login process is complete, the command is executed, and I/O is connected to your terminal or pipeline.

- For UNICOS systems, the NQS `config.h` file customization variables were moved into the `nqeinfo` file. An appendix in *NQE Administration*, publication SG–2150, lists each new `nqeinfo` file variable name, its

equivalent `config.h` file variable name, the default setting, and a description of the variable's function.

2.6 Features Added in the NQE 2.0 Release

The NQE 2.0 release supports all platforms except UNICOS and UNICOS/mk systems. The new features in NQE 2.0 are supported on UNICOS and UNICOS/mk systems as of the NQE 3.1 release.

The following features were added in the NQE 2.0 release:

- Job dependency was added through the `cevent`(1) command. *Job dependency* provides the ability for job scripts or NQS requests to specify interdependency among events and the ability to display related status information. For example, a script might specify that request `testB` is to be run after request `testA` completes. Data concerning the events is stored in the NLB server database.

- The `csuspend`(8) command was added; it suspends NQE batch activity when interactive use occurs. `csuspend` is invoked on a server.

- The `nqeinfo` file was enhanced to support new configuration parameters that you can optionally add if your configuration requires their use. The parameters configure default paths for NQE requests, validation behavior for client commands, NQS shell invocation, the NQS temporary directory for requests, and the host name for the NQS server.

- System administrators can set up a World Wide Web (WWW) interface to selected NQE functions. Once it is installed, users can access the interface through WWW clients, such as Mosaic or Netscape. Through this interface, users can submit a batch request from a file or enter it interactively, obtain status on requests, delete requests, and signal requests. Users can also view and save output files that are produced.

- The `cqsub -p` option assigns a Unified Resource Manager (URM) priority increment. The `-p` option has an effect only if the request is running on a UNICOS system. On UNICOS systems, this priority is passed to URM during request registration. URM adds this value as an increment value to the priority that it calculates for the request. The priority is an integer between 0 and 63. If you do not use this option, the default is 1.

- Additional data objects in the NLB server database provide more information about NQE servers and requests.

- Four new values for *resources* were added to the `cqsub -l` option, as follows (these values are used on CRAY T90 and Cray MPP systems):

    – The `-l p_mpp_t` value specifies the per-process Cray MPP residency time limit.

    – The `-l mpp_t` value specifies the per-request Cray MPP residency time limit.

    – The `-l shm_l[imit]` value specifies the per-request shared memory size limit.

    – The `-l shm_s[egments]` value specifies the per-request shared memory segment limit.

Compatibilities and Differences [3]

This chapter describes compatibilities and differences users may see when upgrading to this NQE release. Described in this chapter are the following:

- Compatibilities and differences between NQE 3.2 and NQE 3.3

- Additional compatibilities and differences for users when you are upgrading directly to NQE 3.3 from a version of NQE prior to NQE 3.2

For feature descriptions, see Chapter 2, page 7.

3.1 Compatibilities and Differences Between NQE 3.2 and NQE 3.3

The following sections describe compatibilities and differences between the NQE 3.2 and NQE 3.3 releases.

If you are upgrading directly to NQE 3.3 from a version of NQE prior to NQE 3.2, you should also read Section 3.2 for additional compatibilities and differences that your users may experience.

3.1.1 `NQE_DEFAULT_COMPLIST` Configuration Variable Replaced `NQE_TYPE` Configuration Variable

The `NQE_DEFAULT_COMPLIST` configuration variable in the `nqeinfo` file has replaced the `NQE_TYPE` configuration variable, which defines the list of NQE components to be started or stopped. The NQE 3.3 release is shipped with the `NQE_DEFAULT_COMPLIST` variable set to the following components:

```
NQS, COLLECTOR, NLB
```

3.1.2 Per-request Memory Limit on IRIX Systems

In NQE 3.2, the memory that was used by all processes in a request (per-request memory) was computed by adding the virtual address space sizes that were allocated for each process. This value did not accurately reflect the actual amount of memory used by a request, especially when the processes in the request accessed shared memory. In NQE 3.3, the per-request memory computation method is based on the amount of memory that is actually referenced by each process. The memory that is shared by different processes in the request is counted only once. This method results in a total memory value that can be much lower than the memory value that was computed in NQE 3.2.

To adjust to this new memory computation method, users and administrators can modify their per-request limit values on queues and individual jobs.

3.2 Compatibilities and Differences Between NQE 3.3 and a Version Prior to NQE 3.2

The following sections describe additional compatibilities and differences users may see if you are upgrading directly to NQE 3.3 from a version of NQE prior to NQE 3.2.

For a complete list of compatibilities and differences that may affect users, you should also read Section 3.1 for compatibilities and differences that were introduced between the NQE 3.2 and NQE 3.3 releases.

3.2.1 Default Output File Names for NQE Database Jobs

Users may notice a slight difference in the default output file names from NQE database jobs. For jobs going through the NQE database, the number portion of the default name is now the NQE database task ID, not the Network Queuing System (NQS) request ID. For jobs going through NQS only, the number portion of the default name remains the request ID. This change ensures unique default output file names within an NQE database cluster for jobs submitted to the NQE database.

3.2.2 `NQEDB_TRACE_LEVEL` Environment Variable Removed

The `NQEDB_TRACE_LEVEL` environment variable was removed. For a description of the related new feature, see Section 2.2, page 11.

3.2.3 Job Recovery After a `SIGRPE` or `SIGUME` Signal

NQS now recovers jobs that are terminated because of hardware problems. If a job is terminated through receipt of a `SIGRPE` or `SIGUME` signal, NQS requeues the job rather than deleting it if the job is rerunnable or if the job is restartable and has a restart file. The following actions can be expected when a job is terminated by either a `SIGRPE` or `SIGUME` signal:

- For a job that has default rerun and restart attributes, the job is requeued and rerun.

- For a job that has default rerun and restart attributes and has a restart file associated with it, the job is requeued and restarted from the restart file.

- For a job that has the no-rerun attribute and has no restart file, the job is deleted.

- For a job that has the no-rerun attribute but does have a restart file, the job is requeued and restarted from the restart file.

- For a job that has the no-restart attribute and uses the default rerun attribute, the job is requeued and rerun.

- For a job that has the no-rerun and no-restart attributes, the job is deleted.

3.2.4 `cload` and `cqstat` Commands Replaced with NQE GUI Interface

The `cload`(1) command was removed as of the NQE 3.1 release; the functionality is provided through the NQE GUI `Load` window.

The `cqstat`(1) command was removed as of the NQE 3.0 release; the functionality is provided through the NQE GUI `Status` window.

The NQE GUI is invoked by using the `nqe`(1) command.

3.2.5 Command Paths Changed for UNICOS Systems

Previous releases of NQS and the Network Queuing EXtensions (NQX) on Cray Research systems were bundled with the UNICOS operating system and installed in the `/etc`, `/usr/bin`, `/usr/lib`, `/usr/include`, and `/usr/man` directories. Beginning with the NQE 3.1 release, NQE on UNICOS and UNICOS/mk platforms is released as an asynchronous product; NQE is installed in the /*nqebase* directory (that is, `/opt/craysoft/nqe` for UNICOS and UNICOS/mk operating systems). For a description of the NQE directory structure, see *NQE Installation*, publication SG–5236.

This path change affects both administrators and end users of NQS, FTA, and NQE (NQX). Users must be notified of the new command location so that their user environment can be changed to access the commands from `/opt/craysoft/nqe/bin`. For example, this command path change will affect user `cron` jobs, job submission scripts, and any user programs that reference NQS, FTA, or NQE (NQX) commands.

The system files that set up user environments can be modified to add `/opt/craysoft/nqe/bin` to the default path. The `modules` package can be used to set up the appropriate path to the NQE commands. For more information about the `modules` package, see *NQE Installation*, publication SG–5236.

3.2.6 Functionality Limited for Cray PVP Systems Running Only NQE Subset

On Cray PVP systems running only the NQE subset (NQS and FTA components), users have limited NQE functionality. New functionality of the NQE product, such as DCE support and the NQE database and its scheduler, is not accessible on Cray PVP systems running only the NQE subset.

3.2.7 UNICOS and UNICOS/mk Systems Using the `modules` Interface

For UNICOS and UNICOS/mk systems using the `modules` interface, frequent users of NQE should modify their `.cshrc` or `.profile` file in order to use NQE. Users who occasionally use NQE can use a command entered at the command line. Instructions are included in *NQE Installation*, publication SG–5236, for system administrators to pass along to their users.

3.2.8 Differences for CRAY T3E Systems

Users will notice the following differences when they use NQE on CRAY T3E systems.

3.2.8.1 Job Submission

The qsub(1) options listed here have the following meanings for CRAY T3E systems:

- The `-lt` and `-lT` options specify the maximum CPU time on command PEs for any process of the request (`-lt`) and the cumulative CPU time of all processes of a request on command PEs (`-lT`).

- The `-l p_mpp_t` and `-l mpp_t` options specify the maximum CPU time on application PEs for any process of the request (`p_mpp_t`) and the cumulative CPU time of all processes of a request on application PEs (`mpp_t`).

- The `-l mpp_p` option specifies the maximum number of PEs required for the request (the default is 1 command PE).

3.2.8.2 Status Displays

On CRAY T3E systems, the qstat(1) status displays show both the CPU time limits and usage for command PEs and application PEs that are associated with a request, as follows:

- The `qstat -m` display shows queue information for CPU time limits of application PEs.

- The `qstat -m` *req-id* display shows the CPU limits and usage for application PEs associated with the specified request, both per-process and per-request.

- The `qstat -a` display shows the CPU time remaining for the command PEs associated with a request.

- The `qstat -f` *req-id* display shows CPU information for the command PEs on the `CPU Time Limit` line and shows CPU information for the application PEs on the `MPP Time Limit` line.

3.2.8.3 Resource Limits

NQS continues to set resource limits before initiating jobs. On CRAY T3E systems and Cray PVP systems, it is the operating system that enforces the resource limits and accumulates resource usage. Because UNICOS/mk resource limit enforcement and resource usage accumulation is not available for all resource types, the `qstat` displays show zero values for some resources.

3.2.8.4 NQE GUI `Load` Window for Memory Demand

Currently, the `sar(1)` command on CRAY T3E systems does not provide system performance data for memory or swapping usage statistics. As a result, the NQE GUI `Load` window for memory demand displays a fixed value of 96% when used for CRAY T3E systems.

3.2.9 Documentation

The following documentation changes have occurred.

3.2.9.1 Online Documentation

All NQE 3.3 publications are available from the Cray Research Online Software Publications Library, which is available publicly at the following URL:

`http://www.cray.com/swpubs/`

The NQE online publications are provided through the Cray DynaWeb server. The Cray DynaWeb server allows users to access information using a World Wide Web browser, such as Netscape.

All NQE 3.3 publications are also provided on the Cray DynaWeb CD-ROM that is included with your NQE 3.3 release package.

PostScript files of NQE 3.3 publications are also provided through the Cray Research Online Software Publications Library, on the Cray DynaWeb CD-ROM, and through anonymous FTP.

Man pages are still accessed by using the `man` command.

CrayDoc is no longer installed as part of the NQE release.

For more information about NQE documentation, see Section 4.1, page 27.

3.2.9.2 *NQE User's Guide* Removed from NQE GUI `help`

Beginning with the NQE 3.1 release, the *NQE User's Guide*, publication SG–2148, is available online through the Cray DynaWeb server and is also available as a PostScript file on the Cray DynaWeb CD-ROM that is included with your NQE release package. A PostScript file of this guide is also available through anonymous `ftp`. This guide is no longer available through the NQE GUI `help` facility. For more information about NQE documentation, see Section 4.1, page 27.

3.2.9.3 UNICOS Documentation Incorporated into NQE Documentation Set

Beginning with the NQE 3.1 release, NQE is released asynchronously from the UNICOS operating system, and NQS and FTA are packaged in the NQE product for all platforms. As a result, documentation that was previously provided in the *Network Queuing System (NQS) User's Guide*, publication SG–2105, the *UNICOS NQS and NQE Administrator's Guide*, publication SG–2305, and the *FTA User and Administrator Manual*, publication SG–2144, has been incorporated into the NQE documentation set. For more information about NQE documentation, see Section 4.1, page 27.

Customer Services [4]

This chapter describes the following customer services that support the NQE 3.3 release:

- NQE documentation

- Documentation provided by other vendors

- NQE training support

- Software support

- NQE customer service support

- Software problem reporting and resolution process

4.1 NQE Documentation

The NQE publications are as follows:

- *NQE Release Overview*, publication RO–5237 3.3

- *Introducing NQE*, publication IN–2153 3.3

- *NQE User's Guide*, publication SG–2148 3.3

- *NQE Administration*, publication SG–2150 3.3

- *NQE Installation*, publication SG–5236 3.3

NQE documentation was revised for this release as described in the following sections.

> **Note:** Because NQE is now released asynchronously from the UNICOS release, NQS and FTA are packaged in the NQE product for all platforms. As a result, documentation that was previously provided in the *Network Queuing System (NQS) User's Guide*, publication SG–2105, the *UNICOS NQS and NQE Administrator's Guide*, publication SG–2305, and the *FTA User and Administrator Manual*, publication SG–2144, was incorporated into the NQE documentation set as of the NQE 3.1 release.

4.1.1 Online Documentation

The following NQE publications are provided in online form.

4.1.1.1 Cray DynaWeb CD-ROM Included with Your NQE Release Package

All NQE 3.3 publications are provided on the Cray DynaWeb CD-ROM that is included with your NQE 3.3 release package.

PostScript files of all NQE 3.3 publications are provided on the Cray DynaWeb CD-ROM that is included with the NQE 3.3 release package.

The Cray DynaWeb server lets you access information using a World Wide Web browser, such as Netscape.

Note: As of the NQE 3.1 release, CrayDoc is no longer installed as part of the NQE release.

4.1.1.2 Man Pages Included with Your NQE Release Package

Man pages were revised for this release. Man pages are provided in online form only and are included as part of the NQE release package.

4.1.1.3 Cray Research Online Software Publications Library

All NQE 3.3 publications are available from the Cray Research Online Software Publications Library, which is available publicly at the following URL:

```
http://www.cray.com/swpubs/
```

PostScript files of all NQE 3.3 publications are available through the Cray Research Online Software Publications Library; you must select the `Titles` link and then the `Summary` link of the publication.

The NQE 3.3 publications are also accessible through the Silicon Graphics Technical Publications Library World Wide Web page at the following URL:

```
http://techpubs.sgi.com/library/
```

4.1.1.4 Anonymous FTP

PostScript files of all NQE 3.3 publications are available through anonymous FTP at the following location:

```
ftp.cray.com/pub/nqe/doc/manuals
```

4.1.1.5 Craypark Domain

An ASCII file and a PostScript file of this *NQE Release Overview*, publication RO–5237 3.3, are available through the Craypark domain on the `craypark` system (in the `/home/craypark/release_docs` directory). For CRInform subscribers, the same ASCII file and PostScript file may be accessed through CRInform.

4.1.2 Printed Documentation

The following publications are available in printed form; for ordering information, see Section 4.1.3, page 29:

- *NQE Release Overview*, publication RO–5237 3.3 (one copy is included with the NQE 3.3 release package)

- *NQE Installation*, publication SG–5236 3.3 (one copy is included with the NQE 3.3 release package)

- *Introducing NQE*, publication IN–2153 3.3

- *NQE User's Guide*, publication SG–2148 3.3

- *NQE Administration*, publication SG–2150 3.3

4.1.3 Ordering Printed NQE Manuals

The NQE manuals were reprinted for this NQE release and may be purchased from Cray Research. To purchase printed NQE publications, use one of the following methods:

Note: These publications are also provided online as PostScript files on the CD-ROM that is distributed with the NQE 3.3 release package and on the Cray DynaWeb server. For information about the online documentation provided with this release, see Section 4.1, page 27.

- Customers can contact the order desk at the Cray Research Distribution Center by telephone (+1–612–683–5907 or 1–800–284–2729 extension 35907),

through electronic mail (`orderdsk@cray.com`), or by fax (+1–612–452–0141).

- Customers who have a Cray Research system and who subscribe to the CRInform program can order additional publications electronically by using the `Publications` option.

4.2 Documentation Provided by Other Vendors

This section lists other documentation that may be of interest to you in order to use and/or administer NQE. The following documentation is recommended but is not provided as part of the NQE product.

4.2.1 FLEXlm Documentation

For information about the FLEXlm license manager, access the WWW page for GLOBEtrotter Software, Inc., at the following URL:

`http://www.globetrotter.com`

Also, you may order the *Flexible License Manager End User Manual* from GLOBEtrotter Software, Inc., or from the Cray Research Distribution Center.

4.2.2 Tcl and Tk Documentation

Tcl is the language used for modifying or writing schedulers in NQE. The following documentation is recommended:

Tcl and the Tk Toolkit
John K. Ousterhout
Addison-Wesley Publishing Company
ISBN 0-201-63337-X

Practical Programming in Tcl and Tk
Brent B. Welsh
Prentice Hall Publishing Company
ISBN 0-13-182007-9

Additional information about Tcl and Tk is available through the WWW and anonymous FTP. Tcl and Tk are very popular, and there is a great deal of available material. The following is a partial list of WWW references for Tcl and Tk:

- *Neosoft TCL General Reference* at the following URL:

  ```
  http://www.neosoft.com/tcl
  ```

- *A Brief Introduction to TCL/TK* at the following URL:

  ```
  http://http2.brunel.ac.uk:8080/~csstddm/TCL2/TCL2.html
  ```

- *SCO's TCL WWW Information* at the following URL:

  ```
  http://www.sco.com/Technology/tcl/Tcl.html
  ```

4.3 NQE Training Support

The *Software Training Catalog for Customers*, publication TR–CUSTCAT, describes NQE training support. The catalog lists training office locations, describes the available training services and facilities, and provides curriculum charts for employees and customers. It also contains the current class schedule, and a complete description and outline for each course.

This catalog resides on the public Silicon Graphics WWW site. You may access it at the following URL:

```
http://www.sgi.com/Products/Edu/schedules/NAFO/nafo.html
```

4.4 Software Support

The Cray NQE software for all supported platforms is fully eligible for software support from Silicon Graphics and Cray Research. There are several support packages available to meet your requirements. These support packages are described in more detail in this section.

The following programs provide both hardware and software support:

- FullCare service delivers next-day, on-site assistance, telephone support from our technical experts, and remote hardware and software diagnosis to ensure that your system is fully operational.

- FullExpress service delivers the same coverage as FullCare service, but with an accelerated on-site response time of 4 hours.

- FullProduction service combines 7x24 coverage with live call-center response to your critical calls. Your assigned account manager proactively works with you to prevent failures and ensure rapid recovery, conducting quarterly on-site reviews, performing proactive patch management, and assisting you with operating system upgrade planning.

- CoOpCare service is the ideal service package for desktop systems. It includes telephone support, remote diagnosis, and parts exchange. After completing our required service training, you will obtain the tools and experience necessary to quickly isolate and fix problems, and perform your own parts replacement.

In addition, the following support package is designed for software support only:

- O/SCare keeps you current with updates to your operating system software and provides technical assistance. Support for your software utilities and applications is also covered under O/SCare.

All of these packages are also available in Extended Warranty versions. These extended warranty packages build on product warranties to provide from 1 to 5 years of service associated with the package.

Additional details about the full suite of Silicon Service support offerings can be found in the support section at the following URL:

```
http://www.sgi.com/Support/
```

Software support for UNICOS customers is determined by the NQE components that have been installed. A site is eligible for support if it installs the NQE subset (comprised of NQS and the File Transfer Agent (FTA)) or the full NQE release. UNICOS/mk customers are only eligible for full NQE software support offerings.

Customers who install NQE 3.3 on systems other than UNICOS or UNICOS/mk must complete and return the *NQE License Request and Warranty Registration* form available in *NQE Installation*, publication SG–5236.

4.5 NQE Customer Service Support

When you purchase the NQE product, it includes a 30-day, money-back guarantee, service, and support. If you need service or support with this product, please contact your local call center or local service representative.

4.6 Software Problem Reporting and Resolution Process

If you experience problems with NQE, contact your local call center or local service representative and they will work with you to resolve the problem.

If you have access to the Cray Inform (CRInform) or the Supportfolio support tools, you may also use these programs to report a problem.

A list of known software problems for NQE 3.3 is available through anonymous FTP at the following location:

```
ftp://ftp.cray.com/pub/nqe/software/current/KNOWN_PROBLEMS
```

4.7 NQE Information Mailing List

There is a mailing list for NQE that is used to distribute information about NQE releases, updates, plans, and the product. It is not used as a forum for list members to share information or post messages, so you will not be overwhelmed with email. If you subscribe to the list, you will receive periodic and timely information about NQE.

To subscribe to the NQE mailing list, send email to the following address:

```
external-majordomo@postofc.corp.sgi.com
```

Include the following line in the body of the email message:

```
subscribe nqe
```

After you subscribe, you will receive a welcome message and instructions about how to unsubscribe from the list.

This chapter includes the following:

- List of the supported operating systems and release levels

- Contents of the NQE 3.3 release package

- Information about the NQE licensing agreement

- Information about ordering NQE and adding servers

5.1 Supported Operating Systems and Release Levels

NQE 3.3 provides support for the following operating systems and release levels; DCE password model support is also indicated:

Table 1. NQE 3.3 Supported Operating Systems

Operating system supported	NQE support of DCE password model on this operating system
AIX 4.2	Yes
Digital UNIX 4.0	Yes
HP-UX 10.10	Yes
IRIX 6.2, 6.3, 6.4, and 6.5	Yes
Solaris 2.5	Yes
UNICOS 9.0.x	Yes
UNICOS 10.0	Yes
UNICOS/mk 2.0.2	Yes

5.2 Release Package Contents

The NQE 3.3 release package includes the following items:

- The installable binary package for NQE 3.3. Either a CD-ROM or a tape is provided for UNICOS and UNICOS/mk systems; all other systems receive a CD-ROM.

  The NQE binary files are available through anonymous `ftp` at the following location:

  `ftp.cray.com/pub/nqe/software`

  If you have an NQE license, you can download the latest version of NQE from the NQE World Wide Web page at the following URL:

  `http://www.cray.com/products/software/nqe/download.html`

- One printed copy of the following NQE publications:

  - *NQE Release Overview*, publication RO–5237 3.3 (this publication)

  - *NQE Installation*, publication SG–5236 3.3

- The Cray DynaWeb online documentation package, which includes the following:

  - Cray DynaWeb CD-ROM for NQE 3.3 (contains a complete set of the NQE 3.3 publications); for additional information about NQE 3.3 documentation, see Section 4.1, page 27.

  - Cray DynaWeb Errata for NQE 3.3

  - *Online Software Publications Installation Guide*, publication SG–6105

  - *Online Software Publications Administrator's Guide*, publication SG–6104

- UNICOS and UNICOS/mk systems also receive `module`(1) software to access NQE and other Cray Research products.

- For UNICOS and UNICOS/mk systems, to simplify your NQE ordering process, your NQE 3.3 release package also includes an NQE 3.3 release CD-ROM for IRIX, AIX, Digital UNIX, HP-UX, and Solaris platforms.

> **Note:** If your installation is not running NQE on these other platforms,
> this is an opportunity to try NQE at no cost or risk. You can get a
> temporary evaluation license for NQE 3.3 to test out NQE in your
> environment. If your site already has an NQE license for these other
> platforms, and if you have not already ordered your `license.dat` file
> for these platforms, you can order your permanent license for these
> platforms by contacting the order desk at the Cray Research Distribution
> Center through email (`orderdsk@cray.com`), by telephone
> (1-800–284-2729, extension 35907), or by fax (+1–612–452–0141).
> (Customers with valid NQE 3.1.*x* or 3.2.*x* FLEXlm licenses do not need
> new licenses for the NQE 3.3 release.) If you would like information
> about evaluation or permanent licensing of NQE for these other
> platforms, see Section 5.4, page 40, for ways to contact us.

5.3 NQE Licensing Agreement Information

The licensing agreement you have is dependent upon the platform that you will
use to run your NQE 3.3 release package. The following sections describe the
licensing agreement information for the NQE 3.3 supported platforms.

5.3.1 Licensing Agreement Information for IRIX, AIX, Digital UNIX, HP-UX, and Solaris Systems

For IRIX, AIX, Digital UNIX, HP-UX, and Solaris systems, the NQE 3.3 release
package is licensed under a shrink-wrap license. The terms and conditions to
which you agree are included with your release package.

5.3.2 Licensing Agreement Information for UNICOS and UNICOS/mk Systems

NQE 3.3 is licensed under a software contract from Cray Research to its
customers with UNICOS and UNICOS/mk systems. NQE 3.3 is licensed for
binary code, for which licensing and monthly service fees are charged. Please
note the following:

- Customers who run UNICOS on Cray PVP systems and who use only the
  NQE subset (NQS and FTA components) continue to have access to the
  NQE subset. No additional licenses or fees are necessary. However, all new
  functionality of the NQE product, such as DCE support and the NQE
  database and its scheduler, is inaccessible unless you obtain a Cray Research
  NQE software licensing agreement.

- Customers who run UNICOS with a Cray Network Queuing EXtensions
  (NQX) license will now receive the Cray NQE release package. No

additional contracting, licenses, or fees are required to obtain the NQE 3.3 release package. You will have full access to the NQE 3.3 product and all of its functionality.

> **Note:** Customers who run UNICOS and do not have an NQX license, but want to have full access to the NQE 3.3 product and all of its functionality, must have a Cray Research NQE software licensing agreement in order to receive the NQE 3.3 release package.

- Customers with CRAY T3E systems must have a Cray Research NQE software licensing agreement in order to receive the NQE 3.3 release package.

5.3.2.1 Licensing Contacts for Customers in the U.S. and Canada with UNICOS and UNICOS/mk Systems

For more information on the licensing of NQE 3.3, customers in the United States and Canada should see their account representative or contract administrator, or contact Barbara Easterly or Sarah White as follows:

Barbara Easterly
Cray Research
655F Lone Oak Drive
Eagan, MN 55121 USA
Telephone: +1-612-683-5662
Fax: +1-612-683-7145
Email: easterly@cray.com

Sarah White
Cray Research
655F Lone Oak Drive
Eagan, MN 55121 USA
Telephone: +1-612-683-5604
Fax: +1-612-683-7145
Email: whitess@cray.com

5.3.2.2 Licensing Contacts for Customers outside the U.S. and Canada with UNICOS and UNICOS/mk Systems

Customers outside the United States and Canada can obtain further licensing information by contacting their account representative or the individuals listed in this section.

Customers in European sales regions can direct licensing inquiries to the following Regional Contract Administrators:

Europe North:

Nick Jacobs
Telephone: +44–118–9257041
Fax: +44–118–257116
Email: niknik@cray.com or niknik@reading.sgi.com

Europe Central:

Thomas Wegener
Telephone: +49–89–14903
Fax: +49–89–1415959
Email: thomasw@munich.sgi.com

Europe South:

Cecile Goachet
Telephone: +33–01–34-88–82–51
Fax: +33–01–34–65–96–19
Email: cecile@cray.com

Other European locations:

Simon Locke
Telephone: +44–118–9257049
Fax: +44–118–9257946

Customers in Japan can direct licensing inquiries to Yuko Hizume or Shinji Uekusa at the following telephone and fax numbers:

Yuko Hizume
Telephone: +81–3–5488–1819
Fax: +81–3–5420–7020
Email: hizume@nsg.sgi.com

Shinji Uekusa
Telephone: +81–3–5488–5692
Fax: +81–3–5420–1867
Email: uekus@nsg.sgi.com

International customers outside Europe and Japan can direct licensing inquiries to Rodgers Naylor at the following telephone and fax numbers:

Rodgers Naylor
Telephone: +1–612–683–7403
Fax: +1–612–683–7297
Email: naylorgr@cray.com

5.3.2.3 Additional Information for UNICOS and UNICOS/mk Customers

For customers running UNICOS and UNICOS/mk systems, if you have questions, or if your site has not signed a Cray Research software license agreement, either contact your regional contract administrator or contact Barbara Easterly or Sarah White as follows:

Barbara Easterly
Cray Research
655F Lone Oak Drive
Eagan, MN 55121 USA
Telephone: +1–612—683–5662
Fax: +1–612–683–7145
Email: easterly@cray.com

Sarah White
Cray Research
655F Lone Oak Drive
Eagan, MN 55121 USA
Telephone: +1–612–683–5604
Fax: +1–612–683–7145
Email: whitess@cray.com

5.4 To Order NQE or to Add NQE Servers

Software will be shipped by ground service or 5-day international service, unless otherwise requested.

To order your NQE 3.3 release package, to purchase additional copies of NQE 3.3, or to add NQE servers, do one of the following:

• Send electronic mail from any system connected to the Internet to the following address: `crayinfo@cray.com`

• Call a representative at the following number: 1–800–284–2729, extension 37473

- Contact Cray Research through the World Wide Web (WWW) at the following URL:

  ```
  http://www.cray.com/products/software/nqe/order_information.html
  ```

  Note: Product information is located at the following URL:

  ```
  http://www.cray.com/products/software/nqe
  ```

- Send a facsimile (fax) to the following number: +1-612-683-5508

- Send mail to the following address:

  Cray Research
  Attention: Software Sales, mail stop A270
  655A Lone Oak Drive
  Eagan, Minnesota 55121 USA

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