






Upgrading Guide (Printable)

The information presented here is also available in individual pages in the [Upgrading](#) section. This page is designed to enable you to easily export the information to a PDF or Word document.

To print a version of this document, log in to wikis.sun.com, click Tools, then select Export to PDF or Export to Word.

Contents	
	Upgrading From a Previous Release of the Software
	How to Back Up the Configuration of the Old Cluster
	How to Install the 6.2 Software Using the Cloned Configuration Method
	Example Upgrade for Cloned Cluster Configuration
	How to Upgrade the Original Cluster to the 6.2 Software (Real Upgrade)



Upgrading From a Previous Release of the Software



[Upgrading Guide \(Printable\)](#)



Note

- The following instructions will work only on the Sun Grid Engine 6.2 RR release.
- The upgrade procedure is only able to upgrade your software from version 6.0 update 2 or higher. If you are running an older version of the Sun Grid Engine software, such as 5.3 or 6.0, you must upgrade to version 6.0 update 2 or higher and then upgrade again to version 6.2 as explained below. See [How to Upgrade from 5.3 to 6.0](#).

About Upgrading the Software



Note

- The upgrade procedure is now partly destructive. See the [constraints](#).
- The `LD_LIBRARY_PATH` variable is not set in Grid Engine 6.2 software. Remove the existing `LD_LIBRARY_PATH` settings from 6.0 before you start a 6.2 installation.
- Before you begin the upgrade process, make sure that you source the existing `$SGE_ROOT/$SGE_CELL/common/settings.sh` or `$SGE_ROOT/$SGE_CELL/common/settings.csh` file.

The upgrade procedure uses the cluster configuration information from the older version of the software to install the Grid Engine 6.2 software on the master host. Beginning with the Sun Grid Engine 6.2 release, you can install 6.2 to a different `$SGE_ROOT` or `$SGE_CELL` and transfer the old configuration to this cluster. This method is called cloned cluster configuration. You might want to use this method to accomplish the following:

- To test the upgrade before making the real upgrade.
- To keep the old cluster running.

Before You Upgrade

Choose one of the following methods to upgrade to 6.2:

- New 6.2 installation (different `$SGE_ROOT` or `$SGE_CELL`) using the same configuration as was used for the old cluster (cloned cluster configuration).
If you use the cloned cluster configuration, you do not have to stop or in any way affect the original cluster. You simply install a new `qmaster` and transfer the configuration from the old cluster to the new one. Then, you manually restart the new execution daemons on all the original execution hosts.
The disadvantage of the cloned configuration method is that you have to install the new `qmaster` and might lose some of the configuration information during the upgrade (see the [constraints](#)). Another disadvantage is that the original execution host will now have twice as many slots - one set for the old cluster and one for the new one.
- Real upgrade of the existing cluster (same `$SGE_ROOT` and `$SGE_CELL`.)

Constraints

The following constraints apply to both upgrade methods:

- Dynamic and static load values will be lost (only static values will be recreated).
- The sharetree usage will be lost.
- Neither jobs nor advanced reservations (ARs) will be replicated.
- There might be running or pending jobs in the cluster when the configuration is saved. If you decide to install the new Sun Grid Engine version in the same `$SGE_ROOT` and `$SGE_CELL`, then you must remove all jobs from the old cluster before the old cluster is shutdown and the new software is installed.
- The previous state of a disabled queue will be lost if the queue config `initial_state` is set to default.

Topic	Description
How to Back Up the Cluster	
How to Install 6.2 Using the Cloned Cluster Configuration Method (Example Upgrade)	
How to Upgrade the Original Cluster to 6.2	
How to Upgrade from 5.3 to 6.0	



To print this section, see the [Upgrading Guide \(Printable\)](#).



How to Back Up the Configuration of the Old Cluster

You can create this backup at any time before you start the upgrade procedure. The upgrade is the same for both types of the upgrade procedures. To create the backup, at least the `qmaster` daemon must be running.

What the Backup Contains

The backup saves the following files:

- `arseqnum`
- `jobseqnum`
- `act_qmaster`
- `bootstrap`

- cluster_name
- host_aliases
- qtask
- sge_aliases
- sge_ar_request
- sge_request
- sge_qstat
- sge_qquota
- sge_qstat
- shadow_masters
- accounting
- dbwriter.conf
- jmx directory



Caution

- During the upgrade procedure, you can select the next job ID. Do not select a job ID that is less than the last job ID in the `accounting` file in the backup. If you do, the `accounting` file will contain some job IDs twice. This leads to unexpected behaviors.
- To avoid the problem, accept the suggested default for the next job ID. The upgrade procedure calculates a safe value for the default.

The backup process creates the following files:

- `sge_root` - old `$SGE_ROOT`
- `sge_cell` - old `$SGE_CELL`
- `ports` - old `$SGE_QMASTER_PORT` and `$SGE_EXECD_PORT`
- `win_hosts` - A list of registered windows execution hosts at the time of the backup

The standard `qconf` client is used to save the complete cluster configuration.

How to Back Up the Cluster

1. Either [download the backup script](#) or get the backup script from the Sun Grid Engine 6.2 common package (`util/upgrade_modules/save_sge_config.sh`).
2. (Optional) Verify that the script is executable.
3. Source the `$SGE_ROOT/$SGE_CELL/common/settings.sh` (or `.csh`) file of the original cluster.
4. Run the backup script.

The backup script has one argument, which is the path to the directory in which to store the backup. The directory must not already exist, but the user must have permission to create it.



Note

You must run the backup script on an admin host (`qconf -sh`) as a manager or operator user (typically `sgeadmin`).

```
# ./save_sge_config.sh /backups/sge_6.1_June10_2008
```

The backup process displays a message confirming that the backup succeeded.



How to Install the 6.2 Software Using the Cloned Configuration Method

Additional Constraints for the New 6.2 Installation with Cloned Configuration

For the cloned cluster configuration, you must also define several new variables and directories that must be different from the original settings:

- `$SGE_ROOT`
- `$SGE_CELL`
- `$SGE_CLUSTER_NAME`
- `$SGE_QMASTER_PORT`
- `$SGE_EXECD_PORT`
- Master daemon spooling directory (`qmaster_spool_dir`)
- Execution daemon spooling directory (`execd_spool_dir`)
- Group ID range for the jobs (`gid_range`)



Caution

Only one `SGE_Helper_Service.exe` can run on an execution host. You cannot use the same Windows execution host for a 6.0 or 6.1 cluster and a 6.2 cluster.



Note

- Because there have been significant changes in the Grid Engine 6.2 software, loading the configuration adds and removes some configuration attributes. Adding and removing configuration attributes might affect the operation of the cluster.
- To ensure stability, you should always follow this process:
 1. Upgrade to the new `$SGE_ROOT` or `$SGE_CELL` (cloned cluster configuration).
 2. Test that the original cluster configuration did not change and that the functionality of the cluster remains intact.
 3. Perform the real upgrade of the original cluster, if desired.



Caution

Do not make both the new cluster and the old cluster available to your users. If you do, execution hosts would offer the original amount of slots for both clusters and might become overloaded.

1. Back up the original cluster settings as described in [How to Back Up the Cluster](#).
2. (Optional) ARCo Upgrade Prerequisites

If you use ARCo and you want to have the data from the old and new cluster in the same ARCo database, you cannot install the `dbwriter` on the new cluster, specifying the old `dbwriter`'s database parameters, unless the `dbwriter` from the old cluster is stopped and all the data from the old cluster are inserted in the database. After installing `dbwriter` (with the same database parameters) on the new cluster, you must not again start the `dbwriter` on the old cluster, otherwise your database will be compromised.

- a. Wait to install ARCo on the new cluster until all the jobs are drained from the old cluster, the cluster is stopped and the old reporting file is processed completely.

There should be no `reporting` or `reporting.processing` file in the `$SGE_ROOT/$SGE_CELL/common` directory of the old cluster.



Note

Jobs can be submitted and the reporting file generated on the new cluster, as long as there is no `dbwriter` installed on the new cluster.



Caution

- There cannot be more than one `dbwriter` process writing into the same ARCo database and schema.
- If you create a new ARCo database for the new cluster, you cannot later merge it with the old ARCo database, due to the primary key constraints.

Once the reporting file on the old cluster is processed, on `dbwriter` host:

- b. Source the cluster `settings.sh` (or `.csh`) file.
- c. Stop the `dbwriter`:

```
# $SGE_ROOT/$SGE_CELL/common/sgedbwriter stop
```

3. Extract the new 6.2 binaries and common files to the new `$SGE_ROOT` directory.
4. Start the new upgrade installation of the `qmaster` from the new `$SGE_ROOT` directory.

```
# ./inst_sge -upd
```

This starts the upgrade procedure. See the [Example Upgrade for Cloned Cluster Configuration](#).



Tip

To enable or disable some additional features like JMX, CSP, or use old IJS, you must provide additional flags to the upgrade script the same way you would for `qmaster` installation. For example, to upgrade a cluster and enable JMX thread in `qmaster` and CSP mode run:

```
./inst_sge -upd -jmx -csp
```

5. Accept the displayed license.
6. Enter the complete path to the backup directory.
For example, `/backups/sge_6.1_June10_2008`. See [Step 6 in the example](#).
7. Enter the new `$SGE_ROOT` directory.
The default is the current directory. For more information, see `SGE_ROOT`. See [Step 7 in the example](#).
8. Select a new `$SGE_CELL` directory.
The default is the `$SGE_CELL` directory from the backup. For more information, see `SGE_CELL`. See [Step 8 in the example](#).
9. Select a new `SGE_QMASTER_PORT` number.
The default is the `$SGE_QMASTER_PORT` number from the backup + 10. See [Step 9 in the example](#).
10. Select a new `SGE_EXECD_PORT` number.
The default is the `$SGE_EXECD_PORT` number from the backup + 10. See [Step 10 in the example](#).
11. Select a new `qmaster` spooling directory
The default is `$SGE_ROOT/$SGE_CELL/spool/qmaster`. See [Step 11 in the example](#).
12. Select a new `$SGE_CLUSTER_NAME`.
The default is `p$SGE_QMASTER_PORT`. For more information, see `SGE_CLUSTER_NAME`. See [Step 12 in the example](#).
13. (Optional) Choose the JMX configuration.
For more information about JMX, see [JMX guide](#).
If you started the upgrade using the `-jmx` option, one of the following choices appears:
 - Choose if you want to use JMX settings from the backup or use new settings.
This question appears when JMX exists in the backup.
 - Choose a JMX port.
This question appears when JMX does not exist in the backup.
14. Select a spooling method.

For more information on choosing a spooling mechanism, see [Choosing Between Classic Spooling and Database Spooling](#). See [Step 14 in the example](#).

15. Choose if you want to use interactive jobs support (IJS) settings from the backup or use the new defaults for 6.2.
In most cases, you should use the new defaults which enable the new interactive jobs support. [Step 15 in the example](#) shows the new defaults.



Caution

If you changed `QLOGIN_DAEMON`, `QLOGIN_COMMAND`, `RLOGIN_DAEMON`, `RLOGIN_COMMAND`, `RSH_DAEMON`, or `RSH_COMMAND` configuration attributes, you should verify that the new IJS will not break your site-specific settings.

16. Choose the group id range
The default is the last group id from the backup + 100 and same range. See [Step 16 in the example](#).
17. Select the next job ID.
The default is `old_jobseqnum + 1000`, rounded up to the nearest 1000. See [Step 17 in the example](#).
18. (Optional) Select the next AR ID.
This question appears only if `arseqnum` is in the backup. The default is `old_arseqnum + 1000`, rounded up to the nearest 1000. See [Step 18 in the example](#).
19. Select automatic startup options.
See [Step 19 in the example](#).
One of the following choices appears:
- Choose whether to run **qmaster** as an SMF service.
This question appears only on systems that run at least version 10 of the Solaris OS.
 - Choose whether to use RC scripts for **qmaster**.
This question appears on platforms that are not running at least version 10 of the Solaris OS or if you started the upgrade using the `-nosmf` option.
20. Load the old configuration.
See [Step 20 in the example](#).
If this step fails with a critical error:
- a. Check the log file `/tmp/sge_backup_date.log`.
 - b. Try to reload the configuration through the `$SGE_ROOT/util/upgrade_modules/load_sge_config.sh` script and the arguments displayed in the previous step.
 - c. If the preceding steps do not resolve the problem, stop the upgrade process.
21. (Optional) Upgrade ARCo.
If you use ARCo, you need to upgrade it. If you want to use the same ARCo database, copy the `$SGE_ROOT/$SGE_CELL/common/dbwriter.conf` from the old cluster into the same directory on the new cluster, it will be sourced and you will be only prompted to enter any missing information during the installation of `dbwriter`. See [Upgrading ARCo](#) step 6.
22. Run the post upgrade procedures



Info

The post-upgrade procedures are easier when you have root access to all machines through `ssh` or `rsh` without having to enter a password. To use `rsh` instead of the default `ssh`, run the `./inst_sge` command with `-rsh` argument.

Example:

```
# ./inst_sge -upd-execd -rsh
```

- a. Initialize the local `execd` spool directories
This step creates the local `execd` spool directories on the `execd` hosts with the correct permissions. Run the following command as root from the master host in `$SGE_ROOT` directory:

```
# ./inst_sge -upd-execd
```

- b. (Optional) Create new RC scripts for the whole cluster.



Caution

This command removes old RC scripts. To keep the old RC scripts, do not run this command.

To start the services automatically after a reboot, run the following command as root from the master host in `$SGE_ROOT` directory:

```
## ./inst_sge -upd-rc
```

- c. (Optional) Install or update the Windows helper service.

Perform this step to use the Windows execution hosts with the 6.2 cluster. When connecting to each Windows execution host, you are prompted for an administrator user to connect to the Windows host. If all your Windows hosts share the same administrative user, set the environment variable `SGE_WIN_ADMIN` to that user to access all Windows hosts without additional user intervention. Example:

```
(sh, bash)# export SGE_WIN_ADMIN=Administrator  
(csh, tcsh)# setenv SGE_WIN_ADMIN Administrator
```

To install or update the Windows helper service, run the following command as root from the master host in `$SGE_ROOT` directory:

```
# ./inst_sge -upd-win
```



Caution

Only one `SGE_Helper_Service.exe` can run on an execution host. You cannot use the same Windows execution host for a 6.0 or 6.1 cluster and a 6.2 cluster.

23. Start the new execution daemons.

Optionally, if you can login without typing a password, you can start the whole cluster as root user from the `$SGE_ROOT` directory with a single command:

```
# ./inst_sge -start-all
```

This command starts the master daemon, shadow daemons, and all execution daemons.

Upgrade is complete.



Example Upgrade for Cloned Cluster Configuration

The following upgrade example uses a copy of the existing cluster configuration with a different `$SGE_CELL`. This example does not use JMX and there are no Service Tags. The steps in this example are referred to from the software upgrade description at [How to Install 6.2 Using the Cloned Cluster Configuration Method](#).

Steps 4 and 5

```
# ./inst_sge -upd

Welcome to the Grid Engine Upgrade Procedure
-----

Before you continue with the upgrade, read these hints:

- Your terminal window should have a size of at least
  80x24 characters

- At any time during the upgrade process, use your standard
  interrupt key to abort the upgrade. Typically, the interrupt
  key combination is Ctrl-C.

The upgrade procedure will take approximately 1-2 minutes.

Hit <RETURN> to continue >>
```

Step 6

```
Type the complete path to the Grid Engine configuration backup directory.
-----
Backup directory >> /tmp/bck

Found backup from GE 6.1u4 version created on 2008-06-10_10:56:29
Continue with this backup directory (y/n) [y] >>
```

Step 7

```
The Grid Engine root directory is:

$SGE_ROOT = /sge

If this directory is not correct (e.g. it may contain an automounter
prefix) enter the correct path to this directory or hit <RETURN>
to use default [/sge] >>

Your $SGE_ROOT directory: /sge

Hit <RETURN> to continue >>
```

Step 8

Grid Engine cells

Grid Engine supports multiple cells.

If you are not planning to run multiple Grid Engine clusters or if you don't know yet what is a Grid Engine cell it is safe to keep the default cell name

default

If you want to install multiple cells you can enter a cell name now.

The environment variable

\$SGE_CELL=<your_cell_name>

will be set for all further Grid Engine commands.

Enter cell name [default] >> new_cell

Using cell >new_cell<.

Hit <RETURN> to continue >>

Step 9

Grid Engine TCP/IP communication service

The port for sge_qmaster is currently set by the shell environment.

SGE_QMASTER_PORT = 21640

Now you have the possibility to set/change the communication ports by using the

>shell environment< or you may configure it via a network service, configured in local >/etc/service<, >NIS< or >NIS+<, adding an entry in the form

sge_qmaster <port_number>/tcp

to your services database and make sure to use an unused port number.

How do you want to configure the Grid Engine communication ports?

Using the >shell environment<: [1]

Using a network service like >/etc/service<, >NIS/NIS+<: [2]

(default: 1) >>

Grid Engine TCP/IP communication service

Using the environment variable

\$SGE_QMASTER_PORT=21640

as port for communication.

Do you want to change the port number? (y/n) [n] >>

Step 10

```
Grid Engine TCP/IP communication service
-----

The port for sge_execd is currently set by the shell environment.

    SGE_EXECD_PORT = 21641

Now you have the possibility to set/change the communication ports by
using the
    >shell environment< or you may configure it via a network service,
configured
in local >/etc/service<, >NIS< or >NIS+<, adding an entry in the form

    sge_execd <port_number>/tcp

to your services database and make sure to use an unused port number.

How do you want to configure the Grid Engine communication ports?

Using the >shell environment<: [1]

Using a network service like >/etc/service<, >NIS/NIS+<: [2]

(default: 1) >>

Grid Engine TCP/IP communication service
-----

Using the environment variable

    $SGE_EXECD_PORT=21641

as port for communication.

Do you want to change the port number? (y/n) [n] >>
```

Step 11

```
Grid Engine qmaster spool directory
-----

The qmaster spool directory is the place where the qmaster daemon stores
the configuration and the state of the queuing system.

The admin user >sgeadmin< must have read/write access
to the qmaster spool directory.

If you will install shadow master hosts or if you want to be able to start
the qmaster daemon on other hosts (see the corresponding section in the
Grid Engine Installation and Administration Manual for details) the account
on the shadow master hosts also needs read/write access to this directory.

The following directory

[/sge/new_cell/spool/qmaster]

will be used as qmaster spool directory by default!

Do you want to select another qmaster spool directory (y/n) [n] >>
```

Step 12

Unique cluster name

The cluster name uniquely identifies a specific Sun Grid Engine cluster. The cluster name must be unique throughout your organization. The name is not related to the SGE cell.

The cluster name must start with a letter ([A-Za-z]), followed by letters, digits ([0-9]), dashes (-) or underscores (_).

Enter **new** cluster name or hit <RETURN>
to use **default** [p21640] >>

Your \$SGE_CLUSTER_NAME: p21640

Hit <RETURN> to **continue** >>

Step 14

creating directory: /sge/new_cell/spool/qmaster/job_scripts

Setup spooling

Your SGE binaries are compiled to link the spooling libraries during runtime (dynamically). So you can choose between Berkeley DB spooling and Classic spooling method.
Please choose a spooling method (berkeleydb|classic) [berkeleydb] >> classic

Initializing spooling database

Hit <RETURN> to **continue** >>

Step 15

Interactive Job Support (IJS) Selection

The backup configuration includes information **for** running interactive jobs. Do you want to use the IJS information from the backup ('y') or use **new default** values ('n') (y/n) [y] >> n

Using **new** interactive job support **default** setting **for** a **new** installation.
Hit <RETURN> to **continue** >>

Creating >act_qmaster< file

Step 16

Grid Engine group id range

When jobs are started under the control of Grid Engine an additional group id is set on platforms which **do** not support jobs. This is done to provide maximum control **for** Grid Engine jobs.

This additional UNIX group id range must be unused group id's in your system. Each job will be assigned a unique id during the time it is running. Therefore you need to provide a range of id's which will be assigned dynamically **for** jobs.

The range must be big enough to provide enough numbers **for** the maximum number of Grid Engine jobs running at a single moment on a single host. E.g. a range like >20000-20100< means, that Grid Engine will use the group ids from 20000-20100 and provides a range **for** 100 Grid Engine jobs at the same time on a single host.

You can change at any time the group id range in your cluster configuration.

Please enter a range [34299-34498] >>

Using >34299-34498< as gid range. Hit <RETURN> to **continue** >>

Grid Engine cluster configuration

Please give the basic configuration parameters of your Grid Engine installation:

<execd_spool_dir>

The pathname of the spool directory of the execution hosts. User >sgeadmin< must have the right to create **this** directory and to write into it.

Default: [/sge/new_cell/spool] >>

Grid Engine cluster configuration (continued)

<administrator_mail>

The email address of the administrator to whom problem reports are sent.

It is recommended to configure **this** parameter. You may use >none< **if** you **do** not wish to receive administrator mail.

Please enter an email address in the form >user@foo.com<.

Default: [sgeadmin@qmaster.com] >>

The following parameters **for** the cluster configuration were configured:

execd_spool_dir	/sge/new_cell/spool
administrator_mail	sgeadmin@qmaster.com

Do you want to change the configuration parameters (y/n) [n] >>

Provide a value to use **for** the next job ID.

Backup contains last job ID 1. As a suggested value, we added 1000 to that number and rounded it up to the nearest 1000.

Increase the value, **if** appropriate.

Choose the **new** next job ID [2000] >>

Hit <RETURN> to **continue** >>

Step 18

Provide a value to use **for** the next AR ID.

Backup contains last AR ID 1. As a suggested value, we added 1000 to that number and rounded it to the nearest 1000.

Increase the value, **if** appropriate.

Choose the **new** next AR ID [2000] >>

Hit <RETURN> to **continue** >>

Step 19

Creating >sgemaster< script
Creating >sgeexecd< script
Creating settings files **for** >.profile/.cshrc<

Hit <RETURN> to **continue** >>

qmaster startup script

Do you want to start qmaster automatically at machine boot?

NOTE: If you select "**n**" SMF will be not used at all! (y/n) [y] >> n

Grid Engine qmaster startup

Starting qmaster daemon. Please wait ...

starting sge_qmaster

Hit <RETURN> to **continue** >>

Step 20

Last step - load configuration from the backup

```
load command: /sge/util/upgrade_modules/load_sge_config.sh /tmp/bck -mode "copy" -log C -newijs "false" -gid_range "34299-34498" -admin_mail "sgeadmin@qmaster.com" -execd_spool_dir "/sge/new_cell/spool"
```

Hit <RETURN> to [continue](#) >>

Loading saved cluster configuration from /tmp/bck (log in /tmp/sge_backup_load_2008-06-13_17:42:28.log)...

Loading saved cluster configuration from /tmp/bck (log in /tmp/sge_backup_load_2008-06-13_17:42:28.log)...

Done

If loading the configuration succeeded run these additional commands:

REQUIRED:

`inst_sge -upd-execd`

This command initializes all execd spool directories.

`inst_sge -upd-win`

This command connects to all Windows execution hosts and installs the [new](#) Windows helper service on each host.

WARNING: If a helper service from a previous release is running on [this](#) host, the [new](#) helper service overwrites it. The host will run only in a 6.2 cluster.

TIP: This action requires to enter a windows administrator user [for](#) each host interactively. If all your systems share the same administrator you can set the environment variable SGE_WIN_ADMIN to that user name.

E.g.: (sh, bash) `export SGE_WIN_ADMIN=Administrator`
(csh, tcsh) `setenv SGE_WIN_ADMIN Administrator`

OPTIONAL:

`inst_sge -upd-rc`

This command creates [new](#) autostart scripts [for](#) the [new](#) cluster and removes any conflicting files.

TIP: To disable SMF on Solaris systems, use the command
`inst_sge -upd-rc -nosmf`

TIP: Use `inst_sge -post-upd` to [do](#) all above actions



How to Upgrade the Original Cluster to the 6.2 Software (Real Upgrade)

1. (Optional) Test the cloned cluster, if you used the cloned cluster configuration method to transfer the configuration to a new 6.2 cluster.
2. Back up the original cluster settings as described in [How to Back Up the Cluster](#).
3. Stop the scheduler:

```
# qconf -ks
```

4. Verify that no jobs are running on the cluster.
5. Stop the old cluster:

```
# qconf -ke all
# $SGE_ROOT/$SGE_CELL/common/sgemaster stop
```

6. (Optional) Stop the Berkeley DB server, if your cluster uses Berkeley DB server spooling.

On the BDB server host:

- Source the cluster **settings.sh** (or **.csh**) file.
- Type the following command:

```
# $SGE_ROOT/$SGE_CELL/common/sgebdb stop
```

7. (Optional) If you use ARCo, ensure that the reporting file has been completely processed by the **dbwriter**.

There should be no **reporting** or **reporting.processing** file in the **\$SGE_ROOT/\$SGE_CELL/common** directory.

Once the reporting file is processed, on **dbwriter** host:

- Source the cluster **settings.sh** (or **.csh**) file.
- Stop the **dbwriter**:

```
# $SGE_ROOT/$SGE_CELL/common/sgebwriter stop
```



Warning

If you use ARCo, you must completely process the reporting file and stop the **dbwriter** before you continue.

8. Extract the new 6.2 binaries and common files to the **\$SGE_ROOT** directory.



Caution

Do not remove any of the **\$SGE_ROOT** directory contents, except for the case where the new Sun Grid Engine 6.2 binaries differ from the existing installation. For example, you might have used your custom lx26-amd64 binaries, but Sun Grid Engine 6.2 uses lx24-amd64 for 2.6 kernels. In that case you must remove the old binaries manually. You must ensure that all binaries for the used architectures were updated and no architecture with the old version remains in the **\$SGE_ROOT** directory.

9. Start the new upgrade on the original **qmaster** host from the **\$SGE_ROOT** directory.

```
# ./inst_sge -upd
```



Tip

To enable or disable some additional features like JMX, CSP, or to use the old IJS, you must provide additional flags to the upgrade script in the same way that you would for **qmaster** installation. For example, to upgrade a cluster and enable the JMX thread in **qmaster** and use CSP mode, run the following command: **./inst_sge -upd -jmx -csp**

10. Accept the displayed license.
11. Enter the complete path to the backup directory.
For example, `/backups/sge_6.1_June10_2008`.



Caution

In case you you don't specify the original `$SGE_ROOT` and `$SGE_CELL` in the next two steps, the upgrade type attempted will not be the real upgrade! Instead the [clone cluster configuration](#) method will be used.

12. Enter the `$SGE_ROOT` directory.
The default is the current directory. For more information, see [SGE_ROOT](#).
13. Enter the `$SGE_CELL` directory.
The default is `default`. For more information, see [SGE_CELL](#).
14. Select a new `$SGE_CLUSTER_NAME`.
The default value is one of the following, depending on which is found first:
 - The existing `SGE_CLUSTER_NAME` (`$SGE_ROOT/$SGE_CELL/common/cluster-name`)
 - The `SGE_CLUSTER_NAME` from the backup
 - `p$SGE_QMASTER_PORT`For more information, see [SGE_CLUSTER_NAME](#).
15. (Optional) Select the JMX configuration.
For more information about JMX, see [JMX guide](#).
If you started the upgrade using the `-jmx` option, one of the following choices appears:
 - Choose if you want to use JMX settings from the backup or use new settings.
This question appears when JMX exists in the backup.
 - Choose a JMX port.
This question appears when JMX does not exist in the backup.
16. Choose if you want to keep the spooling method from the backup.
17. (Optional) Select a spooling method.
This is displayed if you chose not to use backup in the previous screen. See [example](#). For more information on choosing a spooling mechanism, see [Choosing Between Classic Spooling and Database Spooling](#).
18. Choose if you want to use interactive jobs support (IJS) settings from the backup or use the new defaults for 6.2.
In most cases, you should use the new defaults which enable the new interactive jobs support.



Caution

If you changed `QLOGIN_DAEMON`, `QLOGIN_COMMAND`, `RLOGIN_DAEMON`, `RLOGIN_COMMAND`, `RSH_DAEMON`, or `RSH_COMMAND` configuration attributes, you should verify that the new IJS will not break your site-specific settings.

19. Select the next job ID.
The default is `old_jobseqnum + 1000`, rounded up to the nearest 1000.
20. (Optional) Select the next AR ID.
This question appears only if `arseqnum` is in the backup. The default is `old_arseqnum + 1000`, rounded up to the nearest 1000.
21. Choose automatic startup options.
One of the following choices appears:
 - Choose whether to run qmaster as an SMF service.
This question appears only on systems that run at least version 10 of the Solaris OS.
 - Choose whether to use RC scripts for qmaster.
This question appears on platforms that are not running at least version 10 of the Solaris OS or if you started the upgrade using the

-nosmf option.

22. Load the old configuration.

If this step fails with a critical error:

- a. Check the log file `/tmp/sge_backup_date.log`.
- b. Try to reload the configuration through the `$SGE_ROOT/util/upgrade_modules/load_sge_config.sh` script and the arguments displayed in the previous step.
- c. If the preceding steps do not resolve the problem, stop the upgrade process.

23. (Optional) Copy the binaries and the `common` directory to all the hosts in the cluster, if not on a shared file system

If you use local binaries or a local common directory for each host, you must copy all the new binaries and the common directory locally to each host. Ensure that all binaries are updated and no architecture with the old version remains in the `$SGE_ROOT` directory.



Note

If you do not perform this operation the `qmaster` host will have Sun Grid Engine 6.2 binaries, while the rest of the cluster will still have the old version and will not work as desired.

24. (Optional) Upgrade ARCo.

If you use ARCo, you need to upgrade it. See [Upgrading ARCo](#) step 6.

25. Run the post upgrade procedures



Info

The post-upgrade procedures are easier when you have root access to all machines through `ssh` or `rsh` without having to enter a password. To use `rsh` instead of the default `ssh`, run the `./inst_sge` command with `-rsh` argument.

Example:

```
# ./inst_sge -upd-execd -rsh
```

a. Initialize the local execd spool directories

This step creates the local execd spool directories on the execd hosts with the correct permissions. Run the following command as root from the master host in `$SGE_ROOT` directory:

```
# ./inst_sge -upd-execd
```

b. (Optional) Create new RC scripts for the whole cluster.



Caution

This command removes old RC scripts. To keep the old RC scripts, do not run this command.

To start the services automatically after a reboot, run the following command as root from the master host in `$SGE_ROOT` directory:

```
## ./inst_sge -upd-rc
```

c. (Optional) Install or update the Windows helper service.

Perform this step to use the Windows execution hosts with the 6.2 cluster. When connecting to each Windows execution host, you are prompted for an administrator user to connect to the Windows host. If all your Windows hosts share the same administrative user, set the environment variable `SGE_WIN_ADMIN` to that user to access all Windows hosts without additional user intervention. Example:

```
(sh, bash)# export SGE_WIN_ADMIN=Administrator
(csh, tcsh)# setenv SGE_WIN_ADMIN Administrator
```

To install or update the Windows helper service, run the following command as root from the master host in `$SGE_ROOT` directory:

```
# ./inst_sge -upd-win
```



Caution

Only one `SGE_Helper_Service.exe` can run on an execution host. You cannot use the same Windows execution host for a 6.0 or 6.1 cluster and a 6.2 cluster.

26. Start the new execution daemons.

Optionally, if you can login without typing a password, you can start the whole cluster as root user from the `$SGE_ROOT` directory with a single command:

```
# ./inst_sge -start-all
```

This command starts the master daemon, shadow daemons, and all execution daemons.

Upgrade is complete.



How to Upgrade from 5.3 to 6.0

Before You Begin

Be sure to review [Planning the Installation](#) for the information that you will need during the upgrade process. If you have decided to use an administrative user, as described in [User Names](#), you should create that user now. This procedure assumes that you have already extracted the Grid Engine software, as described in [Loading the Distribution Files on a Workstation](#).



Note

While you can run Grid Engine 6.0 software concurrently with your older version of Grid Engine software, you should run the upgrade procedure when there are no running jobs.

Steps

1. Log in to the master host as root.
2. Load the distribution files.
For details, see [Loading the Distribution Files on a Workstation](#).
3. Ensure that you have set the `$SGE_ROOT` environment variable by typing:

```
# echo $SGE_ROOT
```

If the \$SGE_ROOT environment variable is not set, set it now by typing:

```
# SGE_ROOT=sge-root; export SGE_ROOT
```

4. Change to the sge-root installation directory.

Select one of the two following options:

- If the directory where the installation files reside is visible from the master host, change directories (cd) to the installation directory sge-root, and then proceed to [Step 4 of How to Install the Master Host](#).
- If the directory is not visible and cannot be made visible, do the following:
 - Create a local installation directory, sge-root, on the master host.
 - Copy the installation files to the local installation directory sge-root across the network (for example, by using ftp or rcp).
 - Change directories (cd) to the local sge-root directory.

5. Run the upgrade command on the master host, and respond to the prompts.

This command starts the master host installation procedure. You are asked several questions, and you might be required to run some administrative actions.

The syntax of the upgrade command is:

```
inst_sge -upd 5.3-sge-root-directory 5.3-cell-name
```

In the following example, the 5.3 sge-root directory is /sge/gridware and the cell name is default.

```
# ./inst_sge -upd /sge/gridware default
Welcome to the Grid Engine Upgrade
-----

Before you continue with the installation please read these hints:

- Your terminal window should have a size of at least
  80x24 characters

- The INTR character is often bound to the key Ctrl-C.
  The term >Ctrl-C< is used during the upgrade if you
  have the possibility to abort the upgrade

The upgrade procedure will take approximately 5-10 minutes.
After this upgrade you will get a running qmaster and schedd with
the configuration of your old installation. If the upgrade was
successfully completed it is necessary to install your execution hosts
with the install_execd script.

Hit <RETURN> to continue >>
```

6. Choose an administrative account owner.

In the following example, the value of sge-root is /opt/nlge6, and the administrative user is sgeadmin.

```
Grid Engine admin user account
```

```
-----  
The current directory
```

```
    /opt/nlge6
```

```
is owned by user
```

```
    sgeadmin
```

If user >root< does not have write permissions in [this](#) directory on *all* of the machines where Grid Engine will be installed (NFS partitions not exported for user >root< with read/write permissions) it is recommended to install Grid Engine that all spool files will be created under the user id of user >sgeadmin<.

IMPORTANT NOTE: The daemons still have to be started by user >root<.

Do you want to install Grid Engine as admin user >sgeadmin< (y/n) [y] >>

7. Verify the `$SGE_ROOT` directory setting.

In the following example, the value of `$SGE_ROOT` is `/opt/nlge6`.

```
Checking $SGE_ROOT directory
```

```
-----  
The Grid Engine root directory is:
```

```
    $SGE_ROOT = /opt/nlge6
```

If [this](#) directory is not correct (e.g. it may contain an automounter prefix) enter the correct path to [this](#) directory or hit <RETURN> to use [default](#) [/opt/nlge6] >>

8. Set up the TCP/IP services for the Grid Engine software.

a. If the TCP/IP services have not been configured, respond to the installation messages.

```
Grid Engine TCP/IP service >sge_qmaster<
```

```
-----  
There is no service >sge_qmaster< available in your >/etc/services< file  
or in your NIS/NIS+ database.
```

You may add [this](#) service now to your services database or choose a port number. It is recommended to add the service now. If you are using NIS/NIS+ you should add the service at your NIS/NIS+ server and not to the local >/etc/services< file.

Please add an entry in the form

```
    sge_qmaster <port_number>/tcp
```

to your services database and make sure to use an unused port number.

Please add the service now or press <RETURN> to go to entering a port number >>

- b. Start a new terminal session or window to add information to the `/etc/services` file or your NIS maps.
- c. Add the correct ports to the `/etc/services` file or your NIS services map, as described in [Network Services](#).
The following example shows how you might edit your `/etc/services` file.

```
...
sge_qmaster      536/tcp
sge_execd        537/tcp
```



Note

In this example, the entries for both `sge_qmaster` and `sge_execd` are added to `/etc/services`. Subsequent steps in this example assume that both entries have been made.

- d. Save your changes and return to the window where the installation script is running.

```
Please add the service now or press <RETURN> to go to entering a port number >>
```

Press `<RETURN>`. The installation procedure displays the following output:

```
sge_qmaster 536

Service >sge_qmaster< is now available.

Hit <RETURN> to continue >>

Grid Engine TCP/IP service >sge_execd<
-----

Using the service

    sge_execd

for communication with Grid Engine.

Hit <RETURN> to continue >>
```

- 9. Enter the name of your cell or press Return to use the default.
The use of Grid Engine system cells is described in [Cells](#).

Grid Engine cells

Grid Engine supports multiple cells.

If you are not planning to run multiple Grid Engine clusters or `if` you don't know yet what is a Grid Engine cell it is safe to keep the `default` cell name

`default`

If you want to install multiple cells you can enter a cell name now.

The environment variable

`$SGE_CELL=<your_cell_name>`

will be set `for` all further Grid Engine commands.

Enter cell name [`default`] >>

If you have decided not to use cells, the installation process displays the following information:

Using cell >`default`<.

Hit <RETURN> to `continue` >>

10. Specify a spool directory.

For guidelines on disk space requirements for the spool directory, see [Disk Space Requirements](#). For information on where the spool directory is installed, see [Spool Directories Under the Root Directory](#).

Grid Engine qmaster spool directory

The qmaster spool directory is the place where the qmaster daemon stores the configuration and the state of the queuing system.

The admin user `>sgeadmin<` must have read/write access to the qmaster spool directory.

If you will install shadow master hosts or `if` you want to be able to start the qmaster daemon on other hosts (see the corresponding section in the Grid Engine Installation and Administration Manual `for` details) the account on the shadow master hosts also needs read/write access to `this` directory.

The following directory

`[/opt/nlge6/default/spool/qmaster]`

will be used as qmaster spool directory by `default`!

Do you want to select another qmaster spool directory (y/n) [n] >>

- If you want to accept the default spool directory, press Return to continue.
- If you do not want to accept the default spool directory, then answer `y`. In the following example the `/my/spool` directory is specified as the master host spool directory.

```
Do you want to select another qmaster spool directory (y/n) [n] >> y

Please enter a qmaster spool directory now! >>/my/spool
```

11. Set the correct file permissions.

```
Verifying and setting file permissions
-----

Did you install this version with >pkgadd< or did you already
verify and set the file permissions of your distribution (y/n) [y] >> n

Verifying and setting file permissions
-----

We may now verify and set the file permissions of your Grid Engine
distribution.

This may be useful since due to unpacking and copying of your distribution
your files may be inaccessible to other users.

We will set the permissions of directories and binaries to

    755 - that means executable are accessible for the world

and for ordinary files to

    644 - that means readable for the world

Do you want to verify and set your file permissions (y/n) [y] >> y

Verifying and setting file permissions and owner in >3rd_party<
Verifying and setting file permissions and owner in >bin<
Verifying and setting file permissions and owner in >ckpt<
Verifying and setting file permissions and owner in >examples<
Verifying and setting file permissions and owner in >install_execd<
Verifying and setting file permissions and owner in >install_qmaster<
Verifying and setting file permissions and owner in >mpi<
Verifying and setting file permissions and owner in >pvm<
Verifying and setting file permissions and owner in >qmon<
Verifying and setting file permissions and owner in >util<
Verifying and setting file permissions and owner in >utilbin<
Verifying and setting file permissions and owner in >catman<
Verifying and setting file permissions and owner in >doc<
Verifying and setting file permissions and owner in >man<
Verifying and setting file permissions and owner in >inst_sge<
Verifying and setting file permissions and owner in >bin<
Verifying and setting file permissions and owner in >lib<
Verifying and setting file permissions and owner in >utilbin<

Your file permissions were set

Hit <RETURN> to continue >>
```

12. Specify whether all of your Grid Engine system hosts are located in a single DNS domain.

```
Select default Grid Engine hostname resolving method
```

```
-----  
Are all hosts of your cluster in one DNS domain? If this is  
the case the hostnames
```

```
>hostA< and >hostA.foo.com<
```

```
would be treated as equal, because the DNS domain name >foo.com<  
is ignored when comparing hostnames.
```

```
Are all hosts of your cluster in a single DNS domain (y/n) [y] >>
```

- a. If all of your Grid Engine system hosts are located in a single DNS domain, then answer y.

```
Are all hosts of your cluster in a single DNS domain (y/n) [y] >> y
```

```
Ignoring domainname when comparing hostnames.
```

```
Hit <RETURN> to continue >>
```

- b. If all of your Grid Engine system hosts are not located in a single DNS domain, then answer n.

```
Are all hosts of your cluster in a single DNS domain (y/n) [y] >> n
```

```
The domainname is not ignored when comparing hostnames.
```

```
Hit <RETURN> to continue >>
```

```
Default domain for hostnames
```

```
-----  
Sometimes the primary hostname of machines returns the short hostname  
without a domain suffix like >foo.com<.
```

```
This can cause problems with getting load values of your execution hosts.  
If you are using DNS or you are using domains in your >/etc/hosts< file or  
your NIS configuration it is usually safe to define a default domain  
because it is only used if your execution hosts return the short hostname  
as their primary name.
```

```
If your execution hosts reside in more than one domain, the default domain  
parameter must be set on all execution hosts individually.
```

```
Do you want to configure a default domain (y/n) [y] >>
```

- c. Press Return to continue.

1. a. • If you want to specify a default domain, then answer y. In the following example, sun.com is specified as the default domain.

```
Do you want to configure a default domain (y/n) [y] >> y
```

```
Please enter your default domain >> sun.com
```

```
Using >sun.com< as default domain. Hit <RETURN> to continue >>
```


- If you do not want to specify a default domain, then answer n. In the following example, sun.com is specified as the default domain.

```
Do you want to configure a default domain (y/n) [y] >> n
```

2. Press Return to continue.

```
Making directories
-----

creating directory: default/common
creating directory: /opt/nlge6/default/spool/qmaster
creating directory: /opt/nlge6/default/spool/qmaster/job_scripts
Hit <RETURN> to continue >>
```

3. Specify whether you want to use classic spooling or Berkeley DB.

For more information on choosing the spooling mechanism, see [Database Server and Spooling Host](#).

```
Setup spooling
-----

Your SGE binaries are compiled to link the spooling libraries
during runtime (dynamically). So you can choose between Berkeley DB
spooling and Classic spooling method.
Please choose a spooling method (berkeleydb|classic) [berkeleydb] >>
```

- a. If you want to specify Berkeley DB spooling, press Return to continue.

```
Please choose a spooling method (berkeleydb|classic) [berkeleydb] >>

The Berkeley DB spooling method provides two configurations!

1) Local spooling:
The Berkeley DB spools into a local directory on this host (qmaster host)
This setup is faster, but you can't setup a shadow master host

2) Berkeley DB Spooling Server:
If you want to setup a shadow master host, you need to use
Berkeley DB Spooling Server!
In this case you have to choose a host with a configured RPC service.
The qmaster host connects via RPC to the Berkeley DB. This setup is more
failsafe, but results in a clear potential security hole. RPC communication
(as used by Berkeley DB) can be easily compromised. Please only use this
alternative if your site is secure or if you are not concerned about
security. Check the installation guide for further advice on how to achieve
failsafety without compromising security.

Do you want to use a Berkeley DB Spooling Server? (y/n) [n] >>
```

- If you want to use a Berkeley DB spooling server, enter y.

```
Do you want to use a Berkeley DB Spooling Server? (y/n) [n] >> y

Berkeley DB Setup

-----

Please, log in to your Berkeley DB spooling host and execute "inst_sge -db"
Please do not continue, before the Berkeley DB installation with
"inst_sge -db" is completed, continue with <RETURN>
```



Note

Do not press Return until you have completed the Berkeley DB installation on the spooling server.

Follow these steps to set up a Berkeley DB spooling server:

- i. Start a new terminal session or window.
- ii. Log in to the spooling server.
- iii. Install the software as described in [How to Install the Berkeley DB Spooling Server](#).
- iv. After you have installed the software on the spooling server, return to the master installation window, and press Return to continue.
- v. Enter the name of the spooling server. In the following example, `vector` is the host name of the spooling server.

```
Berkeley Database spooling parameters
-----

Please enter the name of your Berkeley DB Spooling Server! >> vector
```

- vi. Enter the name of the spooling directory. In the following example, `/opt/nlge6/default/spooldb` is the spooling directory.

```
Please enter the Database Directory now!

Default: [/opt/nlge6/default/spooldb] >>
Dumping bootstrapping information
Initializing spooling database

Hit <RETURN> to continue >>
```

- If you do not want to use a Berkeley DB spooling server, enter `n`.

```
Do you want to use a Berkeley DB Spooling Server? (y/n) [n] >> n

Hit <RETURN> to continue >>

Berkeley Database spooling parameters
-----

Please enter the Database Directory now, even if you want to spool locally
it is necessary to enter this Database Directory.

Default: [/opt/nlge6/default/spool/spooldb] >>
```

Then specify an alternate directory, or press Return to continue.

```
creating directory: /opt/nlge6/default/spool/spooldb
Dumping bootstrapping information
Initializing spooling database

Hit <RETURN> to continue >>
```

- b. If you want to specify classic spooling, then enter classic.

```
Please choose a spooling method (berkeleydb|classic) [berkeleydb] >> classic

Dumping bootstrapping information
Initializing spooling database

Hit <RETURN> to continue >>
```

4. Enter a group ID range.

For more information, see [Group IDs](#).

```
Grid Engine group id range
-----

When jobs are started under the control of Grid Engine an additional group id
is set on platforms which do not support jobs. This is done to provide maximum
control for Grid Engine jobs.

This additional UNIX group id range must be unused group id's in your system.
Each job will be assigned a unique id during the time it is running.
Therefore you need to provide a range of id's which will be assigned
dynamically for jobs.

The range must be big enough to provide enough numbers for the maximum number
of Grid Engine jobs running at a single moment on a single host. E.g. a range
like >20000-20100< means, that Grid Engine will use the group ids from
20000-20100 and provides a range for 100 Grid Engine jobs at the same time
on a single host.

You can change at any time the group id range in your cluster configuration.

Please enter a range >> 20000-20100

Using >20000-20100< as gid range. Hit <RETURN> to continue >>
```

5. Verify the spooling directory for the execution daemon.

For information on spooling, see [Spool Directories Under the Root Directory](#).

```
Grid Engine cluster configuration
-----
```

```
Please give the basic configuration parameters of your Grid Engine
installation:
```

```
<execd_spool_dir>
```

```
The pathname of the spool directory of the execution hosts. User >sgeadmin<
must have the right to create this directory and to write into it.
```

```
Default: [/opt/nlge6/default/spool] >>
```

6. Enter the email address of the user who should receive problem reports.

In this example, the user who will receive problem report is `me@my.domain`.

```
Grid Engine cluster configuration (continued)
-----
```

```
<administrator_mail>
```

```
The email address of the administrator to whom problem reports are sent.
```

```
It's is recommended to configure this parameter. You may use >none<
if you do not wish to receive administrator mail.
```

```
Please enter an email address in the form >user@foo.com<.
```

```
Default: [none] >> me@my.domain
```

Once you answer this question, the installation process is complete. The system displays several screens of information before the script exits.

The upgrade process uses your existing configuration to customize the installation. Output similar to the following is displayed:

```

Creating >act_qmaster< file
Creating >sgemaster< script
Creating >sgexecd< script
creating directory: /tmp/centry
Reading in complex attributes.
Reading in administrative hosts.
Reading in execution hosts.
Reading in submit hosts.
Reading in users:
    User "as114086".
    User "mdl21042".
Reading in usersets:
    Userset "defaultdepartment".
    Userset "deadlineusers".
    Userset "admin".
    Userset "bchem1".
    Userset "bchem2".
    Userset "bchem3".
    Userset "bchem4".
    Userset "damtp7".
    Userset "damtp8".
    Userset "damtp9".
    Userset "econ1".
    Userset "staff".
Reading in calendars:
    Calendar "always_disabled".
    Calendar "always_suspend".
    Calendar "test".
Reading in projects:
    Project "ap1".
    Project "ap2".
    Project "high".
    Project "low".
    Project "p1".
    Project "p2".
    Project "staff".
Reading in parallel environments:
    PE "bench_tight".
    PE "make".
Creating settings files for >.profile/.cshrc<

```



Caution

Do not rename any of the binaries of the distribution. If you use any scripts or tools in your cluster that monitor the daemons, make sure to check for the new names.

7. Create the environment variables for use with the Grid Engine software.



Note

If no cell name was specified during installation, the value of \$SGE_CELL is default.

- If you are using a C shell, type the following command:

```
% source $SGE_ROOT/$SGE_CELL/common/settings.csh
```

- If you are using a Bourne shell or Korn shell, type the following command:

```
$ . $SGE_ROOT/$SGE_CELL/common/settings.sh
```

8. Install or upgrade the execution hosts.

There are two ways that you can install the Sun Grid Engine software on your execution hosts: installation or upgrade. If you install the execution hosts, the local spool directory configuration, and some execd parameters will be overwritten. If you upgrade the execution hosts, those files will remain untouched.

- a. To upgrade the software on the execution host, you need to log into each execution host and run the following command:

```
# $SGE_ROOT/inst_sge -x -upd
```

- b. To install the software on the execution host:

- If you only have a few execution hosts, you can install them interactively. You need to log into each execution host, and run the following command:

```
# $SGE_ROOT/inst_sge -x
```

Complete instructions for installing execution hosts interactively are in [How to Install Execution Hosts](#).

- If you have a large number of execution hosts, you should consider installing them non-interactively. Instructions for installing execution hosts in an automated way are in [Using the inst_sge Utility and a Configuration Template](#).

9. If you have configured load sensors on your execution hosts, you will need to copy these load sensors to the new directory location.

10. Check your complexes.

Both the structure of complexes and the rules for configuring complexes have changed. You can use `qconf -sc` to list your complexes. Review the log file that was generated during the master host upgrade, `update.pid`. The `update.pid` file will be placed in the master host spool directory, which is `$SGE_ROOT/$SGE_CELL/spool/` by default.

If necessary, you can use `qconf -mc` to reconfigure your complexes. For details, see [Configuring Resource Attributes](#).

11. Reconfigure your queues.

During the upgrade process, a single default cluster queue is created. Within this queue you will find all of your installed execution hosts. It is recommended that you reconfigure your queues. For details, see [Configuring Queues](#).