Eclipse GlassFish Server Upgrade Guide, Release 7

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Eclipse GlassFish Server

```
Upgrade Guide

Release 7

Contributed 2018, 2019

This guide explains how to upgrade to Eclipse GlassFish Server
5.1 from previous GlassFish Server and Sun GlassFish Enterprise
Server product releases. Also included in this guide are instructions
for upgrading configuration data and Java EE applications from
binary-compatible earlier versions of this software to work with
Eclipse GlassFish Server 7. Finally, this guide describes
compatibility issues that affect data and applications that are to be
migrated.

Note: The main thrust of the Eclipse GlassFish Server 7
release is to provide an application server for developers to explore
and begin exploiting the new and updated technologies in the Java EE 7
platform. Thus, the upgrade feature of GlassFish Server was not a focus
of this release. The feature is included in the release, but it may not
function properly with some of the new features added in support of the
Java EE 7 platform.

[[sthref1]]

''''''


Eclipse GlassFish Server Upgrade Guide, Release 7

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[[GSUPG00001]][[gkbei]]


[[preface]]
Preface
-------

This guide explains how to upgrade to GlassFish Server Open Source
Edition 4.0 from previous GlassFish Server and Sun GlassFish Enterprise
Server product releases. Also included in this guide are instructions
for upgrading configuration data and Java EE applications from
binary-compatible earlier versions of this software to work with
GlassFish Server Open Source Edition 4.0. Finally, this guide describes
compatibility issues that affect data and applications that are to be
migrated.


[width="100%",cols="<100%",]
|=======================================================================
a|
Note:

The main thrust of the GlassFish Server Open Source Edition 4.0 release
is to provide an application server for developers to explore and begin
exploiting the new and updated technologies in the Java EE 7 platform.
Thus, the upgrade feature of GlassFish Server was not a focus of this
release. The feature is included in the release, but it may not function
properly with some of the new features added in support of the Java EE 7
platform.

|=======================================================================


This preface contains information about and conventions for the entire
GlassFish Server Open Source Edition (GlassFish Server) documentation
set.

GlassFish Server 4.0 is developed through the GlassFish project
open-source community at `http://glassfish.java.net/`. The GlassFish
project provides a structured process for developing the GlassFish
Server platform that makes the new features of the Java EE platform
available faster, while maintaining the most important feature of Java
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EE: compatibility. It enables Java developers to access the GlassFish
Server source code and to contribute to the development of the GlassFish
Server. The GlassFish project is designed to encourage communication
between Oracle engineers and the community.

The following topics are addressed here:

* link:#ghpbz[GlassFish Server Documentation Set]
* link:#giprl[Related Documentation]
* link:#fwbkx[Typographic Conventions]
* link:#fquvc[Symbol Conventions]
* link:#ghpfg[Default Paths and File Names]

[[GSUPG00020]][[ghpbz]]


[[glassfish-server-documentation-set]]
Eclipse GlassFish Server Documentation Set
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The GlassFish Server documentation set describes deployment planning and
system installation. For an introduction to GlassFish Server, refer to
the books in the order in which they are listed in the following table.

[width="100%",cols="<30%,<70%",options="header",]
|=======================================================================
|Book Title |Description
|link:../release-notes/toc.html#GSRLN[Release Notes] |Provides late-breaking
information about
the software and the documentation and includes a comprehensive,
table-based summary of the supported hardware, operating system, Java
Development Kit (JDK), and database drivers.

|link:../quick-start-guide/toc.html#GSQSG[Quick Start Guide] |Explains how to get
started with the
GlassFish Server product.

|link:../installation-guide/toc.html#GSING[Installation Guide] |Explains how to
install the software
and its components.

|link:../upgrade-guide/toc.html#GSUPG[Upgrade Guide] |Explains how to upgrade to the
latest
version of GlassFish Server. This guide also describes differences
between adjacent product releases and configuration options that can
result in incompatibility with the product specifications.

|link:../deployment-planning-guide/toc.html#GSPLG[Deployment Planning Guide]
```

```
|Explains how to build a
production deployment of GlassFish Server that meets the requirements of
your system and enterprise.

|link:../administration-guide/toc.html#GSADG[Administration Guide] |Explains how to
configure, monitor,
and manage GlassFish Server subsystems and components from the command
line by using the link:../reference-manual/asadmin.html#GSRFM00263[`asadmin`]
utility. Instructions for
performing these tasks from the Administration Console are provided in
the Administration Console online help.

|link:../security-guide/toc.html#GSSCG[Security Guide] |Provides instructions for
configuring and
administering GlassFish Server security.

|link:../application-deployment-guide/toc.html#GSDPG[Application Deployment Guide]
|Explains how to assemble and
deploy applications to the GlassFish Server and provides information
about deployment descriptors.

|link:../application-development-guide/toc.html#GSDVG[Application Development Guide]
|Explains how to create and
implement Java Platform, Enterprise Edition (Java EE platform)
applications that are intended to run on the GlassFish Server. These
applications follow the open Java standards model for Java EE components
and application programmer interfaces (APIs). This guide provides
information about developer tools, security, and debugging.

|link:../embedded-server-guide/toc.html#GSESG[Embedded Server Guide] |Explains how to
run applications in
embedded GlassFish Server and to develop applications in which GlassFish
Server is embedded.

|link:../ha-administration-guide/toc.html#GSHAG[High Availability Administration
Guide] |Explains how to
configure GlassFish Server to provide higher availability and
scalability through failover and load balancing.

|link:../performance-tuning-guide/toc.html#GSPTG[Performance Tuning Guide] |Explains
how to optimize the
performance of GlassFish Server.

|link:../troubleshooting-guide/toc.html#GSTSG[Troubleshooting Guide] |Describes
common problems that you
might encounter when using GlassFish Server and explains how to solve
them.
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|link:../error-messages-reference/toc.html#GSEMR[Error Message Reference] |Describes
error messages that you
might encounter when using GlassFish Server.

|link:../reference-manual/toc.html#GSRFM[Reference Manual] |Provides reference
information in man
page format for GlassFish Server administration commands, utility
commands, and related concepts.

|link:../../openmq/mq-release-notes/toc.html#GMRLN[Message Queue Release Notes]
|Describes new features,
compatibility issues, and existing bugs for Open Message Queue.

|link:../../openmq/mq-tech-over/toc.html#GMTOV[Message Queue Technical Overview]
|Provides an introduction
to the technology, concepts, architecture, capabilities, and features of
the Message Queue messaging service.

|link:../../openmq/mq-admin-guide/toc.html#GMADG[Message Queue Administration Guide]
|Explains how to set up
and manage a Message Queue messaging system.

|link:../../openmq/mq-dev-guide-jmx/toc.html#GMJMG[Message Queue Developer's Guide
for JMX Clients] |Describes
the application programming interface in Message Queue for
programmatically configuring and monitoring Message Queue resources in
conformance with the Java Management Extensions (JMX).

|link:../../openmq/mq-dev-guide-java/toc.html#GMJVG[Message Queue Developer's Guide
for Java Clients] |Provides
information about concepts and procedures for developing Java messaging
applications (Java clients) that work with GlassFish Server.

|link:../../openmq/mq-dev-guide-c/toc.html#GMCCG[Message Queue Developer's Guide for
C Clients] |Provides
programming and reference information for developers working with
Message Queue who want to use the C language binding to the Message
Queue messaging service to send, receive, and process Message Queue
messages.
|=======================================================================


[[GSUPG00021]][[giprl]]


[[related-documentation]]
Related Documentation
~~~~~~~~~~~~~~~~~~~~~
```

```
The following tutorials explain how to develop Java EE applications:

* http://docs.oracle.com/javaee/7/firstcup/doc/home.html[Your First Cup:
An Introduction to the Java EE Platform]
(`http://docs.oracle.com/javaee/7/firstcup/doc/home.html`). For beginning
Java EE programmers, this short tutorial explains the entire process for
developing a simple enterprise application. The sample application is a
web application that consists of a component that is based on the
Enterprise JavaBeans specification, a JAX-RS web service, and a
JavaServer Faces component for the web front end.
* http://docs.oracle.com/javaee/7/tutorial/doc/home.html[The Java EE 7
Tutorial] (`http://docs.oracle.com/javaee/7/tutorial/doc/home.html`).
This comprehensive tutorial explains how to use Java EE 7 platform
technologies and APIs to develop Java EE applications.

Javadoc tool reference documentation for packages that are provided with
GlassFish Server is available as follows.

* The API specification for version 7 of Java EE is located at
`http://docs.oracle.com/javaee/7/api/`.
* The API specification for GlassFish Server 4.0, including Java EE 7
platform packages and nonplatform packages that are specific to the
GlassFish Server product, is located at
`http://glassfish.java.net/nonav/docs/v3/api/`.

Additionally, the
http://www.oracle.com/technetwork/java/javaee/tech/index.html[Java EE
Specifications]
(`http://www.oracle.com/technetwork/java/javaee/tech/index.html`) might
be useful.

For information about creating enterprise applications in the NetBeans
Integrated Development Environment (IDE), see the
http://www.netbeans.org/kb/[NetBeans Documentation, Training & Support
page] (`http://www.netbeans.org/kb/`).

For information about the Java DB database for use with the GlassFish
Server, see the
http://www.oracle.com/technetwork/java/javadb/overview/index.html[Java
DB product page]
(`http://www.oracle.com/technetwork/java/javadb/overview/index.html`).

The Java EE Samples project is a collection of sample applications that
demonstrate a broad range of Java EE technologies. The Java EE Samples
are bundled with the Java EE Software Development Kit (SDK) and are also
available from the http://glassfish-samples.java.net/[Java EE Samples
project page] (`http://glassfish-samples.java.net/`).
```

```
[[GSUPG00022]][[fwbkx]]


[[typographic-conventions]]
Typographic Conventions
~~~~~~~~~~~~~~~~~~~~~~~

The following table describes the typographic changes that are used in
this book.

[width="100%",cols="<14%,<37%,<49%",options="header",]
|=======================================================================
|Typeface |Meaning |Example
|`AaBbCc123` |The names of commands, files, and directories, and
onscreen computer output a|
Edit your `.login` file.

Use `ls` `a` to list all files.

`machine_name% you have mail.`

|`AaBbCc123` |What you type, contrasted with onscreen computer output a|
`machine_name%` `su`

`Password:`

|AaBbCc123 |A placeholder to be replaced with a real name or value |The
command to remove a file is `rm` filename.

|AaBbCc123 |Book titles, new terms, and terms to be emphasized (note
that some emphasized items appear bold online) a|
Read Chapter 6 in the User's Guide.

A cache is a copy that is stored locally.

Do not save the file.

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[[GSUPG00023]][[fquvc]]


[[symbol-conventions]]
Symbol Conventions
~~~~~~~~~~~~~~~~~~
```

```
The following table explains symbols that might be used in this book.

[width="100%",cols="<10%,<26%,<28%,<36%",options="header",]
|=======================================================================
|Symbol |Description |Example |Meaning
|`[ ]` |Contains optional arguments and command options. |`ls [-l]` |The
`-l` option is not required.

|`{ \| }` |Contains a set of choices for a required command option.
|`-d {y\|n}` |The `-d` option requires that you use either the `y`
argument or the `n` argument.

|`${ }` |Indicates a variable reference. |`${com.sun.javaRoot}`
|References the value of the `com.sun.javaRoot` variable.

|- |Joins simultaneous multiple keystrokes. |Control-A |Press the
Control key while you press the A key.

|+ + |Joins consecutive multiple keystrokes. |Ctrl+A+N |Press the
Control key, release it, and then press the subsequent keys.

|> |Indicates menu item selection in a graphical user interface. |File >
New > Templates |From the File menu, choose New. From the New submenu,
choose Templates.
|=======================================================================


[[GSUPG00024]][[ghpfg]]


[[default-paths-and-file-names]]
Default Paths and File Names
~~~~~~~~~~~~~~~~~~~~~~~~~~~

The following table describes the default paths and file names that are
used in this book.

[width="100%",cols="<14%,<34%,<52%",options="header",]
|=======================================================================
|Placeholder |Description |Default Value
|as-install + a|
Represents the base installation directory for GlassFish Server.

In configuration files, as-install is represented as follows:

`${com.sun.aas.installRoot}`

 a|
```

```
Installations on the Oracle Solaris operating system, Linux operating
system, and Mac OS operating system:

user's-home-directory`/glassfish3/glassfish`

Installations on the Windows operating system:

SystemDrive`:\glassfish3\glassfish`

|as-install-parent + |Represents the parent of the base installation
directory for GlassFish Server. a|
Installations on the Oracle Solaris operating system, Linux operating
system, and Mac operating system:

user's-home-directory`/glassfish3`

Installations on the Windows operating system:

SystemDrive`:\glassfish3`

|domain-root-dir + |Represents the directory in which a domain is
created by default. |as-install`/domains/`

|domain-dir + a|
Represents the directory in which a domain's configuration is stored.

In configuration files, domain-dir is represented as follows:

`${com.sun.aas.instanceRoot}`

 |domain-root-dir`/`domain-name

|instance-dir + |Represents the directory for a server instance.
|domain-dir`/`instance-name
|=======================================================================


[[GSUPG00002]][[abmaq]]


[[glassfish-server-upgrade-compatibility-issues]]
1 GlassFish Server Upgrade Compatibility Issues
-----------------------------------------------

This section describes some compatibility issues between GlassFish
Server 4.0 and earlier product releases. This section also describes
some compatibility issues that affect Java applications that run on
earlier product releases with which Oracle GlassFish Server 4.0 is
```

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binary-compatible. When you upgrade to GlassFish Server 4.0, you must
address these issues.

The following topics are addressed here:

* link:#gjwpd[Binary-Compatible Releases For GlassFish Server 4.0]
* link:#gkric[New Default Installation Directory]
* link:#gklhr[Changes to Group Management Service Settings]
* link:#geyyk[Application Client Interoperability]
* link:#gktad[Node Agent Support]
* link:#gkrjm[HADB and `hadbm` Command Support]
* link:#abmbc[Command Line Interface: The `asadmin` Command]
* link:#gflnv[Applications That Use Java DB]
* link:#gjizi[Applications That Use Persistence]
* link:#gjiqj[HTTP Service to Network Service Changes]
* link:#gktkt[NSS Cryptographic Token Support]

[[gjwpd]][[GSUPG00028]][[binary-compatible-releases-for-glassfish-server-4.0]]

Binary-Compatible Releases For GlassFish Server 4.0
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

GlassFish Server Open Source Edition 4.0 is binary-compatible with the
following earlier releases of the software:

* Sun GlassFish Enterprise Server v2.1.1 (Enterprise and Developer
Profiles)
* Sun GlassFish Enterprise Server v3
* GlassFish Server Open Source Edition 3.0.1
* GlassFish Server Open Source Edition 3.1
* GlassFish Server Open Source Edition 3.1.1

Java applications that run on these releases also work on GlassFish
Server Open Source Edition 4.0 except for the compatibility issues that
are listed in the remainder of this chapter.


[width="100%",cols="<100%",]
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Note:

The compatibility issues that are listed in the remainder of this
chapter do not affect Java applications that run on Sun GlassFish
Enterprise Server v3 and GlassFish Server 3.0.1. The differences between
GlassFish Server 4.0 and the Enterprise Server v3 releases do not affect
applications and data.
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|=========================================================================


[[gkric]][[GSUPG00029]][[new-default-installation-directory]]

New Default Installation Directory
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The default GlassFish Server 4.0 installation directories are as
follows:

Solaris, Linux, and Mac OS X systems::
[source,oac_no_warn]
----
user-home-directory/glassfish3
----
Windows systems::
[source,oac_no_warn]
----
SystemDrive\glassfish3
----

In GlassFish Server 3.0.1 and Enterprise Server v3, the default
installation root directory was `glassfishv3`.

[[gklhr]][[GSUPG00030]][[changes-to-group-management-service-settings]]

Changes to Group Management Service Settings
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The functionality of the Group Management Service (GMS) has not changed
since Sun GlassFish Enterprise Server v2.1.1, but the names of GMS
settings have been changed in the Administration Console to make them
more understandable. These changes are made automatically during the
upgrade process.

Changes to settings on the Edit Group Management Service page in the
Administration Console are summarized in the following table.

[[sthref3]][[gklho]]

Table 1-1 GMS Administration Console Settings Changes from 2.1.1 to 4.0

[width="100%",cols="<50%,<50%",options="header",]
|================================================
|Old Setting Name |New Setting Name
|Protocol Maximum Trial |Maximum Missed Heartbeats
|Protocol Timeout |Heartbeat Frequency
```

```
|Ping Timeout |Group Discovery Timeout
|Verified Timeout |Failure Verification Wait Time
|================================================


The Merge Protocol settings from Sun GlassFish Enterprise Server v2.1.1
are not supported and have been removed.

[[geyyk]][[GSUPG00031]][[application-client-interoperability]]

Application Client Interoperability
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The Java EE 6 platform specification imposes stricter requirements than
Java EE 5 did on which JAR files can be visible to various modules
within an EAR file. In particular, application clients must not have
access to EJB JAR files or other JAR files in the EAR file unless they
use a `Class-Path` header in the manifest file, or unless references use
the standard Java SE mechanisms (extensions, for example), or use the
Java EE `library-directory` mechanism. Deployed Java EE 5 applications
that are upgraded to GlassFish Server 4.0 will have the `compatibility`
property set to `v2` and will run without change on GlassFish Server
4.0. You may, however, want to consider modifying the applications to
conform to Java EE 6 requirements.

If your upgrade includes a deployed application with an application
client, you will need to retrieve the client stubs using GlassFish
Server 4.0 in order to run the client. Use the
`asadmin get-client-stubs` command.

If you try to run the application client before retrieving the client
stubs, you will see the following error message:

[source,oac_no_warn]
----
Invalid or corrupt jarfile jar-file-name
----

If you commonly distribute application clients to remote systems from
which users will run them, you must not only retrieve the client stubs,
but you must also run the `package-appclient` utility for GlassFish
Server 4.0 to upgrade the GlassFish Server system files. This utility
creates a JAR file, which you can then expand on the remote systems.

Application clients use EJBs, web services, or other enterprise
components that are in the application server (on the server side). The
application client and the application server must use the same version
and implementation of the RMI-IIOP protocol. GlassFish Server 4.0 does
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```
not support communication between different versions of the protocol
implementation. You cannot run application clients with one version of
the application server runtime with a server that has a different
version. Most often, this would happen if you upgraded the server but
had not upgraded all the application client installations. If you run
the `package-appclient` utility, this issue will not arise.

You can use the Java Web Start support to distribute and launch the
application client. If the runtime on the server has changed since the
end-user last used the application client, Java Web Start automatically
retrieves the updated runtime. Java Web Start enables you to keep the
clients and servers synchronized and using the same runtime.

[[gktad]][[GSUPG00032]][[node-agent-support]]

Node Agent Support
~~~~~~~~~~~~~~~~~~

GlassFish Server 4.0 does not support node agents. When updating from
installations of earlier product versions in which node agents were
configured, the cluster definitions will be migrated, but the clustered
instances themselves must be manually re-created. See
link:upgrading-legacy-installation.html#gfybw[Upgrading Clusters and Node
Agent Configurations] for more information.

[[gkrjm]][[GSUPG00033]][[hadb-and-hadbm-command-support]]

HADB and `hadbm` Command Support
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

GlassFish Server 4.0 does not support HADB or the `hadbm` management
command.

Instead of HADB, GlassFish Server 4.0 supports high availability
clustering by means of in-memory session state replication and
ActiveCache for GlassFish. See "link:../ha-administration-
guide/overview.html#GSHAG00002[High Availability in
GlassFish Server]" in GlassFish Server Open Source Edition High
Availability Administration Guide for more information.

[[abmbc]][[GSUPG00034]][[command-line-interface-the-asadmin-command]]

Command Line Interface: The `asadmin` Command
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The following sections describe changes to the command line utility
`asadmin`:
```

```
* link:#abmbd[Deprecated `asadmin` Subcommands]
* link:#abmbf[Deprecated, Unsupported, and Obsolete Options]

For more information about `asadmin` and its subcommands, see the
link:../reference-manual/toc.html#GSRFM[GlassFish Server Open Source Edition
Reference Manual].

[[abmbd]][[GSUPG00053]][[deprecated-asadmin-subcommands]]

Deprecated `asadmin` Subcommands
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

In GlassFish Server 4.0, it is recommended that utility options of the
`asadmin` command precede the subcommand. Utility options are options
that control the behavior of the `asadmin` utility, as distinguished
from subcommand options. Use of the following options after the
subcommand is deprecated.

* `--host`
* `--port`
* `--user`
* `--passwordfile`
* `--terse`
* `--secure`
* `--echo`
* `--interactive`

[[abmbf]][[GSUPG00054]][[deprecated-unsupported-and-obsolete-options]]

Deprecated, Unsupported, and Obsolete Options
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

Options in link:#gaeki[Table 1-2] are deprecated or no longer supported,
or are obsolete and are ignored.

[[sthref4]][[gaeki]]

Table 1-2 Deprecated, Unsupported, and Obsolete Options for `asadmin`
and Subcommands

[width="100%",cols="<33%,<67%",options="header",]
|=======================================================================
|Option |Affected Subcommands
|`--acceptlang` |Unsupported for the `create-virtual-server` subcommand.

|`--acls` |Unsupported for the `create-virtual-server` subcommand.

|`--adminpassword` |Unsupported for all relevant subcommands. Use
```

```
`--passwordfile` instead.

|`--autoapplyenabled` |Obsolete for the `create-http-lb` subcommand.

|`--autohadb` |Obsolete for the `create-cluster` subcommand.

|`--autohadboverride` |Obsolete for the `start-cluster` subcommand and
the `stop-cluster` subcommand

|`--blockingenabled` |Unsupported for the `create-http-listener`
subcommand.

|`--configfile` |Unsupported for the `create-virtual-server` subcommand.

|`--defaultobj` |Unsupported for the `create-virtual-server` subcommand.

|`--defaultvs` |Deprecated for the `create-http-listener` subcommand.
Use `--default-virtual-server` instead.

|`--description` |Obsolete for the `restore-domain` subcommand.

|`--devicesize` |Obsolete for the `create-cluster` subcommand.

|`--haadminpassword` |Obsolete for the `create-cluster` subcommand.

|`--haadminpasswordfile` |Obsolete for the `create-cluster` subcommand.

|`--haagentport` |Obsolete for the `create-cluster` subcommand.

|`--haproperty` |Obsolete for the `create-cluster` subcommand.

|`--heartbeataddress` |Deprecated for the `create-cluster` subcommand.
Use `--multicastaddress` instead.

|`--heartbeatport` |Deprecated for the `create-cluster` subcommand. Use
`--multicastport` instead.

|`--hosts` |Obsolete for the `create-cluster` subcommand.

|`--ignoreDescriptorItem` |Replaced by the all lowercase option
`--ignoredescriptoritem` in the `set-web-context-param` subcommand and
the `set-web-env-entry` subcommand.

|`--mime` |Unsupported for the `create-virtual-server` subcommand.

|`--password` |Unsupported for all remote subcommands. Use
`--passwordfile` instead.
```

```
|`--path` |Unsupported for the `create-domain` subcommand. Use
`--domaindir` instead.

|`--portbase` |Obsolete only for the `create-cluster` subcommand. This
option is still valid in other subcommands such as `create-domain`,
`create-instance`, and `create-local-instance`.

|`--resourcetype` |Unsupported for all relevant subcommands. Use
`--restype` instead.

|`--retrievefile` |Obsolete for the `export-http-lb-config` subcommand.

|`--setenv` |Obsolete for the `start-instance` subcommand.

|`--target` a|
Obsolete only for the following subcommands:

* `create-connector-connection-pool`
* `create-resource-adapter-config`
* `delete-connector-connection-pool`
* `delete-connector-security-map`
* `delete-jdbc-connection-pool`
* `delete-resource-ref`

Replaced by an operand in the `list-custom-resources` subcommand and the
`list-jndi-entries` subcommand:

|=======================================================================


[[gflnv]][[GSUPG00035]][[applications-that-use-java-db]]

Applications That Use Java DB
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

The directory location of Java DB in GlassFish Server 4.0 has changed
from its location in previous installations. Suppose that you have
deployed applications that use Java DB databases in your previous server
installation, and you upgrade your existing installation to GlassFish
Server 4.0. If you run the `asadmin start-database` command and
successfully start Java DB, you could run into problems while trying to
run applications that were deployed on your previous server
installation.

To solve this problem, you can copy the `databases` directory from your
previous installation to as-install`/databases`. Make sure the database
is not running when you do this.
```

```
Alternatively, you can perform these steps:

1.  Use the `asadmin start-database` command with the `--dbhome` option
pointing to the `databases` directory in the older version of Java DB.
For example: +
[source,oac_no_warn]
----
asadmin start-database --dbhome c:\glassfish\databases
----
2.  After upgrade, start GlassFish Server 4.0.

[[gjizi]][[GSUPG00036]][[applications-that-use-persistence]]

Applications That Use Persistence
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

GlassFish Server 4.0 and 3.0.1, and Sun GlassFish Enterprise Server v3
use the persistence provider EclipseLink, while earlier versions used
TopLink Essentials.

An application that uses the container to create an `EntityManager` or
`EntityManagerFactory` and that used Toplink Essentials as its provider
will work in GlassFish Server 4.0. The container creates an
`EntityManager` if the application uses the `@PersistenceContext`
annotation to inject an `EntityManager`, as in the following example:

[source,oac_no_warn]
----
@PersistenceContext
EntityManager em;
----

The container creates an `EntityManagerFactory` if the application uses
the `@PersistenceUnit` annotation to inject an `EntityManagerFactory`,
as in the following example:

[source,oac_no_warn]
----
@PersistenceUnit
EntityManagerFactory emf;

EntityManager em = emf.createEntityManager();
----

When the application is loaded, GlassFish Server 4.0 will translate the
provider to EclipseLink and will also translate `toplink.*` properties
in the `persistence.xml` to corresponding EclipseLink properties. (The
actual `persistence.xml` file remains unchanged.)
```

```
Under certain circumstances, however, you may have to modify the
`persistence.xml` file or your code:

* If your application uses Java SE code to create the
`EntityManagerFactory`, you will need to change your `persistence.xml`
file for both the `provider` element and for any `toplink.*` properties
to use the EclipseLink equivalents. An application uses Java SE code if
it uses the `javax.persistence.Persistence` class to create the
`EntityManagerFactory`, as in the following example: +
[source,oac_no_warn]
----
EntityManagerFactory emf =
    javax.persistence.Persistence.createEntityManagerFactory("Order");
EntityManager em = emf.createEntityManager();
----
In this case, change the `provider` element to specify the following: +
[source,oac_no_warn]
----
<provider>org.eclipse.persistence.jpa.PersistenceProvider</provider>
----
* If the application itself contains any TopLink Essentials-specific
code and therefore contains casts to `oracle.toplink.*`, you must change
the code to cast to `org.eclipse.persistence.*`. You can use the package
renamer tool described on the
http://wiki.eclipse.org/EclipseLink/Examples/MigratingFromOracleTopLink#Rename_Packag
es[Eclipse
wiki]
(`http://wiki.eclipse.org/EclipseLink/Examples/MigratingFromOracleTopLink#Rename_Pack
ages`)
to do this. This tool is not provided with GlassFish Server 4.0,
however, so you must obtain it from the EclipseLink project download
site.

[[gjiqj]][[GSUPG00037]][[http-service-to-network-service-changes]]

HTTP Service to Network Service Changes
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

In GlassFish Server 4.0, most HTTP Service settings are defined in the
Network Service configuration that was introduced in Sun GlassFish
Enterprise Server v3.

The changes are described in the following sections.

* link:#gipsa[Changes to Dotted Names]
* link:#giprg[Changes to `asadmin` Subcommands]
* link:#gipfo[Remapping of HTTP Service Attributes and Properties]
```

```
* link:#gipcg[New Network Service Elements and Attributes]

[[gipsa]][[GSUPG00055]][[changes-to-dotted-names]]

Changes to Dotted Names
^^^^^^^^^^^^^^^^^^^^^^^

The dotted name hierarchy for the HTTP Service configuration in
GlassFish Server 4.0 is shown below. Elements that are no longer
supported are `request-processing`, `keep-alive`, `connection-pool`,
`http-protocol`, `http-file-cache`, and `http-listener`. During the
upgrade process, these discontinued elements are remapped to the new
configuration automatically and then deleted.

[source,oac_no_warn]
----
config
    http-service
        access-log
        request-processing
        keep-alive
        connection-pool
        http-protocol
        http-file-cache
        http-listener
            ssl
            property
        virtual-server
            http-access-log
            property
        property
    thread-pools
        thread-pool
----

The dotted name hierarchy for the GlassFish Server 4.0 Network Service
and HTTP Service configurations is shown below. The `network-config`
element and all its children are new except for `ssl`.

[source,oac_no_warn]
----
config
    network-config
        transports
            selection-key-handler
            transport
        protocols
            protocol
```

```
                http
                    file-cache
                port-unification
                    protocol-finder
                protocol-chain-instance-handler
                    protocol-chain
                protocol-filter
                ssl
        network-listeners
            network-listener
    http-service
        access-log
        virtual-server
            http-access-log
            property
        property
    thread-pools
        thread-pool
----

The following example compares the commands for setting a listener port
for Sun GlassFish Enterprise Server v3 and GlassFish Server 4.0. Note
that the configuration for Enterprise Server v3 also applies to all
earlier Enterprise Server 2.x releases.

* Command for Sun GlassFish Enterprise Server v3 and earlier: +
[source,oac_no_warn]
----
asadmin set server-config.http-service.http-listener.http-1.listenerport=4321
----
* Command for GlassFish Server 4.0: +
[source,oac_no_warn]
----
asadmin set server-config.network-config.network-listeners.network-\
listener.http-1.listenerport=4321
----

[[giprg]][[GSUPG00056]][[changes-to-asadmin-subcommands]]

Changes to `asadmin` Subcommands
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

To accommodate the move of HTTP Service into the new Network Service
configuration, link:../reference-manual/asadmin.html#GSRFM00263[`asadmin`]
subcommands are changed as
follows:

* The link:../reference-manual/create-ssl.html#GSRFM00058[`create-ssl`] subcommand
```

```
has a new `--type`
parameter value, `network-listener`.
* The link:../reference-manual/create-virtual-server.html#GSRFM00062[`create-virtual-
server`] SUBcommand has a new
parameter, `--networklisteners`.
* The link:../reference-manual/create-http-listener.html#GSRFM00030[`create-http-
listener`] subcommand adds a
`network-listener` element to the domain configuration. The syntax and
options of this commands are unchanged.

[[gipfo]][[GSUPG00057]][[remapping-of-http-service-attributes-and-properties]]

Remapping of HTTP Service Attributes and Properties
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

The following tables describe how attributes and properties in the HTTP
Service configuration for GlassFish Server 4.0 are remapped to
attributes in the Network Service configuration for older product
releases. If you use a configuration from a Sun GlassFish Enterprise
Server v2 or v3 release, this remapping happens automatically and then
discontinued elements are deleted.

[[sthref5]][[gipfy]]

Table 1-3 `com.sun.grizzly` Property Remapping

[width="100%",cols="<33%,<26%,<41%",options="header",]
|=======================================================================
|`com.sun.grizzly` Property |New Owning Element |New Attribute Name
|`selector.timeout` |`transport` |`selector-poll-timeout-millis`
|`displayConfiguration` |`transport` |`display-configuration`
|`enableSnoop` |`transport` |`snoop-enabled`
|`readTimeout` |`transport` |`read-timeout-millis`
|`writeTimeout` |`transport` |`write-timeout-millis`
|=======================================================================



[[sthref6]][[gipfn]]

Table 1-4 `connection-pool` Attribute Remapping

[width="100%",cols="<41%,<19%,<40%",options="header",]
|============================================================================
|`connection-pool` Attribute |New Owning Element |New Attribute Name
|`queue-size-in-bytes` |`thread-pool` |`max-queue-size`

|`max-pending-count` |`transport` |`max-connections-count`
```

```
|`receive-buffer-size-in-` `bytes` |`http` |`request-body-buffer-size-`
`bytes`

|`send-buffer-size-in-bytes` |`http` |`send-buffer-size-bytes`
|=======================================================================


[[sthref7]][[gipcv]]

Table 1-5 `http-file-cache` Attribute Remapping

[width="100%",cols="<50%,<17%,<33%",options="header",]
|=======================================================================
|`http-file-cache` Attribute |New Owning Element |New Attribute Name
|`file-caching-enabled` |`file-cache` |`enabled`
|`max-age-in-seconds` |`file-cache` |`max-age-seconds`
|`medium-file-space-in-bytes` |`file-cache` |`max-cache-size-bytes`
|`max-files-count` |`file-cache` |`max-files-count`
|`globally-enabled` |none |not supported
|`medium-file-size-limit-in-bytes` |none |not supported
|`small-file-size-limit-in-bytes` |none |not supported
|`small-file-space-in-bytes` |none |not supported
|`file-transmission-enabled` |none |not supported
|`hash-init-size` |none |not supported
|=======================================================================


[[sthref8]][[gipev]]

Table 1-6 `http-listener` Attribute Remapping

[width="100%",cols="<37%,<27%,<36%",options="header",]
|=======================================================================
|`http-listener` Attribute |New Owning Element |New Attribute Name
|`id` |`network-listener` |`name`
|`address` |`network-listener` |`address`
|`port` |`network-listener` |`port`
|`enabled` |`network-listener` |`enabled`
|`acceptor-threads` |`transport` |`acceptor-threads`
|`security-enabled` |`protocol` |`security-enabled`
|`default-virtual-server` |`http` |`default-virtual-server`
|`server-name` |`http` |`server-name`
|`redirect-port` |`http` |`redirect-port`
|`xpowered-by` |`http` |`xpowered-by`
|`external-port` |none |not supported
|`family` |none |not supported
|`blocking-enabled` |none |not supported
|=======================================================================
```

```
[[sthref9]][[gipdo]]

Table 1-7 `http-listener` Property Remapping

[width="100%",cols="<43%,<15%,<42%",options="header",]
|=======================================================================
|`http-listener` Property |New Owning Element |New Attribute Name
|`maxKeepAliveRequests` |`http` |`max-connections`

|`authPassthroughEnabled` |`http` |`auth-pass-through-enabled`

|`compression` |`http` |`compression`

|`compressableMimeType` |`http` |`compressable-mime-type`

|`noCompressionUserAgents` |`http` |`no-compression-user-agents`

|`compressionMinSize` |`http` |`compression-min-size-bytes`

|`restrictedUserAgents` |`http` |`restricted-user-agents`

|`cometSupport` |`http` |`comet-support-enabled`

|`connectionUploadTimeout` |`http` |`connection-upload-timeout-`
`millis`

|`disableUploadTimeout` |`http` |`upload-timeout-enabled`

|`chunkingDisabled` |`http` |`chunking-enabled`

|`uriEncoding` |`http` |`uri-encoding`

|`traceEnabled` |`http` |`trace-enabled`

|`rcmSupport` |`http` |`rcm-support-enabled`

|`jkEnabled` |`network-` `listener` |`jk-enabled`

|`crlFile` |`ssl` |`crl-file`

|`trustAlgorithm` |`ssl` |`trust-algorithm`

|`trustMaxCertLength` |`ssl` |`trust-max-cert-length-bytes`

|`tcpNoDelay` |`transport` |`tcp-no-delay`
```

```
|`bufferSize` |`transport` |`buffer-size-bytes`

|`use-nio-direct-bytebuffer` |`transport` |`byte-buffer-type`

|`proxyHandler` |none |not supported

|`proxiedProtocols` |none |not supported

|`recycle-objects` |none |not supported

|`reader-threads` |none |not supported

|`acceptor-queue-length` |none |not supported

|`reader-queue-length` |none |not supported

|`connectionTimeout` |none |not supported

|`monitoring-cache-enabled` |none |not supported

|`monitoring-cache-refresh-in-` `millis` |none |not supported

|`ssl-cache-entries` |none |not supported

|`ssl3-session-timeout` |none |not supported

|`ssl-session-timeout` |none |not supported
|=======================================================================


[[sthref10]][[gipel]]

Table 1-8 `http-protocol` Attribute Remapping

[width="100%",cols="<34%,<33%,<33%",options="header",]
|===================================================================
|`http-protocol` Attribute |New Owning Element |New Attribute Name
|`version` |`http` |`version`
|`forced-response-type` |`http` |`forced-response-type`
|`default-response-type` |`http` |`default-response-type`
|`dns-lookup-enabled` |none |not supported
|`ssl-enabled` |none |not supported
|===================================================================


[[sthref11]][[gipfa]]

Table 1-9 `http-service` Property Remapping
```

```
[width="100%",cols="<34%,<33%,<33%",options="header",]
|=======================================================================
|`http-service` Property |New Owning Element |New Attribute or Property
Name
|`accessLoggingEnabled` |`http-service`, `virtual-server`
|`access-logging-enabled` attribute

|`ssl-cache-entries` |`http-service` |unchanged property

|`ssl3-session-timeout` |`http-service` |unchanged property

|`ssl-session-timeout` |`http-service` |unchanged property

|`proxyHandler` |`http-service` |unchanged property

|`connectionTimeout` |`http-service` |unchanged property

|all other properties |none |not supported
|=======================================================================


[[sthref12]][[gipea]]

Table 1-10 `keep-alive` Attribute Remapping

[width="100%",cols="<34%,<33%,<33%",options="header",]
|===========================================================
|`keep-alive` Attribute |New Owning Element |New Attribute Name
|`max-connections` |`http` |`max-connections`
|`timeout-in-seconds` |`http` |`timeout-seconds`
|`thread-count` |none |not supported
|===========================================================


[[sthref13]][[gipdh]]

Table 1-11 `request-processing` Attribute Remapping

[width="100%",cols="<43%,<18%,<39%",options="header",]
|=================================================================
|`request-processing` Attribute |New Owning Element |New Attribute Name
|`thread-count` |`thread-pool` |`max-thread-pool-size`
|`initial-thread-count` |`thread-pool` |`min-thread-pool-size`
|`header-buffer-length-in-bytes` |`http` |`header-buffer-length-bytes`
|`request-timeout-in-seconds` |`http` |`request-timeout-seconds`
|`thread-increment` |none |not supported
|=================================================================
```

```
[[sthref14]][[gipdv]]

Table 1-12 `ssl` Attribute Changes

[width="100%",cols="<34%,<22%,<44%",options="header",]
|=======================================================================
|Previous Attribute or Property |Previous Owning Element |New `ssl`
Attribute
|none |none |`key-store`

|none |none |`trust-store`

|`crlFile` property |`http-listener` |`crl-file`

|`trustAlgorithm` property |`http-listener` |`trust-algorithm`

|`trustMaxCertLength` property |`http-listener`
|`trust-max-cert-length-bytes`

|all other `ssl` attributes |`ssl` |unchanged
|=======================================================================


[[sthref15]][[gipcj]]

Table 1-13 `thread-pool` Attribute Changes

[width="100%",cols="<44%,<17%,<39%",options="header",]
|=======================================================================
|Previous Attribute |Previous Owning Element |New `thread-pool`
Attribute
|none |none |`classname`

|none |none |`max-queue-size`

|`thread-pool-id` |`thread-pool` |`name`

|`idle-thread-timeout-in-seconds` |`thread-pool`
|`idle-thread-timeout-seconds`

|`num-work-queues` |`thread-pool` |not supported

|all other `thread-pool` attributes |`thread-pool` |unchanged
|=======================================================================
```

```
[[sthref16]][[gipep]]

Table 1-14 `virtual-server` Attribute Changes

[width="100%",cols="<39%,<24%,<37%",options="header",]
|=======================================================================
|Previous Attribute or Property |Previous Owning Element |New
`virtual-server` Attribute
|`http-listeners` attribute |`virtual-server` |`network-listeners`

|`accessLoggingEnabled` property |`http-service`
|`access-logging-enabled`

|`sso-enabled` property |`virtual-server` |`sso-enabled`

|`ssoCookieSecure` property |`virtual-server` |`sso-cookie-secure`

|all other `virtual-server` attributes |`virtual-server` |unchanged

|all other `virtual-server` properties |`virtual-server` |unchanged,
still properties
|=======================================================================


[[gipcg]][[GSUPG00058]][[new-network-service-elements-and-attributes]]

New Network Service Elements and Attributes
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

The following tables describe the Network Service elements and
attributes that were introduced in Sun GlassFish Enterprise Server v3.
For attributes and properties remapped from discontinued elements to new
elements, see link:#gipfo[Remapping of HTTP Service Attributes and
Properties].

The new `file-cache` element has no new attributes. All of its
attributes are remapped from the `http-file-cache` element. For details,
see link:#gipcv[Table 1-5].

[[sthref17]][[gipds]]

Table 1-15 New `http` Attributes

[width="100%",cols="<28%,<32%,<40%",options="header",]
|=======================================================================
|Attribute |Default |Description
|`adapter` |`com.sun.grizzly.tcp. StaticResourcesAdapter` |(Optional)
Specifies the class name of the static resources adapter.
```

```
|`max-post-size-bytes` |`2097152` |(Optional) Specifies the maximum size
of `POST` actions.
|==========================================================================


For remapped `http` attributes, see link:#gipfn[Table 1-4],
link:#gipev[Table 1-6], link:#gipdo[Table 1-7], link:#gipel[Table 1-8],
link:#gipea[Table 1-10], and link:#gipdh[Table 1-11].

[[sthref18]][[gipey]]

Table 1-16 New `network-listener` Attributes

[width="100%",cols="<18%,<11%,<71%",options="header",]
|==========================================================================
|Attribute |Default |Description
|`protocol` |none |Specifies the `name` of the `protocol` associated
with this `network-listener`. Although this attribute is required, a
`protocol` is automatically created with the same `name` as the
`network-listener` when you use `asadmin create-http-listener` to create
a `network-listener`.

|`thread-pool` |none |(Optional) Specifies the `name` of the
`thread-pool` associated with this `network-listener`.

|`transport` |none |Specifies the `name` of the `transport` associated
with this `network-listener`. Although this attribute is required, the
default `transport` is used when you use `asadmin create-http-listener`
to create a `network-listener`.
|==========================================================================


For remapped `network-listener` attributes, see link:#gipev[Table 1-6].

[[sthref19]][[gipfg]]

Table 1-17 New `port-unification` Attributes

[width="100%",cols="<19%,<16%,<65%",options="header",]
|==========================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `port-unification`.

|`classname` |none |Specifies the class name of the `port-unification`
implementation.
|==========================================================================
```

```
[[sthref20]][[gipdj]]

Table 1-18 New `protocol` Attributes

[width="100%",cols="<18%,<17%,<65%",options="header",]
|=======================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `protocol`.
|=======================================================


For remapped `protocol` attributes, see link:#gipev[Table 1-6].

[[sthref21]][[gipcr]]

Table 1-19 New `protocol-chain` Attributes

[width="100%",cols="<19%,<17%,<64%",options="header",]
|=====================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `protocol-chain`.

|`classname` |none |Specifies the class name of the `protocol-chain`
implementation.

|`type` |`STATELESS` |Specifies the type of protocol chain.
|=====================================================================


[[sthref22]][[gipfq]]

Table 1-20 New `protocol-chain-instance-handler` Attributes

[width="100%",cols="<19%,<17%,<64%",options="header",]
|=====================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the
`protocol-chain-instance-handler`.

|`classname` |none |Specifies the class name of the
`protocol-chain-instance-handler` implementation.
|=====================================================================


[[sthref23]][[gipeq]]

Table 1-21 New `protocol-filter` Attributes
```

```
[width="100%",cols="<19%,<17%,<64%",options="header",]
|=======================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `protocol-filter`.

|`classname` |none |Specifies the class name of the `protocol-filter`
implementation.
|=======================================================================


[[sthref24]][[gipfd]]

Table 1-22 New `protocol-finder` Attributes

[width="100%",cols="<19%,<17%,<64%",options="header",]
|=======================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `protocol-finder`.

|`classname` |none |Specifies the class name of the `protocol-finder`
implementation.

|`protocol` |none |Specifies the `name` of the `protocol` associated
with this `protocol-finder`.
|=======================================================================


[[sthref25]][[gipft]]

Table 1-23 New `selection-key-handler` Attributes

[width="100%",cols="<19%,<16%,<65%",options="header",]
|=======================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `selection-key-handler`.

|`classname` |none |Specifies the class name of the
`selection-key-handler` implementation.
|=======================================================================


[[sthref26]][[gipfi]]

Table 1-24 New `ssl` Attributes

[width="100%",cols="<19%,<17%,<64%",options="header",]
|=======================================================
```

```
|Attribute |Default |Description
|`key-store` |none |(Optional) Specifies a key store.
|`trust-store` |none |(Optional) Specifies a trust store.
|=======================================================


For remapped `ssl` attributes, see link:#gipdv[Table 1-12].

[[sthref27]][[gipcc]]

Table 1-25 New `thread-pool` Attributes

[width="100%",cols="<21%,<32%,<47%",options="header",]
|=========================================================================
|Attribute |Default |Description
|`classname` |`com.sun.grizzly.http.StatsThreadPool` |(Optional)
Specifies the class name of the `thread-pool` implementation.

|`max-queue-size` |`-1` |(Optional) Specifies the maximum number of
messages that can be queued until threads are available to process them.
A value of `-1` specifies no limit.
|=========================================================================


For remapped `thread-pool` attributes, see link:#gipfn[Table 1-4],
link:#gipdh[Table 1-11], and link:#gipcj[Table 1-13].

[[sthref28]][[gipem]]

Table 1-26 New `transport` Attributes

[width="100%",cols="<35%,<27%,<38%",options="header",]
|=========================================================================
|Attribute |Default |Description
|`name` |none |Specifies a unique name for the `transport`.

|`classname` |`com.sun.grizzly. TCPSelectorHandler` |(Optional)
Specifies the class name of the `transport` implementation.

|`selection-key-handler` |none |(Optional) Specifies the `name` of the
`selection-key-handler` associated with this `transport`.

|`idle-key-timeout-seconds` |`30` |(Optional) Specifies the idle key
timeout.
|=========================================================================


For remapped `transport` attributes, see link:#gipfy[Table 1-3],
```

```
link:#gipfn[Table 1-4], link:#gipev[Table 1-6], and link:#gipdo[Table
1-7].

[[gktkt]][[GSUPG00038]][[nss-cryptographic-token-support]]

NSS Cryptographic Token Support
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

GlassFish Server 4.0 does not support Network Security Services (NSS)
cryptographic tokens. When upgrading to GlassFish Server 4.0 from
Enterprise Server v2.x, additional manual configuration steps must be
performed. These steps are explained later in this guide, in
link:upgrading-legacy-installation.html#gktnh[Upgrading Installations
That Use NSS Cryptographic Tokens].


[[GSUPG00003]][[abmbq]]


[[upgrading-an-installation-of-application-server-or-glassfish-server]]
2 Upgrading an Installation of Application Server or GlassFish Server
---------------------------------------------------------------------

The Upgrade Tool that is bundled with GlassFish Server 4.0 replicates
the configuration of a previously installed server in the target
installation. The Upgrade Tool assists in upgrading the configuration
and applications from an earlier version of the Application Server or
GlassFish Server to GlassFish Server 4.0.

In addition to Upgrade Tool, there are three Update Center tools that
can be used to perform an in-place upgrade to GlassFish Server 4.0 from
GlassFish Server 3.1.1, 3.1, 3.0.1, and Enterprise Server v3. These
three Update Center tools are:

* Update Tool
* Software Update Notifier
* The `pkg` command-line utility

Upgrade Tool and the three Update Center tools are explained later in
this chapter.

To view a list of the older versions from which you can upgrade, see
link:#gjxkx[Supported Releases for Upgrade to GlassFish Server 4.0].

The following topics are addressed here:

* link:#gaejc[Upgrade Overview]
* link:#abmbr[Performing a Side-By-Side Upgrade With Upgrade Tool]
```

```
* link:#gkthu[Performing an In-Place Upgrade With the Update Center
Tools]
* link:#gktnh[Upgrading Installations That Use NSS Cryptographic Tokens]
* link:#gfybw[Upgrading Clusters and Node Agent Configurations]
* link:#gkrfh[Correcting Potential Upgrade Problems]

[[gaejc]][[GSUPG00039]][[upgrade-overview]]

Upgrade Overview
~~~~~~~~~~~~~~~~

The subsections that follow provide information that you will need when
you perform an upgrade.

The following topics are addressed here:

* link:#gkxum[Upgrade Paths]
* link:#gdkiw[Upgrade Terminology]
* link:#gktcb[Summary of Upgrade Tools and Procedures]
* link:#gjxkx[Supported Releases for Upgrade to GlassFish Server 4.0]
* link:#gkufi[Upgrading From Version 8.x or Older Product Releases]
* link:#gkxrp[Upgrading GlassFish Server Inside a Closed Network]

[[gkxum]][[GSUPG00059]][[upgrade-paths]]

Upgrade Paths
^^^^^^^^^^^^^

There are two general paths you can use when upgrading to GlassFish
Server 4.0:

Side-by-Side::
  A side-by-side upgrade means that the new GlassFish Server release is
  installed in a different directory than the release from which you are
  upgrading. +
  In this scenario, you perform the following steps: +
  1.  Perform a basic installation of GlassFish Server 4.0 in a location
  other than the one being used for the older product.
  2.  Use Upgrade Tool to migrate the old configurations and
  applications to the new GlassFish Server 4.0 directories.
  3.  Test the new GlassFish Server installation to make sure everything
  is working properly.
  4.  When you are satisfied that the new installation works properly,
  modify your production environment to use the new installation. +
  The side-by-side upgrade path is typically used for live production
  environments because it allows you to thoroughly test the new
  GlassFish Server installation before bringing it into production.
In-Place::
```

```
  An in-place upgrade means that the new GlassFish Server release is
  installed directly over and into the same directory as the previous
  product release. The existing configuration is reused in the updated
  installation. +
  In this scenario, you simply use Update Tool, the `pkg` utility, or
  the Update Notifier in your old installation to overwrite the old
  installation with the new GlassFish Server 4.0 product. +
  Performing an in-place upgrade is easier than performing a
  side-by-side upgrade, but you lose the ability to switch back and
  forth between the old and new installations. There is also no way to
  revert an in-place upgrade back to the previous product version.
  Because of these limitations, in-place upgrades are typically only
  used by developers and for non-production GlassFish Server
  deployments. +
  Note also that it is only possible to perform an in-place upgrade when
  upgrading from GlassFish Server 3.1.1, 3.1, 3.0.1, or v3. If you are
  upgrading from product versions prior to 3x, you must perform a
  side-by-side upgrade.

For a more detailed overview, see link:#gktcb[Summary of Upgrade Tools
and Procedures].

[[gdkiw]][[GSUPG00060]][[upgrade-terminology]]

Upgrade Terminology
^^^^^^^^^^^^^^^^^^^

The following are important terms related to the upgrade process.

Source Domain Directory::
  The directory of the server domain from which you are upgrading to the
  new version (for example, `c:\glassfish\domains\domain1`).
Target Root Domain's Directory::
  The directory where domains are created on the server to which you are
  upgrading (for example, `c:\glassfish3\glassfish\domains`).
Master Password::
  The SSL certificate database password used in operations such as
  GlassFish Server startup. This term refers to the master password of
  the installation from which you want to upgrade. You need to specify
  this password if you have changed it from the default value of
  `changeit`.

[[gktcb]][[GSUPG00061]][[summary-of-upgrade-tools-and-procedures]]

Summary of Upgrade Tools and Procedures
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

There are several tools you can use to upgrade from an earlier GlassFish
```

```
Server or Enterprise Server installation to GlassFish Server 4.0. The
general procedures for upgrading to GlassFish Server 4.0 vary depending
on which tool you use and the product version from which you are
upgrading.

The following topics are addressed here:

* link:#gktdx[Summary of Tools for Performing an Upgrade]
* link:#gktdz[Summary of Procedure for Upgrading With Upgrade Tool]
* link:#gktcl[Summary of Procedure for Upgrading With Update Tool]
* link:#gkuef[Summary of Procedure for Upgrading With the Software
Update Notifier]
* link:#gktnb[Summary of Procedure for Upgrading With the `pkg` Utility]

[[gktdx]][[GSUPG00045]][[summary-of-tools-for-performing-an-upgrade]]

Summary of Tools for Performing an Upgrade
++++++++++++++++++++++++++++++++++++++++++

There are several tools you can use to perform an upgrade to GlassFish
Server 4.0 are described below.

* link:#gktcz[Upgrade Tool]
* link:#gktha[Update Tool and the `pkg` Utility]
* link:#gkuff[Software Update Notifier]

[[gktcz]][[GSUPG00004]][[upgrade-tool]]

Upgrade Tool

The GlassFish Server Upgrade Tool is tended solely for performing
side-by-side upgrades from any compatible older product version to
GlassFish Server 4.0.

Upgrade Tool provides a number of features that aid in the migration of
older configurations and applications to a new GlassFish Server 4.0
installation. These features are described in more detail in
link:#gdkix[Upgrade Tool Functionality].

In GlassFish Server 4.0 Upgrade Tool is installed in the
as-install`/bin` directory.


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Note:
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Upgrade Tool is the only tool you can use when upgrading to GlassFish
Server 4.0 from product versions prior to GlassFish Server 3.0.1 or
Enterprise Server v3.

|====================================================================


See link:#gktdz[Summary of Procedure for Upgrading With Upgrade Tool]
for an overview of the general procedure for performing an upgrade with
Upgrade Tool.

[[gktha]][[GSUPG00005]][[update-tool-and-the-pkg-utility]]

Update Tool and the `pkg` Utility

The GlassFish Server Update Tool is a graphical utility that is
typically used for the day-to-day maintenance of GlassFish Server
components and additional features. For example, Update Tool can be used
to update GlassFish Server components or install additional features
such as OSGi Admin Console.

The command-line counterpart to Update Tool is the `pkg` utility. While
the `pkg` utility does not provide exactly the same set of features as
Update Tool, for the purposes of upgrading to GlassFish Server 4.0, the
`pkg` utility and Update Tool feature sets are almost identical.

In addition to day-to-day maintenance tasks, Update Tool and the `pkg`
utility can be used to perform an in-place upgrade of an entire
GlassFish Server 3.0.1 or Enterprise Server v3 installation to the
GlassFish Server 4.0 or later release.

In GlassFish Server 4.0 Update Tool is installed in the
as-install-parent`/bin` directory.


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Note:

It is not possible to use Update Tool to upgrade from GlassFish Server
or Enterprise Server versions prior to 3x. For these older versions, you
must use the Upgrade Tool, described in link:#gktcz[Upgrade Tool].

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See link:#gktcl[Summary of Procedure for Upgrading With Update Tool] for
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```
an overview of the general procedure for performing an upgrade with
Update Tool. For more information about Update Tool in general, see
"link:../administration-guide/toc.html#GSADG00701[Update Tool]" in GlassFish Server
Open Source Edition
Administration Guide.

[[gkuff]][[GSUPG00006]][[software-update-notifier]]

Software Update Notifier

The GlassFish Server Software Update Notifier is similar to Update Tool
and the `pkg` utility in that it enables you to perform an in-place
upgrade from GlassFish Server 3.1.1, 3.1, 3.0.1, or Enterprise Server
v3. As with Update Tool and the `pkg` utility, you cannot use the
Software Update tool to upgrade from product releases prior 3.0.1 and
v3.

The Software Update Notifier is distributed as a configuration option
during GlassFish Server 4.0, 3.0.1, and Enterprise Server v3
installation. If installed and enabled, the Software Update Notifier
monitors your installation and pops up a notification balloon when
updates or upgrades are available for your product.

See link:#gkuef[Summary of Procedure for Upgrading With the Software
Update Notifier] for an overview of the general procedure for performing
an upgrade with the Software Update Notifier. For more information about
the Update Notifier, refer to the Update Tool online help.

[[gktdz]][[GSUPG00046]][[summary-of-procedure-for-upgrading-with-upgrade-tool]]

Summary of Procedure for Upgrading With Upgrade Tool
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The general procedure for using Upgrade Tool to perform an upgrade to
GlassFish Server 4.0 from any compatible older version of GlassFish
Server or Enterprise Server comprises the following steps:

1.  Download GlassFish Server 4.0 and perform a Standard Installation,
as described in "link:../installation-guide/toc.html#GSING00007[To Install GlassFish
Server Using the
Self-Extracting File]" in GlassFish Server Open Source Edition
Installation Guide.
2.  Copy any custom or third-party libraries from the older installation
to their corresponding locations in the new GlassFish Server 4.0
installation directories. Note that you should only copy custom or
third-party libraries here. Do not copy an libraries from the actual
domain that will be upgraded.
3.  Run the `asupgrade` command from the new GlassFish Server 4.0
```

```
as-install`/bin` directory.
4.  Start the new GlassFish Server 4.0 DAS with the
`asadmin start-domain` subcommand.

This procedure is described in more detail in link:#abmbr[Performing a
Side-By-Side Upgrade With Upgrade Tool].

[[gktcl]][[GSUPG00047]][[summary-of-procedure-for-upgrading-with-update-tool]]

Summary of Procedure for Upgrading With Update Tool
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The general procedure for using Update Tool to perform an upgrade to
GlassFish Server 4.0 from GlassFish Server 3.0.1 or Enterprise Server v3
comprises the following steps:

1.  Manually stop all server instances and the domain.
2.  Launch Update Tool by using the as-install-parent`/bin/updatetool`
command in the older product directory.
3.  In Update Tool, select and install the latest GlassFish Server
product release. This updates your server to the 4.0 release.
4.  Upgrade the domain by running the `asadmin start-domain --upgrade`
subcommand. This performs the upgrade and then shuts down the DAS.
5.  Restart the DAS normally with the with the `asadmin start-domain`
subcommand.

This procedure is described in more detail in link:#gktjf[To Upgrade
Using the Update Tool GUI].

[[gkuef]][[GSUPG00048]][[summary-of-procedure-for-upgrading-with-the-software-update-
notifier]]

Summary of Procedure for Upgrading With the Software Update Notifier
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The general procedure for using the Software Update Notifier to perform
an upgrade to GlassFish Server 4.0 from GlassFish Server3.0.1 or
Enterprise Server v3 comprises the following steps:

1.  Wait for the Software Update Notifier to pop up a notification
balloon informing you that updates are available.
2.  Click the balloon prompt to launch the Software Update GUI.
3.  Manually stop all server instances and the domain.
4.  Use the Software Update GUI to perform the upgrade. This updates
your server to the 4.0 release.
5.  Upgrade the domain by running the `asadmin start-domain --upgrade`
subcommand. This performs the upgrade and then shuts down the DAS.
6.  Restart the upgraded DAS normally with the with the
```

```
`asadmin start-domain` subcommand.

This procedure is described in more detail in link:#gkuhu[To Upgrade
Using the Software Update Notifier].

[[gktnb]][[GSUPG00049]][[summary-of-procedure-for-upgrading-with-the-pkg-utility]]

Summary of Procedure for Upgrading With the `pkg` Utility
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The general procedure for using the `pkg` utility to perform an upgrade
to GlassFish Server 4.0 from GlassFish Server3.0.1 or Enterprise Server
v3 comprises the following steps:

1.  Manually stop all server instances and the domain.
2.  Run the as-install-parent`/bin/pkg` command with the desired options
in the older product directory. This updates your server to the 4.0
release.
3.  Upgrade the domain by running the `asadmin start-domain --upgrade`
subcommand. This performs the upgrade and then shuts down the DAS.
4.  Restart the upgraded DAS normally with the with the
`asadmin start-domain` subcommand.

This procedure is described in more detail in link:#gktks[To Upgrade
From the Command Line Using the `pkg` Utility].

[[gjxkx]][[GSUPG00062]][[supported-releases-for-upgrade-to-glassfish-server-4.0]]

Supported Releases for Upgrade to GlassFish Server 4.0
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

Upgrades to GlassFish Server 4.0 are supported from the following
earlier GlassFish Server product releases:

* Sun GlassFish Enterprise Server v2.1.1
* Sun GlassFish Enterprise Server v3
* GlassFish Server Open Source Edition 3.0.1
* GlassFish Server Open Source Edition 3.1
* GlassFish Server Open Source Edition 3.1.1

[[gkufi]][[GSUPG00063]][[upgrading-from-version-8.x-or-older-product-releases]]

Upgrading From Version 8.x or Older Product Releases
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

It is not possible to upgrade to GlassFish Server 4.0 directly from Sun
GlassFish Enterprise Server 8.x or older product releases.
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To upgrade from a product release that is older than any of those listed
in link:#gjxkx[Supported Releases for Upgrade to GlassFish Server 4.0],
you must first upgrade your older product release to one of the releases
that are supported for upgrade to GlassFish Server 4.0.

For example, to upgrade from any Enterprise Server 8.x release, you
first need to upgrade that older release to Enterprise Server 2.1.1.
That is, your upgrade path would be as follows:

Enterprise Server 8.x⇒Enterprise Server 2.1.1⇒GlassFish Server 4.0

Sun GlassFish Enterprise Server 2.1.1 is available for download from the
http://glassfish.java.net/public/downloadsindex.html[GlassFish Community
Downloads] (`http://glassfish.java.net/public/downloadsindex.html`)
page. Instructions for upgrading to Enterprise Server 2.1.1 are provided
in http://download.oracle.com/docs/cd/E19879-01/821-0180/index.html[Sun
GlassFish Enterprise Server 2.1.1 Upgrade Guide]
(`http://docs.oracle.com/cd/E19879-01/821-0180/index.html`).

After upgrading your older Enterprise Server installation to Enterprise
Server 2.1.1, you can proceed normally with the instructions in this
guide to complete the upgrade to GlassFish Server 4.0.

[[gkxrp]][[GSUPG00065]][[upgrading-glassfish-server-inside-a-closed-network]]

Upgrading GlassFish Server Inside a Closed Network
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

For instructions on upgrading a GlassFish Server installation in an
environment where Internet access is not available, see
"link:../administration-guide/toc.html#GSADG00575[Extending and Updating GlassFish
Server Inside a
Closed Network]" in GlassFish Server Open Source Edition Administration
Guide.

[[abmbr]][[GSUPG00040]][[performing-a-side-by-side-upgrade-with-upgrade-tool]]

Performing a Side-By-Side Upgrade With Upgrade Tool
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

This section explains how to use Upgrade Tool to perform a side-by-side
upgrade to GlassFish Server 4.0 from any compatible older product
release.

The following topics are addressed here:

* link:#gktgx[Upgrade Tool Summary]
* link:#gdkix[Upgrade Tool Functionality]
```

```
* link:#gktjn[To Upgrade From the Command Line Using Upgrade Tool]
* link:#gaejn[To Upgrade Using the Upgrade Tool Wizard]

[[gktgx]][[GSUPG00066]][[upgrade-tool-summary]]

Upgrade Tool Summary
^^^^^^^^^^^^^^^^^^^^

The Upgrade Tool upgrades your domain configurations and deployed
applications. When you use the Upgrade Tool, the source server and the
target server are normally installed on the same machine, but under
different install locations. Both server file systems must be accessible
from the system on which you perform the upgrade.

To perform the upgrade, the user who runs the upgrade needs to have read
permissions for the source and target directories and write permission
for the target directory.

You can perform an upgrade using Upgrade Tool in the following ways:

* link:#gktjn[To Upgrade From the Command Line Using Upgrade Tool]
* link:#gaejn[To Upgrade Using the Upgrade Tool Wizard]

[[gdkix]][[GSUPG00067]][[upgrade-tool-functionality]]

Upgrade Tool Functionality
^^^^^^^^^^^^^^^^^^^^^^^^^^

The Upgrade Tool migrates the configurations and deployed applications
from an earlier version of Sun Java System Application Server or Sun
GlassFishEnterprise Server to the current version. Database migrations
or conversions are not part of this upgrade process.

Briefly, the Upgrade Tool performs the following steps:

* Copies the older source domain directory to the new target `domains`
directory.
* Calls the `asadmin start-domain --upgrade` command to migrate the
source configurations to the new target GlassFish Server installation.
* Sends all `asadmin` command output to the screen and to the
`upgrade.log` file, and sends all server output to the `server.log`
file.

Additional Upgrade Tool functions are explained in the following
sections:

* link:#gebrv[Migration of Deployed Applications]
* link:#gebqm[Upgrade of Clusters]
```

```
* link:#gebvn[Upgrade Verification]

[[gebrv]][[GSUPG00050]][[migration-of-deployed-applications]]

Migration of Deployed Applications
++++++++++++++++++++++++++++++++

Application archives (EAR files) and component archives (JAR, WAR, and
RAR files) that are deployed in the source server do not require any
modification to run on GlassFish Server Open Source Edition 4.0.
Components that may have incompatibilities are deployed on GlassFish
Server 4.0 with the `compatibility` property set to `v2` and will run
without change on GlassFish Server 4.0. You may, however, want to
consider modifying the applications to conform to Java EE 6
requirements.

The Java EE 6 platform specification imposes stricter requirements than
Java EE 5 did on which JAR files can be visible to various modules
within an EAR file. In particular, application clients must not have
access to EJB JAR files or other JAR files in the EAR file unless they
use a `Class-Path` header in the manifest file, or unless references use
the standard Java SE mechanisms (extensions, for example), or use the
Java EE `library-directory` mechanism. Setting the `library-directory`
property to `v2` removes these Java EE 6 restrictions.

Applications and components that are deployed in the source server are
deployed on the target server during the upgrade. Applications that do
not deploy successfully on the target server must be deployed manually
on the target server by the user.

If a domain contains information about a deployed application and the
installed application components do not agree with the configuration
information, the configuration is migrated unchanged, without any
attempt to reconfigure the incorrect configurations.

[[gebqm]][[GSUPG00051]][[upgrade-of-clusters]]

Upgrade of Clusters
+++++++++++++++++++

When upgrading from a clustered configuration, the older cluster
information is retained in a new `domain.xml` file in the GlassFish
Server 4.0 installation directories. However, it is still necessary to
manually re-create the server instances that are contained in the
clusters. This procedure is explained in link:#gfybw[Upgrading Clusters
and Node Agent Configurations].

[[gebvn]][[GSUPG00052]][[upgrade-verification]]
```

```
Upgrade Verification
++++++++++++++++++++

An upgrade log records the upgrade activity. The upgrade log file is
named `upgrade.log` and is created in the working directory from which
the Upgrade Tool is run. Additional information is recorded in the
server log of the upgraded domain.

You can also use the `asadmin version` subcommand after starting the
upgraded domain to verify the new GlassFish Server product version; for
example:

[source,oac_no_warn]
----
asadmin> version
Version = Oracle GlassFish Server 3.1 (build 42)
Command version executed successfully.
----

[[gktjn]][[GSUPG00010]][[to-upgrade-from-the-command-line-using-upgrade-tool]]

To Upgrade From the Command Line Using Upgrade Tool
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to use the Upgrade Tool command line to
upgrade to GlassFish Server 4.0 from any supported older product
release. See link:#gjxkx[Supported Releases for Upgrade to GlassFish
Server 4.0] for a list of supported releases.

[[sthref29]]

Before You Begin

Ensure that the domains on the source server from which you are
upgrading are stopped before proceeding.

1.  Download and install GlassFish Server 4.0 using the Typical
Installation path. +
See "link:../installation-guide/toc.html#GSING00025[Installing GlassFish Server From
a Self-Extracting
Bundle]" in GlassFish Server Open Source Edition Installation Guide for
instructions.
2.  Copy any custom or third-party libraries that may be located in the
source as-install`/lib` directory to the target as-install`/lib`
directory. +
Custom and third-party libraries should normally be located in the
domain-dir`/lib` directory. This step is only necessary for custom or
```

```
third-party libraries that may be located in the nonstandard
as-install`/lib` directory.
3.  Start Upgrade Tool from a command shell for your operating
environment. +

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Note:

Use the Upgrade Tool that is located in the target GlassFish Server 4.0
installation, not the older source installation.

|=======================================================================

* On UNIX systems +
[source,oac_no_warn]
----
as-install/bin/asupgrade -c
----
* On Windows systems +
[source,oac_no_warn]
----
as-install\bin\asupgrade.bat -c
----
The `-c` option starts Upgrade Tool in console mode. If `-c` is omitted,
Upgrade Tool starts in GUI mode, which is described in link:#gaejn[To
Upgrade Using the Upgrade Tool Wizard]. +
If you start Upgrade Tool with only the `-c` option, the tool enters
interactive CLI mode in which you are asked to supply the needed
options. If you prefer to enter all options directly from the command
line, you can use the following syntax: +
[source,oac_no_warn]
----
asupgrade
[-c|--console]
[-V|--version]
[-h|--help]
[-s|--source source-domain-directory]
[-t|--target target-domain-directory]
[-f|--passwordfile password-file]
----
Explanations of these options are provided at the end of this procedure.
4.  Follow the prompts to perform the upgrade. +
If a name used for an older domain that you are upgrading already exists
in the new target domains directory, Upgrade Tool will ask if you want
to rename the new directory so the old directory can be copied to the
new installation.
```

```
* If you type `y` in response, the directory is renamed
domain-name`.original`. If that name already exists, the directory will
be renamed domain-name`.orginal.0`. For example, if the old domain
directory is named `domain1`, it will be renamed `domain1.original`, or
if that name already exists, `domain1.original.0`.
* If you type `n`, you are prompted to specify a different directory
name or quit. +
The domain is upgraded and the results are output to the console.
5.  Review the console output to verify that the upgrade proceeded
correctly. +
This output is also written to the `output.log` file for later review. +
If there are any `SEVERE` or `WARNING` messages in the `server.log`
file, the upgrade output will say
`"Possible error encountered during upgrade. See server log after upgrade process
completes."`
6.  Start the upgraded GlassFish Server 4.0 domain. +
[source,oac_no_warn]
----
asadmin start-domain domain-name
----
Log in to the Administration Console with the user name and password you
used in the older server. +

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Note:

GlassFish Server 4.0 does not support NSS authentication. If you are
upgrading from a Enterprise Profile configuration that uses NSS
authentication, follow the procedure in link:#gktnh[Upgrading
Installations That Use NSS Cryptographic Tokens].

|=======================================================================

7.  If you are upgrading a clustered configuration or a configuration in
which node agents were used, proceed with the instructions in
link:#gfybw[Upgrading Clusters and Node Agent Configurations].

[[GSUPG00007]][[gktiu]]


Example 2-1 Using the `asupgrade` Command Line

The following example shows how to use the `asupgrade` command-line
utility in non-interactive mode to upgrade an existing Sun GlassFish
Enterprise Server v2.1 installation to GlassFish Server 4.0. The
following command should be entered on a single line.
```

```
[source,oac_no_warn]
----
asupgrade -c -s /home/glassfish/domains/domain1 -f /root/mypassword
-t /home/glassfish3/glassfish/domains
----

[[sthref30]]

asupgrade Command-Line Options

Listed below are the `asupgrade` command-line options, including the
short form, the long form, and a description of each option.

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|Short Form |Long Form |Description
|`-c` |`--console` |Launches the upgrade command line utility.

|`-V` |`--version` |The version of the GlassFish Server.

|`-h` |`--help` |Displays the arguments for launching the upgrade
utility.

|`-s` source-domain-directory |`--source` source-domain-directory |The
domain-dir directory in the source (older) server installation.

|`-t` target-domains-directory |`--target` target-domains-directory |The
desired domain-root-dir directory in the GlassFish Server 4.0 target
installation; default is as-install`/domains`

|`-f` password-file |`--passwordfile` password-file |The file containing
the administration password and the master password.
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[[sthref31]]

Next Steps

* Browse to the URL `http://localhost:8080` to view the
domain-dir`/docroot/index.html` file. This file is brought over during
the upgrade. You may want to copy the default GlassFish Server 4.0 file
from the `domain1.original/docroot` directory and customize it for your
GlassFish Server 4.0 installation.
* To register your installation of GlassFish Server from the
Administration Console, select the Registration item from the Common
Tasks page. For step-by-step instructions on the registration process,
```

```
click the Help button on the Administration Console.

[[gaejn]][[GSUPG00011]][[to-upgrade-using-the-upgrade-tool-wizard]]

To Upgrade Using the Upgrade Tool Wizard
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to use the graphical Upgrade Tool Wizard to
upgrade to GlassFish Server 4.0 from any supported older product
release. See link:#gjxkx[Supported Releases for Upgrade to GlassFish
Server 4.0] for a list of supported releases.

[[sthref32]]

Before You Begin

Ensure that the source domains from which you are upgrading are stopped
before proceeding.

1.  Download and install GlassFish Server 4.0 using the Typical
Installation path. +
See "link:../installation-guide/toc.html#GSING00025[Installing GlassFish Server From
a Self-Extracting
Bundle]" in GlassFish Server Open Source Edition Installation Guide for
instructions.
2.  Copy any custom or third-party libraries that may be located in the
source as-install`/lib` directory to the target as-install`/lib`
directory. +
Custom and third-party libraries should normally be located in the
domain-dir`/lib` directory. This step is only necessary for custom or
third-party libraries that may be located in the nonstandard
as-install`/lib` directory.
3.  Start the Upgrade Tool wizard from a command shell for your
operating environment. +

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a|
Note:

Use the Upgrade Tool that is located in the target GlassFish Server 4.0
installation, not the older source installation.

|=======================================================================

* On UNIX systems +
[source,oac_no_warn]
----
```

```
as-install/bin/asupgrade
----
* On Windows systems +
[source,oac_no_warn]
----
as-install\bin\asupgrade.bat
----
::

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a|
Tip:

You may find it faster to run the `asupgrade` command with the `s`
source-domain-directory option, which will prefill the Source Domain
Directory field in the next step.

|=======================================================================

4.  In the Source Domain Directory field, type the domain directory of
the existing installation from which to import the configuration, or
click Browse. +
For example, you might type `c:\glassfish\domains\domain1`.
5.  In the Target Domains Root Directory field, type the location of the
GlassFish Server 4.0 installation to which to transfer the
configuration, or click Browse. +
The default is the full path name of the `domains` directory of your
GlassFish Server 4.0 installation (for example,
`c:\glassfish3\glassfish\domains`).
6.  Provide the master password of the source application server. +
The domain will be upgraded using these credentials. If you do not
specify a password here, the default master password is used. +

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Note:

GlassFish Server 4.0 does not support NSS authentication. If you are
upgrading from a Enterprise Profile configuration that uses NSS
authentication, follow the procedure in link:#gktnh[Upgrading
Installations That Use NSS Cryptographic Tokens].

|=======================================================================

7.  Click Next. +
If a name used for an older domain that you are upgrading already exists
```

```
in the new target domains directory, Upgrade Tool will ask if you want
to rename the new directory so the old directory can be copied to the
new installation.
* If you click OK in response, the directory is renamed
domain-name`.original`. If that name already exists, the directory will
be renamed domain-name`.orginal.0`. For example, if the old domain
directory is named `domain1`, it will be renamed `domain1.original`, or
if that name already exists, `domain1.original.0`.
* If you click No, you brought back to the main screen. +
The domain is upgraded and the Upgrade Results page displays the status
of the upgrade operation.
8.  Review the output in the Upgrade Results page to verify that the
upgrade proceeded correctly. +
If there are any `SEVERE` or `WARNING` messages in the `server.log`
file, the upgrade output will say
`"Possible error encountered during upgrade. See server log after upgrade process
completes."`
9.  Click Finish to exit the Upgrade Tool when the upgrade process is
complete.
10. Start the upgraded GlassFish Server 4.0 domain. +
[source,oac_no_warn]
----
asadmin start-domain domain-name
----
11. If you are upgrading a clustered configuration or a configuration in
which node agents were used, proceed with the instructions in
link:#gfybw[Upgrading Clusters and Node Agent Configurations].

[[sthref33]]

Next Steps

* Browse to the URL `http://localhost:8080` to view the
domain-dir`/docroot/index.html` file. This file is brought over during
the upgrade. You may want to copy the default GlassFish Server 4.0 file
from the `domain1.original/docroot` directory and customize it for your
GlassFish Server 4.0 installation.
* To register your installation of GlassFish Server from the
Administration Console, select the Registration item from the Common
Tasks page. For step-by-step instructions on the registration process,
click the Help button on the Administration Console.

[[gkthu]][[GSUPG00041]][[performing-an-in-place-upgrade-with-the-update-center-
tools]]

Performing an In-Place Upgrade With the Update Center Tools
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
This section explains how to use the three Update Center tools to
perform an in-place upgrade to GlassFish Server 4.0 from GlassFish
Server 3.0.1 or Enterprise Server v3. Specifically, the three tools
explained in this section are:

* Update Tool
* Software Update Notifier
* The `pkg` command-line utility


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Note:

GlassFish Server 3.0.1 and Enterprise Server v3 are the only product
releases that can be upgraded to the 4.0 release with the Update Center
tools. If you are upgrading from any other product release, you must use
Upgrade Tool, as described in link:#abmbr[Performing a Side-By-Side
Upgrade With Upgrade Tool].

|=======================================================================


The following topics are addressed here:

* link:#gkthx[Update Center Tool Procedures]
* link:#gktjf[To Upgrade Using the Update Tool GUI]
* link:#gkuhu[To Upgrade Using the Software Update Notifier]
* link:#gktks[To Upgrade From the Command Line Using the `pkg` Utility]

[[gkthx]][[GSUPG00068]][[update-center-tool-procedures]]

Update Center Tool Procedures
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

Unlike when using Upgrade Tool, when you use the Update Tool, the
Software Update Notifier, or the `pkg` utility to perform a GlassFish
Server 4.0 upgrade, the older source server directories are overwritten
with the new target server directories, and the existing configuration
and deployed applications are reused in the updated installation.

To perform the upgrade, the user who runs the upgrade needs to have read
and writer permissions for the server installation directories.

You can perform an upgrade using the Update Center tools in the
following ways:
```

```
* link:#gktjf[To Upgrade Using the Update Tool GUI]
* link:#gkuhu[To Upgrade Using the Software Update Notifier]
* link:#gktks[To Upgrade From the Command Line Using the `pkg` Utility]

[[gktjf]][[GSUPG00012]][[to-upgrade-using-the-update-tool-gui]]

To Upgrade Using the Update Tool GUI
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to use the graphical Update Tool to perform
an in-place upgrade to GlassFish Server 4.0 from GlassFish Server 3.0.1
or Enterprise Server v3. Note that it is not possible to use this
procedure with any other product releases.

1.  Ensure that all domains on the source server from which you are
upgrading are stopped before proceeding.
2.  In a command shell for your operating environment, navigate to the
as-install-parent`/bin` directory.
3.  Use the `updatetool` command to start the Update Tool GUI. +
The Update Tool main window is displayed.
4.  Click on Available Updates.
5.  Select all items in the Available Updates list, and then click the
Install button in the toolbar at the top of the Update Tool main window. +
When the upgrade is complete, exit Update Tool.
6.  Upgrade the domain by starting the DAS with the `--upgrade` option. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain --upgrade domain-name
----
This upgrades the domain and then shuts down the DAS.
7.  Start the DAS normally. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain domain-name
----

[[sthref34]]

Next Steps

* Browse to the URL `http://localhost:8080` to view the
domain-dir`/docroot/index.html` file. This file is brought over during
the upgrade. You may want to copy the default GlassFish Server 4.0 file
from the `domain1.original/docroot` directory and customize it for your
GlassFish Server 4.0 installation.
* To register your installation of GlassFish Server from the
Administration Console, select the Registration item from the Common
Tasks page. For step-by-step instructions on the registration process,
```

```
click the Help button on the Administration Console.

[[gkuhu]][[GSUPG00013]][[to-upgrade-using-the-software-update-notifier]]

To Upgrade Using the Software Update Notifier
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to use the Software Update Notifier to
perform an in-place upgrade to GlassFish Server 4.0 from GlassFish
Server 3.0.1 or Enterprise Server v3. Note that it is not possible to
use this procedure with any other product releases.

[[sthref35]]

Before You Begin

The Software Update Notifier must be installed and enabled on the
GlassFish Server or Enterprise Server release from which you are
upgrading. Software Update Notifier installation is typically performed
during the initial GlassFish Server or Enterprise Server installation.
The Software Update Notifier can also be installed later using Update
Tool. For more information about the Update Notifier, refer to the
Update Tool online help.

1.  Wait for the Software Update Notifier to pop up a notification
balloon informing you that updates are available.
2.  Click the balloon prompt to open the Software Update GUI.
3.  Manually stop all domains and server instances.
4.  Using the Software Update GUI, select the items you want to upgrade
and start the installation. +
Ensure that GlassFish Server 4.0 is one of the items you select for
upgrade. This upgrades the server and selected components to the latest
available versions.
5.  Upgrade the domain by starting the DAS with the `--upgrade` option. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain --upgrade domain-name
----
This upgrades the domain and then shuts down the DAS.
6.  Start the DAS normally. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain domain-name
----

[[sthref36]]

Next Steps
```

```
* Browse to the URL `http://localhost:8080` to view the
domain-dir`/docroot/index.html` file. This file is brought over during
the upgrade. You may want to copy the default GlassFish Server 4.0 file
from the `domain1.original/docroot` directory and customize it for your
GlassFish Server 4.0 installation.
* To register your installation of GlassFish Server from the
Administration Console, select the Registration item from the Common
Tasks page. For step-by-step instructions on the registration process,
click the Help button on the Administration Console.

[[gktks]][[GSUPG00014]][[to-upgrade-from-the-command-line-using-the-pkg-utility]]

To Upgrade From the Command Line Using the `pkg` Utility
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to use the `pkg` utility to perform an
in-place upgrade to GlassFish Server 4.0 from GlassFish Server 3.0.1 or
Enterprise Server v3. Note that it is not possible to use this procedure
with any other product releases.

1.  Ensure that all domains on the source server from which you are
upgrading are stopped before proceeding.
2.  In a command shell for your operating environment, navigate to the
as-install-parent`/bin` directory.
3.  Use the `pkg image-update` command to update your entire GlassFish
Server 3.0.1 or Enterprise Server v3 installation to GlassFish Server
4.0. +
[source,oac_no_warn]
----
./pkg image-update
----
This upgrades the server components to the latest available versions.
4.  Upgrade the domain by starting the DAS with the `--upgrade` option. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain --upgrade domain-name
----
This upgrades the domain and then shuts down the DAS.
5.  Start the DAS normally. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain domain-name
----

[[sthref37]]

Next Steps
```

```
* Browse to the URL `http://localhost:8080` to view the
domain-dir`/docroot/index.html` file. This file is brought over during
the upgrade. You may want to copy the default GlassFish Server 4.0 file
from the `domain1.original/docroot` directory and customize it for your
GlassFish Server 4.0 installation.
* To register your installation of GlassFish Server from the
Administration Console, select the Registration item from the Common
Tasks page. For step-by-step instructions on the registration process,
click the Help button on the Administration Console.

[[gktnh]][[GSUPG00042]][[upgrading-installations-that-use-nss-cryptographic-tokens]]

Upgrading Installations That Use NSS Cryptographic Tokens
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

GlassFish Server v2.x EE (Enterprise Edition) uses Network Security
Services (NSS) for cryptographic software tokens. GlassFish Server 4.0
does not support NSS, so when performing an upgrade from v2.x EE to 4.0
additional manual configuration steps must be performed.

The following topics are addressed here:

* link:#gktnq[To Prepare for the Upgrade]
* link:#gktlz[To Perform Post-Upgrade Configuration]
* link:#gktlp[To Upgrade PKCS#11 Hardware Tokens]

[[gktnq]][[GSUPG00015]][[to-prepare-for-the-upgrade]]

To Prepare for the Upgrade
^^^^^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to prepare for modifying an NSS-based
GlassFish Server 2.x installation when upgrading to GlassFish Server
4.0.

1.  Download and install GlassFish Server 4.0 using the Typical
Installation path. +
Ensure that you install the new GlassFish Server 4.0 product in a
directory that is different than the one used for the older installation
from which you are upgrading. +
See "link:../installation-guide/toc.html#GSING00025[Installing GlassFish Server From
a Self-Extracting
Bundle]" in GlassFish Server Open Source Edition Installation Guide for
instructions.
2.  Rename the new GlassFish Server 4.0 domain-dir (the default is
as-install`/domains/domain1`) to a name of your choice. +
In this procedure, `31domain` is used for the renamed GlassFish Server
```

```
4.0 domain.
3.  Copy the older source domain to be upgraded to the new GlassFish
Server 4.0 as-install`/domains` directory. +
In this procedure, `domain1` is used for the older source domain that is
copied to the new GlassFish Server 4.0 installation. +

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Note:

The remaining steps in this procedure are performed on the copy of your
source domain that you created in this step, rather than on your
original source domain. It is strongly recommended that you perform the
GlassFish Server 4.0 upgrade on a copy of your old domain rather than on
the original.

|=======================================================================

4.  Copy the `server.policy`, `keystore.jks`, and `cacerts.jks` files
from the renamed `./31domain/config` directory to the `./domain1/config`
directory to be upgraded. +
For example: +
[source,oac_no_warn]
----
cp as-install/domains/31domain/config/server.policy as-install/domains/domain1/config
cp as-install/domains/31domain/config/keystore.jks as-install/domains/domain1/config
cp as-install/domains/31domain/config/cacerts.jks as-install/domains/domain1/config
----
This will overwrite the master password for `./domain1` with the
password used in the `./31domain`.
5.  Modify the `domain.xml` file for `./domain1`.
1.  Add the following `jvm-options` under `server-config` and
`default-config`: +
[source,oac_no_warn]
----
-Djavax.net.ssl.keyStore=${com.sun.aas.instanceRoot}/config/keystore.jks
-Djavax.net.ssl.trustStore=${com.sun.aas.instanceRoot}/config/cacerts.jks
----
2.  Remove the following `jvm-option` under `server-config` and
`default-config`: +
[source,oac_no_warn]
----
-Dcom.sun.appserv.nss.db=${com.sun.aas.instanceRoot}/config
----
6.  Upgrade `./domain1` by starting the DAS in the new GlassFish Server
4.0 installation with the `--upgrade` option. +
[source,oac_no_warn]
```

```
----
as-install/bin/asadmin start-domain --upgrade domain1
----
This upgrades the domain and then shuts down the DAS.
7.  Start the upgraded DAS normally. +
[source,oac_no_warn]
----
as-install/bin/asadmin start-domain domain1
----

[[gktlz]][[GSUPG00016]][[to-perform-post-upgrade-configuration]]

To Perform Post-Upgrade Configuration
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

These instructions explain the post-upgrade configuration steps that
must be performed when upgrading from an NSS-based installation to
GlassFish Server 4.0.

[[sthref38]]

Before You Begin

Before proceeding with this procedure, complete the procedure explained
in link:#gktnq[To Prepare for the Upgrade].

1.  Start the GlassFish Server 4.0 domain, if it is not already running,
and open the GlassFish Server Admin Console in a browser window. +
The default URL is `https://localhost:4848` +
As part of the link:#gktnq[To Prepare for the Upgrade] procedure, the
default keystore with a default self-signed key-certificate pair with an
alias named `s1as` and a keystore password `changeit` was copied into
the v2.x domain before the upgrade.
2.  If your default server alias in the NSS v2.x domain is not `s1as`,
you can delete this entry using the following command: +
[source,oac_no_warn]
----
keytool -delete -keystore keystore.jks -storepass changeit -alias s1as
keytool -delete -keystore cacerts.jks -storepass changeit -alias s1as
----
3.  If the master password for the v2.x domain is not the default
password `changeit`, you need to change the new keystore password to
match the v2.x master password. +
[source,oac_no_warn]
----
keytool -storepasswd -new v2-master-password \
-keystore keystore.jks -storepass changeit
keytool -storepasswd -new v2-master-password \
```

```
-keystore cacerts.jks -storepass changeit
----
4.  Take note of all the `KeyEntries` that exist in your NSS database. +
These entries must be migrated to the `keystore.jks` in the GlassFish
Server 4.0 domain. The following command can be used to list all the
`KeyEntries` in the NSS database: +
[source,oac_no_warn]
----
certutil -L -d $AS_NSS_DB
----
`AS_NSS_DB` should point to the `${com.sun.aas.instanceRoot}/config` for
the 4.0 instance into which the v2.x domain was copied. The listing with
the attribute combinations `u,u,u` are the `KeyEntries`. +
For example: +
[source,oac_no_warn]
----
s1as u,u,u
----
::

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Note:

To run the `certutil` command, your `LD_LIBRARY_PATH` must point to the
directory containing NSS library and DLLs.

|=======================================================================

5.  For each `PrivateKey-Certificate` pair (`KeyEntry`) that exists in
the v2.x NSS database, use the following commands to export them from
the NSS database and import them into the newly created `keystore.jks`
file. +
Make sure you use the same alias when importing the `KeyEntry` into the
JKS keystore. For example, if s1as is the only alias present in the NSS
database, the following command can be used: +
[source,oac_no_warn]
----
> pk12util -o /tmp/s1as_pk.p12 -n s1as -d $AS_NSS_DB
>keytool -importkeystore -srckeystore /tmp/s1as_pk.p12 -destkeystore \
${com.sun.aas.instanceRoot}/config/keystore.jks -srcstoretype PKCS12 \
-deststoretype JKS -srcstorepass v2-master-password \
-deststorepass v3-master-password -srcalias s1as \
-destalias s1as -srckeypass v2-master-password \
-destkeypass v3-master-password
----
::
```

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Note:

The reference to v3-master-password could be the same as
v2-master-password if you intend to retain the same master password for
the 4.0 domain after upgrading from v2.x.

|=======================================================================

6.  If the `s1as` alias represents a `KeyEntry` with a self-signed
certificate, the self-signed certificate must be copied to the
`truststore`. +
[source,oac_no_warn]
----
>certutil -L -n s1as -r -d $AS_NSS_DB> /tmp/s1as.der>keytool -import -keystore
cacerts.jks -storepass v3-master-password \
-file /tmp/s1as.der -alias s1as
----
7.  There is a rare chance that the 2.x NSS database has some CA
(Certificate Authority) certificates that are absent in the default
created `truststore`. In such cases, all aliases that are missing in the
`truststore` (`cacerts.jks`) need to collected.
1.  `certutil -L -d $AS_NSS_DB` +
Example output: +
[source,oac_no_warn]
----
verisignc1g1 T,c,c
verisignc1g2 T,c,c
verisignc1g3 T,c,c
----
2.  `keytool -list -keystore cacerts.jks -storepass` v3-master-password +
Example output: +
[source,oac_no_warn]
----
godaddyclass2ca, Jan 20, 2005, trustedCertEntry,
Certificate fingerprint (MD5): 91:DE:06:25:AB:DA:FD:32:17:0C:BB:25:17:2A:84:67
verisignclass1g3ca, Mar 26, 2004, trustedCertEntry,
Certificate fingerprint (MD5): B1:47:BC:18:57 1:18:A0:78:2D:EC:71:E8:2A:95:73
secomevrootca1, May 1, 2008, trustedCertEntry,
Certificate fingerprint (MD5): 22:2D:A6:01:EA:7C:0A:F7:F0:6C:56:43:3F:77:76 3
----
8.  For each of the aliases from the `certutil` output in the preceding
step that are required but missing in the `truststore` listing, execute
the following commands to export and import them into the 4.0 domain's
`truststore`. +
```

```
[source,oac_no_warn]
----
>certutil -L -n verisignc1g1 -r -d $AS_NSS_DB> /tmp/verisignc1g1.der>keytool -import
-keystore cacerts.jks -storepass v3-master-password \
-file /tmp/verisignc1g1.der -alias verisignc1g1
----
::

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Note:

Sometimes just the alias names that are used in the NSS database are
different, and the same certificate is, in fact, present in the 4.0
default `truststore`.

|=======================================================================


[[gktlp]][[GSUPG00017]][[to-upgrade-pkcs11-hardware-tokens]]

To Upgrade PKCS#11 Hardware Tokens
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

If you are using GlassFish Server v2.x Enterprise Edition with Hardware
Tokens (for example, FIPS-140 compliant Sun Cryptographic Accelerator
6000 or other Sun Cryptographic Accelerators) configured by means of
NSS-PKCS11, then the v2.x EE-to-4.0 upgrade solution is to directly
configure the Hardware Token as a PKCS11 token using the JDK-JSSE
supported mechanisms for configuring PKCS#11 tokens.

1.  Set the `javax.net.ssl.keyStoreType` `jvm-options` in GlassFish
Server 4.0 to PKCS11. +
[source,oac_no_warn]
----
<jvm-options>-Djavax.net.ssl.keyStoreType=PKCS11</jvm-options>
----
2.  Set the `javax.net.ssl.keyStore` URL should be set to l since this
is a hardware token. +
[source,oac_no_warn]
----
<jvm-options>-Djavax.net.ssl.keyStore=NONE</jvm-options>
----
3.  Change the password for the `truststore` and the GlassFish Server
`MasterPassword` to match the PIN of your `HardwareToken`.
4.  Since you are using a Hardware Token, you can delete the
`keystore.jks` for the migrated domain.
```

```
5.  Ensure the `token-alias` for the hardware token (private key) that
you intend to use as the Server's Key for SSL is mentioned in every
relevant place in the `domain.xml` for the domain. +
For example, the `cert-nickname` attribute for the `<ssl/>` element
under the `protocol` configuration.
6.  If the Hardware Token is to act as a `TrustStore` as well, remove
the `cacerts.jks` file from the domain-dir`/config` directory. +
Ensure that the following two `jvm-options` are set in the `domain.xml`
file: +
[source,oac_no_warn]
----
<jvm-options>-Djavax.net.ssl.trustStore=NONE</jvm-options>
<jvm-options>-Djavax.net.ssl.trustStoreType=PKCS11</jvm-options>
----

[[gfybw]][[GSUPG00043]][[upgrading-clusters-and-node-agent-configurations]]

Upgrading Clusters and Node Agent Configurations
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

This section explains additional steps you need to perform when
upgrading cluster and node agent configurations from Application Server
or Enterprise Server to GlassFish Server 4.0.

GlassFish Server 4.0 does not support node agents. As part of the
upgrade process, any node agent elements in the older source
configuration are transformed into `CONFIG` node elements in the
`domain.xml` file for the upgraded DAS. If the source node agent
configuration is incompatible with your GlassFish Server 4.0
installation, you must correct the node configuration on the upgraded
DAS.

In addition, although the source cluster configuration is retained in
the `domain.xml` file for the upgraded DAS, it is still necessary to
install GlassFish Server 4.0 on each node host and manually re-create
the server instances that are contained in the clusters.

The following topics are addressed here:

* link:#gkyda[Overview of Cluster and Node Agent Upgrade Procedures]
* link:#gktle[To Correct the Configuration of a Node After an Upgrade]
* link:#gktkx[To Re-Create a Cluster]

[[gkyda]][[GSUPG00069]][[overview-of-cluster-and-node-agent-upgrade-procedures]]

Overview of Cluster and Node Agent Upgrade Procedures
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
```

```
The general steps for upgrading a cluster and node agent configuration
so it will work in GlassFish Server 4.0 are as follows:

1.  Perform a side-by-side upgrade of the DAS. This procedure is
described in link:#abmbr[Performing a Side-By-Side Upgrade With Upgrade
Tool].
2.  Perform new (not upgrade) GlassFish Server 4.0 installations on each
node host. GlassFish Server 4.0 installation instructions are provided
in the link:../installation-guide/toc.html#GSING[GlassFish Server Open Source Edition
Installation
Guide].
3.  Correct the node configuration on the upgraded DAS, if necessary.
This procedure is described in link:#gktle[To Correct the Configuration
of a Node After an Upgrade].
4.  Re-create the clusters and server instances on each GlassFish Server
4.0 node host. This procedure is described in link:#gktkx[To Re-Create a
Cluster].

[[gktle]][[GSUPG00018]][[to-correct-the-configuration-of-a-node-after-an-upgrade]]

To Correct the Configuration of a Node After an Upgrade
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

As part of the upgrade process, node agent elements in the DAS
configuration are transformed into GlassFish Server node elements of
type `CONFIG`. This transformation does not affect the node agent
directories for GlassFish Server instances. To create the equivalent
directories for GlassFish Server instances after an upgrade, you must
re-create the instances as explained in link:#gktkx[To Re-Create a
Cluster].

The name of an upgraded node is the name of the node agent from which
the node is transformed.

The host that the node represents is obtained from the configuration of
the original node agent or, if not specified, is not set. If the
configuration of the original node agent did not specify the name of the
node host, you must update the node to specify the host that the node
represents.

Default values are applied to the remainder of the node's configuration
data.

The default values of the following items in a node's configuration data
might not meet your requirements for the upgraded installation of
GlassFish Server:

* The parent of the base installation directory of the GlassFish Server
```

```
software on the host, for example, `/export/glassfish3`. +
The default is the parent of the default base installation directory of
the GlassFish Server 4.0 software on the DAS host. If the GlassFish
Server software is installed under a different directory on the node
host, you must update the node's configuration to specify the correct
directory.
* The directory that will contain the GlassFish Server instances that
are to reside on the node. +
The default is as-install`/nodes`, where as-install is the base
installation directory of the GlassFish Server software on the host. If
you require the instances to be contained in a different directory, you
must update the node's configuration to specify that directory.

If you are using secure shell (SSH) for centralized administration, you
must also change the type of the node to `SSH` to enable the node for
remote communication.

For more information about GlassFish Server nodes, see
"link:../ha-administration-guide/nodes.html#GSHAG00004[Administering GlassFish Server
Nodes]" in GlassFish
Server Open Source Edition High Availability Administration Guide.

[[sthref39]]

Before You Begin

Ensure that the following prerequisites are met:

* A side-by-side upgrade on the DAS has been performed. For more
information, see link:#abmbr[Performing a Side-By-Side Upgrade With
Upgrade Tool].
* If you are changing the type of the node to `SSH`, ensure that SSH is
configured on the host where the DAS is running and on the host that the
node represents. For more information, see "link:../ha-administration-guide/ssh-
setup.html#GSHAG00003[Setting Up
SSH for Centralized Administration]" in GlassFish Server Open Source
Edition High Availability Administration Guide.
* If you are upgrading from an Enterprise Profile configuration that
uses NSS authentication, ensure that the procedure in
link:#gktnh[Upgrading Installations That Use NSS Cryptographic Tokens]
has been performed. GlassFish Server 4.0 does not support NSS
authentication.

1.  Ensure that the DAS is running. +
Remote subcommands require a running server.
2.  Update the node's configuration data to specify the correct
directories and, if necessary, change the type of the node. +
```

```
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Note:

Only the options that are required to complete this task are provided in
this step. For information about all the options for changing the node's
configuration data, see the link:../reference-manual/update-node-
ssh001.html#GSRFM00256[`update-node-ssh`(1)] help
page or the link:../reference-manual/update-node-config.html#GSRFM00255[`update-node-
config`(1)] help page.

|=======================================================================

[source,oac_no_warn]
----
asadmin> node-update-subcommand [--installdir as-install-parent] [--nodedir node-dir]
[--nodehost node-host] node-name
----
node-update-subcommand::
  The subcommand to run to update the node. +
  * If you are leaving the type of the node as `CONFIG`, run the
  `update-node-config` subcommand on the node.
  * If you are changing the type of the node to `SSH`, run the
  `update-node-ssh` subcommand on the node.
as-install-parent::
  The full path to the parent of the base installation directory of the
  GlassFish Server software on the host, for example,
  `/export/glassfish3`.
node-dir::
  The path to the directory that will contain GlassFish Server instances
  that are to reside on the node. If a relative path is specified, the
  path is relative to the as-install directory.
node-host::
  The name of the host that the node is to represent after the node is
  updated.
node-name::
  The name of the node to update. This name is the name of the node
  agent from which the node was transformed.

[[GSUPG00008]][[gktoh]]


Example 2-2 Correcting the Configuration of a Node After an Upgrade

This example updates the path to the directory that will contain
instances that are to reside on the node `xk01` to
`/export/home/gf/nodes`. Because this node is transformed from a node
```

```
agent, the type of the node is `CONFIG`. Therefore, type of the node is
not changed.

[source,oac_no_warn]
----
asadmin> update-node-config --nodedir /export/home/gf/nodes xk01
Command update-node-config executed successfully.
----

[[sthref40]]

Next Steps

Re-create the cluster configuration from the older source installation
in the new GlassFish Server 4.0 installation in as explained in
link:#gktkx[To Re-Create a Cluster].

[[sthref41]]

See Also

* "link:../ha-administration-guide/ssh-setup.html#GSHAG00003[Setting Up SSH for
Centralized Administration]" in
GlassFish Server Open Source Edition High Availability Administration
Guide
* "link:../ha-administration-guide/nodes.html#GSHAG00004[Administering GlassFish
Server Nodes]" in GlassFish
Server Open Source Edition High Availability Administration Guide
* link:../reference-manual/update-node-config.html#GSRFM00255[`update-node-
config`(1)]
* link:../reference-manual/update-node-ssh001.html#GSRFM00256[`update-node-ssh`(1)]

[[gktkx]][[GSUPG00019]][[to-re-create-a-cluster]]

To Re-Create a Cluster
^^^^^^^^^^^^^^^^^^^^^^

This procedure explains how to re-create a clustered GlassFish Server or
Enterprise Server configuration for GlassFish Server 4.0.

[[sthref42]]

Before You Begin

Before proceeding with these instructions, ensure that you have
completed the following procedures:

* Perform the standard upgrade to GlassFish Server 4.0 on the DAS, as
```

```
described in link:#abmbr[Performing a Side-By-Side Upgrade With Upgrade
Tool].
* Perform a new (not upgrade) installation of GlassFish Server 4.0 on
each node host. See the link:../installation-guide/toc.html#GSING[GlassFish Server
Open Source Edition
Installation Guide] for instructions.
* Correct the upgraded node configuration, if necessary, as described
link:#gktle[To Correct the Configuration of a Node After an Upgrade].

1.  Start the upgraded DAS. +
[source,oac_no_warn]
----
asadmin> start-domain domain-name
----
If the upgrade succeeded, the migrated cluster configuration exists and
the `get-health` subcommand lists the status of the clustered instances
as not running.
2.  Confirm that the cluster configuration exists and contains all its
instances. +
[source,oac_no_warn]
----
asadmin> get-health cluster-name
----
For example, for the sample `cluster1` used in this procedure: +
[source,oac_no_warn]
----
asadmin> get-health cluster1
instance1 not started
instance2 not started
Command get-health executed successfully.
----
3.  Re-create the clustered server instances on each instance host. +
The specific commands to use depend on your configuration.
* If remote hosts cannot contact the DAS, export and import the
instances' configuration data, as explained in "link:../ha-administration-
guide/instances.html#GSHAG00125[To
Resynchronize an Instance and the DAS Offline]" in GlassFish Server Open
Source Edition High Availability Administration Guide.
* If remote hosts can contact the DAS, create each instance individually
and resynchronize the instance with the DAS, as explained in the
following sections:

** "link:../ha-administration-guide/instances.html#GSHAG00114[To Create an Instance
Locally]" in GlassFish Server
Open Source Edition High Availability Administration Guide

** "link:../ha-administration-guide/instances.html#GSHAG00119[To Resynchronize an
Instance and the DAS Online]"
```

```
in GlassFish Server Open Source Edition High Availability Administration
Guide +
Note that the node name matches that used for the node agent in the 2.x
installation. If you get an error stating that some attributes do not
match the values in the DAS configuration, follow the instructions in
link:#gktle[To Correct the Configuration of a Node After an Upgrade].
4.  After creating the instances, manually copy the instance-dir`/imq`
directory for each instance from the older source installation to the
target GlassFish Server 4.0 installation.
5.  If necessary, start the cluster. +
For example: +
[source,oac_no_warn]
----
asadmin> start-cluster cluster1
----
This step may or may not be necessary, depending on the procedure you
used to create the server instances for the cluster.

[[GSUPG00009]][[gkyin]]


Example 2-3 Creating Two Local Instances

The following example shows how to create two local instances in a
cluster.

[source,oac_no_warn]
----
host1$ asadmin --host dashost create-local-instance --node na1 --cluster cluster1
instance1
host2$ asadmin --host dashost create-local-instance --node na2 --cluster cluster1
instance2
----

`dashost`::
  The name of the DAS host.
`na1`::
  The name of the node host.
`cluster1`::
  The name of the cluster.
`instance1`, `instance2`::
  The names of the instances.

[[gkrfh]][[GSUPG00044]][[correcting-potential-upgrade-problems]]

Correcting Potential Upgrade Problems
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
This section addresses issues that can occur during an upgrade to
GlassFish Server 4.0.

The following topics are addressed here:

* link:#gkrgh[Cluster Profile Security Setting]
* link:#gkrib[Cluster Profile Upgrade on Windows]
* link:#gkyho[`asupgrade` Fails Without Internet Connection]

[[gkrgh]][[GSUPG00070]][[cluster-profile-security-setting]]

Cluster Profile Security Setting
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

When upgrading a clustered domain configuration from Application Server
9.1 or Enterprise Server v2 to GlassFish Server 4.0, you may encounter
problems if the `admin-service` element in the DAS `domain.xml` file
sets both of the following attributes:

* `security-enabled=true`
* `type=das-and-server`

The `security-enabled` attribute must be set to `false` in the
`admin-service` element for the DAS when `type` is set to
`das-and-server`.

You can use the `get` subcommand to determine the values for these two
attributes. For example:

* To display the value for the `security-enabled` attribute: +
[source,oac_no_warn]
----
asadmin> get configs.config.server-config.admin-service.jmx-
connector.system.security-enabled
----
* To display the value for the type attribute: +
[source,oac_no_warn]
----
asadmin> get configs.config.server-config.admin-service.type
----

If necessary, use the `set` subcommand to set `security-enabled=false`.
For example:

[source,oac_no_warn]
----
asadmin> set configs.config.server-config.admin-service.jmx-
connector.system.security-enabled=false
```

```
----

[[gkrib]][[GSUPG00071]][[cluster-profile-upgrade-on-windows]]

Cluster Profile Upgrade on Windows
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

On Windows, when you upgrade cluster profile domains, you could
encounter the following error:

[source,oac_no_warn]
----
Fatal error while backing up the domain directory
----

To resolve this error, look for and remove any hidden files in the
source domain's directory and re-run Upgrade Tool.

[[gkyho]][[GSUPG00072]][[asupgrade-fails-without-internet-connection]]

`asupgrade` Fails Without Internet Connection
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

This problem only occurs when using GlassFish Server 3.1 Upgrade Tool to
perform a side-by-side upgrade on a 2.x domain without an Internet
connection. It does not occur when using GlassFish Server 3.1.1.

The workaround for this issue is as follows:

1.  Copy the older source domain to be upgraded to the new target
domain-dir, the default for which is as-install`/domains`. +
Rename the target `domain1` directory, if one exists, before proceeding.
2.  Run the upgrade. +
[source,oac_no_warn]
----
asadmin> start-domain --upgrade domain-name
----
```