



# **GlassFish Server Open Source Edition 3.1 Upgrade Guide**

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Part No: 821-2459  
February 2011

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# Preface

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This guide explains how to upgrade configuration data and Java EE applications from binary-compatible earlier versions of this software to GlassFish Server Open Source Edition 3.1. This guide also describes compatibility issues that affect data and applications that are to be migrated.

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

GlassFish Server 3.1 is developed through the GlassFish project open-source community at <https://glassfish.dev.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 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:

- “GlassFish Server Documentation Set” on page 5
- “Related Documentation” on page 7
- “Typographic Conventions” on page 8
- “Symbol Conventions” on page 8
- “Default Paths and File Names” on page 9
- “Documentation, Support, and Training” on page 10
- “Searching Oracle Product Documentation” on page 10
- “Third-Party Web Site References” on page 10

## 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.

TABLE P-1 Books in the GlassFish Server Documentation Set

Book Title	Description
<i>Release Notes</i>	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.
<i>Quick Start Guide</i>	Explains how to get started with the GlassFish Server product.
<i>Installation Guide</i>	Explains how to install the software and its components.
<i>Upgrade Guide</i>	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.
<i>Deployment Planning Guide</i>	Explains how to build a production deployment of GlassFish Server that meets the requirements of your system and enterprise.
<i>Administration Guide</i>	Explains how to configure, monitor, and manage GlassFish Server subsystems and components from the command line by using the <code>asadmin(1M)</code> utility. Instructions for performing these tasks from the Administration Console are provided in the Administration Console online help.
<i>Application Deployment Guide</i>	Explains how to assemble and deploy applications to the GlassFish Server and provides information about deployment descriptors.
<i>Application Development Guide</i>	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.
<i>Add-On Component Development Guide</i>	Explains how to use published interfaces of GlassFish Server to develop add-on components for GlassFish Server. This document explains how to perform <i>only</i> those tasks that ensure that the add-on component is suitable for GlassFish Server.
<i>Embedded Server Guide</i>	Explains how to run applications in embedded GlassFish Server and to develop applications in which GlassFish Server is embedded.
<i>High Availability Administration Guide</i>	Explains how to configure GlassFish Server to provide higher availability and scalability through failover and load balancing.
<i>Performance Tuning Guide</i>	Explains how to optimize the performance of GlassFish Server.
<i>Troubleshooting Guide</i>	Describes common problems that you might encounter when using GlassFish Server and explains how to solve them.

TABLE P-1 Books in the GlassFish Server Documentation Set (Continued)

Book Title	Description
<i>Error Message Reference</i>	Describes error messages that you might encounter when using GlassFish Server.
<i>Reference Manual</i>	Provides reference information in man page format for GlassFish Server administration commands, utility commands, and related concepts.
<i>Message Queue Release Notes</i>	Describes new features, compatibility issues, and existing bugs for Open Message Queue.
<i>Message Queue Administration Guide</i>	Explains how to set up and manage a Message Queue messaging system.
<i>Message Queue Developer's Guide for JMX Clients</i>	Describes the application programming interface in Message Queue for programmatically configuring and monitoring Message Queue resources in conformance with the Java Management Extensions (JMX).

## Related Documentation

The following tutorials explain how to develop Java EE applications:

- *Your First Cup: An Introduction to the Java EE Platform* (<http://download.oracle.com/javaee/6/firstcup/doc/>). 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.
- *The Java EE 6 Tutorial* (<http://download.oracle.com/javaee/6/tutorial/doc/>). This comprehensive tutorial explains how to use Java EE 6 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 6 of Java EE is located at <http://download.oracle.com/javaee/6/api/>.
- The API specification for GlassFish Server 3.1, including Java EE 6 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 *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 *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 [Java DB product page](http://www.oracle.com/technetwork/java/javadb/overview/index.html) (<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 [Java EE Samples project page](http://java.net/projects/glassfish-samples) (<http://java.net/projects/glassfish-samples>).

## Typographic Conventions

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

TABLE P-2 Typographic Conventions

Typeface	Meaning	Example
AaBbCc123	The names of commands, files, and directories, and onscreen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. <code>machine_name% you have mail.</code>
<b>AaBbCc123</b>	What you type, contrasted with onscreen computer output	<code>machine_name% su</code> Password:
<i>AaBbCc123</i>	A placeholder to be replaced with a real name or value	The command to remove a file is <code>rm filename</code> .
<i>AaBbCc123</i>	Book titles, new terms, and terms to be emphasized (note that some emphasized items appear bold online)	Read Chapter 6 in the <i>User's Guide</i> . A <i>cache</i> is a copy that is stored locally. Do <i>not</i> save the file.

## Symbol Conventions

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

TABLE P-3 Symbol Conventions

Symbol	Description	Example	Meaning
[ ]	Contains optional arguments and command options.	<code>ls [-l]</code>	The <code>-l</code> option is not required.
{   }	Contains a set of choices for a required command option.	<code>-d {y n}</code>	The <code>-d</code> option requires that you use either the <code>y</code> argument or the <code>n</code> argument.



TABLE P-3 Symbol Conventions (Continued)

Symbol	Description	Example	Meaning
<code>\${ }</code>	Indicates a variable reference.	<code>\${com.sun.javaRoot}</code>	References the value of the <code>com.sun.javaRoot</code> 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.

## Default Paths and File Names

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

TABLE P-4 Default Paths and File Names

Placeholder	Description	Default Value
<i>as-install</i>	Represents the base installation directory for GlassFish Server.  In configuration files, <i>as-install</i> is represented as follows: <code>\${com.sun.aas.installRoot}</code>	Installations on the Oracle Solaris operating system, Linux operating system, and Mac operating system:  <i>user's-home-directory/glassfish3/glassfish</i>  Windows, all installations:  <i>SystemDrive:\glassfish3\glassfish</i>
<i>as-install-parent</i>	Represents the parent of the base installation directory for GlassFish Server.	Installations on the Oracle Solaris operating system, Linux operating system, and Mac operating system:  <i>user's-home-directory/glassfish3</i>  Windows, all installations:  <i>SystemDrive:\glassfish3</i>
<i>domain-root-dir</i>	Represents the directory in which a domain is created by default.	<i>as-install/domains/</i>
<i>domain-dir</i>	Represents the directory in which a domain's configuration is stored.  In configuration files, <i>domain-dir</i> is represented as follows: <code>\${com.sun.aas.instanceRoot}</code>	<i>domain-root-dir/domain-name</i>

## Documentation, Support, and Training

The Oracle web site provides information about the following additional resources:

- Documentation (<http://www.oracle.com/technetwork/indexes/documentation/index.html>)
- Support (<http://www.oracle.com/us/support/index.html>)
- Training (<http://education.oracle.com/>)

## Searching Oracle Product Documentation

Besides searching Oracle product documentation from the [Oracle Documentation](http://www.oracle.com/technetwork/indexes/documentation/index.html) (<http://www.oracle.com/technetwork/indexes/documentation/index.html>) web site, you can use a search engine by typing the following syntax in the search field:

*search-term* **site:oracle.com**

For example, to search for “broker,” type the following:

**broker site:oracle.com**

## Third-Party Web Site References

Third-party URLs are referenced in this document and provide additional, related information.

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# GlassFish Server Upgrade Compatibility Issues

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This section describes some compatibility issues between GlassFish Server 3.1 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 3.1 is binary-compatible. When you upgrade to GlassFish Server 3.1, you must address these issues.

The following topics are addressed here:

- “Binary-Compatible Releases For GlassFish Server 3.1” on page 11
- “New Default Installation Directory” on page 12
- “Changes to Group Management Service Settings” on page 12
- “Application Client Interoperability” on page 13
- “Node Agent Support” on page 14
- “HADB and hadbm Command Support” on page 14
- “Command Line Interface: The `asadmin` Command” on page 14
- “Applications That Use Java DB” on page 15
- “Applications That Use Persistence” on page 16
- “HTTP Service to Network Service Changes” on page 17
- “NSS Cryptographic Token Support” on page 26

## Binary-Compatible Releases For GlassFish Server 3.1

GlassFish Server Open Source Edition 3.1 is binary-compatible with the following earlier releases of the software:

- Sun Java System Application Server 9.1 Update 2 (Enterprise and Developer Profiles)
- Sun GlassFish Enterprise Server v2.1 (Enterprise and Developer Profiles)
- Sun GlassFish Enterprise Server v2.1.1 (Enterprise and Developer Profiles)
- Sun GlassFish Enterprise Server v3 Prelude
- Sun GlassFish Enterprise Server v3
- GlassFish Server Open Source Edition 3.0.1

Java applications that run on these releases also work on GlassFish Server Open Source Edition 3.1 except for the compatibility issues that are listed in the remainder of this chapter.

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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, v3 Prelude, and GlassFish Server 3.0.1. The differences between GlassFish Server 3.1 and the Enterprise Server 3x releases do not affect applications and data.

---

## New Default Installation Directory

The default GlassFish Server 3.1 installation directories are as follows:

### Solaris, Linux, and Mac OS X systems

*user-home-directory/glassfish3*

### Windows systems

*SystemDrive\glassfish3*

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

## 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.

TABLE 1-1 GMS Administration Console Settings Changes from 2.1.1 to 3.1

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.

# 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 3.1 will have the `compatibility` property set to `v2` and will run without change on GlassFish Server 3.1. 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 3.1 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:

```
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 3.1 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 3.1 does 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.

## Node Agent Support

GlassFish Server 3.1 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 recreated. See [“Upgrading Clusters and Node Agent Configurations” on page 44](#) for more information.

## HADB and hadbm Command Support

GlassFish Server 3.1 does not support HADB or the hadbm management command.

Instead of HADB, GlassFish Server 3.1 supports high availability clustering by means of in-memory session state replication and ActiveCache for GlassFish. See Chapter 1, “High Availability in GlassFish Server,” in *GlassFish Server Open Source Edition 3.1 High Availability Administration Guide* for more information.

## Command Line Interface: The `asadmin` Command

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

- [“`asadmin` Subcommands” on page 14](#)
- [“Deprecated and Unsupported Options” on page 15](#)

For more information about `asadmin` and its subcommands, see *GlassFish Server Open Source Edition 3.1 Reference Manual*.

### `asadmin` Subcommands

In GlassFish Server 3.1, 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`

## Deprecated and Unsupported Options

Options in [Table 1-2](#) are deprecated or no longer supported.

TABLE 1-2 Deprecated and Unsupported `asadmin` Options

Option	Deprecated or Unsupported in Subcommands
<code>--defaulttvs</code>	Deprecated for the <code>create-http-listener</code> subcommand. Use <code>--default-virtual-server</code> option instead.
<code>--acceptlang</code>	Unsupported for the <code>create-virtual-server</code> subcommand.
<code>--acls</code>	Unsupported for the <code>create-virtual-server</code> subcommand.
<code>--adminpassword</code>	Unsupported for all relevant subcommands. Use <code>--passwordfile</code> instead.
<code>--blockingenabled</code>	Unsupported for the <code>create-http-listener</code> subcommand.
<code>--configfile</code>	Unsupported for the <code>create-virtual-server</code> subcommand.
<code>--defaultobj</code>	Unsupported for the <code>create-virtual-server</code> subcommand.
<code>--mime</code>	Unsupported for the <code>create-virtual-server</code> subcommand.
<code>--password</code>	Unsupported for all remote subcommands. Use <code>--passwordfile</code> instead.
<code>--path</code>	Unsupported for the <code>create-domain</code> subcommand. Use <code>--domaindir</code> instead.
<code>--resourcetype</code>	Unsupported for all relevant subcommands. Use <code>--restype</code> instead.

## Applications That Use Java DB

The directory location of Java DB in GlassFish Server 3.1 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 3.1. 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. After upgrade, start GlassFish Server 3.1.
2. Use the `asadmin start-database` command with the `--dbhome` option pointing to the `databases` directory in the older version of Java DB. For example:

```
asadmin start-database --dbhome c:\glassfish\databases
```

## Applications That Use Persistence

GlassFish Server 3.1 and 3.0.1, and Sun GlassFish Enterprise Server v3 and v3 Prelude 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 3.1. The container creates an `EntityManager` if the application uses the `@PersistenceContext` annotation to inject an `EntityManager`, as in the following example:

```
@PersistenceContext
EntityManager em;
```

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

```
@PersistenceUnit
EntityManagerFactory emf;

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

When the application is loaded, GlassFish Server 3.1 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:

```
EntityManagerFactory emf =
    javax.persistence.Persistence.createEntityManagerFactory("Order");
EntityManager em = emf.createEntityManager();
```

In this case, change the provider element to specify the following:

```
<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 [Eclipse wiki](#) to do this. This tool is not provided with GlassFish Server 3.1, however, so you must obtain it from the EclipseLink project download site.



# HTTP Service to Network Service Changes

In GlassFish Server 3.1, 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.

- “Changes to Dotted Names” on page 17
- “Changes to `asadmin` Commands” on page 18
- “Remapping of HTTP Service Attributes and Properties” on page 18
- “New Network Service Elements and Attributes” on page 23

## Changes to Dotted Names

The dotted name hierarchy for the HTTP Service configuration in GlassFish Server 3.1 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.

```
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
  thread-pools
    thread-pool
```

The dotted name hierarchy for the GlassFish Server 3.1 Network Service and HTTP Service configurations is shown below. The `network-config` element and all its children are new except for `ssl`.

```
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 Prelude and GlassFish Server 3.1. Note that the configuration for Enterprise Server v3 Prelude also applies to all earlier Enterprise Server 2.x releases.

- Command for Sun GlassFish Enterprise Server v3 Prelude and earlier:

```
asadmin set server-config.http-service.http-listener.http-1.listenerport=4321
```

- Command for GlassFish Server 3.1:

```
asadmin set server-config.network-config.network-listeners.network-\
listener.http-1.listenerport=4321
```

## Changes to `asadmin` Commands

To accommodate the move of HTTP Service into the new `Netwoasadmin(1M)` commands are changed as follows:

- The `create-ssl(1)` command has a new `--type` parameter value, `network-listener`.
- The `create-virtual-server(1)` command has a new parameter, `--networklisteners`.
- The `create-http-listener(1)` command adds a `network-listener` element to the domain configuration. The syntax and options of this commands are unchanged.

## Remapping of HTTP Service Attributes and Properties

The following tables describe how attributes and properties in the HTTP Service configuration for GlassFish Server 3.1 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, v3, or v3 Prelude release, this remapping happens automatically and then discontinued elements are deleted.

TABLE 1-3 com.sun.grizzly Property Remapping

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

TABLE 1-4 connection-pool Attribute Remapping

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

TABLE 1-5 http-file-cache Attribute Remapping

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

TABLE 1-6 http-listener Attribute Remapping

http-listener Attribute	New Owning Element	New Attribute Name
id	network-listener	name

**TABLE 1-6** http-listener Attribute Remapping *(Continued)*

http-listener Attribute	New Owning Element	New Attribute 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

**TABLE 1-7** http-listener Property Remapping

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

TABLE 1-7 http-listener Property Remapping (Continued)

http-listener Property	New Owning Element	New Attribute Name
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

TABLE 1-8 http-protocol Attribute Remapping

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

TABLE 1-9 http-service Property Remapping

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

TABLE 1-10 keep-alive Attribute Remapping

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

TABLE 1-11 request-processing Attribute Remapping

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

TABLE 1-12 ssl Attribute Changes

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

TABLE 1-12 ssl Attribute Changes (Continued)

Previous Attribute or Property	Previous Owning Element	New ssl Attribute
trustMaxCertLength property	http-listener	trust-max-cert-length-bytes
all other ssl attributes	ssl	unchanged

TABLE 1-13 thread-pool Attribute Changes

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

TABLE 1-14 virtual-server Attribute Changes

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

## 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 [“Remapping of HTTP Service Attributes and Properties” on page 18](#).

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

TABLE 1-15 New http Attributes

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 [Table 1-4](#), [Table 1-6](#), [Table 1-7](#), [Table 1-8](#), [Table 1-10](#), and [Table 1-11](#).

TABLE 1-16 New network-listener Attributes

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 <code>asadmin create-http-listener</code> 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 <code>asadmin create-http-listener</code> to create a network-listener.

For remapped network-listener attributes, see [Table 1-6](#).

TABLE 1-17 New port-unification Attributes

Attribute	Default	Description
name	none	Specifies a unique name for the port-unification.
classname	none	Specifies the class name of the port-unification implementation.

TABLE 1-18 New protocol Attributes

Attribute	Default	Description
name	none	Specifies a unique name for the protocol.

For remapped protocol attributes, see [Table 1-6](#).



TABLE 1-19 New protocol-chain Attributes

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.

TABLE 1-20 New protocol-chain-instance-handler Attributes

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.

TABLE 1-21 New protocol-filter Attributes

Attribute	Default	Description
name	none	Specifies a unique name for the protocol-filter.
classname	none	Specifies the class name of the protocol-filter implementation.

TABLE 1-22 New protocol-finder Attributes

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.

TABLE 1-23 New selection-key-handler Attributes

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.

TABLE 1-24 New ssl Attributes

Attribute	Default	Description
key-store	none	(Optional) Specifies a key store.

TABLE 1-24 New ssl Attributes *(Continued)*

Attribute	Default	Description
trust-store	none	(Optional) Specifies a trust store.

For remapped ssl attributes, see [Table 1-12](#).

TABLE 1-25 New thread-pool Attributes

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 [Table 1-4](#), [Table 1-11](#), and [Table 1-13](#).

TABLE 1-26 New transport Attributes

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 [Table 1-3](#), [Table 1-4](#), [Table 1-6](#), and [Table 1-7](#).

## NSS Cryptographic Token Support

GlassFish Server 3.1 does not support Network Security Services (NSS) cryptographic tokens. When upgrading to GlassFish Server 3.1 from Enterprise Server v2.x, additional manual configuration steps must be performed. These steps are explained later in this guide, in [“Upgrading Installations That Use NSS Cryptographic Tokens” on page 40](#).

# Upgrading an Installation of Application Server or GlassFish Server

---

The Upgrade Tool that is bundled with GlassFish Server 3.1 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 3.1.

In addition to Upgrade Tool, the Update Tool and related pkg utility can be used to perform an in-place upgrade to GlassFish Server 3.1 from GlassFish Server 3.0.1 and Enterprise Server v3 and v3 Prelude.

To view a list of the older versions from which you can upgrade, see [“Supported Releases for Upgrade to GlassFish Server 3.1”](#) on page 30.

The following topics are addressed here:

- [“Upgrade Overview”](#) on page 27
- [“Performing a Side-By-Side Upgrade With Upgrade Tool”](#) on page 31
- [“Performing an In-Place Upgrade With Update Tool \(Update Center\) or the pkg Utility”](#) on page 38
- [“Upgrading Installations That Use NSS Cryptographic Tokens”](#) on page 40
- [“Upgrading Clusters and Node Agent Configurations”](#) on page 44
- [“Correcting Potential Upgrade Problems”](#) on page 45

## Upgrade Overview

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

The following topics are addressed here:

- [“Summary of Upgrade Tools and Procedures”](#) on page 28
- [“Supported Releases for Upgrade to GlassFish Server 3.1”](#) on page 30
- [“Upgrade Terminology”](#) on page 31

## Summary of Upgrade Tools and Procedures

There are two sets of tools you can use to upgrade from an earlier GlassFish Server or Enterprise Server installation to GlassFish Server 3.1. The general procedures for upgrading to GlassFish Server 3.1 vary depending on which tool you use and the product version from which you are upgrading.

The following topics are addressed here:

- [“Summary of Tools for Performing an Upgrade” on page 28](#)
- [“Summary of Procedure for Upgrading with Upgrade Tool” on page 29](#)
- [“Summary of Procedure for Upgrading With the pkg Utility” on page 30](#)
- [“Summary of Procedure for Upgrading With Update Tool \(Update Center\)” on page 30](#)

### Summary of Tools for Performing an Upgrade

The two tools you can use to perform an upgrade to GlassFish Server 3.1 are described below.

- [“Upgrade Tool” on page 28](#)
- [“Update Tool \(Update Center\) and the pkg Utility” on page 29](#)

### 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 3.1.

A side-by-side upgrade means that the new GlassFish Server release is installed in a different directory than the release from which it is being upgraded. For more information, see [“Performing a Side-By-Side Upgrade With Upgrade Tool” on page 31](#). For a list of compatible older product versions, see [“Supported Releases for Upgrade to GlassFish Server 3.1” on page 30](#).

Upgrade Tool provides a number of features that aid in the migration of older configurations and applications to a new GlassFish Server 3.1 installation. These features are described in more detail in [“Upgrade Tool Functionality” on page 32](#).

In GlassFish Server 3.1 Upgrade Tool is installed in the *as-install-parent/glassfish/bin* directory.

---

**Note** – Upgrade Tool is the only tool you can use when upgrading to GlassFish Server 3.1 from product versions prior to GlassFish Server 3.0.1, Enterprise Server v3, or Enterprise Server v3 Prelude.

---

See [“Summary of Procedure for Upgrading with Upgrade Tool” on page 29](#) for an overview of the general procedure for performing an upgrade with Upgrade Tool.

## Update Tool (Update Center) and the pkg Utility

The GlassFish Server *Update Tool* (sometimes referred to as *Update Center*) 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 add or update EJB, JMS, and core GlassFish Server components.

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 3.1, 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, Enterprise Server v3, or Enterprise Server v3 Prelude installation to the GlassFish Server 3.1 release.

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. For more information, see [“Performing an In-Place Upgrade With Update Tool \(Update Center\) or the pkg Utility” on page 38.](#)

In GlassFish Server 3.1 Update Tool is installed in the *as-install-parent/bin* directory.

---

**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 [“Upgrade Tool” on page 28.](#)

---

See [“Summary of Procedure for Upgrading With Update Tool \(Update Center\)” on page 30](#) for an overview of the general procedure for performing an upgrade with Update Tool. For more information about Update Tool in general, see “Update Tool” in *GlassFish Server Open Source Edition 3.1 Administration Guide*.

## Summary of Procedure for Upgrading with Upgrade Tool

The general procedure for using Upgrade Tool to perform an upgrade to GlassFish Server 3.1 from any compatible older version of GlassFish Server or Enterprise Server comprises the following steps:

1. Download GlassFish Server 3.1 and perform a Standard Installation, as described in “To Install GlassFish Server Using the Self-Extracting File” in *GlassFish Server Open Source Edition 3.1 Installation Guide*.
2. Copy any custom or third-party libraries from the older installation to their corresponding locations in the new GlassFish Server 3.1 installation directories.
3. Run the `asupgrade` command from the new GlassFish Server 3.1 *as-install-parent/glassfish/bin* directory.
4. Start the new GlassFish Server 3.1 DAS with the `asadmin start-domain --upgrade` subcommand.

This procedure is described in more detail in [“Performing a Side-By-Side Upgrade With Upgrade Tool” on page 31.](#)

### **Summary of Procedure for Upgrading With the pkg Utility**

The general procedure for using the pkg utility to perform an upgrade to GlassFish Server 3.1 from GlassFish Server 3.0.1 or Enterprise Server v3, or v3 Prelude comprises the following steps:

1. Run the `as-install-parent/bin/pkg` command with the desired options in the older product directory.
2. Start the new GlassFish Server 3.1 DAS with the `asadmin start-domain --upgrade` subcommand.

This procedure is described in more detail in [“To Upgrade From the Command Line Using the pkg Utility” on page 38.](#)

### **Summary of Procedure for Upgrading With Update Tool (Update Center)**

The general procedure for using Update Tool (Update Center) to perform an upgrade to GlassFish Server 3.1 from GlassFish Server 3.0.1 or Enterprise Server v3, or v3 Prelude comprises the following steps:

1. Launch Update Tool by using the `as-install-parent/bin/updatetool` command in the older product directory.
2. In Update Tool, select and install the latest GlassFish Server product release.
3. Start the new GlassFish Server 3.1 DAS with the `asadmin start-domain --upgrade` subcommand.

This procedure is described in more detail in [“To Upgrade Using the Update Tool GUI” on page 39.](#)

## **Supported Releases for Upgrade to GlassFish Server 3.1**

Upgrades to GlassFish Server 3.1 are supported from the following earlier GlassFish Server product releases:

- Sun Java System Application Server 9.1 Update 2
- Sun GlassFish Enterprise Server v2.1
- Sun GlassFish Enterprise Server v2.1.1
- Sun GlassFish Enterprise Server v3 Prelude
- Sun GlassFish Enterprise Server v3
- GlassFish Server Open Source Edition 3.0.1

## 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:\glassfish3\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`.

## 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 3.1 from any compatible older product release.

The following topics are addressed here:

- [“Upgrade Tool Summary” on page 31](#)
- [“Upgrade Tool Functionality” on page 32](#)
- [“To Upgrade From the Command Line Using Upgrade Tool” on page 33](#)
- [“To Upgrade Using the Upgrade Tool Wizard” on page 35](#)

## 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:

- [“To Upgrade From the Command Line Using Upgrade Tool” on page 33](#)
- [“To Upgrade Using the Upgrade Tool Wizard” on page 35](#)

## 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 directories to the new target domain directories.
- 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:

- [“Migration of Deployed Applications” on page 32](#)
- [“Upgrade of Clusters” on page 33](#)
- [“Upgrade Verification” on page 33](#)

## 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 Oracle GlassFish Server 3.1. Components that may have incompatibilities are deployed on GlassFish Server 3.1 with the `compatibility` property set to `v2` and will run without change on GlassFish Server 3.1. 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.



## 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 3.1 installation directories. However, it is still necessary to manually recreate the server instances that are contained in the clusters. This procedure is explained in [“Upgrading Clusters and Node Agent Configurations”](#) on page 44.

## 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.

## ▼ 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 3.1 from any supported older product release. See [“Supported Releases for Upgrade to GlassFish Server 3.1”](#) on page 30 for a list of supported releases.

**Before You Begin** Ensure that the source domains from which you are upgrading are stopped before proceeding.

### 1 Download and install GlassFish Server 3.1 using the Typical Installation path.

See “Installing GlassFish Server From a Self-Extracting Bundle” in *GlassFish Server Open Source Edition 3.1 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 Delete any `osgi-cache` directories in the source domains.

For example:

```
cd source-install-dir/glassfish/domains
rm -fr ./*/osgi-cache
```

### 4 Start Upgrade Tool from a command shell for your operating environment.

---

**Note** – Use the Upgrade Tool that is located in the **target** GlassFish Server 3.1 installation, not the older source installation.

---

- **On UNIX systems**

`as-install-parent/glassfish/bin/asupgrade -c`

- **On Windows systems**

`as-install-parent\glassfish\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 [“To Upgrade Using the Upgrade Tool Wizard” on page 35](#).

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:

```
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.

## 5 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 domain location, Upgrade Tool will ask if you want to rename the old directory in 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.original.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.

## 6 Start the upgraded GlassFish Server 3.1 domain.

```
asadmin start-domain domain-name
```

Log in to the Administration Console with the user name and password you used in the older server. If you do not specify a password here, the default master password is used.

---

**Note** – GlassFish Server 3.1 does not support NSS authentication. If you are upgrading from a Enterprise Profile configuration that uses NSS authentication, follow the procedure in [“Upgrading Installations That Use NSS Cryptographic Tokens” on page 40](#).

---

## 7 If you are upgrading a clustered configuration or a configuration in which node agents were used, proceed with the instructions in [“Upgrading Clusters and Node Agent Configurations” on page 44](#).

## 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 3.1.

```
asupgrade -c --source /home/glassfish/domains/domain1 \
--target /home/glassfish3/glassfish/domains
```

### More Information 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.

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 <i>source-domain-directory</i>	--source <i>source-domain-directory</i>	The <i>domain-root-dir</i> directory in the source (older) server installation.
-t <i>target-domain-directory</i>	--target <i>target-domain-directory</i>	The desired <i>domain-root-dir</i> directory in the GlassFish Server 3.1 target installation; default is <i>as-install-parent/glassfish/domains</i>
-f <i>password-file</i>	--passwordfile <i>password-file</i>	The file containing the administration password and the master password.

- 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 3.1 file from the `domain1.original/docroot` directory and customize it for your GlassFish Server 3.1 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.

## ▼ To Upgrade Using the Upgrade Tool Wizard

This procedure explains how to use the graphical Upgrade Tool Wizard to upgrade to GlassFish Server 3.1 from any supported older product release. See [“Supported Releases for Upgrade to GlassFish Server 3.1” on page 30](#) for a list of supported releases.

**Before You Begin** Ensure that the source domains from which you are upgrading are stopped before proceeding.

**1 Download and install GlassFish Server 3.1 using the Typical Installation path.**

See “Installing GlassFish Server From a Self-Extracting Bundle” in *GlassFish Server Open Source Edition 3.1 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 Delete any osgi-cache directories in the source domains.**

For example:

```
cd source-install-dir/glassfish/domains
rm -fr ./*/osgi-cache
```

**4 Start the Upgrade Tool wizard from a command shell for your operating environment.**

---

**Note** – Use the Upgrade Tool that is located in the **target** GlassFish Server 3.1 installation, not the older source installation.

---

■ **On UNIX systems**

```
as-install-parent/glassfish/bin/asupgrade
```

■ **On Windows systems**

```
as-install-parent\glassfish\bin\asupgrade.bat
```

---

**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.

---

**5 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`.

**6 In the Target Domains Root Directory field, type the location of the GlassFish Server 3.1 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 3.1 installation (for example, `c:\glassfish3\glassfish\domains`).

**7 (Optional) 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.

---

**Note** – GlassFish Server 3.1 does not support NSS authentication. If you are upgrading from a Enterprise Profile configuration that uses NSS authentication, follow the procedure in [“Upgrading Installations That Use NSS Cryptographic Tokens” on page 40.](#)

---

**8 Click Next.**

If a name used for an older domain that you are upgrading already exists in the new target domain location, Upgrade Tool will ask if you want to rename the old directory in 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.original.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 are prompted to specify a different directory name or quit.

The Upgrade Results page displays the status of the upgrade operation.

**9 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."

**10 Click Finish to exit the Upgrade Tool when the upgrade process is complete.****11 Start the upgraded GlassFish Server 3.1 domain.**

```
asadmin start-domain domain-name
```

**12 If you are upgrading a clustered configuration or a configuration in which node agents were used, proceed with the instructions in [“Upgrading Clusters and Node Agent Configurations” on page 44.](#)**

- 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 3.1 file from the *domain1.original/docroot* directory and customize it for your GlassFish Server 3.1 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.

# Performing an In-Place Upgrade With Update Tool (Update Center) or the pkg Utility

This section explains how to use Update Tool (Update Center) or the pkg utility to perform an in-place upgrade to GlassFish Server 3.1 from GlassFish Server 3.0.1, Enterprise Server v3 or Enterprise Server v3 Prelude.

---

**Note** – GlassFish Server 3.0.1, Enterprise Server v3, and Enterprise Server v3 Prelude are the only product releases that can be upgraded to the 3.1 release with Update Tool or the pkg utility. If upgrading from any other product release, you must use Upgrade Tool, as described in [“Performing a Side-By-Side Upgrade With Upgrade Tool” on page 31](#).

---

The following topics are addressed here:

- [“Update Tool Summary” on page 38](#)
- [“To Upgrade From the Command Line Using the pkg Utility” on page 38](#)
- [“To Upgrade Using the Update Tool GUI” on page 39](#)

## Update Tool Summary

Unlike when using Upgrade Tool, when you use the Update Tool or the pkg utility to perform a GlassFish Server 3.1 upgrade, the source server and the target server are installed on the same machine and in the same installation directories. Like Upgrade Tool, Update Tool and the pkg utility upgrade your domain configurations and deployed applications.

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 Update Tool in the following ways:

- [“To Upgrade From the Command Line Using the pkg Utility” on page 38](#)
- [“To Upgrade Using the Update Tool GUI” on page 39](#)

## ▼ 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 3.1 from GlassFish Server 3.0.1, Enterprise Server v3, or Enterprise Server v3 Prelude. Note that it is not possible to use this procedure with any other product releases.

- 1 Stop the domains you want to upgrade.**

**2 Delete any osgi-cache directories in the source domains.**

For example:

```
cd source-install-dir/glassfish/domains
rm -fr ./*/osgi-cache
```

**3 In a command shell for your operating environment, navigate to the *as-install-parent/bin* directory.****4 Use the `pkg image-update` command to update your entire GlassFish Server 3.0.1, Enterprise Server v3, or Enterprise Server v3 Prelude installation to GlassFish Server 3.1.**

```
./pkg image-update
```

**5 Start the upgraded domains with the `--upgrade` option.**

```
as-install-parent/glassfish/bin/asadmin start-domain domain-name --upgrade
```

**6 If you are upgrading a clustered configuration or a configuration in which node agents were used, proceed with the instructions in [“Upgrading Clusters and Node Agent Configurations”](#) on page 44.**

- 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 3.1 file from the `domain1.original/docroot` directory and customize it for your GlassFish Server 3.1 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.

## ▼ 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 3.1 from GlassFish Server 3.0.1, Enterprise Server v3, or Enterprise Server v3 Prelude. Note that it is not possible to use this procedure with any other product releases.

**1 Stop the domains you want to upgrade.****2 Delete any osgi-cache directories in the source domains.**

For example:

```
cd source-install-dir/glassfish/domains
rm -fr ./*/osgi-cache
```

**3 In a command shell for your operating environment, navigate to the *as-install-parent/bin* directory.**

**4 Use the `updateTool` command to start the Update Tool GUI.**

The Update Tool main window is displayed, with Available Updates highlighted.

**5 Ensure that the GlassFish Server 3.1 item is selected, 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 Start the upgraded domains with the `--upgrade` option.**

```
as-install-parent/glassfish/bin/asadmin start-domain domain-name --upgrade
```

**7 If you are upgrading a clustered configuration or a configuration in which node agents were used, proceed with the instructions in [“Upgrading Clusters and Node Agent Configurations” on page 44](#).**

- 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 3.1 file from the `domain1.original/docroot` directory and customize it for your GlassFish Server 3.1 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.

## 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 3.1 does not support NSS, so when performing an upgrade from v2.x EE to 3.1 additional manual configuration steps must be performed.

The following topics are addressed here:

- [“To Prepare for the Upgrade” on page 40](#)
- [“To Perform Post-Upgrade Configuration” on page 41](#)
- [“To Upgrade PKCS#11 Hardware Tokens” on page 43](#)

### ▼ 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 3.1.

- Before You Begin** Before proceeding with these instructions, perform the standard upgrade to GlassFish Server 3.1, as described in [“Performing a Side-By-Side Upgrade With Upgrade Tool” on page 31](#).



- 1 **Copy the `server.policy`, `keystore.jks`, and `cacerts.jks` files from the GlassFish Server 3.1 domain to the `domain/config` directory you want to upgrade.**

Note that this will overwrite the master password for the domain with the one in the 3.1 installation.

- 2 **Modify the `domain.xml` for the domain you want to upgrade.**

- a. **Add the following `jvm-options` under `server-config` and `default-config`:**

```
-Djavax.net.ssl.keyStore=${com.sun.aas.instanceRoot}/config/keystore.jks
-Djavax.net.ssl.trustStore=${com.sun.aas.instanceRoot}/config/cacerts.jks
```

- b. **Remove the following `jvm-option` under `server-config` and `default-config`:**

```
-Dcom.sun.appserv.nss.db=${com.sun.aas.instanceRoot}/config
```

- 3 **Start the upgraded GlassFish Server 3.1 domain.**

```
asadmin start-domain domain-name
```

Log in to the Administration Console with the user name and password you used in the older server. If you do not specify a password here, the default master password is used.

## ▼ 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 3.1.

**Before You Begin** Before proceeding with this procedure, complete the procedure explained in [“To Prepare for the Upgrade”](#) on page 40.

- 1 **Start the GlassFish Server 3.1 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 [“To Prepare for the Upgrade”](#) on page 40 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:**

```
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 change it, you need to change the new keystore password to match the v2.x master password.**

```
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 3.1 domain. The following command can be used to list all the KeyEntries in the NSS database:

```
certutil -L -d $AS_NSS_DB
```

AS\_NSS\_DB should point to the \${com.sun.aas.instanceRoot}/config for the 3.1 instance into which the v2.x domain was copied. The listing with the attribute combinations u,u,u are the KeyEntries.

For example:

```
s1as u,u,u
```

---

**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:

```
> 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
```

---

**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 3.1 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.**

```
>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 be collected.**

a. **certutil -L -d \$AS\_NSS\_DB**

Example output:

```
verisignc1g1 T,c,c
verisignc1g2 T,c,c
verisignc1g3 T,c,c
```

b. **keytool -list -keystore cacerts.jks -storepass v3-master-password**

Example output:

```
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 3.1 domain's truststore.**

```
>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
```

---

**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 3.1 default truststore.

---

## ▼ 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-3.1 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 3.1 to PKCS11.**

```
<jvm-options>-Djavax.net.ssl.keyStoreType=PKCS11</jvm-options>
```

- 2 **Set the `javax.net.ssl.keyStore` URL should be set to `|` since this is a hardware token.**

```
<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 -a lias 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 then remove the cacerts . jks file from the as-install/domains/domain-name/config directory.**

Ensure that the following two jvm-options are set in the domain . xml file:

```
<jvm-options>-Djavax.net.ssl.trustStore=NONE</jvm-options>
<jvm-options>-Djavax.net.ssl.trustStoreType=PKCS11</jvm-options>
```

## Upgrading Clusters and Node Agent Configurations

GlassFish Server 3.1 does not support node agents. When upgrading from a clustered configuration, the older cluster information is retained in a new domain . xml file in the GlassFish Server 3.1 installation directories. However, it is still necessary to manually recreate the server instances that are contained in the clusters.

### ▼ To Upgrade Clusters

This procedure explains how to upgrade clustered GlassFish Server and Enterprise Server configurations to GlassFish Server 3.1.

**Before You Begin** Before proceeding with these instructions, perform the standard upgrade to GlassFish Server 3.1, as described in [“Performing a Side-By-Side Upgrade With Upgrade Tool” on page 31](#).

Also note that GlassFish Server 3.1 does not support NSS authentication. If you are upgrading from an Enterprise Profile configuration that uses NSS authentication, follow the procedure in [“Upgrading Installations That Use NSS Cryptographic Tokens” on page 40](#) before proceeding with the instructions in this procedure.

- 1 **Verify that the DAS is running and the cluster definitions were correctly recreated during the upgrade process.**

```
rm -rf as-install/domains/domain1.original
as-install/bin/asadmin start-domain
as-install/bin/asadmin get-health cluster-name
```

If the upgrade worked correctly, the migrated clusters will exist, and the DAS will think that the clustered server instances also exist but are not running.

## 2 Recreate the clustered server instances.

It is possible to use the `asadmin export-sync-bundle` and `import-sync-bundle` subcommands, but it is often more reliable to simply recreate the instances using the `asadmin create-local-instance` subcommand.

For example:

```
asadmin> create-local-instance --node na1 --cluster cluster1 instance1
asadmin> create-local-instance --node na1 --cluster cluster1 instance2
```

## 3 After creating the instances, you must manually copy the `instance-dir/imq` directory for each instance from the older source installation to the target GlassFish Server 3.1 installation.

## 4 Start the cluster(s).

For example:

```
asadmin> start-cluster cluster1
```

# Correcting Potential Upgrade Problems

This section addresses the following issues that could occur during an upgrade to GlassFish Server 3.1:

## Cluster Profile Security Setting

When you upgrade a cluster domain from Application Server 9.1/GlassFish v2 to GlassFish Server 3.1, you could encounter problems because the security setting is incorrect for the `admin-service` whose type attribute is `das-and-server` in the target `domain.xml`. The solution is to edit the `domain.xml` file in the corresponding upgraded domain and correct the setting of the `security-enabled` attribute. Look for the following statements in the `domain.xml` file.

```
<admin-service system-jmx-connector-name="system" type="das-and-server">
<!-- The JSR 160 "system-jmx-connector"-->
<jmx-connector accept-all="false" address="0.0.0.0"
auth-realm-name="admin-realm" enabled=true" name="system" port="8686"
protocol="rmi_jrmp" security-enabled="true">
```

## Cluster Profile Upgrade on Windows

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

```
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 run Upgrade tool.



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