

Using the Tutorial Examples

This chapter tells you everything you need to know to install, build, and run the examples.

The following topics are addressed here:

- Required Software
- Starting and Stopping the GlassFish Server
- Starting the Administration Console
- Starting and Stopping the Java DB Server
- Building the Examples
- Tutorial Example Directory Structure
- Getting the Latest Updates to the Tutorial
- Debugging Java EE Applications
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Required Software

The following software is required to run the examples:

- Java Platform, Standard Edition
- Java EE 6 Software Development Kit
- Java EE 6 Tutorial Component
- NetBeans IDE
- Apache Ant

Java Platform, Standard Edition

To build, deploy, and run the examples, you need a copy of the Java Platform, Standard Edition 6.0 Development Kit (JDK 6).

You can download the JDK 6 software from <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.

Download the current JDK update that does not include any other software, such as NetBeans IDE or the Java EE SDK.

Java EE 6 Software Development Kit

GlassFish Server Open Source Edition 3.1 is targeted as the build and runtime environment for the tutorial examples.

To build, deploy, and run the examples, you need a copy of the GlassFish Server and, optionally, NetBeans IDE.

To obtain the GlassFish Server, you must install the Java EE 6 Software Development Kit (SDK), which you can download from <http://www.oracle.com/technetwork/java/javaee/downloads/index.html>.

Make sure you download the Java EE 6 SDK, not the Java EE 6 Web Profile SDK.

SDK Installation Tips

During the installation of the SDK, do the following.

- Configure the GlassFish Server administration user name as **admin**, and **specify** no password.

This is the default setting.

- Accept the default port values for the Admin Port (4848) and the HTTP Port (8080).
- Allow the installer to download and configure the Update Tool.

If you access the Internet through a firewall, provide the proxy host and port.

This tutorial refers to *as-install-parent*, the directory **where** you install the GlassFish Server.

For example, the default installation directory on Microsoft Windows is **C:\glassfishv3**, so *as-install-parent* is **C:\glassfishv3**.

The GlassFish Server itself is installed in *as-install*, the **glassfish** directory under *as-install-parent*.

So on Microsoft Windows, *as-install* is **C:\glassfishv3\glassfish**.

After you install the GlassFish Server, add the following directories to your **PATH** to avoid having to specify the full path when you use commands:

as-install-parent/bin

as-install/bin

Java EE 6 Tutorial Component

The tutorial example source is contained in the tutorial component.

To obtain the tutorial component, use the Update Tool.

To Obtain the Tutorial Component

Using the Update Tool

1. Start the Update Tool.

- **From** the command line, type the command **updatetool**.
- On a Windows system, **from** the Start menu, **choose** All Programs, then **choose** Java EE 6 SDK, then **choose** Start Update Tool.

- 2. Expand the GlassFish Server Open Source Edition node.**
- 3. Select the Available Add-ons node.**
- 4. From the list, select the Java EE 6 Tutorial check box.**
- 5. Click Install.**
- 6. Accept the license agreement.**

After installation, the Java EE 6 Tutorial appears in the list of installed components.

The **tool** is installed in the

as-install/docs/javaee-tutorial directory.

This directory contains two subdirectories: **docs** and **examples**.

The **examples** directory contains subdirectories for each of the technologies discussed in the tutorial.

Next Steps

Updates to the Java EE 6 Tutorial are published periodically.

For details on obtaining these updates, see Getting the Latest Updates to the Tutorial.

NetBeans IDE

The NetBeans integrated development environment (IDE) is a free, open-source IDE for developing Java applications, including enterprise applications.

NetBeans IDE supports the Java EE platform.

You can build, package, deploy, and run the tutorial examples **from** within NetBeans IDE.

To run the tutorial examples, you need the latest version of NetBeans IDE.

You can download NetBeans IDE **from**
<http://www.netbeans.org/downloads/index.html>.

To Install NetBeans IDE without GlassFish Server

When you install NetBeans IDE, do not install the version of GlassFish Server that comes with NetBeans IDE.

To skip the installation of GlassFish Server, follow these steps.

- 1.** Click **Customize** on the first page of the **NetBeans** IDE Installer wizard.
- 2.** In the **Customize Installation** dialog, **deselect** the check box for **GlassFish Server** and click **OK**.
- 3.** Continue with the installation of **NetBeans** IDE.

Next Steps

The first time you start NetBeans IDE, a dialog box asks you if you want to download and install the JUnit testing library.

A few of the tutorial examples use this library, so you should install it.

To Add GlassFish Server as a Server in NetBeans IDE

To run the tutorial examples in NetBeans IDE, you must add your GlassFish Server as a server in NetBeans IDE.

Follow these instructions to add the GlassFish Server to NetBeans IDE.

1. From the Tools menu, choose Servers.

The Servers wizard opens.

2. Click Add Server.

3. Under Choose Server, select GlassFish Server 3 and click Next.

4. Under **Server Location**, browse the location of your GlassFish Server installation and click **Next**.
5. Under **Domain Location**, **select** **Register Local Domain**.
6. Click **Finish**.

Apache Ant

Ant is a Java technology-based build tool developed by the Apache Software Foundation (<http://ant.apache.org/>) and is used to build, package, and deploy the tutorial examples.

To run the tutorial examples, you need Ant 1.7.1 or higher.

If you do not already have Ant, you can install it from the Update Tool that is part of the GlassFish Server.

To Obtain Apache Ant

1. Start the Update Tool.
 - From the command line, type the command `updatetool`.
 - On a Windows system, from the Start menu, choose All Programs, then choose Java EE 6 SDK, then choose Start Update Tool.
2. Expand the GlassFish Server Open Source Edition node.

3. **Select** the Available Add-ons node.
4. **From** the list, **select** the Apache Ant Build Tool check box.
5. Click Install.
6. Accept the license agreement.

After installation, Apache Ant appears in the list of installed components.

The **tool** is installed in the *as-install-parent/ant* directory.

Next Steps

To use the **ant** command, add *as-install-parent/ant/bin* to your **PATH** environment variable.

Starting and Stopping the GlassFish Server

To start the GlassFish Server, open a terminal window or command prompt and execute the following:

```
asadmin start-domain --verbose
```

A domain is a set of one or more GlassFish Server instances **managed** by one administration server.

Associated with a domain are the following:

- . The GlassFish Server's port number.

The default is 8080.

- The administration server's port number.

The default is 4848.

- An administration user name and password.

You specify these values when you install the GlassFish Server.

The examples in this tutorial assume that you chose the default ports.

With no arguments, the **start-domain** command initiates the default domain, which is **domain1**.

The **--verbose** flag causes all logging and debugging output to appear on the terminal window or command prompt.

The output also goes **into** the server log, which is located in **domain-dir/logs/server.log**.

Or, on Windows, from the Start menu, choose All Programs, then choose Java EE 6 SDK, then choose Start Application Server.

After the server has completed its startup sequence, you will see the following output:

`Domain domain1 started.`

To stop the GlassFish Server, open a terminal window or command prompt and execute:

```
asadmin stop-domain domain1
```

Or, on Windows, from the Start menu, choose All Programs, then choose Java EE 6 SDK, then choose Stop Application Server.

When the server has stopped, you will see the following output:

Domain domain1 stopped.

Starting the Administration Console

To administer the GlassFish Server and **manage** **users**, **resources**, and Java EE applications, use the Administration Console **tool**.

The GlassFish Server must be running before you invoke the Administration Console.

To start the Administration Console, open a browser at <http://localhost:4848/>.

Or, on Windows, from the Start menu, choose All Programs, then choose Java EE 6 SDK, then choose Administration Console.

To Start the Administration Console in NetBeans IDE

1. Click the Services tab.
2. Expand the Servers node.
3. Right-click the GlassFish Server instance and select View Admin Console.

Note - NetBeans IDE uses your default web browser to open the Administration Console.

Starting and Stopping the Java DB Server

The GlassFish Server includes the Java DB database server.

To start the Java DB server, open a terminal window or command prompt and execute:

```
asadmin start-database
```

To stop the Java DB server, open a terminal window or command prompt and execute:

```
asadmin stop-database
```

For information about the Java DB included with the GlassFish Server, see

<http://www.oracle.com/technetwork/java/javadb/overview/index.html>.

To Start the Database Server Using NetBeans IDE

1. Click the Services tab.
2. Expand the Databases node.
3. Right-click Java DB and choose Start Server.

Next Steps

To stop the **database** using **NetBeans IDE**,
right-click Java DB and choose Stop Server.

Building the Examples

The tutorial examples are distributed with a configuration file for either NetBeans IDE or Ant.

Directions for building the examples are provided in each chapter.

Either NetBeans IDE or Ant may be used to build, package, deploy, and run the examples.

Tutorial Example Directory Structure

To facilitate iterative development and keep application source separate from compiled files, the tutorial examples use the Java BluePrints application directory structure.

Each application module has the following structure:

- **build.xml**: Ant build file
- **src/java**: Java source files for the module
- **src/conf**: configuration files for the module, with the exception of web applications

- **web**: web pages, style sheets, **tag** files, and images (web applications only)
- **web/WEB-INF**: configuration files for web applications (web applications only)
- **nbproject**: NetBeans project files

Examples that have multiple application modules packaged **into** an EAR file have submodule directories that **use** the following naming conventions:

- *example-name-app-client*: application clients
- *example-name-ejb*: enterprise **bean** JAR files

. *example-name-war*: web applications

The Ant build files (*build.xml*) distributed with the examples contain targets to create a *build* subdirectory and to copy and compile files *into* that directory; a *dist* subdirectory, which holds the packaged module file; and a *client-jar* directory, which holds the retrieved application client JAR.

The directory

tut-install/*examples*/*bp-project* contains additional Ant targets called by the *build.xml* file targets.

Some Ant targets for web examples will open the example URL in a browser if one is available.

This happens automatically on Windows systems.

If you are running on a UNIX system, you may want to modify a line in the

tut-install/examples/

bp-project/build.properties file.

Remove the comment character **from** the line specifying the **default.browser** property and specify the path to the command that invokes a browser.

If you do not make the change, you can open the URL in the browser yourself.

Getting the Latest Updates to the Tutorial

Check for any updates to the tutorial by using the Update Center included with the Java EE 6 SDK.

To Update the Tutorial Through the Update Center

1. Open the Services tab in NetBeans IDE and expand Servers.
2. Right-click the GlassFish Server 3 instance and select View Update Center to display the Update Tool.

3. Select Available Updates in the tree to display a list of updated packages.

4. Look for updates to the Java EE 6 Tutorial (javaee-tutorial) package.

5. If there is an updated version of the Tutorial, **select** Java EE 6 Tutorial (javaee-tutorial) and click Install.

Debugging Java EE Applications

This section explains how to determine what is causing an error in your application deployment or execution.

Using the Server Log

One way to debug applications is to look at the server log in *domain-dir/logs/server.log*.

The log contains output from the GlassFish Server and your applications.

You can log messages **from** any Java **class** in your application with **System.out.println** and the Java Logging **APIs** (documented at <http://download.oracle.com/javase/6/docs/technotes/guides/logging/index.html>) and **from** web components with the **ServletContext.log** method.

If you start the GlassFish Server with the **--verbose** flag, all logging and debugging output will appear on the terminal window or command prompt and the server log.

If you start the GlassFish Server in the background, debugging information is available only in the log.

You can view the server log with a text editor or with the Administration Console log viewer.

To Use the Log Viewer

- 1. Select the GlassFish Server node.**
- 2. Click the View Log Files button.**

The log viewer opens and displays the last 40 entries.

3. To display other entries, follow these steps.

a. Click the Modify Search button.

b. Specify any constraints on the entries you want to see.

c. Click the Search button at the top of the log viewer.

Using a Debugger

The GlassFish Server supports the Java Platform Debugger **Architecture** (JPDA).

With JPDA, you can configure the GlassFish Server to communicate debugging information using a socket.

To Debug an Application Using a Debugger

- 1. Enable debugging in the GlassFish Server using the Administration Console:**
 - a. Expand the Configurations node, then expand the server-config node.**

b. Select the JVM Settings node.

The default debug options are set to:

```
-Xdebug -  
Xrunjdwp:transport=dt_socket,  
server=y, suspend=n, address=9009
```

As you can see, the default debugger socket port is 9009.

You can change it to a port not in use by the GlassFish Server or another service.

c. Select the Debug Enabled check box.

d. Click the Save button.

2. Stop the GlassFish Server and then restart it.