

# **GlassFish Tools Bundle for Eclipse User Guide**

Sun Microsystems, Inc.  
4150 Network Circle  
Santa Clara, CA 95054  
U.S.A.

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# Introduction

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GlassFish™ Server is a open source Application Server that implements the Java EE platform. It is the industry standard for implementing enterprise-class Service-Oriented Architecture (SOA) and next-generation web applications.

Eclipse is a popular open source Integrated Development Environment (IDE) that is widely adopted in the developer community.

The GlassFish Tools Bundle for Eclipse is a software bundle that includes GlassFish Server v2.1 and v3 Prelude, Eclipse IDE 3.4 and the plug-in that enables them to work together. It provides a ready-to-use environment that helps you get started with developing applications on Eclipse and deploying them to GlassFish Server.

This document helps GlassFish Tools Bundle for Eclipse users to become familiar with using the product and its various features. The document contains information on the following topics:

- [Installing GlassFish Tools Bundle for Eclipse](#)
- [Configuring and Using GlassFish Server from Eclipse IDE](#)
- [Developing Applications for GlassFish Server from Eclipse IDE](#)
- [Getting started with Metro](#)
- [Appendix A, “Using Popup Menu”](#)



# Installing GlassFish Tools Bundle for Eclipse

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This chapter describes the process of installing GlassFish Tools Bundle for Eclipse, that includes Eclipse IDE 3.4, GlassFish Server v2.1 and v3 Prelude Servers, and the plug-in that integrates these products, on various platforms.

- “To Install on Windows Platform” on page 7
- “To Install on Mac OS Platform” on page 8
- “To Install on Linux Platform” on page 9
- “To Install on Open Solaris Platform” on page 11
- “To Uninstall” on page 13
- “Troubleshooting” on page 13

## ▼ To Install on Windows Platform

- 1 Download GlassFish Tools Bundle for Eclipse Windows package from the following location:**  
<http://download.java.net/glassfish/eclipse>
- 2 Double click the downloaded file, to start installer wizard.**  
Welcome Message is displayed.
- 3 Click Next to continue.**  
License Agreement is displayed.
- 4 Read and accept License Agreement.**
- 5 In the next screen, accept default location or specify a different location to install software.**  
For example: C:\Program Files\GlassFish-Tools-Bundle-For Eclipse-<version>\

---

**6 Click Install to continue.**

Wait for installation to complete.

When installation is completed, Eclipse IDE 3.4 and GlassFish Servers v2.1 and v3 Prelude and the plug-in that integrates these products are installed on your system.

**7 Click Close to quit Installer wizard.**

**8 To start Eclipse IDE, select Start ->Programs->GlassFish Tools Bundle for Eclipse <version>->GlassFish Tools Bundle for Eclipse.**

Workspace Launcher page is displayed.

**9 Accept default Workspace or select a different Workspace.**

**10 Click Next.**

GlassFish Registration page is displayed.

**11 Register GlassFish Server from Registration page.**

You can also choose one of the other registration options.

---

**Tip** – By registering your GlassFish Installation, you have the advantage of receiving patch information and updates, screen casts and tutorials, support and training offerings from GlassFish community.

---

**12 Click Next or Finish.**

Eclipse IDE is opened.

Close Welcome page to enter default Workbench, in Java EE Perspective.

## ▼ To Install on Mac OS Platform

**1 Download GlassFish Tools Bundle for Eclipse Mac OS package from the following location:**

<http://download.java.net/glassfish/eclipse>

**2 Double click downloaded file to create pkg file.**

**3 Click on pkg file to start installer wizard.**

Welcome Message is displayed.

**4 Click Continue.**

License Agreement page is displayed.



---

**5 Read and accept License Agreement. Click next.**

**6 Accept default location or specify another location to install software.**

For example: HD Disk.

**7 Click Install.**

Wait for installation to complete.

When installation is complete, Eclipse IDE 3.4 and GlassFish Servers v2.1 and v3 Prelude along with the plug-in that integrates these products are installed on system.

**8 To start Eclipse IDE, navigate to Applications directory and click GlassFish Tools Bundle for Eclipse <version>.**

Workspace Launcher page is displayed.

**9 Accept default Workspace or select a different Workspace.**

**10 Click Next.**

GlassFish Registration page is displayed.

**11 Register GlassFish Server from Registration Screen.**

You can also choose one of the other registration options.

---

**Tip** – By registering your GlassFish Installation, you have the advantage of receiving patch information and updates, screen casts and tutorials, support and training offerings from GlassFish community.

---

**12 Click Next or Finish.**

Eclipse IDE is opened.

Close Welcome page to enter default Workbench, in Java EE Perspective.

## ▼ To Install on Linux Platform

**1 Download GlassFish Tools Bundle for Eclipse Linux package from the following location:**

<http://download.java.net/glassfish/eclipse>

**2 Move the package to a suitable directory.**

If you are using the zipped tar file then skip Steps 3 through 12 and go to Step 13.

---

**3 Use the following command to start the installer wizard:**

```
java -jar <glassfish-tools-bundle-for-eclipse-xxxx.jar>
```

Welcome Message is displayed.

**4 Click Next to continue.**

License Agreement page is displayed.

**5 Read and accept License Agreement and click Next.**

Target Path selection page is displayed.

**6 Accept default location or specify a different location to install software.**

For example: /home/<GlassFish-Tools-Bundle-For Eclipse-<version>/

**7 Click Next to continue.**

Setup Shortcuts page is displayed.

**8 Use checkbox to create or not to create shortcuts for the application in the XDG -Menu. Select default Program Group for shortcuts or create a new Program Group.**

**9 Click Next to continue.**

Summary Configuration Data page is displayed.

**10 If configuration data is acceptable, click Next to proceed with installation.**

Wait for installation to complete.

**11 Click Next to continue.**

Installation Finished message is displayed.

**12 Click Done to close the Installer wizard.**

**13 Navigate to the install location, <glassfish-tools-bundle-for-eclipse-xxxx> directory.**

This directory contains Eclipse IDE 3.4, GlassFish Server v2.1 and v3 Prelude installations.

**14 Start Eclipse IDE, by using the following command:**

```
./eclipse
```

Workspace Launcher page is displayed.

**15 Accept default Workspace or select a different Workspace.**

---

**16 Click OK to continue.**

GlassFish Registration page is displayed.

**17 Register GlassFish Server from Registration Screen.**

You can also choose one of the other available options.

---

**Tip** – By registering your GlassFish Installation, you have the advantage of receiving patch information and updates, screen casts and tutorials, support and training offerings from GlassFish community.

---

**18 Click Next or Finish depending on the option you chose in the previous screen.**

Eclipse IDE is opened.

Close Welcome page to enter default Workbench, in Java EE Perspective.

**19 If you are using the zipped tar file (tar.gz) distribution, then use the following step to install:**

- **Use gunzip and then extract tar file.**

When file is extracted, Eclipse IDE 3.4 and GlassFish Servers v2.1 and v3 Prelude along with the plug-in that integrates these products are installed on system.

- **Go to Step 13 and continue.**

## ▼ **To Install on Open Solaris Platform**

**1 Download GlassFish Tools Bundle for Eclipse Open Solaris package from the following location:**

<http://download.java.net/glassfish/eclipse>

**2 Move the package to a suitable directory.**

If you are using the zipped tar file then skip Steps 3 through 12 and go to Step 13.

**3 Use the following command to start the installer wizard:**

```
java -jar <glassfish-tools-bundle-for-eclipse-xxxx.jar>
```

Welcome Message is displayed.

**4 Click Next to continue.**

License Agreement page is displayed.

**5 Read and accept License Agreement and click Next.**

Target Path selection page is displayed.

- 
- 6 Accept default location or specify a different location to install software.**  
For example: /home/<GlassFish-Tools-Bundle-For Eclipse-<version>/
  - 7 Click Next to continue.**  
Setup Shortcuts page is displayed.
  - 8 Use checkbox to create or not to create shortcuts for the application in the XDG -Menu. Select default Program Group for shortcuts or create a new Program Group.**
  - 9 Click Next to continue.**  
Summary Configuration Data page is displayed.
  - 10 If configuration data is acceptable, click Next to proceed with installation.**  
Wait for installation to complete.
  - 11 Click Next to continue.**  
Installation Finished message is displayed.
  - 12 Click Done to close the Installer wizard.**
  - 13 To start Eclipse IDE, select Launch ->Applications ->GlassFish Tools Bundle for Eclipse <version> ->GlassFish Tools Bundle for Eclipse.**  
Workspace Launcher page is displayed.
  - 14 Accept default Workspace or select a different Workspace.**
  - 15 Click OK to continue.**  
GlassFish Registration page is displayed.
  - 16 Register GlassFish Server from Registration Screen.**  
You can also choose one of the other available options.

---

**Tip** – By registering your GlassFish Installation, you have the advantage of receiving patch information and updates, screen casts and tutorials, support and training offerings from GlassFish community.

---

- 17 Click Next or Finish depending on the option you chose in the previous screen.**  
Eclipse IDE is opened.  
Close Welcome page to enter default Workbench, in Java EE Perspective.

---

**18 If you are using the zipped tar file (tar.gz) distribution, then use the following step to install:**

- **Use gunzip and then extract tar file.**

When file is extracted, Eclipse IDE 3.4 and GlassFish Servers v2.1 and v3 Prelude along with the plug-in that integrates these products are installed on system.

- **Go to Step 13 and continue.**

## ▼ To Uninstall

To uninstall your GlassFish Tools Bundle for Eclipse installation, use the following procedure:

- 1 For Windows installations, select Start ->GlassFish Tools Bundle For Eclipse <version> ->GlassFish Tools bundle Uninstall.**
- 2 For Mac OS installations, go to <Disk>/Applications directory, remove the <installation>directory.**
- 3 For Linux installations, go to <installation>/Uninstall directory and use the following command to launch the Uninstaller:**

```
java -jar uninstaller.jar
```

- 4 For Open Solaris installations, go to <installation>/Uninstall directory and use the following command to launch the Uninstaller:**

```
java -jar uninstaller.jar
```

## ▼ Troubleshooting

If you face any issues in installing the bundle, use the following steps to clean up the failed install and restore the pre-installation state of system.

- 1 Remove the <installation> directory.**
- 2 Remove any relevant hidden directories and files from your home directory.**  
For example: `~/ .glassfish-tools-bundle-for-eclipse-<version>` on Linux.
- 3 Remove the Eclipse Workspace associated with the installation, if configured.**
- 4 Install GlassFish Tools Bundle for Eclipse again.**



# Configuring and Using GlassFish Server from Eclipse IDE

---

This chapter introduces you to configuring and using the GlassFish Server from Eclipse IDE. When GlassFish Tools Bundle for Eclipse is installed successfully, you can configure it and take advantage of advanced features available in GlassFish Servers. The following topics describe the process of configuring the GlassFish Server from the Eclipse IDE.

Several of the following procedures use Server popup menu. For more information on using the Server popup menu, see [Appendix A, “Using Popup Menu.”](#)

- “To create a new Server” on page 15
- “To start GlassFish Server” on page 16
- “To stop GlassFish Server” on page 17
- “To restart GlassFish Server” on page 17
- “To start GlassFish Server in debug mode” on page 18
- “To publish Projects” on page 18
- “To clean published Projects” on page 18
- “To add and remove Projects” on page 19
- “To display GlassFish Sever properties” on page 19
- “To access GlassFish Server Administration Console” on page 20
- “To register GlassFish Server Installation” on page 20
- “To use GlassFish Update Center from Eclipse IDE” on page 21
- “To use Help Menu for GlassFish Server” on page 21
- “To change Preferences for GlassFish Server Plug-in” on page 22
- “To monitor TCP/IP for Web Applications with GlassFish Server” on page 22
- “To view Sample JavaDB” on page 23
- “Miscellaneous” on page 24

## ▼ To create a new Server

The GlassFish Tools Bundle for Eclipse, by default, installs a new instance of GlassFish v2.1 Server and GlassFish v3 Prelude Server (Bundled GlassFish v2.1 and Bundled GlassFish v3

---

Prelude) for you. If you want to add a new Server to Eclipse IDE, use the following procedure. In some cases, this option also downloads and installs a new Server. For example: GlassFish v3 Promoted Build

To create a new Server instance, use the following procedure:

**1 Select Servers view.**

**2 Select New, from Server popup menu.**

New Server page is displayed

**3 Provide GlassFish Server details.**

For example, provide details for the following:

*Server's host name*

*Server type*

*Server name*

*Server Runtime Environment*

**4 Click Next.**

Complete Server configuration. For example, provide values for the following:

*Domain Directory*

*Domain Name*

*Administrator ID*

*Administrator password*

**5 Click Next.**

Add and Remove Projects page is displayed.

Select the existing projects, you want to add to the new Server.

**6 Click Finish.**

New Server creation is completed.

## ▼ To start GlassFish Server

To start your GlassFish Server from Eclipse IDE, use the following procedure:



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**Note** – By default, Eclipse Workbench is set to Java EE Perspective. Skip Step 1 if Workbench is already set to Java EE Perspective.

---

- 1 Select Window ->Open Perspective ->Java EE Perspective, to set Eclipse IDE to Java EE Perspective.**
- 2 Select Servers view.**
- 3 Select the GlassFish Server instance you want to start.**
- 4 Select Start from Server popup menu.**  
GlassFish Server is started.

---

**Tip** – You could also use the Start icon from the toolbar to start Server.

---

## ▼ To stop GlassFish Server

To stop a running GlassFish Server, use the following procedure:

- 1 Select Servers view.**
- 2 Select the GlassFish Server instance you want to stop.**
- 3 Select Stop from Server popup menu.**  
GlassFish Server is stopped.

---

**Tip** – You could also use the Stop icon from the toolbar to stop the Server.

---

## ▼ To restart GlassFish Server

To stop and restart a running GlassFish Server, use the following procedure:

- 1 Select Servers view.**
- 2 Select the GlassFish Server you want to restart.**
- 3 From Server popup menu, select Restart.**  
GlassFish Server is stopped and restarted.

---

## ▼ To start GlassFish Server in debug mode

When you want to debug an application, run GlassFish Server in debug mode. To start GlassFish Server in debug mode, use the following procedure:

- 1 **Select Servers view.**
- 2 **Select the GlassFish Server.**
- 3 **Select Debug from Server popup menu.**  
GlassFish Server is started in Debug mode.

---

**Note** – If GlassFish Server is already running, you will see **Restart** in Debug option in the popup menu, instead of Debug.

---

For more information on using GlassFish Server to debug applications, see [“To debug a Servlet with GlassFish Server” on page 30](#).

## ▼ To publish Projects

To publish applications to the GlassFish Server, use the following procedure:

- 1 **Select Servers view.**
- 2 **Select GlassFish Server.**
- 3 **Select Publish from Server popup menu.**  
The selected applications are published to the GlassFish Server.

## ▼ To clean published Projects

To discard all published projects, and republish from scratch, use the following procedure:

- 1 **Select Servers view.**
- 2 **Select GlassFish Server.**
- 3 **Select Clean... from Server popup menu.**
- 4 **Click OK to accept the warning regarding discarding the published state.**  
The published state of projects is discarded and projects are republished.

---

## ▼ To add and remove Projects

To add and remove projects that are configured to run on GlassFish Server, use the following procedure:

- 1 **Select Servers view.**
- 2 **Select GlassFish Server.**
- 3 **Select Add and Remove Projects... from Server popup menu.**  
Add and Remove Project screen is displayed.
- 4 **To add a project to Server:**
  - a. **Select the project you want to add from Available projects panel.**
  - b. **Click Add, to add the project to Configured projects panel.**
- 5 **To remove a project from Server:**
  - a. **Select the project you want to remove from Configured projects panel.**
  - b. **Click Remove, to remove the project and move it to Available projects panel.**
- 6 **Click Finish to exit.**

## ▼ To display GlassFish Sever properties

To view some of the GlassFish Server current properties and/or to restore them to default, use the following procedure:

- 1 **Select Servers view.**
- 2 **Select GlassFish Server.**
- 3 **Select Properties from Server popup menu.**  
Properties for GlassFish Server page is displayed.
- 4 **View current Server properties or restore them to default.**

---

## ▼ To access GlassFish Server Administration Console

GlassFish Sever offers many administrative features that are not accessible from Eclipse IDE. These features are available from GlassFish Server Administration Console which is accessible from Eclipse IDE. The following procedure describes the process of accessing GlassFish Server Administration Console, from Eclipse IDE.

For more information on how to access GlassFish Server popup menu, see [Appendix A, “Using Popup Menu.”](#)

**Before You Begin** Make sure that GlassFish Server is running.

- 1 **Open Eclipse IDE.**  
Default Workbench is displayed.
- 2 **Select Servers view.**
- 3 **Select Server popup menu → GlassFish Enterprise Server →GlassFish Administration Console.**  
GlassFish Administration Console is displayed.  
  
Access various features available from Administration Console such as Registration, Subscription and Documentation.

## ▼ To register GlassFish Server Installation

By registering your GlassFish Installation, you have the advantage of receiving patch information and updates, screen casts and tutorials, support and training offerings from GlassFish community.

If you did not register during installation, use the following procedure to register your GlassFish Server from Eclipse IDE.

**Before You Begin** Make sure that GlassFish Server is running.

For more information on GlassFish Server popup menu, see [Appendix A, “Using Popup Menu.”](#)

- 1 **To view Registration page, select Server popup menu →GlassFish Enterprise Server →Register GlassFish Enterprise Server.**
- 2 **Provide the required information to register your GlassFish Server Installation.**
- 3 **To access Support Information, from GlassFish Server popup menu, select →GlassFish Enterprise Server →Get Support for GlassFish Enterprise Server.**

---

## ▼ To use GlassFish Update Center from Eclipse IDE

GlassFish Update Center provides access to Add-On components and product updates for GlassFish Server.

Use the following procedure to access GlassFish Update Center from Eclipse IDE.

---

**Note** – You can update the GlassFish plug-in in the bundle, by accessing Help→Software Updates option and downloading the latest version of the GlassFish plug-in.

---

**Before You Begin** Make sure that the GlassFish Server is running.

For more information on how to access GlassFish Server popup menu, see [Appendix A, “Using Popup Menu.”](#)

**1 Select GlassFish Enterprise Server →GlassFish Update Center from Server popup menu.**

**2 Select Add-On components and product updates as required.**

For example: *JRuby*.

## ▼ To use Help Menu for GlassFish Server

The GlassFish Tools Bundle for Eclipse, provides additional GlassFish help options from the Eclipse IDE Help menu. You can access the Online Help for GlassFish Server v2.1 and GlassFish Server v3 Prelude from Eclipse IDE Help ->GlassFish Enterprise Server menu. The Help options are useful for learning how to use, administer or deploy with GlassFish server.

Use the following procedure to access Eclipse Help menu:

**1 Select Help ->Java EE 5 Javadoc, to view Java EE javadoc.**

**2 Select Help ->GlassFish Enterprise Server, to view GlassFish Server help options.**

The following options are available:

- **Get Support for GlassFish Enterprise Server**
- **Aquarium: GlassFish Community News**
- **GlassFish v3 Prelude (Documentation)**
- **GlassFish v2.1 Java EE 5 (Documentation)**

---

## ▼ To change Preferences for GlassFish Server Plug-in

The GlassFish Tools Bundle for Eclipse allows you to change the preferences for GlassFish Server plug-in from Eclipse IDE.

- **To change GlassFish plug-in preferences from Eclipse IDE, select Window ->Preferences.**

The available GlassFish Server preference flags are explained in detail.

- **Enable GlassFish Plug-in Log information in IDE log file**

This preference is useful for debugging purposes. By turning this option on, you can see additional traces in Eclipse log file specific to GlassFish plug-in. This option is in OFF state by default.

- **Start the JavaDB database process when Starting GlassFish Server**

GlassFish Tools Bundle for Eclipse includes a preconfigured JavaDB Database. By turning this option on, you can start the database automatically when the server is started. It is useful when working with JPA applications. This option is in OFF state by default.

- **Start the GlassFish Enterprise Server in Verbose Mode**

By turning this option on, GlassFish server output log is sent to Eclipse console. This option is in OFF state by default.

- **Enable colored rendering in GlassFish Log Viewer**

By turning this option on, log messages can be rendered in color: INFO level messages in black, WARNING messages in yellow, SEVERE messages in red (Eclipse IDE default Error Text color), and multiple line entries in Italic. This option is in ON state by default.

---

**Tip** – You can always modify Eclipse IDE Error message text color. Select Window→Preferences→General→Appearance→Colors and Fonts. From Colors and Fonts panel, select Basic and then Error Text color. Modify error text color as per your requirement.

---

## ▼ To monitor TCP/IP for Web Applications with GlassFish Server

TCP/IP monitoring is a useful Eclipse IDE feature that is enabled for GlassFish Server in this bundle. It allows you to trace HTTP requests made to your web application. Use the following procedure to configure TCP/IP monitoring for GlassFish Server.

- 1 **From GlassFish Server popup menu, select Monitoring ->Properties.**

Monitoring Properties page is displayed.

---

**2 Click Add.**

Monitoring Ports page is displayed.

**3 Select Server Port, which is the http port used by GlassFish server.**

By default, it is 8080. The port that will be used to actually do monitoring is 8081 which is specified in the Monitor Port field.

---

**Note** – You can modify port numbers as necessary.

---

**4 Click Start, to start monitoring.**

The port 8080 is now monitored from port 8081.

The Status column in page will show (monitoring) status as Started.

**5 Select Apply and then OK, to complete setup.**

When GlassFish server is running, access a web page using port 8081 instead of the regular port 8080. The TCP/IP monitor view should appear below, and fill up with the traffic between your Web browser and your web application. When you select each request in the tree at the top left of page, information about the request/response is shown. The bottom left of the view will display the HTTP request that was made to your web application, and the bottom right will show each response.

## ▼ To view Sample JavaDB

The GlassFish Tools Bundle for Eclipse, by default, installs and creates a JavaDB sample database for you.

Use the following procedure to view the tables that exist in the database. Skip Step 1 to Step 5 if the database is already started.

**1 Select Window→Preferences.**

Preferences page is displayed.

**2 Select GlassFish Preferences.**

**3 Select the Checkbox next to Start JavaDB database process when Starting GlassFish Server option.**

**4 Click Close.**

**5 Restart the GlassFish Server.**

The sample JavaDB database will be started along with the GlassFish Server.

- 
- 6 Select Data Source Explorer view.**
  - 7 Select Sample JavaDB database node.**
  - 8 Right click the node to view the popup menu and confirm if the Database is connected.**
  - 9 If not, select Connect from the popup menu.**  
You will be connected to the Database.
  - 10 Click to expand the database node.**  
You will be able to see the various schemata and tables that are already created for you.

## ▼ Miscellaneous

The above procedures describe the use of Server popup menu for various tasks, such as starting and stopping GlassFish Server.

The same tasks can also be performed using other menus such as Eclipse IDE toolbar menu or Project node right click menu. You can use any of the available menus as is convenient.

For example, starting the Server in Debug mode as described in [“To debug a Servlet with GlassFish Server” on page 30](#), can also be done from Eclipse toolbar menu.

- 1 Select the Project in Project Explorer.**
- 2 Select Debug As.**  
Menu is displayed.
- 3 Select Debug As icon from toolbar.**
  - a. Select Run on Server.**  
Debug On Server page is displayed.
  - b. Select Bundled GlassFish Server v3 Prelude.**
  - c. Click Next to continue.**
  - d. Select any other Projects you want to Debug.**
  - e. Click Finish.**  
Prompt to Switch mode is displayed.
  - f. Select Switch Mode option and click OK.**



---

**See Also** For more information on Eclipse IDE menus, see [Eclipse Documentation](#).



## Developing Applications for GlassFish Server from Eclipse IDE

---

This section of the document helps you to get familiar with developing applications for GlassFish Server with Eclipse IDE, using the advanced features available in GlassFish Server v3 Prelude.

The following topics assume GlassFish Server v3 Prelude as Server runtime. You can use GlassFish Server v2.1 for developing applications but without support for the features that are specific to v3 Prelude. You may also need to perform further configuration, for the following tasks to work with GlassFish Server v2.1.

For example: Use of `EclipseLink` described in [“To create a new Data Source and register it with GlassFish Server” on page 31](#), is preconfigured to work with GlassFish Server v3 Prelude but not with GlassFish Server v2.1.

- [“To create a new Web Application project for GlassFish Server” on page 27](#)
- [“To add a Servlet and use Session Preservation feature” on page 28](#)
- [“To debug a Servlet with GlassFish Server” on page 30](#)
- [“To edit the preconfigured MySQL Database Connector” on page 31](#)
- [“To create a new Data Source and register it with GlassFish Server” on page 31](#)
- [“To create a JPA Project for GlassFish Server” on page 33](#)

### ▼ To create a new Web Application project for GlassFish Server

You can create different types of applications using GlassFish Tools Bundle for Eclipse. The following procedure describes the process of creating a Web Application for publishing to GlassFish Server.

- 1 **Select File ->New ->Dynamic Web project.**

Project creation page is displayed.

---

**2 Enter a Project Name in the first field.**

For example: MyFirstWebApp.

**3 Select GlassFish Server version to use as Target Runtime.**

For example: GlassFish v3 Prelude.

**4 Click Finish.**

A new dynamic Web Project is created and is visible in Project Explorer panel.

A default JSP file `index.jsp` page is created and opened in JSP Editor View.

**5 Add or modify `index.jsp` code as required.**

**6 From Eclipse main menu, select Run menu or Run icon from toolbar.**

**7 Select Run On→GlassFish Server v3 Prelude, as the server to run this application.**

---

**Note** – You can select **Always use this server when running this project** checkbox to streamline further run invocations.

---

**8 Build the Web Application and publish to GlassFish Server v3 Prelude.**

The Console view displays server log. The `index.jsp` page appears in Eclipse IDE default Web Browser.

---

**Note** – You can always switch back and forth between Editor view and Web Browser view. Both views are available from Eclipse Editor. Each time the application is changed, it is redeployed on server. You can reload the application in the browser to see the changes immediately.

---

## ▼ To add a Servlet and use Session Preservation feature

Session Preservation is a new and convenient feature of GlassFish Server v3 Prelude, critical when you are developing/debugging complex Web Applications with complex Session management such as Shopping Cart applications, and when you want to retain information about your Sessions across redeployments.

This section of document explains how to use Session Preservation feature. For testing this feature, you can use the Project created in the previous example or create a new Project. If you are using the previously created project, skip Step 1.

### Before You Begin

This section of the document is applicable for GlassFish Server v3 Prelude only. It is not applicable to GlassFish Server v2.1.

- 
- 1 Create a new Dynamic Web Project, in the manner described in the previous section.**
  - 2 From Project Explorer window, right click the Project node.**
  - 3 Select New ->Servlet, to create a new servlet.**  
Create Servlet screen is displayed.
  - 4 Enter a package name.**  
For example: apkg.
  - 5 Enter a servlet name.**  
For example:MyServlet
  - 6 Click Finish.**  
A new servlet is created and opened in Eclipse IDE editor view.
  - 7 From Eclipse IDE editor, add more logic to the servlet.**  
An example Servlet code for showing Session data is available from here:[Sample Servlet code for Session Preservation](#)
  - 8 Save servlet file.**  
The file is deployed on the GlassFish Server.
  - 9 Go to Web Browser view to activate the servlet page.**  
`http://localhost:8080/MyFirstWebApp/MyServlet.`
  - 10 Reload servlet web page, a number of times.**  
In the servlet page, you can see the Number of Previous Accesses field growing. This counter is stored in Servlet Session data.
  - 11 Modify servlet source code, and redeploy the web application.**  
Go the Web Browser view and click Reload to see the updated page.

---

**Tip** – By default, Deploy On Save mode is enabled. When you save servlet source file, it is automatically redeployed on the Server.

---

- 12 To test Session Preservation feature, add some text in servlet source code.**

For example:

```
session.putValue("accessCount", accessCount);  
out.println (  
.....
```

---

```
.....
"<H2> Updated Servlet!!! Information on your Session:<H2>\n"+
.....
.....
```

and save the servlet page.

When the update is saved, the servlet is redeployed.

### **13 Access the web page once again.**

You can see the newly added text, Updated Servlet!!! in the web page, and the field, Number of Previous Accesses, as 5.

With the above process you have verified that the Servlet Session data was preserved during redeployment.

## **▼ To debug a Servlet with GlassFish Server**

GlassFish Tools Bundle for Eclipse enables you to debug various types of web applications such as servlet helper classes, JPA (Java Persistence API) applications, Web Services, or JSP pages containing Java code fragments. The following procedures describes the process of setting up a servlet for debugging.

### **1 Set breakpoints for an application.**

Go relevant line of application code from Eclipse IDE editor.

### **2 Select Run ->Toggle Break Point.**

- You can also select the popup menu available in the vertical grey bar, on the left side of Eclipse IDE editor, and select Toggle Break Point.

### **3 If Eclipse IDE can set up a breakpoint on this selected line, a small icon will appear on the vertical grey bar.**

If Eclipse IDE cannot set a breakpoint on this line, you will be notified.

### **4 Select Debug from Server popup menu to start GlassFish server in debug mode.**

Eclipse IDE will switch to Debug Perspective as soon as the Web Page with breakpoint set, is activated.

You can now start to debug the servlet using the feature-rich Eclipse Debugger.

---

**Note** – For debugging a project, you can always use the Debug As icon from the Menu toolbar or the Debug As option from the Project node right click menu.

For more information on using the Eclipse IDE, use the Help Menu.

---

## ▼ To edit the preconfigured MySQL Database Connector

The GlassFish Tools Bundle for Eclipse includes a preconfigured MySQL database connector. You can use it to connect with your MySQL database with minimal configuration effort.

To edit the preconfigured MySQL database connector, use the following process:

- 1 From Eclipse IDE, select Windows->Preferences
- 2 Select Data Management from left-hand side panel.
- 3 Click Connectivity
- 4 Click Driver Definitions.
- 5 Select MySQL JDBC Bundled Driver Default and click Edit.
- 6 Edit the parameters for the MySQL Driver Definition as required.
- 7 Click OK to close dialog box.
- 8 Click OK to close Preferences screen.

## ▼ To create a new Data Source and register it with GlassFish Server

As described in [Chapter 3, “Configuring and Using GlassFish Server from Eclipse IDE,”](#) by default GlassFish Tools Bundle for Eclipse installs and configures a Derby database instance for you.

You can also create a new Data Source and register it with GlassFish Server from Eclipse IDE. The process of creating and registering a new MySQL Data Source is described as follows:

**Before You Begin** Install a MySQL database instance if you do not have a pre-installed MySQL database. For more information on installing MySQL, See [MySQL installation documentation](#).

- 
- 1 Select Database Connections from Data Source Explorer view. Right click the Databases node and select New.**
  - 2 Select MySQL from New Connection Profile options.**  
Accept default name New MySQL or choose another name.
  - 3 Click Next.**  
MySQL Connection Profile screen is displayed.
  - 4 Click New Driver Definition button (located next to Drivers text box).**  
New Driver Definition screen is displayed.

---

**Note** – Step 5 through 8 are optional and may be used if you need to use a MySQL driver that is not bundled.

---

- 5 Select a Driver template from list.**
- 6 Select Jar List tab, and select location of MySQL JDBC Driver file from <glassfish-tools-bundle-for-eclipse-xxxx> directory.**
- 7 Select Properties tab and view properties of Driver Definition.**  
Change any properties as required.
- 8 Click OK to exit New Driver Definition screen.**
- 9 From Connection Profile screen, modify any other details as required.**  
For example: User name and Password.
- 10 Click Test Connection to test Database connectivity.**
- 11 Click Next to view a summary of Connection Profile.**
- 12 Verify Profile details.**  
If necessary, go back and change details.
- 13 Click Finish to complete creation of the new Data Source profile.**  
The newly created MySQL Data Source can be seen from Data Source Explorer view.



---

**Note** – You can also edit Data Resources from GlassFish Server Administration Console.

Additional details on editing Data Resources are available from GlassFish Server Administration Documentation.

---

## ▼ To create a JPA Project for GlassFish Server

The following steps explain how to create a Java Persistence API (JPA) based project and generate DDL for it.

**Before You Begin** This section of the document is applicable for GlassFish Server v3 Prelude only. It is not applicable to GlassFish Server v2.1.

**1 Select Window ->Preferences.**

Preferences page will be displayed.

**2 Select GlassFish Server Preferences.**

**3 Select the checkbox next to Start JavaDB database process when Starting GlassFish Server option.**

**4 Click OK to close the page.**

**5 Start or restart GlassFish Server.**

The JavaDB database is started along GlassFish Server.

**6 Select File ->New ->Other.**

New project wizard will be displayed.

**7 Select JPA ->JPA Project.**

**8 Click Next to continue.**

New JPA Project wizard will be displayed.

**9 Create a name and select to run on GlassFish Server v3 Prelude.**

For example:MyJPAProject.

**10 Click Next to continue.**

**11 Select EclipseLink as Platform and Sample JavaDB Database as connection.**

- 
- 12 Select Annotated classes must be listed in `persistence.xml` option, for Persistent class management.**

Other default options need not be changed.

- 13 Click Finish to complete new JPA project creation.**

- 14 Accept message prompt to switch to JPA perspective.**

- 15 Select File ->New ->Other.**

New project wizard will be displayed.

- 16 Select JPA ->Entity.**

- 17 Create a name and package name.**

For example: MyEntity

- 18 Click Next to continue.**

- 19 Add two fields in the Entity Fields panel, one of which should be selected as key field.**

For example: Type=Int:Fieldname=id, Type=String:Fieldname=name.

- 20 Click Finish.**

A New Entity Class is created

- 21 Right click on JPA Project Node and select JPATools ->Generate DDL.**

- 22 Click OK to warning that you are about to create new tables.**

New tables will be created in database.

- 23 Select Data Source Explorer.**

- 24 Select the Sample JavaDB database.**

You can view the newly created tables by expanding the Sample JavaDB Database node.

## Additional Resources

The following resources provide additional information on Eclipse IDE and GlassFish Server.

- [Sun GlassFish Enterprise Server v3 Prelude Documentation](#)
- [Sun GlassFish Enterprise Server 2.1 Documentation](#)
- [Eclipse Documentation](#)

## Getting started with Metro

---

Metro is a high-performance, extensible, easy-to-use Web Service stack that is a part of GlassFish Server community. It offers core support for JAX-WS and optionally support for additional features.

The GlassFish Tools Bundle for Eclipse 1.1 version includes Metro plug-in for Eclipse.

## Developing Web Applications using Metro

This section of the document will help you get familiar with developing web services applications with Metro using the Tools Bundle.

### Install Metro on GlassFish Server

Before you can start developing web application with Metro for GlassFish Server, you need to ensure Metro is installed on GlassFish Server.

While GlassFish v2.1 includes Metro, GlassFish v3 Prelude does not include the Metro stack by default. You can install it as an Add-On package.

You can also update Metro version included with GlassFish Server v2 as described in the following document:

<https://metro.dev.java.net/1.4/docs/install.html>

#### ▼ **To install Metro for GlassFish Server v3 Prelude**

Metro is available as an Add-On package from Update Center for GlassFish v3 Prelude. The following task describes the process of adding Metro stack to GlassFish v3 Prelude.

- 1 **Stop GlassFish v3 Prelude Server.**

- 2 **Start the Update Tool from** *<install-location>/glassfishv3prelude/bin* **directory.**
- 3 **Click available Add-Ons.**
- 4 **Select Metro Web Services for GlassFish.**  
Optionally you can also select Jersey Web Services.
- 5 **Click Install.**
- 6 **Accept License Agreement.**  
Selected packages will be installed.
- 7 **Start the GlassFish v3 Prelude Server.**

---

**Note** – You can also use the Update Tool from GlassFish Server Administration Console for installing Metro packages.

---

## ▼ **To create a new Metro based Web Service**

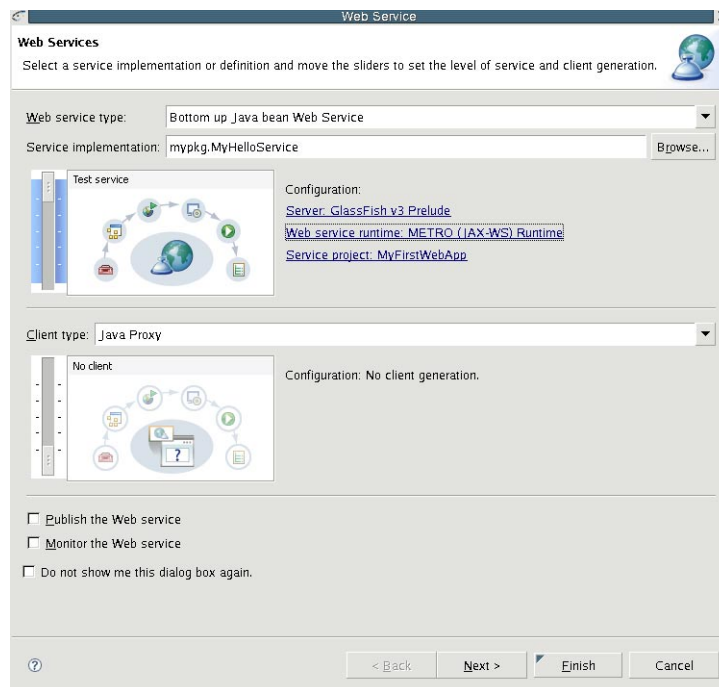
The following task describes the steps to create a web application and add a web service to it.

- 1 **Create a new web application as described in** [“To create a new Web Application project for GlassFish Server” on page 27.](#)
- 2 **From Project Explorer, right-click the web application project node and select New->Class**
- 3 **In the New Java Class wizard, select mypkg as package name, and MyHelloService as class name.**
- 4 **Click Finish.**
- 5 **In the Eclipse IDE, edit the java class file and enter the following code snippet to create a method:**  

```
package mypkg;  
  
public class MyHelloService {  
    public String sayhello(String name) {  
        return "Hello " + name;  
    }  
}
```
- 6 **From the Project Explorer, select MyHelloService java class.**

- 7 Right-click the java class and select WebServices->Create Web Service.
- 8 In the Service section, move the Service slider one level up to the top, to enable Test Service stage.
- 9 Click Web Service runtime entry.
- 10 Select METRO Runtime in the dialog box.
- 11 Click OK to close the dialog box.

Your configuration will look like this:



- 12 Click Next.  
Options screen is displayed. You can customize your options for:
  - Generation of JSR 109 portable /JAX-WS RI specific Web Service.
  - Packaging of Metro libraries in war file.

The default options are set based on your target runtime platform.

- 13 Click Next.

- 14 **Start the Server if necessary, depending on the state of Server.**
- 15 **Enter your GlassFish Server admin login and password if requested.**
- 16 **Click Launch, when presented with option to launch Web Service testing facility.**  
Browser opens page where you can test the web service.
- 17 **Click Finish to complete the wizard.**  
At this stage a web service has been created and deployed on the server.
- 18 **Click sayHello link in the web page, and then click Add to add the parameter value.**
- 19 **Enter your name in the text field and click Go.**
- 20 **The service will respond with Hello \$YOUR\_NAME message.**
- 21 **Click Source link to see the SOAP communication.**  
The result shall look like this:

## ▼ **To create a new Metro based Web Service from WSDL**

- 1 **Download this [WSDL](#) file and save it in a suitable location.**
- 2 **Right-click the Web Project created in the previous task, in Project Explorer and select New->Other.**
- 3 **Browse the Web Services category and select Web Service from Menu.**
- 4 **Click Next.**
- 5 **Select Top down Java bean Web Service and click Browse to choose the WSDL file.**
- 6 **Click OK to close the dialog box**
- 7 **Enter the direct file link to your WSDL file from the web browser as follows:**  
`file:///Users/admin/work/sources/eclipse/metro/docs/SearchWS.wsdl.`
- 8 **Click Web Service runtime option and select METRO Runtime from the dialog box.**
- 9 **Click OK.**
- 10 **Click Next.**

- 11 Accept the default options and click Next.**
- 12 Start the Server if necessary, depending on the state of Server.**
- 13 Enter your GlassFish Server admin login and password if requested.**
- 14 Click Finish to close the wizard.**

The Web Service is created, but deployment to server fails, because implementation of the service is missing.

- 15 Click the error message (light-bulb icon) next to the compilation error, and choose Add Unimplemented Methods.**
- 16 Implement the service method. An example Service method source is as follows:**

```
package org.tempuri;

import javax.jws.*;

@WebService(wsdlLocation = "WEB-INF/wsdl/SearchWS.wsdl",
            serviceName = "WebSearchWS",
            portName = "WebSearchWSSoap",
            endpointInterface = "org.tempuri.WebSearchWSSoap")
public class WebSearchWSSoapImpl implements org.tempuri.WebSearchWSSoap {

    public String search(String keyWord) {
        return "Search Result for: " + keyWord;
    }

}
```

- 17 Right-click the web project node, and select Run As ->Run On Server to deploy the application.**
- 18 Visit the web service URL from browser.**

For example:

<http://localhost:8080/MyFirstWebApp/WebSearchWS?Tester>

- 19 Input a search string and click Search.**

The result shall look like this:

## search Method invocation

---

### Method parameter(s)

Type	Value
java.lang.String	uuu

---

### Method returned

java.lang.String : **"Search Result for: uuu"**

---

### SOAP Request

---

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header/>
  <S:Body>
    <Search xmlns="http://tempuri.org/">
      <Keyword>uuu</Keyword>
    </Search>
  </S:Body>
</S:Envelope>
```

---

### SOAP Response

---

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <SearchResponse xmlns="http://tempuri.org/">
      <SearchResult>Search Result for: uuu</SearchResult>
    </SearchResponse>
  </S:Body>
</S:Envelope>
```

---

## ▼ Configure the Web Service Policies

- 1 Browse the WSDL of the web service, in the project you created in the previous task.
- 2 Right-click it and select **Web Services->WS-Policy Configuration**.  
WS-Policy configuration dialog box is opened.
- 3 Select the **Reliable Message Delivery** checkbox and click **OK** to save the value and close the dialog box.
- 4 Deploy the project again (**Run As->Run On Server**)



**5 Visit the service URL.**

For example:

<http://localhost:8080/MyFirstWebApp/WebSearchWS?Tester>

**6 Click the WSDL link to see the WSDL of the service.**

Scroll down to see the policy definition:

```
- <wsp:Policy wss:Id="WebSearchWSSoapPolicy">
  - <ns1:ExactlyOne>
    - <ns1:All>
      <ns3:RMAssertion/>
      <ns2:Addressing ns1:Optional="false"/>
    </ns1:All>
  </ns1:ExactlyOne>
</wsp:Policy>
</wsdl:definitions>
```

**7 Get back to the Tester page in browser, input a search string in the search box and click Search.**

Notice the change in the soap communication:

**Method parameter(s)**

Type	Value
java.lang.String	test

**Method returned**

java.lang.String : "Search result for: test"

**SOAP Request**

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <To xmlns="http://www.w3.org/2005/08/addressing">http://localhost:8080/MyWebProject/WebSearchWS</To>
    <Action xmlns="http://www.w3.org/2005/08/addressing">http://tempuri.org/Search</Action>
    <ReplyTo xmlns="http://www.w3.org/2005/08/addressing">
      <Address>http://www.w3.org/2005/08/addressing/anonymous</Address>
    </ReplyTo>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">uuid:07dd84d9-2f7f-4c42-a75c-c7cebd80f1d8</MessageID>
    <ns2:Sequence xmlns="http://www.w3.org/2005/08/addressing" xmlns:ns2="http://docs.oasis-open.org/ws-rx/ws-rx-2004-08" />
    <ns2:Identifier>uuid:845132ab-277b-4799-963e-fa9a35452d94</ns2:Identifier>
    <ns2:MessageNumber>3</ns2:MessageNumber>
    </ns2:Sequence>
    <ns2:SequenceAcknowledgement xmlns="http://www.w3.org/2005/08/addressing" xmlns:ns2="http://docs.oasis-open.org/ws-rx/ws-rx-2004-08" />
    <ns2:Identifier>uuid:d31bd681-95c8-4c05-83f4-28b05a6aaeb</ns2:Identifier>
    <ns2:AcknowledgementRange Lower="1" Upper="2"/>
    </ns2:SequenceAcknowledgement>
  </S:Header>
  <S:Body>
    <Search xmlns="http://tempuri.org/">
      <Keyword>test</Keyword>
    </Search>
  </S:Body>
</S:Envelope>
```

**SOAP Response**

```
<?xml version="1.0" encoding="UTF-8"?>
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <To xmlns="http://www.w3.org/2005/08/addressing">http://www.w3.org/2005/08/addressing/anonymous</To>
    <Action xmlns="http://www.w3.org/2005/08/addressing">http://tempuri.org/WebSearchWS/Soap/SearchResponse</Action>
    <MessageID xmlns="http://www.w3.org/2005/08/addressing">uuid:3ddf786c-e8ed-44d8-b4bd-8de91162205d</MessageID>
    <RelatesTo xmlns="http://www.w3.org/2005/08/addressing">uuid:07dd84d9-2f7f-4c42-a75c-c7cebd80f1d8</RelatesTo>
  </S:Header>
  <S:Body>
    <SearchResponse xmlns="http://tempuri.org/">
      <SearchResult>Search result for: test</SearchResult>
    </SearchResponse>
  </S:Body>
</S:Envelope>
```

## Using Popup Menu

---

The popup menu available from Servers view provides a number of usage options, including customized options for GlassFish Server. It is referred to as the Server popup menu in this document. To access popup menu from Eclipse IDE, select Servers view, and right click mouse.

The following options are available from Server popup Menu:

<b>New</b>	Allows user to add a new GlassFish Server instance to Eclipse. The new server should be pre-installed. In some cases, this option also downloads and installs a new Server. For example: GlassFish v3 Promoted Build
<b>Open (F3)</b>	<p>Allows user to access Server Overview page. The Server Overview page allows user to view and modify some GlassFish Server properties:</p> <ul style="list-style-type: none"> <li>▪ Specify hostname and other common settings</li> <li>▪ Edit Server configuration properties (Open launch configuration)</li> <li>▪ Modify settings for Publishing</li> <li>▪ Specify time limit to complete Server operations</li> <li>▪ Edit some Server runtime properties</li> </ul>

---

**Note** – Alternately, select and double-click the Server from Servers view, to launch Server Overview page.

---

<b>Show In (Shift+Alt+W)</b>	Allows user to direct GlassFish Server log messages to Console or Debug windows. This option is also accessible through (Shift+Alt+W) key action.
<b>Copy (Ctrl+C)</b>	Allows user to copy GlassFish Server Instance. This option is also accessible through (Ctrl+C) key action.

<b>Paste (Ctrl+V)</b>	Allows user to paste the copied GlassFish Server Instance. This option is also accessible through (Ctrl+V) key action.
<b>Delete (Delete)</b>	Allows user to delete selected GlassFish Server Instance from configuration. This option is also accessible through Delete button from keyboard.
<b>Rename (F2)</b>	Allows user to rename GlassFish Server Instance. This option is also accessible through the F2 function key.
<b>Debug (Ctrl+Alt+D)</b>	Allows user to start GlassFish Server Instance in Debug mode. This option is also accessible through (Ctrl+Alt+D) key action.
<b>Start (Ctrl+Alt+R)</b>	Allows user to start GlassFish Server Instance. This option is also accessible through (Ctrl+Alt+R) key action.
<b>Profile</b>	This option is not implemented in GlassFish Tools Bundle for Eclipse.
<b>Stop (Ctrl+Alt+S)</b>	Allows user to stop GlassFish Server Instance. This option is also accessible through (Ctrl+Alt+S) key action.
<b>Publish (Ctrl+Alt+P)</b>	Allows user to deploy the built applications to GlassFish Server. This option is also accessible through (Ctrl+Alt+P) key action.
<b>Clean...</b>	Allows user to discard all published state from GlassFish Server and republish from scratch.
<b>Add and Remove Projects...</b>	Allows user to add or remove Projects that are configured to run on GlassFish Server.
<b>Monitoring</b>	Allows user to monitor GlassFish Server ports for access. This is a new feature available in GlassFish Server v3 Prelude.
<b>GlassFish Enterprise Server</b>	Allows user to access to the following additional sub menu options: <ul style="list-style-type: none"><li>▪ <b>GlassFish Update Center</b></li><li>▪ <b>Register the GlassFish Enterprise Server</b></li><li>▪ <b>Get Support for GlassFish Enterprise Server</b></li><li>▪ <b>Aquarium: GlassFish Community News</b></li><li>▪ <b>View Admin Console</b></li><li>▪ <b>View Log File</b></li></ul>
<b>Properties (Alt+Enter)</b>	Allows user to view GlassFish Server properties and modify some of them. This option is also accessible through (Alt+Enter) key action.