

Oracle® Java CAPS Intelligent Event Processor Service Engine Tutorial

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Using the IEP Service Engine in a Project

In this tutorial, you create an Intelligent Event Processor called `quotes.iiep` that monitors a stream of stock quotes and updates a database table called `Latest2Quotes`. The table `Latest2Quotes` always contains the two latest stock quotes.

To create an Intelligent Event Processor and monitor its processing, you create the following:

1. An IEP project, `quotesIEP`.
2. An intelligent event processor, `quotes.iiep`, under the project `quotesIEP`.
3. A deployment project, `quotesJBI`, to deploy the intelligent event processor to the application server.

Finally, you insert stock quotes into the event stream and observe the two latest stock quotes in the table, `Latest2Quotes`.

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- [“Software Needed for the Tutorial” on page 6](#)
- [“Configuring and Starting the GlassFish Application Server” on page 6](#)
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Prerequisites

This tutorial assumes that you have some basic knowledge of, or programming experience with, the Java language and platform and the NetBeans IDE.

Software Needed for the Tutorial

Before you begin, make sure Oracle Java CAPS is installed on your computer.

Configuring and Starting the GlassFish Application Server

Before you can deploy your application, the GlassFish Application Server must be configured correctly and running.

Note – In the following procedures, the GlassFish V2 node refers to the node that represents the GlassFish Application Server associated with Java CAPS.

▼ To Check the Status of the GlassFish Application Server

1 If the Runtime window is not visible, choose **Window > Runtime**.

2 In the Runtime window, expand the **Servers** node.

The Servers node should contain a GlassFish Application Server subnode. If a GlassFish Application Server node does not appear, go to [“To Configure the GlassFish Application Server:” on page 6](#).

If a green arrow badge appears on the GlassFish Application Server node, the server is running. If a green arrow badge does not appear, go to [“To Start the GlassFish Application Server:” on page 7](#).

▼ To Configure the GlassFish Application Server:

1 If the Runtime window is not visible, choose **Window > Runtime**.

2 In the Runtime window, right-click the **Servers** node and choose **Add Server** from the pop-up menu.

The Add Server Instance dialog box opens.

3 In the **Choose Server** page, from the **Server** drop-down list, select **GlassFish Application Server**.

4 (Optional) In the **Name** field, change the default name for the server.

The IDE uses this name to identify the server.

5 Click Next.

The Platform Location Folder page opens.

6 In the Platform Location field, use the Browse button to navigate to and select the installation location of the application server.

The default installation location is different depending on the type of installation and the platform, as shown in the following table.

7 Select the Register Local Default Domain radio button and click Next.**8 Enter the user name and password for the domain's administrator.**

If you accepted the default values during the installation, the user name is admin; the password is specified during installation.

9 Click Finish.**▼ To Start the GlassFish Application Server:****1 In the Runtime window, right-click the GlassFish Application Server node and choose Start.****2 Wait until the following message appears in the Output window:**

```
Application server startup complete.
```

When the server is running, the IDE displays a green arrow badge on the GlassFish Server node.

3 Before you create an Intelligent Event Processor Module Project, make sure the IEP Service Engine is started.

a. Navigate to the Runtime window.

b. Expand the JBI node until you can select the sun- iep- engine node.

c. Right-click, and choose Start.

Creating an Intelligent Event Processor Module Project

You must create a new Intelligent Event Processing project to create an intelligent event processor.

Perform the following tasks to create project:

- “To Create an Intelligent Event Processing Project” on page 8
- “To Add IEP Operators from the Palette to the Design Area” on page 8

▼ To Create an Intelligent Event Processing Project

- 1 Choose File > New Project.
- 2 Select SOA from Categories.
- 3 Select Intelligent Event Processing Module from Projects, and click the Next button
- 4 Input quotesIEP for the Project Name entry. If necessary, browse to the desired directory to save the Project. Then click Finish.
- 5 In the Projects window, expand the quotesIEP project node, right-click the Process Files node and choose New > Intelligent Event Processor.
- 6 Input quotes for the File Name field, and click Finish.
- 7 The IDE does the following:
 - a. Creates quotes .iep under the Source Packages > Default Package.
 - b. Opens the quotes .iep file in the IEP design view.
 - c. Opens the Palette.

▼ To Add IEP Operators from the Palette to the Design Area

- 1 Drag the Stream Input operator from the Input section of the Palette onto the design area. If the Palette is not visible, from the Window menu, choose the Palette item to display it.
- 2 Drag the Tuple Based Window operator from the Stream Converter section of the Palette onto the design area.
- 3 Drag the Table Output operator from the Output section of the Palette onto the design area.

- 4 **Connect the three operators by dragging lines between their ports; that is, connect `StreamInput0` to `TupleBasedWindow0` to `TableOutput0`.**
- 5 **To configure operator `StreamInput0`, double-click the `StreamInput0` operator.**

The Stream Input Property Editor appears, where you can add attributes to define the incoming stream's data format.

 - a. **To add the first attribute, select the cell under the column header named `Attribute Name`. Type `Symbol`.**
 - b. **Select the cell under the column header `Data Type`. From the drop down list select `Varchar`.**
 - c. **Select the cell under the column header `Size`. Type `10`.**
- 6 **Click the `Add Attribute` button to add another Attribute. A blank row appears below the `Symbol` attribute row.**
- 7 **Type `Price` for column `Attribute Name`. Select `Double` for `Data Type`.**
- 8 **Click `OK` to complete the task.**
- 9 **To configure the operator `TupleBasedWindow0` so that it will retain only the two latest quotes, double-click operator `TupleBasedWindow0`.**

The pop-up window called `TupleBasedWindow Property Editor` opens.
- 10 **In the `Property Editor` type `2` for the `Size` property and click `OK`.**
- 11 **Double-click the operator `TableOutput0` in the design area. The `Table Output Property Editor` appears.**
- 12 **Check property `Is Global`, and change the value of property `Global Id` to `Latest2Quotes`. Click `OK` to finish this task.**
- 13 **Click `Save` to save the IEP Process.**

Note that once you save the IEP process, the IDE creates the IEP WSDL file.

Creating and Deploying the Composite Application

The Composite Application maps the design-time components to the runtime for your application.

▼ To Create and Deploy the Composite Application

- 1 Choose File > New Project.
- 2 Select SOA from Categories.
- 3 Select Composite Application from Projects and click Next.
- 4 Input quotesJBI for the Project Name and click Finish. If necessary, browse to the directory in which you want to save the project.
- 5 Right-click the folder quotesJBI, and select Add JBI Module.
- 6 Navigate to the directory under which you created your quotesIEP Project, select the folder quotesIEP , and click the button Add Project JAR Files.
- 7 Right-click the folder quotesJBI, and select Deploy Project.

Testing the quotesJBI Application

To Test the quotesJBI Application, create a connection to the Java DB database server from within your NetBeans IDE. This connection enables you to view the content of the database tables.

You will use a Java Project to insert new quotes into the event stream, and you can then observe the two latest stock quotes in the table Latest2Quotes .

To Create the Database Connection

In this section, you create a connection to the Java DB database server from within your NetBeans IDE and examine the appropriate table in the database.

▼ To Create the Database Connection

- 1 In the Runtime window of NetBeans, right-click Databases and select New Connection. The New Database Connection window opens.

- 2 Input `jdbc:derby://localhost/iepseDB` for Database URL, `iepseDB` for User Name, and `iepseDB` for Password.
- 3 Check **Remember password during this session**, and click **OK**. Notice the folder `jdbc:derby://localhost/iepseDB[iepseDB on IEPSEDB]` now exists under the folder **Databases**. A connection to the Java DB database server from within NetBeans IDE is created.
- 4 Expand the folder `jdbc:derby://localhost/iepseDB[iepseDB on IEPSEDB]` and then expand the subfolder **Tables**.
- 5 Right-click **LATEST2QUOTES**, and select **View Data**. Notice that this table is empty.
Next you will insert stock quotes into the event stream, and observe the two latest stock quotes as updates in the `Latest2Quotes` table.

Running the Java Project

In this section, you open the Java application provided with this tutorial to send an event stream to test the IEP project.

▼ To Run the Java Project

- 1 Create a directory on your file system named `IEPTut` and unzip the `iepquotesender.zip` file into the directory.
- 2 From the main window of the Projects window of the IDE, choose **File > Open Project**.
- 3 Browse to the `IEPTut` directory that you just created and select the `iepquotesender` project.
- 4 Leave the checkbox **Open as Main Project** selected and click **Open Project Folder**. A progress dialog box appears and then a node for the `quotesSender` project appears in the Projects window.
- 5 Right-click `quotesSender` project and select **Run Project**. This sends a SOAP message to the event processor `quotes.iep`.
- 6 In the Output window make sure the `quotesSender(run)` tab is selected.
- 7 In the Output window, Input field, type `y` and press **Enter**.
- 8 Click the **Run SQL** button (green arrow) in the SQL command window and you will see the latest quote in the table `LATEST2QUOTES`.
- 9 Repeat steps 6-8 to send another quote from the `iepquotesender` project. Note the following:

- The latest 2 quotes in table LATEST2QUOTES are changed.
- Quote (ADBE, 63) is deleted from the table. This is because the TupleBasedWindow operator in quotes .iep is configured to only keep the latest 2 events.

Summary

In this tutorial, you created an Intelligent Event Processor Module, created and deployed a Composite Application, and tested the deployed Intelligent Event Processor Module application.