



# **Dialogic® PowerMedia™ XMS JSR 309 Connector Software Release 3.4**

**Installation and Configuration Guide  
with TeleStax JBoss Application Server**

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## Revision History

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Revision	Release Date	Notes
4.0	October 2017	Updates for JSR 309 Release 3.4 Service Update 1.
3.0	December 2016	Updates for JSR 309 Release 3.2. <a href="#">Contents of the Distribution</a> : Updated the section. <a href="#">Building and Debugging Sample Demos in Eclipse IDE</a> : Updated the <a href="#">Prepare the Eclipse Workspace</a> section.
2.0	July 2016	Updates for JSR 309 5.2 Service Update 1. <a href="#">Dialogic JSR 309 Connector Requirements</a> : Updated the required platforms. <a href="#">Contents of the Distribution</a> : Added the <a href="#">For Developers</a> section. <a href="#">Set Up and Configure the Logging Facility</a> and <a href="#">Logging</a> : Updated the location of the log file.
1.0	March 2016	Initial release of this document.
Last modified: October 2017		

# 1. Dialogic JSR 309 Connector Requirements

---

The following requirements are needed before installing the Dialogic JSR 309 Connector:

- A functional TeleStax JBoss platform for development and testing.

The Dialogic JSR 309 Connector has been tested with the following JBoss versions of TeleStax Application Servers:

- TeleStax Mobicents JBoss AS:  
Java 1.7 based:  
*restcomm-sip-servlets-3.1.781-jboss-as-7.2.0.Final*
- TeleStax Mobicents WildFly AS (Note: WildFly is BETA):  
Java 1.8 based:  
*restcomm-sip-servlets-4.0.125-wildfly-8.2.1.Final*  
*restcomm-sip-servlets-4.0.125-wildfly-10.0.0.Final*
- TeleStax TelScale JBoss AS:  
Java 1.7 based:  
*TelScale-SIP-Servlets-7.0.3.329-jboss-as-7.2.0.Final*

**Note:** Refer to [www.telestax.com](http://www.telestax.com) for any additional information about TeleStax Application Server and their licensing.

- A functional PowerMedia XMS Release 3.4 system.

**Note:** Refer to [Proper Configuration of PowerMedia XMS](#) for additional information.

- SIP phones or soft clients.

**Note:** WebRTC is not supported because the JBoss platform does not provide WebSocket support. However, the BETA version of WildFly does provide WebRTC support.

TeleStax Application Server Platform	Dialogic JSR 309 Connector
restcomm-sip-servlets-3.1.781-jboss-as-7.2.0.Final TelScale-SIP-Servlets-7.0.3.329-jboss-as-7.2.0.Final	dialogic309-M.m-(GA or SU#)-jboss.jar
restcomm-sip-servlets-4.0.125-wildfly-8.2.1.Final restcomm-sip-servlets-4.0.125-wildfly-10.0.0.Final	dialogic309-M.m-(GA or SU#)-wildfly.jar

## 2. Contents of the Distribution

---

This section lists and describes the files in the Dialogic JSR 309 Connector distribution.

There are several platforms that are supported by the Dialogic JSR 309 Connector. Their distributions are based on supported platforms as well as the version of Java they support.

This document covers support for TeleStax open source (Mobicents) and equivalent commercial version (TelScale) distributions that are based on JBoss.

- Java 1.7 based platform:  
*dialogic309-M.m-(GA or SU#)-jboss.jar*
- Java 1.8 based platform:  
*dialogic309-M.m-(GA or SU#)-wildfly.jar*

Where:

- *M* stands for a major version number.
- *m* stands for a minor version number.
- (*GA or SU#*) stands for a build number.

This package contains the following structure:

Dialogic JSR 309 Connector Files	Description
<u>DIR:</u> <i>/DlgcJSR309/application/</i> <u>CONTENTS:</u> <i>dlgc_sample_demo.war</i> <i>Dialogic.mp4</i> <i>DialogicSampleDemo/</i>	Directory that contains the Dialogic JSR 309 Verification Application <i>dlgc_sample_demo.war</i> ready to be deployed and the <i>Dialogic.mp4</i> media file used by the Verification Application (which will be part of upcoming PowerMedia XMS installs).  Directory also contains the <i>DialogicSampleDemo</i> directory, which has all of the necessary items to build <i>dlgc_sample_demo.war</i> . Refer to <a href="#">Dialogic JSR 309 Verification Application</a> for details.
<u>DIR:</u> <i>/DlgcJSR309/Dlgc309Connector/</i> <i>/DlgcJSR309/3rdPartyLibs/</i>	Directory that contains the <i>Dlgc309Connector</i> , which has all of the Dialogic connector files, and the <i>3rdPartyLibs</i> directory, which has all necessary third-party JAR files.

Dialogic JSR 309 Connector Files	Description
<u>DIR:</u> /DlgcJSR309/properties/ <u>CONTENTS:</u> dlgc_sample_demo.properties log4j2.xml	Directory that contains Verification Application properties files used to set up its configuration and the configuration parameters for the Dialogic JSR 309 Connector.  Directory also contains the <i>log4j2.xml</i> log configuration file used for Dialogic JSR 309 Connector and Verification Application logging.

## For Developers

To make it easier for developers, Dialogic provides connector files for direct download from an HTTPS URL:

- <https://www.dialogic.com/files/jsr-309/3.4SU1/dialogic309-3.4-SU1-17129-jboss.jar>
- <https://www.dialogic.com/files/jsr-309/3.4SU1/dialogic309-3.4-SU1-17129-wildfly.jar>
- <https://www.dialogic.com/files/jsr-309/3.4SU1/dialogicmsmltypes-3.4-SU1-17129.jar>
- <https://www.dialogic.com/files/jsr-309/3.4SU1/dialogicsmiltypes-3.4-SU1-17129.jar>

**Note:** Make sure you choose the appropriate connector for the desired platform.

## 3. Installation and Configuration

---

This section describes how to install and use the Dialogic JSR 309 Connector. The Dialogic JSR 309 Connector adds the Media Control API interface to an application running in a J2EE platform. The connector and the application need to be correctly configured on a platform for proper operation.

The following steps are necessary to configure the Dialogic JSR 309 Connector and to verify its proper operation:

1. [Preparing the J2EE Converged Application Server](#)
2. [Installing the Dialogic JSR 309 Connector](#)
3. [Deploying the Verification Application Using the Dialogic JSR 309 Connector](#)
4. [Running the Dialogic JSR 309 Verification Application](#)

For system requirements and supported platforms, see [Dialogic JSR 309 Connector Requirements](#).

### Preparing the J2EE Converged Application Server

The Dialogic JSR 309 Connector has been deployed and tested on specific versions of TeleStax Application Servers as described in [Dialogic JSR 309 Connector Requirements](#). For a quick guide on how to install and configure the desired Application Server (AS) before configuring the Dialogic JSR 309 Connector, refer to [Appendix A: Dialogic JSR 309 Connector Environment Setup](#).

### Installing the Dialogic JSR 309 Connector

The Dialogic JSR 309 Connector is created as a library (JAR file) that can be used by an application. The application is responsible for packaging it as part of the application WAR file.

The Dialogic JSR 309 Connector Verification Application is used to verify Dialogic JSR 309 Connector installation and configuration and to illustrate the necessary steps used in the Dialogic Media Server Control API features. These necessary application level steps are clearly described in [Dialogic JSR 309 Verification Application](#).

The distribution package needs to be extracted onto the target system because various components (files) will be needed to correctly complete each step. Refer to [Contents of the Distribution](#), which describes the content in detail.

### Configure the Application Server Platform

Place the package file on the TeleStax JBoss Linux server and run the following command:

```
tar -xvf dialogic309-M.m-(GA or SU#)-jboss.jar
```

This will create a *DlgcJSR309* directory, which includes all necessary files as described in [Contents of the Distribution](#).

**Note:** These directories are referenced throughout this document for content required by the Dialogic JSR 309 Connector.



In order to properly configure the Application Server platform, the following steps must be completed:

1. [Set Up the Environment Variables](#)
2. [Set Up and Configure the Logging Facility](#)

## Set Up the Environment Variables

The system environment will need to be modified to define the JAVA\_HOME directory as well as the location of the Dialogic Verification Application properties file. There are many ways to accomplish this. The following procedure is an example of one way to accomplish this:

1. Edit the system user's .bashrc file using the following command.

```
vi .bashrc
```

2. Add the following lines marked in RED below. In this example, the *mss-3.1.633-jboss-as-7.2.0.Final* Application Server platform is used and the user "jboss" was created on the Linux system. Therefore, the file to be edited will be found in this user's root directory (for example, */home/jboss*).

```
# .bashrc

### Dialogic additions

export JAVA_HOME=/usr/java/jdk1.7.0_80
export JBOSS_HOME=/home/jboss/restcomm-sip-servlets-3.1.781-jboss-as-7.2.0.Final
export
SAMPLE_PROPERTY_FILE=${JBOSS_HOME}/standalone/configuration/Dialogic/dlgc_sample_demo.pro
perties

### END - Dialogic additions

# Source global definitions
if [ -f /etc/bashrc ]; then
    . /etc/bashrc
fi

# User specific aliases and functions
```

Note the following about Dialogic additions:

- JAVA\_HOME points to a specific Java version. This version has to match the version of JAVA that is supported by the designated platform. For the platform in this example, it is Java 1.7.
- JBOSS\_HOME points to a root directory of the installed platform.
- SAMPLE\_PROPERTY\_FILE points to the configuration properties file used by the Dialogic JSR 309 verification demo.

**Note:** This will not be needed if a custom application is being deployed.

In order for above the changes to take effect, a user either needs to log out and log back in or execute the "source" command for the modified .bashrc file:

```
source /home/jboss/.bashrc
```

## Set Up and Configure the Logging Facility

The Log4j2 logging facility is implemented through five third-party Log4j2 library files (JAR files) that need to be placed in the application's WAR file lib directory. Here is the list of jar files needed:

- *log4j-api-2.2.jar*
- *log4j-core-2.2.jar*
- *log4j-slf4j-impl-2.2.jar*
- *slf4j-api-1.7.5.jar*
- *org.osgi-3.0.0.jar*

Edit *standalone.conf*, which is located here:

```
${JBOSS_HOME}/bin/standalone.conf
```

Add the following lines exactly located as shown below:

```
# Uncomment to gather JBoss Modules metrics
#JAVA_OPTS="$JAVA_OPTS -Djboss.modules.metrics=true"

### Dialogic additions
JAVA_OPTS="$JAVA_OPTS -
Dlog4j.configurationFile=${JBOSS_HOME}/standalone/configuration/Dialogic/log4j2.xml"
### END - Dialogic additions
```

From the distribution directory, copy *log4j2.xml* into the following platform directory:

```
${JBOSS_HOME}/standalone/configuration/Dialogic/log4j2.xml"
```

**Note:** A "Dialogic" directory will need to be created if it does not already exist.

Note the following about the logging facility:

- Due to a known Log4j version 1 Thread Deadlock issue, the Dialogic JSR 309 Connector has been built using Log4j2 (version 2). Modification of a platform startup script is required to configure the Log4j2 logging facility and to define a reference to its configuration .xml file.
- The *Dialogic.log* file, when generated, is found here:  

```
${JBOSS_HOME}/standalone/log/Dialogic.log
```
- Default logging configuration is set to ERROR. Configuration file, *log4j2.xml*, can be edited if one wishes to change the logging levels.

**Note:** The *log4j2.xml* file changes go into effect automatically as governed by the configuration parameter in the *log4j2.xml* file. Details of *log4j2.xml* as provided can be found in the Troubleshooting section under Logging.

## Deploying the Verification Application Using the Dialogic JSR 309 Connector

The Dialogic JSR 309 Verification Application, like any other application that wants to use J2EE Media Server Control (JSR 309) API, needs to do the following:

1. Take specific steps to correctly initialize itself for the J2EE platform to correctly deploy it.
2. Take specific steps to correctly initialize the Dialogic JSR 309 Connector for its use.

**Note:** For further details on the application architecture refer to [Dialogic JSR 309 Verification Application](#).

The following steps are necessary to deploy the Dialogic JSR 309 Verification Application:

1. [Configure the dlgc\\_sample\\_demo.properties File](#)
2. [Copy All JAVA Library \(JAR\) Files](#)
3. [Deploy the Dialogic JSR 309 Verification Application](#)

### Configure the dlgc\_sample\_demo.properties File

From the distribution directory, copy the *dlgc\_sample\_demo.properties* file and place it in the following directory:

```
${JBOSS_HOME}/standalone/configuration/Dialogic
```

**Note:** The "Dialogic" directory should already exist and contain the *log4j2.xml* file.

From the platform's Dialogic directory, edit the *dlgc\_sample\_demo.properties* file. Provide the required parameters as illustrated in **RED** below:

```
# Dialogic JSR 309 Verification Application configuration parameters:
# Dialogic JSR 309 Connector Configuration
    dlgc.jsr309.driver.name=com.dialogic.dlg309
    connector.sip.address=xxx.xxx.xxx.xxx
    connector.sip.port=xxxx
    connector.sip.transport=udp
# Dialogic Media Server Configuration
    mediaserver.sessionTimer.rfc4028=off
    mediaserver.sessionTimer.maxTimeout=120
    mediaserver.sessionTimer.minTimeout=100
    mediaserver.sip.address=xxx.xxx.xxx.xxx
    mediaserver.sip.port=xxxx

# Application runtime parameters:
play.prompt=file:///en_US/verification/Dialogic.mp4
```

Refer to the following information for details on the *dlgc\_sample\_demo.properties* file:

1. Dialogic JSR 309 Connector Configuration:

- `connector.sip.address` – IP address of the SIP interface used by the platform. The connector detects an IP address automatically. However, if there is more than one interface available on the platform, the application will have to be able to set the appropriate IP address for the connector to use. The demo will take this IP address and if different from the automatically discovered IP address, the demo will use it.
- `connector.sip.port` – Port address of the SIP interface used by the platform. The connector detects a port automatically, which goes with detected IP address. However, if the port address is incorrect, the application will have to set the appropriate one for connector to use. The demo will take this port address, and if different from the automatically discovered port address, the demo will use it.
- `connector.sip.transport` – Platform SIP transport. Supported values are "udp" or "tcp". Default: "udp".

2. Dialogic Media Server Configuration

- `mediaserver.sip.address` – User needs to specify an IP of a Dialogic PowerMedia XMS to be used by the Dialogic JSR 309 Connector.
- `mediaserver.sip.port` – User needs to specify a port of a Dialogic PowerMedia XMS to be used by the Dialogic JSR 309 Connector.

Optionally, the Dialogic JSR 309 Connector supports turning on SIP Session Timers between the JSR 309 driver and the Dialogic PowerMedia XMS. In this version of the JSR 309 Connector, the SIP Session Timers are turned off by default. The application can modify the parameters for the SIP Session Timers when configuring factory properties:

- `mediaserver.sessionTimer.rfc4028` – Turns the SIP Session Timer function on or off. Allowed values are: "on" or "off". Default: "off".
- `mediaserver.sessionTimer.minTimeout` – defines SIP Session min timeout in seconds. Default: 90 (seconds).
- `mediaserver.sessionTimer.maxTimeout` – defines SIP Session timeout in seconds. Default: 1800 (seconds).

## Copy All JAVA Library (JAR) Files

The Dialogic JSR 309 Connector and its Verification Application are dependent on a few third-party JAVA library files.

The Verification Application needs to include all required JAR files inside the application WAR package in the designated *lib* directory. The following is a view of the directory structure of the Dialogic JSR 309 Verification Application and highlighted is the *lib* directory where all required JAR files need to be placed:

```
\META-INF\MANIFEST.MF
\WEB-INF\jboss-deployment-structure.xml
\WEB-INF\sip.xml
\WEB-INF\classes\base\ConfigProperty.class
\WEB-INF\classes\play\AsyncPlayer$PlayerEventListener.class
\WEB-INF\classes\play\AsyncPlayer$PlayerJoinEventListener.class
\WEB-INF\classes\play\AsyncPlayer$SdpPortsListener.class
```

```
\WEB-INF\classes\play\AsyncPlayer.class
\WEB-INF\lib\Dialogic309-5.0.0-jboss.jar
\WEB-INF\lib\Dialogic309msmltypes-5.0.0-jboss.jar
\WEB-INF\lib\Dialogic309smiltypes-5.0.0-jboss.jar
\WEB-INF\lib\geronimo-commonj_1.1_spec-1.0.jar
\WEB-INF\lib\jain-sip-ri-1.2.256.jar
\WEB-INF\lib\json_simple-1.1.jar
\WEB-INF\lib\jsr173_1.0_api.jar
\WEB-INF\lib\log4j-api-2.2.jar
\WEB-INF\lib\log4j-core-2.2.jar
\WEB-INF\lib\log4j-slf4j-impl-2.2.jar
\WEB-INF\lib\mscontrol.jar
\WEB-INF\lib\org.osgi-3.0.0.jar
\WEB-INF\lib\slf4j-api-1.7.5.jar
\WEB-INF\lib\xbean.jar
```

## Deploy the Dialogic JSR 309 Verification Application

The Dialogic JSR 309 Connector demo application needs to be deployed in the TeleStax Application Server.

There are two ways to deploy an application WAR file in the TeleStax Application Server.

- [Deploying via Application Server Web Administration Console](#)
- [Deploying Directly on the Server](#)

### Deploying via Application Server Web Administration Console

1. Start the TeleStax Application Server from here:

```
${JBOSS_HOME}/bin
```

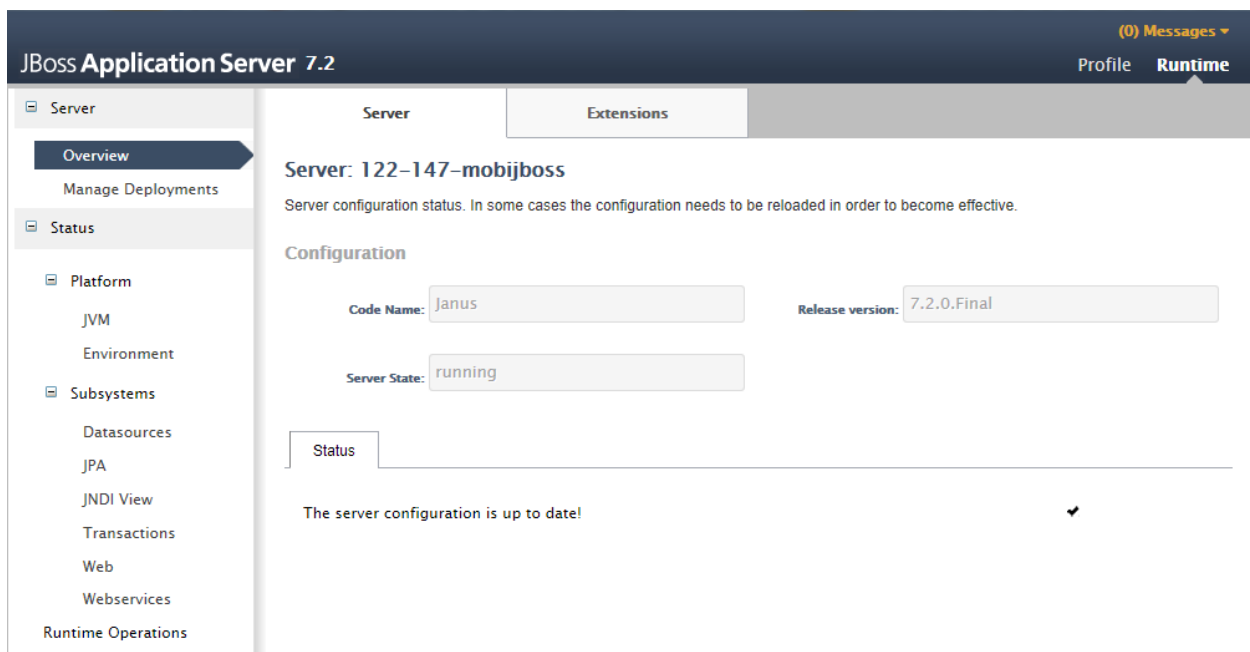
2. Execute the following script. If the server starts without any errors/exceptions, the application is ready to be deployed.

```
./standalone.sh -c standalone-sip.xml
```

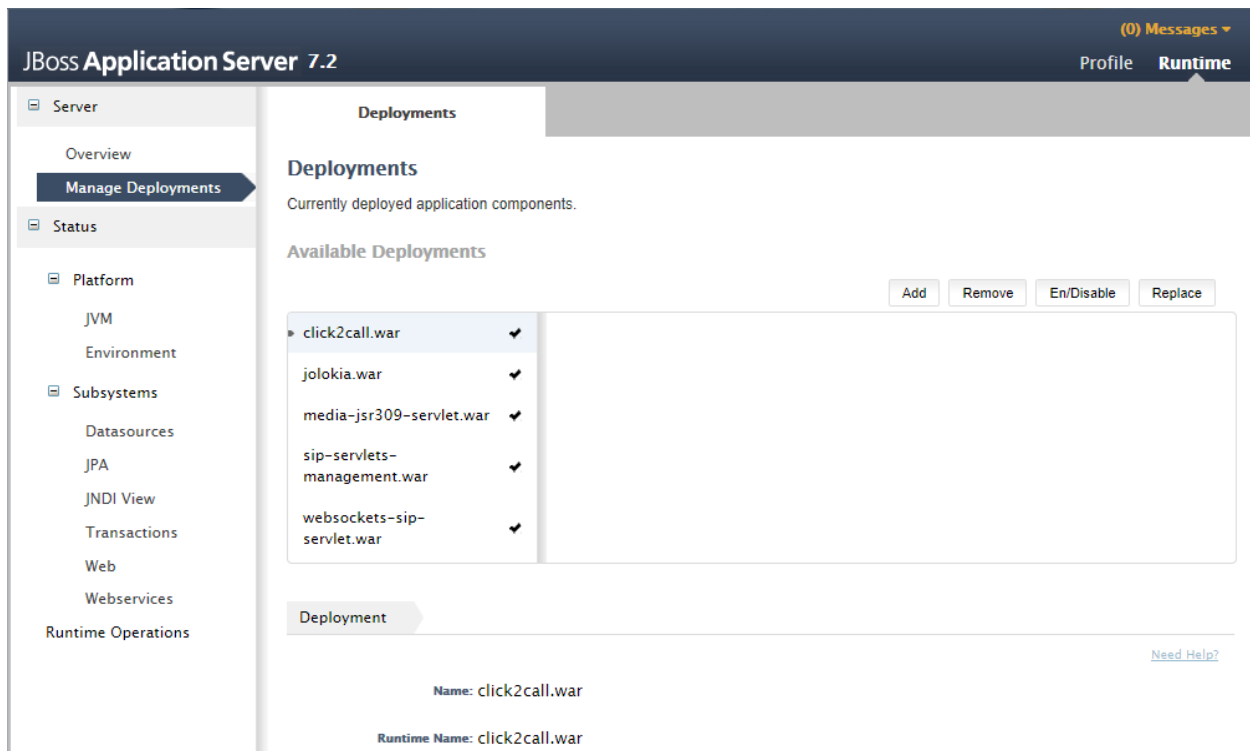
3. Navigate to **Administration Console**.



4. Enter the appropriate login credentials.



5. Click **Manage Deployments** and then click **Add**.



The screenshot shows the JBoss Application Server 7.2 web console. The left sidebar contains a navigation menu with 'Server' selected, and 'Manage Deployments' highlighted under the 'Status' section. The main content area is titled 'Deployments' and shows a list of 'Available Deployments'. The list includes 'click2call.war', 'jolokia.war', 'media-jsr309-servlet.war', 'sip-servlets-management.war', and 'websockets-sip-servlet.war', each with a checkmark icon. Above the list are buttons for 'Add', 'Remove', 'En/Disable', and 'Replace'. Below the list, a 'Deployment' section shows the details for 'click2call.war', including its 'Name' and 'Runtime Name'.

JBoss Application Server 7.2 (0) Messages ▾ Profile Runtime

Server

- Overview
- Manage Deployments**
- Status
  - Platform
    - JVM
    - Environment
  - Subsystems
    - Datasources
    - JPA
    - JNDI View
    - Transactions
    - Web
    - Webservices
    - Runtime Operations

Deployments

Currently deployed application components.

Available Deployments

Add Remove En/Disable Replace

click2call.war	✓
jolokia.war	✓
media-jsr309-servlet.war	✓
sip-servlets-management.war	✓
websockets-sip-servlet.war	✓

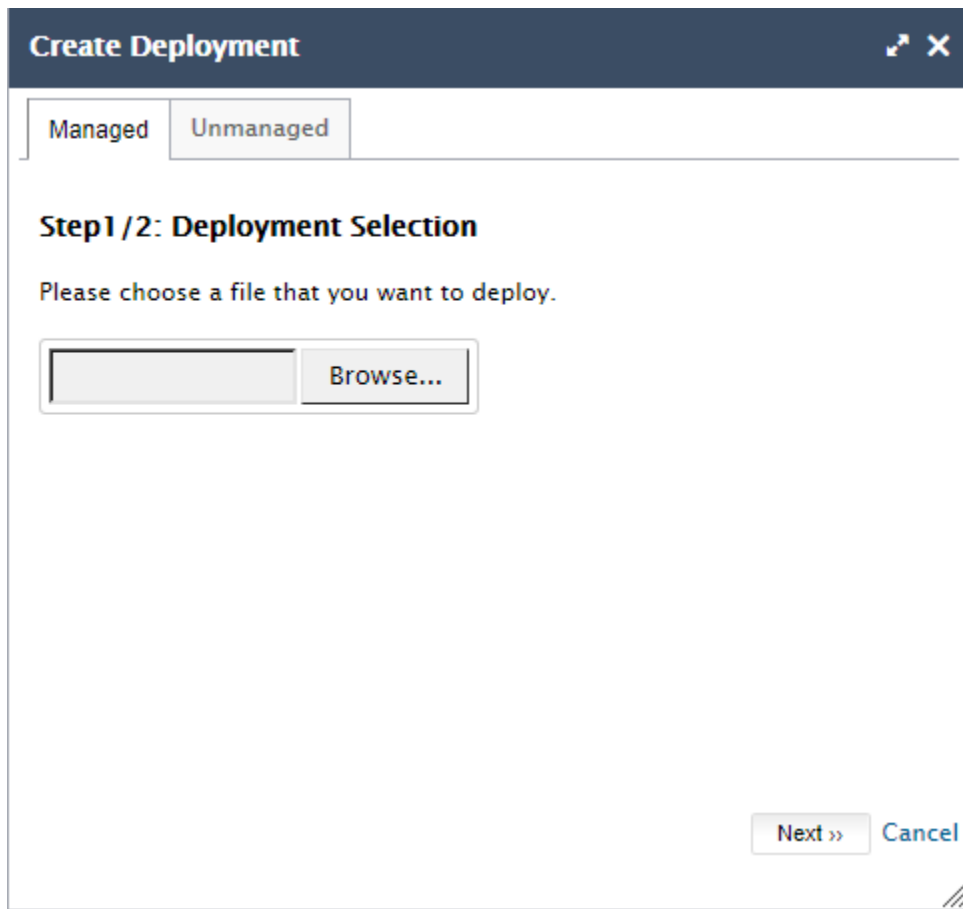
Deployment

Name: click2call.war

Runtime Name: click2call.war

[Need Help?](#)

6. Click **Browse**, select the *dlgcmisc\_demo.war* file, and then click **Next**.



The image shows a 'Create Deployment' dialog box with a dark blue header bar containing the title and window controls. Below the header, there are two tabs: 'Managed' and 'Unmanaged'. The 'Unmanaged' tab is selected. The main area is titled 'Step 1 / 2: Deployment Selection' and contains the instruction 'Please choose a file that you want to deploy.' Below this is a text input field and a 'Browse...' button. At the bottom right, there are 'Next >>' and 'Cancel' buttons.

**Create Deployment**

Managed Unmanaged

**Step 1 / 2: Deployment Selection**



Please choose a file that you want to deploy.

Browse...

Next >> Cancel



7. Click **Save**.


**Create Deployment**  

**Step 2/2: Verify Deployment Names**

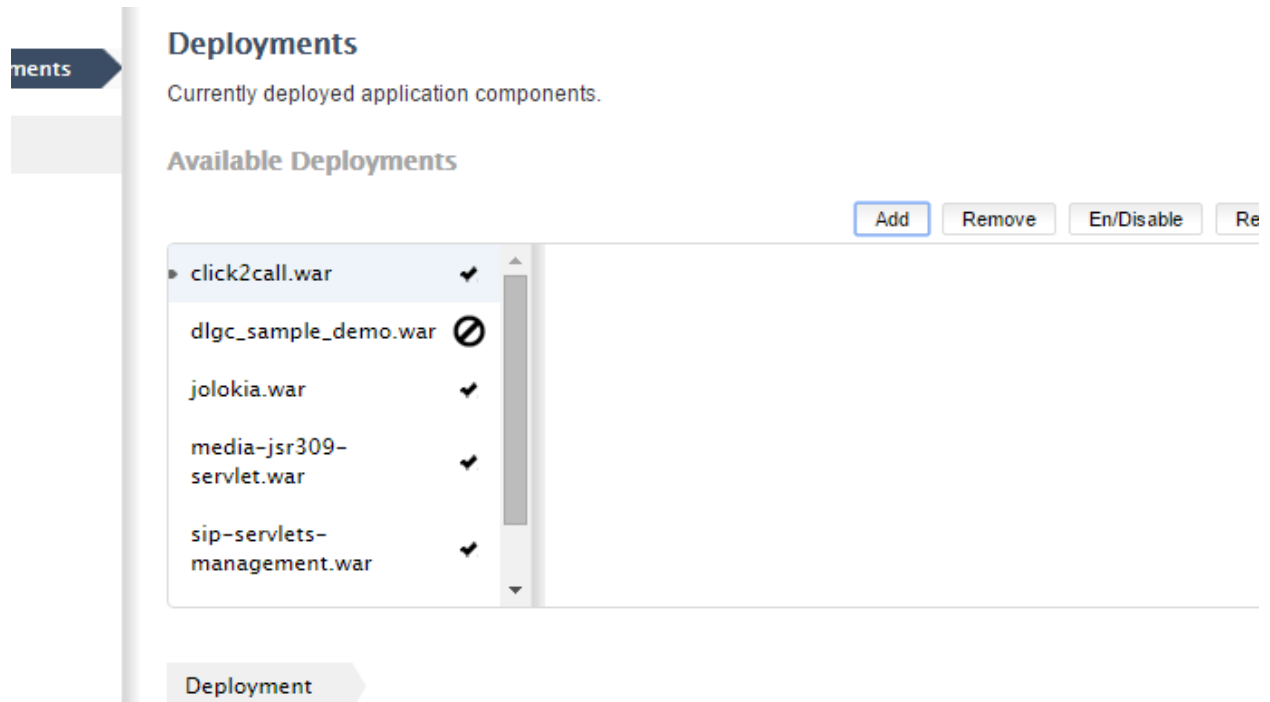
**Key:**

**Name:**

**Runtime Name:**



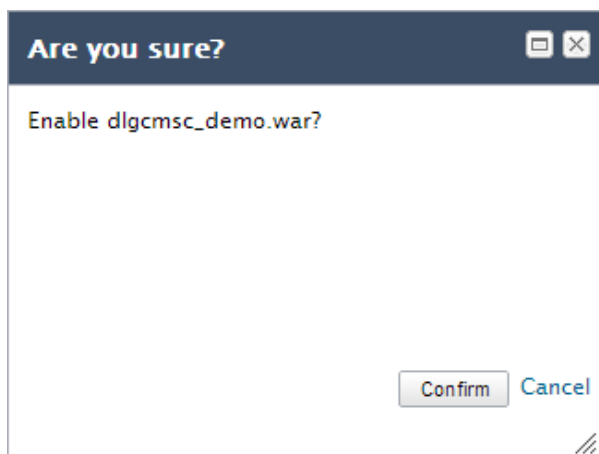
On the **Manage Deployments** page, the newly deployed *dlgc\_sample\_demo.war* application appears.



8. To enable the deployed application, highlight it and click **En/Disable**.



9. Click **Confirm**.



If deployment was completed successfully, the deployed WAR file will have a check icon next to it.

The console window will indicate that *dlgc\_sample\_demo.war* has been deployed.

## Deploying Directly on the Server

Another way to deploy the application is to place the WAR file in the following directory:

## Running the Dialogic JSR 309 Verification Application

Follow these steps:

## Configure Platform SIP Routing Using SIP Servlets Management

Before the deployed application can process SIP messages, it needs to be configured in the SIP Servlets Management console:

`http://<AS_IP_Address>:8080/sip-servlets-management.`

The following **Sip Servlets Management Console** appears.

The screenshot shows the Telestax SIP Servlets Management Console. The header includes the Telestax logo and the title "SIP SERVLETS MANAGEMENT CONSOLE". On the left, there is a sidebar with a "CONNECTED TO:" status showing "HTTP://146.152.122.177:8080" and a "MANAGEMENT" section with links for "Application Routing" and "Server Settings". The main content area is titled "Application Routing" and features a navigation bar with tabs: "ALL", "REGISTER", "INVITE", "OPTIONS", "MESSAGE", "SUBSCRIBE", and "NOTIFY". Below the tabs, there is a form for configuring the "INVITE" action. The form includes a "SIP Application Name" field with a dropdown menu currently showing "WebsocketSample" and a "+ Add Application" button. Below this is a "Subscriber Identity" field with the text "DAR:From". Further down is a "Routing Region" field with a dropdown menu showing "Originating". At the bottom, there is a "Route Modifiers" field.

Click **INVITE** and select **dlgc\_sample\_demo** in the **SIP Application Name** field.

This screenshot shows the "INVITE" configuration page. The "INVITE" tab is selected in the navigation bar. The "SIP Application Name" dropdown menu is now set to "dlgc\_sample\_demo". The "Subscriber Identity" field remains "DAR:From". The "+ Add Application" button is still visible next to the dropdown.

Click **Apply Changes**. A message on the bottom of your screen will confirm its success: "[INFO] DAR Information successfully updated". The Application Server is configured to use the newly deployed application.

## Dial in to the Dialogic JSR 309 Verification Demo

The Dialogic JSR 309 Verification Demo (player) has been written to support both SIP and WebRTC (Chrome and Firefox only at this time) clients.

Dial in to a SIP client as follows:

1. Have a SIP client configured for the supported audio codec.
2. Place a call into the Application Server with the following URI:

```
player@<as_ip_address>:5080
```

With successful configuration, the sample verification .mp4 should be heard and/or seen.

Dial in to a WebRTC client as follows:

**Note:** Standard based server side WebSockets are not supported in the JBoss platform. However, support was introduced for server side WebSockets in the next version of JBoss (renamed "WildFly"). TeleStax WildFly version is currently in Beta release.

**Note:** With the newest versions of browsers, WebRTC media functionality and WebSocket support are only allowed via a secure web connection (HTTPS). The J2EE platform will need to be configured for HTTPS in order for a WebRTC Client to work. Follow the online documentation of the platform for HTTPS configuration instructions.

1. Open a Chrome or Firefox web browser.
2. Navigate to the following URL:

```
https://<AS_Platform_IP>:8443/dlgc_sample_demo/DemoGUI/index.html
```

3. Click **Play**.

## 4. Dialogic JSR 309 Verification Application

---

### About

The Dialogic JSR 309 Verification Application is provided with each platform specific package for two reasons:

1. The application (WAR file), which uses the Dialogic JSR 309 Connector, is provided as a tool to verify the Application Server platform and Dialogic PowerMedia XMS operation.
2. The application project source has all the necessary components required to create a platform-specific application using the Dialogic JSR 309 Connector. This can quickly help clarify various steps that are required in the J2EE application using the Dialogic JSR 309 Connector. It includes the following:
  - a. Provides steps on how to create an application (WAR file) to run in a specific J2EE AS platform
  - b. Illustrates application initialization steps
  - c. Illustrates application initialization steps necessary for use with the Dialogic JSR 309 Connector
  - d. Illustrates the steps the application needs to take in order to work with SIP and/or web based multimedia (WebRTC) clients (provided that the chosen platform provides support for server side WebSockets)

### Details

This section details the different areas of the Verification Application for a better understanding of the basic, necessary steps for any application.

- [Application WAR File Content](#)
- [Application Initialization Steps](#)
- [Application Steps to Initialize the Dialogic JSR 309 Connector](#)

### Application WAR File Content

Minimum content of the application is illustrated in the Dialogic JSR 309 Verification Application WAR file. The WAR package contains several necessary items. Refer to *build.xml* to get familiar with how the WAR file is generated.

The *dlgc\_sample\_demo.war* file consists of three directories:

- The */META-INF* directory contains a *MANIFEST.MF*, which is a standard way of providing information about the package that contains it.
- The */WEB-INF* directory contains the following:
  - The *classes* directory, which contains JAVA .class files.
  - The *lib* directory, which contains all JAR files required by the deployment application WAR file.
  - The *jboss-deployment-structure.xml* file used to exclude some automatic dependencies.
  - The *sip.xml* file, which defines SIP servlet-mapping for the deployment application WAR.

- The */DemoGUI* directory contains content for the application that supports WebRTC. It includes necessary .html and .js files for the verification demo. Note that this directory will not be present in application WAR files for JBoss because it does not support WebSockets.

## Application Initialization Steps

Below is an example of a basic application structure used in this platform. For further details, please reference a source of Dialogic JSR 309 Verification Application.

```
package play;

@javax.servlet.sip.annotation.SipServlet(description = "Dialogic Sample Demo", applicationName =
"DialogicSampleDemo", name="AsyncPlayer", loadOnStartup=2)

@SipListener
public class AsyncPlayer extends SipServlet implements Serializable, SipServletListener
{
    @Override
    public void init(ServletConfig cfg) throws ServletException
    {
    }

    @Override
    public void servletInitialized(SipServletContextEvent evt)
    {
    }
}
```

Note the following:

1. Note the mandatory *@javax.servlet.sip.annotation.SipServlet* annotation. This annotation allows for the Sip Servlet metadata to be declared without having to create the deployment descriptor:
  - a. description – Any string describing the application.
  - b. applicationName – Must match servlet mapping as defined in *sip.xml* for this application. The Dialogic JSR 309 Connector Verification Application *sip.xml* is shown below for reference:

```
<?xml version="1.0" encoding="UTF-8"?>
<sip-app>

    <app-name>DialogicSampleDemo</app-name>
    <display-name>DialogicSampleDemo</display-name>

    <session-config>
        <session-timeout>0</session-timeout>
    </session-config>

    <servlet-selection>
        <servlet-mapping>
            <servlet-name>AsyncPlayer</servlet-name>
```

```

        <pattern>
            <and>
                <equal>
                    <var>request.method</var>
                    <value>INVITE</value>
                </equal>
                <equal>
                    <var>request.to.uri.user</var>
                    <value>player</value>
                </equal>
            </and>
        </pattern>
    </servlet-mapping>
</servlet-selection>

</sip-app>

```

- c. name – The name of the SIP servlet class:

```

@SipListener
public class AsyncPlayer extends SipServlet implements Serializable,
SipServletListener
{

```

- d. loadOnStartup – Defines the order in which the SIP container should start this SIP Servlet class. Since this application depends on JSR 309, it should start after the Dialogic JSR 309 Connector. Since Dialogic JSR 309 Connector Sip Servlet annotation is set (loadOnStartup) to 1, the application should be a number greater than 1.
2. When the platform starts the application, it will invoke an `init( )` function. This function should contain application specific initialization procedures. This is where the Verification Application reads the application properties file and stores its content in local storage to be used later when initializing the JSR 309 interface.
  3. Once the platform's SIP container is started, it will call the application's `servletInitialized( )` method to inform it that the SIP stack is now ready for application usage. At this stage, the application can start to initialize the Dialogic JSR 309 Connector.

## Application Steps to Initialize the Dialogic JSR 309 Connector

Once the application's `servletInitialized( )` method is invoked, the SIP container has been initialized and the application can now take steps to initialize the JSR 309 interface. After validating the request in the Verification Application `servletInitialized( )` method, the application will issue `initDriver( )` method.

The application obtains the Dialogic JSR 309 Connector configuration:

```

protected boolean initDriver()
{
    dlgcDriver = DriverManager.getDriver(DLGC_309_DRIVER_NAME);
    PropertyInfo connectorProperty[] = dlgcDriver.getFactoryPropertyInfo();
    ...
}

```



The connector driver is able to discover some of the parameters that it needs but not all. The parameters required by the driver to work correctly are as follows:

- `connector.sip.address` – Platform SIP IP address used by the SIP container. The connector provides the ability to change the address in case the platform has multiple IP interfaces and the default IP address picked by connector needs to be changed.
- `connector.sip.port` – Platform SIP port address used by SIP container. The connector provides ability to change the address in case the platform has multiple IP interfaces and the proper one is defined for different port number.
- `connector.sip.transport` – Platform SIP transport.
- `mediaserver.sip.ipaddress` – Dialogic XMS Media Server SIP IP address to be used by the Dialogic JSR 309 Connector.
- `mediaserver.sip.port` – Dialogic XMS Media Server SIP port to be used by the Dialogic JSR 309 Connector.

The Verification Application configures the Dialogic JSR 309 Connector properties:

```
...
Properties factoryProperties = new Properties();
for ( PropertyInfo prop: connectorProperty ) {
    log.debug("initDriver() - =====");
    log.debug("initDriver() - Name: " + prop.name);
    log.debug("initDriver() - Description: " + prop.description);
    log.debug("initDriver() - Required: " + new Boolean(prop.required).toString() );
    log.debug("initDriver() - Value: " + prop.defaultValue);
    if ( prop.name.compareToIgnoreCase("connector.sip.address") == 0 )
    {
        if (prop.defaultValue.compareToIgnoreCase(new_connector_sip_address.toString()) != 0)
        {
            log.debug("initDriver() - New Value: " + new_connector_sip_address);
            prop.defaultValue = new_connector_sip_address;
        }
    }
    .....
    factoryProperties.setProperty(prop.name, prop.defaultValue);
}
```

The application creates a new properties factory in which it will store all required parameters for the Dialogic JSR 309 Connector to start properly. It reads the locally stored application properties file configuration of each required parameter and compares it to the value automatically picked up by the Dialogic JSR 309 Connector. It then takes the newest value for each of the required parameters and stores it in new properties factory.

The Dialogic JSR 309 Connector factory is created with the new set of parameters.

```
....
mscFactory = dlgcDriver.getFactory(factoryProperties);
....
```

The Dialogic JSR 309 Connector factory (`mscFactory`) is now created with a new set of required parameters. Now, the Dialogic JSR 309 Connector interface can be used.

## 5. Troubleshooting

---

This section provides basic troubleshooting techniques for the Dialogic JSR 309 Connector.

### Logging

The Dialogic JSR 309 Connector and its Verification Application use the Apache Log4j2 (version 2) logging facility. The connector makes use of *log4j2.xml* file for its logging configuration. With the introduction of Log4j2, it is possible to change the log levels without stopping/restarting any components. All that needs to be done is open *log4j2.xml* and change the logging to the desired level. Log configuration file *log4j2.xml* can be found at:

```
${JBOSS_HOME}/standalone/configuration/Dialogic/log4j2.xml
```

As per *log4j2.xml* configuration, the Dialogic JSR 309 Connector and Verification Applications log output file *Dialogic.log* can be found in the *\$JBOSS\_HOME/standalone/log/* directory.

Refer to the following to see *log4j2.xml* in detail.

```
<?xml version="1.0" encoding="UTF-8"?>
<Configuration monitorInterval="10" status="ERROR">
  <Appenders>
    <File name="dialogic" fileName=" ../standalone/log/Dialogic.log" append="false">
      <PatternLayout pattern="%d{HH:mm:ss.SSS} %-5level %class{36} %L %M - %msg%xEx%n"/>
    </File>
    <Console name="STDOUT" target="SYSTEM_OUT">
      <PatternLayout pattern="%d{HH:mm:ss.SSS} %-5level %class{36} %L %M - %msg%xEx%n"/>
    </Console>
  </Appenders>

  <Loggers>
    <Logger name="com.vendor.dialogic" level="ERROR">
      <AppenderRef ref="dialogic"/>
      <!-- AppenderRef ref="STDOUT"/ -->
    </Logger>
    <Logger name="play" level="ERROR">
      <AppenderRef ref="dialogic"/>
      <!-- AppenderRef ref="STDOUT"/ -->
    </Logger>
    <Logger name="base" level="ERROR">
      <AppenderRef ref="dialogic"/>
      <!-- AppenderRef ref="STDOUT"/ -->
    </Logger>
  </Loggers>
</Configuration>
```

For details of the *log4j2.xml* configuration, refer to the following information:

- **monitorInterval** – Parameter defines how often Log4j2 facility will automatically detect changes to the configuration file and reconfigure itself. The default is 10 seconds.
  - **Appenders:**
    - Provided *log4j2.xml* file defines two streams (Appenders) that it will send logging to: a file (*Dialogic.log*) and a system console. Each individual logger has a choice of which appender to use.
  - **Loggers:**
    - Provided *log4j2.xml* file Loggers section provides a logger configuration for various Java source packages:
      - `com.vendor.dialogic` is a Dialogic JSR 309 Connector.
      - `play & base` is a Dialogic JSR 309 Connector Verification Application.

**Note:** Each logger can be set individually to the appropriate level of logging and each logger can be individually configured to log to file, STDOUT, or both.

Note that default logging level is set to *ERROR*, which will cause the *Dialogic.log* file to be empty unless there are errors.

Refer to the Apache Log4j 2 documentation at <http://logging.apache.org/log4j/2.x> for details.

Additional platform component logging, configuration, and modifications can be accomplished via appropriate Application Server Administration page. Refer to the platform specific documentation for details.

## Dialogic JSR 309 Connector and Verification Application Troubleshooting

1. The Verification Application first opens the application properties. If the path is not set or the properties file does not exist, the DEBUG log file will show an error as follows:

```
13:53:55.851 INFO   play.AsyncPlayer 136 init - init() - Entering
13:53:55.853 DEBUG play.AsyncPlayer 138 init - init() - servletName: AsyncPlayer
13:53:55.854 INFO   base.ConfigProperty 40 <init> - ConfigProperty() - Entering
13:53:55.854 INFO   base.ConfigProperty 56 LoadProperties - LoadProperties() - Entering
13:53:55.855 INFO   base.ConfigProperty 60 LoadProperties - LoadProperties() - Properties
File = /home/jboss/mss-3.1.633-jboss-as-
7.2.0.Final/standalone/configuration/Dialogic/dlgc_sample_demo.properties
13:53:55.855 ERROR base.ConfigProperty 77 LoadProperties - java.io.FileNotFoundException:
/home/jboss/mss-3.1.633-jboss-as-
7.2.0.Final/standalone/configuration/Dialogic/dlgc_sample_demo.properties (No such file
or directory)
13:53:55.856 ERROR base.ConfigProperty 78 LoadProperties - LoadProperties() - base
Configuration File: /home/jboss/mss-3.1.633-jboss-as-
7.2.0.Final/standalone/configuration/Dialogic/dlgc_sample_demo.properties load failed
13:53:55.856 INFO   base.ConfigProperty 81 LoadProperties - LoadProperties() - Exiting
```

Successful loading of the properties file will be shown as an INFO message as follows:

```
13:55:46.315 INFO   play.AsyncPlayer 136 init - init() - Entering
13:55:46.317 DEBUG  play.AsyncPlayer 138 init - init() - servletName: AsyncPlayer
13:55:46.318 INFO   base.ConfigProperty 40 <init> - ConfigProperty() - Entering
13:55:46.319 INFO   base.ConfigProperty 56 LoadProperties - LoadProperties() - Entering
13:55:46.320 INFO   base.ConfigProperty 60 LoadProperties - LoadProperties() - Properties
File = /home/jboss/mss-3.1.633-jboss-as-
7.2.0.Final/standalone/configuration/Dialogic/dlgc_sample_demo.properties
13:55:46.321 INFO   base.ConfigProperty 73 LoadProperties - LoadProperties() - base
Configuration File: /home/jboss/mss-3.1.633-jboss-as-
7.2.0.Final/standalone/configuration/Dialogic/dlgc_sample_demo.properties Successfully
Loaded
13:55:46.322 INFO   base.ConfigProperty 81 LoadProperties - LoadProperties() - Exiting
```

2. Make sure that the Dialogic Connector SIP Servlet gets initialized first. If successful, you will see following DEBUG print:

```
09:58:49.959 DEBUG  com.vendor.dialogic.javax.media.mscontrol.spi.DlgcDriver 147
registerDialogic309Driver - DlgcDriver::registerDialogic309Driver() - Application
Platformloading..loading driver now
09:58:49.959 DEBUG  com.vendor.dialogic.javax.media.mscontrol.spi.DlgcDriver 148
registerDialogic309Driver - DlgcDriver:registerDialogic309Drive() calling
DriverManager.re
09:58:49.961 DEBUG  com.vendor.dialogic.javax.media.mscontrol.spi.DlgcDriver 150
registerDialogic309Driver - DlgcDriver:registerDialogic309Drive() returned from
DriverMana
09:58:49.962 DEBUG  com.vendor.dialogic.javax.media.mscontrol.sip.DlgcSipServlet 137 init
- Dialogic Servlet Initialized...
```

The Verification Application will take the new set of required parameters and create a the Dialogic JSR 309 Factory. Successful creation of the JSR 309factory will be shown in the DEBUG logs as follows:

```
13:55:46.700 DEBUG  com.vendor.dialogic.javax.media.mscontrol.spi.DlgcDriver 408
getControlFactory - DlgcDriver::getControlFactory() property passed in:
13:55:46.706 DEBUG  com.vendor.dialogic.javax.media.mscontrol.DlgcMsControlFactory 103
<init> - DlgcMsControlFactory:: CTOR using Dynamic Factory Configuration
13:55:46.709 DEBUG  com.vendor.dialogic.javax.media.mscontrol.sip.DlgcMediaServer 235
<init> - DlgcMediaServer CTOR supporting Dynamic Configuration:
13:55:46.710 DEBUG  com.vendor.dialogic.javax.media.mscontrol.sip.DlgcMediaServer 251
<init> - DlgcMediaServer CTOR using the following XMS SIP Values:  username: msml= Media
Server IP: 146.152.122.4 Media Server SIP Port: 5060
13:55:46.711 DEBUG  com.vendor.dialogic.javax.media.mscontrol.sip.DlgcMediaServer 252
<init> - DlgcMediaServer CTOR using the following XMS Connector AS SIP Values: AS Server
IP: 146.152.122.146 Connector AS SIP Port: 5080
```

## SIP Errors

If the PowerMedia XMS returns "503 Service Unavailable", make sure the network is correctly set up by performing the following actions:

1. Verify the available PowerMedia XMS licenses.
2. Check the */etc/hosts* file configuration.

## 6. Building and Debugging Sample Demos in Eclipse IDE

---

The Dialogic JSR 309 Connector distribution package comes with all necessary configuration files and content needed for anyone to build the Verification Application on their own. This section provides the steps to create, compile, build, and debug provided demo application using Eclipse IDE.

### Prerequisites

The following components must be installed:

- Latest JDK version supported by desired J2EE platform.
- Eclipse KDE (Version used here: Mars.1 Release (4.5.1)).
- In order to build provided demo applications, obtain two TeleStax platform dependent libraries that NOT provided as part of the Dialogic JSR 309 Connector distribution package. They can be found under the following directories:

`{JBOSS_HOME}/modules/system/layers/base/org/mobicents/javax/servlet/sip/main`

`{JBOSS_HOME}/modules/system/layers/base/javax/servlet/api/main`

- (TelScale)
  - `sip-servlets-spec-7.0.2.GA-TelScale.jar`
  - `jboss-servlet-api_3.0_spec-1.0.2.Final.jar`
- (Mobicents)
  - `sip-servlets-spec-3.0.xxx.jar` (*xxx represents version of Mobicents 633*)
  - `jboss-servlet-api_3.0_spec-1.0.2.Final.jar`

### Creating the Build Environment

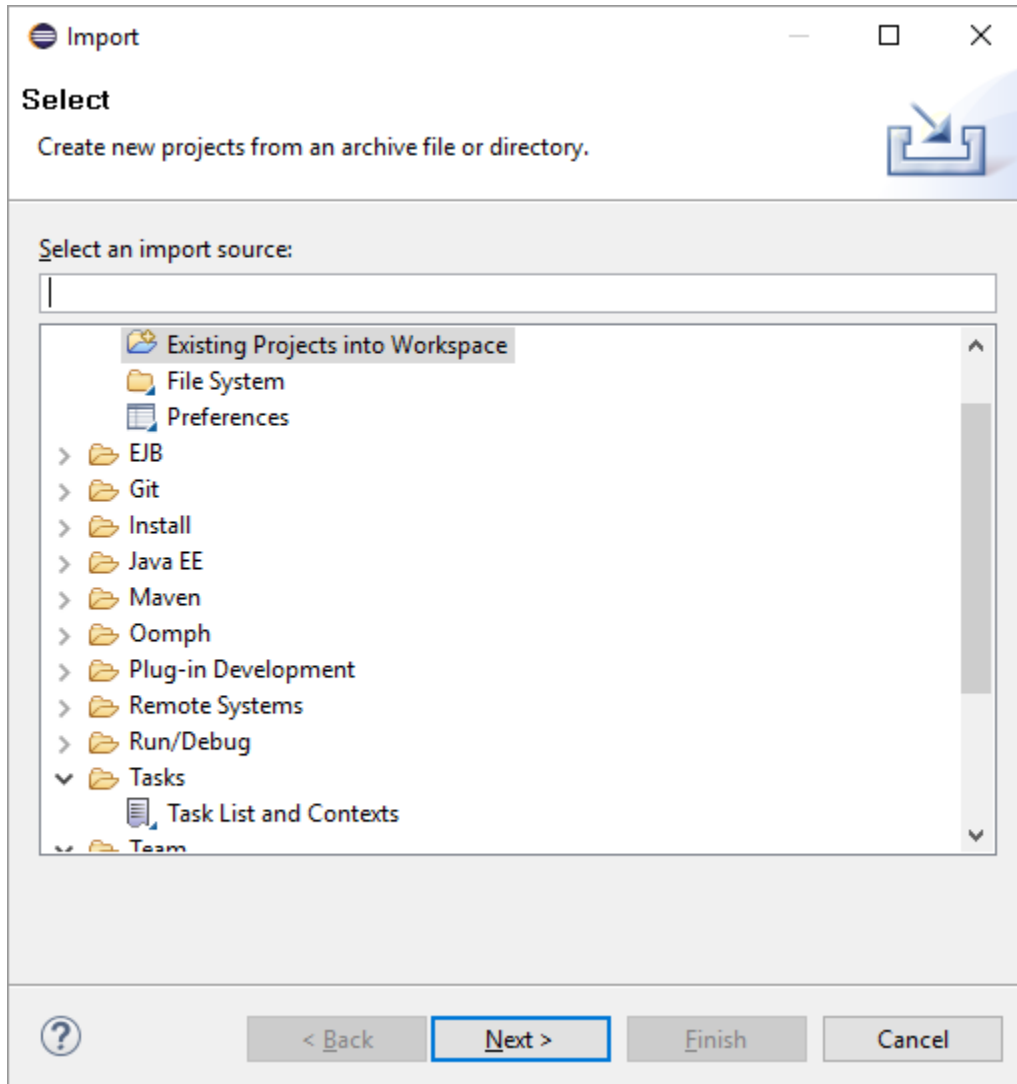
The Dialogic JSR 309 Verification Application source project comes with all the necessary components to compile and build the application WAR file. Follow these steps to create a Dialogic demo build environment:

#### Prepare the Eclipse Workspace

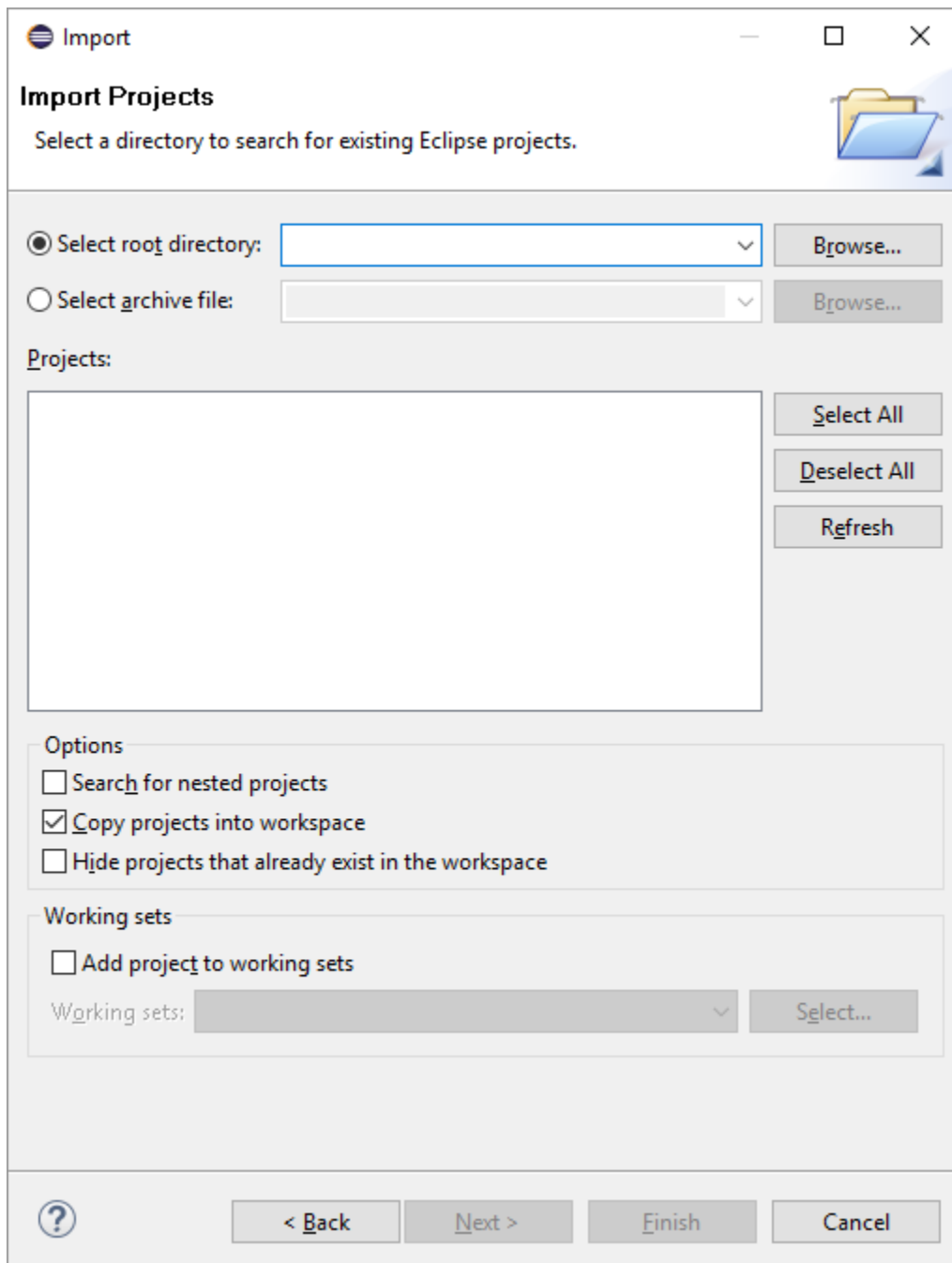
First, prepare the Eclipse workspace:

1. From the distribution package, copy the `DlgcJSR309/application/DialogicSampleDemo` directory and put it in a known location on the system.
2. Verify that the `Project/lib/3rdParty` directory contains all required third-party JAR files including the Dialogic JSR 309 Connector JAR files.
3. Copy the required Application Server platform specific libraries into the `Project/lib/AS` directory.

4. Open Eclipse IDE and click **File > Import**.
5. Select **Existing Project into Workspace**, and then click **Next**.



6. Click **Browse** and navigate to the *Project* directory on the system.



The image shows the 'Import Projects' dialog box in Eclipse. The title bar says 'Import'. The main heading is 'Import Projects' with a subtitle 'Select a directory to search for existing Eclipse projects.' and a folder icon. There are two radio buttons: 'Select root directory:' (selected) and 'Select archive file:'. Each has a text field and a 'Browse...' button. Below is a 'Projects:' list box, currently empty, with 'Select All', 'Deselect All', and 'Refresh' buttons to its right. Under 'Options', there are three checkboxes: 'Search for nested projects' (unchecked), 'Copy projects into workspace' (checked), and 'Hide projects that already exist in the workspace' (unchecked). Under 'Working sets', there is an 'Add project to working sets' checkbox (unchecked) and a 'Working sets:' dropdown menu with a 'Select...' button. At the bottom are buttons for '?', '< Back', 'Next >', 'Finish', and 'Cancel'.

Import

**Import Projects**

Select a directory to search for existing Eclipse projects.

☒ Select root directory:  **Browse...**

☐ Select archive file:  **Browse...**

**Projects:**

**Options**

☐ Search for nested projects

☒ Copy projects into workspace

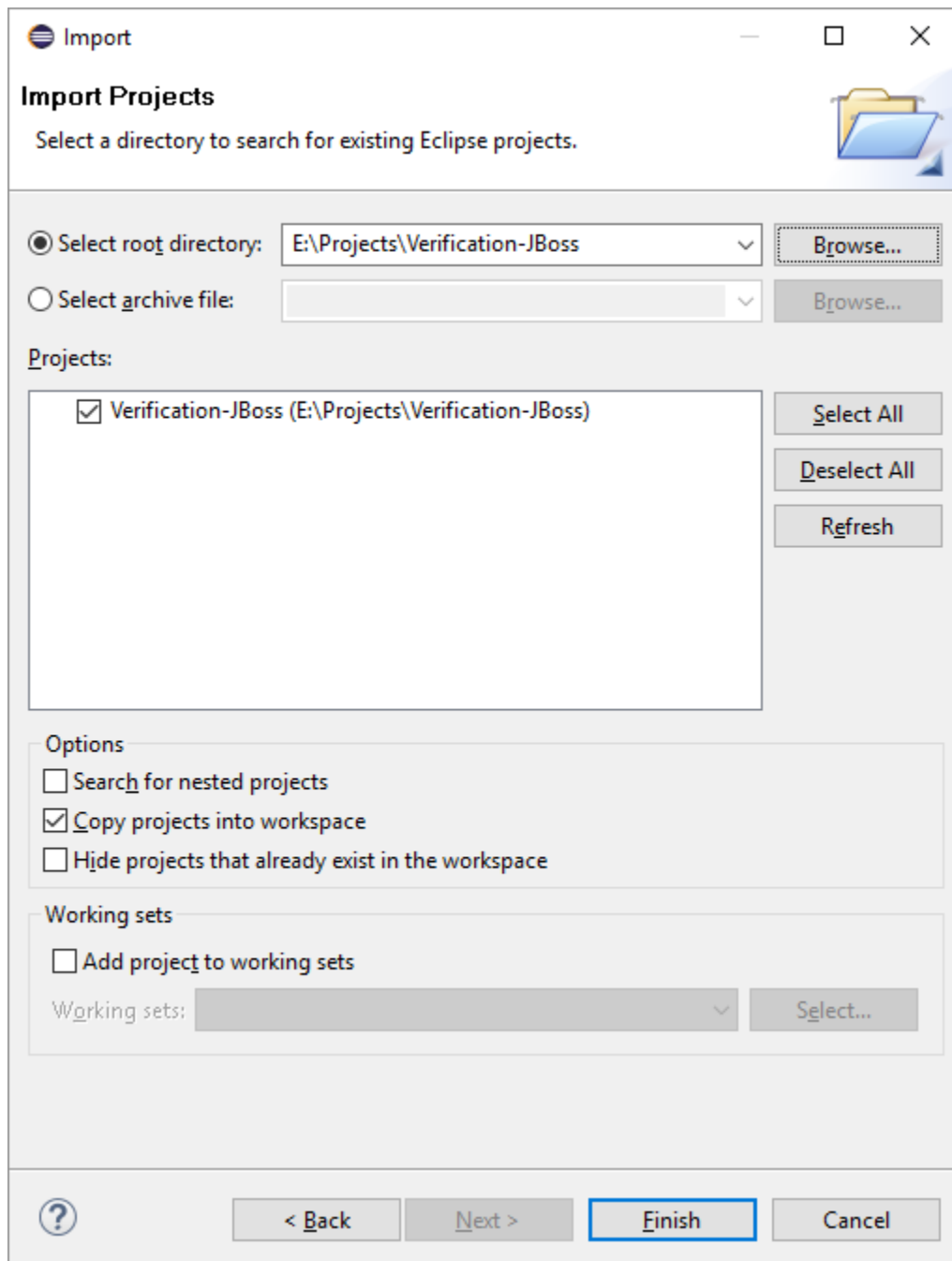
☐ Hide projects that already exist in the workspace

**Working sets**

☐ Add project to working sets

Working sets:  **Select...**

7. Click **Finish**. The Project has been imported to the Eclipse workspace.

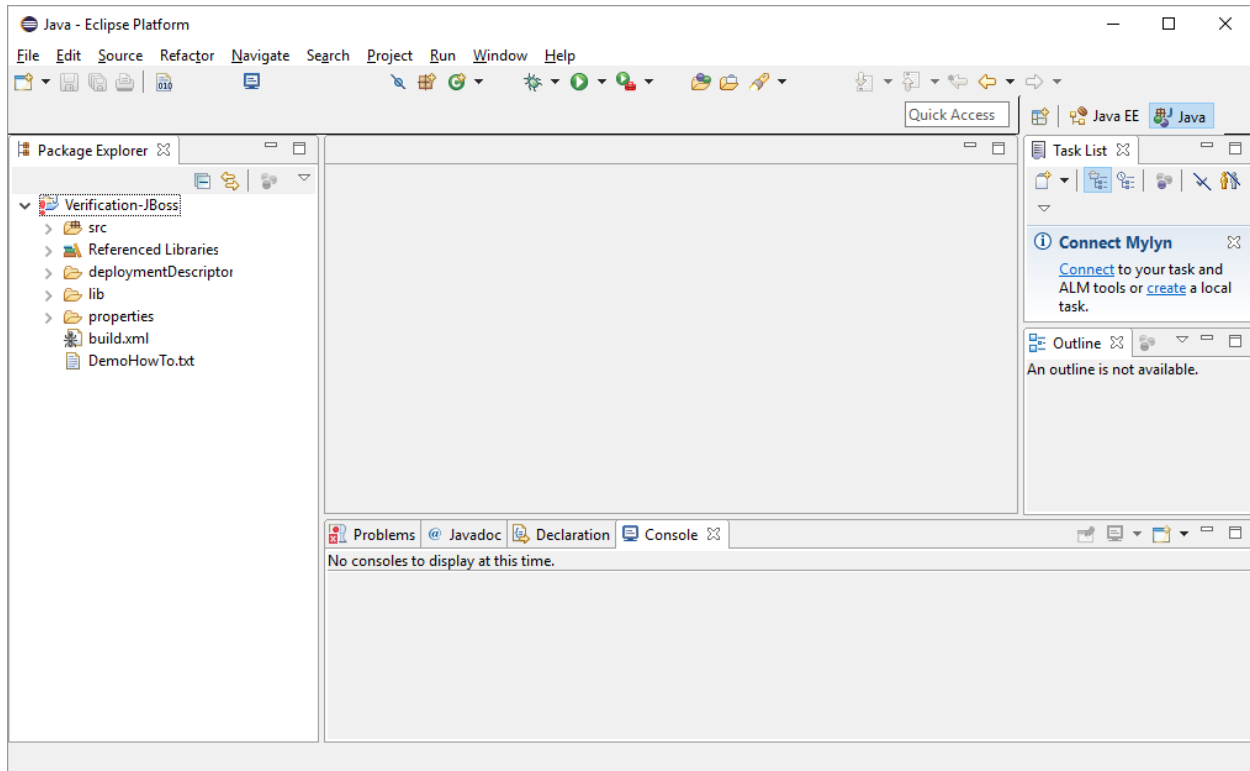




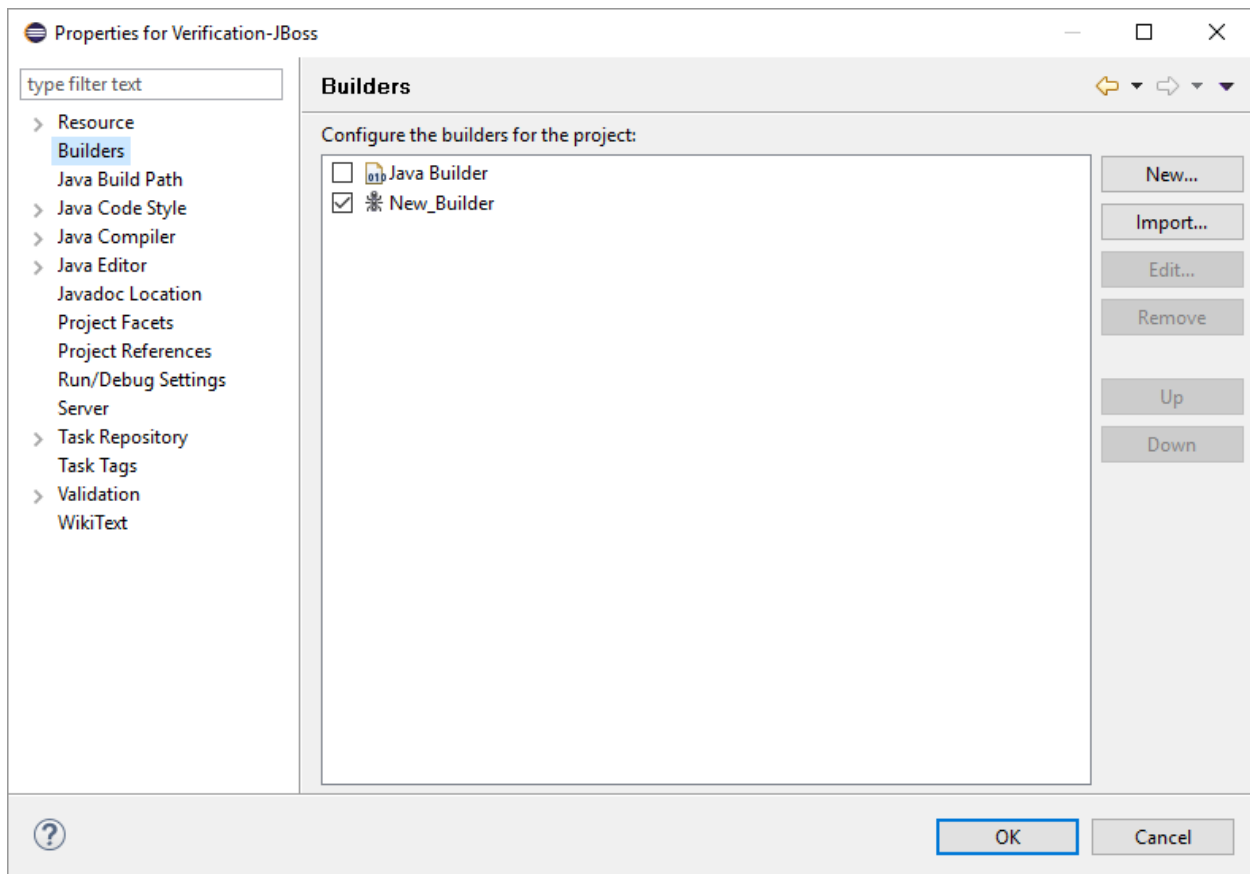
## Configure the Application

To configure the application, edit the following settings:

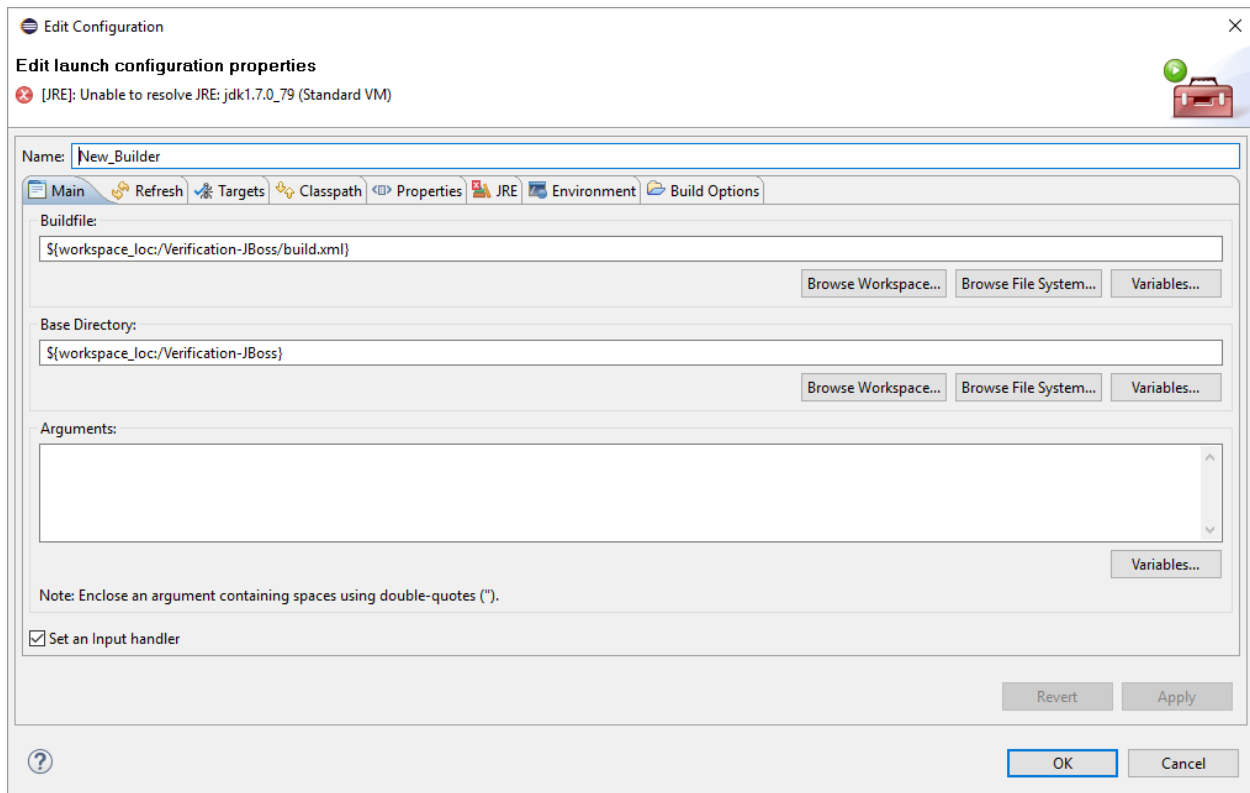
1. Right-click the **Verification-JBoss** project directory (for this example) and select **Properties**.



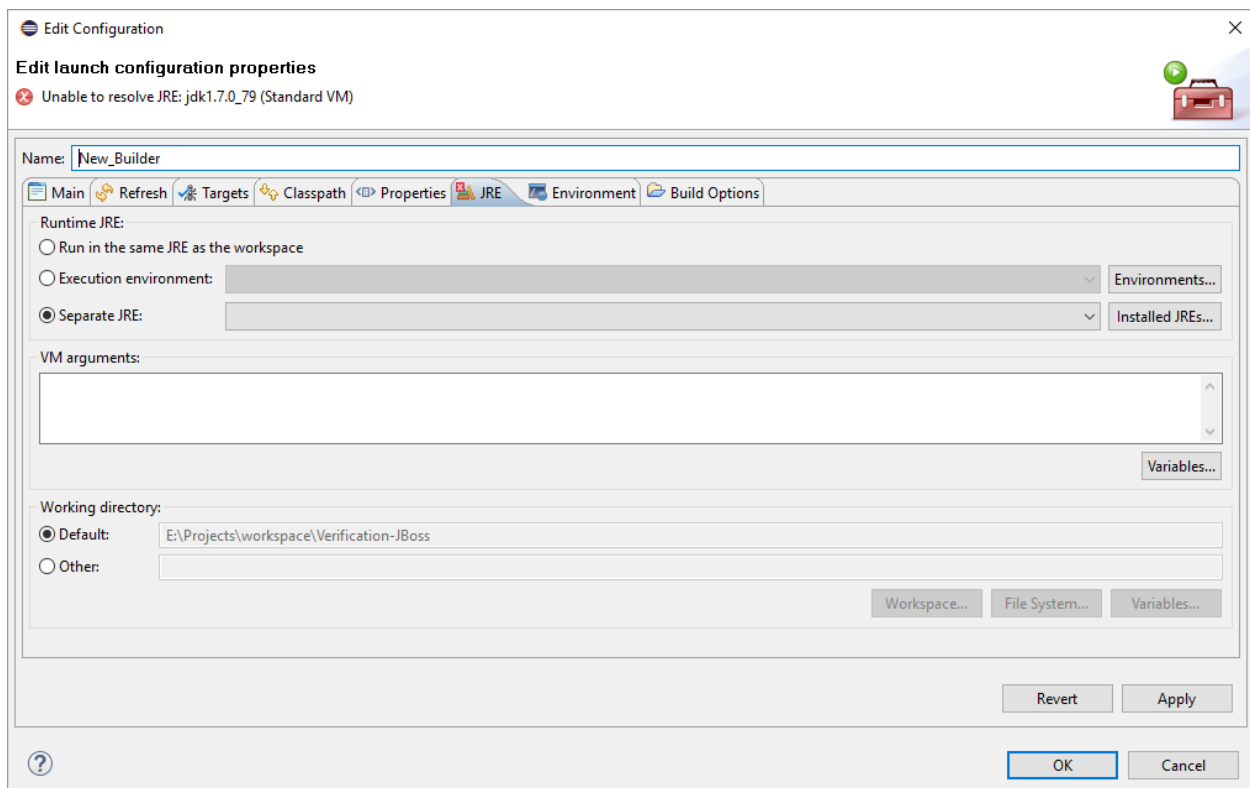
2. Click **Builders** and then double-click **New\_Builder**.



3. Verify that **Buildfile** and **Base Directory** point to correct workspace *build.xml* and directory.

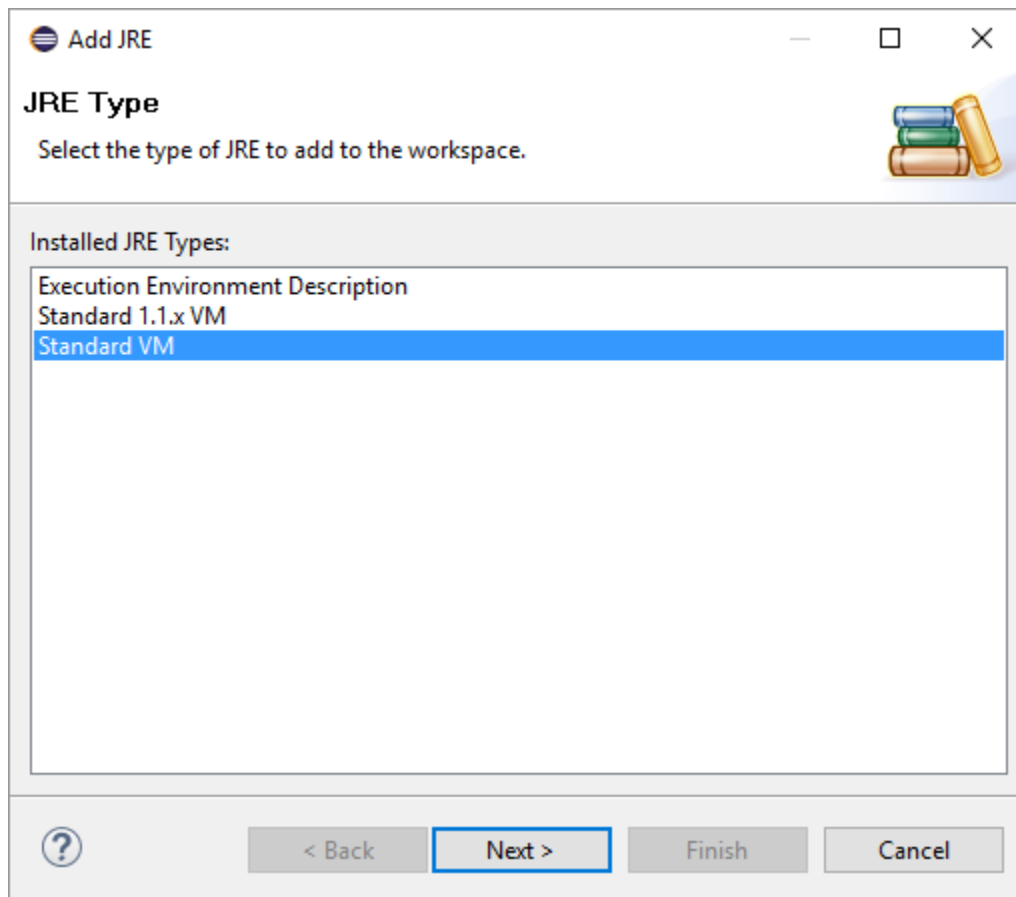


4. Click the **JRE** tab.



- 
- type filter text
- Java
- Installed JREs
- The selected JRE does not support the current compiler compliance level of 1.7
- Add, remove or edit JRE definitions. By default, the checked JRE is added to the build path of newly created Java projects.
- Installed JREs:
- | Name  | Location                 | Type         |
|---|--------------------------|--------------|
| <input checked="" type="checkbox"/> jdk1... | C:\Program Files\Java... | Standard ... |
| <input type="checkbox"/> jre7               | C:\Program Files\Java... | Standard VM  |
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|   |                          |              |
- Add... Edit... Duplicate... Remove Search...
- Conflicting compliance settings can be changed on the [Compiler](#) page.
- Apply OK Cancel

6. Click **Next**.



7. Click **Directory** and navigate to the appropriate JDK. When done, click **Finish**.

**Add JRE**

**JRE Definition**  
Specify attributes for a JRE

JRE home:

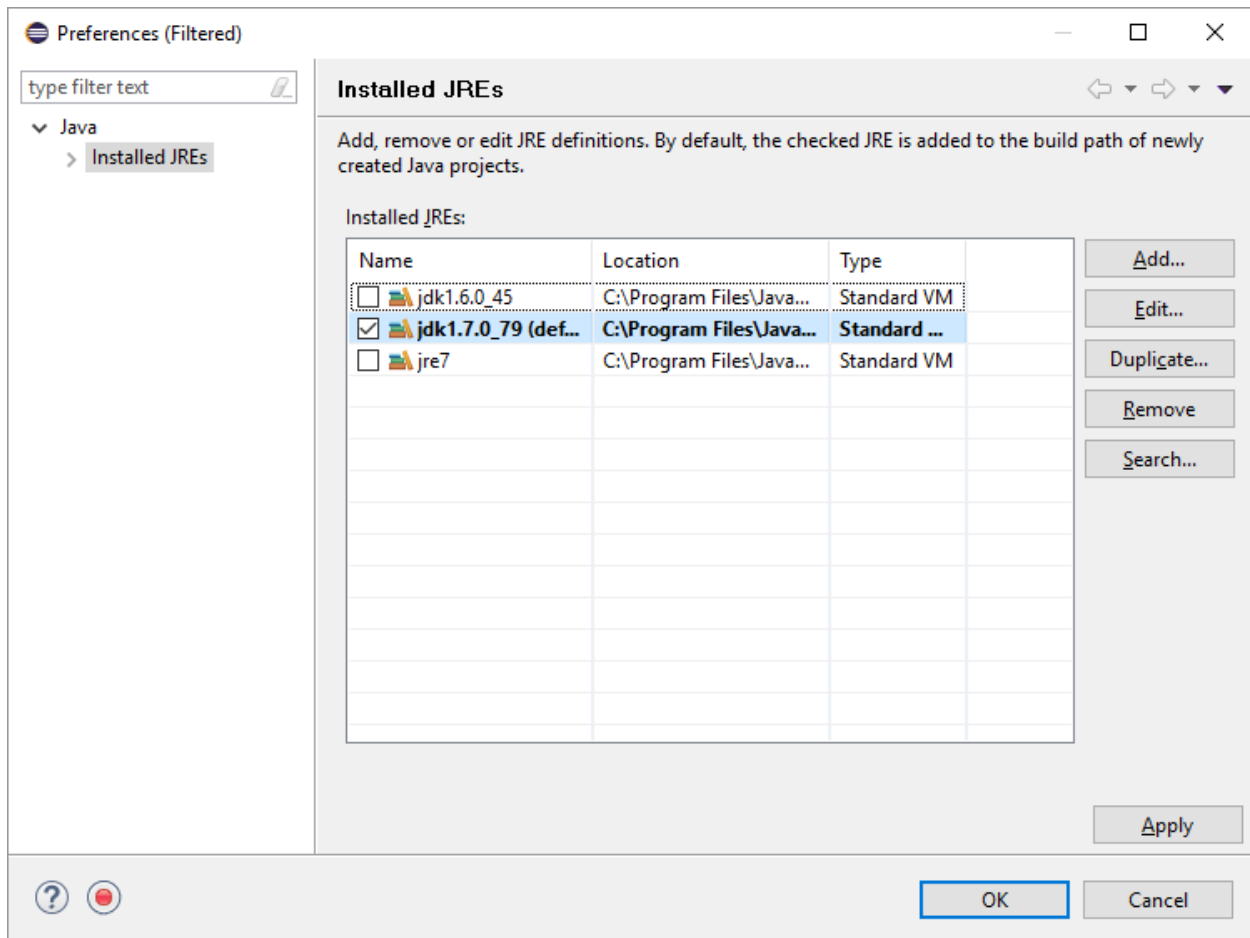
JRE name:

Default VM arguments:

JRE system libraries:

- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\resources.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\rt.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\jsse.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\jce.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\charsets.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\jfr.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\ext\access-bri
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\ext\dnsns.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\ext\jaccess.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\ext\localedata
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\ext\sunec.jar
- > C:\Program Files\Java\jdk1.7.0\_79\jre\lib\ext\sunjce\_prc

8. Make sure that appropriate JDK is chosen, and then click **OK**. In this example, **jdk1.7.0\_79** is chosen.



9. Verify that the **Separate JRE** field points to the desired JDK, and then click **OK**.

The screenshot shows the 'Edit Configuration' dialog box for a configuration named 'New\_Builder'. The 'JRE' tab is selected, showing the 'Runtime JRE' section. The 'Separate JRE' option is selected, and the field shows 'jdk1.7.0\_79'. The 'Working directory' is set to 'Default' with the path 'E:\Projects\workspace\Verification-JBoss'. The 'Java executable' is set to 'Default (javaw)'. The 'OK' button is highlighted.

**Edit Configuration**

**Edit launch configuration properties**  
Create a configuration that will run an Ant build file during a build.

Name: New\_Builder

Main Refresh Targets Classpath Properties **JRE** Environment Build Options

Runtime JRE:  
☐ Run in the same JRE as the workspace  
☐ Execution environment: CDC-1.0/Foundation-1.0 (jdk1.7.0\_79) Environments...  
☒ Separate JRE: jdk1.7.0\_79 **Installed JREs...**

VM arguments:  
Variables...

Working directory:  
☒ Default: E:\Projects\workspace\Verification-JBoss  
☐ Other: Workspace... File System... Variables...

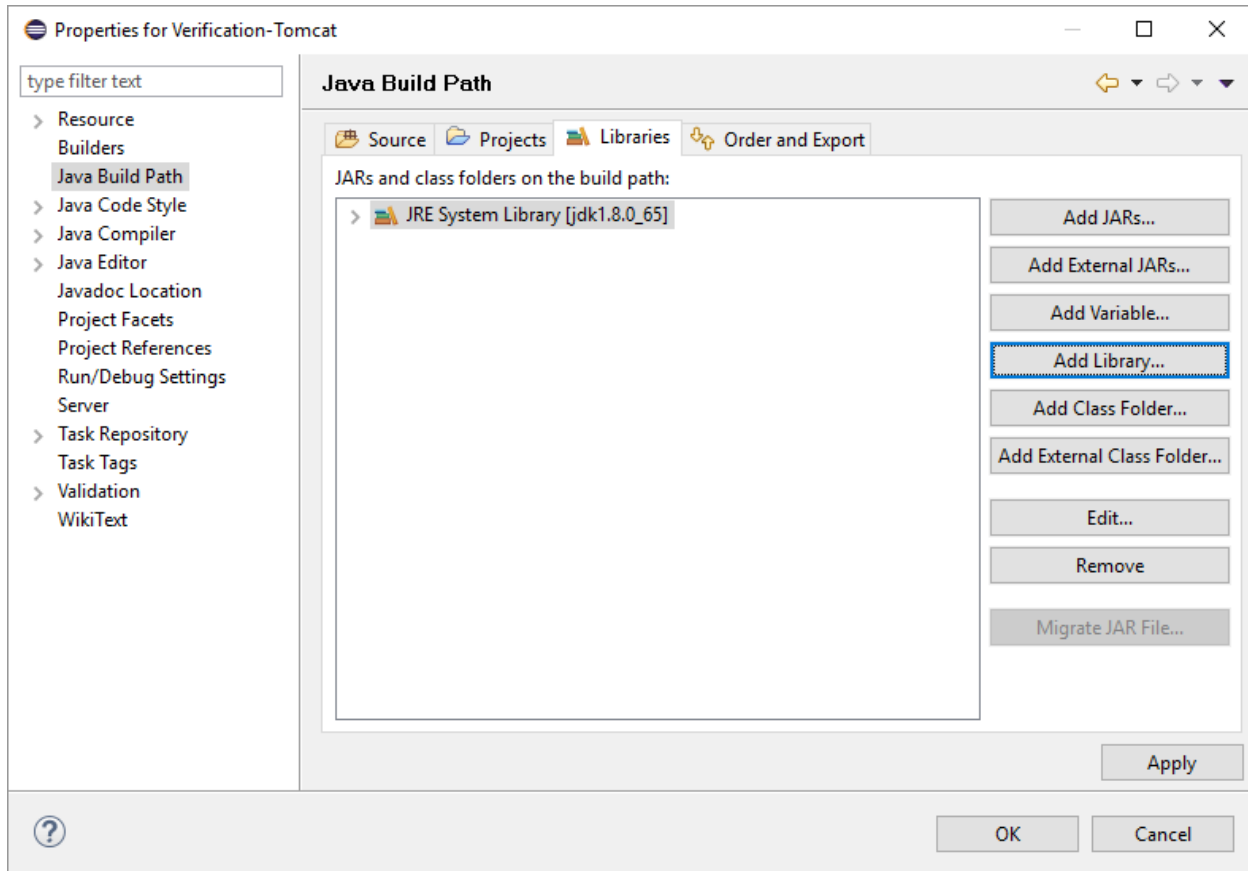
Java executable:  
☒ Default (javaw)

Revert Apply

OK Cancel

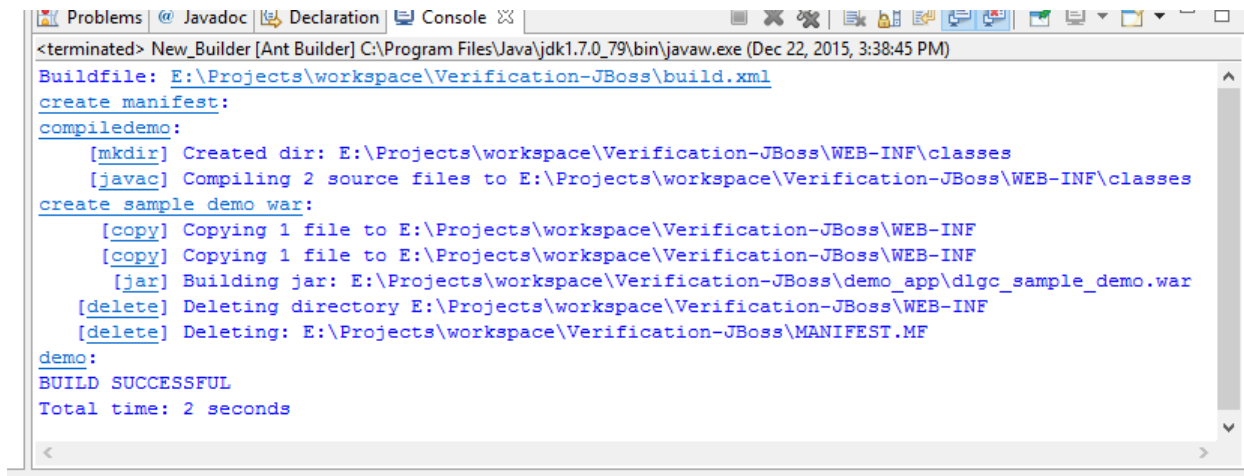


10. Click **Java Build Path** and verify that all JAR files are correctly pointed to. If not, click **Add JARs** and select all the JAR files from within *Project/lib* directories. Once that is done, click **OK**.



## Building the Project

After a successful project installation and configuration, a project can be built. In Eclipse, select the newly created project. In the **Project** menu, click **Build All**. Successful build content will be shown in the **Console** view in Eclipse as follows.



The newly built application WAR file will be located under the *demo\_app\demo\_app* directory named *dlgc\_sample\_demo.war*. In order to deploy this application, follow the same deployment instructions as described in [Installation and Configuration of the Dialogic JSR 309 Connector Demo](#).

## Configuring Eclipse Project and TeleStax Application Server Deployed Application for Remote Debugging

In order to connect the newly created project to the deployed WAR file in the Application Server debugging purposes, developers need to do the following:

1. [Configuring the Application Server Platform for Remote Debugging](#)
2. [Eclipse Project Configuration for Remote Debugging](#)

### Configuring the Application Server Platform for Remote Debugging

Configure the Application Server platform for remote debugging as follows:

1. Stop the Application Server.
2. Edit *standalone.conf*:

```
${JBOSS_HOME}/bin/standalone.conf
```

3. Find the line below and uncomment it as illustrated below:

```
# Sample JPDA settings for remote socket debugging
```

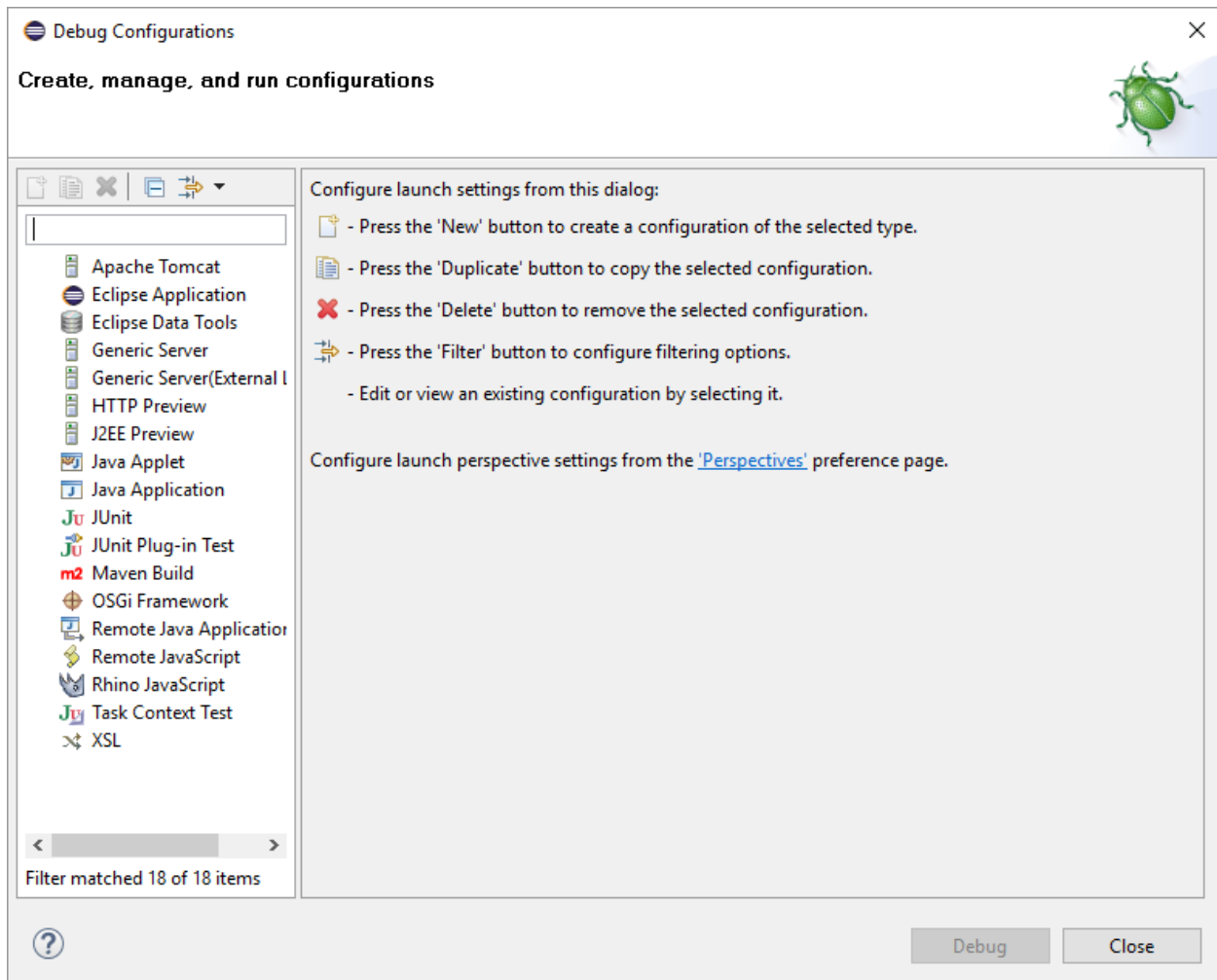
```
JAVA_OPTS="$JAVA_OPTS -Xrunjdwp:transport=dt_socket,address=8787,server=y,suspend=n"
```

**Note:** The socket address specified above is 8787 by default but any port of choice can be used. Any port used needs to be enabled in a firewall in order to allow communication through it.

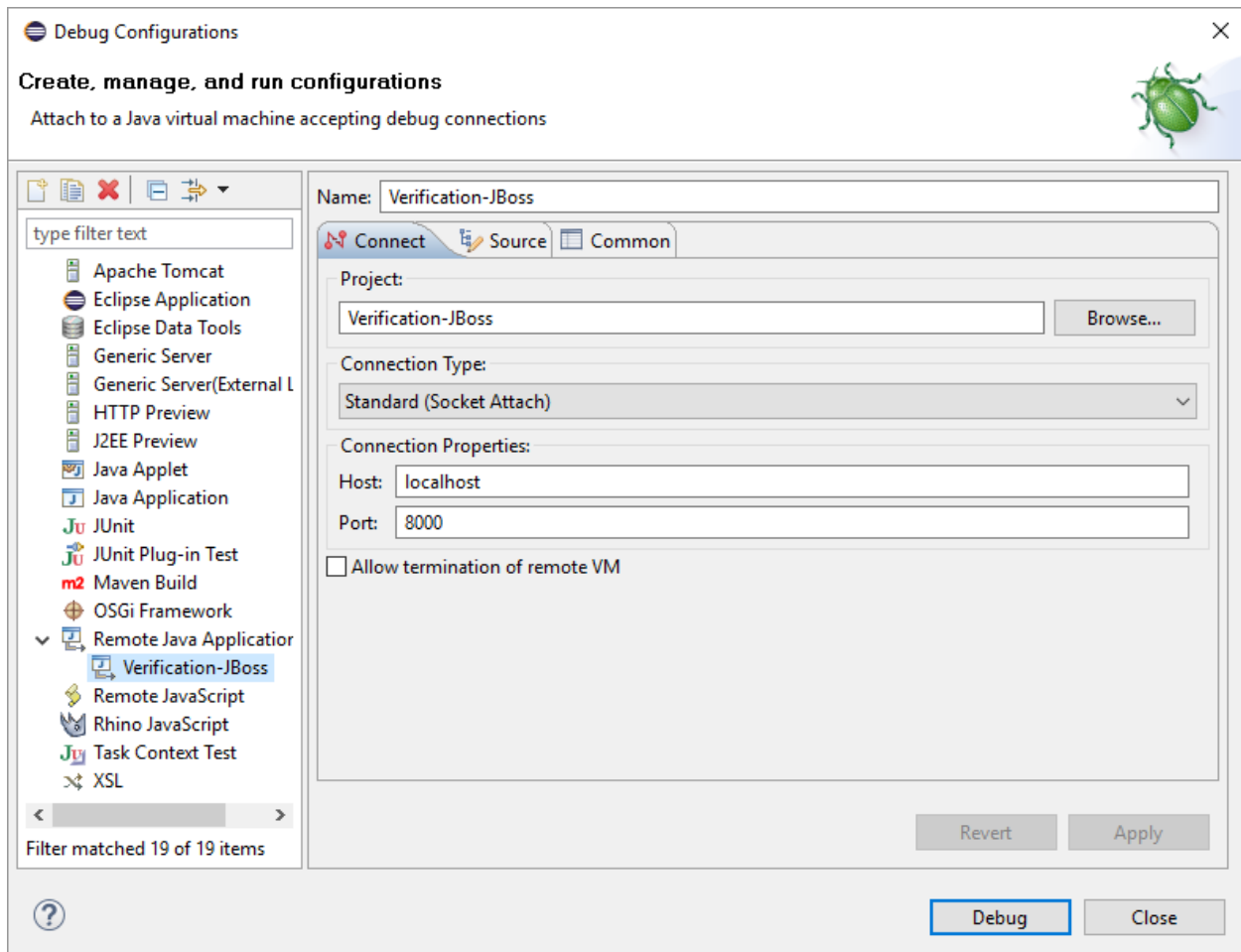
4. Start the Application Server and make sure that there are no errors in the console.

## Eclipse Project Configuration for Remote Debugging

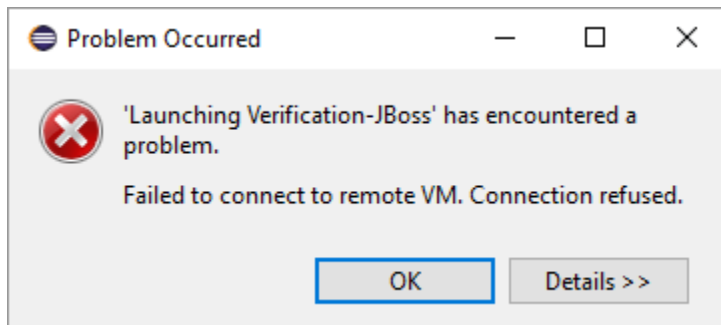
To configure the existing and working Dialogic JSR 309 Connector project, the remote debugging section needs to be configured. In Eclipse, go to the **Run** menu and click **Debug Configurations**.



1. In the **Debug Configurations** window, double-click **Remote Java Application**. The project name should be automatically added.

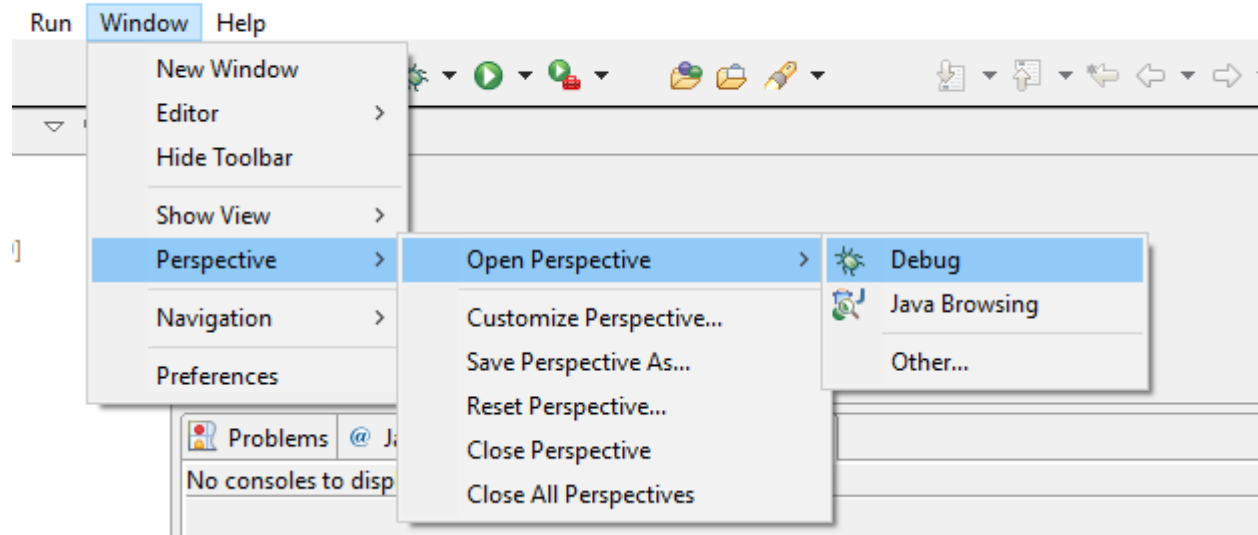


2. In the **Connection Properties** field, specify the host address and the port address of the J2EE platform with the deployed application for the debugger to connect to.
3. Click **Debug**. Provided that Application Server is already running and that debugging port 8787 is accessible, remote debugging should connect. If not successful, the following message appears. Check your configuration and try again.

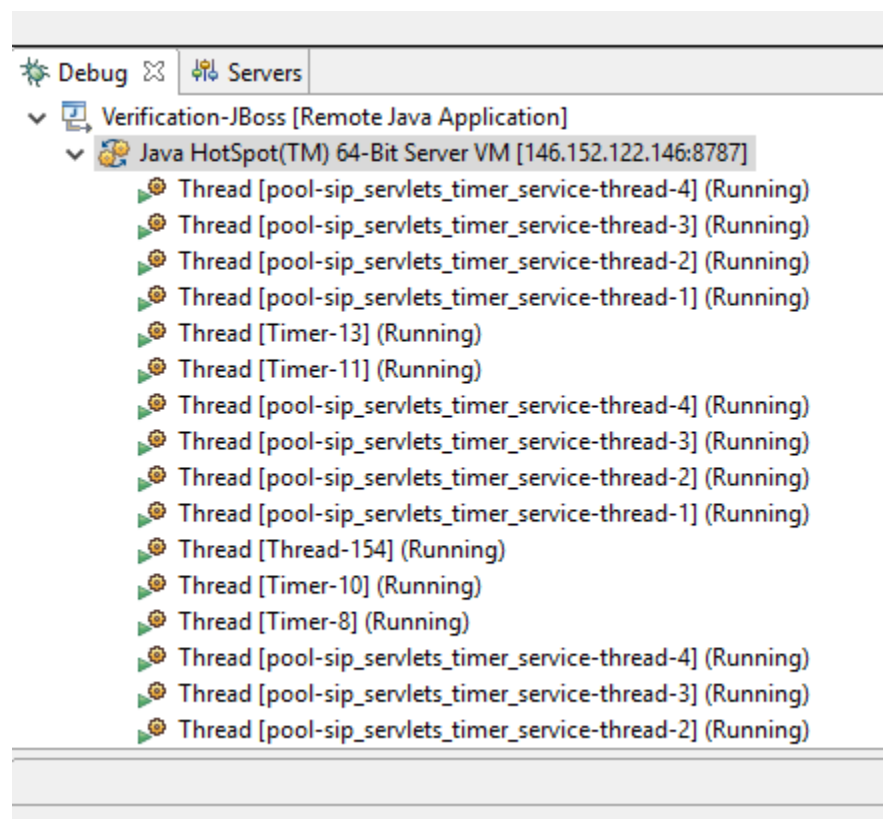


**Note:** If you are already connected and you try to connect again, the same error will be reported.

The way to verify that debugging session has been established between Eclipse and the Application Server platform is to click **Window > Perspective > Open Perspective > Debug**.



Once on the **Debug** screen, a successful debugging connection will be shown as follows. The Eclipse project is connected to the build application that is deployed in the TeleStax Application Server.



## 7. Appendix A: Dialogic JSR 309 Connector Environment Setup

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This section describes, in detail, how to set up the Dialogic JSR 309 Connector environment. For system requirements and supported platforms, see [Dialogic JSR 309 Connector Requirements](#).

This section does not go into the details of the Application Server platform, but it will help build the Application Server quickly for use.

It should be noted that OS level configuration should include the following:

- Enable NTP (Network Time Protocol)
- Enable ports in firewall (if applicable)

**Note:** The following IP ports must be enabled in the firewall for the system to operate correctly: 8080 (TCP), 9990 (TCP), 5080 (UDP and TCP), and optional remote debugging port 8787 (TCP).

If you need further details on TeleStax Application Server, visit [www.telestax.com](http://www.telestax.com).

### Installing and Configuring the TeleStax JBoss Application Server

**Note:** If you are familiar with TeleStax AS or are planning to deploy on an existing TeleStax setup, proceed to [Installing the Dialogic JSR 309 Connector](#).

This section describes the installation and configuration instructions for the Application Server:

- [Preinstallation Setup](#)
- [TeleStax Installation](#)
- [TeleStax Configuration](#)
- [Firewall Configuration](#)
- [TeleStax Startup](#)
- [TeleStax Verification](#)

#### Preinstallation Setup

Install the OS supported by TeleStax. Refer to [www.telestax.com](http://www.telestax.com) for details. For the purpose of this documentation, a CentOS 6.4/6.5 64-bit operating system with minimum installation options was used. Follow the steps below:

1. Log in to the newly installed operating system and install zip/unzip package:

```
yum install zip unzip
```

2. Copy and install the latest 1.7 version of JDK .rpm package, which can be downloaded from [www.oracle.com](http://www.oracle.com).

```
rpm -ivh jdk-7u80-linux-x64.rpm
```

3. Under the user home root directory, edit the `.bashrc` file and include the following export lines:

For TelScale AS:

```
export JAVA_HOME=/usr/java/jdk1.7.0_80
export JBOSS_HOME=/home/jboss/TelScale-SIP-Servlets-7.0.3.329-jboss-as-7.2.0.Final
```

For Mobicents AS:

```
export JAVA_HOME=/usr/java/jdk1.7.0_80
export JBOSS_HOME=/home/jboss/mss-3.1.633-jboss-as-7.2.0.Final
```

4. Save the file and execute the following command for the changes to take effect:

```
source /home/jboss/.bashrc
```

5. Edit the `/etc/hosts` file and add a line at the very top of the file that corresponds to your system's IP address and the hostname.

Here is an example of `hosts` file content:

```
xxx.xxx.xxx.xxx TeleStaxAS
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
```

**Note:** You will have to be a root to have privileges to do modify the `hosts` file.

**Note:** The hostname should match exactly what is returned by executing "hostname" from the command prompt.

**Note:** This must be the first line in the `/etc/hosts` file. If not, you might encounter a "503 Service Unavailable" error.

6. To activate the changes made to the `hosts` file, run the following command at the prompt:

```
service network restart
```

## Firewall Configuration

Several ports must be allowed to go through the firewall. Ports that are going to be in use are 8080, 9990, 5080, and the optional remote debugging port 8787. To do this, edit the `/etc/sysconfig/iptables` file:

```
vi /etc/sysconfig/iptables
```

Then, add the ports as illustrated below:

```
# Firewall configuration written by system-config-firewall
# Manual customization of this file is not recommended.
*filter
:INPUT ACCEPT [0:0]
:FORWARD ACCEPT [0:0]
:OUTPUT ACCEPT [0:0]
-A INPUT -m state --state ESTABLISHED,RELATED -j ACCEPT
-A INPUT -p icmp -j ACCEPT
-A INPUT -i lo -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 22 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 8080 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 9990 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 5080 -j ACCEPT
-A INPUT -m state --state NEW -m udp -p udp --dport 5080 -j ACCEPT
```

```
#optional port needs to be opened if platform remote debugging will be used.
```

```
-A INPUT -m state --state NEW -m tcp -p tcp --dport 8787 -j ACCEPT
```

```
-A INPUT -j REJECT --reject-with icmp-host-prohibited
```

```
-A FORWARD -j REJECT --reject-with icmp-host-prohibited
```

```
COMMIT
```

Save the file and restart the firewall for the changes to take effect by executing the following command:

```
service iptables restart
```

## TeleStax Installation

There are many ways to install the platform, but for this example, the user "jboss" is created and used. The example "jboss" user account will be used throughout the installation process as a home directory for the platform.

After creating the "jboss" user account in the system, log in to that account. Then, copy the desired platform distribution to the user home directory. In this example, the user home directory is */home/jboss*.

Copy the following to the system under the */home/jboss* directory and unzip them.

```
(TelScale AS) - TelScale-SIP-Servlets-7.0.3.329-jboss-as-7.2.0.Final.zip
```

```
(Mobicents AS) - restcomm-sip-servlets-3.1.781-jboss-as-7.2.0.Final.zip
```

## TeleStax Configuration

To properly configure the newly installed platform in a system, specific modifications of the system configuration need to take place.

Edit the *standalone-sip.xml* file:

```
${JBOSS_HOME}/standalone/configuration/standalone-sip.xml
```

Locate the lines that need to be modified. They are identified below in **RED** in the "Before" section. Replace the lines in **RED** in the "Before" section with the lines in **RED** from the "After" section.

### Before

```
<subsystem xmlns="urn:jboss:domain:webservices:1.2">
    <modify-wsdl-address>true</modify-wsdl-address>
    <wsdl-host>${jboss.bind.address:127.0.0.1}</wsdl-host>
    <endpoint-config name="Standard-Endpoint-Config"/>
    <endpoint-config name="Recording-Endpoint-Config">
...
<interfaces>
    <interface name="management">
        <inet-address value="${jboss.bind.address.management:127.0.0.1}"/>
    </interface>
    <interface name="public">
        <inet-address value="${jboss.bind.address:127.0.0.1}"/>
    </interface>
    <!-- TODO - only show this if the jacobd subsystem is added -->
    <interface name="unsecure">
        <!--
```



```

~ Used for IIOP sockets in the standard configuration.
~
~ To secure JacORB you need to setup SSL
-->
<inet-address value="${jboss.bind.address.unsecure:127.0.0.1}"/>
</interface>
</interfaces>

```

## After

```

<subsystem xmlns="urn:jboss:domain:webservices:1.2">
  <modify-wsdl-address>true</modify-wsdl-address>
  <wsdl-host>${jboss.bind.address: TeleStaxAS}</wsdl-host>
  <endpoint-config name="Standard-Endpoint-Config"/>
  <endpoint-config name="Recording-Endpoint-Config">
...
<interfaces>
  <interface name="management">
    <inet-address value="${jboss.bind.address.management: TeleStaxAS}"/>
  </interface>
  <interface name="public">
    <inet-address value="${jboss.bind.address: TeleStaxAS}"/>
  </interface>
  <!-- TODO - only show this if the jacorb subsystem is added -->
  <interface name="unsecure">
    <!--
      ~ Used for IIOP sockets in the standard configuration.
      ~
      ~ To secure JacORB you need to setup SSL
    -->
    <inet-address value="${jboss.bind.address.unsecure: TeleStaxAS}"/>
  </interface>

```

## TeleStax Startup

To run the Application Server, go to the following directory:

```
${JBOSS_HOME}/bin
```

Then, execute the following command:

```
./standalone.sh -c standalone-sip.xml
```

```

=====
==
==      Thank you for running Mobicents Community code      ==
==  For Commercial Grade Support, please request a TelScale Subscription  ==
==                        http://www.telestax.com/                        ==
==
=====

2014-04-22 11:59:44,936 WARN  [SipStackImpl] (main) Could not register the stack as a Notification L
istener of jboss.system:service=Logging,type=Log4jService runtime changes to log4j.xml won't affect
SIP Stack Logging
Apr 22, 2014 11:59:44 AM org.apache.catalina.startup.Catalina start
INFO: Server startup in 23281 ms

```

To stop the service, press **Ctrl+C**.

## TeleStax Verification

Once the Application Server service is started, access to the TeleStax JBoss Web Administration Console can be done from any browser by going to the following URL:

`http://<as_ip_address>:8080`



By default, you will not be able to access the Administration Console. If you try to access it, you will see the following screen:

By default the realm name used by AS 7 is "ManagementRealm" this is already selected by default.



After you have added the user follow this link to Try Again.

Because no user access has been set up yet, follow these steps to enable user access:

Go to the `/opt/mss-3.1.620-jboss-as-7.2.0.Final/bin/` directory, and execute the following command:

```
./add-user.sh
```

Follow the prompts:

1. Select **Management User** by pressing **Enter**.
2. Press **Enter** to accept **ManagementRealm**.
3. Enter a username of your choice (for example, admin).  
**Note:** You will need these credentials to log in to the Web Console later on.
4. Enter a password and confirm it (for example, testing1!).
5. Respond "yes" to the next three questions and user access setup is complete.
6. Navigate to `http://<as_ip_address>:8080` and click **Administration Console**.
7. Enter the log in credentials you created and click **Log In**.

**Note:** You can always re-run `add-user.sh` script to change previously defined settings.



## 8. Appendix B: Updating the Dialogic JSR 309 Connector

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The Dialogic JSR 309 Connector is a set of the three files as described by the following section: [Dialogic JSR 309 Connector Requirements](#).

In the TeleStax Application Server JBoss version, the required application files are part of the application WAR file structure.

In the application WAR file, the previous versions of connector JAR files need to be removed and replaced with new versions:

```
<application_WAR_File>/WEB-INF/lib/dialogic309-M.m-(GA or SU#)-jboss.jar  
<application_WAR_File>/WEB-INF/lib/dialogicmsmltypes-M.m-(GA or SU#).jar  
<application_WAR_File>/WEB-INF/lib/dialogicmiltypes-M.m-(GA or SU#).jar
```