BEA AquaLogic® SOA Management

Installation Guide

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CHAPTER 1

Preparing for Your Installation

What's in This Release

This distribution contains the 2.6 release of BEA AquaLogic SOA Management (ALSM).

Before you Begin

Macromedia Flash Player

ALSM uses the Macromedia Flash Player (version 7.0r10 or higher) on some pages to generate various graphical displays. If your web browser does not already have the Flash Player installed, you can get the latest version at this URL:

http://www.macromedia.com/go/getflashplayer

IE Security Settings and Flash

If you use Microsoft's Internet Explorer you must make sure that your security settings are adjusted so that Internet Explorer allows the Flash player Active X control to run. To configure the settings, do the following:

1. Run Internet Explorer and select Tools > Internet Options....
2. The "Internet Options" dialog should now appear. Select the "Security" tab.

3. Select the “Medium” security level (or lower) for the “security zone” that applies to ALSM. (This will probably be either the “Internet” or “Local intranet” zones, depending on your system configuration.)
4. If you use a “Custom” security level you should click the “Custom Level...” button instead of setting a preset security level like “Medium”.
5. In the Security Settings”, scroll down and find the following two options;
   - Run ActiveX controls and plug-ins
   - Script activeX controls marked safe for scripting
6. Set them both to “Enabled” and click OK.

Configuring Windows Firewall to Accommodate a Multi-container Installation

If you are using a Window Firewall and you plan to implement the ALSM across containers (see Appendix A, “Appendix A: Installation Best Practices”), you need to configure the firewall to make it aware of the additional ports into which you installed ALSM. Please do the following:

1. Bring up the Windows Control Panel and double-click Windows Firewall.
2. In the General tab of the Windows Firewall dialog, turn on the firewall if it is not already on.
3. Click the Exceptions tab and click the Add Port... button.
4. Enter a Port Name and Port Number for each port you used in your distributed ALSM installation. For example:
   - 7001 - the standard HTTP port for WebLogic Server

Other containers use other standard ports, and you can use different port numbers for all of them; you must know what port(s) you are using.

5. For each port, you can also click the "Change Scope" button and specify that you want to allow access from all computers, only your subnet, or a custom list of IP addresses.
6. Click OK when you are finished adding ports, and then again to dismiss the Windows Firewall dialog.

General WebLogic Server Information

- Obtain a valid ALSM 2.6 license from BEA and add it to the WebLogic Server installation on which you will install ALSM. For inforrmation about installing and updating licemse files, see http://e-docs.bea.com/common/docs92/install/license.html.
- Ensure that WebLogic Server is installed and running before you start installing SOA Management System.
- Recommended maximum heap size for WebLogic Server's VM is 1024MB.
- If using Sun's JVM, recommended maximum perm size is 256MB or larger.
- Recommended thread pool size is 25.
- If you plan to use ALSM sample Java key stores, you must use JDK 1.4.2_05 or higher.
- If you are running ALSM on Unix-like systems, you must restart your server with the following property set before you run reports using the service-level management component:

  ```
  -Djava.awt.headless=true
  ```

WebLogic Server 9.2 MP1

If you are using WebLogic Server 9.2 MP1 (Maintenance Pack 1), and are installing into a managed server environment, you must manually install SOA Management System. Please see "Appendix C: Creating War Files for Manual Installation" on page C-7 for details.

CHAPTER 2

Installing ALSM

All platforms, including Windows and Unix platforms, use a product installation file that does not contain a JVM. You specify the path the JVM you wish to use when you run the installation script.

The following instructions explain how to install ALSM and deploy it to WebLogic Server.

Prepare the Properties File

1. Copy the distribution file to the target machine or to a machine that is accessible to the target machine over your network, and extract it.
2. The installer consists of 3 components: an installation script, a properties file, and an installer executable file (that the script silently runs):
   - Windows
     - install.cmd
     - SMSWindowsAquaLogic.properties
     - SOAManagementInstallernoVM.exe
   - Unix (Solaris or Linux)
     - SOAManagementInstallernoVM.bin
     - install.sh
     - SMSUnixAquaLogic.properties

3. Before you run the installer, you must edit the appropriate (Windows or Unix) properties file. The following table describes the installation properties.

Table 2-1 Installation Property List

Property Name	Description	Default Value
AP_ACCEPT_LICENSE_AGREEMENT	User must not change the default value.	true
INSTALLER_UI	Installer type. User must not change the default value.	silent
AP_INSTALL_OPTION_INPUT_F5_REQUESTED	User must not change the default value	0
AP_BEA_FEATURE_SET	User must not change the default value.	true
USER_INSTALL_DIR	Location in which ALSM is to be installed. User editable. Must use double backslash as path separator on Windows.	C:\\bea\\AquaLogic (Windows) /opt/bea/SMSAquaLogic (Unix)
WL_HOME_INPUT	The location of WebLogic directory under *BEA_HOME* to which ALSM is to be deployed. User editable.	C:\\bea92\\weblogic92 (Windows) /opt/bea92/weblogic92 (Unix)
WL_HOST_INPUT	Host name of WebLogic domain to which ALSM is to be deployed. User editable.	localhost
DOMAIN_LISTENING_PORT	Port number of WebLogic domain to which ALSM is to be deployed. User editable.	9001

Table 2-1 Installation Property List

Property Name	Description	Default Value
CONTAINER_ADMIN_USERNAME_INPUT	Admin user name of WebLogic domain to which ALSM is to be deployed. User editable.	weblogic
CONTAINER_ADMIN_PASSWORD_INPUT	Admin password of WebLogic domain to which ALSM is to be deployed. User editable.	weblogic
AP_INSTALL_OPTION_INPUT_CREATE_NEW_SPHERE	A new ALSM sphere will be installed if value set as 1. Comment out this property and use property 'AP_INSTALL_OPTION_INPUT_USE_EXISTING_SPHERE' if installing into an existing sphere.	1
AP_INSTALL_OPTION_INPUT_USE_EXISTING_SPHERE	Installing into an existing sphere if value set as 1. Comment out this property and use property 'AP_INSTALL_OPTION_INPUT_CREATE_NEW_SPHERE' if installing a new sphere.	Commented out
FEATURES_TO_INSTALL	Choose what ALSM features to install. Its value can be one of the followings: • ContainerAndProxy,Install_Samples • ExmOnly • URL of existing sphere	ALL

Table 2-1 Installation Property List

Property Name	Description	Default Value
SPHERE_URL_INPUT	Only required when value of property 'AP_INSTALL_OPTION_INPUT_USE_EXISTING_SPHERE' set to 1.	http://localhost:9480/apcentral/sphere
AP_INSTALL_OPTION_INPUT_CUSTOMIZE	Choose if install the tutorial and sample webapps. Its value can be one of the followings: • 1: install • 0: not install	1

Run the Installer

1. Obtain a valid ALSM 2.6 license from your BEA sales representative and add it to the WebLogic Server installation on which you will install ALSM. For information about installing and updating license files, see `http://e-docs.bea.com/common/docs92/install/license.html`.
2. Ensure that the WebLogic Server domain on which ALSM is to be installed is running.

Note: For information about recommended heap size, thread pool size, and so on, see General WebLogic Server Information in Chapter 1, "Preparing for Your Installation."

Windows

1. Ensure that editable properties in `SMSWindowsAquaLogic.properties` are modified properly.
2. Start the installer on command prompt

   ```
   install.cmd full_path_to_JVM
   ```

   For example

   ```
   install.cmd C:\\bea\\weblogic92\\jdk150_06
   ```

   – Use the JDK bundled within WebLogic Server for installation of ALSM by setting the `JAVA_HOME` environment variable to point to the JDK location under WebLogic Server's installation directory.

– Use double backslash as the path separator.

Solaris

1. Grant writing and execution privileges on the following files using the chmod command:

   ```
   chmod u+wx ./SMSUnixAquaLogic.properties
   chmod u+wx ./install.sh
   chmod u+x ./SOAManagementInstallernoVM.bin
   ```

2. Ensure that editable properties in `SMSUnixAquaLogic.properties` are modified correctly.
3. Start the installer

   ```
   install.sh full_path_to_JVM
   ```

   For example

   ```
   ./install.sh /bea/weblogic92/jdk150_06
   ```

   Note: Use the JDK bundled within WebLogic Server for installation of ALSM by setting the `JAVA_HOME` environment variable to point to the JDK location under WebLogic Server's installation directory.

Linux

1. Grant writing and execution privileges on the following files using the chmod command:

   ```
   chmod u+wx ./SMSUnixAquaLogic.properties
   chmod u+wx ./install.sh
   chmod u+x ./SOAManagementInstallernoVM.bin
   ```

2. Ensure that editable properties in `SMSUnixAquaLogic.properties` are modified correctly.
3. Start the installer

   ```
   install.sh full_path_to_JVM
   ```

   For example

   ```
   ./install.sh /bea/weblogic92/jrocket90_150_06
   ```

   Note: Use the JDK bundled within WebLogic Server for installation of ALSM by setting the `JAVA_HOME` environment variable to point to the JDK location under WebLogic Server's installation directory.

What Gets Installed?

When you install ALSM, the following web applications are installed into WebLogic Server:

- apcentral - contains the sphere and all sphere-wide services (one per ALSM system)
- apcontainer - contains the container services and is installed in each container that is part of a sphere
- apmonitor - contains the agent for processing messages out of band (used with the nano agent)
- apasc - the ALSM Management Console web application (one per ALSM system)
- apexm, apexmrt - the exception management components (one per ALSM system)
- apwebui, aqms, notifier, domain - the service level management components

In addition, several sample web applications are installed:

- bookmart
- bookmartClient
- tutorial
- tutorialClient
- tutorialBackup

After Installation

Check for Errors

Check install log file `AmberPoint_InstallLog.log` at `<ALSM_Install_Directory>`. Ensure the summary part (at the beginning of the log file) indicates all steps are successful and there is no error.

Verify Deployment to WebLogic Server

1. Launch and log in to the WebLogic Server Console. The URL is: `http://localhost:port/console`.
2. Navigate to Deployments > Web Application Modules

3. Ensure that the following modules are listed:
   - apacsc
   - apcentral
   - apcontainer
   - apexm
   - apexmrt
   - apmonitor
   - apwebui
   - bookmart
   - bookmartClient
   - tutorial
   - tutorialBackup
   - tutorialClient

Setting up ALSM databases

A Hypersonic database system is installed along with ALSM. By default, ALSM is configured to use this database system for persistent storage. With the exception of the database for the ALSM container service, the Hypersonic database system is intended only for demonstration and initial evaluation purposes. The Management Configuration Database for the AP_Container_Service is used primarily for caching. There is no advantage in switching databases to balance the overhead of setting up multiple databases (since it is likely there will be multiple container services). For all other ALSM databases used in development, testing, and production systems, you should configure ALSM to use a production-level, external database system. For information on configuring ALSM to use an external database system, see "Appendix B: Setting Up ALSM Databases" on page B-3.

Next Steps

1. Install the nano agents.

   See '"Installing the nano agents" at the following URL:

   http://edocs.bea.com/alsm/docs26/webhelp/index.htm

2. Install the JAX-RPC client-side agent.

   See “Installing the client-side agent” at the following URL:

   http://edocs.bea.com/alsm/docs26/webhelp/index.htm

Starting and Shutting Down ALSM

You can start ALSM by running the `server/bin/startup.bat|startup.sh` script or choosing Start > ALSM > Start Server from the Start menu. (This is the default location in the Start menu.).

Note: If you are running ALSM on Unix-like systems, you must restart your server with the following property set before you run reports in Service Level Manager:

- `-Djava.awt.headless=true`

Starting WebLogic Server automatically starts ALSM.

After starting ALSM, you access its facilities and administer it using a web-based interface called the ALSM Management Console.

Logging into the Management Console

To log into the Management Console:

1. Open a URL of the following form in a web browser:

   `http://host_name:port_number/apasc`

The port number depends on how WebLogic Server is configured. By default, the WebLogic Server installer sets the port number to 7001.

You can also choose Start > ALSM > Launch Management Console if you are running the Management Console on the host machine.

After you start the Management Console, a log-in page is displayed. Log in using the appropriate credentials, as described in"ALSM Application Roles" on page 3-2.

ALSM Application Roles

The Management Console uses roles to authorize access to various parts of the user interface.

ALSM applications rely on the WebLogic Server container for authentication and association of roles with users. The roles of the ALSM System administrator (amfadmin, slmadmin, exmadmin) are automatically mapped to the Administrators group defined in WebLogic Server. The roles of ALSM user (amfuser, slmuser, exmuser) are mapped to the groups Operators and Monitors. The roles of ALSM observer (amfobserver, slmobserver, exmobserver) are mapped to the group Everyone, granting all authenticated users observer privileges. The following table lists the ALSM application roles and their default container role mapping:

Table 3-1 Role Mapping in WebLogic Server

ALSM Application Roles	Container Group
amfadmin	Administrators
exmadmin	
slmadmin	
amfuser	Operators, Monitors
exmuser	
slmuser	
amfobserver	Everyone
exmobserver	
slmobserver	
amf_limited_observer	
exm_limited_observer	
slm_limited_observer	

You can modify these default mappings using the WebLogic Server console. For more information on setting up user accounts and assigning roles, see the "Authentication and Role Mapping" topic of the ALSM online help

Logging out of the ALSM Management Console

To log out of the ALSM Management Console, click the Logout link in the upper-right corner of the page.

Shutting down ALSM

You can shut down (and restart) ALSM using the WebLogic Server Administration Console.

You can shut down ALSM by choosing Start > ALSM > Stop Server or running the `server/bin/shutdown.bat|startup.sh script`.

Uninstalling ALSM

If you have installed multiple instances of ALSM, there will only be one entry in the Add/Remove Programs panel, likely the most recent one. You can find the installation directory and version info for the instance the Add/Remove entry is referring to by clicking on the Support Info link for that entry.

Note: If you uninstall a container, you should also unregister it in the Management Console.

Uninstalling from Multiple Installations

If you want to uninstall a particular instance ALSM, whether it has a Add/Remove Programs entry or not, you can go into the `installation_base_directory/UninstallerData` and run the executable (`.exe` or for Unix, `.bin`) to launch the uninstaller. The uninstaller Introduction panel displays the base installation directory of the instance you are uninstalling. You can use this directory to confirm the instance you are uninstalling. The rest of the process is identical to an uninstallation launched from the Add/Remove Programs Panel.

Ensure that WebLogic Server is running when you uninstall ALSM. WebLogic Server will shut down the Management Foundation for you when you run the uninstaller.

To uninstall ALSM from a Windows system

1. Shut down ALSM if it is running.
2. Choose Start > Control Panel.
3. Double-click Add/Remove Programs.

4. Select ALSM and click Change/Remove.
5. Follow the instructions in the Uninstallation Wizard.

Note: If you used the default settings in the Database Setup screen, the databases will be cleaned up during the uninstallation of ALSM. If you modified the default settings, the databases will not be removed by the ALSM Uninstaller. You must manually remove the databases, especially if you intend to reinstall ALSM.

CHAPTER 5

Documentation

You can access ALSM documentation by clicking the Help button in the ALSM Management Console. The documentation is presented in an online help format. The documentation set includes a printable Introduction to ALSM in PDF format, several tutorials, and context-sensitive help topics.

Hosted versus Local Documentation

When you access the documentation by clicking the Help button, you are actually viewing documentation hosted at http://edocs.bea.com/alsm/docs26. By hosting the documentation, we can give you access to the most up-to-date version.

If you are working without an Internet connection and want to view this documentation locally, go to http://edocs.bea.com/alsm/docs26/localdoc/ and follow the instructions for downloading and installing the documentation. Then, in the ALSM Management Console, click the Set Local/Remote Documentation link in the E-menu and then choose the Local radio button.

Note: We recommend that whenever possible you use hosted documentation.

Sample Web Applications

The AquaLogic SOA Management tutorials contain a series of hands on exercises that demonstrate the functionality provided by the system components. To use the tutorials, see the Tutorials section in the online help, available at the following URL:

http://edocs.bea.com/alsm/docs26/webhelp/index.htm

The online tutorials use several sample web applications named bookmart, bookmartClient, tutorial, tutorialBackup, and tutorialClient. The web services deployed in these applications run in the same container as ALSM services

CHAPTER 6

Troubleshooting and Limitations

Troubleshooting

Here are solutions to common problems that may arise during the installation of the product:

Problem:

I installed the proper version of the JDK, but when I open a command window and type java -version, I get the wrong version number.

Solution:

Ensure that %JAVA_HOME%\bin is at the FRONT of your path setting.

Problem:

When attempting to install on a UNIX-like platform, I receive an error stating that the machine's temporary space is insufficient. The error varies, but looks something like the following:

```
[my_username@qa-redhat 4.3]$ chmod +x *Lin*

[my_username@qa-redhat 4.3]$ ./*Lin*

Preparing to install...

WARNING: /tmp does not have enough disk space!

Attempting to use /home/my_username for install base and tmp dir.

Extracting the JRE from the installer archive... Unpacking the JRE...

Extracting the installation resources from the installer archive...The size
of the extracted files to be installed are corrupted.  Please tryto download
```

```
the installer again and make sure that you download using 'binary' mode.
Please do not attempt to install this currently downloaded copy.
```

Solution:

The installer extracts the software to a temporary space before installing it. By default, the temporary space is in `/tmp`. Approximately 150 MB of free space is required. If `/tmp` doesn't have enough free space, specify a different directory as the temporary space. For example:

```
IATEMPDIR=/home/my_username/tmp

export IATEMPDIR

echo $IATEMPDIR
```

Typically, your home directory will provide enough free space as long as the disc has sufficient space.

Problem:

Users of Windows 2003 with SP1 or Later

ALSM might not launch, or might exit with a system error, because of a new security feature in Windows. This problem can also occur on certain configurations of Windows XP with SP2 or later installed.

Solution:

To avoid this problem, you must add the installer executable to an exclusion list. To find the exclusion list:

1. Open the System Properties control panel.
2. Click the Advanced tab.
3. Click the Performance Settings button.
4. Click the Data Execution Prevention tab on the Performance Settings window.
5. If DEP is turned on for all programs and services, then add the ALSM installer executable to the list.

For additional information on this subject, refer to the Microsoft technical note located at:

http://www.microsoft.com/technet/prodtechnol/winxppro/maintain/sp2mempr.mspx. The applicable section is titled, "Per-application DEP Configuration".

Limitations

Limitation:

Plug-in agents cannot manage services in a web application in which there is a security constraint applied to the entire application.

Workaround:

Apply the security constraint to each service in the application.

Appendix A: Installation Best Practices

Depending on the nature of your enterprise system and your supporting environment, you can make choices during the installation of ALSM that can optimize its performance.

The ALSM installer allows you to install all ALSM components into a single container. This installation scenario is useful for demonstrations and for learning how to use the product. However this scenario might not scale successfully for a number of reasons.

As with any software, you want to use resources efficiently. Therefore, you might want to separate some of the ALSM components and install them on different machines and/or in different containers. For example, depending on what your service level monitoring requirements are, it may be best to put the service level management components into their own environment. This will lessen the impact on memory resources by dividing processes across CPUs/ environments.

Your logging demands also impact system performance. For example, if you log all messages, rather than, say, only messages that generate exceptions, you might want to install exception management components into their own environment.

Finally, if you install all components into a single container and then run into memory problems, it will be hard to diagnose which part of the system is causing the problem. Memory and CPU usage will vary depending on the number of services, correlations, operations in your system, as well as what you configured ALSM to do.

To install different components into different containers, note that you will need to run the installer multiple times. For example, if you want to install a sphere in one container, exception management components into another, and service level management components into a third container, you will run the installer three times.

If you are considering installing all components in a single environment for anything other than demonstrations/training purposes, please consult with BEA Technical Support.

Appendix B: Setting Up ALSM Databases

For information about how to switch to an external database after installation, see the ALSM online help at http://edocs.bea.com/alsm/docs26/webhelp/index.htm. Locate the section "Configuring and Administering ALSM Components/Database Configuration/Administering Databases".

Supported Database Drivers

Table B-1 Database Drivers

Database	Driver
default Hypersonic	org.hsqldb.jdbcDriver.
Microsoft SQL Server (Java)	com.microsoft.jdbc.sqlserver.SQLServerDriver
Oracle	oracle.jdbc.OracleDriver
IBM DB2 UDB	com.ibm.db2.jcc.DB2Driver
Sybase ASE	com.sybase.jdbc3.jdbc.SybDriver

Connection URLs

Microsoft SQL Server (Java)

The connection URL for Microsoft SQL Server (Java) can use two forms.

Note: In both forms you must set the `SelectMethod` property to cursor, the `SendStringParametersAsUnicode` property to false, and the `DatabaseName` property to the name of the database in which you want to create the ALSM tables.

Form 1:

```
jdbc:microsoft:sqlserver://Server_Name:Port_Number[;Property_Name=Property_Value…]
```

Example

`jdbc:microsoft:sqlserver://server1:1433;SelectMethod=cursor;DatabaseName=sphereServiceDB;``SendStringParametersAsUnicode=false`

`jdbc:microsoft:sqlserver://server1:1433;SelectMethod=cursor;DatabaseName=domains;``SendStringParametersAsUnicode=false`

Form 2:

```
jdbc:microsoft:sqlserver://Server_Name\\Instance_Name[;Property_Name=Property_Value…]
```

Example

`jdbc:micsrosoft:sqlserver://server1\\NetSDK;SelectMethod=cursor;DatabaseName=sphereServiceDB;``SendStringParametersAsUnicode=false`

For more information about this connection URL, refer to the Microsoft SQL Server 2000 Driver for JDBC, User's Guide and Reference manual.

Oracle

The connection URL for Oracle uses the form:

```
jdbc:oracle:Driver_Type:@Database_Specifier
```

Example

`jdbc:oracle:thin:@svr3:1521:svc01` (example using the service ID)

`jdbc:oracle:thin:@svr3:1521/name01` (example using the service name)

For more information about this connection URL, refer to the Oracle 9i, JDBC Developer's Guide and Reference manual.

IBM DB2 UDB

The connection URL for IBM DB2 UDB uses the form:

```
jdbc:db2://Server_Name:Port_Number/Database_Name
```

Example

`jdbc:db2://server1:50000/`**`sphereServiceDB`**

Sybase ASE

The option 'DDL in tran" should be set to true. This can be done through the Sybase central GUI application or with the sp_dboption stored procedure.

```
jdbc:sybase:Tds:Server_Name:Port_Number/Database_Name
```

Example

```
jdbc:sybase:Tds:dbserver:5000/SLM
```

Appendix C: Creating War Files for Manual Installation

If you are running WebLogic Server 9.2 MP1 and using managed servers, then you must deploy all of the ALSM war files to the managed servers manually. All of the war files should be deployed to the managed server; `apcontainer.war` must be deployed to the Admin server.

The installer generates the following files in the `<ALSM_install>/installer_work/deploy_stage` directory:

- apasc.war
- apcentral.war
- apcontainer.war
- apexm.war
- apexmrt.war
- apwebui.war
- apmonitor.war
- ap-mto-runtime.jar
- aqms.war
- domain.war
- notifier.war

Optional

- apsmshelp.ear
- bookmartClient.war
- bookmart.war
- tutorialBackup.war
- tutorialClient.war
- tutorial.war

Deploying the war files

We suggest that you deploy the generated files in the following order:

Basic management components

1. Sample web services (tutorial.war, tutorialClient.war, tutorialBackup.war, bookmart.war, bookmartClient.war
2. apcentral.war
3. apcontainer.war
4. apasc.war
5. apmonitor.war

Exception management components

1. apexmrt.war
2. notifier.war
3. apexm.war

Service level management components

1. aqms.war
2. notifier.war

   Note: If you are installing the service level components in the same container as the exception management components, you do not need to install another copy of this

3. domain.war
4. apwebui.war

Enabling Observation of Service Dependencies

You can view the dependencies among services in the ALSM Management Console. To enable this functionality, complete the following procedure:

1. Copy `ap-mto-runtime.jar` to `/WebLogic_home/weblogic81/server/lib`. You should add this file to any server that hosts services for which you want to observe dependencies. ALSM does not track dependencies of its system services, so you do not need to place this file in the servers hosting the sphere, or service-level or exception management components unless those servers also host business services.
2. In that same directory (for each server into which you copied the JAR file), edit commEnv.cmd and add the following line to `WEBLOGIC_CLASSPATH`:

   ```
   %WL_HOME%\server\lib\ap-mto-runtime.jar
   ```

   Example

   ```
   set
   WEBLOGIC_CLASSPATH=%WL_HOME%\server\lib\ap-mto-runtime.jar;%JAVA_HOME%\
   lib\tools.jar;%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib
   \weblogic.jar
   ```

   Note: If you are running a WebLogic Server managed instance, you can add the JAR to the front of the managed instance's classpath.

3. Restart WebLogic Server.