Configuring external Java environment connections

The IMS Universal drivers support Java™ applications that access IMS. The IMS Universal drivers are built on industry standards and open specifications, and provide flexible support for connectivity, data access methods, and transaction processing options.

IMS Universal drivers: configuring connections to IMS

The IMS Universal drivers can run in z/OS® and distributed environments, including WebSphere® Application Server for z/OS, WebSphere Application Server for distributed platforms, and WebSphere Application Server Liberty.

The IMS Universal drivers include the following adapters and drivers:

- The IMS Universal Database resource adapters, which take advantage of Java™ Platform, Enterprise Edition (Java EE) services.
- The IMS Universal JDBC driver, which support SQL calls that directly access your IMS data.
- The IMS Universal DL/I driver, which provides calls that are similar to DL/I in a Java programming interface.

When running in a distributed environment on a server such as WebSphere Application Server for distributed platforms, or in a remote z/OS environments on a server such as WebSphere Application Server for z/OS, or in WebSphere Application Server Liberty, the IMS Universal drivers connect to IMS using a type-4 connection architecture, which supports TCP/IP communications and socket management.

When running locally on the same logical partition (LPAR) as IMS, the IMS Universal drivers connect to IMS by using a type-2 connection architecture, which supports direct communication with IMS through the IMS Open Database Access (ODBA) and IMS database resource adapter (DRA) interfaces.
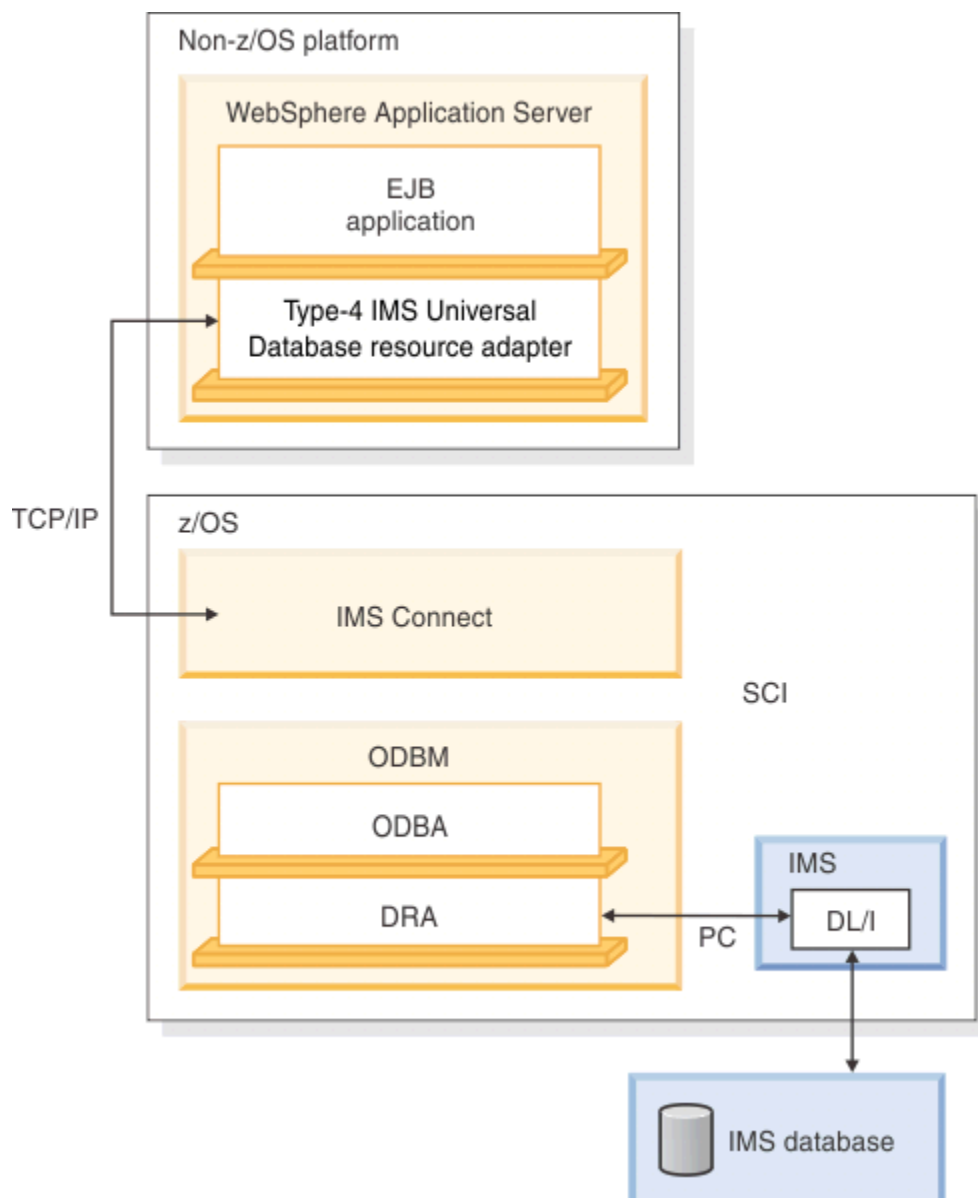
WebSphere Application Server supports all of the IMS Universal drivers in both distributed and z/OS environments.

IMS Universal drivers: WebSphere Application Server type-4 connections

Java™ applications that run on WebSphere Application Server can access IMS databases by using the type-4 connectivity provided by the IMS Universal drivers. The type-4 connectivity of the IMS Universal drivers enables Java application programs to access IMS databases from a wide variety of distributed and mainframe environments, either in stand-alone mode or under an application server, with or without XA support for global transactions.

The following figure provides an overview of a configuration that uses the type-4 connectivity of an IMS Universal Database resource adapter to connect to IMS from WebSphere Application Server for distributed platforms.

Figure 1. A WebSphere Application Server EJB application using a type-4 IMS Universal Database resource adapter

The following procedures apply to both WebSphere Application Server for distributed platforms and WebSphere Application Server for z/OS®.

Installing a type-4 IMS Universal Database resource adapter on WebSphere Application Server

You must install an IMS Universal Database resource adapter before it can be used to access IMS databases from WebSphere Application Server.

Prerequisites:
- You must configure your WebSphere Application Server by following the steps in Configuring WebSphere Application Server for EJB development with the IMS Universal drivers.
- Copy the RAR files for the IMS Universal drivers to storage that is accessible to WebSphere Application Server.

To install the IMS Universal Database resource adapter:

1. In the WebSphere Application Server administrative console, click **Resources** > **Resource Adapters** > **Resource Adapters**.
2. Click **Install RAR**.
   A dialog opens for installing the resource adapter.
3. Enter the path to the RAR files. The path can be to a local location or to a location on the server.
   - If your RAR file is located on your local workstation, select **Local path** and browse to find the file. For
     example: `C:\`*`install_directory`*`\imsudbLocal.rar`
   - If your RAR file is located on your server, select **Server path** and specify the fully qualified path to the file.

     For
     example: *`path_prefix`*`/usr/lpp/ims/ims14/imsjava/rar/imsudbLocal.rar`

4. Click **Next**.
   The configuration panel opens.
5. Click **OK**.
   The IMS Universal Database resource adapter is listed.
6. In the messages box, click **Save**.
   The save page is displayed.
7. Click **Save** to update the master repository with your changes.

Defining a connection factory for a type-4 IMS Universal Database resource adapter on WebSphere Application Server

After you install an IMS Universal Database resource adapter, you define the connection factory by using the WebSphere Application Server administrative console.

To define the connection factory for the IMS Universal Database resource adapter:

1. In the left frame of the WebSphere Application Server administrative console, click **Resources** > **Resource Adapters** > **Resource Adapters**.
2. Click the name of the IMS Universal Database resource adapter that you chose when you installed the adapter.
3. Under Additional Properties, click **J2C connection factories**.
4. Click **New**.
5. Type the following information:
   o **Name**: the name for the connection factory, for example, PhonebookCF
   o **JNDI Name**: the JNDI name for the connection factory that is unique within this server, for example, PhonebookCF
6. Click **Apply**.
   The data source is listed in the J2C Connection Factories.
7. Under Additional Properties, click **Custom Properties**.
8. Specify values defined by your installation for each of the following properties by clicking the property name and, in the configuration pane that opens, specifying the value for the property in the **Value** field. After specifying the value for a property, click OK to return to the list of properties.

   See Connecting using the IMS Universal Database resource adapter in a managed environment for a list of connection properties.

9. In the messages box, click **Save**.
10. Restart WebSphere Application Server.

Installing an EAR file that uses a type-4 IMS Universal Database resource adapter on WebSphere Application Server

After installing a type-4 IMS Universal Database resource adapter and configuring the connection factory, you must install the client application program, or EAR file, on WebSphere Application Server.

To install the EAR file on the WebSphere Application Server:

1. In the left pane of the WebSphere Application Server administrative console,
    click **Applications** > **Install New Application**.
2. Enter the path to the EAR file or locate the EAR file by clicking the **Browse** button.
    Click **Next**.
3. In the "Selection installation options" panel, accept the defaults and click **Next**.
4. In the "Map modules to servers" panel, accept the defaults and click **Next**.
5. In the "Summary" panel, verify that the options are correct and click **Next**.
    A series of messages are issued that indicate that the application is being installed.
6. After the message that indicates that your application was installed successfully,
    click **Save**.

After your application is installed, it is ready to be started.