



## Extended JavaTMRuntime Environment

Each **EJRE** is comprised of:

RTOS/processor ports of all relevant components that would be included in the RTOS/processor-targeted FJRE (for example, an RTSJ-compliant EJRE will include the ports of J9VM, FCL, and RTSJCL, but will not include the JIT compiler); and

any of the following components needed by Java applications that will be running on this EJRE:

IBM's implementations of optional API packages defined for the CDC J2ME Foundation Profile v1.1 by [JSR-219](#), namely:

- The Java Secure Socket Extension (JSSE) package comprised of J2SE java.net, javax.net, javax.net.ssl, and javax.security.cert sub-packages.
- The Java Cryptography Extension (JCE) package comprised of J2SE javax.crypto, javax.crypto.interface, and javax.crypto.spec sub-packages.
- The Java Authentication and Authorization Service (JAAS) package comprised of J2SE javax.security.auth, javax.security.auth.callback, javax.security.auth.login, and javax.security.auth.spi sub-packages.

IBM's Personal Class Library (PCL), which includes the java.applet, java.awt, and java.beans API packages compatible with the corresponding packages in [J2ME CDC Personal Profile](#) defined by [JSR-216](#).

The PCL comes with Apogee-created graphical support integrated with the java.awt package of PCL (PCL.AWT) and based on IBM's UGL (Universal Graphics Library) or the [Standard Widget Toolkit](#) (SWT) from the Eclipse open platform, whichever is more suitable for use with the low-level graphics library (LLGL) that comes with the RTOS/processor target platform. The UGL-based graphical support is comprised of the PCL.AWT-to-UGL mapping layer and UGL modified to work effectively with the graphical functions of LLGL. The SWT-based graphical support is comprised of the PCL.AWT-to-SWT mapping layer, SWT widgets modified or re-written to work effectively with LLGL, and one-to-one mapping from SWT widgets to graphical functions of LLGL.

IBM's or Apogee's implementation of Java API packages defined by various J2ME-specific [JSRs](#) (Java Specification Requests), for example:

- The RMI (Remote Method Invocation) package defined by [JSR-66](#), comprised of a subset of J2SE java.rmi classes.
- The JDBC (Java Data-Base Connectivity) package defined by [JSR-169](#), comprised of a subset of J2SE java.sql classes.
- The XML Support & Web Services package defined by [JSR-172](#), that includes a non-validating XML parser, XML-handling classes, and classes that provide various Web services.
- The API packages supporting wireless communications and "mobile media", such as:
  - Bluetooth API defined by [JSR-82](#);
  - Wireless Messaging APIs defined by [JSR-120](#) and [JSR-205](#);
  - Mobile Media API defined by [JSR-135](#); and
  - Mobile Location API defined by [JSR-179](#).

IBM's implementation of Sun's [Java Communications](#) (javax.comm) package providing the APIs supporting various communication protocols, such as SOAP, RS232, RS485, Ethernet, and Firewire.

IBM's implementation of Sun's [JINI](#) package providing the APIs that facilitate sharing of various devices (for example, printers, disk drives, etc.) by networked devices having the EJRE running on them.

The Java Data-Base Enabler ("JDBE") utility that allows the use of the JDBC package for a wider range of data bases (for example, Oracle databases).

The "client-side" runtime supports ("runtimes") for various server-client services, obtained from IBM, other Apogee's partners, or providers of open-source Java software, as long as each such runtime only uses the Java APIs in the class libraries and implementations of JSR packages included in a given EJRE. For example:

- Runtimes for the Servlets, Java Server Pages (JSP), and Java Message Server (JMS) packages from IBM's [Micro Environment Toolkit for WebSphere Studio](#) (METWS).
- Runtimes for the IPv6 (Internet Protocol Version 6) and SyncML DS & DM protocols, and for accessing IBM's DB2 Everyplace and DB2 Cloudscape databases, all from METWS.

One of the following two runtimes for the OSGi platform:

IBM's Service Management Framework (SMF) runtime.

Embedded OSGi Framework from ProSyst Software providing the client-side support for ProSyst's implementation of the OSGi platform designed specifically for embedded systems.

One of the following two runtimes for CORBA:

The ORBexpress CORBA runtime from Objective Interface Systems.

The OpenFusion RT CORBA runtime from PrismTech Corporation.

IBM's WRDI (WebSphere RFID Device Infrastructure) RFID runtime.

The application-level packages from IBM or providers of open-source Java software, as long as each such package only uses the Java APIs in the class libraries and implementations of JSR packages included in the EJRE. For example:

The Java Server Pages (JSP) package from IBM's METWS.

The XercesXML validating parser from Apache.org.

The DOM.XPath package from W3.org.

Each EJRE is still compatible with Sun's CDC J2ME platform, which means that it can pass all tests in Sun's J2ME TCK test suites for the CDC VM, Foundation Profile, other relevant profiles, and relevant JSRs. For example, an EJRE that includes the ports of PCL and RMI package can also pass all tests in Sun's J2ME TCK test suites for the Personal Profile and JSR-69 RMI package.