Technical Specifications

General

- **Pure Java.** Flux is written in pure Java. As a result, the same Flux code runs on any platform that has a supported version of Java. Flux runs equally well on Windows and Linux, as well as OSX and other environments with Java Virtual machines.
- **Supported Java Versions.** Flux 8.0 is tested on the Oracle versions of Java. Numerous customers have found Flux works with Java versions from other vendors, and Flux provides validation and support for these versions through its consulting services. We recommend using the latest JRE supported available. Supported Java versions for each Flux 8.0 maintenance release are listed below.
    - Flux 8.0.13 Build 2200 and after supports Java 10 and 11. This support became available in October of 2018.
    - Flux 8.0.11 and later: Java 7 and 8 are supported for the Flux Operations Console. The Flux engine itself is supported on Java 6, 7, and 8.
    - Flux 8.0.10: Java 6, 7 and 8
    - All earlier versions of Flux 8 require Java 6 or Java 7 to run.
- **Supported Databases.** Note: The JDBC Database Drivers being used must match the release of the database being used. Using database drivers that pre-date the database version is not supported. As an example, using JDBC Drivers for SQL Server 2000 is not supported when using SQL Server 2008. Flux uses no stored procedures to better assure portability across databases.
    - Apache Derby *(Built into Flux and the default database if none other is selected. Does not cluster. Only appropriate for light-duty use.)*
    - Oracle All versions including and after 8i.
    - IBM DB2 All versions including and after 8.1.
    - SQL Server All versions including and after SQL Server 2005. All with row versioning enabled using the Microsoft JDBC drivers.
    - PostgreSQL All versions including and after 8.1.
    - MySQL All versions including and after 5.0 using the com.mysql.jdbc.Driver JDBC driver with InnoDB tables.
    - MariaDB All versions including and after 10.2
    - H2, HSQL, Apache Derby In-memory *(In-memory database built into Flux. Data is lost on restart. Does not cluster. Only appropriate for light-duty use.)*
- **Supported Application Servers.** Using an application server is optional.
    - WebLogic Server All after and including 6.1
    - WebSphere All after and including 4.0
    - JBoss 7.1 and 7.0 (both with RestEasy disabled)
    - Tomcat All after and including 5.0
    - Jetty All after and including 5.0
- **Supported Web Browsers.** Using the Web-based Operations Console is optional. It supports the following web browsers. **NOTE:** Internet Explorer is known to perform significantly slower than other browsers. We recommend using one of the other supported browsers listed where possible.
    - Firefox 7 and newer
    - Microsoft Edge
    - Google Chrome 15 and newer
- **Supported LDAP Servers.**Using LDAP for security authentication is optional.
    - Microsoft Active Directory
    - Apache Directory Server
- **Supported Operating Systems.** Flux works on any operating system that supports Oracle's JVM, version 6 or 7. Starting with Flux 8.0.10, Flux supports Java 8 as well. Flux 8.0.13 supports later versions of Java including OpenJDK versions. Specifically, Flux is known to work on 64-bit and 32-bit Windows, Linux, Mac OS X, Solaris, HP-UX, AIX, AS/400, and OpenVMS systems.
- **Minimum Memory Requirements.** *Flux Engine:* 512 MB RAM. *Flux Agent:* 512 MB RAM. *Flux Operations Console:* 512 MB RAM. A cluster of Flux engines and their agents is managed from a single Operations Console instance.
    - **Apache Derby and H2.** If you are using the default Apache Derby database or the in-memory H2 database, Flux will typically require an additional 300 MB of memory to start.
- **Minimum CPU requirements.** Flux requires an equivalent CPU of a 1.0-1.2 GHz 2007 Opteron or 2007 Xeon processor (or equivalent to a 2006 1.7 GHz Xeon processor). **NOTE:** Memory and CPU requirements may increase as the usage of Flux increases. As the usage, size, and complexity of your Flux workflows increase, CPU and memory usage may scale accordingly.
    - **Apache Derby and H2.** If you are using the default Apache Derby database or the in-memory H2 database, Flux will typically require an additional CPU equivalent to the type described above.
- **Minimum Screen Resolution.** The Flux Operations Console requires a minimum screen resolution of 1280 x 1024.
- **Virtualized Environments.** Flux can run in any virtualized environment (including VMWare and VirtualBox) where a stable JVM is available. Note that many virtual environments have virtual disk I/O subsystems that are substantially less performant than physical machines. In such instances the performance of Flux may be adversely (sometimes extremely) impacted.
- **Active-Active Clustering.** Engines automatically cluster when pointed to the same database. Flux supports clusters of a dozen or more engines. **NOTE:** If using a cluster of more than 4 engines, the cluster networking enabled engine configuration option should be disabled for best performance.

Network and Firewall Ports

Flux requires access to certain TCP-IP ports when operating. Please ensure the following ports are open between the Flux engine and Operations console and external servers/services. The Flux-specific ports for the Flux Engine and the Flux Operations Console can be reconfigured if needed.

- Outbound 21 for FTP
- Outbound 22 for SFTP
- Outbound 25 or 587 or ... for Mail
- Outbound 139 for UNC
- Outbound 389 or 10389 for LDAP and Active Directory

- Outbound 636 or 10636 for LDAPS
- Outbound 445 for SMB
- Inbound 7186 for the Flux Operations Console
- Inbound 7520 and outbound for the Flux Engine
- Outbound Database ports (e.g., 1433 for SQL Server, 50000 for DB2)

What Does it Mean for a Component to be "Supported" within Flux?

In Flux, a supported component is a software component that Flux has performed testing against, using the component's default configuration, and Flux has verified that all core Flux features are known to work while using the component.

If a user encounters any defect in the core Flux features, and the defect can be reproduced using the component's default configuration, the defect will be covered under the Flux support and maintenance agreement.

Errors that occur within a customer's environment using supported components that do not impact core Flux features (i.e., errors in custom actions or code that Flux invokes) or that result from non-default configuration changes, may not be considered as bugs in Flux. Such customer-specific debugging and troubleshooting will generally be considered billable and outside the scope of the support and maintenance agreement. Reviewing customer-specific code or configuration settings to ensure they will run smoothly with Flux is also generally considered billable.

Flux Maintenance Policy

The following versions of Flux continue to be supported and will be supported indefinitely: Flux 8.x, 7.x, 6.5, 5.3, and 3.1.

Java Technology Support Information

Flux depends on Java technology. From time to time, new versions of Java technology appear and older versions are retired. Because Flux runs in a Java environment, we encourage you to take proactive measures to ensure that Flux is not running in an obsolete software environment. However, we recognize and accommodate the above listed application servers that use older versions of Java.

Oracle Java Licensing

The January 15th, 2019 scheduled Critical Patch Update of Java 8 (8u201, and the related 8u202 Patch Set Update) are the last update available under the BCL license which is generally free for general purpose desktop and server use, and has been the Oracle JDK license for several years. The update of Java 8, scheduled for April 16, 2019 (8u211 and the related 8u212 Patch Set Update), are available under a new license which will be free for personal individual desktop use, and free for development, testing, prototyping and demonstration purposes.

Free versions of Java are available from a number of sources. Flux tests with the following: https://adoptopenjdk.net/.