



Java Client Roadmap Update

An update of timelines for Java Deployment and Java UI technologies.

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Overview

The Java Client consists of Java Deployment (Applets and Web Start) and Java UI (Swing, AWT and JavaFX) technologies. This white paper provides an updated overview of the current roadmap and recommendations for each technology. It also offers guidance for application developers, administrators, and users who rely on a stand-alone preinstalled Java Runtime Environment (JRE) for desktops.

Executive Summary:

- Oracle has extended commercial support and updates for Java SE 8 from March 2025 to at least December 2030.
- Oracle has extended indefinitely the availability of updates for personal (non-commercial) use of Java SE 8 from the previously announced date of December 2020. Oracle will provide at least 18 months notice, on the [Java SE Support Roadmap](#), if an end of availability date is set.
- Oracle will continue to offer commercial support for Web Start on Java SE 8 through Java SE Subscriptions, legacy Java SE products, or when used in conjunction with Oracle products that have a Web Start dependency, through at least December 2030.
- Oracle will continue to make Web Start on Java SE 8 available for personal (non-commercial) use for as long as Java SE 8 updates remain available for personal (non-commercial) use. Oracle encourages developers relying on this deployment technology to migrate to other delivery alternatives.
- As announced in 2015, Applets were supported in Java SE 8 until March, 2019. Although support is no longer available for Applets, they remain available for Windows and continue to receive updates in Java SE 8. Oracle has no plans to remove the components required to launch Applets in Internet Explorer 11 from Java SE 8 but may do so with little or no warning.
- Oracle has extended JavaFX support with Oracle Java SE 8 from March 2022 through at least March 2025. Oracle completed the re-architecture and transition of JavaFX to OpenJFX as a stand-alone module as of Java SE 11. Oracle is also reaffirming its commitment to continue co-leading and collaborating at the [OpenJFX project](#).
- Oracle is reaffirming that Swing and AWT remain core Java SE technologies to Oracle across all Java SE releases and support timelines.

Release Cadence and Licensing

The application development market has shifted dramatically over the past decade. On the client side, ready-to-run mobile-first native applications and HTML5/JS web interfaces are prevalent. On the cloud, applications are transitioning to container-based modular architectures and functions. Application developers today expect frequent updates and open-source licensing from their development platforms.

To address these requirements, Oracle announced in 2017 shifting Java to a [strict time-based release model](#), with a new feature release delivered every six months, and publishes OpenJDK binaries under the GPLv2 with Classpath Exception to [simplify licensing and redistribution](#). These changes created an opportunity to streamline the client roadmap.

Java Deployment Roadmap

Applets

During the past seven years, browser vendors have withdrawn support for plugins such as Flash, Silverlight, and Java in their products, with Microsoft Internet Explorer 11 being the only major browser still allowing them. Support for running Applets in browsers was only possible while browser vendors were committed to standards-based plugins. With that no longer being the case, Applet support ended in March 2019.

- [Oracle announced in January 2016 that Applets would be deprecated in Java SE 9](#), and the technology was removed in Java SE 11.
- There are currently no plans to remove the components required to run Applets in Microsoft Internet Explorer 11 from Java SE 8, but they may be removed at any time with little or no warning.
- Components required to run Applets on non-Windows platforms are being removed starting July 2020.

Java Web Start and Pre-Installed Java Runtime Environments

[Web Start](#) has been included in the Oracle Java Runtime Environment (JRE) since 2001. It is launched automatically when a Java application using Web Start technology is downloaded for the first time. Desktop shortcuts can also launch the application, providing the user with a similar experience to that of a native application. Web Start has become an intermediate migration path for developers as browser vendors continued to restrict plugin support over the past several years.

Since it is predominantly a desktop technology, Web Start has some limitations. In particular, it requires a standalone JRE to be installed and maintained on the user's desktop.

However, over the past decade, vendors of the most popular desktop operating systems have emphatically pushed for applications on their platforms to be delivered bundled with integrated, sandboxed runtimes. Increasingly they require desktop applications to be distributed through their own proprietary "app stores."

The notion of an application being distributed separately from a standalone JRE is, therefore, quickly fading. To address this changing technology landscape affecting Web Start:

- Oracle extended support for Web Start in Java SE 8 from March, 2019, through at least March 2030. This support is of course subject to any constraints imposed over time by the browser and operating system vendors as it was with Applets.
- Oracle products that have dependencies on Web Start will remain on Java SE 8 and continue with the support timelines as indicated by those products.
- Oracle does not include Web Start in Java SE 11 and later.
- Oracle has been encouraging application developers and users to transition away from Web Start and encouraging non-commercial consumers to remove any unused or non-supported Oracle JRE installations from their desktops.
- Developers who deploy desktop applications to individual consumers (eg, games, personal banking, or other B2C applications) will need to transition to other deployment technologies such as jlink, jpackage and/or third party packaging and deployment solutions as soon as possible.

- Application developers who target applications for internal data processing, business, commercial, or production purposes, will either need to seek commercial license with Oracle, or transition to other deployment technologies.

Java UI

JavaFX

JavaFX is a set of graphics and media packages that enable developers to write rich client applications that operate consistently across diverse platforms. Development of JavaFX started in 2005. Oracle fully open sourced JavaFX through the OpenJFX project in OpenJDK during 2011 and continues to contribute to its open-source development.

- Oracle will continue to support JavaFX with new fixes for Java SE 8 until at least March 2025.
- Oracle plans to continue lead and collaborate with interested third parties on the evolution of the separately distributable open-source OpenJFX module in the OpenJDK Community.

Swing and AWT

AWT has been an integral part of Java SE since its launch in 1995. Swing was introduced shortly thereafter as a separate library and finally incorporated into “J2SE 1.2” in 1998. Both toolkits are part of the Java SE Specification and core to many other toolkits and applications that build on top of them.

Oracle will continue developing Swing and AWT across all supported releases as a core Java SE technology.

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