

# The Java SE Platform & OpenJDK: Process issues

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September 2020

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Some entities wish to offer many years of updates to their Java binaries, typically free of charge. To do this, they backport fixes and features from the source code of the *JDK Project* to the source code of the *JDK Updates Project*. Then, they produce binaries from the source code of the JDK Updates Project.

# What's in Java SE every six months?

The same as always: New features in the Java language, the JVM, and the `java.*/javax.*` API

Features are conceived as JDK Enhancement Proposals (JEPs), not JSRs

- Feature *design* is discussed on \*-spec-experts mailing lists @ openjdk.java.net
- Feature *implementation* is discussed on \*-dev mailing lists @ openjdk.java.net
- Feature *specification* is published on an OpenJDK web site under the JCP Spec License
- Feature *TCK* is produced by the JEP owner when the spec is steady

If and when a feature is ready to ship, it is *targeted* to a release of the JDK Project

- (“Late binding” – targeting happens only a few months before release)
- Feature *implementation* is folded into the JDK Project
- Feature *specification* is folded into the JLS/JVMS/Javadoc
- Feature *TCK* is folded into the JCK
- SE-scoped JEPs are listed in the Specification of the Java SE Platform JSR

# Not everything in Java SE is final and permanent

Big features usually evolve in their own OpenJDK Projects, e.g., Loom

- Most Oracle-run projects have Early Access binaries at <http://jdk.java.net/>
- But hardly anyone downloads them → Insufficient feedback

Eventually, a big feature is targeted to a release of the JDK Project

- Permanent inclusion in Java SE is imminent!
- Once it's in mainstream Java binaries, everyone will have feedback!
- But it will be too late to change anything

To build confidence in the correctness and completeness of a new feature, it is desirable for the feature to enjoy a period of brief exposure *after* its specification and implementation are stable but *before* it achieves final and permanent status in the Java SE Platform

# Preview Features (JEP 12)

## A feature can “preview” in the Java SE Platform

- Fully specified, fully implemented, fully tested
- Present in every Platform implementation
- Disabled by default (use `--enable-preview` to “opt in”)
- Subject to change before going final (whereupon, enabled by default)
- Scope is Java language/VM/API features only – non-SE enhancements (e.g., to GCs) do not preview

## The decision to preview is made when the feature is targeted to a release of the JDK Project

- Most language/VM features from Oracle will preview, e.g., Text Blocks in SE 13 and 14 (final in 15)
- Most big APIs from Oracle will preview, e.g., Loom’s Virtual Thread API

## The decision to go final is made after feedback from one or two releases

# Incubating Features (JEP 11)

APIs that are not ready to preview may consider *incubation*

- An incubating API is a `jdk.incubator.*` package in a `jdk.incubator.*` module in the JDK Project
- `jdk.incubator.*` modules are included in Oracle OpenJDK + Oracle JDK binaries
- Not part of Java SE in any way
- Scope is APIs and JDK tools – Java language/VM features do not incubate

The decision to incubate is made when the feature is targeted to a release of the JDK Project

- Works best for self-contained, high-level APIs, e.g., HTTP Client in JDK 9 and 10 (final in 11)
- Also useful for JDK tools, e.g., `jpackage` in JDK 14 (final in 15)

Feedback from incubation may lead to the owner previewing the API in the next release

# How can EC Members contribute to Java SE?

## Feedback when a JEP becomes a *candidate* for some future release of the JDK Project

- The JEP receives a number and serves as an informal specification
- Candidacy implies no commitment about if/when the feature will be targeted to a release of the JDK Project

## Feedback when a JEP is *targeted* to a release of the JDK Project

- The feature may be final and permanent, or in preview – either way, a full specification is available
- Targeting is a very strong commitment to include the feature in Java SE
- Targeting happens in the first half of the six month release cycle  
(because the JDK Project's source code is forked at three months to become the RI)

## Feedback on Public Review specification

- PR happens in the second half of the six month release cycle

*The candidacy and targeting of SE-scoped JEPs is announced to the Expert Group for the Java SE Platform JSR – going forward, EC Members will receive these announcements too*

## Safe Harbor

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