



## Zulu Release Notes

Zulu 8.50 (8u272) for PowerPC 64, Big Endian.

Release Date: November 3, 2020

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## Revision History

Revision	Date	Description
1.0	November 3, 2020	Initial version of the document.

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# Zulu Overview

Azul Systems® Zulu® is an implementation of the Java Standard Edition (SE) based on OpenJDK and optimized for embedded devices. Zulu includes Headless JDK that provides a collection of tools for application development.

# What's New

**November 3, 2020**

**Zulu 8.50.0.261 release**

## Summary

Azul Zulu distribution types:

**SA** are tested, certified, and commercially supported Azul Zulu builds of OpenJDK whereby Azul ensures that software that uses the Accessible APIs of the product is not required to carry a specific license and that such use does not contaminate the code or intellectual property of such software with any license requirements.

**CA** are Azul Zulu builds of OpenJDK that are free to download and use.

The details of the released Zulu versions are specified in the following table:

Java SE Version	Java Update Type*	Zulu Version	JDK Version	Based on**	
				Zulu Version	JDK Version
8	PSU	8.50	8u272-b17	8.49	8u271-b09

### \*Java Update Type:

- **CPU** (Critical Patch Updates) contain fixes to security vulnerabilities and critical bug fixes. Zulu CPU releases are generally based on prior-cycle PSU releases, with only security fixes applied. They provide a low-risk vehicle for the potentially urgent deployment of security fixes when issues of sufficient severity arise. CPU releases are available in SA distributions.
- **PSU** (Patch Set Updates) incorporates all of fixes in the corresponding CPU, as well as additional non-security bug fixes. Zulu PSU releases incorporate both security fixes and other accumulated changes that align the release contents with the associated OpenJDK project quarterly release. PSU releases are available in SA and CA distributions.

**\*\*Based on:** Zulu CPU releases are based on prior-cycle PSU releases. Zulu PSU releases are based on the current-cycle CPU releases.

## IANA time zone data version

This release of Zulu comes with IANA time zone data version 2020a. For more information, see [Timezone Data Versions in the JRE Software](#). Please note that Zulu with IANA time zone data version 2020b version or later will be delivered shortly.

## New Features

### Fallback option for the Zulu 8 users who require the legacy Base64 format for XML message signing

A new system property

`com.sun.org.apache.xml.internal.security.lineFeedOnly` was added to Zulu 8. Now, if you want to fallback to legacy Base64 encoded format, you can set this flag in one of the following ways:

As a command line option:

```
-Dcom.sun.org.apache.xml.internal.security.lineFeedOnly=true
```

Programmatically:

```
System.setProperty  
("com.sun.org.apache.xml.internal.security.lineFeedOnly",  
"true")
```

Note that later JDK family versions will only support the recommended property `com.sun.org.apache.xml.internal.security.ignoreLineBreaks`.

## Additions and Changes in Behavior

### JDK-8237990: New system and environment runtime property for LDAP context

Introduced in all Zulu versions.

The `jdk.jndi.ldap.mechsAllowedToSendCredentials` property sets the list of authentication mechanisms that are allowed to send credentials over a non-encrypted connection in the LDAP context. Possible values are:

- `all` allows all mechanisms
- (empty value) allows none
- `mech1,mech2,...,mechN` allows the given authentication mechanisms

If the property is not set, all mechanisms are allowed. Note that "none" and "anonymous" authentication mechanisms are always allowed irrespective of the property value.

In previous versions, user credentials could be sent over an unencrypted connection.

### **JDK-8245417: New runtime properties to control TLS workflow**

Introduced in all Zulu versions.

- The `jdk.tls.maxHandshakeMessageSize` property controls the maximum size limit for the handshake message. The default property value is 32768.
- The `jdk.tls.maxCertificateChainLength` property controls the maximum length for the certificate chain. The default property value is 10.

Note that when the corresponding data size exceeds the allowed value, an exception is thrown from various parts of the JDK. For example: `The size of the handshake message <actual size> exceeds the maximum allowed size <maxHandshakeMessageSize>`.

In previous versions, the maximum handshake messages size was limited to  $2^{24}$  bytes, and there was no limit on the length of certificate chains.

### **JDK-8236862: New runtime property to control the number of interfaces allowed for Proxies**

Introduced in all Zulu versions.

The `jdk.serialProxyInterfaceLimit` property sets the implementation limit on the number of interfaces allowed for Proxies. The property range is from 0 to 65535; the default value is 65535.

In previous versions, the maximum number of interfaces was 65535 and you couldn't set a lower value.

### **JDK-8233624: New mapping rules from a Java native method name to a C native library implementation function name**

Introduced in all Zulu versions.

The JNI methods mapping rules have been changed, for details on new rules, see [Troubleshooting tips](#).

Note, if a Java class or package name for some reason begins with a digit "0", "1", "2", or "3", no native library search is performed, and the attempt to link the native method invocation throws `UnsatisfiedLinkError`.

To resolve compatibility issues, you can either set the `XX:+UseLegacyJNINameEscaping` runtime flag to skip the extra mapping check or notify your library provider to update the JNI names according to the new mapping rules and to reissue and redeploy the libraries.



# Features and Supported Platforms

## Supported Platforms

Zulu is delivered as binary builds of OpenJDK on Linux kernel 3.8 or higher. It is supported on PowerPC 64 bit, Big Endian, for e5500 or e6500 PPC cores. It is tested on the following platforms:

- QorIQ SDK (FSL Reference Distro) 1.4, Linux kernel 3.8.13
- Wind River Linux 8.0.0.20, Linux kernel 4.1.21

## Supported Functionality

### Hotspot Compilers

Zulu for PowerPC 64-bit architecture supports the server (C2) compiler in addition to the optimized template interpreter. The following command-line options can be used to switch between the implementations:

- `-Xint` – Runs the application in interpreted-only mode.
- `-Xcomp` – Enforces compilation of methods on first invocation.
- `-Xbatch` – Disables background compilation so that compilation of all methods proceeds as a foreground task until completed.

Refer to the extended list of the [Advanced JIT Compiler Options](#), for more information about fine-tuning the compilation behavior. For example, you can tune the compilation thresholds in order to balance the startup time and execution performance.

# Getting Started with Zulu

To start working with the Zulu, perform the following steps:

## Extract the Installation Archive

- Download one of the installation archives and save it in a reasonable location on your system.
- Extract the downloaded archive. For example,

```
$ tar -xzf zulu8.50.0.261-ca-hl-jdk8.0.272-linux_ppc64.tar.gz
```

- Copy the extracted directory into the following location:

```
/usr/lib/jvm
```

## Add Debug Symbols

If you do not need debug symbols, skip this step.

- Download the archive with the debug symbols:

```
zulu8.50.0.261-ca-hl-dbg-jdk8.0.272-linux_ppc64.zip
```

- Copy the archive to

```
/usr/lib/jvm/zulu8.50.0.261-ca-hl-jdk8.0.272-linux_ppc64/jre
```

- Extract the archive. For example,

```
$ unzip zulu8.50.0.261-ca-hl-dbg-jdk8.0.272-linux_ppc64.zip
```

## Verify Java Version

- Run a simple Java command

```
$ java -version
```

If needed, provide the fully qualified path. For example:

```
$ /usr/lib/jvm/zulu8.50.0.261-ca-h1-jdk8.0.272-  
linux_ppc64/bin/java -version
```

- Inspect the system response. Correct sample output should look as follows:

```
openjdk version "1.8.0_272"
```

```
OpenJDK Runtime Environment (Zulu 8.50.0.261-CA-  
linux_ppc64) (build 1.8.0_272-b17)
```

```
OpenJDK 64-Bit Embedded Server VM (Zulu  
8.50.0.261-CA-linux_ppc64) (build 25.272-b17,  
mixed mode)
```

## Zulu Resolved Issues

This section summarizes JDK Common Vulnerabilities and Exposure (CVE ) fixes reflecting October, 2020 OpenJDK changes implemented for the following Zulu levels:

- Zulu 15
- Zulu 13
- Zulu 11
- Zulu 8

## JDK Common Vulnerabilities and Exposure (CVE) Fixes

### October, 2020 CVE Fixes

CVSS VERSION 3.0 RISK															
CVE #	Component	Protocol	Remote Exploit without Auth.	Base Score	Attack Vector	Attack Complex	Privs Req'd	User Interact	Scope	Confidentiality	Integrity	Availability	Supported Zulu Versions Affected	Modules Changed to Address CVE	Notes
<a href="#">CVE-2020-14803</a>	Libraries	Multiple	Yes	5.3	Network	Low	None	None	Unchanged	Low	None	None	15, 13, 11	15, 13, 11: java.base	Note 1
<a href="#">CVE-2020-14792</a>	Hotspot	Multiple	Yes	4.2	Network	High	None	Required	Unchanged	Low	Low	None	15, 13, 11, 8, 7, 6	15, 13, 11: hotspot  8, 7, 6: HOTSPOT	Note 2

### October, 2020 CVE Fixes

CVSS VERSION 3.0 RISK															
CVE #	Component	Protocol	Remote Exploit without Auth.	Base Score	Attack Vector	Attack Complex	Privs Req'd	User Interact	Scope	Confidentiality	Integrity	Availability	Supported Zulu Versions Affected	Modules Changed to Address CVE	Notes
<a href="#">CVE-2020-14797</a>	Libraries	Multiple	Yes	3.7	Network	High	None	None	Unchanged	None	Low	None	15, 13, 11, 8, 7	15, 13, 11: java.base 8, 7: JDK	Note 2
<a href="#">CVE-2020-14782</a>	Libraries	Multiple	Yes	3.7	Network	High	None	None	Unchanged	None	Low	None	15, 13, 11, 8, 7	15, 13, 11: java.base 8, 7: JDK	Note 2
<a href="#">CVE-2020-14781</a>	JNDI	Multiple	Yes	3.7	Network	High	None	None	Unchanged	Low	None	None	15, 13, 11, 8, 7, 6	15, 13, 11: java.naming 8, 7, 6: JDK	Note 2
<a href="#">CVE-2020-14779</a>	Serialization	Multiple	Yes	3.7	Network	High	None	None	Unchanged	None	None	Low	15, 13, 11, 8, 7, 6	15, 13, 11: java.base 8, 7, 6: JDK JDK	Note 2

### October, 2020 CVE Fixes

CVSS VERSION 3.0 RISK															
CVE #	Component	Protocol	Remote Exploit without Auth.	Base Score	Attack Vector	Attack Complex	Privs Req'd	User Interact	Scope	Confidentiality	Integrity	Availability	Supported Zulu Versions Affected	Modules Changed to Address CVE	Notes
<a href="#">CVE-2020-14798</a>	Libraries	Multiple	Yes	3.1	Network	High	None	Required	Unchanged	None	Low	None	15, 13, 11, 8, 7	15, 13, 11: java.base 8, 7: JDK	Note 1
<a href="#">CVE-2020-14796</a>	Libraries	Multiple	Yes	3.1	Network	High	None	Required	Unchanged	Low	None	None	15, 13, 11, 8, 7	15, 13, 11: java.base 8, 7: JDK	Note 1

Base and Impact Metric:

Metrics	Values
Attack Vector	Network (N), Adjacent (A), Local (L), and Physical (P)
Attack Complexity	Low (L) and High (H)
Privileges Required	None (N), Low (L), and High (H)
User Interaction	None (N) and Required (R)
Scope	Unchanged (U) and Changed (C)
Confidentiality Impact	High (H), Low (L), and None (N)

Integrity Impact	High (H), Low (L), and None (N)
Availability Impact	High (H), Low (L), and None (N)

Notes:

ID	Notes
1	<p>This vulnerability applies to Java deployments that load and run untrusted code (e.g., code that comes from the internet) and rely on the Java sandbox for security. This vulnerability does not apply to Java deployments, typically in servers, that load and run only trusted code (e.g., code installed by an administrator).</p>
2	<p>This vulnerability applies to client and server deployment of Java. This vulnerability can be exploited through untrusted code executed under Java sandbox restrictions. It can also be exploited by supplying data to APIs in the specified Component without using untrusted code executed under Java sandbox restrictions, such as through a web service.</p>

## In-Depth Non-CVE Security Fixes

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8253019</a>	Enhanced JPEG decoding	CPU
<a href="#">JDK-8249927</a>	Specify limits of <code>jdk.serialProxyInterfaceLimit</code>	CPU
<a href="#">JDK-8248574</a>	Improve jpeg processing	CPU
<a href="#">JDK-8248177</a>	Improve XML support	CPU
<a href="#">JDK-8248171</a>	Better query support	CPU
<a href="#">JDK-8245417</a>	Improve certificate chain handling	CPU
<a href="#">JDK-8245412</a>	Better class definitions	CPU
<a href="#">JDK-8245407</a>	Enhance zoning of times	CPU
<a href="#">JDK-8244955</a>	Additional Fix for <a href="#">JDK-8240124</a>	CPU
<a href="#">JDK-8244479</a>	Further constrain certificates	CPU
<a href="#">JDK-8243302</a>	Advanced class supports	CPU
<a href="#">JDK-8240124</a>	Better VM Interning	CPU
<a href="#">JDK-8236196</a>	Improve string pooling	CPU
<a href="#">JDK-8233624</a>	Enhance JNI Inkage	CPU

## Other OpenJDK Bug Fixes

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8254937</a>	Revert <a href="#">JDK-8148854</a> for <code>8u272</code>	PSU
<a href="#">JDK-8254673</a>	call for <code>JvmtiExport::post_vm_start()</code> was removed by the fix for <a href="#">JDK-8249158</a>	PSU



OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8253019</a>	Enhanced JPEG decoding	CPU
<a href="#">JDK-8252886</a>	[TESTBUG] sun/security/ec/TestEC.java : Compilation failed	PSU
<a href="#">JDK-8252573</a>	8u: Windows build failed after 8222079 backport	PSU
<a href="#">JDK-8252497</a>	Incorrect numeric currency code for ROL	PSU
<a href="#">JDK-8252084</a>	Minimal VM fails to bootcycle: undefined symbol: AgeT-ableTracer::is_tenuring_distribution_event_enabled	PSU
<a href="#">JDK-8251546</a>	8u backport of JDK-8194298 breaks AIX and Solaris builds	PSU
<a href="#">JDK-8251478</a>	Backport TLSv1.3 regression tests to JDK8u	PSU
<a href="#">JDK-8251341</a>	Minimal Java specification change	PSU
<a href="#">JDK-8251120</a>	[8u] HotSpot build assumes ENABLE_JFR is set to either true or false	PSU
<a href="#">JDK-8251117</a>	Cannot check P11Key size in P11Cipher and P11AEADCipher	PSU
<a href="#">JDK-8250876</a>	Fix issues with cross-compile on macos	PSU
<a href="#">JDK-8250875</a>	Incorrect parameter type for update_number in JDK_Version::jdk_update	PSU
<a href="#">JDK-8250755</a>	Better cleanup for jdk/test/-javax/imageio/plugins/shared/CanWriteSequence.java	PSU
<a href="#">JDK-8250636</a>	iso8601_time returns incorrect offset part on MacOS	PSU
<a href="#">JDK-8250627</a>	Use -XX:+/-UseContainerSupport for enabling/disabling Java container metrics	PSU
<a href="#">JDK-8250582</a>	Revert Principal Name type to NT-UNKNOWN when requesting TGS Kerberos tickets	PSU
<a href="#">JDK-8250546</a>	Expect changed behaviour reported in JDK-8249846	PSU
<a href="#">JDK-8249927</a>	Specify limits of jdk.serialProxyInterfaceLimit	CPU
<a href="#">JDK-8249610</a>	Make sun.security.krb5.Config.getBooleanObject(String... keys) method public	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8249278</a>	Revert JDK-8226253 which breaks the spec of AccessibleState.SHOWING for JList	PSU
<a href="#">JDK-8249251</a>	[dark_mode ubuntu 20.04] The selected menu is not highlighted in GTKLookAndFeel	PSU
<a href="#">JDK-8249159</a>	Downport test rework for SSLSocketTemplate from 8224650	PSU
<a href="#">JDK-8249158</a>	THREAD_START and THREAD_END event posted in primordial phase	PSU
<a href="#">JDK-8248851</a>	CMS: Missing memory fences between free chunk check and class read	PSU
<a href="#">JDK-8248643</a>	Remove extra leading space in JDK-8240295 8u backport	PSU
<a href="#">JDK-8248574</a>	Improve jpeg processing	CPU
<a href="#">JDK-8248495</a>	[macos] zerovm is broken due to libffi headers location	PSU
<a href="#">JDK-8248219</a>	aarch64: missing memory barrier in fast_storefield and fast_accessfield	PSU
<a href="#">JDK-8247979</a>	aarch64: missing side effect of killing flags for clearArray_reg_reg	PSU
<a href="#">JDK-8246384</a>	Enable JFR by default on supported architectures for October 2020 release	PSU
<a href="#">JDK-8246330</a>	Add TLS Tests for Legacy ECDSA curves	PSU
<a href="#">JDK-8246310</a>	Clean commented-out code about ModuleEntry andPackageEntry in JFR	PSU
<a href="#">JDK-8246193</a>	Possible NPE in ENC-PA-REP search in AS-REQ	CPU
<a href="#">JDK-8246094</a>	[macos] Sound Recording and playback is not working	PSU
<a href="#">JDK-8245473</a>	OCSP stapling support	PSU
<a href="#">JDK-8245471</a>	Revert JDK-8148188	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8245417</a>	Improve certificate chain handling	CPU
<a href="#">JDK-8245412</a>	Better class definitions	CPU
<a href="#">JDK-8245407</a>	Enhance zoning of times	CPU
<a href="#">JDK-8245005</a>	javax/net/ssl/compatibility/BasicConnectTest.java failed with No enum constant	PSU
<a href="#">JDK-8244955</a>	Additional Fix for JDK-8240124	CPU
<a href="#">JDK-8244818</a>	[macos] Java2D Queue Flusher crash while moving application window to external monitor	PSU
<a href="#">JDK-8244479</a>	Further constrain certificates	CPU
<a href="#">JDK-8244225</a>	stringop-overflow warning on strncpy call from compile_the_world_in	PSU
<a href="#">JDK-8244151</a>	Update MUSCLE PC/SC-Lite headers to the latest release 1.8.26	PSU
<a href="#">JDK-8244136</a>	Improved Buffer supports	CPU
<a href="#">JDK-8243489</a>	Thread CPU Load event may contain wrong data for CPU time under certain conditions	PSU
<a href="#">JDK-8243321</a>	Add Entrust root CA - G4 to Oracle Root CA program	PSU
<a href="#">JDK-8243320</a>	Add SSL root certificates to Oracle Root CA program	PSU
<a href="#">JDK-8243302</a>	Advanced class supports	CPU
<a href="#">JDK-8243138</a>	Enhance BaseLdapServer to support starttls extended request	PSU
<a href="#">JDK-8243029</a>	Rewrite javax/net/ssl/compatibility/Compatibility.java with a flexible interop test framework	PSU
<a href="#">JDK-8242695</a>	Enhanced Buffer Support	CPU
<a href="#">JDK-8242685</a>	Better Path Validation	CPU
<a href="#">JDK-8242680</a>	Improved URI support	CPU
<a href="#">JDK-8242556</a>	Cannot load RSASSA-PSS public key with non-null params from	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
	byte array	
<a href="#">JDK-8241888</a>	Mirror jdk.security.allowNonCaAnchor system property with a security one	PSU
<a href="#">JDK-8241114</a>	Better range handling	CPU
<a href="#">JDK-8240676</a>	Meet not symmetric failure when running lucene on jdk8	PSU
<a href="#">JDK-8240295</a>	hs_err elapsed time in seconds is not accurate enough	PSU
<a href="#">JDK-8240124</a>	Better VM Interning	CPU
<a href="#">JDK-8239819</a>	XToolkit: Misread of screen information memory	PSU
<a href="#">JDK-8238898</a>	Missing hash characters for header on license file	PSU
<a href="#">JDK-8238388</a>	libj2gss/NativeFunc.o "multiple definition" link errors with GCC10	PSU
<a href="#">JDK-8238386</a>	(sctp) jdk.sctp/unix/native/libj2gss/SctpNet.c "multiple definition" link errors with GCC10	PSU
<a href="#">JDK-8238380</a>	java.base/unix/native/libjava/childproc.c "multiple definition" link errors with GCC10	PSU
<a href="#">JDK-8237995</a>	Enhance certificate processing	CPU
<a href="#">JDK-8237990</a>	Enhanced LDAP contexts	CPU
<a href="#">JDK-8237951</a>	CTW: C2 compilation fails with "malformed control flow"	PSU
<a href="#">JDK-8236862</a>	Enhance support of Proxy class	CPU
<a href="#">JDK-8236645</a>	JDK 8u231 introduces a regression with incompatible handling of XML messages	PSU
<a href="#">JDK-8236464</a>	SO_LINGER option is ignored by SSLSocket in JDK 11	PSU
<a href="#">JDK-8236196</a>	Improve string pooling	CPU
<a href="#">JDK-8235325</a>	build failure on Linux after 8235243	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8235243</a>	handle VS2017 15.9 and VS2019 in abstract_vm_version	PSU
<a href="#">JDK-8235153</a>	[TESTBUG] [macos 10.15] java/awt/Graphics/DrawImageBG/SystemBgColorTest.java fails	PSU
<a href="#">JDK-8234617</a>	C1: Incorrect result of field load due to missing narrowing conversion	PSU
<a href="#">JDK-8233624</a>	Enhance JNI Inkage	CPU
<a href="#">JDK-8233621</a>	Mismatch in jsse.enableMFLNExtension property name	PSU
<a href="#">JDK-8233228</a>	Disable weak named curves by default in TLS, CertPath, and Signed JAR	PSU
<a href="#">JDK-8233097</a>	Fontmetrics for large Fonts has zero width	PSU
<a href="#">JDK-8231213</a>	Migrate SimpleDateFormatConstTest to JDK Repo	PSU
<a href="#">JDK-8230711</a>	ConnectionGraph::unique_java_object(Node* N) return NULL if n is not in the CG	PSU
<a href="#">JDK-8230303</a>	JDB hangs when running monitor command	PSU
<a href="#">JDK-8229378</a>	jdwp library loader in linker_md.c quietly truncates on buffer overflow	PSU
<a href="#">JDK-8228967</a>	Trust/Key store and SSL context utilities for tests	PSU
<a href="#">JDK-8228835</a>	Memory leak in PKCS11 provider when using AES GCM	PSU
<a href="#">JDK-8226809</a>	Circular reference in printed stack trace is not correctly indented & ambiguous	PSU
<a href="#">JDK-8226806</a>	[macOS 10.14] Methods of Java Robot should be called from appropriate thread	PSU
<a href="#">JDK-8226697</a>	Several tests which need the @key headful keyword are missing it.	PSU
<a href="#">JDK-8226575</a>	OperatingSystemMXBean should be made container aware	PSU
<a href="#">JDK-8225695</a>	32-bit build failures after JDK-8080462 (Update SunPKCS11 pro-	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
	vider with PKCS11 v2.40 support)	
<a href="#">JDK-8224217</a>	RecordingInfo should use textual representation of path	PSU
<a href="#">JDK-8222079</a>	Don't use memset to initialize fields decode_env constructor in dis-assembler.cpp	PSU
<a href="#">JDK-8221658</a>	aarch64: add necessary predicate for ubfx patterns	PSU
<a href="#">JDK-8221569</a>	JFR tool produces incorrect output when both --categories and --events are specified	PSU
<a href="#">JDK-8220674</a>	[TESTBUG] MetricsMemoryTester failcount test in docker container only works with debug JVMs	PSU
<a href="#">JDK-8220555</a>	JFR tool shows potentially misleading message when it cannot access a file	PSU
<a href="#">JDK-8220313</a>	[TESTBUG] Update base image for Docker testing to OL 7.6	PSU
<a href="#">JDK-8220150</a>	[macos] macos10.14 Mojave returns anti-aliased glyphs instead of aliased B&W glyphs	PSU
<a href="#">JDK-8219919</a>	RuntimeStub's name lost with PrintFrameConverterAssembly	PSU
<a href="#">JDK-8219566</a>	JFR did not collect call stacks when MaxJavaStackTraceDepth is set to zero	PSU
<a href="#">JDK-8218629</a>	XML Digital Signature throws NAMESPACE_ERR exception on OpenJDK 11, works 8/9/10	PSU
<a href="#">JDK-8217878</a>	ENVELOPING XML signature no longer works	PSU
<a href="#">JDK-8217647</a>	JFR: recordings on 32-bit systems unreadable	PSU
<a href="#">JDK-8217606</a>	LdapContext#reconnect always opens a new connection	PSU
<a href="#">JDK-8216283</a>	Allow shorter method sampling interval than 10 ms	PSU
<a href="#">JDK-8214862</a>	assert(proj != __null) at compile.cpp:3251	PSU
<a href="#">JDK-8211714</a>	Need to update vm_version.cpp to recognise VS2017 minor ver-	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
	sions	
<a href="#">JDK-8211296</a>	Remove HotSpot deprecation warning suppression for Mac/clang	PSU
<a href="#">JDK-8211163</a>	UNIX version of Java_java_io_Console_echo does not return a clean boolean	PSU
<a href="#">JDK-8211049</a>	Second parameter of "initialize" method is not used	PSU
<a href="#">JDK-8209113</a>	Use WeakReference for lastFontStrike for created Fonts	PSU
<a href="#">JDK-8203699</a>	java/lang/invoke/SpecialInterfaceCall fails with SIGILL on aarch64	PSU
<a href="#">JDK-8203481</a>	Incorrect constraint for unextended_sp in frame:safe_for_sender	PSU
<a href="#">JDK-8203357</a>	Container Metrics	PSU
<a href="#">JDK-8202076</a>	test/jdk/java/io/File/WinSpecialFiles.java on windows with VS2017	PSU
<a href="#">JDK-8198004</a>	javax/swing/JFileChooser/6868611/bug6868611.java throws error	PSU
<a href="#">JDK-8194298</a>	Add support for per Socket configuration of TCP keepalive	PSU
<a href="#">JDK-8193234</a>	When using -Xcheck:jni an internally allocated buffer can leak	PSU
<a href="#">JDK-8193137</a>	Nashorn crashes when given an empty script file.	PSU
<a href="#">JDK-8192953</a>	sun/management/jmxremote/bootstrap/*.sh tests fail with error : revokeall.exe: Permission denied	PSU
<a href="#">JDK-8191678</a>	[TESTBUG] Add keyword headful in java/awt and javax tests.	PSU
<a href="#">JDK-8184762</a>	ZapStackSegments should use optimized memset	PSU
<a href="#">JDK-8183351</a>	Better cleanup for jdk/test/- javax/im- ageio/spi/AppletContextTest/BadPluginConfigurationTest.sh	PSU
<a href="#">JDK-8183349</a>	Better cleanup for jdk/test/- javax/imageio/plugins/shared/CanWriteSequence.java and WriteAfterAbort.java	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8183341</a>	Better cleanup for javax/imageio/AllowSearch.java	PSU
<a href="#">JDK-8182657</a>	Make the required changes in Runtime code to build on OSX 10 + Xcode 8	PSU
<a href="#">JDK-8180197</a>	Failing assert: id must be initialized	PSU
<a href="#">JDK-8178784</a>	Revisit changes for making Serviceability Agent attach functionality optional	PSU
<a href="#">JDK-8177628</a>	Opensource unit/regression tests for ImageIO	PSU
<a href="#">JDK-8177334</a>	Update xmldsig implementation to Apache Santuario 2.1.1	PSU
<a href="#">JDK-8173300</a>	[TESTBUG]compiler/tiered/NonTieredLevelsTest.java fails with compiler.whitebox.SimpleTestCaseHelper(int) must be compiled	PSU
<a href="#">JDK-8172012</a>	[TEST_BUG] delays needed in javax/swing/JTree/4633594/bug4633594.java	PSU
<a href="#">JDK-8169925</a>	Organize licenses by module in source, JMOD file, and run-time image	PSU
<a href="#">JDK-8168517</a>	java/lang/ProcessBuilder/Basic.java failed with "java.lang.AssertionError: Some tests failed"	PSU
<a href="#">JDK-8167615</a>	Opensource unit/regression tests for JavaSound	PSU
<a href="#">JDK-8167300</a>	Scheduling failures during gcm should be fatal	PSU
<a href="#">JDK-8166015</a>	[PIT][TEST_BUG] stray character in java/awt/Focus/ModalDialogActivationTest/ModalDialogActivationTest.java	PSU
<a href="#">JDK-8165996</a>	PKCS11 using NSS throws an error regarding secmod.db when NSS uses sqlite	PSU
<a href="#">JDK-8161973</a>	PKIXRevocationChecker.getSoftFailExceptions() not working	PSU
<a href="#">JDK-8160768</a>	Add capability to custom resolve host/domain names within the default JNDI LDAP provider	PSU



OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8160217</a>	JavaSound should clean up resources better	PSU
<a href="#">JDK-8156169</a>	Some sound tests rarely hangs because of incorrect synchronization	PSU
<a href="#">JDK-8154313</a>	Generated javadoc scattered all over the place	PSU
<a href="#">JDK-8153725</a>	Problem list javax/sound/sampled/DirectAudio/bug6400879.java for Linux	PSU
<a href="#">JDK-8153583</a>	Make OutputAnalyzer.reportDiagnosticSummary public	PSU
<a href="#">JDK-8152077</a>	(cal) Calendar.roll does not always roll the hours during daylight savings changes	PSU
<a href="#">JDK-8151788</a>	NullPointerException from ntlm.Client.type3	PSU
<a href="#">JDK-8151678</a>	com/sun/jndi/ldap/LdapTimeoutTest.java failed due to timeout on DeadServerNoTimeoutTest is incorrect	PSU
<a href="#">JDK-8148983</a>	Fix extra comma in changes for JDK-8148916	PSU
<a href="#">JDK-8148916</a>	Mark bug6400879.java as intermittently failing	PSU
<a href="#">JDK-8148915</a>	Intermittent failures of bug6400879.java	PSU
<a href="#">JDK-8148854</a>	Class names "SomeClass" and "LSomeClass;" treated by JVM as an equivalent	PSU
<a href="#">JDK-8148754</a>	C2 loop unrolling fails due to unexpected graph shape	PSU
<a href="#">JDK-8145808</a>	[PIT] test java/awt/Graphics2D/MTGraphicsAccessTest/MTGraphicsAccessTest.java hangs on Win. 8	PSU
<a href="#">JDK-8144539</a>	Update PKCS11 tests to run with security manager	PSU
<a href="#">JDK-8137087</a>	[TEST_BUG] Cygwin failure of java/awt/appletviewer/IOExceptionIfEncodedURLTest/IOExceptionIfEncodedURLTest.sh	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
<a href="#">JDK-8132745</a>	TEST_BUG: minor cleanup of java/util/Scanner/ScanTest.java	PSU
<a href="#">JDK-8132376</a>	Add @requires os.family to the client tests with access to internal OS-specific API	PSU
<a href="#">JDK-8132206</a>	move ScanTest.java into OpenJDK	PSU
<a href="#">JDK-8080953</a>	[TEST_BUG]Test java/awt/FontClass/DebugFonts.java fails due to wrongly typed bugid	PSU
<a href="#">JDK-8080462</a>	Update SunPKCS11 provider with PKCS11 v2.40 support	PSU
<a href="#">JDK-8078880</a>	Mark a few more intermittently failing security-libs tests	PSU
<a href="#">JDK-8078334</a>	Mark regression tests using randomness	PSU
<a href="#">JDK-8076151</a>	[TESTBUG] Test java/awt/FontClass/CreateFont/-fileaccess/FontFile.java fails	PSU
<a href="#">JDK-8075774</a>	Small readability and performance improvements for zipfs	PSU
<a href="#">JDK-8064319</a>	Need to enable -XX:+TraceExceptions in release builds	PSU
<a href="#">JDK-8062947</a>	Fix exception message to correctly represent LDAP connection failure	PSU
<a href="#">JDK-8061616</a>	HotspotDiagnosticMXBean.getVMOption() throws IllegalArgumentException for flags of type double	PSU
<a href="#">JDK-8060721</a>	Test runtime/SharedArchiveFile/LimitSharedSizes.java fails in jdk 9 fcs new platforms/compiler	PSU
<a href="#">JDK-8060027</a>	Tests java/beans/XMLEncoder/Test4903007.java and java/beans/XMLEncoder/java_awt_GridBagLayout.java	PSU
<a href="#">JDK-8057003</a>	Large reference arrays cause extremely long synchronization times	PSU
<a href="#">JDK-8048933</a>	-XX:+TraceExceptions output should include the message	PSU
<a href="#">JDK-8039082</a>	[TEST_BUG] Test java/awt/dnd/BadSeri-	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
	alizationTest/BadSerializationTest.java fails	
<a href="#">JDK-8036088</a>	Replace strtok() with its safe equivalent strtok_s() in DefaultProxySelector.c	PSU
<a href="#">JDK-8031625</a>	javadoc problems referencing inner class constructors	PSU
<a href="#">JDK-8030123</a>	java/beans/Introspector/Test8027648.java fails	PSU
<a href="#">JDK-8026236</a>	Add PrimeTest for BigInteger	PSU
<a href="#">JDK-8025886</a>	replace [[ and == bash extensions in regtest	PSU
<a href="#">JDK-8025430</a>	[TEST_BUG] closed/- javax/swing/JEditorPane/5076514/bug5076514.java failed since jdk8b108	PSU
<a href="#">JDK-8023697</a>	failed class resolution reports different class name in detail message for the first and subsequent times	PSU
<a href="#">JDK-8011541</a>	[TEST_BUG] closed/- javax/swing/plaf/metal/MetalUtils/bug6190373.java fails NPE since 7u25b03	PSU
<a href="#">JDK-7188942</a>	Remove support of pbuffers in OGL Java2d pipeline	PSU
<a href="#">JDK-6574989</a>	TEST_BUG: javax/sound/sampled/Clip/bug5070081.java fails sometimes	PSU

## Zulu Bug Fixes

OpenJDK Patch ID	Synopsis	CPU/PSU
ZULU-19057	SPECjvm2008 sunflow and startup.sunflow regression	PSU
ZULU-19029	please fix key (randomness) for test/- java/nio/channels/DatagramChannel/AdaptDatagramSocket.java	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
ZULU-19021	[ppcspe] regression: Math.log() is broken	PSU
ZULU-19014	[ppcspe] JCK geom failures	PSU
ZULU-19011	[ppc64] JVM crashes at startup	PSU
ZULU-18893	Backout fix for JDK-8148854	PSU
ZULU-18667	SSL debug log prints incorrect caller info	PSU
ZULU-18552	JCK regression: rmi.activation.ActivationGroup in 8.49.0.13	CPU
ZULU-18524	Duplicated license info	PSU
ZULU-18503	Switch to OpenJSSE v1.1.5	PSU
ZULU-18286	SIGSEGV at JCK api/java_lang/Compiler	PSU
ZULU-18268	Fix hotspot/test/vmTestbase/gc/g1 tests	PSU
ZULU-18239	Fix Reserved space to be non rwx on zero_mac_arm64	PSU
ZULU-18237	Initial support for xcode8+ for zulu8	PSU
ZULU-18234	Zulu Embedded 8 fails to build for all platforms	PSU
ZULU-18129	javac/java hangs on an intermediate C/RaM build	PSU
ZULU-18068	[REGRESSION] Tests for JVMTI event SingleStep and function GetPhase fail	PSU
ZULU-17965	[Missmerge] tools/launcher/Settings.java test defines run-TestOptionSystem() twice	PSU
ZULU-17870	Solaris build failures	PSU
ZULU-17809	Zulu failed with CompressedSharedArchiveFile after merge 8076475: Misuses of strncpy/strncat	PSU
ZULU-17385	Reenable detection of multiprocessor system	PSU
ZULU-17384	Disable Biased Locking for single core CPU	PSU

OpenJDK Patch ID	Synopsis	CPU/PSU
ZULU-17256	Remove obsolete code in AWTView.m	PSU
ZULU-17144	Build system preparation to macos on aarch64	PSU
ZULU-13915	Replace with parameter a hardcoded by mistake libnuma version	PSU
ZULU-13894	Change list of client enabled CustomizedTLSContext cipher suites	PSU
ZULU-13879	Remove NONEwithDSAINP1363Format from the default enabled set	PSU
ZULU-13878	Zrestore may appear unexpectedly exited	PSU
ZULU-13737	renaissance db-shootout: SIGSEGV on checkpoint	PSU
ZULU-13735	C/RaM: SIGSEGV for a JMH sample	PSU
ZULU-12929	Limit JIT CPU usage	PSU
ZULU-12423	PrintCompilation have timestamps from checkpoint	PSU
ZULU-11622	SIGSEGV on checkpoint for a couple of SPECjvm2008 and Dacapo benchmarks	PSU
ZULU-4896	OpenJSSE should break configure in a case of problem	PSU

## License Changes

Zulu incorporates third-party licensed software packages. Some of these have distribution restrictions and some have only reporting requirements.

The following table lists the third-party licensed software packages changes in all Zulu products released in October, 2020.

License Change	License Text Updates
MUSCLE PC/SC-Lite headers	Copyright (c) 1999-2003 David Corcoran <corcoran@linuxnet.com>

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Apache Jakarta Regexp dependency removal	<p>The following line was removed from the TPL text:</p> <p>Apache Jakarta Regexp 1.4.</p>

Refer to the [THIRD\\_PARTY\\_README](#) file for the complete list of third-party software packages licensed for this release.

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