



Azul Zulu builds of OpenJDK

July 2023 Quarterly Update

Release Notes

Revision 1.1

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Revision History

Revision	Date	Description
0.1	July 18, 2023	Initial version of the document.
0.2	July 18, 2023	Pre-release announcement version.
0.3	July 18, 2023	Added bug fixes and version table.
0.4	July 18, 2023	First published version, without CVE details.
1.0	July 18, 2023	Added information about the CVEs fixed in this release + extra bug fixes.
1.1	July 28, 2023	Updated bugs lists.

Release Details

This release is a quarterly update release for Azul Zulu Builds of OpenJDK version 20, 17, 11, 8, 7, and 6.

The following table lists detailed information on the Azul Zulu versions released with the current update.

Azul Zulu Version (*)	Update Type (**)	JDK Version	Based on		JavaFX Version
			Azul Zulu Version	JDK Version	
20.32.11 (CA) 20.32.12 (SA)	PSU	20.0.2+9	20.30	20.0.1+9	20.0.2+100
17.43.14 (SA)	CPU	17.0.7.0.101+2	17.42	17.0.7+7	20.0.1.0.101+100
17.44.15 (CA) 17.44.17 (CA) 17.44.16 (SA) 17.44.18 (SA)	PSU	17.0.8+7	17.43	17.0.7.0.101+2	20.0.2+100
11.65.14 (SA)	CPU	11.0.19.0.101+2	11.64	11.0.19+7	19.0.3.0.101+100

11.66.15 (CA) 11.66.17 (CA) 11.66.16 (SA) 11.66.18 (SA)	PSU	11.0.20+8	11.65	11.0.19.0.101+2	19.0.4+100
8.71.0.14 (SA)	CPU	8u381-b02	8.70	8u372-b07	8u381-b01
8.72.0.17 (CA) 8.72.0.18 (SA)	PSU	8u382-b05	8.71	8u381-b02	8u382-b01
7.63.0.14 (SA)	CPU	7u391-b02	7.61	7u381-b03	N/A
6.57.0.12 (SA)	CPU	6b157	6.55	6b155	N/A

(*) Azul provides two types of distribution packages for each Java version:

- **SA** distributions are tested, certified, and commercially supported Azul Zulu builds of OpenJDK. Azul ensures that the software that uses the Accessible APIs of the product doesn't have to include specific licenses and that such use doesn't 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.

NOTE

Both SA and CA distributions may contain Early Access builds noted with `-ea-` in their filename. Early Access builds may not be TCK certified.

(**) Update type:

- **CPU** (Critical Patch Updates) contain fixes to security vulnerabilities and critical bug fixes. Azul 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 fixes in the corresponding CPU, as well as additional non-security bug fixes. Azul Zulu PSU releases incorporate both security fixes and other changes that align the release contents with the associated OpenJDK

project quarterly release. PSU releases are available in SA and CA distributions.

What's New

Azul Zulu Builds of OpenJDK 8 GA on AIX

Azul Zulu Builds of OpenJDK, version 8 SA, are now available for the AIX platform.

Improvements in Azul Zulu Build of OpenJDK 17 with CRaC support

Azul Zulu Builds of OpenJDK, version 17, with integrated support for CRaC, are available for Linux/x64 and Linux/Arm64. This release brings further improvements to support embedded platforms based on Arm64.

- Fixed intermediate failures during unprivileged restore on aarch64.
- `CAP_SYS_ADMIN` capability is no longer required for checkpoint.

Configuration changes

We plan to reduce the testing cycles for the following environments targeting their end of life.

- Debian 9.X
- Windows Client 8.1

If you're still using any of these, we will be providing Azul Platform Core versions for you and can help you if issues would arise! Please email us at support@azul.com.

Extended Info for Supported Platforms

The [table below with "Supported Platforms"](#) has been extended to indicate which versions of Azul Zulu Builds of OpenJDK are also available with OpenJFX included. A second table was added with the available builds including CRaC.

Extra Field validation in ZIP64

Related to [JDK-8302483](#), a new flag is introduced which defines if ZIP64 extra fields

should be validated when opening a ZIP file:

`jdk.util.zip.disableZip64ExtraFieldValidation`. The default value is `false`, to disable this change, set the value to `true`.

Enhanced Jar Signature Validation

Related to [JDK-8300596](#), a new system property is introduced to configure the maximum number of bytes allowed for the signature-related files in a JAR file during verification: `jdk.jar.maxSignatureFileSize`. The default value is `8000000`.

Known Issues

There are no new known issues to report in this release.

IANA Time Zone Database version



This release of Azul Zulu comes with **IANA Time Zone Database version 2023c**, identical to the April release.

Supported Platforms

This section provides information about the operating systems that are supported in this update release of Azul Zulu.

Azul Zulu Builds of OpenJDK without and with OpenJFX

Some versions of Azul Zulu are available in different packages for specific platforms, as indicated in this overview table with:

-  : Build of OpenJDK without OpenJFX
-  : Build of OpenJDK without and with OpenJFX

NOTE

The list of supported configurations and platform includes, but is not limited to, the table below. Don't hesitate to [contact Support](#) if you have issues with Azul Zulu Builds of OpenJDK on any other platform or configuration.

Operating System	Azul Zulu Version					
	6	7	8	11	17	20
Windows (x86 32/64-bit)						
Windows Server 2022	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Windows Server 2019	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Windows Server 2016	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Windows Server 2012 R2	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Windows 11	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Windows 10	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Windows (ARM 64-bit)						
Windows 11	n/a	n/a	n/a	n/a	✓	n/a
Windows 10	n/a	n/a	n/a	n/a	✓	n/a
Linux (x86 32/64-bit)						
RHEL 9.x	n/a	✓	✓✓	✓✓	✓✓	✓✓ [1]
RHEL 8.x	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
RHEL 7.x	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
SLES 15	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
SLES 12	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
CentOS Stream	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Ubuntu 22.04	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Ubuntu 20.04	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Ubuntu 18.04	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Debian 12	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Debian 11	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Debian 10	✓	✓	✓✓	✓✓	✓✓	✓✓ [1]
Wind River 8.x	n/a	✓	✓	n/a	n/a	n/a

CoreOS	n/a	✓	✓	✓	✓	n/a
Alpine Linux 3.11 or later	n/a	n/a	✓	✓	✓	✓
Amazon Linux 2023	n/a	n/a	✓	✓	✓	n/a
Linux (ARM 64-bit)						
Ubuntu 22.04	n/a	n/a	✓	✓	✓	✓
Ubuntu 20.04	n/a	n/a	✓	✓	✓	✓
Ubuntu 18.04	n/a	n/a	✓	✓	n/a	n/a
Debian 12	n/a	n/a	✓	✓	✓	✓
Debian 11	n/a	n/a	✓	✓	✓	✓
Alpine Linux 3.11 or later	n/a	n/a	✓	✓	✓	✓
Amazon Linux 2023	n/a	n/a	✓	✓	✓	n/a
Linux with kernel 3.10.x and glibc 2.23 [2] [3]	n/a	n/a	✓	✓	n/a	n/a
Linux (ARM 32-bit Hard-Float)						
Ubuntu 18.04 [4]	n/a	n/a	✓	✓	✓	n/a
Raspbian 10 Buster [4]	n/a	n/a	✓	✓	✓	n/a
Raspbian 9 Stretch [4]	n/a	n/a	✓	✓	n/a	n/a
Linux with kernel 3.10.x and glibc 2.9 [4] [5]	n/a	n/a	✓	✓	n/a	n/a
Linux (ARM 32-bit Soft-Float) [6]						
Linux with kernel 2.6.34 and glibc 2.5 [7]	n/a	n/a	✓	✓	n/a	n/a
Debian 7 Wheezy [8]	n/a	n/a	✓	✓	n/a	n/a
Linux with kernel 3.10.x and glibc 2.9 [8]	n/a	n/a	✓	✓	n/a	n/a
Linux (MIPS 32-bit) [9]						
Linux with kernel 4.9.59 and glibc 2.9 [10]	n/a	n/a	✓	n/a	n/a	n/a
Linux (ppc64 Big Endian)						

Linux with kernel 3.8.13 and glibc 2.22 [11]	n/a	n/a	✓	n/a	n/a	n/a
Linux (ppc32 Hard-float and SPE)						
Linux with kernel 3.12.37 and glibc 2.20 [12]	n/a	n/a	✓	n/a	n/a	n/a
QNX (ARMv7 32-bit Hard-Float ABI)						
QNX 7.0	n/a	n/a	✓	n/a	n/a	n/a
MacOS (x86 64-bit)						
macOS 13	n/a	✓	✓✓	✓✓	✓✓	✓✓
macOS 12	n/a	✓	✓✓	✓✓	✓✓	✓✓
MacOS (Apple Silicon)						
macOS 13	n/a	n/a	✓✓	✓✓	✓✓	✓✓
macOS 12	n/a	n/a	✓✓	✓✓	✓✓	✓✓
Solaris (x86 and Sparc)						
Solaris 11	n/a	✓	✓	✓	n/a	n/a
Solaris 10	n/a	✓	✓	n/a	n/a	n/a
AIX (ppc64)						
AIX 7.2	n/a	n/a	✓	n/a	n/a	n/a



1. Build of OpenJDK (with and without OpenJFX) only for 64-bit.
2. Bundles with the Checkpoint/Restore (with the `criu` suffix) functionality require kernel 4.4.0+.
3. Bundles compiled with GCC 9 (with the `gcc9` suffix) require glibc 2.29.
4. Bundles with the C1 compiler were tested on ARMv6/ARMv7/ARMv8 hardware. Bundles with both C1 and C2 compilers were tested on ARMv7/ARMv8 hardware.
5. Bundles with the CRaM (with the `cr` suffix) functionality require glibc 2.13.
6. Bundles with the C1 compiler will use FPU, if it is present and available, to speed up floating point operations. Bundles with both C1 and C2 compilers require FPU.
7. Bundles with the C1 compiler. Tested on ARMv5 hardware.

8. Bundles with the C1 compiler were tested on ARMv6 and ARMv7 hardware. Bundles with both C1 and C2 compilers were tested on ARMv7 hardware.
9. MIPS32r2 ISA, Big Endian, FPU in 32-bit mode or equivalent emulation.
10. Linux soft-float O32 MIPS ABI
11. Bundles for this platform were tested on QorIQ® T4240-RDB.
12. Hard-Float EABI bundles were tested on QorIQ® T1024RDB. SPE ABI bundles were tested on NXP® P2020RDB.

Azul Zulu Builds of OpenJDK with CRaC

NOTE

Currently, CRaC is only available on Linux/x64 and Linux/Arm64, in version 17 of Azul Zulu Builds of OpenJDK. For development, you can use the CRaC Java library, on any platform.

Operating System	Azul Zulu Version
	17
Linux (x86 64-bit)	
Linux (ARM 64-bit)	

Fixed Issues

This section covers all issues that were fixed in this release.

Fixed Common Vulnerabilities and Exposures

This section summarizes Common Vulnerabilities and Exposures (CVE) fixed in this release.

CVE #	Component	Protocol	Remote Exploit w/o Auth.	Base Score	Attack Vector	Attack Complex	Privileges Req'd	User Interact	Scope	Confidentiality	Integrity	Availability	Azul Zulu Versions Affected	Notes
CVE-2023-22043	JavaFX	Multiple	Yes	5.9	Network	High	None	None	Unchanged	None	High	None	20, 17, 11, 8	Note 1
CVE-2023-22041	Hotspot	None	No	5.1	Local	High	None	None	Unchanged	High	None	None	20, 17, 11	Note 1
CVE-2023-22036	Utility	Multiple	Yes	3.7	Network	High	None	None	Unchanged	None	None	Low	20, 17, 11	Note 2
CVE-2023-22044	Hotspot	Multiple	Yes	3.7	Network	High	None	None	Unchanged	Low	None	None	20, 17	Note 2
CVE-2023-22045	Hotspot	Multiple	Yes	3.7	Network	High	None	None	Unchanged	Low	None	None	20, 17, 11, 8	Note 2
CVE-2023-22049	Libraries	Multiple	Yes	3.7	Network	High	None	None	Unchanged	None	Low	None	20, 17, 11, 8, 7	Note 2
CVE-2023-25193	2D (Harfbuzz)	Multiple	Yes	3.7	Network	High	None	None	Unchanged	None	None	Low	20, 17, 11	Note 2
CVE-2023-22006	Networking	Multiple	Yes	3.1	Network	High	None	Required	Unchanged	None	Low	None	20, 17, 11	Note 1
CVE-2023-22051	GraalVM Compiler	Multiple	Yes	3.7	Network	High	None	None	Unchanged	Low	None	None	None	

Notes:

ID	Notes
1	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).

ID	Notes
2	This vulnerability can be exploited by using APIs in the specified Component, e.g., through a web service which supplies data to the APIs. This vulnerability also 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.

Non-CVE Security Fixes

The following table summarizes non-CVE security fixes implemented in this release.

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8294323	17, 20	Improve Shared Class Data	CPU,PSU
JDK-8296565	17, 20	Enhanced archival support	CPU,PSU
JDK-8298676	6, 7, 8, 11, 17, 20	Enhanced Look and Feel	CPU,PSU
JDK-8300285	11, 17, 20	Enhance TLS data handling	CPU,PSU
JDK-8300596	6, 7, 8, 11, 17, 20	Enhance Jar Signature validation	CPU,PSU
JDK-8301014	8, 11, 17, 20	Update libxml	CPU,PSU
JDK-8303376	11, 17, 20	Better launching of JDI	CPU,PSU
JDK-8306311	8, 11, 17, 20	Better XML support	CPU,PSU

OpenJDK Bug Fixes

The following table describes the OpenJDK changes implemented in this release.

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-7006339	7	[parfait] potential null pointer dereference in splashscreen	CPU,PSU
JDK-8003900	7	X11 dependencies should be removed from Mac OS X build.	CPU,PSU
JDK-8009729	7	Refix hotspot jni_<cpu>.h JNIEXPORT and JNIIMPORT definitions to match jdk version	CPU,PSU
JDK-8021954	7	VM SIGSEGV during classloading on MacOS; hs_err_pid file produced	CPU,PSU
JDK-8025673	7	[macosx] Disable X11 AWT toolkit	CPU,PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8033215	7	clang: node.cpp:284 IDX_INIT macro use uninitialized field _out	CPU,PSU
JDK-8034766	7	[parfait] JNI exception pending in jdk/src/macosex/native/sun/awt/CRobot.m	CPU,PSU
JDK-8037825	7	Fix warnings and enable "warnings as errors" in serviceability native libraries	CPU,PSU
JDK-8041620	7	Solaris Studio 12.4 C++ 5.13 change in behavior for placing friend declarations within surrounding scope	CPU,PSU
JDK-8042440	7	awt_Plugin no longer needed	CPU,PSU
JDK-8068412	7	[macosex] Initialization of Cocoa hangs if CoreAudio was initialized before	CPU,PSU
JDK-8074835	7	Resolve disabled warnings for libj2gss	CPU,PSU
JDK-8074836	7	Resolve disabled warnings for libosxkrb5	CPU,PSU
JDK-8129511	7	PlatformMidi.c:83 uses malloc without malloc header	CPU,PSU
JDK-8152856	7	Xcode 7.3 -Wshift-negative-value compile failure on Mac OS X	CPU,PSU
JDK-8174050	7	Compilation errors with clang-4.0	CPU,PSU
JDK-8182657	7	Make the required changes in Runtime code to build on OSX 10 + Xcode 8	CPU,PSU
JDK-8239400	7	[8u] clean up delete-non-virtual-dtor warnings in HotSpot	CPU,PSU
JDK-8253375	7	OSX build fails with Xcode 12.0 (12A7209)	CPU,PSU
JDK-8294323	17, 20	Improve Shared Class Data	CPU,PSU
JDK-8296565	17, 20	Enhanced archival support	CPU,PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8298676	6, 7, 8, 11, 17, 20	Enhanced Look and Feel	CPU,PSU
JDK-8300285	11, 17, 20	Enhance TLS data handling	CPU,PSU
JDK-8300596	6, 7, 8, 11, 17, 20	Enhance Jar Signature validation	CPU,PSU
JDK-8301998	11, 17, 20	Update HarfBuzz to 7.0.1	CPU,PSU
JDK-8302084	11, 17, 20	Enhanced font rendering	CPU,PSU
JDK-8302475	11, 17, 20	Enhance HTTP client file downloading	CPU,PSU
JDK-8302483	11, 17, 20	Enhance ZIP performance	CPU,PSU
JDK-8303376	11, 17, 20	Better launching of JDI	CPU,PSU
JDK-8304295	11, 17, 20	harfbuzz build fails with GCC 7 after JDK-8301998	CPU,PSU
JDK-8304460	17, 20	Improve array usages	CPU,PSU
JDK-8304468	8, 11, 17, 20	Better array usages	CPU,PSU
JDK-8305113	6, 8, 11, 17, 20	(tz) Update Timezone Data to 2023c	CPU,PSU
JDK-8305312	7, 8, 11, 17, 20	Enhanced path handling	CPU,PSU
JDK-8308682	11, 17, 20	Enhance AES performance	CPU,PSU
JDK-8072678	8	Wrong exception messages in java.awt.color.ICC_ColorSpace	PSU
JDK-8151460	8	Metaspace counters can have inconsistent values	PSU
JDK-8152432	8	Implement setting jtreg @requires properties vm.flavor, vm.bits, vm.compMode	PSU
JDK-8159156	8	[TESTBUG] ReserveMemory test is not useful on Aix.	PSU
JDK-8171426	11	java/lang/ProcessBuilder/Basic.java failed with Stream closed	PSU
JDK-8178806	11, 17	Better exception logging in crypto code	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8185736	8	missing default exception handler in calls to rethrow_Stub	PSU
JDK-8186801	8	Add regression test to test mapping based charsets (generated at build time)	PSU
JDK-8187522	11	test/sun/net/ftp/FtpURLConnectionLeak.java timed out	PSU
JDK-8201516	17, 20	DebugNonSafepoints generates incorrect information	PSU
JDK-8209167	11	Use CLDR's time zone mappings for Windows	PSU
JDK-8209546	11	Make sun/security/tools/keytool/autotest.sh to support macosx	PSU
JDK-8209880	11	tzdb.dat is not reproducibly built	PSU
JDK-8213531	11	Test javax/swing/border/TestTitledBorderLeak.java fails	PSU
JDK-8214459	11	NSS source should be removed	PSU
JDK-8214807	11	Improve handling of very old class files	PSU
JDK-8215015	11	[TESTBUG] remove unneeded -Xfuture option from tests	PSU
JDK-8215105	8	java/awt/Robot/HiDPIScreenCapture/ScreenCaptureTest.java: Wrong Pixel Color	PSU
JDK-8215575	11	C2 crash: assert(get_instanceKlass()&is_loaded()) failed: must be at least loaded	PSU
JDK-8224768	17	Test ActalisCA.java fails	PSU
JDK-8227060	17	Optimize safepoint cleanup subtask order	PSU
JDK-8227257	11, 17, 20	javax/swing/JFileChooser/4847375/bug4847375.java fails with AssertionError	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8232853	11	AuthenticationFilter.Cache::remove may throw ConcurrentModificationException	PSU
JDK-8238274	17	(sctp) JDK-7118373 is not fixed for SctpChannel	PSU
JDK-8241311	8	Move some charset mapping tests from closed to open	PSU
JDK-8243936	11	NonWriteable system properties are actually writeable	PSU
JDK-8244976	17	vmTestbase/nsk/jdi/Event/request/request001.java doesn't initialize eName	PSU
JDK-8245877	17	assert(_value != __null) failed: resolving NULL _value in JvmtiExport::post_compiled_method_load	PSU
JDK-8246383	11	NullPointerException in JceSecurity.getVerificationResult when using Entrust provider	PSU
JDK-8248001	17	javadoc generates invalid HTML pages whose ftp:// links are broken	PSU
JDK-8252990	17	Intrinsify Unsafe.storeStoreFence	PSU
JDK-8254711	17	Add java.security.Provider.getService JFR Event	PSU
JDK-8257856	11, 17	Make ClassFileVersionsTest.java robust to JDK version updates	PSU
JDK-8259530	11	Generated docs contain MIT/GPL-licensed works without reproducing the licence	PSU
JDK-8261495	17	Shenandoah: reconsider update references memory ordering	PSU
JDK-8263059	8	security/infra/java/security/cert/CertPathValidator/certification/ComodoCA.java fails due to revoked cert	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8263420	11	Incorrect function name in NSAccessibilityStaticText native peer implementation	PSU
JDK-8264290	11	Create implementation for NSAccessibilityComponentGroup protocol peer	PSU
JDK-8264304	11	Create implementation for NSAccessibilityToolbar protocol peer	PSU
JDK-8265486	11	ProblemList javax/sound/midi/Sequencer/Recording.java on macosx-aarch64	PSU
JDK-8268298	17	jdk/jfr/api/consumer/log/TestVerbosity.java fails: unexpected log message	PSU
JDK-8268558	8, 11	[TESTBUG] Case 2 in TestP11KeyFactoryGetRSAKeySpec is skipped	PSU
JDK-8268582	17	javadoc throws NPE with --ignore-source-errors option	PSU
JDK-8269746	11	C2: assert(!in.is_CFG()) failed: CFG Node with no controlling input?	PSU
JDK-8269821	17	Remove is-queue-active check in inner loop of write_ref_array_pre_work	PSU
JDK-8270434	17	JDI+UT: Unexpected event in JDI tests	PSU
JDK-8270859	17	Post JEP 411 refactoring: client libs with maximum covering > 10K	PSU
JDK-8270869	17	G1ServiceThread may not terminate	PSU
JDK-8271519	17	java/awt/event/SequencedEvent/MultipleContexts FunctionalTest.java failed with "Total [200] - Expected [400]"	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8273909	17	vmTestbase/nsk/jdi/Event/request/request001 can still fail with "ERROR: new event is not ThreadStartEvent"	PSU
JDK-8274243	17	Implement fast-path for ASCII-compatible CharsetEncoders on aarch64	PSU
JDK-8274615	17	Support relaxed atomic add for linux-aarch64	PSU
JDK-8274864	11, 17	Remove Amman/Cairo hacks in ZoneInfoFile	PSU
JDK-8275233	11, 17	Incorrect line number reported in exception stack trace thrown from a lambda expression	PSU
JDK-8275287	17	Relax memory ordering constraints on updating instance class and array class counters	PSU
JDK-8275721	11, 17	Name of UTC timezone in a locale changes depending on previous code	PSU
JDK-8275735	11, 17	[linux] Remove deprecated Metrics api (kernel memory limit)	PSU
JDK-8276058	17	Some swing test fails on specific CI macos system	PSU
JDK-8276880	11	Remove java/lang/RuntimeTests/exec/ExecWithDir as unnecessary	PSU
JDK-8277407	17	javax/swing/plaf/synth/SynthButtonUI/6276188/bug6276188.java fails to compile after JDK-8276058	PSU
JDK-8277775	11, 17	Fixup bugids in RemoveDropTargetCrashTest.java - add 4357905	PSU
JDK-8277881	8	Missing SessionID in TLS1.3 resumption in compatibility mode	PSU
JDK-8278146	17	G1: Rework VM_G1Concurrent VMOp to clearly identify it as pause	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8278434	11, 17	timeouts in test java/time/test/java/time/format/TestZoneTextPrinterParser.java	PSU
JDK-8278834	17	Error "Cannot read field "sym" because "this.lvar[od]" is null" when compiling	PSU
JDK-8278851	8	Correct signer logic for jars signed with multiple digest algorithms	PSU
JDK-8280703	11	CipherCore.doFinal(...) causes potentially massive byte[] allocations during decryption	PSU
JDK-8282077	11, 17	PKCS11 provider C_sign() impl should handle CKR_BUFFER_TOO_SMALL error	PSU
JDK-8282201	11, 17, 20	Consider removal of expiry check in VerifyCACerts.java test	PSU
JDK-8282227	17	Locale information for nb is not working properly	PSU
JDK-8282345	8	handle latest VS2022 in abstract_vm_version	PSU
JDK-8282467	11	add extra diagnostics for JDK-8268184	PSU
JDK-8282600	8, 11	SSLSocketImpl should not use user_canceled workaround when not necessary	PSU
JDK-8282704	17	runtime/Thread/StopAtExit.java may leak memory	PSU
JDK-8283059	11	Uninitialized warning in check_code.c with GCC 11.2	PSU
JDK-8283326	17	Implement SafeFetch statically	PSU
JDK-8283520	17	JFR: Memory leak in dcmd_arena	PSU
JDK-8283566	17	G1: Improve G1BarrierSet::enqueue performance	PSU
JDK-8284331	17	Add sanity check for signal handler modification warning.	PSU
JDK-8284997	17	arm32 build crashes since JDK-8283326	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8285497	11	Add system property for Java SE specification maintenance version	PSU
JDK-8285515	8	(dc) DatagramChannel.disconnect fails with "Invalid argument" on macOS 12.4	PSU
JDK-8285635	17	javax/swing/JRootPane/DefaultButtonTest.java failed with Default Button not pressed for L&F: com.sun.java.swing.plaf.motif.MotifLookAndFeel	PSU
JDK-8285675	17	Temporary fix for arm32 SafeFetch	PSU
JDK-8285987	17	executing shell scripts without #! fails on Alpine linux	PSU
JDK-8286191	17	misc tests fail due to JDK-8285987	PSU
JDK-8286287	17	Reading file as UTF-16 causes Error which "shouldn't happen"	PSU
JDK-8286331	17	jni_GetStringUTFChars() uses wrong heap allocator	PSU
JDK-8286346	17	3-parameter version of AllocateHeap should not ignore AllocFailType	PSU
JDK-8286398	11, 17	Address possibly lossy conversions in jdk.internal.le	PSU
JDK-8287007	11, 17	[cgroups] Consistently use stringStream throughout parsing code	PSU
JDK-8287246	11, 17	DSAKeyValue should check for missing params instead of relying on KeyFactory provider	PSU
JDK-8287404	8, 11, 17	Improve ping times	PSU
JDK-8287541	17	Files.writeString fails to throw IOException for charset "windows-1252"	PSU
JDK-8287854	17	Dangling reference in ClassVerifier::verify_class	PSU
JDK-8287876	11, 17	The recently de-problemlisted TestTitledBorderLeak test is unstable	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8287897	11, 17	Augment src/jdk.internal.le/share/legal/jline.md with information on 4th party dependencies	PSU
JDK-8288436	8, 11, 17	Improve Xalan supports	PSU
JDK-8288589	17	Files.readString ignores encoding errors for UTF-16	PSU
JDK-8288719	17	[arm32] SafeFetch32 thumb interleaving causes random crashes	PSU
JDK-8289301	8, 11	P11Cipher should not throw out of bounds exception during padding	PSU
JDK-8289509	17	Improve test coverage for XPath Axes: descendant, descendant-or-self, following, following-sibling	PSU
JDK-8289748	20	C2 compiled code crashes with SIGFPE with -XX:+StressLCM and -XX:+StressGCM	PSU
JDK-8289949	17	Improve test coverage for XPath: operators	PSU
JDK-8290822	17, 20	C2: assert in PhaseIdealLoop::do_unroll() is subject to undefined behavior	PSU
JDK-8291226	11, 17	Create Test Cases to cover scenarios for JDK-8278067	PSU
JDK-8291637	11, 17	HttpClient default keep alive timeout not followed if server sends invalid value	PSU
JDK-8291638	11, 17	Keep-Alive timeout of 0 should close connection immediately	PSU
JDK-8292206	11, 17	TestCgroupMetrics.java fails as getMemoryUsage() is lower than expected	PSU
JDK-8292301	17	[REDO v2] C2 crash when allocating array of size too large	PSU
JDK-8292407	17	Improve Weak CAS VarHandle/Unsafe tests resilience under spurious failures	PSU
JDK-8292652	8	Enhance macro allocation	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8292713	17	Unsafe.allocateInstance should be intrinsified without UseUnalignedAccesses	PSU
JDK-8292755	17	Non-default method in interface leads to a stack overflow in JShell	PSU
JDK-8292990	17	Improve test coverage for XPath Axes: parent	PSU
JDK-8293232	8, 11	Fix race condition in pkcs11 SessionManager	PSU
JDK-8293295	17	Add type check asserts to java_lang_ref_Reference accessors	PSU
JDK-8293492	17	ShenandoahControlThread missing from hs-err log and thread dump	PSU
JDK-8293815	8, 11	P11PSSSignature.engineUpdate should not print debug messages during normal operation	PSU
JDK-8293858	17	Change PKCS7 code to use default SecureRandom impl instead of SHA1PRNG	PSU
JDK-8293887	17	AArch64 build failure with GCC 12 due to maybe-uninitialized warning in libfdlibm k_rem_pio2.c	PSU
JDK-8294183	17	AArch64: Wrong macro check in SharedRuntime::generate_deopt_blob	PSU
JDK-8294474	8, 11, 17	Better AES support	PSU
JDK-8294548	11	Problem list SA core file tests on macosx-x64 due to JDK-8294316	PSU
JDK-8294673	17	JFR: Add SecurityProviderService#threshold to TestActiveSettingEvent.java	PSU
JDK-8294717	17	(bf) DirectByteBuffer constructor will leak if allocating Deallocator or Cleaner fails with OOME	PSU
JDK-8294906	11, 17	Memory leak in PKCS11 NSS TLS server	PSU
JDK-8295304	8, 11, 17, 20	Runtime support improvements	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8295530	8	Update Zlib Data Compression Library to Version 1.2.13	PSU
JDK-8295564	17	Norwegian Nynorsk Locale is missing formatting	PSU
JDK-8295974	11, 17	jni_FatalError and Xcheck:jni warnings should print the native stack when there are no Java frames	PSU
JDK-8296084	17	javax/swing/JSpinner/4788637/bug4788637.java fails intermittently on a VM	PSU
JDK-8296318	17, 20	use-def assert: special case undetected loops nested in infinite loops	PSU
JDK-8296343	17	CPVE thrown on missing content-length in OCSP response	PSU
JDK-8296389	20	C2: PhaseCFG::convert_NeverBranch_to_Goto must handle both orders of successors	PSU
JDK-8296412	17, 20	Special case infinite loops with unmerged backedges in IdealLoopTree::check_safepts	PSU
JDK-8296496	8	Overzealous check in sizecal.h prevents large memory allocation	PSU
JDK-8296545	17	C2 Blackholes should allow load optimizations	PSU
JDK-8296676	8, 11, 17	Improve String platform support	PSU
JDK-8296684	8, 11, 17	Improve String platform support	PSU
JDK-8296692	8, 11, 17	Improve String platform support	PSU
JDK-8296700	8	Improve String platform support	PSU
JDK-8296832	8, 11, 17	Improve Swing platform support	PSU
JDK-8296934	11, 17	Write a test to verify whether Undecorated Frame can be iconified or not	PSU
JDK-8296957	8	One more cast in SAFE_SIZE_NEW_ARRAY2	PSU
JDK-8297154	17	Improve safepoint cleanup logging	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8297371	8, 11, 17	Improve UTF8 representation redux	PSU
JDK-8297450	11, 17	ScaledTextFieldBorderTest.java fails when run with -show parameter	PSU
JDK-8297587	17, 20	Upgrade JLine to 3.22.0	PSU
JDK-8297730	17, 20	C2: Arraycopy intrinsic throws incorrect exception	PSU
JDK-8297955	17	LDAP CertStore should use LdapName and not String for DN's	PSU
JDK-8298108	8	Add a regression test for JDK-8297684	PSU
JDK-8298191	8, 11, 17	Enhance object reclamation process	PSU
JDK-8298271	8	java/security/SignedJar/spi-calendar-provider/TestSPISigned.java failing on Windows	PSU
JDK-8298310	8, 11, 17	Enhance TLS session negotiation	PSU
JDK-8298488	17	[macos13] tools/jpackage tests failing with "Exit code: 137" on macOS	PSU
JDK-8298568	20	Fastdebug build fails after JDK-8296389	PSU
JDK-8298667	8, 11, 17	Improved path handling	PSU
JDK-8298887	11, 17, 20	On the latest macOS+XCode the Robot API may report wrong colors	PSU
JDK-8299129	8, 11, 17, 20	Enhance NameService lookups	PSU
JDK-8299179	17, 20	ArrayFill with store on backedge needs to reduce length by 1	PSU
JDK-8299259	11, 17, 20	C2: Div/Mod nodes without zero check could be split through iv phi of loop resulting in SIGFPE	PSU
JDK-8299544	17	Improve performance of CRC32C intrinsics (non-AVX-512) for small inputs	PSU
JDK-8299570	17, 20	[JVMCI] Insufficient error handling when CodeBuffer is exhausted	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8299945	20	Update the release version after forking Apr CPU23_04	PSU
JDK-8299946	20	Update the Jul CPU23_07 release date in master branch after forking Apr CPU23_04	PSU
JDK-8299959	17, 20	C2: CmpU::Value must filter overflow computation against local sub computation	PSU
JDK-8300042	17	Improve CPU related JFR events descriptions	PSU
JDK-8300079	11, 17, 20	SIGSEGV in LibraryCallKit::inline_string_copy due to constant NULL src argument	PSU
JDK-8300205	11	Swing test bug8078268 make latch timeout configurable	PSU
JDK-8300590	20	[JVMCI] BytecodeFrame.equals is broken	PSU
JDK-8300692	20	GCC 12 reports some compiler warnings in bundled freetype	PSU
JDK-8300823	17, 20	UB: Compile::_phase_optimize_finished is initialized too late	PSU
JDK-8300939	17	sun/security/provider/certpath/OCSP/OCSPNoContentLength.java fails due to network errors	PSU
JDK-8301050	17	Detect Xen Virtualization on Linux aarch64	PSU
JDK-8301119	8, 11, 17, 20	Support for GB18030-2022	PSU
JDK-8301123	17	Enable Symbol refcounting underflow checks in PRODUCT	PSU
JDK-8301170	11	perfMemory_windows.cpp add free_security_attr to early returns	PSU
JDK-8301190	17, 20	[vectorapi] The typeChar of LaneType is incorrect when default locale is tr	PSU
JDK-8301216	17	ForkJoinPool invokeAll() ignores timeout	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8301269	20	Update Commons BCEL to Version 6.7.0	PSU
JDK-8301338	17, 20	Identical branch conditions in CompileBroker::print_heapinfo	PSU
JDK-8301400	8	Allow additional characters for GB18030-2022 support	PSU
JDK-8301401	11	Allow additional characters for GB18030-2022 support	PSU
JDK-8301491	17, 20	C2: java.lang.StringUTF16::indexOfChar intrinsic called with negative character argument	PSU
JDK-8301637	17	ThreadLocalRandom.current().doubles().parallel() contention	PSU
JDK-8301661	17	Enhance os::pd_print_cpu_info on macOS and Windows	PSU
JDK-8301700	8	Increase the default TLS Diffie-Hellman group size from 1024-bit to 2048-bit	PSU
JDK-8302151	11, 17	BMPImageReader throws an exception reading BMP images	PSU
JDK-8302172	17, 20	[JVMCI] HotSpotResolvedJavaMethodImpl.canBeInlined must respect ForceInline	PSU
JDK-8302191	8, 11, 17, 20	Performance degradation for float/double modulo on Linux	PSU
JDK-8302320	17	AsyncGetCallTrace obtains too few frames in sanity test	PSU
JDK-8302491	17, 20	NoClassDefFoundError omits the original cause of an error	PSU
JDK-8302508	17	Add timestamp to the output TraceCompilerThreads	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8302594	17, 20	use-after-free in Node::destruct	PSU
JDK-8302595	17, 20	use-after-free related to GraphKit::clone_map	PSU
JDK-8302791	8, 11, 17	Add specific ClassLoader object to Proxy IllegalArgumentException message	PSU
JDK-8302849	17	SurfaceManager might expose partially constructed object	PSU
JDK-8302976	20	C2 Intrinsicification of Float.floatToFloat16 and Float.float16ToFloat Yields Different Result than the Interpreter	PSU
JDK-8303028	8	Update system property for Java SE specification maintenance version	PSU
JDK-8303069	17, 20	Memory leak in CompilerOracle::parse_from_line	PSU
JDK-8303102	11, 17, 20	jcmm: ManagementAgent.status truncates the text longer than O_BUFLEN	PSU
JDK-8303186	20	Missing Classpath exception from Continuation.c	PSU
JDK-8303354	11, 17	addCertificatesToKeystore in KeystoreImpl.m needs CFRelease call in early potential CHECK_NULL return	PSU
JDK-8303440	11, 17, 20	The "ZonedDateTime.parse" may not accept the "UTC+XX" zone id	PSU
JDK-8303465	11, 17	KeyStore of type KeychainStore, provider Apple does not show all trusted certificates	PSU
JDK-8303482	11, 17	Update LCMS to 2.15	PSU
JDK-8303508	17, 20	Vector.lane() gets wrong value on x86	PSU
JDK-8303511	17, 20	C2: assert(get_ctrl(n) == cle_out) during unrolling	PSU
JDK-8303564	11, 17, 20	C2: "Bad graph detected in build_loop_late" after a CMove is wrongly split thru phi	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8303575	17	adjust Xen handling on Linux aarch64	PSU
JDK-8303576	11, 17	addIdentitiesToKeystore in KeystoreImpl.m needs CFRelease call in early potential CHECK_NULL return	PSU
JDK-8303588	17	[JVMCI] make JVMCI source directories conform with standard layout	PSU
JDK-8303809	8	Dispose context in SPNEGO NegotiatorImpl	PSU
JDK-8303822	11, 17	gtestMain should give more helpful output	PSU
JDK-8303861	11, 17	Error handling step timeouts should never be blocked by OnError and others	PSU
JDK-8303937	11, 17, 20	Corrupted heap dumps due to missing retries for os::write()	PSU
JDK-8303949	17	gcc10 warning Linux ppc64le - note: the layout of aggregates containing vectors with 8-byte alignment has changed in GCC 5	PSU
JDK-8304054	17	Linux: NullPointerException from FontConfiguration.getVersion in case no fonts are installed	PSU
JDK-8304063	17	tools/jpackage/share/AppLauncherEnvTest.java fails when checking LD_LIBRARY_PATH	PSU
JDK-8304291	11, 17, 20	[AIX] Broken build after JDK-8301998	PSU
JDK-8304350	11, 17, 20	Font.getStringBounds calculates wrong width for TextAttribute.TRACKING other than 0.0	PSU
JDK-8304498	20	JShell does not switch to raw mode when there is no /bin/test	PSU
JDK-8304671	17, 20	javac regression: Compilation with --release 8 fails on underscore in enum identifiers	PSU
JDK-8304683	17, 20	Memory leak in WB_IsMethodCompatible	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8304725	17	AsyncGetCallTrace can cause SIGBUS on M1	PSU
JDK-8304760	8, 11, 17, 20	Add 2 Microsoft TLS roots	PSU
JDK-8304878	20	ConcurrentModificationException in javadoc tool	PSU
JDK-8304880	17	[PPC64] VerifyOops code in C1 doesn't work with ZGC	PSU
JDK-8304976	17	Optimize DateTimeFormatterBuilder.ZoneTextPrinterParser.getTree()	PSU
JDK-8305088	17	SIGSEGV in Method::is_method_handle_intrinsic	PSU
JDK-8305165	8	[8u] ServiceThread::nmethods_do is not called to keep nmethods from being zombied while in the queue	PSU
JDK-8305352	20	updateIconImages may lead to deadlock after JDK-8276849	PSU
JDK-8305400	11, 17	ISO 4217 Amendment 175 Update	PSU
JDK-8305403	17, 20	Shenandoah evacuation workers may deadlock	PSU
JDK-8305421	20	Work around JDK-8305420 in CDSJDITest.java	PSU
JDK-8305481	17	gtest is_first_C_frame failing on ARM	PSU
JDK-8305528	11	[11u] Backport of JDK-8259530 breaks build with JDK10 bootstrap VM	PSU
JDK-8305565	20	Incorrect milestone for release JDK 20.0.2	PSU
JDK-8305668	20	PPC: Non-Top Interpreted frames should be independent of ABI_ELFv2	PSU
JDK-8305681	8	Allow additional characters for GB18030-2022 (Level 2) support	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8305682	11	Update the javadoc in the Character class to state support for GB 18030-2022 Implementation Level 2	PSU
JDK-8305690	17	[X86] Do not emit two REX prefixes in Assembler::prefix	PSU
JDK-8305711	11, 17	Arm: C2 always enters slowpath for monitorexit	PSU
JDK-8305766	20	ProblemList runtime/CompressedOops/CompressedClassPointers.java	PSU
JDK-8305975	8, 11, 17, 20	Add TWCA Global Root CA	PSU
JDK-8305993	17	Add handleSocketErrorWithMessage to extend nio Net.c exception message	PSU
JDK-8305994	17, 20	Guarantee eventual async monitor deflation	PSU
JDK-8306049	20	Change milestone to fcs for all releases	PSU
JDK-8306072	17	Open source several AWT MouseInfo related tests	PSU
JDK-8306133	17	Open source few AWT Drag & Drop related tests	PSU
JDK-8306409	17	Open source AWT KeyBoardFocusManger, LightweightComponent related tests	PSU
JDK-8306432	17	Open source several AWT Text Component related tests	PSU
JDK-8306466	17	Open source more AWT Drag & Drop related tests	PSU
JDK-8306489	17	Open source AWT List related tests	PSU
JDK-8306640	17	Open source several AWT TextArea related tests	PSU
JDK-8306652	17	Open source AWT MenuItem related tests	PSU
JDK-8306681	17	Open source more AWT DnD related tests	PSU
JDK-8306683	17	Open source several clipboard and color AWT tests	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8306734	20	Shenandoah: Missing barriers on deoptimization path	PSU
JDK-8306752	17	Open source several container and component AWT tests	PSU
JDK-8306753	17	Open source several container AWT tests	PSU
JDK-8306755	17	Open source few Swing JComponent and AbstractButton tests	PSU
JDK-8306768	11, 17	CodeCache Analytics reports wrong threshold	PSU
JDK-8306774	17, 20	Make runtime/Monitor/GuaranteedAsyncDeflationIntervalTest.java more reliable	PSU
JDK-8306825	17, 20	Monitor deflation might be accidentally disabled by zero intervals	PSU
JDK-8306850	17	Open source AWT Modal related tests	PSU
JDK-8306871	17	Open source more AWT Drag & Drop tests	PSU
JDK-8306883	17, 20	Thread stacksize is reported with wrong units in os::create_thread logging	PSU
JDK-8306941	17	Open source several datatransfer and dnd AWT tests	PSU
JDK-8306943	17	Open source several dnd AWT tests	PSU
JDK-8306954	17	Open source five Focus related tests	PSU
JDK-8306955	17	Open source several JComboBox jtreg tests	PSU
JDK-8306996	17	Open source Swing MenuItem related tests	PSU
JDK-8307080	17	Open source some more JComboBox jtreg tests	PSU
JDK-8307104	20	[AIX] VM crashes with UserRTMLocking on Power10	PSU
JDK-8307128	17	Open source some drag and drop tests 4	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8307130	17	Open source few Swing JMenu tests	PSU
JDK-8307133	17	Open source some JTable jtreg tests	PSU
JDK-8307134	8, 11, 17, 20	Add GTS root CAs	PSU
JDK-8307135	17	java/awt/dnd/NotReallySerializableTest/NotReallySerializableTest.java failed	PSU
JDK-8307310	8	Backport the tests for JDK-8058969 and JDK-8039271 to the OpenJDK8	PSU
JDK-8307331	17	Correctly update line maps when class redefine rewrites bytecodes	PSU
JDK-8307346	17, 20	Add missing gc+phases logging for ObjectCount(AfterGC) JFR event collection code	PSU
JDK-8307347	17	serviceability/sa/ClhsdbDumpclass.java could leave files owned by root on macOS	PSU
JDK-8307378	17, 20	Allow collectors to provide specific values for GC notifications' actions	PSU
JDK-8307381	17	Open Source JFrame, JIF related Swing Tests	PSU
JDK-8307425	17, 20	Socket input stream read burns CPU cycles with back-to-back poll(0) calls	PSU
JDK-8307466	20	java.time.Instant calculation bug in until and between methods	PSU
JDK-8307531	8	[aarch64] JDK8 single-step debugging is extremely slow	PSU
JDK-8307799	17	Newly added java/awt/dnd/MozillaDnDTest.java has invalid jtreg <code>@requires</code> clause	PSU
JDK-8307811	11	[TEST] compilation of TimeoutInErrorHandlingTest fails after backport of JDK-8303861	PSU
JDK-8308006	11	Missing NMT memory tagging in CMS	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8308554	17	[17u] Fix commit of 8286191. vm.musl was not removed from ExternalEditorTest	PSU
JDK-8308880	17	[17u] micro bench ZoneStrings missed in backport of 8278434	PSU
JDK-8308884	11, 17	[17u/11u] Backout JDK-8297951	PSU
JDK-8309476	11	[11u] tools/jmod/hashes/HashesOrderTest.java fails intermittently	PSU
JDK-8310947	8	gb18030-2000 not selectable with LANG=zh_CN.GB18030 after JDK-8301119	PSU

OpenJFX Bug Fixes

The following table describes the OpenJFX changes implemented in this release.

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8301009	8, 11, 17, 20	Update libxml2 to 2.10.3	CPU,PSU
JDK-8301014	8, 11, 17, 20	Update libxml	CPU,PSU
JDK-8304751	8, 11, 17, 20	Improve pipeline layout	CPU,PSU
JDK-8306115	8, 11, 17, 20	Update libxml2 to 2.10.4	CPU,PSU
JDK-8306311	8, 11, 17, 20	Better XML support	CPU,PSU
JDK-8282359	8, 17, 20	Intermittent WebKit build failure on Windows: C1090: PDB API call failed, error code 23	PSU
JDK-8284542	8	[Accessibility] [Win] Missing attribute for toggle state of CheckBox in CheckBoxTreetItem	PSU
JDK-8284662	8	[Win][Accessibility][ListCell] Screen reader fails to read ListView/ComboBox item count if > 100	PSU
JDK-8286089	8, 17, 20	Intermittent WebKit build failure on macOS in JavaScriptCore	PSU

OpenJDK Patch ID	Azul Zulu Version	Synopsis	CPU/PSU
JDK-8304008	17, 20	Update README.md and CONTRIBUTING.md for jfx update repos	PSU
JDK-8304441	8	[macos] Crash when putting invalid unicode char on clipboard	PSU
JDK-8304665	8	Change to Xcode12.4+1.1 devkit	PSU

Bug Fixes Specific to Azul Zulu Builds of OpenJDK

The following table describes the Azul Zulu bug fixes implemented in this release.

Issue ID	Azul Zulu Version	Synopsis	CPU/PSU
ZULU-47407	6	Failure in java/util/TimeZone/AssureTzdataVersion.java - tzdata versions don't match: run-time=2023c, tests=2022g	CPU,PSU
ZULU-47616	6	zulu6 could not run ubi8, ubi9 container images: no matching libnsl available in repos	CPU,PSU
ZULU-48358	7	test_gamma crash in PerfDataManager::destroy	CPU,PSU
ZULU-48517	7	[7u] Change to Xcode12/clang for building on macOS	CPU,PSU
ZULU-48711	11	Solaris build is broken by Harfbuzz 7.0.1	CPU,PSU
ZULU-48713	6, 7, 8, 11, 17, 20	dmg scripts failure	CPU,PSU
ZULU-48739	17	Update JFX to zulu20.0.1.0.101+100	CPU,PSU
ZULU-48745	11	Update JFX to zulu19.0.3.0.101+100	CPU,PSU
ZULU-48746	8	Update JFX to zulu8u381-b01	CPU,PSU
ZULU-48959	6, 7	[7u] fix 32-bit build failure in docker	CPU,PSU

Issue ID	Azul Zulu Version	Synopsis	CPU/PSU
ZULU-49168	7	Failure in sun/misc/CopyMemory.java - SIGSEGV (0xb) at pc=0x00000001076c884a, pid=50556, tid=17667	CPU,PSU
ZULU-49175	6	[6u] use different delimiter for sed substitute	CPU,PSU
ZULU-49348	8	Update OpenJSSE version to 1.1.13	CPU,PSU
ZULU-49476	6, 7, 8, 11, 17, 20	msi: add location	CPU,PSU
ZULU-44402	8	Race between CRStopCompileAfterRestore and CompilerCpuPolicy	PSU
ZULU-47189	8	aarch32 can't be compiled in armv7 thumb mode	PSU
ZULU-47356	8	Update LZ4 to 1.9.4	PSU
ZULU-47372	8	Debug version of zulu8 crashes on on MacOS M1	PSU
ZULU-47853	8, 11, 17	New -XX:+UseSystemFloatModulo disable of merged: 8302191: Performance degradation for float/double modulo on Linux	PSU
ZULU-48489	8	Allow to build crs agent from sources	PSU
ZULU-48547	8	zulu8_qnx build fails with "lz4.c: Command not found"	PSU
ZULU-48669	8, 11, 17	unnecessary call of hash.cpp/sha256 method when CRS is not intended to be started	PSU
ZULU-48687	8, 11, 17, 20	Improve readme text with the product link (PMM-402)	PSU
ZULU-48695	8, 11, 17	adding heuristic: report compilation events as VM_METHOD_FIRST_CALLED event	PSU
ZULU-48967	8, 11, 17	AVD agent to be used: 1.0.30	PSU
ZULU-49194	8	Use cram-release-6	PSU
ZULU-49206	8, 11, 17	AVD agent to be used: 1.0.32	PSU

Issue ID	Azul Zulu Version	Synopsis	CPU/PSU
ZULU-49363	17	Checkpoint fails with error java.lang.NoSuchMethodError	PSU
ZULU-49601	17, 20	Update JFX to zulu20.0.2+100	PSU
ZULU-50102	8	[CRaM] Renaissance 0.14 test finagle-chirper causes JVM crash	PSU
ZULU-50438	17	Use crac-criu b31	PSU
ZULU-50509	11	JVM crash at Linux-armv5	PSU
ZULU-50529	8	Enable build Zulu8 under AIX with XLC 16.1	PSU

Bug Fixes Specific to Azul Zulu Builds of OpenJDK with JavaFX

There are no fixed issues to report in this release.

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