Zing System Tools Release Notes

This document provides release information for Zing System Tools 5.20.6.

January 18, 2018

Table of Contents

1 Zing System Tools Overview

The Azul Systems® Zing® platform uses the Zing Virtual Machine (ZVM) to run Java™ technology-based applications. In the Zing product, the Zing System Tools (ZST) component, installed on each ZVM host system, manages the elastic and highly scalable shared memory resources.

Zing System Tools provide functionality to perform memory management and display information about active Zing processes, system behavior, and Zing memory usage.

Important: Any minor changes to Azul tools such as zing-ps and GC Log Analyser can cause customer production scripts that parse the output from these tools to report erroneous results.

The following documentation is included with Zing System Tools 5.20.6. See http://www.azul.com/downloads/software-downloads-and-documents/.

Document Title	Purpose	Format
Zing System Tools Release Notes (this document)	Release information including new ZST features, resolved issues, and known issues.	PDF
Zing Virtual Machine Release Notes	Release information about the latest available version of ZVM.	PDF
Zing System Requirements and Compatibility References	List of Zing System Requirements including Operating System, CPU, Memory, and Hardware Disk Storage Space. Provides information about Zing Component Version Compatibility and ZST/ Zing API Compatibility.	PDF
Zing Getting Started Guide	Provides reference information about how to install Zing components, configure Zing memory management, and run your Java applications with Zing.	PDF
Zing User's Guide	Provides detailed description of Zing installation, memory configuration, using the Pool License Server, running Java applications with Zing, troubleshooting, and using additional tools and utilities to improve performance of your Java applications.	PDF
Zing Common Vulnerabilities	List of CVE fixes integrated in this release.	PDF

Document Title	Purpose	Format
and Exposures List		
Zing MXBeans Javadoc	Javadoc documentation for Zing MXBeans.	PDF

2 New Features and Updates in Zing System Tools

Below is the list of the features and updates introduced in ZST 5.20.6:

Providing Compatibility with the Intel CPU Bug Fix	ZST 5.20.5 and higher provides compatibility with the newly available fixes for the recently reported Intel CPU kernel side-channel security flaws, and is required for Zing to operate on Linux distributions that have been updated to address these flaws with the addition of KPTI (kernel page table isolation). It is recommended to upgrade your ZST to ZST 5.20.5 or higher as soon as possible. Our recommendation for best practice in isolating changes independently is to update Zing to use ZST 5.20.5 and verify your application launches and works, then apply your KPTI kernel update, and recheck that your application launches and still works.
Installation Behavior Change	ZST 5.20.x running ZVM 17.06.1.0 and later implement a behavior change for the default memory reservation policy. Previously, the default at the time of memory configuration was for all requested memory to be pre-allocated (reserve-at-config) at the time of configuration and, naturally, ahead of JVM startup. For the version of Zing (ZST and ZVM) downloaded from the free trial website, the default has been changed to not reserve the memory during the memory configuration but at ZVM startup. When installing ZST 5.20.* using RPM and DEB packages, the Zing memory needs to be configured manually upon installation by running "system-config-zing-memory." The following table shows the list of the packages that require manual memory configuration and the packages that have reserve-at-launch memory pre-configured during the installation.

Operating System Package	Zing Memory Configuration
RHEL 5, OEL 5 (RHEL 5), RHEL 6, RHEL 6 MRG (RHEL 6), Amazon Linux (RHEL DKMS), DEB DKMS, SLES DKMS, RHEL DKMS.	manual configuration after installation
OEL 6, RHEL 7, OEL 7, SLES 11 SP4, SLES	reserve-at-

	12, Ubuntu 12.04, Ubuntu 14.04, Ubuntu 16.04.	launch configuration during installation
Extended support for Linux kernels	Additional support for the following operating systems: • Ubuntu 16.04 • SLES 12, SLES 11 SP4 • Oracle Linux 6, 7 • Amazon Linux • RHEL/CentOS 7	

3 Zing System Tools Resolved Issues

The following table lists known issues that are resolved as of Zing System Tools 5.20.6. The Bug IDs listed are Azul internal reference numbers.

Bug ID	Release Resolved	Description
12992	5.20.6	Zing memory crashes with the following error: `Unknown symbol kaiser_set_shadow_pgd (err 0).`
12506	5.20.3	Kernel crash on RHEL 5 systems when running `zing-ps` in a loop to print ZVM process information (Error message: `unable to handle kernel NULL pointer dereference`).
12202	5.20.3	`zing-ps` missing to print "Consolidated Summary" of memory usage when used along with `--comma` option.
11968	5.20.2	Linux kernel bug caused by incorrect Zing memory management (at `/var/lib/dkms/zing_mm/[5.20.*|5.21.*]/build/zm_mm.c:4801`).
12057	5.20.2	Running a ZVM on a machine with an enabled user-level Non-Uniform Memory Access Daemon (numad) daemon causes unexpected high system load average.
12442	5.20.2	Kernel crash when running zing-ps in a loop to print ZVM process information (Error message: `unable to handle kernel NULL pointer dereference`).
10960	5.20.1	Long application pause times occur during New-To-Old/Old collections when collecting both the New and Old Generations.
8131	5.20.1	Kernel crashes with the following error messages: `BUG: unable to handle kernel NULL pointer dereference`
5504	5.16.0	The `zing-ps` command should report `"zing-memory is stopped. No Zing processes found."` in all situations where zing-memory is not running.

Bug ID	Release Resolved	Description
8378	5.15.0	Dumping non-Zing cores causes RHEL 5 systems to panic under certain conditions.
7530	5.15.0	The `java -version` command reports an exception: `Failed to reserve lower 2g address. error : 12`. The fix changes the prereserve mmap in the `libc_hooks init()` to `MAP_NORESERVE` and `PROT_NONE`.
7484	5.15.0	Deadlock is detected when trying to preload a third party library `jemalloc`.
4883	5.15.0	Entering "default" for contingency memory when configuring ZST memory caused 0 size pool.
7612	5.14.0	Unable to shutdown or startup Zing instances when running incompatible versions of ZVM and ZST.
7455	5.12.0	Kernel may crash when configuring Zing memory on some SGI systems.
7207	5.12.0	On Ubuntu 16.04, `zing-ps` reports the following error for non-root users: `Unable to open /proc/33639/maps: errno=13: Permission denied`

7175	5.12.0	On Ubuntu 16.04, when the zing-memory service is stopped, attempting to start a ZVM gives the following error:
		`Zing Error: The Zing memory device (/dev/zing_mm*) is not present.`
		`Zing Error: Please make sure the device is shared with the container. See the Zing documentation for details.`

7000	5.12.0	Zing core bundler deletes Zing core when no space is left in the current working directory. Also introduces `-output-dir` argument to zing-core-bundler.
6700	5.11.0	Server reboots without any info when using custom signal handler with Zing. This problem appeared because the `NULL` file table entry impedes obtaining the stored binary format.
6349	5.11.0	Some SIGSEGV backtraces are not accurately reported in `hs_err_pid*.log`. The fix implements checking the `az_mprobe` return value

Bug ID	Release Resolved	Description
		before checking the protection bits on the page.
5477	5.11.0	Unable to handle kernel paging request.
6348	5.7.19	`kill -SIGBUS` generates incomplete core files.
6344	5.7.19	`mlockall` interaction: if core dumps are collected during crashes in processes that made an `mlockall`, the core dumps would be partial and will not include Zing VMAs.
6001	5.7.18	Allow shut down scripts to uninstall ZST if Zing services don't exist or they fail to stop.
2972	5.7.18	The Pool License Server fails to start with JDK 8.
5827	5.7.17	`system-config-zing-core-pattern` enables users to choose a destination directory for cores but does not honor this.
5458	5.7.17	Not able to dump cores on containers when `zing-core-pattern` is enabled and the host does not have access to the specified directory which is mounted on the container.
5297	5.7.17	Allow cores to be dumped to any configurable location.
5454	5.7.16	Unable to launch Zing with reserve-at-launch policy even when sufficient memory is available.
5105	5.7.15	Update `zing-ps` to work correctly with new policy of System Zing Memory reservation on process launch.
4598	5.7.15	`ps` and `zing-ps` do not show detailed information for Cassandra processes running on Zing.
4930	5.7.14	Support browsers updated with the fix for Logjam vulnerability. Upgrade to ZST 5.7.14 or above if you see `(Error code: ssl_error_weak_server_ephemeral_dh_key`.

Bug ID	Release Resolved	Description
4358	5.7.12	Uninstalling ZST 5.7.11 on Amazon Linux displays a message. Ignore this message: `/bin/cat: /etc/redhat-release: No such file or directory`
4470	5.7.12	`zing-licensed` prints `ERROR: Failed to verify Zing license '/etc/zing/license'`, but ZVM can start as long as license is indeed valid.
4524	5.7.12	`libjvm.so` does not link against a specific version of `libazsys`, `libc_hooks` and `libazprof`, resulting in errors such as: java: `error while loading shared libraries: libc_hooks2.so.1: cannot open shared object file: No such file or directory`
4563	5.7.12	Add support for Oracle Linux- 2.6.39-400.246.2.el6uek.x86_64, 2.6.39-400.249.3.el5uek.x86_64, 2.6.39-400.249.3.el6uek.x86_64

4 Zing System Tools Known Issues

The following table lists known issues that are known issues as of Zing System Tools 5.20.6. The Bug IDs listed are Azul internal reference numbers.

Bug ID	Release Known	Description
12719	5.20.4	Failing to uninstall ZST on a privileged container. **Workaround:** If a user needs to upgrade the ZST on a CoreOS Host the following steps are advised: • Manually stop zing-memory from within the container. • Exit from the container. • Start a new privilege container. • Install and configure ZST by following the installation instructions.
12645	5.20.3	Cores generated with zing-core pattern enabled are not encrypted with openssl 1.1.
7413	5.12.0	Uninstalling ZST on RHEL 6.8 displays the following warning messages: `Warning: erase unlink of /lib/modules/zing-driver/extra/zm_linux_<kernel_ version>.o failed: No such file or directory` These messages can be ignored.

5815	5.7.18	When upgrading from ZST 5.7.17 to ZST 5.7.18 on Ubuntu systems, these errors can be ignored:
		`/etc/init.d/zing-agent: line 57: [: too many arguments`
		`/etc/init.d/zing-certd: line 44: [: too many arguments`
		`/etc/init.d/zing-httpd: line 58: [: too many arguments`

5627	5.7.17	Upgrading ZST from 5.7.17 to 5.7.18 on Ubuntu displays warning messages. Ignore the following messages:
		`/etc/init.d/zing-agent: line 57: [: too many arguments`
		`/etc/init.d/zing-certd: line 44: [: too many arguments`
		`/etc/init.d/zing-httpd: line 58: [: too many arguments`

Bug ID	Release Known	Description
5366	5.7.15	Upgrading ZST to 5.7.15 on RHEL/CentOS 7.x displays warning messages. Ignore these messages `warning: file /usr/lib/zing/libc_hooks2.so.1.0.0: remove failed: No such file or directory`
5305	5.7.15	ZVM 15.05.0.0 will not run with ZST 5.7.15 without a configuration change. Contact Azul Systems Support for assistance to use ZVM 15.05.0.0 with ZVM 5.7.15.

4615	5.7.12	Uninstalling ZST on Amazon Linux displays warning messages when rpm is upgraded. Ignore these warning messages.
		`warning: file /lib/modules/zing-driver/extra/zm_linux_3.4.57-48.42.amzn1.x86_64.o: remove failed: No such file or directory`
		`warning: file /lib/modules/zing-driver/extra/zm_linux_3.4.48-45.46.amzn1.x86_64.o: remove failed: No such file or directory`

4510	5.7.11	Attempting to install the ZST package for Ubuntu 12.04 on an Ubuntu 10.04 system will fail and leave the system unable to open a new ssh session. To remedy the issue, uninstall the ZST package form the existing shell session.
2406	5.7.6	Zing processes still running after uninstall when both relocated binaries and regular binaries are installed. Issue may arise under deployment control systems like EFS.
2337	5.7.6	Cannot renew license through the OEM UI.
1486	5.7.6	Can bundle Zing cores with non matching executable.

Legal Notice

Published, January 18, 2018