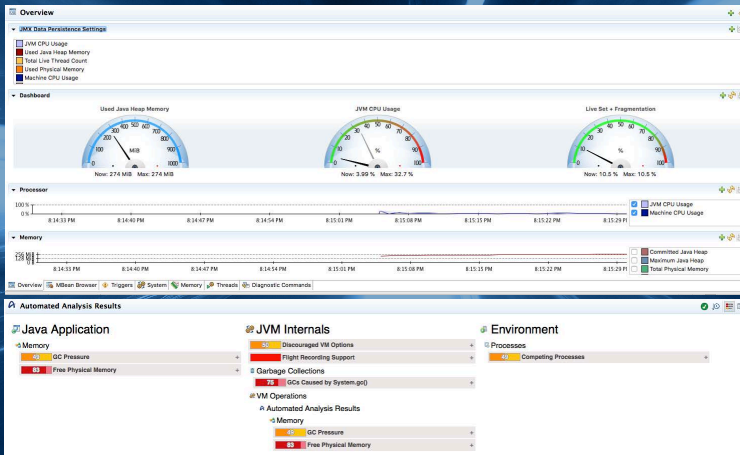


Zulu Mission Control and Zulu Flight Recorder

Ultra-low-overhead production-friendly Java profiling coupled with powerful troubleshooting technology, fully integrated with Azul Systems Zing and Zulu Enterprise builds of OpenJDK 8 and OpenJDK 11.

Provide your team with 100% open source, top-tier profiling and monitoring tools backed by Azul Systems.



The challenge: troubleshooting Java applications during development and production

Proving that the Java application you have developed is reliable and has good stable performance, reasonable memory, CPU, I/O and other native resource usage is never an easy task. There are many tools available from different vendors to help Java developers accomplish this, but they can impact the performance of the application being tested, even generating results that are unreliable or false.

Introducing Zulu Mission Control and Zulu Flight Recorder

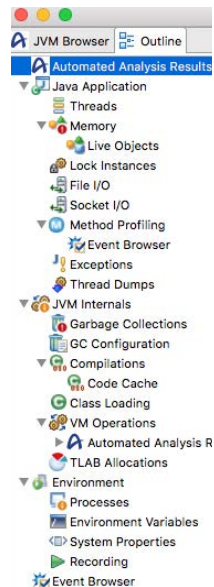
Azul Systems has brought ultra-low-overhead Java profiling and analysis tools to Zing and Zulu Enterprise builds of OpenJDK 8 and OpenJDK 11. The impact on application runtime performance is extremely low (<=2%), making it practical to use these tools in production for both troubleshooting and debugging.

Zulu Mission Control is responsible for visual representation of the data from the current execution of the JVM in real time. Zulu Mission Controls displays all the fine-grained information of the JVM execution process and helps to analyze this data. It allow you to see what happened during moments of peak processing or memory usage, how many threads are running in the application, their migration between the possible states, which Java classes are being executed, etc. making it easy to understand where resources are primarily being consumed.

As noted in the screen shot of the top-level menu on the left, Zulu Mission Control is designed to deliver comprehensive, easy-to-understand visual summaries of Java applications while they are running in production. Every aspect of the running configuration is also tracked – from memory size and utilization to Garbage Collection activity and issues with memory or CPU resource pressure to deep insights into the behavior of the C1 and C2 JIT compilers responsible for generating optimized runtime code. When needed, with Zulu Mission Control you can view application performance thread by thread.

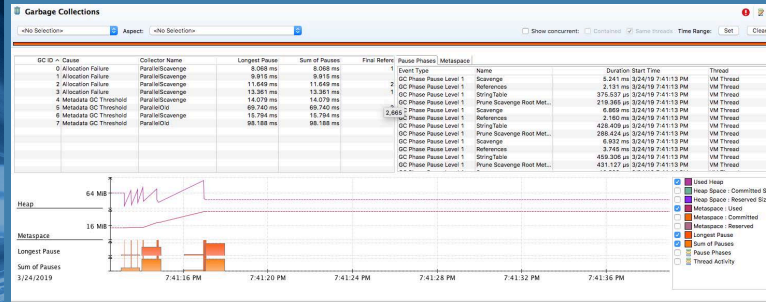
Zulu Flight Recorder is included with all Zing, Zulu Enterprise and Zulu Embedded builds of OpenJDK 8 (8u202 and later) and all versions of OpenJDK 11. Flight Recorder saves all the fine-grained information of the JVM execution during a specified period of time to a separate log file. It enables collection of key performance data from production systems via simple commands to a running local or remote JVM that has Flight Recorder enabled. Flight Recorder was designed to be a very lightweight system tool, making it practical for either intermittent or continuous use in production.

Flight Recorder log files can be shared with remotely-located development teams for in-depth analysis without the need for physical presence on the site for additional data collection.



BENEFITS OF ZULU MISSION CONTROL

- Coherent data representation allows for data cross-referencing and filtering of the events
- Reduces cost of operation and maintenance and reduces business interruption
- Custom API for application-specific events
- Improves systems stability and efficiency
- Extremely low overhead makes practical data collection in production possible
- Accelerates development cycles by providing essential performance data
- Multi-platform desktop support
 - Windows
 - Linux
 - macOS



Reduce the time to identify and resolve Java performance issues with Zulu Mission Control's extensive monitoring capabilities

For years, Flight Recorder and Java Mission Control had limited adoption outside development shops due to its production pricing model.

Today both technologies are readily available for production deployment on the millions of OpenJDK-based desktops and servers running Zing or Zulu Enterprise.

Automated summaries and custom scripts make troubleshooting simpler

Where possible, Zulu Mission Control will guide your development, QA or DevOps teams to likely trouble spots, including the flagging of resource issues like insufficient memory or overburdened CPU cores. For more advanced users, there are a wide variety of pre-existing scripts that can be adapted depending upon the types of problems being encountered.

Getting started with Zulu Mission Control

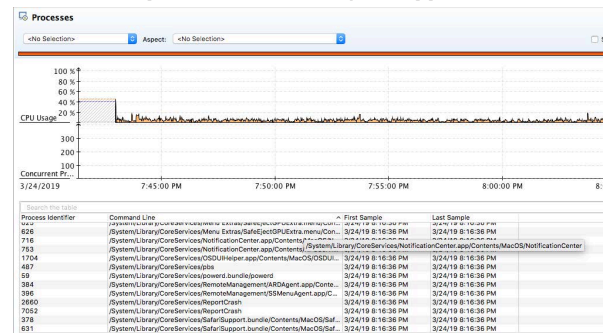
If your organization is interested in exploring the power and capabilities of Zulu Mission Control, the shortest path is to download the software from the Azul Systems website, at <https://www.azul.com/products/zulu-mission-control>.

General Availability (GA) builds of version 7.0 are available on the azul systems website, and support desktops running windows, Linux or macOS.

Supported Flight Recorder and Zulu Mission Control Platforms:

- Windows (FR, ZMC)
- Linux x86 (FR, ZMC)
- macOS (FR, ZMC)
- Solaris (SPARC and x86) (FR only)
- Zulu: OpenJDK 8 and 11 (FR, ZMC)
- Zing: OpenJDK 8 and 11 (FR, ZMC)

Track other processes outside your application



Flight Recorder and Mission Control also provide insights into other system-level artifacts that may be impacting performance.

Zulu Mission Control is 100% Open Source

Zulu Mission Control is licensed under the Universal Permissive License v 1.0. The license text is available at <https://opensource.org/licenses/UPL>.

Support for Zulu Flight Recorder and Zulu Mission Control is part of every Zing and Zulu Enterprise subscription

We've made it easy for Azul customers to get access to Zulu Flight Recorder and Zulu Mission Control. Every subscriber is entitled to both tools at no additional cost, and support is delivered via Azul's globally-distributed Support organization.

Production (GA) builds of Zulu Mission Control are available for free download at <https://www.azul.com/products/zulu-mission-control>.

To get started, contact us:

Email: info@azul.com

Phone: +1.650.230.6500

Web: <https://www.azul.com/products/zulu-mission-control>