

z/TPF system monitoring for Java™ applications

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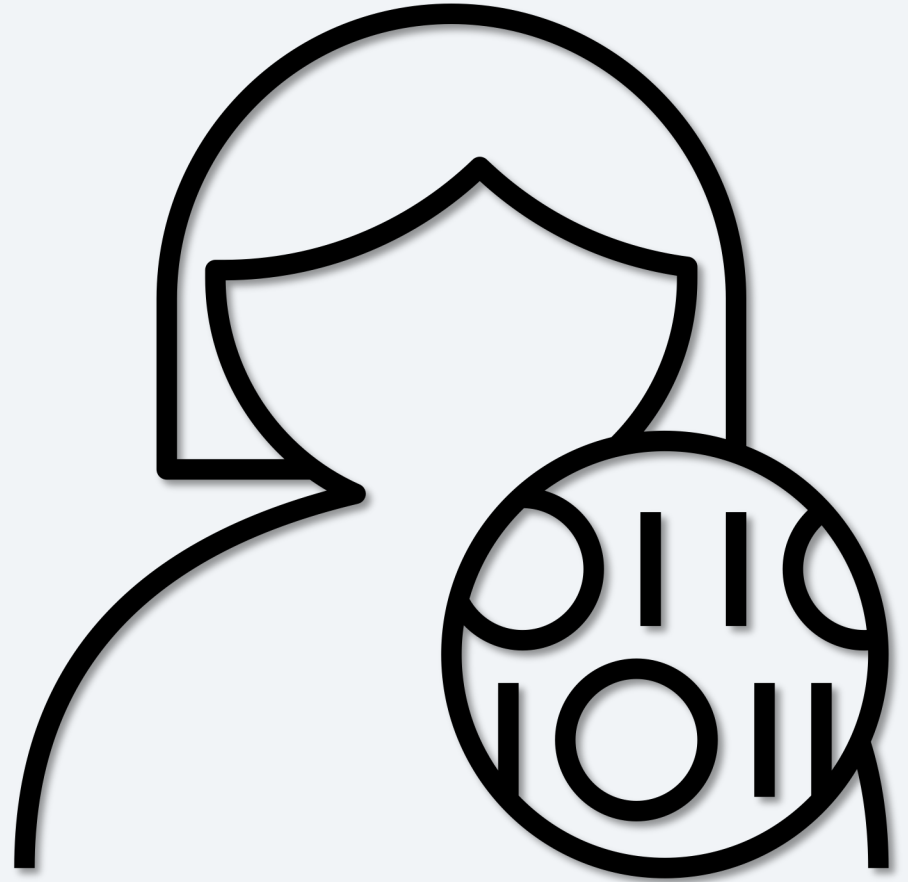
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Disclaimer

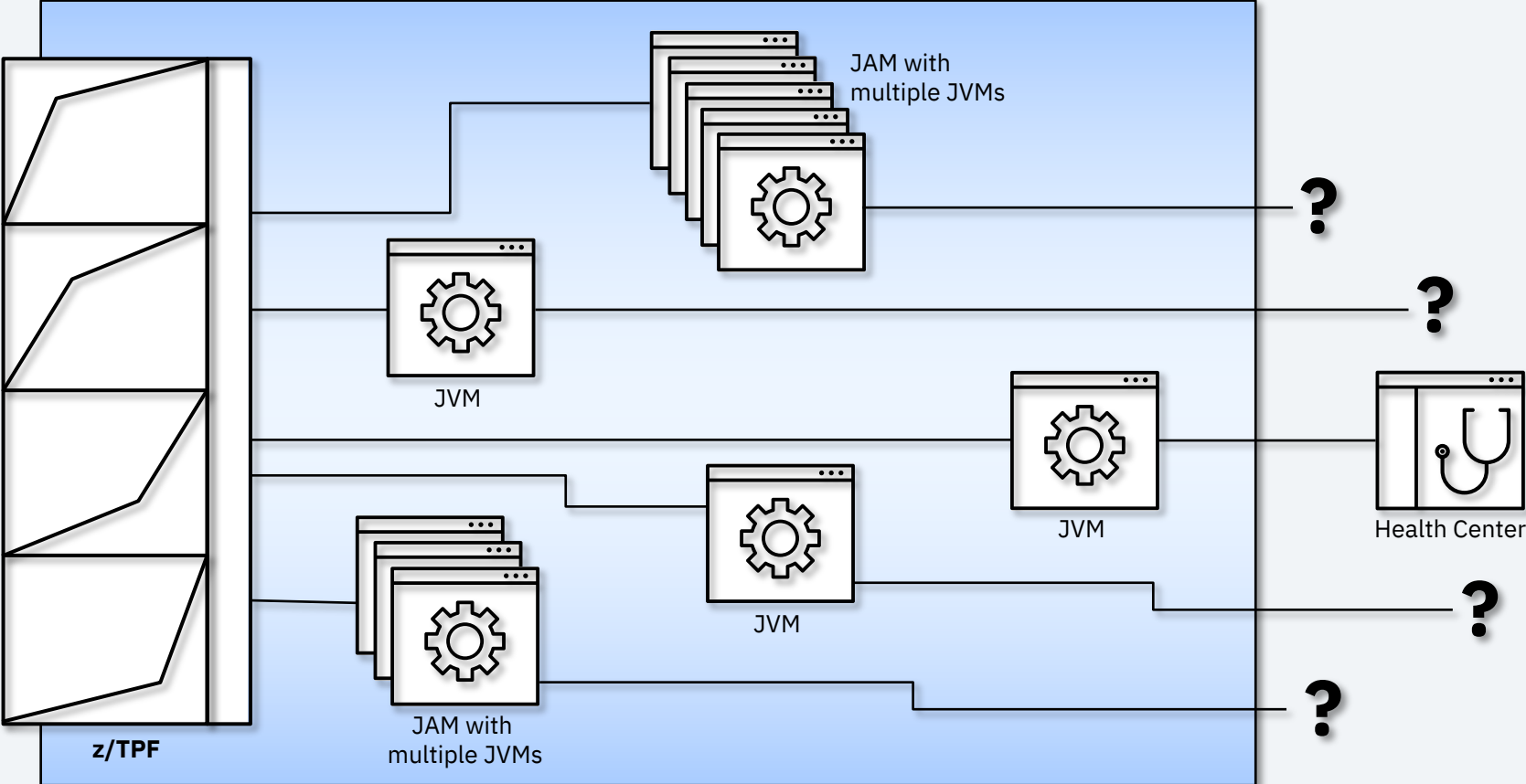
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Problem statement

With the Health Center, I can monitor a single Java virtual machine (JVM) that is connected to a single system, but I need to monitor the entire z/TPF system to better understand the impact of introducing Java to my environment.

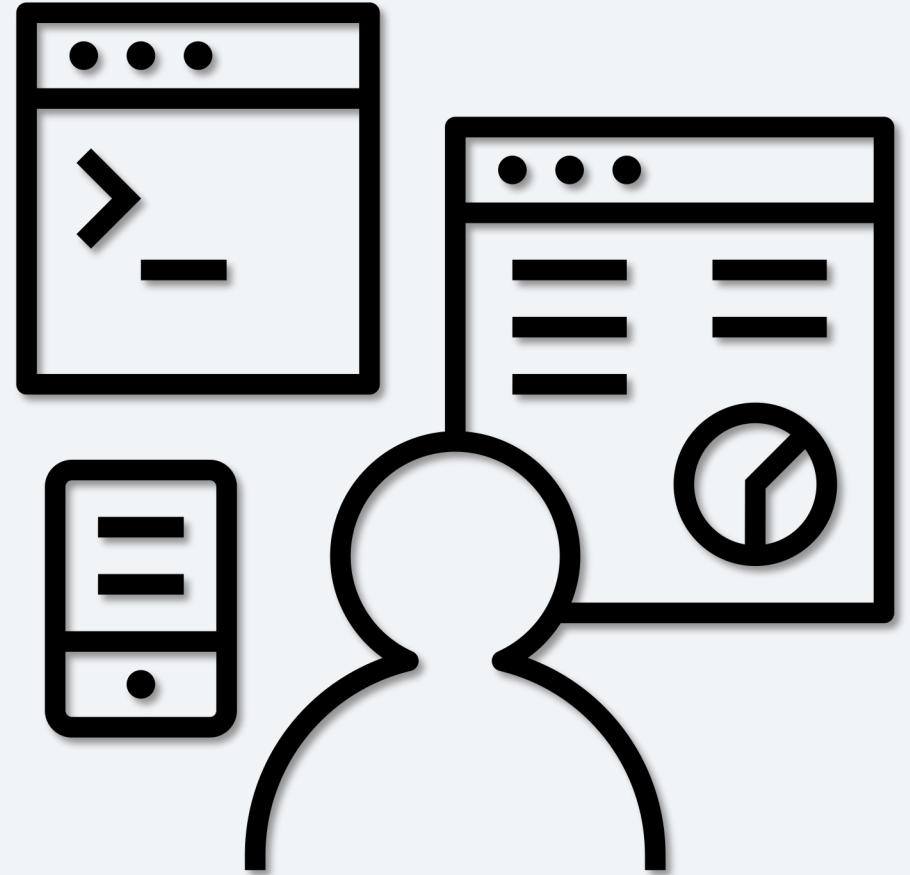


Problem statement

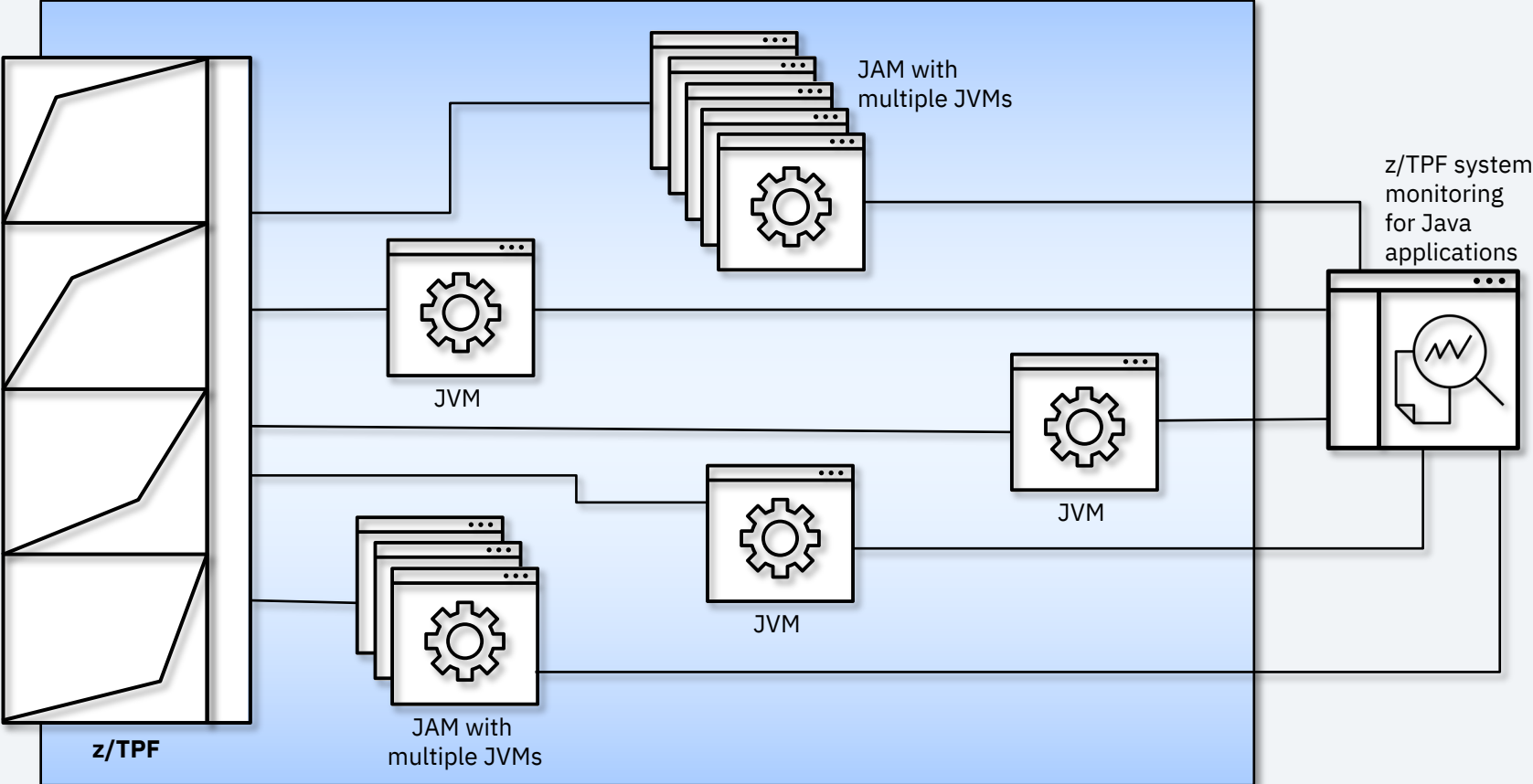


Solution

z/TPF system monitoring for Java applications provides a system-wide view of all JVMs that are running on a z/TPF system by collecting JVM data and sending it to real-time runtime metrics collection. The data is then sent to Apache Kafka for further analysis and is visually represented in Grafana dashboards.



Solution



Solution – everything you need to get started

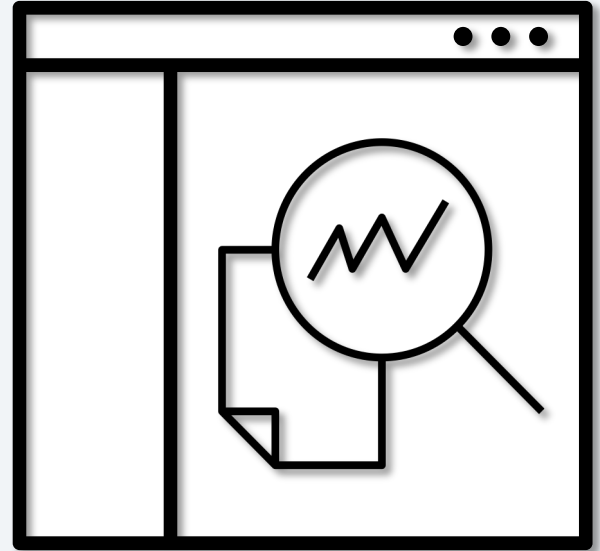
- Two APARs were created to address this solution:
 - APAR PJ46312 (April 2021) provides the infrastructure to monitor Java applications
 - APAR PJ46275 (April 2021) provides enhancements to real-time runtime metrics collection for monitoring Java applications
- z/TPF real-time insights dashboard starter kit:
 - Ten new dashboards that are fully customizable
 - Create your own dashboards

Usage scenarios

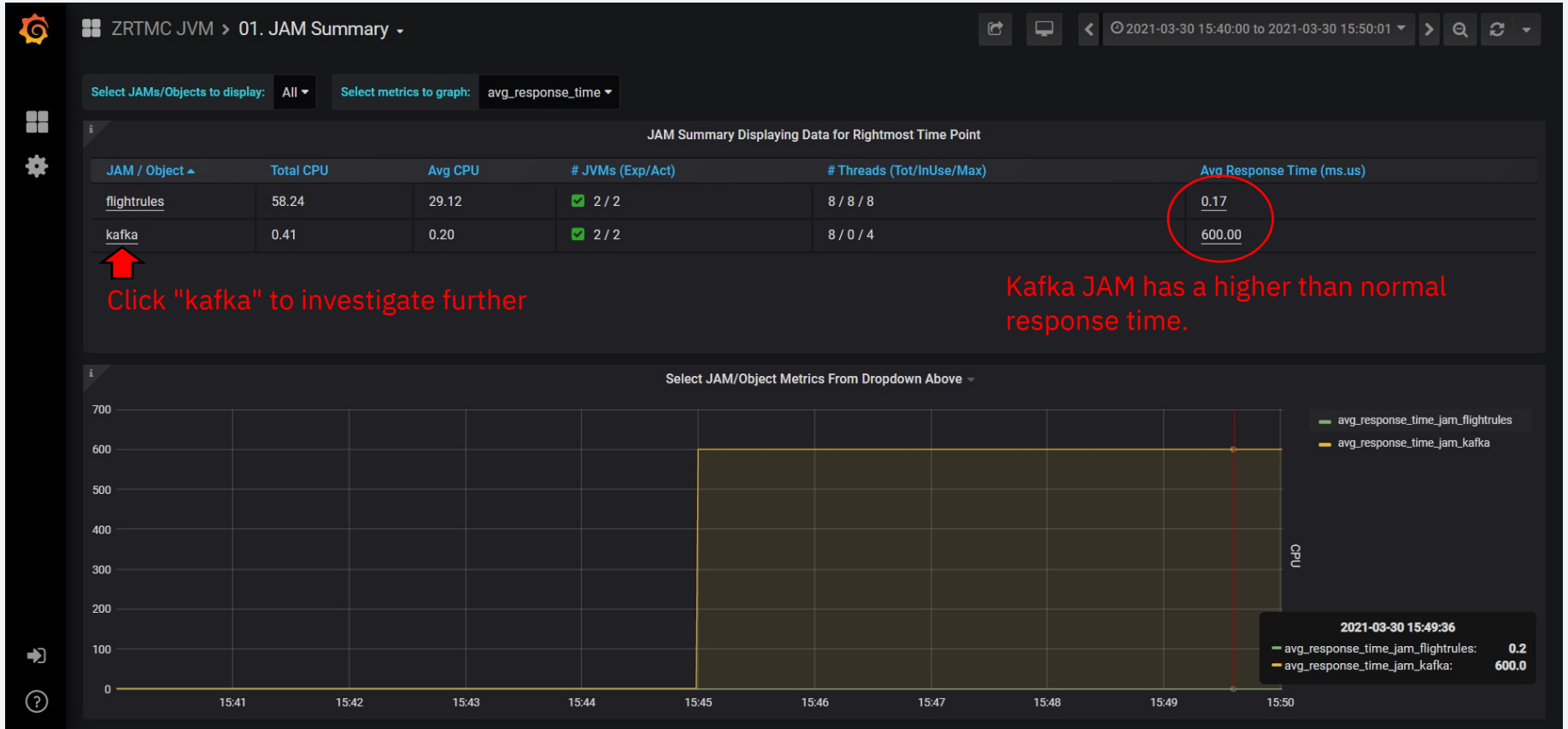
Potential Scenarios for Use

- Investigation of these scenarios are made possible by the Grafana dashboards
- High system/processor use caused by one or more JVMs
- Irregular heap size usage caused by a JVM's garbage collector
- Unusually long response times caused by a lock issue in a JVM *

* The lock issue scenario will be illustrated in the following slides



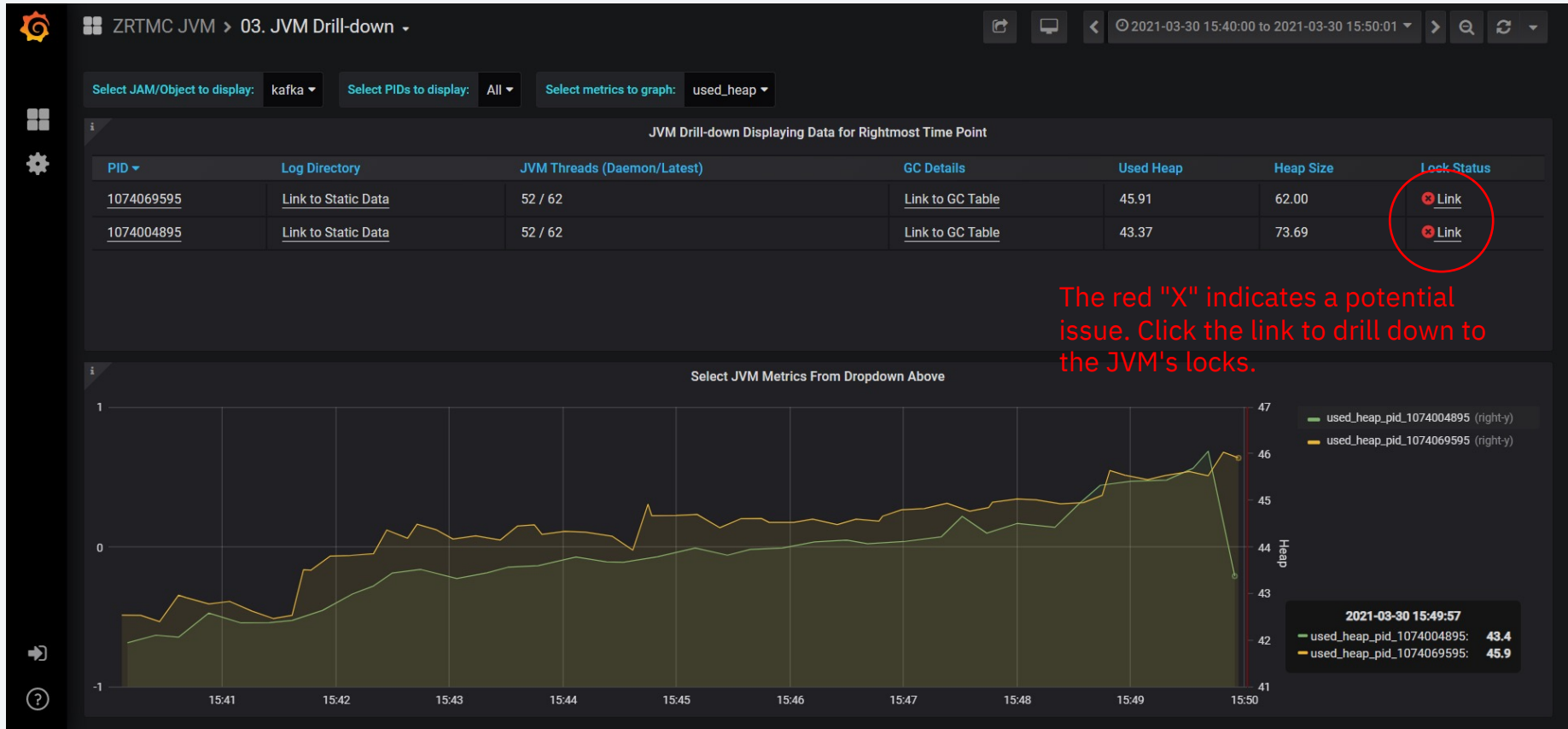
JAM summary



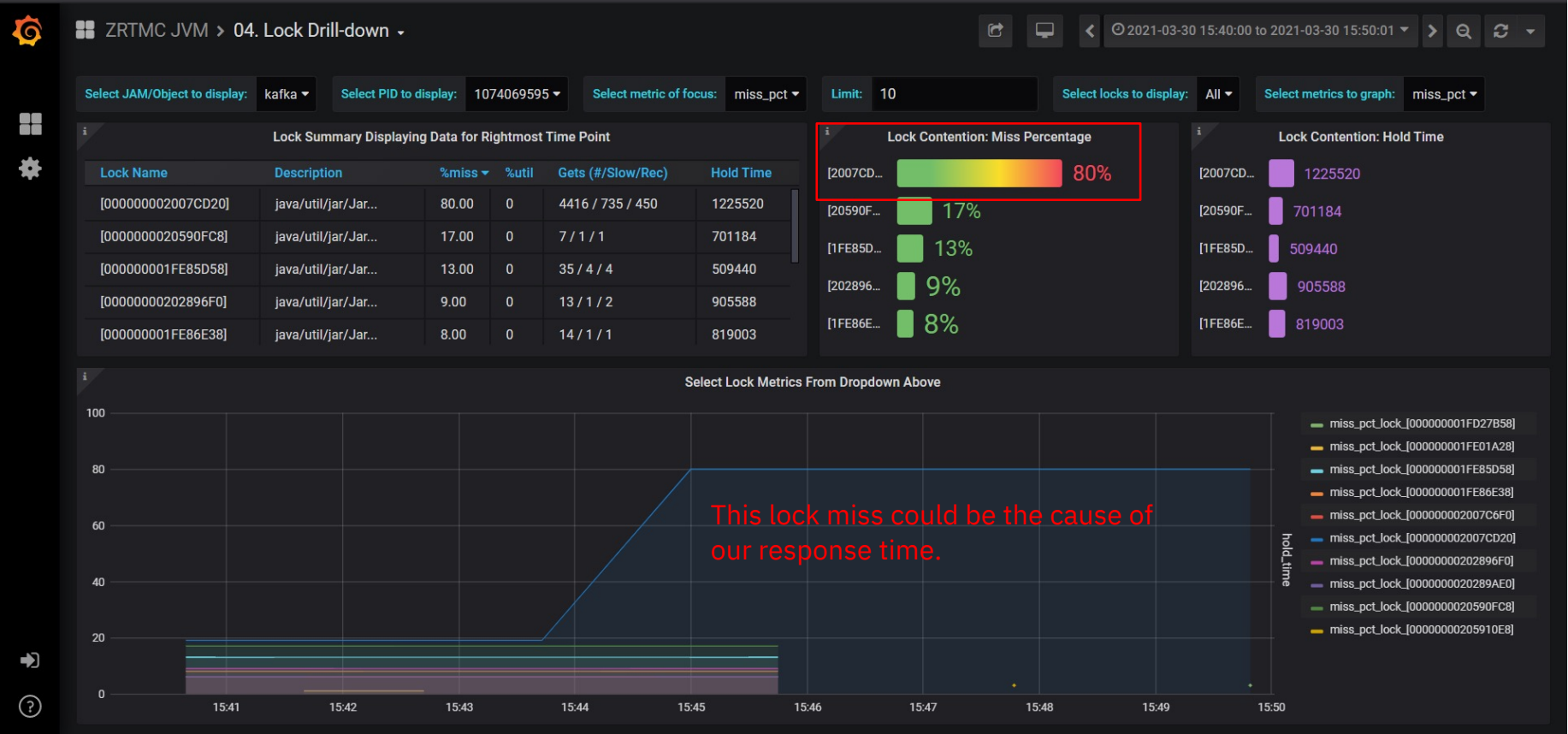
JVM summary



JVM drill-down



Lock drill-down



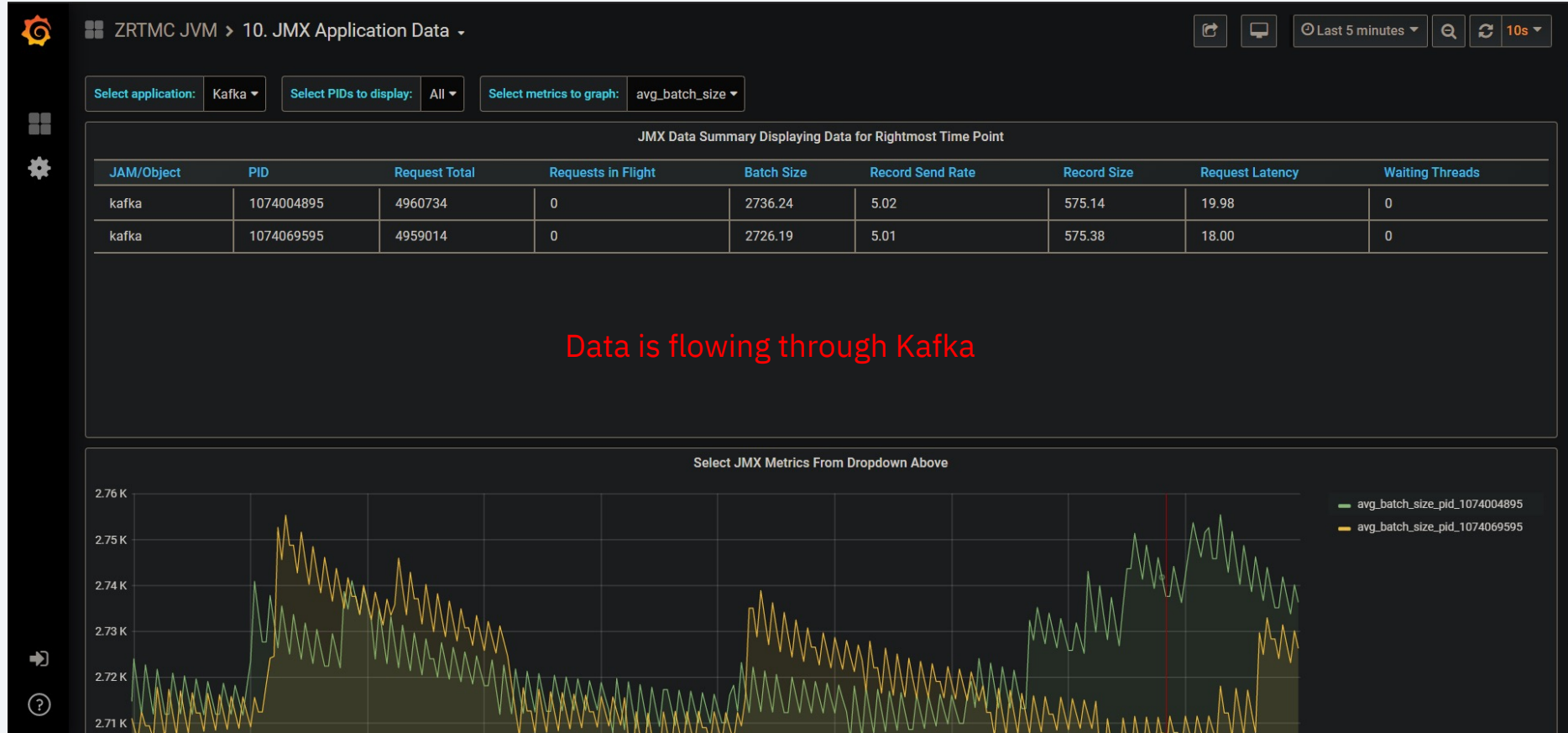
Further Investigation

- More in-depth investigation can be done by using Health Center to connect to the specific JVM
- Upon further investigation in this scenario, we find that the remote Kafka server had stopped and was causing our lock and response time issues in the JVM.
- After restarting the Kafka server, we can go back to our JAM summary dashboard and check to see if the issue has been resolved.

JAM Summary After Fix



Kafka Metrics

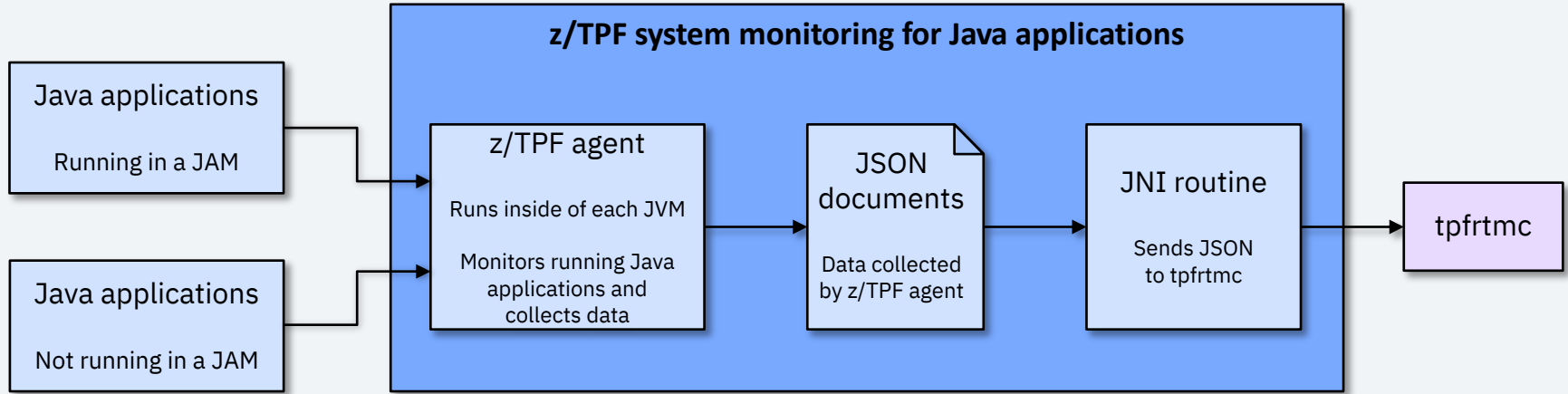


Low-level details

Performance implications

- There is no measurable impact to production systems when running z/TPF system monitoring for Java applications
- We recommend always running with this support on for your production systems

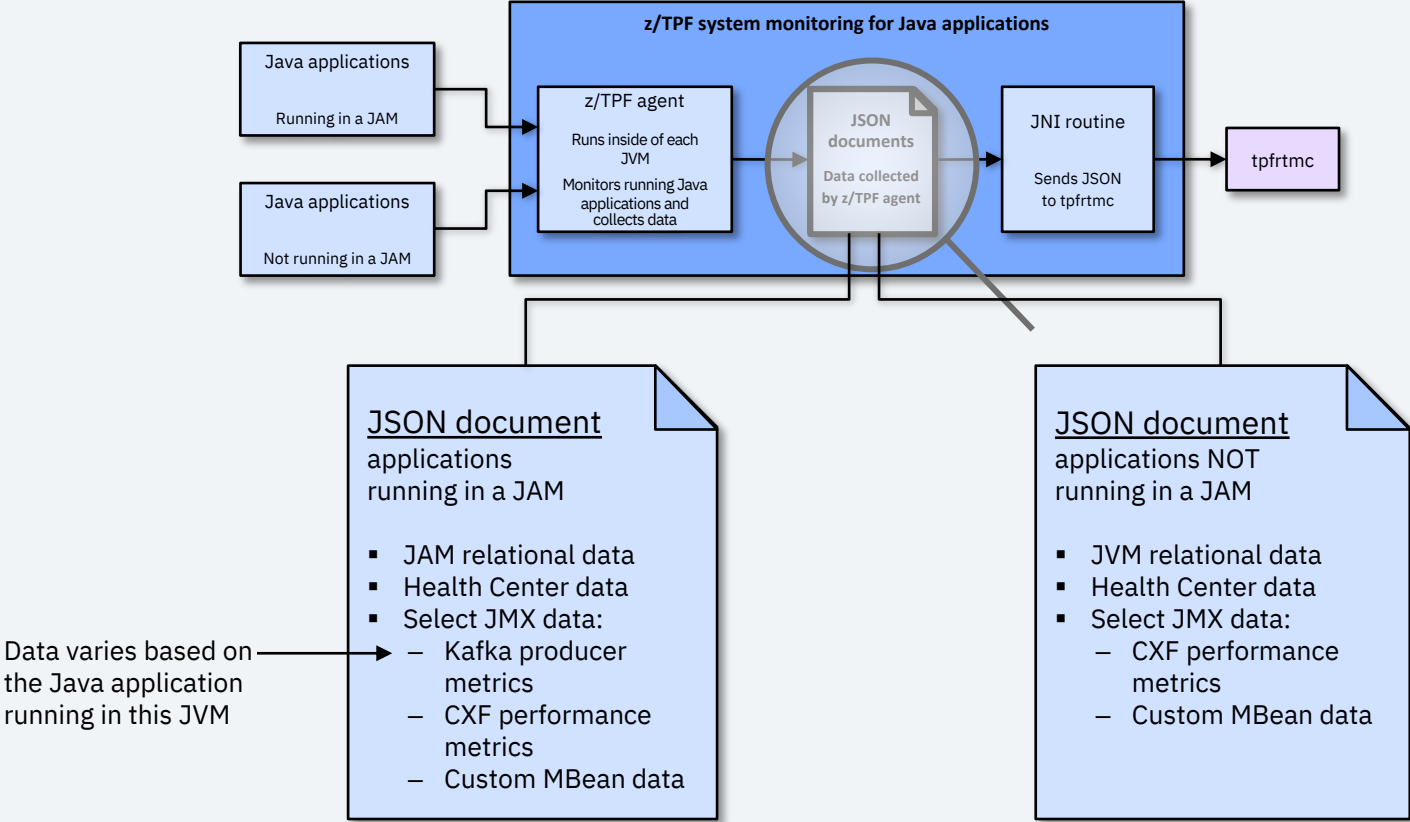
PJ46312: System-wide JVM monitoring



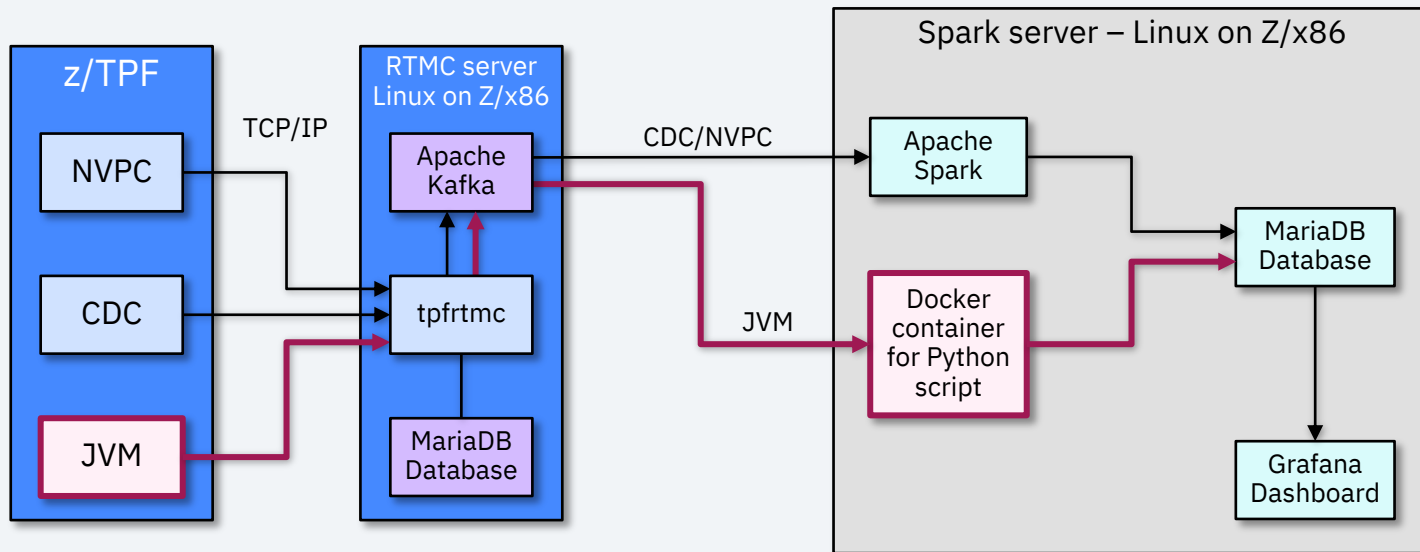
Required startup options:

- Xhealthcenter:level=inprocess
- javaagent:/sys/tpf_pbfiles/apps/tpfjmon/tpfagent.jar
- cp /sys/tpf_pbfiles/apps/tpfjmon/tpfagent.jar

PJ46312: A closer look at the JSON documents

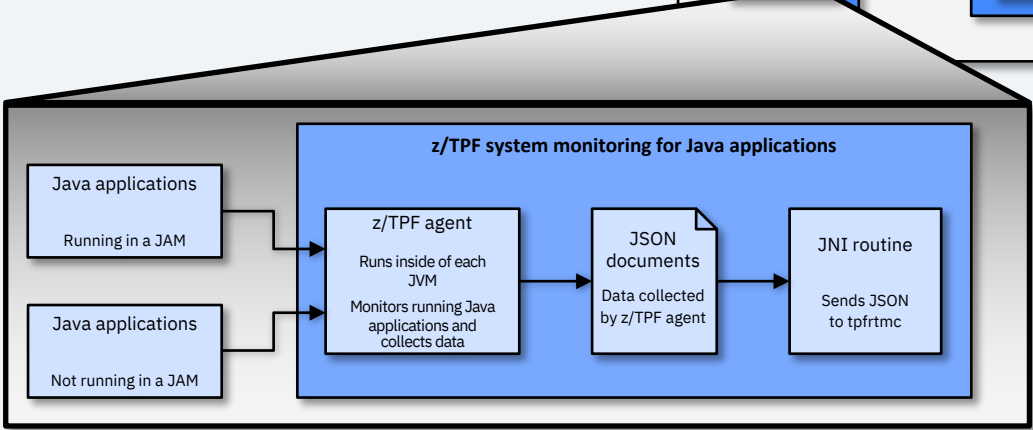
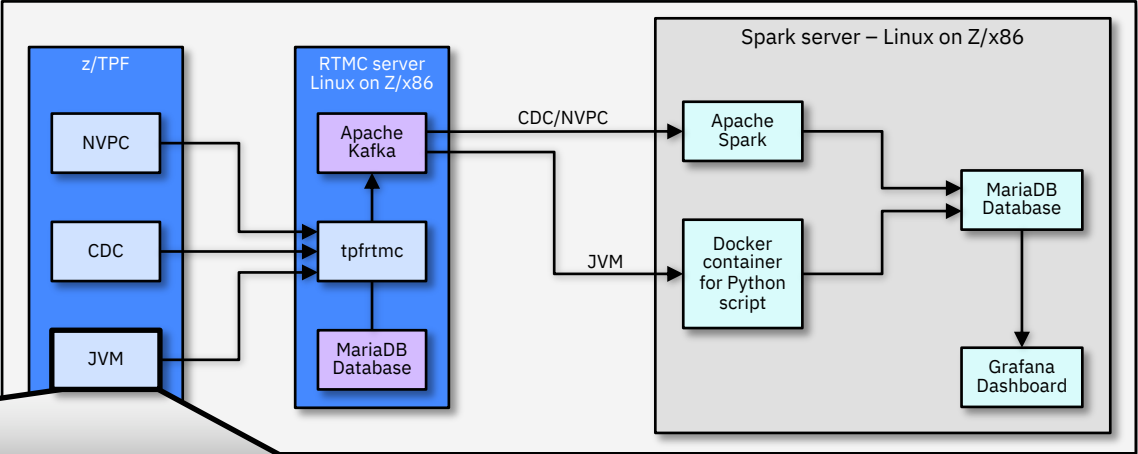


PJ46275: Real-time runtime metrics collection system-wide JVM monitoring support



Putting it all together

PJ46275



PJ46312

References

APEDITs:

[PJ46275](#)

(<https://www.ibm.com/support/pages/apar/PJ46275>)

[PJ46312](#)

(<https://www.ibm.com/support/pages/apar/PJ46312>)

Downloads:

[z/TPF real-time insights dashboard starter kit](#)

(<https://www.ibm.com/support/pages/node/1142674>)

Blog:

[z/TPF system monitoring for Java applications](#)

(<https://community.ibm.com/ibmz-and-linuxone/blogs/jennifer-chiarieri1/2021/04/16/ztpf-system-monitoring-for-java-applications>)



Thank you!

Let us know if you are interested in adopting this support or we can help you in any way in the path toward adopting Java on z/TPF. Please contact Dan Gritter - dgritter@us.ibm.com

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