

Real-Time Runtime Metrics Collection Update

2022 TPF Users Group Conference

March 27-30, Dallas, TX

Operations and Coverage

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What is real-time runtime metrics collection?

- Provides continuous real-time monitoring and analysis of a z/TPF system.
- System wide metrics (Continuous Data Collection data - CDC).
- Application metrics by name-value pair (MsgType), owner name (code package) and more.
- Java on z/TPF metrics.
- z/TPF real-time insights dashboard starter kit provides sample analytics pipeline with dashboards. <https://www.ibm.com/support/pages/ztpf-real-time-insights-dashboard-starter-kit>
- Message analysis tool results analysis and dashboards. Provides resource usage insights at the function and macro level.

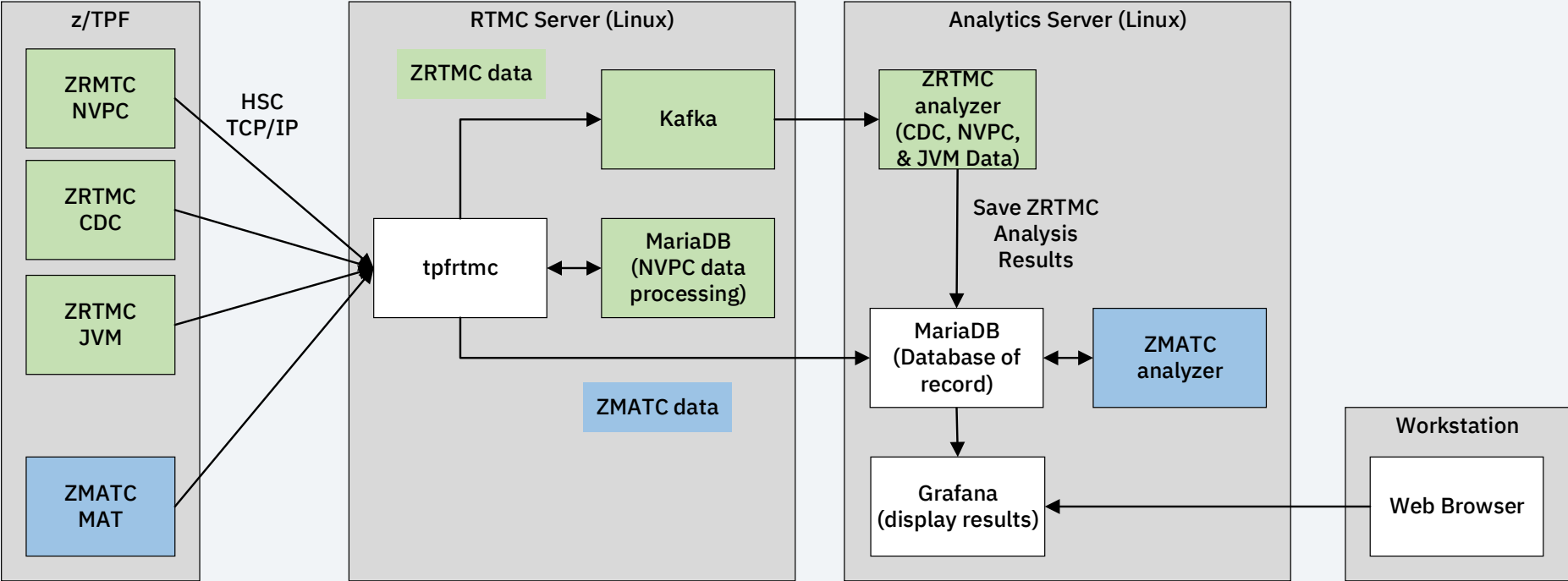
Advantages of real-time runtime metrics collection in production environments

- Data flows continuously in real time so you can view data and insights instantly on interactive dashboards.
- Collection leverages sampling so it can run continuously without impacting the z/TPF system.
- Store historical data in a database for investigation and trend insights.
- Sample environment and analytics pipeline built on open source to inspire your custom analysis for your business needs. Provides statistical analysis.
- You can implement machine learning and data science techniques to provide more insights into system resource usage.

Advantages of real-time runtime metrics collection in development and test environments

- Quickly see what resources (CPU, IO, etc) are used by your messages, code packages, cross section of message and code package, and more.
- Quickly see if application changes are using more resources than anticipated.
- Calculates averaged results over many runs of a message.

Architecture Review



APAR PJ46555 (Aug 2021)

- Improve z/TPF real-time insights dashboard starter kit resource usage.
- Replaced Apache Spark and JVM python components with a single python analytics container.
 - The starter kit sample pipeline uses less memory and resources on the analytics server. In our testing, it used 100x less memory, CPU, etc. Your mileage may vary.
 - The analysis components are much more stable.
- The starter kit has fewer components, which makes it easier to administer. The starter kit is more easily deployed on a Linux® on IBM® Z system.

APAR PJ46555 (Aug 2021)

- Added user exit to make it easier for customer and z/TPF real-time insights dashboard starter kit code to coexist. You can:
 - Write data out to other types of databases.
 - Process additional types of data.
 - Perform other forms of analysis such as machine learning.
 - Selectively turn off z/TPF sample analytics.

APARs PJ46479, PJ46309, and PJ46308 (Dec 2021)

- In addition to providing message analysis tool results processing, analysis and dashboards, these deliverables also:
- Simplified the administration of the tpftrmc offline utility by removing the dependency on the Apache Tomcat.

APAR PJ46275 (Jun 2021) – JVM Monitoring

APAR PJ46608 (Jan 2022) – Multi-Processor JVM Monitoring

- PJ46275 provided the ability for the tpfrtmc offline utility to monitor JVM data from a single z/TPF processor.
- PJ46608 provided the ability for the tpfrtmc offline utility to monitor JVM data from up to 10 z/TPF processors.
- In concert with the PJ46608 release, the z/TPF real-time insights dashboard starter kit download implemented several improvements. The next few slides highlight some of these improvements.

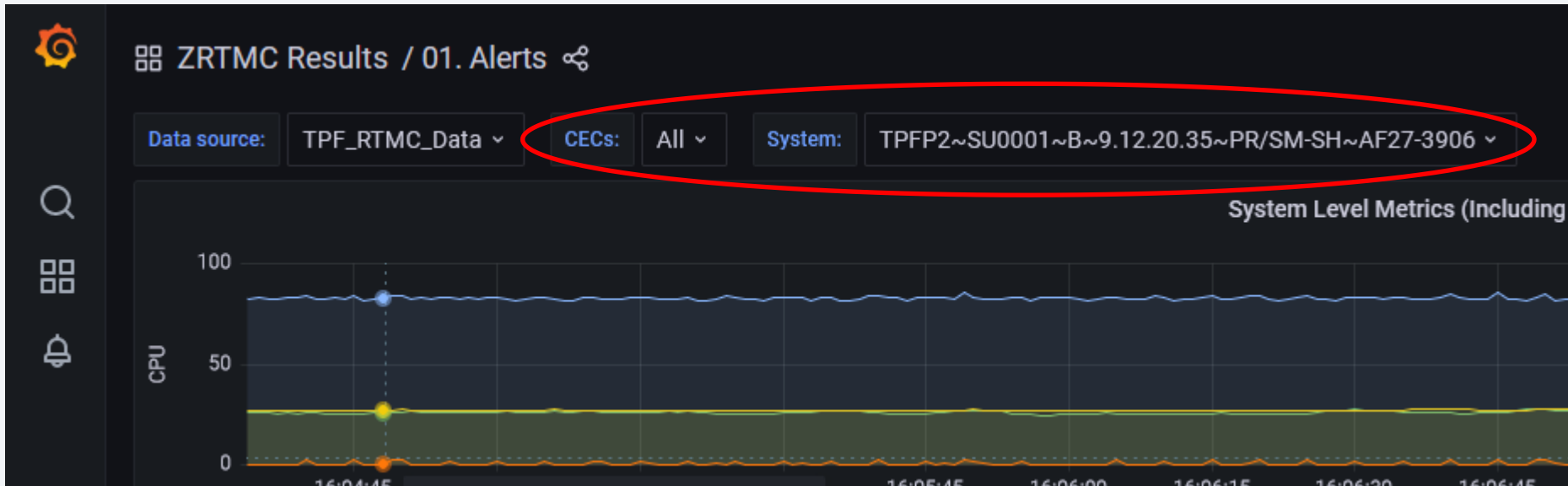
APAR PJ46608 (Jan 2022) – Data Source Selector

Data source selector representing complex, geography, test complex, etc.
Any Grafana instance can see any data source you configure.



APAR PJ46608 (Jan 2022) – System Selection

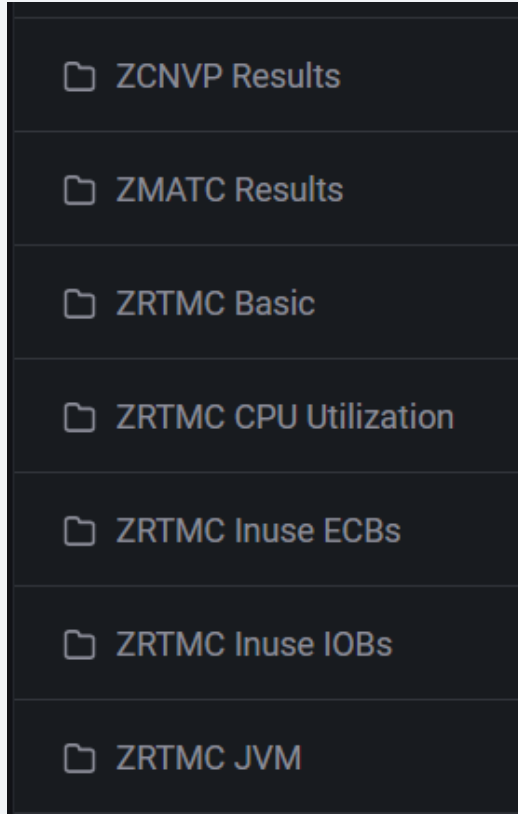
CEC filter and System selector.



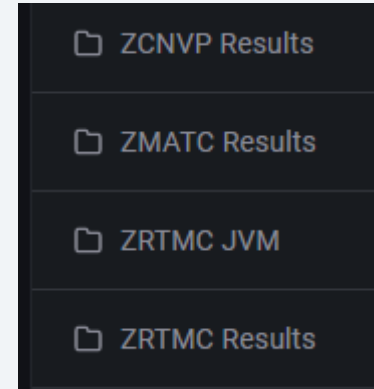
APAR PJ46608 (Jan 2022) – Folder Reorganization

Simplified Dashboard Folder layout based on user feedback.

Before

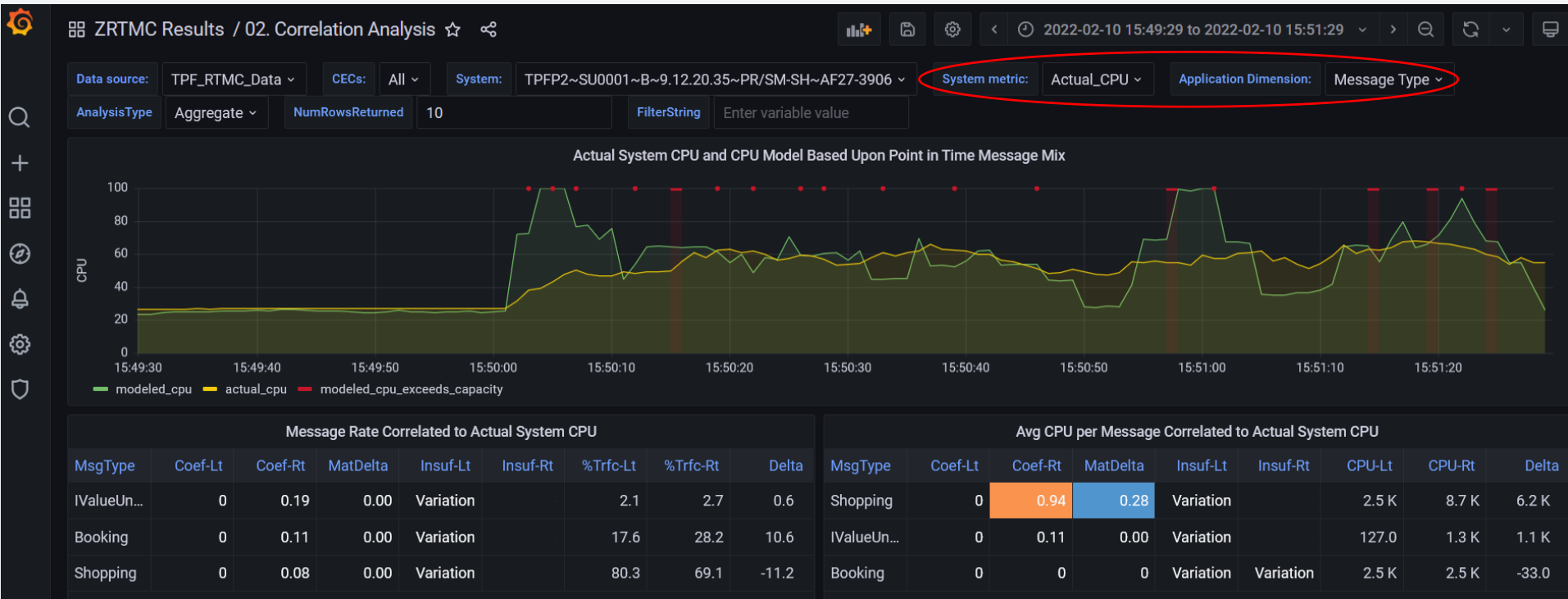


After



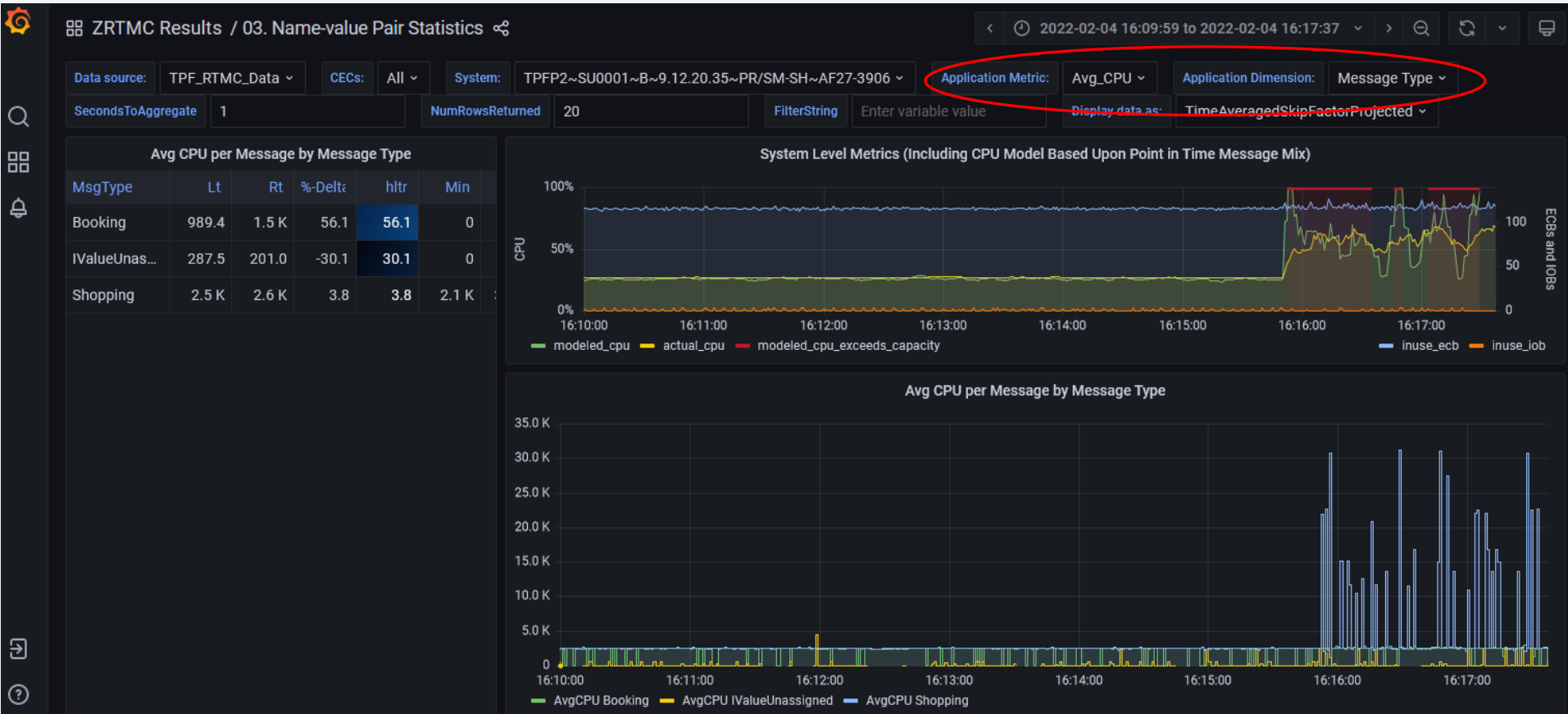
APAR PJ46608 (Jan 2022) – Correlation Analysis Dashboard

Simplified correlation dashboards – select metrics and application dimension.



APAR PJ46608 (Jan 2022) – Statistics Dashboard

Simplified statistics dashboards – select metrics and application dimension.



What's Next?

Multi-Processor CDC Monitoring (Target – 2Q2022)

Multi-Processor NVPC Monitoring (Target – 2H2022)

- Currently, a single tpfmtmc offline utility can process data from 10 z/TPF systems sending JVM data, 10 z/TPF systems sending message analysis tool data, 1 z/TPF system sending CDC data, and 1 z/TPF system sending NVPC data simultaneously.
- Our objective is for a single tpfmtmc offline utility instance to have the capacity to allow you to monitor all collection types for an entire z/TPF complex (up to 10 LPARs, 10 VPARs or any combination).
- This effort will expand the capacity for a single tpfmtmc offline utility instance to process data from 10 z/TPF systems sending CDC data and 10 z/TPF systems sending NVPC data.

What's Next?

Complex-wide dashboards (Target - 2Q2022)

- This effort will provide dashboards that show metrics from multiple z/TPF systems on a single dashboard. Note: these dashboards provide new features and metrics even for uni-environments.
- System State metrics (actual CPU, inuse ECBs, inuse IOBs). This will include additional CPU metrics for Workload and Low Priority Workload.
- Name-value pair metrics. Allows you to see message rates overall or filter on one or more name-value pair values.
- JAM metrics.
- Business Events metrics.
- REST metrics.

What's Next?

Complex-wide dashboards (Target - 2Q2022)

- This effort will also provide the ability to view messages rates, perform correlation analysis and view resource usage statistics by the ISrvcName name-value pair.
- The ISrvcName name-value pair is automatically generated for your ECBs by the z/TPF system when processing REST services.
- With this enhancement, you can use the z/TPF real-time insights dashboard starter kit without making any application code changes for messages that originate from REST services. You do not need to set any name-value pairs in your application, such as MsgType. Use the program configuration file to automatically set ECB owner names with no application code changes. For example, use IOwnerHi as code package.

What's Next?

TE vs GP MIPS usage (Target - 2H2022)

- This effort will provide the ability to see:
 - TE vs GP MIPS usage on the system overall for a given period of time.
 - TE vs GP MIPS usage by name-value pair (MsgType, ISrvcName, CodePackage, etc). In this way, you can see your TE vs GP MIPS usage by the type of message or for a specified code package.
- User research will start in 2Q2022, let us know if you're interested in being a sponsor user.

We want sponsor users!

Our development cycle is driven by your feedback.

We are looking for sponsor users to assist in design and implementation, targeting the following personas:

- Operators
- Coverage Programmer

If you are interested in participating as a sponsor user, please contact:

Josh Wisniewski (jwisniew@us.ibm.com)

Thank you

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