Beyond Monitoring:

Unleashing Automated Operations for CICS Diagnostics

Using automation in the data collection and analysis phases

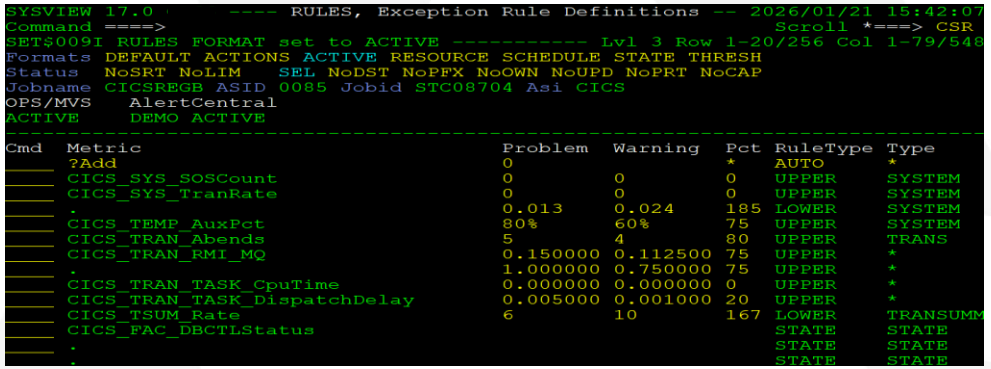
Scenarios in the analysis of CICS monitoring data through the integration between performance management solutions and operations automation.

Using automation in the data collection and analysis phases

AUTOMATIC DIAGNOSTIC - BUILDING SELF-HEALING

Automatic diagnostic

Building Self-Healing through data collection and analysis between CICS and MQ



Performance Management Metrics

- CICS Diagnostics
- MQ Performance

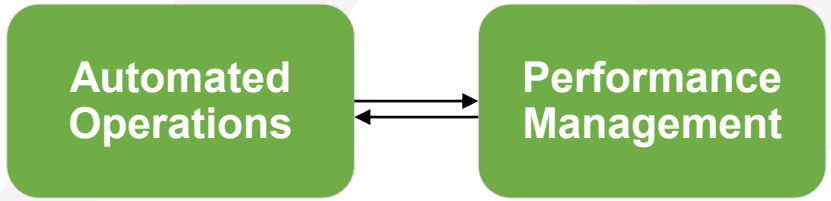
- Shorten diagnostic time
- Ensure application availability
- Correlate metrics from multiple sources

Real-time analysis and remediation

Automatic diagnostic

Building Self-Healing through data collection and analysis between CICS and MQ

- Integrated solution



- CICS Diagnostics
- MQ Performance

- Activation of self-healing based on critical events
- Map of similar behavior

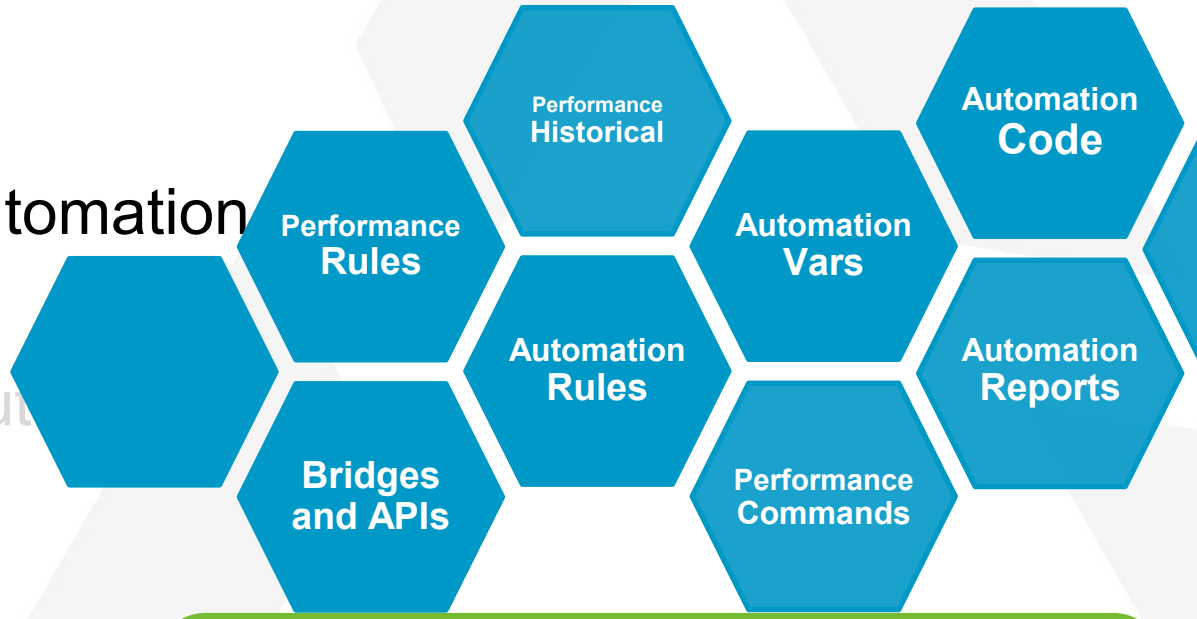
Mark recent events as "flags"

Real-time analysis and remediation

Automatic diagnostic

Building Self-Healing through data collection and analysis between CICS and MQ

- Continuous automation
- Integrated solut
- CICS Diagnostics
- MQ Performance



- Adjust, maintain, and create automation
- Observability as a source

Anticipating actions based on detailed diagnoses

Mark recent events as "flags"

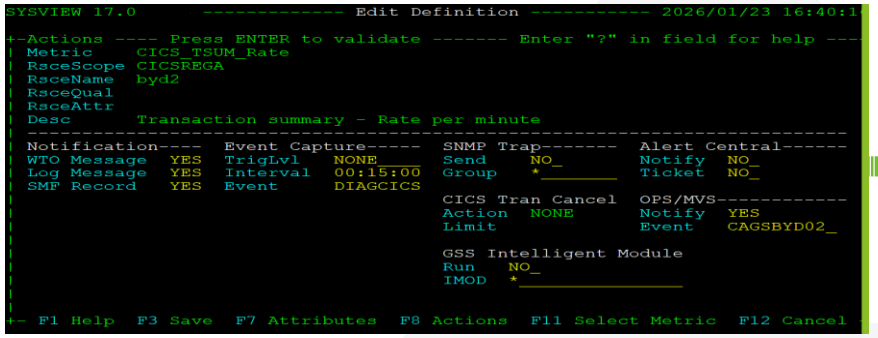
Real-time analysis and remediation

SCENARIO 1: VALIDATE IF CICS TRIGGER MONITOR IS ACTIVE

Scenario 1: Validate if CICS Trigger Monitor is active

If the transaction is being activated via MQ, it will be based on the number of executions of the same transaction.

Performance management tool indicates through one of its rules that the number of **transactions per minute** is lower than normal.

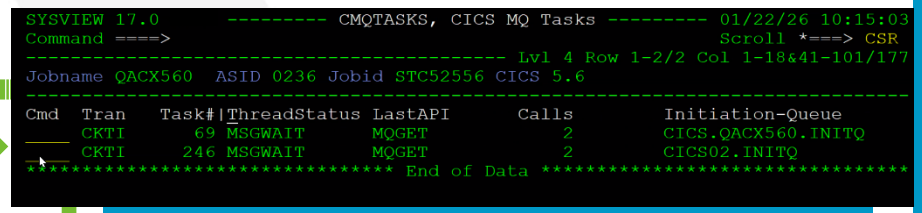


Automation **query** CICS MQ TASKS

Bridge / API

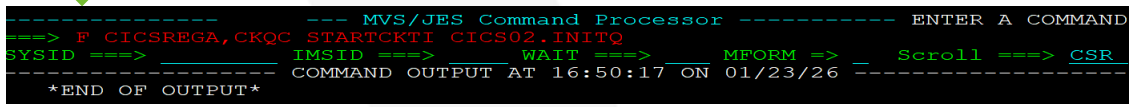
Automation **Rule**

MSG id (or API)



Collects Initiation-Queue ThreadStatus

If **Initiation-Queue** doesn`t have **CICS02.INITQ**



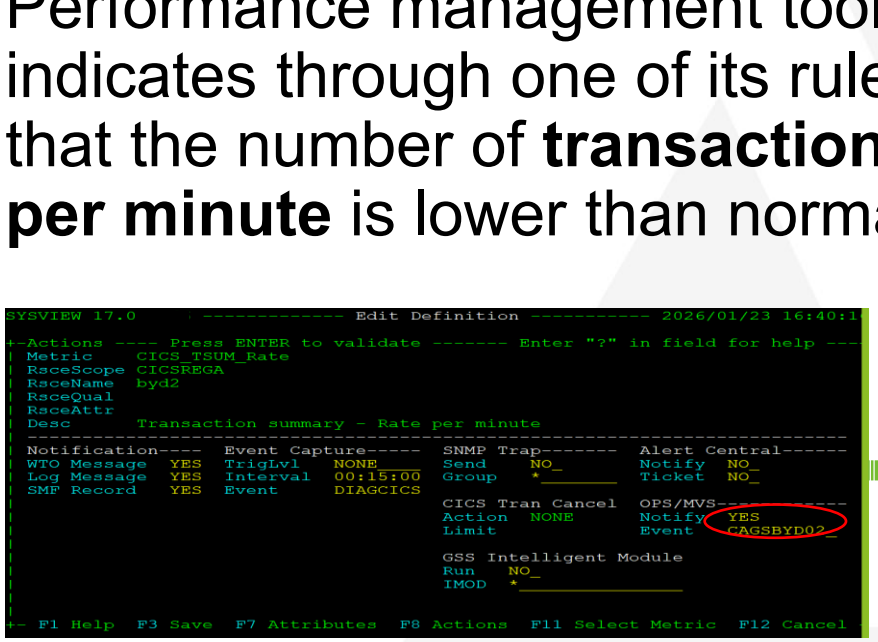
Comand CICS START MQ Bridge

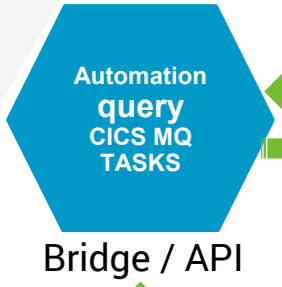
SCENARIO 2: CICS TRANSACTION VOLUME LOWER THAN NORMAL

Scenario 2: CICS transaction volume lower than normal

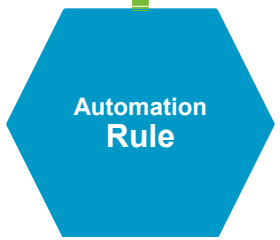
The movement of a CICS transaction is performed at a slower than normal speed, indicating a potential problem with the associated MQ queue.

Performance management tool indicates through one of its rules that the number of **transactions per minute** is lower than normal.

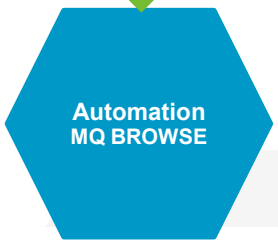




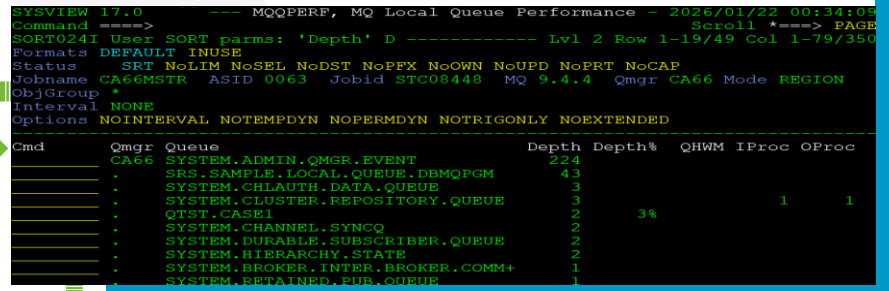
Bridge / API



MSG id (or API)

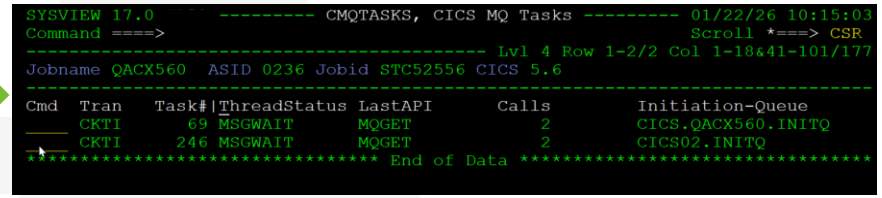


Bridge / API



Collects
GetsR
PutsR
Depth
LGetElap
LPutElap

QUEUE with **Depth** superior 2

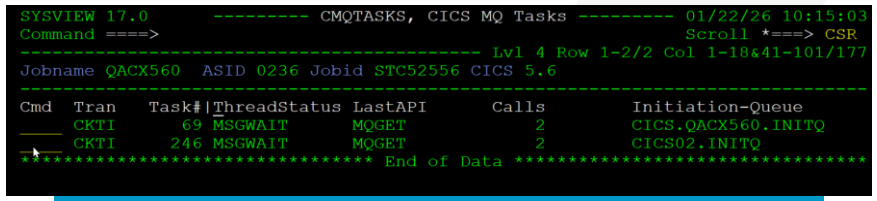


Manage QUEUE with
MsgLen = 70

Scenario 2: CICS transaction volume lower than normal (cont.)

The movement of a CICS transaction is performed at a slower than normal speed, indicating a potential problem with the associated MQ queue.

In this case, the automation can use direct integration to MQ manager



Manage QUEUE
MsgLen = 70

Automation possibilities:

- Connect to a queue manager
- Open a queue
- Put messages in the queue and get messages
- Forward message to a temporary queue
- Set queue manager attributes
- Inquire which attributes are set for the queue
- Close the queue
- Disconnect from the queue manager

SCENARIO 3: CICS CRITICAL TDS INTERNAL MESSAGES

Scenario 3: QR TCB CPU Dispatch Ratio case

The **QR TCB CPU Dispatch Ratio** is an indicator of how much processor resource is assigned to the **QR TCB** by the operating system and hardware, when compared to the amount of processor resource requested by the CICS dispatcher.

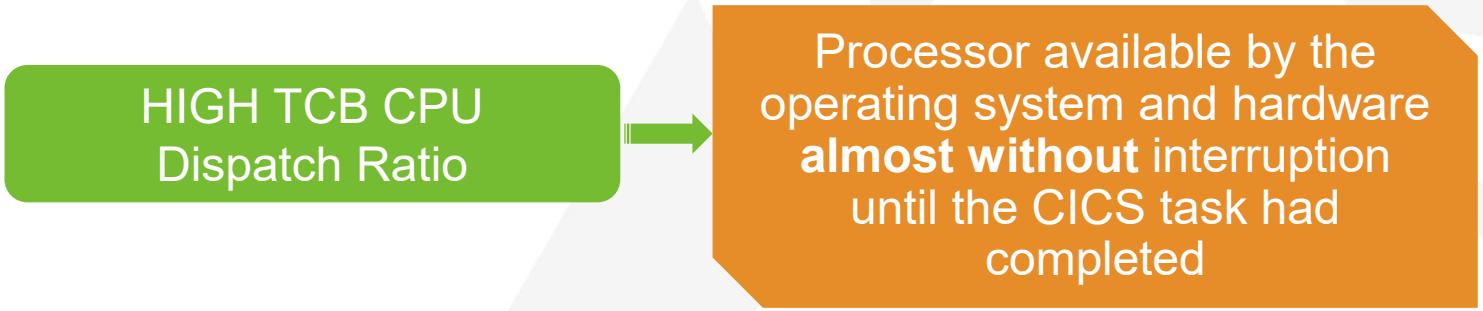
TCB CPU Dispatch Ratio → The accumulated CPU time as a fraction of accumulated dispatch time, expressed as a *percentage*

In a CICS environment this ratio is only of value for the **QR TCB** and is **meaningless** for other TCBs

Ref: https://www.ibm.com/docs/en/cics-ts/6.x?topic=techniques-what-investigate-when-analyzing-performance#qr-tcb-cpu-dispatch-ratio

Scenario 3: QR TCB CPU Dispatch Ratio case

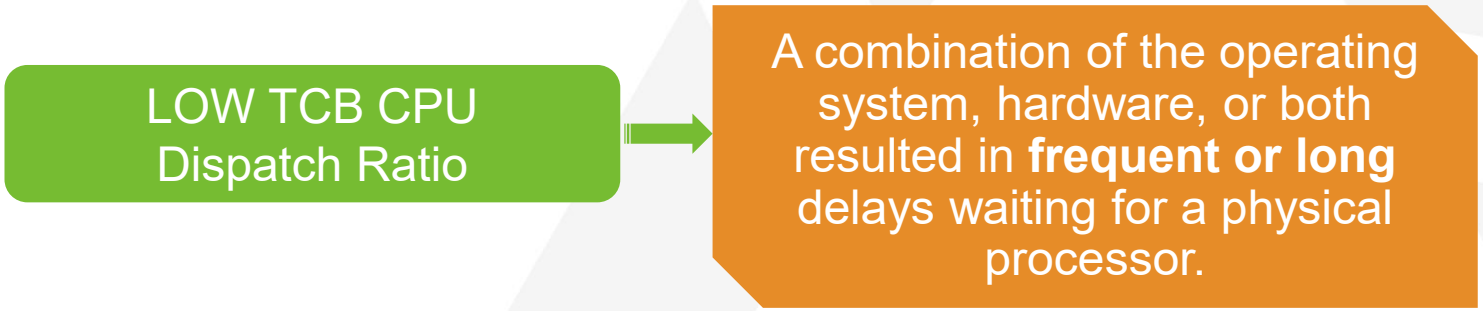
For a given interval, a **high ratio** indicates that when CICS dispatched a task on the QR TCB, processor resource was made available by the operating system and hardware **almost without** interruption until the CICS task had completed.



In this case, the **CPU time** is closely correlated with the overall elapsed time (the **CICS dispatch time**)

Scenario 3: QR TCB CPU Dispatch Ratio case

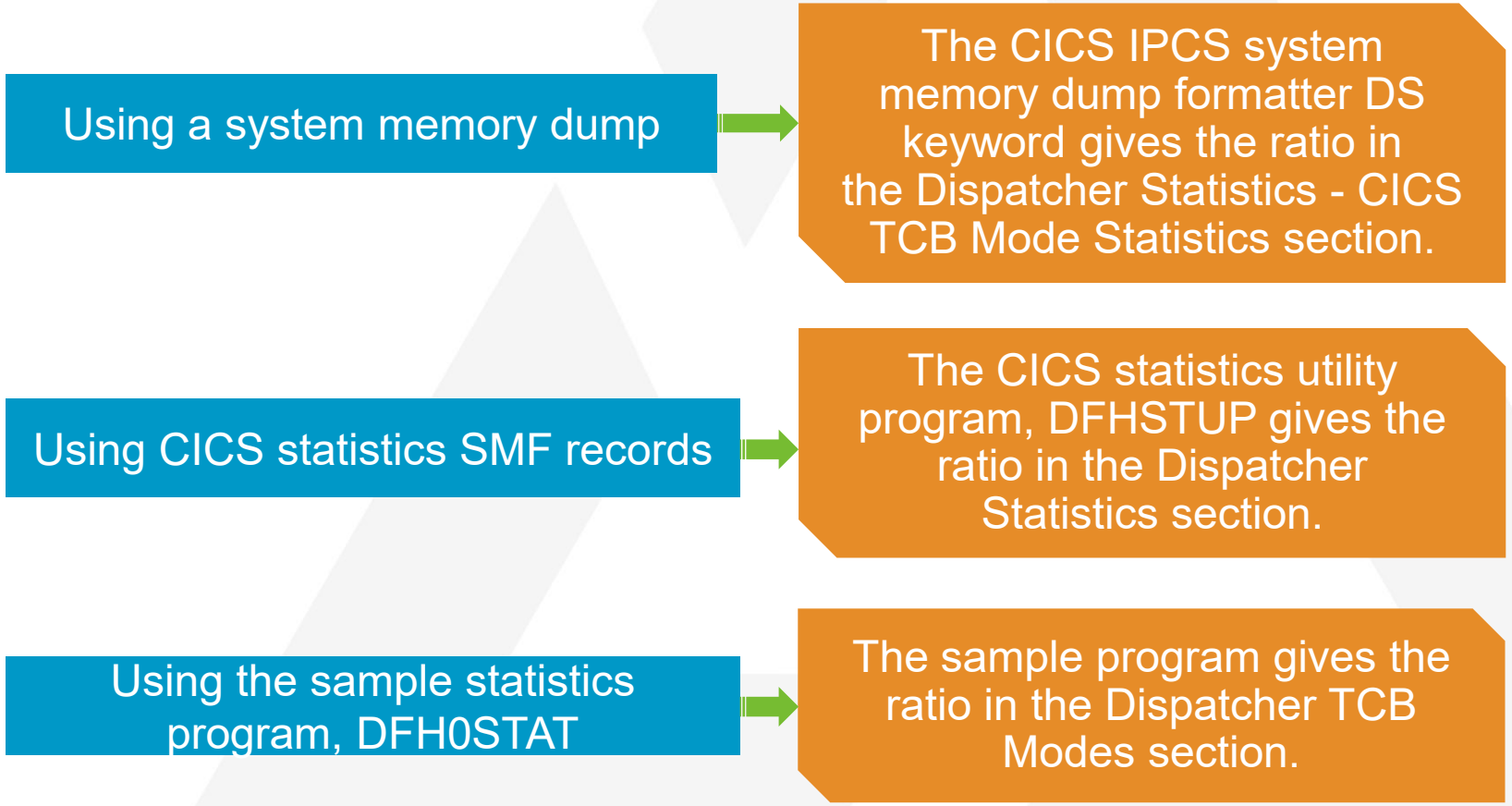
A **low ratio** indicates that despite CICS requesting processor resource, a combination of the operating system, hardware, or both resulted in frequent or long delays waiting for a physical processor.



In this case, the **CPU time** is **significantly smaller** than the overall elapsed time.

Scenario 3: QR TCB CPU Dispatch Ratio case

The **QR TCB CPU** dispatch ratio is reported in a number of ways:



Scenario 3: CICS critical TDs internal messages

Lastly, the **QR TCB CPU** dispatch ratio is reported in the CICS TD:

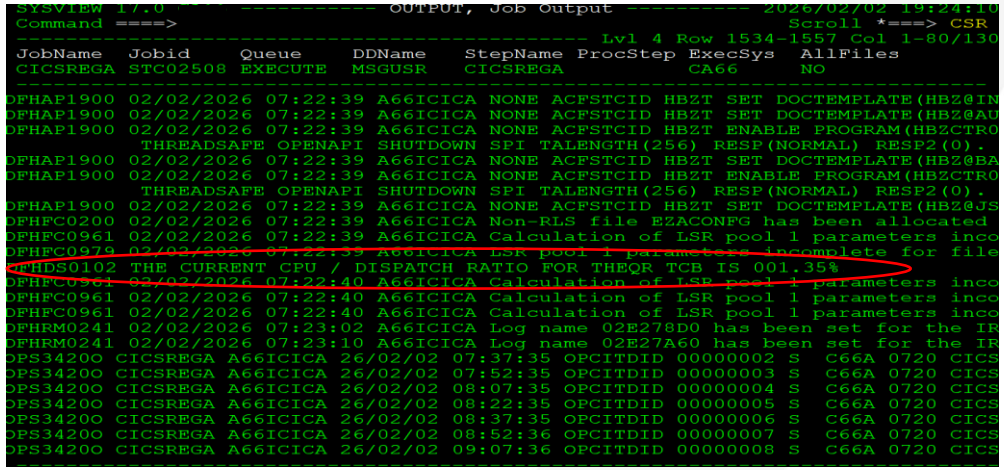
Using the CICS message **DFHDS0102**

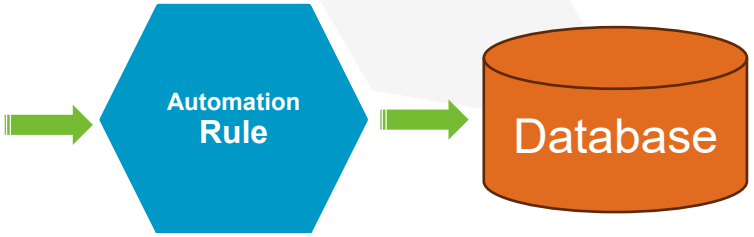
DFHDS0102 messages regularly report the **QR TCB CPU** Dispatch Ratio and can be used as an indicator of a potential shortage of **CPU resource**

The default interval for **DFHDS0102** messages is 5 mins
The interval can be set by specifying the system initialization parm **INITPARM=(DFHQRCPU='nn')** where **nn** is a number of minutes in the range 01 - 59.

Scenario 3: CICS critical TDs internal messages

Lastly, the **QR TCB CPU** dispatch ratio is reported in the CICS TD:





MSG id (or API)

Grafana/Splunk Dashboards stored by REST API
As best practice, collect a series of measurements to determine the usual range

SCENARIO N: LEVERAGE YOUR AUTOMATED OPERATIONS TEAM TO BUILD NEW SCENARIOS!

Scenario n: Leverage your automated operations team to build new scenarios!

- Continuous automation

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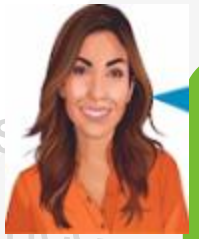
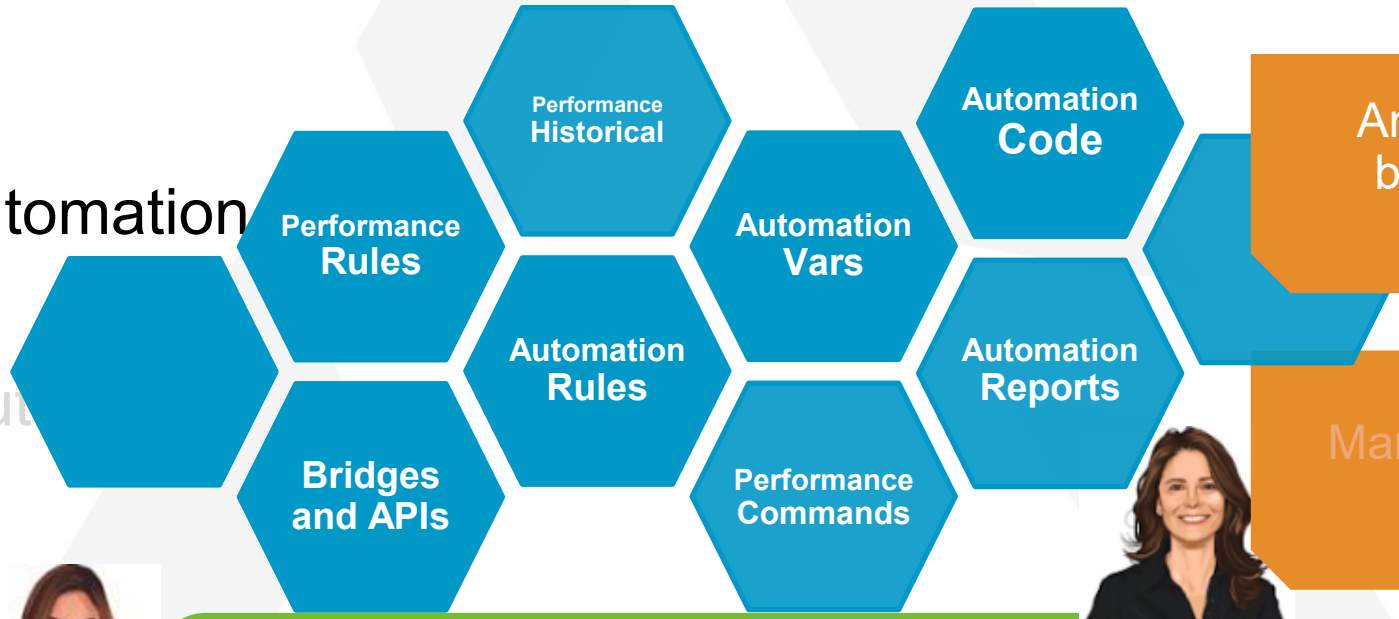
- CICS Diagnos
- MQ Performance





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Teodoro Novo
Mainframe Consultant
teodoro.novo@broadcom.com

Flavio Yano
Mainframe Consultant
flavio.yano@broadcom.com

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Teodoro Novo
Mainframe Consultant
teodoro.novo@broadcom.com

Flavio Yano
Mainframe Consultant
flavio.yano@broadcom.com