

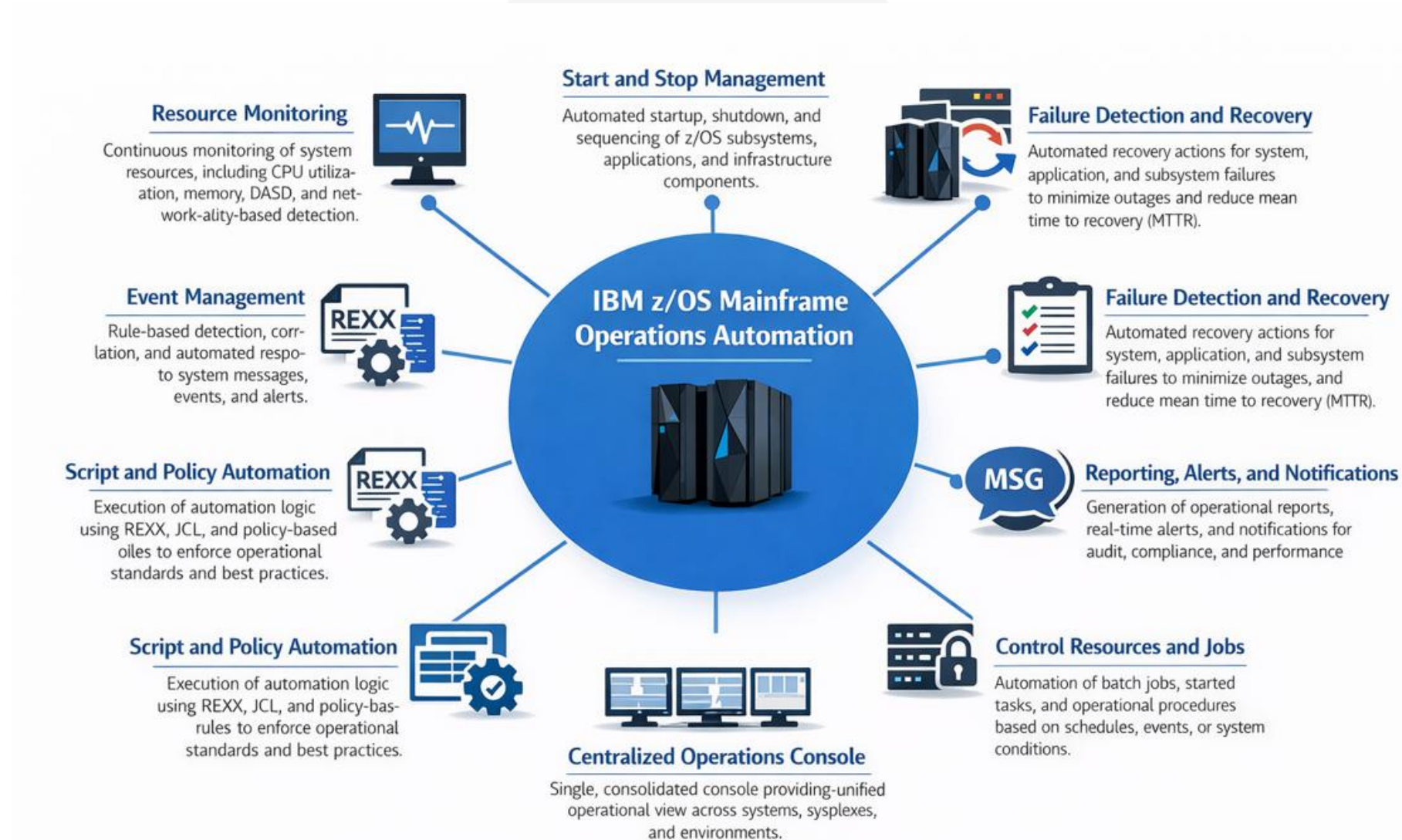
Beyond Monitoring:

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

```
SYSVIEW 17.0      ---- RULES, Exception Rule Definitions -- 2026/01/21 15:42:07
Command =====
SET$0091 RULES FORMAT set to ACTIVE ----- Lvl 3 Row 1-20/256 Col 1-79/548
Format:  DEFAULT ACTIONS ACTIVE RESOURCE SCHEDULE STATE THRESH
Status:   NoSRT NoLIM   SEL NoDST NoPFX NoOWN NoUPD NoPRT NoCAP
Jobname:  CICSREGB ASID 0085 Jobid STC08704 Asi CICS
OPS/MVS:  AlertCentral
ACTIVE:   DEMO ACTIVE
```

Cmd	Metric	Problem	Warning	Pct	RuleType	Type
?	Add	0		*	AUTO	*
	CICS_SYS_SOSCount	0	0	0	UPPER	SYSTEM
	CICS_SYS_TranRate	0	0	0	UPPER	SYSTEM
	.	0.013	0.024	185	LOWER	SYSTEM
	CICS_TEMP_AuxPct	80%	60%	75	UPPER	SYSTEM
	CICS_TRAN_Abends	5	4	80	UPPER	TRANS
	CICS_TRAN_RMI_MQ	0.150000	0.112500	75	UPPER	*
	.	1.000000	0.750000	75	UPPER	*
	CICS_TRAN_TASK_CpuTime	0.000000	0.000000	0	UPPER	*
	CICS_TRAN_TASK_DispatchDelay	0.005000	0.001000	20	UPPER	*
	CICS_TSUM_Rate	6	10	167	LOWER	TRANSM
	CICS_PAC_DBCTLStatus				STATE	STATE
	.				STATE	STATE
	.				STATE	STATE

Performance Management Metrics

- CICS Diagnostics
- MQ Performance

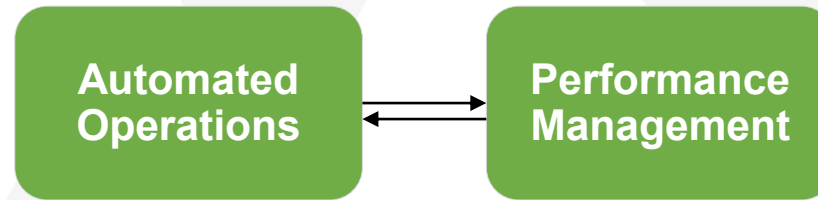
- Shorten diagnostic time
- Ensure application availability
- Correlate metrics from multiple sources

Real-time analysis and
remediation

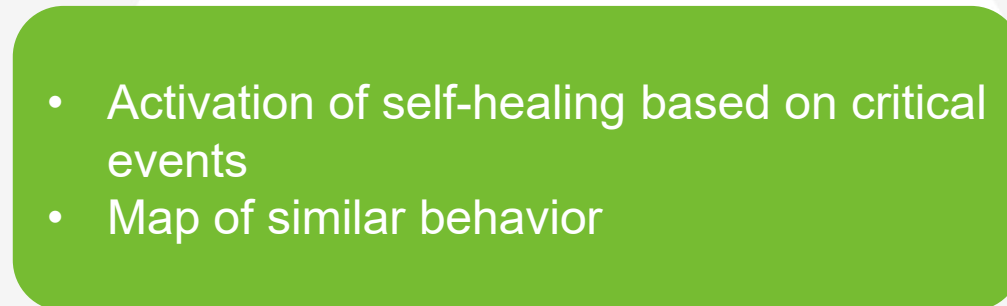
Automatic diagnostic

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

- Integrated solution



- CICS Diagnostics
- MQ Performance



Automatic diagnostic

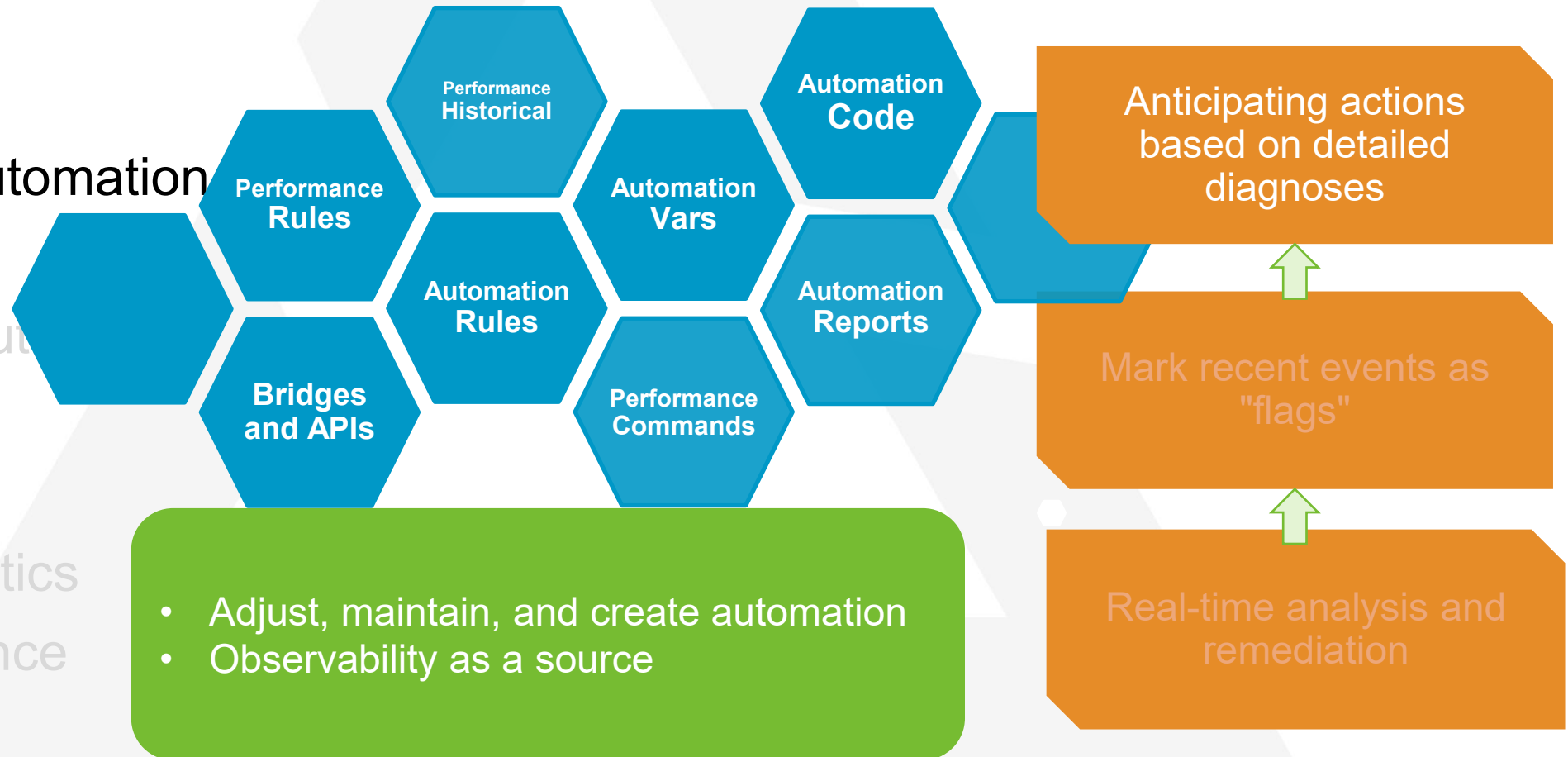
Building Self-Healing through data collection and analysis between CICS and MQ

- Continuous automation

- Integrated solution

- CICS Diagnostics

- MQ Performance





SCENARIO 1: VALIDATE IF CICS TRIGGER MONITOR IS ACTIVE

Scenario 1: Validate if CICS Trigger Monitor is active

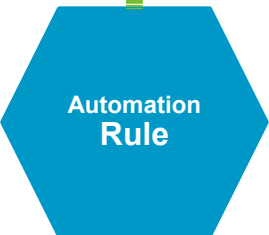
If the transaction is being activated via MQ, it will be based on the number of executions of the same transaction.

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

```
SYSVIEW 17.0 Edit Definition 2026/01/23 16:40:1
+Actions --- Press ENTER to validate --- Enter "?" in field for help ---
Metric CICS_TSUM_Rate
RsceScope CICSREGA
RsceName byd2
RsceQual
RsceAttr
Desc Transaction summary - Rate per minute
Notification--- Event Capture--- SNMP Trap--- Alert Central---
WTO Message YES TrigLvl NONE Send NO Notify NO
Log Message YES Interval 00:15:00 Group * Ticket NO
SMP Record YES Event DIAGCICS
CICS Tran Cancel OPS/MVS---
Action NONE Notify YES
Limit Event CAGSBYD02_
GSS Intelligent Module
Run NO
IMOD *
+ F1 Help F3 Save F7 Attributes F8 Actions F11 Select Metric F12 Cancel
```



Bridge / API



MSG id (or API)

```
SYSVIEW 17.0 ----- CMQTASKS, CICS MQ Tasks ----- 01/22/26 10:15:03
Command ==>
----- Lvl 4 Row 1-2/2 Col 1-18&41-101/177
Jobname QACX560 ASID 0236 Jobid STC52556 CICS 5.6
-----
Cmd Tran Task#|ThreadStatus LastAPI Calls Initiation-Queue
--- CKTI 69 MSGWAIT MQGET 2 CICS.QACX560.INITQ
--- CKTI 246 MSGWAIT MQGET 2 CICS02.INITQ
***** End of Data *****
```

If Initiation-Queue doesn't have CICS02.INITQ

Collects Initiation-Queue ThreadStatus

```
----- MVS/JES Command Processor ----- ENTER A COMMAND
==> F CICSREGA,CKQC STARTCKTI CICS02.INITQ
SYSID ==> IMSID ==> WAIT ==> MFORM ==> Scroll ==> CSR
*END OF OUTPUT*
```

Comand CICS START MQ Bridge



SCENARIO 2: CICS TRANSACTION VOLUME LOWER THAN NORMAL

Scenario 2: CICS transaction volume lower than normal

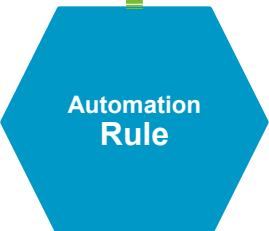
The movement of a CICS transaction is performed at a slower than normal speed, indicating a potential problem with the associated MQ queue.

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

```
SYSVIEW 17.0 Edit Definition 2026/01/23 16:40:1
+Actions --- Press ENTER to validate --- Enter "?" in field for help ---
Metric CICS_TSUM_Rate
RsceScope CICSREGA
RsceName byd2
RsceQual
RsceAttr
Desc Transaction summary - Rate per minute
Notification--- Event Capture--- SNMP Trap--- Alert Central---
WTO Message YES TrigLvl NONE Send NO Notify NO
Log Message YES Interval 00:15:00 Group * Ticket NO
SMP Record YES Event DIAGCICS CICS Tran Cancel OPS/MVS---
Action NONE Notify YES
Limit Event CAGSBD02
GSS Intelligent Module
Run NO
IMOD *
F1 Help F3 Save F7 Attributes F8 Actions F11 Select Metric F12 Cancel
```



Bridge / API



MSG id (or API)

```
SYSVIEW 17.0 --- MQQPERF, MQ Local Queue Performance - 2026/01/22 00:34:09
Command ==>
SORT0241 User SORT parms: 'Depth' D ----- Lvl 2 Row 1-19/49 Col 1-79/350
Formats DEFAULT INUSE
Status SRT NoLIM NoSEL NoDST NoPFX NoOWN NoUPD NoPRT NoCAP
Jobname CA66MSTR ASID 0063 Jobid STC08448 MQ 9.4.4 Qmgr CA66 Mode REGION
ObjGroup *
Interval NONE
Options NOINTERVAL NOTEMPDYN NOPERMDYN NOTRIGONLY NOEXTENDED
Cmd Qmgr Queue Depth Depth% QHWM IProc OProc
CA66 SYSTEM.ADMIN.QMGR.EVENT 224
SRS.SAMPLE.LOCAL.QUEUE.DBMQPGM 43
SYSTEM.CHLAUTH.DATA.QUEUE 3
SYSTEM.CLUSTER.REPOSITORY.QUEUE 3
QST.CASE1 2 3% 1 1
SYSTEM.CHANNEL.SYNCO 2
SYSTEM.DURABLE.SUBSCRIBER.QUEUE 2
SYSTEM.HIERARCHY.STATE 2
SYSTEM.BROKER.INTER.BROKER.COMM+ 1
SYSTEM.RETAINER.EUR.QUEUE 1
```

QUEUE with Depth superior 2

Collects
GetsR
PutsR
Depth
LGetElap
LPutElap



Bridge / API

```
SYSVIEW 17.0 ----- CMQTASKS, CICS MQ Tasks ----- 01/22/26 10:15:03
Command ==>
Jobname QACX560 ASID 0236 Jobid STC52556 CICS 5.6
Cmd Tran Task#|ThreadStatus LastAPI Calls Initiation-Queue
CKTI 69 MSGWAIT MQGET 2 CICS.QACX560.INITQ
CKTI 246 MSGWAIT MQGET 2 CICS02.INITQ
***** End of Data *****
```

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

```
SYSVIEW 17.0 ----- CMQTASKS, CICS MQ Tasks ----- 01/22/26 10:15:03
Command =====> Scroll *====> CSR
----- Lvl 4 Row 1-2/2 Col 1-18&41-101/177
Jobname QACX560 ASID 0236 Jobid STC52556 CICS 5.6
-----
Cmd Tran Task# ThreadStatus LastAPI Calls Initiation-Queue
--- ---
CRTI 69 MSGWAIT MQGET 2 CICS.QACX560.INITQ
CRTI 246 MSGWAIT MQGET 2 CICS02.INITQ
***** End of Data *****
```

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.

HIGH TCB CPU
Dispatch Ratio

Processor 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.

LOW TCB CPU
Dispatch Ratio

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:

Using a system memory dump

The CICS IPCS system memory dump formatter DS keyword gives the ratio in the Dispatcher Statistics - CICS TCB Mode Statistics section.

Using CICS statistics SMF records

The CICS statistics utility program, DFHSTUP gives the ratio in the Dispatcher Statistics section.

Using the sample statistics program, DFH0STAT

The sample program gives the ratio in the Dispatcher TCB Modes section.

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**

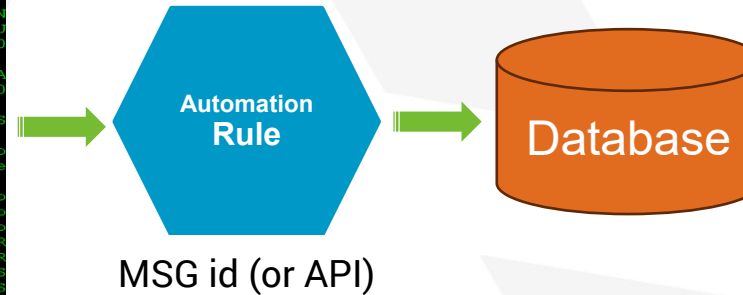
The default interval
for **DFHDS0102** messages is 5 mins
The interval can be set by specifying
the system initialization parm
INITPARM=(DFHQRCPU='nn') where
nn is a number of minutes in the range
01 - 59.

Scenario 3: CICS critical TDs internal messages

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

```

SYSVIEW 17.0 ----- OUTPUT, Job Output ----- 2026/02/02 19:24:10
Command =====
----- Lvl 4 Row 1534-1557 Col 1-80/190 -----
JobName  Jobid   Queue   DDName  StepName ProcStep ExecSys AllFiles
CICSREGA STC02508 EXECUTE MSGUSR  CICSREGA CA66    NO
-----
DFHAP1900 02/02/2026 07:22:39 A66ICICA NONE ACFSTCID HBZT SET DOCTEMPLATE(HBZ@IN
DFHAP1900 02/02/2026 07:22:39 A66ICICA NONE ACFSTCID HBZT SET DOCTEMPLATE(HBZ@AU
DFHAP1900 02/02/2026 07:22:39 A66ICICA NONE ACFSTCID HBZT ENABLE PROGRAM(HBZ@TRO
DFHAP1900 02/02/2026 07:22:39 A66ICICA NONE ACFSTCID HBZT SET DOCTEMPLATE(HBZ@BA
DFHAP1900 02/02/2026 07:22:39 A66ICICA NONE ACFSTCID HBZT ENABLE PROGRAM(HBZ@TRO
DFHAP1900 02/02/2026 07:22:39 A66ICICA NONE ACFSTCID HBZT SET DOCTEMPLATE(HBZ@JS
DFHFC0200 02/02/2026 07:22:39 A66ICICA Non-RLS file EZACONFG has been allocated
DFHFC0961 02/02/2026 07:22:39 A66ICICA Calculation of LSR pool 1 parameters inco
DFHFC0979 02/02/2026 07:22:39 A66ICICA LSR pool 1 parameters incomplete for file
THDS0102 THE CURRENT CPU / DISPATCH RATIO FOR THEQR TCB IS 001.35%
DFHFC0961 02/02/2026 07:22:40 A66ICICA Calculation of LSR pool 1 parameters inco
DFHFC0961 02/02/2026 07:22:40 A66ICICA Calculation of LSR pool 1 parameters inco
DFHRM0241 02/02/2026 07:23:02 A66ICICA Log name 02E27A60 has been set for the IR
DFHRM0241 02/02/2026 07:23:10 A66ICICA Log name 02E27A60 has been set for the IR
OPS34200 CICSREGA A66ICICA 26/02/02 07:37:35 OPCITDID 00000002 S C66A 0720 CICS
OPS34200 CICSREGA A66ICICA 26/02/02 07:52:35 OPCITDID 00000003 S C66A 0720 CICS
OPS34200 CICSREGA A66ICICA 26/02/02 08:07:35 OPCITDID 00000004 S C66A 0720 CICS
OPS34200 CICSREGA A66ICICA 26/02/02 08:22:35 OPCITDID 00000005 S C66A 0720 CICS
OPS34200 CICSREGA A66ICICA 26/02/02 08:37:35 OPCITDID 00000006 S C66A 0720 CICS
OPS34200 CICSREGA A66ICICA 26/02/02 08:52:36 OPCITDID 00000007 S C66A 0720 CICS
OPS34200 CICSREGA A66ICICA 26/02/02 09:07:36 OPCITDID 00000008 S C66A 0720 CICS
  
```



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



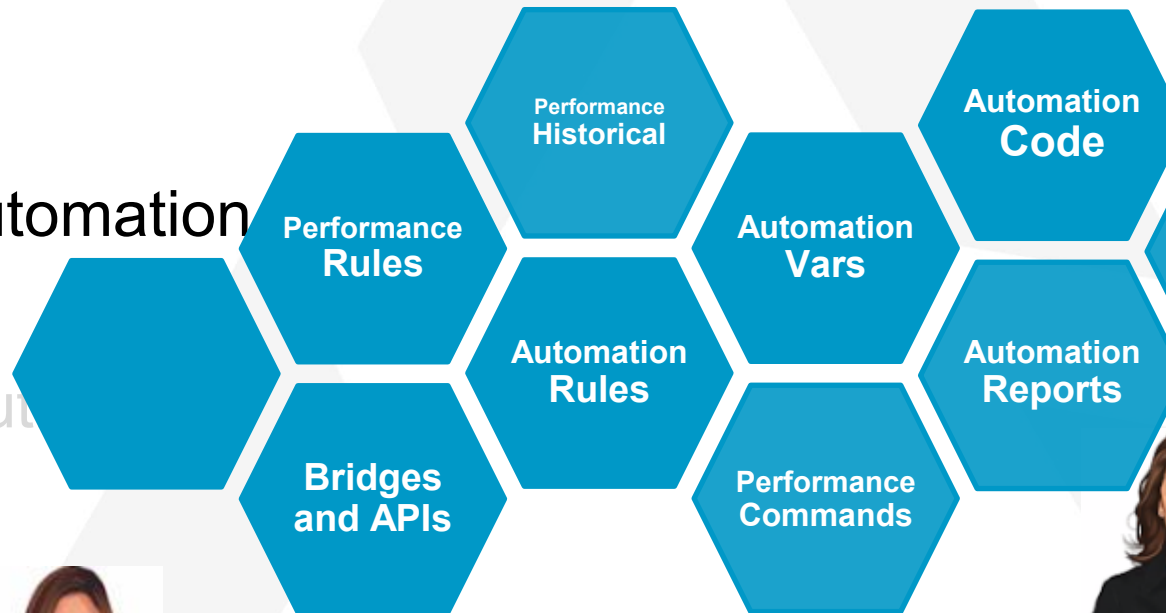
SCENARIO N: LEVERAGE YOUR AUTOMATED OPERATIONS TEAM TO BUILD NEW SCENARIOS!

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

- Continuous automation



Integrated solutions



Anticipating actions based on detailed diagnoses

Mark recent events as "flags"

Real-time analysis and remediation

- CICS Diagnosis
- MQ Performance



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



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