
Rule CIC323: High percent entries (either queue or item) not found

Finding: The CICS Shared Temporary Storage Queue Server statistics showed that a large percent of entries (either queue or item) were not found.

Impact: This finding has a LOW IMPACT or MEDIUM IMPACT on the performance of the CICS region.

Logic flow: This is a basic finding, based on an analysis of the data. The finding applies only with CICS/Transaction Server for OS/390 or for z/OS.

Discussion: The CICS temporary storage control facility provides the application programmer with the ability to store data in temporary storage queues, either in main storage, in auxiliary storage on a direct_access storage device, or in a temporary storage data sharing pool. Several commands can be used to reference, modify, or delete data in a temporary storage queue or to delete the entire queue.

- Write data to a temporary storage queue (WRITEQ TS)
- Update data in a temporary storage queue (WRITEQ TS REWRITE)
- Read data from a temporary storage queue (READQ TS command)
- Read the next data from a temporary storage queue (READQ TS NEXT)
- Delete a temporary storage queue (DELETEQ TS command)

When any of the above commands are executed, the response from the command can be “normal” in that no further action is required, or the response can be “abnormal” in that either the task is terminated or action is required. A *HANDLE CONDITION* command can be issued before the temporary storage commands are issued. The *HANDLE CONDITION* command can specify the label to which control is to be passed if a condition occurs.

Two abnormal conditions that apply to shared temporary storage are reported in the CICS statistics: *ITEMERR* and *QIDERR*.

- The *ITEMERR* abnormal condition can occur with the READQ TS command and with the WRITEQ TS command.

- The ITEMERR abnormal condition can occur with the READQ TS command when (1) the item number specified is invalid (that is, the item number is outside the range of item numbers written to the queue), or (2) an attempt is made to read beyond the end of the queue using the NEXT (default) option.

A temporary storage queue that has only one record can be treated as a single unit of data that can be accessed using its symbolic name. Using temporary storage control in this way provides a typical scratch-pad capability. This type of storage should be accessed using the READQ TS command with the ITEM option; not doing so may cause the ITEMERR condition to be raised.

- The ITEMERR abnormal condition can occur with the WRITEQ TS command when (1) the item number specified in a WRITEQ TS command with the REWRITE option¹, is not valid (that is, it is outside the range of entry numbers assigned for the queue), or (2) the maximum number of items (32 767) is exceeded.
- The QIDERR abnormal condition can occur with the READQ TS command, with the WRITEQ TS command, and with the DELETEQ TS command. The QIDERR abnormal condition occurs when the specified queue cannot be found. The default action (if the *HANDLE CONDITION* command has not been issued) is to terminate the task abnormally.

Shared temporary storage queue server statistics for the coupling facility are available in MXG file CICXQ1. CPEXpert uses data in CICXQ1 to calculate the percent of requests that encountered a “specified entry (queue or item) was not found” condition, using the following algorithm:

$$\text{Percent entries not found} = \frac{S1RSP3CT}{S1RSP1CT + \text{Abnormal responses}}$$

where S1RSP1CT = Number of normal responses
 Abnormal = S1RSP2CT + S1RSP3CT + S1RSP4CT +
 S1RSP5CT+ S1RSP6CT + S1RSP7CT +
 S1RSP8CT

S1RSP2CT = Requests timed out by CF
 S1RSP3CT = Specified entry not found
 S1RSP4CT = Version check failed for entry being updated
 S1RSP5CT = List authority comparison failed

¹If the REWRITE option is specified, the ITEM option must also be specified. If the specified queue does not exist, the QIDERR condition occurs. If the correct item within an existing queue cannot be found, the ITEMERR condition occurs and the data is not stored.

S1RSP6CT = Maximum list key reached
S1RSP7CT = List structure was out of space
S1RSP8CT = Other IXLLIST return code occurred

CPEXpert produces Rule CIC323 when the percent requests that encountered a “specified entry (queue or item) was not found” condition is greater than the value specified by the **TSPCTNOE** guidance variable in USOURCE(CICGUIDE). The default value for the **TSPCTNOE** is 0.1 indicating that CPEXpert should produce Rule CIC323 whenever more than one tenth percent of the requests encountered a “specified entry (queue or item) was not found” condition.

Suggestion: If this finding is produced, you should consider the following alternatives:

- Examine the application to determine why the “specified entry (queue or item) was not found” condition is encountered. Under normal situations, this condition should be considered a program error and should be remedied.
- Change the TSPCTNOE guidance variable in USOURCE(CICGUIDE) so Rule CIC323 is produced only when you wish to be aware of applications that cause a larger percent of “specified entry (queue or item) was not found” condition.
- You can specify **%LET TSPCTNOE = 100;** in USOURCE(CICGUIDE) to suppress this finding (the percent specified entry (queue or item) cannot be greater than 100), or you can “turn off” the rule using the process described in Section 3 of this User Manual.

Reference: *CICS/TS for OS/390 Release 1.1*
CICS Application Programming Reference:
Section 1.60 DELETEQ TS
Section 1.140 READQ TS
Section 1.241 WRITEQ TS

CICS/TS for OS/390 Release 1.2
CICS Application Programming Reference:
Section 1.60 DELETEQ TS
Section 1.140 READQ TS
Section 1.241 WRITEQ TS

CICS/TS for OS/390 Release 1.3
CICS Application Programming Reference:
Section 1.62 DELETEQ TS

Section 1.150 READQ TS
Section 1.268 WRITEQ TS

CICS/TS for z/OS Release 2.1

CICS Application Programming Reference:

CICS API commands (READQ TS, WRITEQ TS, and DELETEQ TS)

CICS/TS for z/OS Release 2.2

CICS Application Programming Reference:

CICS API commands (READQ TS and WRITEQ TS)