
Rule CIC334: High percent GET waits on shared temporary storage buffer lock

Finding: The CICS Shared Temporary Storage Queue Server statistics showed that there was a high percent of GET requests to the shared temporary storage buffer pool that waited on a buffer lock.

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 shared temporary storage queue server uses a *queue index buffer pool* within its region, to read and write queue index entries. When a READQ TS or WRITEQ TS request completes, the queue index information is retained in the buffer. Retaining the queue index entries in the queue index buffer pool can avoid the need to reread the queue index entry if the same queue is referenced from the same MVS image before the buffer has been reused.

Temporary storage control commands WRITEQ TS and DELETEQ TS invoke *implicit enqueueing*. However, CICS enqueueing is not invoked for READQ TS commands. This makes possible for one task to read a temporary storage queue record while another is updating the same record.

CICS provides two explicit enqueueing commands (EXEC CICS ENQ RESOURCE and EXEC CICS DEQ RESOURCE). These commands can be used to protect a temporary storage queue from being read and updated concurrently.

After a task has issued an ENQ RESOURCE(data-area) command, any other task that issues an ENQ RESOURCE command with the same data-area parameter is suspended until the task issues a matching DEQ RESOURCE(data-area) command, or until the UOW ends.

Shared temporary storage queue server buffer pool statistics are available in MXG file CICXQ2. Variable S2BFLWTS report the number of GET waits for a buffer because another request owned the buffer. CPExpert uses data in CICXQ2 to calculate the percent of GET waits on buffer lock, using the following algorithm:

$$\text{Percent GET waits on buffer lock} = \frac{S2BFLWTS}{S2BFGETS}$$

where S2BFLWTS = Number of GET waits on buffer lock
 S2BFGETS = Number of GET requests

CPEXpert produces Rule CIC334 when the percent GET waits on buffer lock is greater than the value specified by the **TSPCTWBL** guidance variable in USOURCE(CICGUIDE). The default value for the **TSPCTWBL** is 1, indicating that CPEXpert should produce Rule CIC334 whenever more than one percent of the GET requests waited for a buffer lock. CPEXpert suppresses this finding unless there are more than 1,000 GET requests in the statistics interval.

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

- Examine the tasks using the shared temporary storage queue to see whether it possible to make tasks relinquish control of the buffer item more quickly. Consider reducing the size of UOWs, or making conversational tasks pseudoconversational.
- Change the **TSPCTWBL** guidance variable in USOURCE(CICGUIDE) so Rule CIC328 is produced only when you wish to be aware of a larger percent of GET requests that waited for buffer lock.
- You can specify **%LET TSPCTWBL = 100;** in USOURCE(CICGUIDE) to suppress this finding (the percent GET requests that wait for buffer lock 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 Recovery and Restart Guide:
 Section 3.4.5.3 Implicit enqueueing on recoverable temporary storage queues
 Section 3.4.5.5 Explicit enqueueing (by the application programmer)

CICS/TS for OS/390 Release 1.2
 CICS Recovery and Restart Guide:
 Section 3.4.4.3 Implicit enqueueing on recoverable temporary storage queues
 Section 3.4.4.5 Explicit enqueueing (by the application programmer)

CICS/TS for OS/390 Release 1.3
 CICS Recovery and Restart Guide:
 Section 3.4.4.3 Implicit enqueueing on recoverable temporary storage queues
 Section 3.4.4.5 Explicit enqueueing (by the application programmer)

CICS/TS for z/OS Release 2.1

CICS Recovery and Restart Guide: Chapter 13. Programming considerations

Implicit enqueueing on recoverable temporary storage queues

Explicit enqueueing (by the application programmer)

CICS/TS for z/OS Release 2.2

CICS Recovery and Restart Guide: Chapter 13. Programming considerations

Implicit enqueueing on recoverable temporary storage queues

Explicit enqueueing (by the application programmer)