Rule CIC251 Default value was specified for the MROBTCH keyword

Finding: CPExpert noticed that the default value for MROBTCH was specified in the System Initialization Table (SIT).

Impact: This finding should normally have a LOW IMPACT on the performance of the CICS region, but there should be a significant reduction in CPU time. Benchmarks by IBM have shown up to 12% decrease in processor overhead resulting from batching MRO requests.

Logic flow: This is a basic finding, based upon an analysis of the CICS statistics. The CICS Component of CPExpert no longer analyzes SIT definitions unless a specific SIT variable is available in CICS statistics. The MROBTCH value was made available only with CICS Transaction Server for z/OS Release 2.2 (as variable DSGMBTCH). Consequently, this finding applies only with CICS Transaction Server for z/OS Release 2.2 and subsequent releases.

Discussion: CICS regions that use Multiple Region Operation (MRO) can queue MRO requests rather than sending the requests to the other region as the requests arrive. This queuing, or batching, of the MRO requests saves the overhead of posting and dispatching the region for each request.

Batching of MRO requests is accomplished using the MROBTCH parameter in the SIT. The MROBTCH parameter specifies the number of MRO requests that are to be accumulated before providing the set of requests to the receiving region. When the number of requests specified by the MROBTCH parameter has been accumulated, or when the time specified by the ICV parameter has lapsed, the region is started to process the requests.

With CICS Version 2, batching of MRO requests applied only to MRO requests. With CICS/ESA Version 3, batching of the requests was extended to include some non-MRO events, such as:

- VSAM physical I/O completion
- Subtasked request completion (if SUBTSKS=1 is specified)
- DL/I request completion implemented through DBCTL

MROBTCH is applied only to the 'quasi-reentrant' mode TCB.

IBM provides an algorithm for estimating the reduction in CPU overhead that can result from using a value larger than 1 for the MROBTCH parameter. Compared with no batching (the default specification of

MROBTCH=1), IBM states that setting MROBTCH=n has the following saving in the processor usage for waiting and posting of the TCB.:

$$\textit{Percent savings in CPU overhead} = \frac{(n-1) * 100}{n}$$

Applying this algorithm, IBM shows that:

for n=2, 50% savings
for n=3, 66% savings
for n=6, 83% savings

There is a transaction response time cost that would be associated with the batching of requests. IBM provides the following algorithm for estimating this cost:

$$\textit{Potential increased transaction time} = \frac{(n+1)}{2} * AR$$

Where:

AR = the average arrival time for each request actually batched

CICS dispatcher statistics are available in MXG file CICDS. CPExpert produces Rule CIC251 when the MXG variable DSGMBTCH is the default value (MROBTCH=1).

Suggestion: If Rule CIC251 is produced, CPEXPERT suggests that you consider the following alternatives:

- **Increase the MROBTCH value**. increasing the MROBTCH value in the SIT from the default of MROBTCH=1.

  You should initially increase the MROBTCH value to MROBTCH=2, and monitor the transaction response time in the region. If response time is satisfactory, you should continue increasing the MROBTCH value while continuing to monitor transaction response time. This iterative approach is suggested to prevent unacceptable CICS response time because of batching MRO requests.

  IBM cautions that setting MROBTCH higher than 6 is not recommended as the decreasing additional processor saving is unlikely to be worth the further increased response time.

Even specifying MROBTCH=6 might be too large a value. Some CPExpert users have reported significant (and unacceptable) transaction response time when MROBTCH=6 was specified.

The increased response time might cause an increase in overall virtual storage usage as the average number of concurrent transactions increases. You should monitor the increase to determine whether it is acceptable.

- **Specify ISV=500 and MROLRM=YES** . CPEXPERT also suggests that you specify ISV=500 when you implement MRO batching, and that you specify MROLRM=YES. Please see Rule CIC250 and Rule CIC253 for discussion about this suggestion.

- **Turn off Rule CIC251**. You should turn off Rule CIC251 if you do not wish to increase the MROBTCH value. See "Turning OFF CICS Component Rules" in Section 3 for a discussion on how to turn off rules produced by the CICS Component.

Reference: *CICS/ESA Version 4.1.1 Performance Guide*:Section 4.2.8, Section 4.3.8, and Section 4.8.4.

CICS/TS Release 1.1 Performance Guide: Section 4.2.8, Section 4.3.8, and Section 4.8.4.

CICS/TS Release 1.2 Performance Guide: Section 4.2.8 and Section 4.8.5.

CICS/TS Release 1.3 Performance Guide: Section 4.12.5.

CICS/TS for z/OS Release 2.1 *Performance Guide*: Chapter 24 (MRO and ISC - Batching requests (MROBTCH)).

CICS/TS for z/OS Release 2.2 *Performance Guide*: Section 4.11.5 (Batching requests).

CICS/TS for z/OS Release 2.3 *Performance Guide*: Section 4.11.5 (Batching requests).

CICS/TS for z/OS Release 3.1 *Performance Guide*: Section 4.11.5 (Batching requests).

CICS/TS for z/OS Release 3.2 *Performance Guide*:
Chapter 20. MRO and ISC: performance considerations
Batching requests (MROBTCH)

CICS/TS for z/OS Release 4.1 *Performance Guide*:
Chapter 20. MRO and ISC: performance considerations
Batching requests (MROBTCH)

CICS/TS for z/OS Release 4.2 *Performance Guide*:
Chapter 12. CICS MRO, ISC and IPIC: performance and tuning
Batching requests (MROBTCH)

CICS/TS for z/OS Release 5.1 *Performance Guide*:
Chapter 14. CICS MRO, ISC and IPIC: performance and tuning
MROBTCH

