
Rule WLM340: Batch jobs may be delayed waiting for an initiator

Finding: CPEXpert believes that much of the UNKNOWN delay may be attributed to batch jobs waiting for an initiator.

Impact: This finding can have a MEDIUM IMPACT or HIGH IMPACT on the performance of the service class. The amount of impact depends upon the amount of delay attributed to waiting for an initiator.

NOTE: This finding applies only to environments prior to OS/390 V2R4. With OS/390 V2R4, batch job classes may be managed by the Workload Manager, and other CPEXpert analysis applies.

Logic flow: The following rule causes this rule to be invoked:
Rule WLM300: Service Class was delayed for UNKNOWN delay

Discussion: When CPEXpert detects that a service class did not achieve its response goal, CPEXpert analyzes the basic causes (see the discussion in the above predecessor rule).

When the UNKNOWN delay is greater than the **WLMSIG** guidance variable in USOURCE(WLMGUIDE), CPEXpert analyzes several possible causes of delay outside the control of the SRM. One of the possible causes of UNKNOWN delay for a service class describing batch workload is that the batch jobs were delayed because they were waiting for an initiator.

With RMF Version 5, SMF Type 72 (Subtype 3) records contain the total transaction elapsed time in field R723CTET¹. The transaction elapsed time is measured from the point of entry to the point of termination of the transaction. This time includes both queued time and active time. For a batch job, the queued time represents the time that the batch job was on a JES queue waiting for an initiator. For an APPC transaction, the queue time represents the time that the APPC transaction waited for the APPC/MVS transaction scheduler.

With RMF Version 5, SMF Type 72 (Subtype 3) records contain the total transaction execution time in field R723CXET. For batch jobs, the transaction execution time represents the time that a batch job had been started by an initiator.

¹The meaning of the R723CTET field in Goal Mode is the same as the SMF72TST field in versions provided in SMF Type 72 (Subtype 1) for Compatibility Mode and for earlier versions of MVS.

CPEXpert computes the average amount of time transactions spent in a queue by subtracting the transaction execution time (R723CXET) from the total transaction elapsed time (R723CTET). CPEXpert concludes that queue delay time was a significant amount of the transaction time if the queue delay time divided by the total transaction time is greater than the **WLMSIG** guidance variable.

CPEXpert scans the Service Class Description (SMF Type 72 field R723MCDE) for the word "batch" and assumes that the service class describes batch workload if "batch" is encountered. CPEXpert produces Rule WLM340 if "batch" is detected in the Service Class Description.

It is, of course, possible that the service class does not describe batch workload even though "batch" is in the description. This instance is unlikely, as most installations will use the word "batch" in a description of only batch work.

It also is possible that the word "batch" will not be in the description of a service class of batch workload. Rule WLM341 will be invoked to provide information in this case.

The following example illustrates the output from Rule WLM340:

```
RULE WLM340: BATCH JOBS MAY BE DELAYED WAITING FOR AN INITIATOR

The HOTBATCH Service Class might have failed to achieve its performance
goal because batch jobs were waiting for an initiator. The below
information shows the average number of address spaces in the system,
by category.

-----THIS SERVICE CLASS-----
AVERAGE QUEUE   AVERAGE   AVG   AVERAGE
MEASUREMENT INTERVAL  TIME PER JOB  JOBS QUEUED  MPL   BATCH
13:02-13:07,21JUN1994  0:05:02      2          0.1   16
```

Suggestion: CPEXpert suggests that you review your initiator structure. Depending upon the amount of delay and the importance of the batch workload, you may wish to revise the initiator structure (provide more initiators, change the classes assigned to initiators, etc.).

Alternatively, you may wish to revise the job class assigned to the batch workload missing the performance goal.

From a practical matter, Rule WLM340 normally will be produced only for a service class consisting of test batch jobs. This is because you are unlikely to assign a response goal to lengthy batch jobs. (In fact, CPEXpert will detect a lengthy response goal and produce Rule WLM006. Please

refer to the documentation of Rule WLM006 for a discussion of the implications of a lengthy response goal.)

Batch work with an execution velocity goal cannot miss its performance goal because of initiator delays. This is because such delays are not included in the definition of execution velocity². This batch work can, of course, exhibit poor performance because of initiator delays. This poor performance will not be detected by the Workload Manager, and consequently will not be detected by CPEXpert.

²Queue delay (including time spent waiting for an initiator) optionally will be included in execution velocity beginning with OS/390 Version 2 Release 4.