
Rule WLM135: IMS activity processing transactions in service class

Finding: CPExpert has detected that a large percent of the transaction response time was related to IMS activity involved in processing the transactions in the service class.

Impact: This finding means that transactions were waiting for IMS activity - either an IMS Message Processing Region was processing the transaction or an IMS Message Processing Region was waiting for some reason.

Logic flow: The following rules cause this rule to be invoked:

- Rule WLM104: Subsystem Service Class did not achieve average response goal
- Rule WLM105: Subsystem Service Class did not achieve percentile response goal

Discussion: A transaction service class could be “served” by CICS regions, by IMS regions, by DB2 threads, or a combination of these. When a transaction service class misses its performance goal, CPExpert determines whether transaction delay information is available, from the view of these “server” subsystems.

When a transaction service class fails to achieve its performance goal, CPExpert analyzes the delay information to identify the primary and secondary causes of delay.

If the subsystem supports work manager delay reporting (that is, the subsystem is at CICS Version 4 or above, IMS Version 5 or above, or DB2 Version 6 or above), the delay information is available in the "Work Manager/Resource Manger State Section" of SMF Type 72 (Subtype 3) records. Field R723RTYP describes the subsystem that reports the transaction delay information (e.g., CICS, IMS, DB2, etc.).

When a significant amount of transaction time is spent in IMS, CPExpert examines the delay information reported by IMS. This reports the result of that analysis.

IMS Version 5 reports only one view of the transactions: the *execution phase*. The execution phase starts when IMS Version 5 has started an application task to process the transaction in a Message Processing Region (MPR). IMS does not report on the Begin_to_end Phase as does some subsystems (for example, CICS reports both Begin_to_end Phase

and Execution Phase). IMS designers apparently believed that so little time was spent in the Message Control Region that little benefit would be gained by reporting transaction states in the Message Control Region¹. Consequently, only Execution Phase information is provided by IMS.

IMS reports the transaction states in the following categories within the Execution Phase:

- **Idle state.** The Idle state means that the IMS transaction is waiting for work.
- **Active state.** The Active state means that IMS is executing an application program on behalf of the transaction.
- **Waiting for I/O state.** The Waiting for I/O state means that IMS had initiated some I/O operation and is waiting for completion.
- **Waiting for Lock state.** The Waiting for Lock state means that IMS is waiting on a lock request.

CPEXpert uses Rule WLM135 to report the time when a “served” transaction service class was served by IMS. The information is provided relative to the total subsystem samples reported by SMF for the transaction service class missing its goal. Thus, a CPEXpert user can see the effect of IMS activity and waiting on the transaction response time.

The following example illustrates the output from Rule WLM135:

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RULE WLM135: IMS ACTIVITY IN SUPPORT OF SERVICE CLASS

CICSPROD: The following information shows the distribution of samples
in IMS for those periods when IMS accounted for a significant part
of the response time of the CICSPROD Service Class. The percentages
are shown relative to the total samples for the CICSPROD Service
Class.

MEASUREMENT INTERVAL          PCT IMS      PCT IMS      PCT IMS
                               ACTIVE        WAIT FOR I/O  WAIT FOR LOCK
13:00-13:30,01MAR2001         42.9         0.0          0.0
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Suggestion: There are no suggestions with this finding. CPEXpert will continue analysis and other rules may be produced to provide more information. Please refer to Rule WLM104 or Rule WLM105 for information about the causes of delay to the subsystem transaction service classes.

¹This is an interesting belief, since the IMS Administration Guide specifically states that a major part of transaction delay time in a busy system could be caused by delays in the IMS Control Region.

Reference: IMS/ESA V5 Administrative Guide: System
Section 6.1.2.6: Interpreting MVS WLM Change State PB Service Codes
Section 6.5: Transaction Flow

IMS/ESA V6 Administrative Guide: System
Section 2.2.1.2.6: Interpreting MVS WLM Change State PB Service Codes
Section 2.2.5: Transaction Flow

IMS/ESA V7 Administrative Guide: System
Section 2.2.1.2.6: Interpreting MVS WLM Change State PB Service Codes
Section 2.2.5: Transaction Flow