
Rule WLM116: Execution Phase samples did not exist in SMF data

Finding: CPExpert has detected that there were no Work Manager/Resource Manager sample in the Execution Phase. This finding applies only to service classes representing transactions under CICS/ESA Version 4 or later versions of CICS.

Impact: This finding means that all service class activity for the indicated RMF intervals took place in the `Begin_to_end` phase.

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: CICS/ESA Version 4.1 (or later versions) reports two separate views of the transactions: the *begin_to_end phase* and the *execution phase*¹.

- **Begin_to_end phase.** The `begin_to_end` phase starts when CICS has classified the transaction². This action normally is done in a CICS Terminal Owning Region (TOR).
- **Execution phase.** The execution phase starts when either CICS or IMS (Version 5 or later) has started an application task to process the transaction. For CICS, this normally is done in a CICS Application Owning Region (AOR). For IMS, this is done in an IMS Message Processing Region (MPR).

The SRM periodically samples the status word associated with each transaction³, and updates counters representing the state of transactions executing in the service class. There is a status word for the `begin_to_end` phase and a status word for the execution phase, and separate sets of counters are maintained for the various `begin_to_end` states and execution states for each service class. The result of the sampling is recorded in SMF Type 72 records, as the Work Manager/Resource Manager section. There

¹IMS Version 5 reports only *execution phase* samples.

²Classifying the transaction into a service class is done by the Workload Manager when the subsystem manager issues the IWMCLSFY macro. Please refer to Section 4 for a more complete discussion of the subsystem work manager (e.g., CICS) interaction with the Workload Manager.

³With MVS/ESA SP5.1, the SRM takes its samples every 250 milliseconds.

are separate record sections for the Begin_to_end phase and the Execution phase.

The service class being analyzed by CPExpert did not meet its performance goal (as reported by Rule WLM104 or Rule WLM105). However, the SMF data did not contain samples in the Execution phase section of the Work Manager/Resource Manager information.

CPExpert produces Rule WLM116 when analyzing performance of the service class from the perspective of Execution phase, and there were no Execution phase samples. Since CPExpert is analyzing response delays based on Execution phase samples, Rule WLM116 advises you that the analysis cannot be performed because there were no Execution phase samples. Rule WLM116 provides information about transactions ending in the Begin_to_end phase, and a distribution of the percent of samples that were in each major state.

The following example illustrates the output from Rule WLM105, leading to Rule WLM116:

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RULE WLM105: SERVICE CLASS DID NOT ACHIEVE PERCENTILE RESPONSE GOAL

CICSCONV: Service class did not achieve its response goal during the
measurement intervals shown below. The response goal was 90.00 percent
of the transactions completing within 1.000 seconds, with an importance
level of 3. CICSCONV was defined as a "served" Service Class (e.g.,
IMS or CICS transactions). The below causes of delay were based upon
local Execution Phase samples.
CICSCONV was served by CICSRCN

-----LOCAL SYSTEM-----
                TRANS
                %
TOTAL MEETING MEETING PERF PLEX PRIMARY,SECOND
MEASUREMENT INTERVAL TRANS GOAL GOAL INDX PI CAUSE OF DELAY
11:45-12:00,18MAR1998 81 0 0.0 4.00 4.00 NO EXE PHASE SAMPLES
12:00-12:15,18MAR1998 89 1 1.1 4.00 4.00 NO EXE PHASE SAMPLES

RULE WLM116: SERVICE CLASS DID NOT HAVE EXECUTION PHASE SAMPLES

CICSCONV is a "served" Service Class (e.g., IMS or CICS transactions).
However, this service class did not have any Execution Phase samples
on System J80 during the intervals shown below. The below information
shows the total samples collected and the distribution of samples in
the Begin_to_End Phase for CICSCONV:

TOTAL TOTAL -----PERCENT OF SAMPLES-----
MEASUREMENT INTERVAL TRANS SAMPLES IDLE READY ACTIVE WAIT SWITCHED
11:45-12:00,18MAR1998 2,317 81 99.7 0.1 0.3 0.0 0.0
12:00-12:15,18MAR1998 3,056 89 99.9 0.0 0.1 0.0 0.0

```

Suggestion: The situation in which a transaction service class misses its performance goal, but there are no Execution phase samples normally is caused by the following situations:

C Transactions in the service class on the system being analyzed complete in the Begin_to_end phase, and they are not shipped to an AOR. These transactions commonly are CICS system transactions. The example shown above illustrates this situation. Note that a relatively small number of transactions completed execution, and that the transactions were Idle during a large percent of the samples. In such cases, you may wish to ignore CPEXpert's finding, or change the guidance in USOURCE(WLMGUIDE) to exclude the service class from analysis.

At present, CPEXpert does no further analysis of the Begin_to_end phase delays. This design is because all situations encountered had (1) few transactions involved, and (2) most of the samples were in Idle state. Please call if you encounter situations that you feel should be analyzed further.

C All transactions in the service class being analyzed are shipped to another system in the sysplex.

In this situation, CPEXpert will "set a flag" and analyze Execution phase activity for the service class on other systems in the sysplex.

C All transactions in the service class being analyzed are shipped somewhere in the network.

In this situation, no further information is available in SMF, and no further analysis can be done.

Reference: CICS/ESA Version 4.1 Performance Guide
Section 2.6.3.1: Service Definitions

CICS/TS Release 1.1 Performance Guide
Section 2.6.3.1: Service Definitions

CICS/TS Release 1.2 Performance Guide
Section 2.6.3.1: Service Definitions

CICS/TS Release 1.3 Performance Guide
Section 2.5.7.1: Service Definitions

CICS/TS for z/OS Release 2.1 *Performance Guide*: Chapter 8 (Managing Workloads - Setting up service definitions).

CICS/TS for z/OS Release 2.2 *Performance Guide*: Chapter 8 (Managing Workloads - Setting up service definitions).