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## Rule WLM125: Significant transaction time was in Waiting for Conversation state

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**Finding:** A significant amount of the transaction response time for the service class missing its performance goal was spent in the Waiting for Conversation state. This finding applies to service classes which are part of a subsystem (e.g., CICS transactions).

**Impact:** This finding has MEDIUM IMPACT or HIGH IMPACT on performance of the service class. The level of impact depends on the percent of transaction response time spent in the Waiting for Conversation state.

**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:** When CPEXpert produces Rule WLM104 or Rule WLM105 to indicate that a subsystem service class did not achieve its performance goal, the logic of these rules tries to identify the cause of the delay. The cause of the delay initially is analyzed from the "served" service class view. The delays from the served service class are reported by CICS/ESA Version 4.1 or IMS Version 5 interaction with the Workload Manager, using the Workload Management Services macros<sup>1</sup>.

CICS/ESA Version 4.1 reports two separate views of the transactions: the *begin\_to\_end phase* and the *execution phase*<sup>2</sup>.

- **Begin\_to\_end phase.** The *begin\_to\_end phase* starts when CICS/ESA Version 4.1 has classified the transaction<sup>3</sup>. This action normally is done in a CICS Terminal Owning Region (TOR).
- **Execution phase.** The *execution phase* starts when either CICS/ESA Version 4.1 or IMS Version 5 has started an application task to process

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<sup>1</sup>Please refer to Section 4 of this document for more detail about the Workload Management Services macros and how the subsystems use these macros to exchange information with the Workload Manager.

<sup>2</sup>IMS Version 5 reports only *execution phase* samples.

<sup>3</sup>Classifying the transaction into a service class is actually done by the Workload Manager when CICS 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.

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the transaction. For CICS, this normally is done in a CICS Application Owning Region (AOR).

Within each phase, CICS or IMS reports the "state" of the transaction, from the view of CICS or IMS. The state of the transaction is reported in the following categories<sup>4</sup>:

- **Idle state.**
- **Active state.**
- **Ready state.**
- **Wait state.**
- **Switched state.**

If the subsystem supports work manager delay reporting, the delay information is available in the "Work Manager/Resource Manger State Section" of SMF Type 72 (Subtype 3) records. When a transaction service class fails to achieve its performance goal, CPExpert analyzes the information to identify the primary and secondary causes of delay.

The Wait state indicates that a task in support of the transaction was waiting on some activity. The Wait state is broken into several categories: waiting for lock, waiting for I/O, waiting for conversation, waiting for distributed request, waiting for a session to be established (locally, somewhere in the network, or somewhere in the sysplex), waiting for a timer, waiting for another product, or waiting for an unidentified resource.

CPExpert produces Rule WLM125 when the primary or secondary cause of delay was that the transaction service class was in the Waiting for Conversation state for a significant percent of its response time. These tasks would be shown as "Suspended" by the CEMT INQUIRE TASK command.

The Waiting on Conversation state means that a transaction has been switched across an intersystem communication link (MRO or ISC) to another work manager.

A CICS transaction typically enters the system through a TOR and may be routed to an AOR. The Waiting on Conversation state in the TOR would include the time the transaction was switched to the AOR, plus any queue

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<sup>4</sup>Please refer to Section 4 of this document for a more comprehensive discussion of the transaction states and the interaction between the subsystem (CICS or IMS) and the Workload Manager.

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time waiting for the AOR to accept the transaction and notify the Workload Manager, plus the time in the AOR processing the transaction. The Waiting on Conversation state in the TOR would terminate when the TOR received the transaction back from the AOR. All of this Waiting on Conversation time would show up in the BTE Phase of the transaction.

Most of the Waiting on Conversation state (particularly for the BTE Phase) is explained in the Switched state:

- **Switched - Local.** The transaction has been switched, across an MRO link, to another CICS region in same MVS image.
- **Switched - Sysplex.** The transaction has been switched, across an XCF/MRO link, to another CICS region in another MVS image in the sysplex.
- **Switched - Network.** The transaction has been switched, across an ISC link, to another CICS region (which may, or may not, be in the same MVS image).

The following example illustrates the output from Rule WLM125:

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RULE WLM125:  SIGNIFICANT TRANSACTION TIME WAS WAITING FOR CONVERSATION

A significant amount of the transaction response time for CICUSERC Service
Class was spent waiting on a conversation between subsystems:  waiting
on another CICS region, an IMS region, DBCTL, etc.
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**Suggestion:** There are no suggestions with this rule. The finding is provided for information purposes.

**Reference:** CICS/ESA Version 4.1 Performance Guide  
Section 2.7.1.1: The response time breakdown in percentage section  
Section 2.7.1.2: The state section

CICS/TS Release 1.1 Performance Guide  
Section 2.7.1.1: The response time breakdown in percentage section  
Section 2.7.1.2: The state section

CICS/TS Release 1.2 Performance Guide  
Section 2.7.1.1: The response time breakdown in percentage section  
Section 2.7.1.2: The state section

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CICS/TS Release 1.3 Performance Guide

Section 2.6.1.1: The response time breakdown in percentage section

Section 2.6.1.2: The state section

CICS/TS for z/OS Release 2.1 *Performance Guide*: Chapter 8 (Managing Workloads).

CICS/TS for z/OS Release 2.2 *Performance Guide*: Chapter 8 (Managing Workloads). |