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**Rule WLM630: A hardware problem may exist**

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**Finding:** There was a significant number of PATH RETRY requests to one or more paths in the indicated transport class.

**Impact:** This finding can have a HIGH IMPACT on the signalling performance of the sysplex.

**Logic flow:** This a basic finding. There are no predecessor rules.

**Discussion:** The XCF component of MVS/ESA allows authorized programs on one MVS system in a sysplex to communicate with programs on the same system or on other systems. A typical example of this communication is between CICS regions; CICS regions often communicate with other CICS regions in the same system or with CICS regions on other systems in the sysplex.

Please refer to the discussion associated with Rule WLM601 for additional information about XCF buffers.

XCF group members communicate with each other using the XCF *signalling* mechanism. The communication is done via signalling paths consisting of ESCON channels operating in channel-to-channel (CTC) mode, a coupling facility list structure (beginning with MVS/ESA Version 5), or 3088 Multisystem Channel Communication Unit. Messages are sent over the signalling paths, and the paths have one or more buffers associated with them to hold the messages as they are sent or received.

When a signalling path experiences an error (such as an I/O error), XCF attempts to restart the signalling path and resend the message. Restarting a path represents a loss of signalling capacity while the path is being restarted. Additionally, the failed message must be resent on a different path during path restart and the delay to the message may cause sysplex performance degradation. Depending upon the type of message being sent, the performance degradation could be serious.

If the number of retry operations reaches the value specified for the RETRY parameter on the PATHIN or PATHOUT statement, XCF will stop the path. The default value for the RETRY parameter is 10, indicating that XCF will stop the path after 10 retry operations.

SMF Type 74 (Subtype 2) provides statistics about the number of messages, where the messages are sent, the paths used to send the

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messages, the path retry limit (as specified in the PATHIN or PATHOUT statement), and how many retry operations XCF initiated for the path.

CPEXpert analyzes this information to determine whether a hardware problem exists for the path. CPEXpert concludes that a hardware problem exists in the path when the number of XCF retry operations was 25% of the path retry limit. The purpose of selecting this value is to give an "early warning" of pending path problems.

The following example illustrates the output from Rule WLM630:

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RULE WLM630: A HARDWARE PROBLEM MAY EXIST

There were a significant number of RETRY requests in the DEFSSMALL
transport class. A RETRY often indicates that there is a hardware
problem. This finding applies to the following RMF measurement
intervals:
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MEASUREMENT INTERVAL	SENT TO (SYSTEM/PATH)	OUTBOUND REQUESTS	RESTARTS	RESTART LIMIT
10:30-11:00,26MAR1996	Z0/C594	6,245	26	100
11:00-11:30,26MAR1996	Z0/C595	7,177	44	100
11:30-12:00,26MAR1996	Z0/C596	10,508	63	100
12:00-12:30,26MAR1996	Z0/C597	12,919	72	100

**Suggestion:** If Rule WLM630 is produced, CPEXpert suggests that you identify and resolve the cause of the path retry problems.

**Reference:** MVS/ESA: Setting Up a Sysplex (GC28-1449)  
Section 5: Planning Signalling Services in a Sysplex

MVS/ESA: Initialization and Tuning Reference (GC28-1452)  
COUPLExx (Cross-System Coupling Facility Parameters)

OS/390: Setting Up a Sysplex (GC28-1779)  
Section 5: Planning Signalling Services in a Sysplex

OS/390: Initialization and Tuning Reference (GC28-1752)  
COUPLExx (Cross-System Coupling Facility Parameters)

z/OS: Setting Up a Sysplex (SA22-7625)  
Section 5: Planning Signalling Services in a Sysplex

z/OS: Initialization and Tuning Reference (SA22-7592)  
COUPLExx (Cross-System Coupling Facility Parameters)

"Parallel Sysplex Performance: tuning tips and techniques,"

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Kelley, Joan (IBM, Poughkeepsie, NY), SHARE 86, February 1996.