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## Rule WLM030: Report class period is heterogeneous

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**Finding:** At least one report class period was shown as "heterogeneous" by the SMF Type 72 information.

**Impact:** This finding should be viewed as NO IMPACT on the performance of your computer system. However, the workload information recorded by SMF may contain "double counting" of data. Consequently, the finding could have a HIGH IMPACT on accounting for the use of system resources, on billing for use of system resources, or on capacity planning efforts.

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

**Discussion:** Two types of performance classes are reflected in data maintained by the Workload Manager: *service classes* and *report classes*.

- Service classes are used by the Workload Manager to determine whether performance goals are being met and to control the allocation of system resources to address spaces. A single transaction, job, Started Task, etc. can be controlled by only one service class (defined in the service policy).
- Report classes can be used to obtain information about the use of system resources at various levels of detail, based upon the specifications contained in the Workload Group definition of the service policy. Up to 999 report classes may be defined in a service policy. Earlier versions of MVS allowed the assignment of a workload element to up to four report performance groups. With Goal Mode, a single transaction, job, Started Task, etc. can be assigned to only **one** report class.

A report class period that is related to a subset of work in a **single** service class, is referred to as a **homogeneous** report class period. This term means that the report class period contains resource and performance information about work units in a **single** service class period, and that the performance goal and goal importance related to the report class period are obtained from a **single** service class period. As described below, with z/OS V1R2, it is possible to identify homogeneous report class periods.

A report class can be associated with work units that are assigned to multiple service class periods. That is, the workload classification scheme can associate work units to **multiple** service classes, while associating these work units to a **single** report class. When a report class is

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associated to work units in multiple service classes, the report class is referred to as a **heterogeneous** report class. This term means that the report class period contains resource and performance information about work units in **multiple** service class periods.

Heterogeneous report classes can cause incorrect or misleading performance data, since the data collected is based on different goals, importance, or duration as specified for the multiple service class periods. As described below, with z/OS V1R2, it is possible to identify heterogeneous report class periods.

With z/OS V1R2, the heterogeneous report class will have a number of periods corresponding to the largest number of periods of any associated service class. For example, if Service Class 1 has two periods and Service Class 2 has three periods, and if work units assigned to Service Class 1 and Service Class 2 were assigned to Report Class 1, then Report Class 1 would have three periods (based on Service Class 2 having three periods).

With z/OS V1R2, SMF Type 72 (field R723CRS1: Report class period flags) contains information that describes whether a report class period is homogeneous or heterogeneous, on an RMF recording interval basis. A report class period is described as heterogeneous if more than one service class period was found contributing to the report class period in an RMF recording interval.

This new information means that it is possible for CPExpert to detect whether a report class period reverts between homogeneous and heterogeneous between RMF recording intervals, depending on whether work units actually executed in the corresponding service class periods during the RMF interval. Since the SMF information is reported on a system basis, it also is possible to determine whether a report class is homogeneous or heterogeneous on each system being analyzed by CPExpert.

Additionally, with z/OS V1R2, SMF Type 72 variable R723CLSC contains the name of the service class that last **contributed information** to the report class period. The performance goal and goal importance described in SMF Type 72 records for the report class period are obtained from the **last** service class period that contributed to the report class period. This new field can be used to associate the performance information to a specific service class period, which could be particularly useful if a report class period reverted between homogeneous and heterogeneous states from one RMF recording interval to the next.

While processing SMF Type 72 records, CPExpert extracts records for all report class periods in which R723CRS1 indicates that the report class

period is heterogeneous. CPExpert then summarizes these records by report class period and extracts information from all SMF Type 72 records that describe the report class periods, regardless of whether they are homogeneous or heterogeneous. The result is a compilation of information showing, by system, whether the report class period is homogeneous or heterogeneous for the entire SMF data being analyzed.

CPExpert produces Rule WLM030 to alert you that there is a problem with the performance data reflected by the report class period.

Recall that the SMF Type 72 records identify the last service class for each RMF interval that contributed to the report class period. Consequently, CPExpert lists the last service class that contributed to the report class period (obtained from the R723CLSC field). This identification of service classes associated with the report class period is not complete, since any particular service class might not be the "last" that contributed to the report class period. However, with a relatively large number of RMF intervals to analyze, it is likely that most associated service classes would be identified.

The following example illustrates the output from Rule WLM030:

RULE WLM030: REPORT CLASS PERIOD IS HETEROGENEOUS			
At least one report class period was shown as "heterogeneous" by the SMF Type 72 information. A report class period is referred to as "heterogeneous" when the report class period is associated to work units in multiple service classes. Heterogeneous report classes can cause incorrect or misleading performance data, since the data collected is based on different goals, importance, or duration as specified for the multiple service class periods.			
REPORT CLASS	PERIOD	SYSTEM	LAST SERVICE CLASS CONTRIBUTING INFORMATION
CICSCPSM	1	J90	TESTSRVY
CICSCPSM	1	JA0	TESTSRVN
CICSCPSM	1	JC0	TESTSRVN
CICSCPSM	1	JE0	TESTSRVY
CICSCPSM	1	JF0	TESTSRVN
CICSCPSM	1	JG0	TESTSRVY
CICSCPSM	1	JI0	TESTSRVN
CICSCPSM	1	TPN	TESTSRVN
CICSCPSM	1	Z0	TESTSRVY
CICSCPSM	1	JB0	TESTSRVY

**Suggestion:** CPExpert suggests that you consider the following alternatives:

- Unless you have unusual requirements, you should review the classification scheme of your report classes. The classification scheme should be revised to eliminate the assignment of work units from multiple service classes to the same report class.

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- If you do have an unusual requirement, you should make sure that everyone who uses the heterogeneous report class period information is aware that heterogeneous report classes can cause incorrect or misleading performance data. This is because the data collected is based on different goals, importance, or duration as specified for the multiple service class periods.
  - You can "turn off" CPEXpert's analysis of heterogeneous report class periods by specifying **%LET WLM030 = OFF.;** in USOURCE(WLMGUIDE).
  - You can disable CPEXpert's checking the service definition by modifying the CHKPLCY guidance variable in USOURCE(WLMGUIDE). If the CHKPLCY guidance variable is specified as **%LET CHCKPLCY=Y;**, CPEXpert will not check the service definition for potential problems.

Before you globally disable CPEXpert's checking the service definition, you may wish to review other guidance variables. Many of the tests which CPEXpert makes can be made inoperative by a guidance variable that applies to the specific test. The discussion of each finding describes the associated guidance variable.

- Reference:** MVS Planning: Workload Management  
z/OS (V1R2): Chapter 10: Defining Report Classes
- MVS Programming: Workload Management Services  
z/OS (V1R2): Chapter 8.4.5 Interpreting Report Class Data
- MVS Programming: Workload Management Services  
z/OS (V1R3): Chapter 8.4.5 Interpreting Report Class Data
- MVS Programming: Workload Management Services  
z/OS (V1R4): Chapter 8.3.5 Interpreting Report Class Data