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**Rule WLM052:      The number of page slots allocated may not be sufficient to allow the contiguous slot algorithm to be effective**

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**Finding:**      CPExpert has determined that the number of page slots allocated to local page data sets may not always allow the Auxiliary Storage Manager to implement the *contiguous slot algorithm*.

**Impact:**      This finding can have a LOW IMPACT, MEDIUM IMPACT, or HIGH IMPACT on performance of your computer system. The level of impact depends upon how many physical swaps to auxiliary storage are done by the SRM and how much the average swap is delayed.

**Logic flow:**    The following rules cause this rule to be invoked:  
                    Rule WLM400:    Page-in from auxiliary storage was a major performance problem

**Discussion:**    Swaps to auxiliary storage occur in "swap sets" of 30 page frames if local page data sets are used. The number of pages to be swapped out is divided into these swap sets. For example, if 95 page frames were swapped, there would be 4 swap sets. Three of the swap sets would be 30 page frames and 1 swap set would be 5 frames.

The Auxiliary Storage Manager (ASM) will attempt to attempt to write the swap set to a contiguous set of slots. The logic necessary to locate contiguous slots is called the *contiguous slot algorithm*.

If the contiguous slot algorithm is successful in locating contiguous slots, only one seek is required to write the swap set (and only one seek would be required to read the swap set when the address space is swapped back in). Additionally, there would be no latency between page writes (or page reads upon swap-in). The effect of the contiguous slot algorithm is to minimize the device service time per page and to minimize the device utilization.

The contiguous slot algorithm is effective only if there is a sufficiently large number of slots allocated to local page data sets so that fragmentation of the data sets does not preclude the ASM finding contiguous slots. As a general guidance, the number of slots allocated should be at least four times the number of slots used.

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CPEXpert analyzes the page/swap configuration when a service class period missed its performance goal and swap-in was a major performance factor for the service class period.

CPEXpert analyzes the number of slots allocated to local page data sets, versus the number of slots in use. This analysis is based upon information contained in SMF Type 75 records (SMF75SLA and SMF75MXU, respectively).

Rule WLM052 is produced if the number of slots allocated for local page data sets is less than four times the number of slots used.

The following example illustrates the output from Rule WLM052:

RULE WLM052: THE NUMBER OF ALLOCATED PAGE SLOTS MAY BE INSUFFICIENT			
The number of slots allocated for local page data sets may not always allow the Auxiliary Storage Manager to implement the contiguous slot algorithm. During the measurement intervals shown below, the number of available slots was less than the desired percent of slots allocated, and at least one service class missed its performance goal because of paging delays or swap-in from auxiliary storage. As a general rule, the number of allocated slots should be about four times the average number of slots used to ensure that the contiguous slot algorithm has sufficient space.			
MEASUREMENT INTERVAL	AUXILIARY STORAGE SLOTS ALLOCATED	SLOTS USED	PERCENT SLOTS USED
7:30- 8:00, 16AUG1995	36,000	16,427	45.6
8:00- 8:30, 16AUG1995	36,000	16,090	44.7

**Suggestion:** CPEXpert suggests that you consider increasing the number of slots allocated to local page data sets so that the contiguous slot algorithm can be effective.

**Reference:** "Paging Analysis in an Expanded Storage Environment", Beretvas, Thomas (IBM Corporation), *CMG '87 Conference Proceedings*, The Computer Measurement Group, Inc., Chicago, IL.