

# Section 3: Using the WLM Component

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This section describes how to use the WLM Component to analyze system performance, to identify intervals when service classes did not achieve their performance goals, and to determine why the performance goals were not met.

Before executing the WLM Component, you should review the guidance contained in the prefix.CPEXPERT.USOURCE(WLMGUIDE) PDS member, to make sure that the guidance variables are appropriate for your environment. Exhibit 2-1 illustrates the variables that must be changed in the WLMGUIDE PDS member.

## Chapter 1: Executing the WLMCPE Module

This chapter describes how to execute the WLMCPE Module of the WLM Component. We suggest that you execute the WLMCPE Module on a daily basis, after the normal update of your performance data base.

As stated in the Introduction to this document, the WLM Component consists of numerous modules, working together to (1) detect intervals in which service classes did not achieve performance goals, (2) shape system performance and utilization data for detailed analysis by other modules, (3) evaluate the data to assess reasons service classes did not achieve performance goals, and (4) report the results from the evaluation. Additionally, the WLM Component contains modules to analyze the Workload Manager service definition to detect potential problems with workload classification or service class definitions. These modules are loaded and controlled by the central WLM Component of CPEXpert (titled WLMCPE).

### Step 1. Use TSO ISPF to change the "prefix" in the data set names

Use TSO ISPF to change the "prefix" in the data set names (DSN) in the **USOURCE** DD statement, the **SOURCE** DD statement, the **CPEDATA** DD statement, the **HISTORY** DD statement, the **PDBLIB** DD statement, and the **SYSIN** DD statement of the JCL in accordance with your installation standards. The JCL is illustrated in Exhibit 3-1. (A "shell" of this JCL is contained on the distribution tape as "WLMJCL1")

- The CPEDATA DD statement in Exhibit 3-1 refers to the SAS data library maintained by CPEXpert. The space for this library was created during the installation of CPEXpert.

//jobname	JOB	job card information
//STEP01	EXEC	SAS,OPTIONS='MACRO DQUOTE PAGESIZE=65 ERRORABEND'
//USOURCE	DD	DSN=prefix.CPEXPRT.USOURCE,DISP=SHR
//SOURCE	DD	DSN=prefix.CPEXPRT.SOURCE,DISP=SHR
//CPEDATA	DD	DSN=prefix.CPEXPRT.CPEDATA,DISP=OLD
//HISTORY	DD	DSN=prefix.CPEXPRT.HISTORY,DISP=OLD
//PDBLIB	DD	DSN=prefix.MXG.PDBLIB.SASDB,DISP=SHR
//LIBRARY	DD	DSN=saslib containing MXG FORMATS
//CPEDASD	DD	-optional-
//SYSIN	DD	DSN=prefix.CPEXPRT.SOURCE(WLMCPE),DISP=SHR

## JOB CONTROL LANGUAGE TO EXECUTE THE WLMCPE MODULE

### EXHIBIT 3-1

- The HISTORY DD statement in Exhibit 3-1 refers to the SAS history data library maintained by CPExpert. The space for this library was created during the installation of CPExpert.
- The PDBLIB DD statement in Exhibit 3-1 refers to the SAS library containing the performance data base to be analyzed. The example shows a sample DSN for a typical MXG performance data base. The DSN would be changed to "DSN=prefix.RMF.MICS.DETAIL" to use a MICS performance data base.

Exhibit 3-1 does not show the optional DD statements for MICS Information Areas (i.e., BATLIB DD, SCBLIB DD, HARLIB DD, etc.). The CPExpert Installation Guide describes how to use these optional DD statements if you have your MICS performance data base separated by MICS Information Area.

- The SASLIB DD statement in Exhibit 3-1 refers to the SAS library containing the MXG FORMATS. If you execute CPExpert against a MICS performance data base, the SASLIB DD statement would be changed to refer to the MICS FORMAT library.
- The **optional** CPEDASD DD statement in Exhibit 3-1 applies only if you have licensed the DASD Component of CPExpert and you have installed the modification to MXG or MICS which collects SMF Type 30 (Data Definition) information.

The WLM Component estimates potential delays to service classes, including delays caused by DASD. If you have not licensed the DASD Component, the WLM

Component uses the average DASD I/O service time for all devices to assess potential delays to TSO. If you have licensed the DASD Component and have installed the modification to MXG or MICS, the WLM Component can determine which DASD devices are used by service classes and thus can provide a better estimate of potential problems related to DASD service delays.

## Step 2: Make any appropriate changes to the WLMGUIDE Module

Before submitting the above JCL shown in Exhibit 3-1 and executing the WLMCPE Module, you should make appropriate changes to the prefix.CPEXPERT.USOURCE(WLMGUIDE) module. These changes are described in Section 2 of this manual.

The defaults provided with the WLM Component should be adequate for initial executions of the WLM Component. You normally will make changes to the guidance only after executing the WLM Component several times.

## Step 3: Review the output from the WLMCPE Module

If any rules produced, refer to the specific rule in Appendix A of this document for a description of the rule, a discussion of why the rule produced, and a suggestion for actions that should be taken.

Depending upon the output, you may wish to make changes or wait to see if the problems are identified in an analysis of a subsequent day's performance.

The following points should be considered in deciding whether to make a change:

- The WLM Component may identify problems which clearly should be solved because their effect is so serious. In many cases, once the problem is identified, users immediately realize that the problem and suggested solutions make sense.
- The WLM Component may identify problems which you do not feel will commonly occur. For example, you may realize that the results are based upon abnormal workload and changes may be unnecessary since the conditions will not occur often.
- **You generally should make only one change at a time if you decide to make changes!** This sound tuning advice is founded on the principles that:
  - Tuning is an art. No one (and certainly not CPEXpert) can guarantee that any particular change will have a beneficial effect in all environments.



- Changes may have unexpected effects. Most systems are complex, parameters may improve performance of one area at the expense of performance in another area, and management may wish resources focused on the second area.
- If you make multiple changes and performance deteriorates, you will be unable to identify easily the change causing the problem. You are then faced with the problem of backing out all of the changes and starting over, one at a time.
- Some changes are not "precise" in that, for example, keyword values might need to be adjusted a little at a time until a suitable value is reached. If multiple changes are made, you will be unable to detect the effect of the fine-tuning of the changes.
- Above all, **remember that the recommendations from CPEXpert are simply options** to be considered in the context of overall objectives. You must decide whether the recommendations are reasonable. Rarely should a recommendation be implemented without first evaluating how the recommendation will effect other workloads.

Please remember that CPEXpert is not intended to replace a performance analyst. Rather, CPEXpert was developed to help analyze the performance of MVS systems. CPEXpert automates much of the routine of computer performance evaluation. Performance analysts can then focus on the areas which are not routine and which "require thinking".

With this philosophy, please let us know when you discover areas in which CPEXpert could have helped you analyze a problem. We will improve our product and you will have more help!

## Chapter 2: Checklist

The following checklist should be followed to execute the WLM Component of CPEXpert.

## Checklist for Executing the WLM Component, Mainframe

- Change the job card information in the JCL.
- Change the "prefix" in the data set names in the DD statements.
  - Change the "prefix" in USOURCE DD statement.
  - Change the "prefix" in SOURCE DD statement.
  - Change the "prefix" in CPEDATA DD statement.
  - Change the "prefix" in HISTORY DD statement.
  - Change the "prefix" in PDBLIB DD statement.
  - Change the "prefix" in SASLIB DD statement.
  - Optional: Change the "prefix" in CPEDASD DD statement. This step is required only if you have licensed the DASD Component of CPEExpert and have installed the modification to MXG or MICS to collect SMF Type 30 DASD information. Please refer to the DASD Component User Manual for further information.
- Make any necessary changes to the WLMGUIDE Module in USOURCE.
- Submit the JCL to execute the WLMCPE Module.