CPExpert™

Product Update Bulletin 2003-2

This product update forwards updates to both software and documentation. The software update is Release 13.2 of CPExpert. The release number indicates that it is the second release of 2003.

The primary development work during this update cycle has focused on the CICS Component (including more extensive analysis of CICS-DB2 interface problems) and on the DASD Component (much of the DASD Component code and documentation has been rewritten). This release (1) provides these updates to the CICS Component and the DASD Component, (2) provides updates to the WLM Component, (3) provides updates to the DB2 Component, (4) provides updated documentation on CD, (5) adds a log of changes to the CPExpert code, and (6) corrects errors that have been reported.

C **Updates to the CICS Component**. With Release 13.2, the CICS Component has been updated with new analysis in several areas:

- *Rule CIC101 (CICS region reached maximum tasks too often)* has been revised to show total active tasks (both system and users), peak user tasks, times MAXTASKS was reached, peak users at MAXTASKS, and total time suspended for MAXTASKS reason.

- *Rule CIC251 (Default value was specified for the MROBTCH parameter)* has been significantly revised. With CICS/TS for z/OS Release 2.2, IBM included the MROBTCH value in the CICS Dispatcher Statistics (DSGMBTCH), and provided a detailed discussion of the reasons why the default value might not be appropriate. This documentation from IBM includes methods for estimating the CPU savings that result from different values of the MROBTCH parameter, and recommendations for selecting the correct MROBTCH value. CPExpert has incorporated this IBM guidance and discussion into Rule CIC251 logic and documentation for sites running CICS/TS for z/OS, Release 2.2.

- *Rule CIC254 (ISRDELAY value may be too low)* has been completely revised and retitled as *Rule CIC254 (USRDELAY value may be too low)*.

The following new rules have added to the CICS Component:

- *Rule CIC278 (CICS-DB2 tasks abended because pool thread was unavailable)* analyzes whether any CICS-DB2 task abended because a pool thread was unavailable and the THREADWAIT attribute specified abend.

- *Rule CIC280 (High number of CICS-DB2 Entry tasks on Entry Ready Queue)* analyzes whether the peak number of tasks on an Entry Ready Queue is high for the CICS-DB2 connection.

- *Rule CIC281 (CICS-DB2 Entry tasks abended because Entry thread was unavailable)* analyzes whether tasks abended because of potentially inappropriate specifications for the CICS-DB2 DB2ENTRY or DB2TRAN definition.

- *Rule CIC282 (CICS-DB2 Entry tasks overflowed to Thread Pool)* analyzes whether any CICS-DB2 Entry task overflowed to the thread pool because an Entry thread was unavailable and the DB2ENTRY THREADWAIT attribute specified POOL.

- *Rule CIC285 (Consider increasing protected threads for CICS-DB2 Entry tasks)* analyzes whether the average number of thread terminations for the CICS-DB2 Entry was sufficiently high that you should consider specifying (or increasing) the number of protected threads for the CICS-DB2 Entry.

- *Rule CIC286 (Consider decreasing protected threads for CICS-DB2 Entry)* analyzes whether the average number of threads that were reused for the CICS-DB2 Entry was sufficiently low that you should consider decreasing the number of protected threads for the CICS-DB2 Entry to reduce CPU overhead in CICS.

- *Rule CIC290 (Open (L8) TCBs reached MAXOPENTCBS limit)* analyzes whether the peak number of open (L8) Task Control Blocks (TCBs) in use for the CICS-DB2 connection reached the limit set by the MAXOPENTCBS parameter specified in the System Initialization Table (SIT).

- *Rule CIC291 (Peak open TCBs in use was approaching MAXOPENTCBS)* analyzes whether the peak number of open (L8) Task Control Blocks (TCBs) in use was approaching the limit set by the MAXOPENTCBS parameter specified in the System Initialization Table (SIT). This rule provides an "early warning" of a potential problem.

- The CICS Component now optionally analyzes data in the CICDSPOO (CICS Dispatcher TCB Pools) and CICUSG (User Domain Statistics).

- The SAS %sysfunc(exist(file)) function now is used to determine whether any optional file is present in the performance data base, and the CICS Component reports analysis that cannot be done because of missing files.

  PLEASE NOTE: If any user is using features of CICS that are not analyzed by the CICS Component (such as Named Counters, Java Virtual Machines, etc.), please send test data to me and I will make that analysis available in the April 2004 release of CPExpert. Thanks!

C **Updates to the DASD Component**. With Release 13.2, much of the code and documentation has been rewritten, and the DASD Component has been updated with new analysis in several areas:

C The discussion of DASD performance problems and specific findings of the DASD Component have been updated to include discussion of FICON infrastructure implications, Parallel Access Volume (PAV), and cached device issues.

C Findings that relate to "legacy" systems (e.g., 3380 devices attached to 3990-2 controllers) have been specifically identified so readers will not be confused about discussions that do not apply to more modern environments.

C Better analysis has been provided for cache controller features, operation, and performance implications.

C Better analysis has been provided of device DISC time (including DISC time caused by physical channel activity.

C Better analysis has been provided of device PEND delay time.

C An option is provided for the configuration model created by the DASD Component to be retained in a specific library (rather than the SAS WORK library), and an option is provided to process from this library rather than re-create the configuration model. Retaining the configuration model allows capacity planners to access the configuration model for capacity planning purposes. Providing the option to process the retained configuration model allows performance analysts to examine problem areas repeatedly without incurring the overhead of recreating the configuration model.

C Physical channel type (e.g., ESCON, FICON Bridge, FICON Native, etc.) and physical channel activity have been added to the configuration model so future analysis can detect performance problems with channels based on type of channel.

C RMF Cache Controller statistics (contained in MXG TYPE74CA) have been added to the configuration model for the "worst performing" devices. These cache controller statistics allow current analysis of cache controller performance problems (and facilitate expended analysis in future releases of CPExpert). This analysis will be available for MICS when I get test data.

In addition to rewriting the rule description documentation for all rules, the following new rules have been added to the DASD Component:

C *Rule DAS131 (PEND delay time was caused by channel busy*) provides information related to PEND delay time caused by channel activity (CPExpert computes an estimated PEND time delay caused by channel activity).

C *Rule DAS132 (PEND delay time was caused by director port busy)* provides information related to PEND time caused by director port busy.

C *Rule DAS133 (PEND delay time was caused by controller busy delays*) provides information related to PEND time caused by controller busy.

C *Rule DAS134 (PEND delay time was caused by device busy delays)* provides information related to PEND time caused by device busy from other systems.

C *Rule DAS135 (PEND delay time was caused by other delays)* provides information related to PEND time caused by other delays, and discusses some causes of these delays not reflected in RMF measurement data.

C *Rule DAS160 (Disconnect was major cause of response delay)* provides information related to DISC time, and CPExpert shows data that could cause DISC time (such as cache read miss, peer-to-peer remote copy, bypass cache writes, and inhibit cache loading).

C **Enhancements to the WLM Component**. The WLM Component has been updated in the following areas:

C Rule WLM017 (*Server and subsystem transactions in same service class*) is not applicable if APAR OW45239 is installed, or with z/OS V1R1 and subsequent releases of z/OS.

C Rule WLM103 (*Service class did not achieve velocity goal*) has been revised to provide a more comprehensive explanation of the way the Workload Manager calculates DASD using and delay samples.

C Rule WLM104 (*Served service class did not achieve average response goal*) and Rule WLM105 (*Served service class did not achieve percentile response goal*) have been revised to include waiting for SSL thread, waiting for regular thread, and waiting for work table.

C Rule WLM173 (*The response performance goal may be too large*) was expanded to describe more completely the reasons from an internal Workload Manager logic view why long response time goals are not effective.

C The documentation for many rules have been revised to distinguish between "legacy" systems (e.g., 3380 devices attached to 3990-2 controllers) and more modern systems, so readers will not be confused about discussions that do not apply to modern environments. Additionally, the documentation related to I/O delays has been revised to discuss differences between ESCON channels and FICON channels.

C The documentation for rules that relate to "served" transaction service classes (e.g., CICS transactions or IMS transactions) have been revised to distinguish between the transaction delay data that is available for CICS regions versus data available for IMS Message Processing Regions.

C **Enhancements to the DB2 Component**. The main changes to the DB2 Component for CPExpert Release 13.2 are to make minor revisions to the documentation and to correct errors reported by users

C **Update documentation on CD**. This release provides all updated documentation to reflect new or revised rules. The CPExpert documentation is accessible via Adobe

Acrobat Reader. A free version of Adobe Acrobat Reader is available at *http://www.adobe.com/products/acrobat/readstep2.html*.

There is no additional charge for the CD versions of CPExpert documentation. If any user does not have the capability to access documentation on CD (or simply prefers to have hard-copy documentation), please send me a note.

C **Add log of changes to code**. At the request of users, I've added a log of changes to the CPExpert code for Release 13.2. This log is titled CHANGES and shows each module changed (except when the change is minor). Interested users can review the CHANGES log to see what code changes have been made, and can easily identify new guidance variables. I'll follow the MXG model for future releases (that is, the CHANGES log will show changes in the new release, while the CHANGESS log will be an accumulation of changes.

C **Correct errors that have been reported**. I've added a new member titled SOURCE(GENER131) that contains a listing of the errors that were discovered in CPExpert code for Release 13.1, and acknowledges the user who found the error.

I **really** appreciate notes from users reporting problems or simply asking questions. As I said in the original delivery letter for CPExpert, if errors occur with your installation, please don't waste your time trying to solve the error. Just send me an email or phone me, and I will quickly fix the problem!

Installation

I suggest that you use the following steps to install Release 13.2:

- Create a new PDS titled "prefix.CPEXPERT.V132.SOURCE".

- Create a new PDS titled "prefix.CPEXPERT.V132.USOURCE".

- Install CPExpert into the "prefix.CPEXPERT.V132.SOURCE" using the normal installation procedures described in the *CPExpert Installation Guide*.

- Copy your **old** USOURCE members into "prefix.CPEXPERT.V132.USOURCE". This step should be done so you do not have to recreate all of your unique parameters.

- If you elected to receive updates to CPExpert on CD, the software is distributed on the CD that contains the CPExpert user documentation. I have created a BAT file for you so that you can easily upload the new software. This file is titled "UPLOAD.BAT" and will be located in the SOFTWARE directory of the CD. The BAT file was created per your instructions (i.e., using SEND, etc.).

- If you have installed the CPExpert option to produce output to SAS Output Delivery System (ODS) and if you have exercised the LINKPDF option so you can "click" on

the rule to see the documentation, **please remember to load the new documentation onto your system**.

Thanks

I would like to say "**Thank you**" to the following individuals. These folks have discovered errors, proposed new features, graciously sent me test data, or suggested documentation changes since the last Update Bulletin:

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Please phone or send me an email if you have suggestions, you want new features, or you would like to see more or different reporting done by CPExpert.

Best regards,

Don Deese

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