



Product Update Bulletin 2008-2

This product update forwards updates to both software and documentation. The software update is Release 18.2 of CPEXPERT. The release number indicates that it is the second release of 2008.

With Release 18.2, CPEXPERT has been updated to: (1) support z/OS Version 1 Release 10; (2) provide additional analysis and features in the WLM Component, the DB2 Component, the CICS Component, the DASD Component, and the WebSphere MQ Component; (3) provide updated documentation on CD; and (4) correct errors that have been reported.

- **Support z/OS Version 1 Release 10 (z/OS V1R10).** z/OS V1R10 was made Generally Available (GA) by IBM in September 2008. Since Computer Management Sciences is a Partner in Development with IBM, I normally can provide support for new IBM releases within 30 days of General Availability of the new IBM release.
 - All CPEXPERT components have been updated to provide support for z/OS V1R10.
 - All CPEXPERT documentation has been updated with references to applicable z/OS V1R10 documents from IBM.
- **Updates to the WLM Component.** The following rules and features have been added to the WLM Component:
 - **Added new rules.** The following rules have been added to the WLM Component:
 - Rule WLM042 (*There was a decrease in hardware service units per second*) reports that SMF Type 72 records showed that there was a decrease in the hardware service units per second¹. This decrease could mean that there was a problem with the cooling unit in the central electronic complex (CEC). This reduction can occur when a CPU temperature reaches an unacceptable level because of failure in the cooling environment. When CPU speed is reduced, Message IWM063I ("WLM POLICY WAS REFRESHED DUE TO A PROCESSOR SPEED CHANGE") will be issued. IBM estimates² that the processor slowdown would be 4% to 8% decrease in CPU speed while the cooling system was failing.
 - Rule WLM045 (*Unreferenced Interval Count was less than guidance*) reports that SMF Type 71 records showed that the Unreferenced Interval Count (UIC) value

¹Thanks to Rick Ralston (Humana, KY) for for suggesting this analysis.

²"Hybrid cooling with cycle steering in the IBM eServer z990", by G. F. Goth, D. J. Kearney, U. Meyer, and D. W. Porter, IBM Systems Journal Volume 48, Number 3/4, 2004.

was less than the guidance provided to CPEXpert³. This finding could mean that central storage was constrained in the LPAR. This finding applies only with z/OS Version 1 Release 8 (z/OS V1R8) and subsequent releases of z/OS.

- **Modified rules.** The following WLM Component rules have been modified:
 - Rule WLM003 (*The service policy was changed*) has been updated to reflect the potential problem related to an automatic reduction in CPU speed described by Rule WLM042.
 - Rule WLM041 (*There was negative uncaptured CPU time*) has been updated to reflect the potential problem related to an automatic reduction in CPU speed described by Rule WLM042.
 - Rule WLM806 (*Inadequate number of initial logical processors were defined*). This rule does not apply with z9 and subsequent servers.
- **Enhanced support of NeuMICS performance data base.** With Release 18.2, support has been added for analyzing a performance data base created by NeuMICS in the following areas:
 - Added support for analysis of Blocked Workload. This support requires that NeuMICS Product Change RMF6820 be installed.
 - Added support for analysis of HiperDispatch Management Mode. This support requires that NeuMICS Product Changes RMF6860 and RMF6870 be installed. While Product Changes RMF6860 and RMF6870 are not yet Generally Available, Computer Associates will make RMF6860 and RMF6870 available as an early release PTF upon request.
- **Enhanced HISTORY features.** Some CPEXpert users have very large sites and use the CPEXpert WLM Component to analyze performance problems with *many* systems. In such cases, the WLM Component typically produces an unacceptably large amount of output. This is because there normally can be a very large number of potential performance problems that need to be solved, or else the guidance to CPEXpert needs to be changed so more stringent analysis parameters are used. Unfortunately, sometimes the size of the initial reports can be daunting and analysts might be hesitant to use the reports.

To help solve the problem, the concept of *analysis areas* was introduced with CPEXpert Release 15.1 (April 2005). With the analysis areas concept, CPEXpert's analysis and reporting were broken into ten general performance areas (e.g., Service Class Period performance, XCF performance, PR/SM performance, etc.). A user could direct CPEXpert to analyze and report only the specific performance areas of interest.

³Thanks to **San Knutson** (GEICO, MD) for suggesting this analysis.

Additionally, the *email alert* feature was added with CPEXpert Release 17.1 (April 2007). With the email alert feature, CPEXpert components can optionally send an email alert for selected findings that potentially have a significant adverse effect on performance. With this feature, users might wish to examine detailed output from the WLM Component only if an email alert is received regarding a particularly important finding.

Sadly, the problem of “excessive” output persisted, partially because users were reluctant to curtail the CPEXpert analysis for fear that they might miss an important finding, or because they would worry that CPEXpert analysis might have to be rerun if they wanted to examine areas different from what they specified.

How CPEXpert is used has optionally changed with CPEXpert Release 18.2. With Release 18.2, operating CPEXpert should be considered as two phases: the *analysis* phase and the *reporting* phase. While the “old” way of operating CPEXpert can still be used, users are encouraged to use the following approach:

- Run CPEXpert with all analysis areas enabled and analyzing all systems of interest. This ensures that all relevant analysis is done.
- Produce only the “overview” report(s) reflecting the analysis. This will result in a very modest amount of output, and the results can be quickly scanned to determine whether findings of interest were produced.
- Save all results from CPEXpert’s analysis in the HISTORY file. The number of days of rules resulting from the analysis can be as large as you wish (CPEXpert will pare off rules based on guidance provided about the number of days to retain).
- After the analysis phase has completed, users can produce selected reports from the HISTORY file. Rules produced from CPEXpert’s analysis in any area of interest can be reported from the HISTORY file without rerunning the analysis. In addition to selecting by reporting areas, the normal guidance related to analysis can be used in selecting dates, systems, rules, etc. that are to be reported.

The following table shows the guidance variables that control the *reporting areas*:

VARIABLE	DESCRIPTION OF REPORTING AREA
RPTGOAL	Report reasons service class periods missed goals?
RPTINIT	Report problems with WLM-managed initiators?
RPTIOP	Report problems with IOP/SAP imbalance?
RPTLOGGER	Report problems with System Logger?
RPTPAGE	Report problems with paging subsystem?

RPTPLCY	Report problems with WLM service policy definition?
RPTPRSM	Report problems with PR/SM, IRD and HiperDispatch?
RPTSYS	Report problems with general system-related issues?
RPTXCF	Report problems with coupling facility and XCF?
RPTZAAP	Report problems with zSeries Application Assist Processors (zAAP)?
RPTZIIP	Report problems with zSeries Integrated Information Processor (zIIP)?

This approach has the advantages that CPEXpert analysis is done once, with an overview or email produced from the analysis. Detailed analysis results can be viewed only for selected areas of interest.

A new section (“Reporting based on rules in HISTORY library”) has been added to the WLM Component User Manual. This section describes how to use the new history reporting features.

- **Updates to the DB2 Component.** Changes to the DB2 Component with CPEXpert Release 18.2 include:
 - **New Features.** A masking technique has been implemented to ease selection of data sharing groups. The “*” character can be specified in any position of the data sharing group name. CPEXpert will ignore that position in selecting records based on DB2 data sharing groups.
 - **New reports and report features.** The following new report⁴ is optionally produced by the DB2 Component:
 - **Buffer pool interval report.** The buffer pool summary report introduced with CPEXpert Release 18.1 is of the entire DB2 statistics being evaluated. For each buffer pool, the summary shows the number of buffers allocated, the total GETs to the buffer pool, the percent random versus sequential access to the pool, the Read/Write ratio, the buffer pool hit rate, the number of times that thresholds were encountered, the variable threshold values, and the number of times that no write engine was available. This summary provides information that can help performance analysts tune the DB2 buffer pools.

The buffer pool summary report was so well received that users requested that the same report be available on a DB2 statistics interval basis. This buffer pool interval report is available with CPEXpert Release 18.2, and reports the same information as the buffer pool summary report.

⁴Thanks to Glenn Bowman (Wakefern Food Corporation, NJ) for suggesting this new report.

This report is produced if **%LET BPSUMINT=Y;** is specified in USOURCE(DB2GUIDE). The BPSUMINT guidance variable is *dual-purpose*, in that a specific DB2 subsystem name can be specified by the BPSUMINT variable (rather than specifying "Y"). In this case, CPEXpert will produce the buffer pool interval report only for the specified DB2 subsystem.

WARNING: You normally should produce the buffer pool interval report only for a specific DB2 subsystem. If you have a large number of DB2 subsystems, the buffer pool interval report could be extremely large.

- **HISTORY FEATURES for DB2 Component.** The HISTORY feature described earlier for the WLM Component and described subsequently for the other CPEXpert components will not be generally available for the DB2 Component until CPEXpert Release 19.1 (April 2009). That feature is being developed at present. If any user needs the HISTORY feature for the DB2 Component before Release 19.1, please send me an email and I'll provide that feature to you as soon as it has been tested.

- **Updates to the CICS Component.** The following rules and features have been added to the WLM Component:
 - **Added new rule.** The following rule has been added to the WLM Component:
 - Rule CIC317 (*Structure has log streams that write dissimilar record lengths*) reports that a coupling facility structure has log streams that write records with significantly different record lengths. These characteristics cause the log stream structure to have an entry/element ratio that cannot be optimal.
 - **Modified rule.** The following CICS Component rule has been modified:
 - Rule CIC105 (*Transaction class reached MAXACTIVE too often*) has added a test for the average time on queue being greater than guidance before producing the rule, and the output has been reformatted to show the average time on the queue.

- **New features and reports.** The following new features and reports have been added to the CICS Component:
 - **Classifying CICS regions into GROUPs.** Some users of the CICS Component have a very large number of CICS regions (in some cases, several hundred CICS regions are active). In past, individual CICS regions could be selected for analysis and reporting. This feature will still exist, but the concept of a *GROUP of regions* has been introduced. A masking technique has been implemented to identify one or more GROUP(s) of CICS regions that should be analyzed. The "*" asterisk character can be specified in any position of the APPLID name. CPEXpert will ignore that position in the APPLID name when selecting records based on the named APPLID group.

This feature has the advantage of easily grouping CICS regions associated with different business units, associated with test or production regions, etc. Once APPLIDs have been classified into a GROUP, all CICS regions in that GROUP will be selected for analysis. Individual regions can still be selected, but they conceptually are in their own GROUP.

There is an implicit hierarchy of GROUP classification that depends on the order in which CICS region GROUPs are defined. As an example (assuming that the CICS region APPLID names were established in a hierarchal manner), this allows classification of individual high-importance CICS regions in a business unit, followed by all other CICS regions in the business unit, perhaps followed by all other production CICS regions, and perhaps followed by test CICS regions.

- **Reporting CICS regions that are in GROUPs.** How performance analysis results are reported for CICS regions depends on the setting of the ALL_CICS guidance variable.
 - **ALL_CICS=Y.** If ALL_CICS=Y is specified, there is no change with Release 18.2 in selecting all CICS for analysis and reporting the results of the analysis for all CICS regions.
 - **ALL_CICS=W.** If ALL_CICS=W is specified, the reporting is done by CICS GROUP. If individual regions are specified for analysis, the analysis results for these are reported by individual region (recall that an individual region is considered to be a GROUP consisting of only one region). If the masking technique is used for any defined GROUP, the analysis results for all regions in that GROUP will be reported collectively (the reporting is similar to that produced by the ALL_CICS=Y option, but for APPLIDs in the GROUP).
 - **ALL_CICS=N.** If ALL_CICS=N is specified, the reporting of analysis results is done by CICS individual region, regardless of whether the region has been selected for analysis as part of a GROUP.
- **New CICS Component report.** The CICS Component includes an optional new report with Release 18.2. This report is an overview of the rules produced by the CICS Component, by CICS region. This Overview by CICS Region report compliments the report of an overview of rules produced by CICS GROUP (this report is by time of day). The new report produced by CICS region shows a 1-line summary, on a region basis, of all rules related to each region. This report should provide an easy way to quickly assess performance problems with specific regions.
- **HISTORY FEATURES for CICS Component.** The HISTORY feature described earlier for the WLM Component has been implemented for the CICS Component. After CPEXpert's analysis has completed, the results from the analysis can be saved in the HISTORY file.

After the analysis phase has completed, users can select analysis results from the HISTORY file. This process allows CPEXpert's analysis results to be reported from the HISTORY file without rerunning the analysis. The normal guidance related to analysis can be used in selecting analysis results to report based on the date, systems, CICS regions, region GROUPs, rules, etc. The new USOURCE(CICHIST) module controls how the reports are produced from the HISTORY file.

It is important to appreciate that rule selection from the HISTORY file is independent from the selection criteria and CICS GROUP definitions used to select CICS statistics during the analysis phase. So long as regions have been selected for analysis (and analysis has not been "turned off" in the analysis phase), the rules resulting from the analysis will be available in the HISTORY file. The selection criteria used by the HISTORY feature can re-categorize results for reporting, by CICS regions (either for an individual region or by specifying new CICS GROUPs under which the results should be reported).

The new Overview by CICS Region report can be used to identify regions that have important performance issues. Analysis results for these regions can be selected from the HISTORY file, using the USOURCE(CICHIST) guidance module.

A new section ("Reporting based on rules in HISTORY library") has been added to the CICS Component User Manual. This section describes how to use the new history reporting features.

- **Updates to the DASD Component.** Changes to the DASD Component with CPEXpert Release 18.2 include:
 - **Volume selection criteria.** With Release 18.2, DASD volumes can be selected for analysis using two new methods:
 - **Masking technique.** A masking technique has been implemented to identify DASD volumes that should be analyzed. The "*" asterisk character optionally can be specified in any position of the VOLSER name. CPEXpert will ignore that position in the VOLSER name when selecting records based on the VOLSER.
 - **SMS Storage Group Name.** DASD volumes can be selected for analysis by optionally identifying SMS Storage Groups that should be selected for analysis. Any number of SMS Storage Groups can be specified in USOURCE(DASGUIDE), and the DASD Component will select and analyze data related to volumes in the specified SMS Storage Groups. The DASD Component reports have been revised to display the SMS Storage Group name to which volumes are assigned.

- **HISTORY FEATURES for DASD Component.** The HISTORY feature described earlier for the WLM Component has been implemented for the DASD Component. After CPEXpert's analysis of RMF I/O data has completed, the results from the analysis can be saved in the HISTORY file.

After the analysis phase has completed, users can select analysis results from the HISTORY file. This process allows CPEXpert's analysis results to be reported from the HISTORY file without rerunning the analysis. The normal guidance related to analysis can be used in selecting analysis results to be reported based on the date, system, VOLSER, SMS Storage Groups, rules, etc. The new USOURCE(DASHIST) module controls how the reports are produced from the HISTORY file.

It is important to appreciate that rule selection from the HISTORY file is independent from the selection criteria used to select CICS statistics during the analysis phase. So long as DASD volumes have been selected for analysis, the rules resulting from the analysis will be available in the HISTORY file. The selection criteria used by the HISTORY feature can re-categorize results for reporting, by masking technique or specifying SMS Storage Groups under which the results should be reported.

In normal operation, a user of the DASD Component might specify a larger number of DASD volumes for which RMF data should be analyzed. A much smaller number of volumes might be specified for reporting purposes when selecting analysis results from the HISTORY file. The normal selection criteria previously available can be used to identify volumes for which analysis results should be selected from the HISTORY file.

A new section ("Reporting based on rules in HISTORY library") has been added to the DASD Component User Manual. This section describes how to use the new history reporting features.

- **Updates to the WebSphere MQ Component.** Changes to the WebSphere MQ Component with CPEXpert Release 18.2 include:
 - **HISTORY FEATURES for WebSphere MQ Component.** The HISTORY feature described earlier for the WLM Component has been implemented for the WebSphere MQ Component. After CPEXpert's analysis of WebSphere MQ statistics has completed, the results from the analysis can be saved in the HISTORY file for subsequent selecting and reporting.

After the analysis phase has completed, users can produce selected reports from the HISTORY file. This process allows CPEXpert's analysis results to be reported from the HISTORY file without rerunning the analysis. The normal guidance related to analysis can be used in selecting analysis results to report based on dates, systems,

VOLSER, SMS Storage Groups, rules, etc. The new USOURCE(WMQHIST) module controls how the reports are produced from the HISTORY file.

It is important to appreciate that rule selection from the HISTORY file is independent from the selection criteria used to select WebSphere MQ statistics during the analysis phase. So long as WebSphere MQ subsystems have been selected for analysis, the rules resulting from the analysis will be available in the HISTORY file. The normal selection criteria previously available can be used to identify WebSphere MQ subsystems for which analysis results should be selected from the HISTORY file.

A new section ("Reporting based on rules in HISTORY library") has been added to the WebSphere MQ Component User Manual. This section describes how to use the new history reporting features.

- **Updated 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>.
- **Add a log of changes to code.** I've added a log of changes to the CPEXpert code for Release 18.2. 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've followed the MXG model for releases (that is, the CHANGES log shows changes in the new release, while the CHANGESS log is an accumulation of changes). Additionally, I've described additions or changes to USOURCE members in the CHANGES log.
- **Add a log of errors reported.** I've added a log of all errors reported by users for CPEXpert Release 17.2. This error log is in the GENER172 module in SOURCE.

FTP download

CPEXpert Release 18.2 (both code and documentation) is available via ftp download from my ftp server. If you prefer this method of obtaining the update, please send an email to Don_Deese@cpexpert.com to obtain instructions for ftp download, obtain your user id, and obtain your password. **If you have requested ftp download in past, I will automatically send you the ftp download instructions.**

Installation

I suggest that you use the following steps to install Release 18.2;

- Create a new PDS titled "prefix.CPEXPERT.V182.SOURCE".

- Create a new PDS titled "prefix.CPEXPERT.V182.USOURCE".
- Install CPEXpert into the "prefix.CPEXPERT.V182.SOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*.
- Install CPEXpert into the "prefix.CPEXPERT.V182.USOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*. This step will cause the email macros to be loaded into USOURCE.
- Copy your **old** USOURCE members into "prefix.CPEXPERT.V182.USOURCE". This step should be done so you do not have to recreate all of your unique parameters⁵.
- If you elected to receive updates to CPEXpert on CD, the software is distributed on the CD that contains the CPEXpert user documentation. **This distribution media now is the default distribution.**
 - **Installing CPEXpert from CD to MVS.** Copy the *source.182.ebc* file from cd:\software\ as binary, to CPEXPERT.TAPE.REL182, allocated as DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)), DSN=CPEXPERT.REL182.IEBUPDTE. The *source.182.ebc* file is in standard IEBUPDTE format.

Use the JCL described in Exhibit 2-1 of the *CPEXpert Installation Guide* to install the CPEXpert software. Copy your old USOURCE members as described above.

- **Installing CPEXpert from CD to PC:** Copy the cd:\software\source\ on the CD to prefix\cpexpert\rel182\source. Copy the cd:\software\usource\ on the CD to prefix.cpexpert\rel182\usource using the normal installation procedures as described in the *CPEXpert Installation Guide*. This step will cause the email macros to be loaded into usource. Copy your old usource members as described above. Make sure that you update your usource(genguide) member to specify **%LET SOURCE =user_directory;** statement to point to the new SOURCE directory.
- **Downloading via ftp:** If you elected to download updates from my ftp server, you can copy the *source.182.ebc* file to CPEXPERT.TAPE.REL182, allocated as DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)), DSN=CPEXPERT.REL182.IEBUPDTE. The *source.182.ebc* file is in standard IEBUPDTE format. The updated CPEXpert user documentation also will be available on the ftp site. It is your option whether you wish to download only the manuals, or also download the individual rule documents. If you wish to download the individual rule

⁵The exception to this statement is if you chose to use the "yesterday" option in selecting data. The "yesterday" calculation is done by a PREVIOUS macro contained in USOURCE(GENGUIDE). The PREVIOUS macro is placed in USOURCE so you can select "yesterday" as the immediate previous day, or can define "yesterday" as any other previous day you chose. Placing the PREVIOUS macro in USOURCE(GENGUIDE) allows you to make such a modification, without your altering a SOURCE member. Consequently, if you copy your old USOURCE(GENGUIDE) member to CPEXPERT.V171.USOURCE, you may wish to append the PREVIOUS macro from the Release 16.2 USOURCE into your USOURCE(GENGUIDE) member.

documents, they will be available as pdf files in *Individual_Rule_Documentation.zip* on the ftp site.

- If you have installed the CPEXpert option to produce output to the SAS Output Delivery System (ODS) and if you have exercised the LINKPDF option so you can “click” on a rule in the html output to see the documentation, **please remember to load the new individual rule documentation onto your system.**
- If you chose to implement the xxxHTML option (e.g., WLMHTML) to provide your own SAS ODS HTML statement parameters, please place your own macros into USOURCE and concatenate the USOURCE pds ahead of the SOURCE pds.

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:

Rexaldo.N.Avendano (Kaiser Permanente, CA)
Glenn Bowman (Wakefern Food Corporation, NJ)
Tom Bubnash (Social Security Administration, MD)
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John den Os (Rabobank, Netherland)
Rodger Foreman (Transunion, IL)
Wayne Hammond (Bank of America, GA)
Sam Knutson (GEICO, MD)
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Al Sherkow (I/S Management Strategies, Ltd., WI)
Randy Springs (Branch Banking & Trust Co., NC)
Andreas von Imhof (Rabobank, Netherlands)
Robert Winder (Rabobank, Netherlands)
Bruce Widlund (Merrill Consultants, TX)

Please 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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