



Product Update Bulletin 2007-2

This product update forwards updates to both software and documentation. The software update is Release 17.2 of CPEXPERT. The release number indicates that it is the second release of 2007.

Before getting to the technical details of the CPEXPERT update, this is to announce that Computer Management Sciences, Inc. has moved offices. I purchased my office in Alexandria more than 18 years ago, and I have been commuting between home and office since that time. We have recently purchased a new home in Hartfield, Virginia. This new location is off the Piankatank River, on the Chesapeake Bay in Virginia. The property is more than 3.5 acres, is beautifully landscaped, and includes a lovely forest. I will use about 1500 square feet of the second floor of our new home as my new office space. We will be happy moving from the stress of city living down to the Bay, and having no more commuting. The last page shows details about my new contact information.

With Release 17.2, CPEXPERT has been updated to: (1) support z/OS Version 1 Release 9, (2) provide additional analysis in the WLM Component, (3) provide analysis of CICS/TS for z/OS Version 3 Release 2 (V3R2) and add analysis of pre-V3R2 performance problems, (4) provide support for DB2 Version 9.1, (5) provide analysis of WebSphere MQ statistics that are in a NeuMICS performance data base, (6) provide updated documentation on CD; and (7) correct errors that have been reported.

- **Support z/OS Version 1 Release 9 (z/OS V1R9).** z/OS V1R9 was made Generally Available (GA) by IBM in September 2007. Since Computer Management Sciences is a Business Partner with IBM, I normally can provide support for new IBM releases within 30 days of GA of the new IBM release.
 - All CPEXPERT components have been updated to provide support for z/OS V1R9.
 - All CPEXPERT documentation has been updated with references to applicable z/OS V1R9 documents from IBM.
- **Updates to the WLM Component.** The following rules and features have been added to the WLM Component:
 - Rule WLM035 (*IEAOPTxx parameter BLWLTRPCT was changed*) reports that the BLWLTRPCT parameter in IEAOPTxx had been changed by operator specification. This finding applies with z/OS V1R9, and z/OS V1R8 with APAR OA18244.
 - Rule WLM036 (*IEAOPTxx parameter BLWLINTHD was changed*) reports that the BLWLINTHD parameter in IEAOPTxx had been changed by operator specification. This finding applies with z/OS V1R9, and z/OS V1R8 with APAR OA18244.

- Rule WLM137 (*Significant transaction time was Waiting, DB2 Buffer I/O*) reports that a significant amount of the transaction response time for the service class missing its performance goal was spent Waiting for DB2 Buffer I/O operations. This finding applies to service classes that are part of a DB2 subsystem at DB2 UDB for z/OS Version 9, and with z/OS V1R8 or above.
- Rule WLM253 (*CPU access might be denied because blocked workload promoted*) reports that CPU access might have been denied for the service class missing its performance goal because blocked workload had been temporarily promoted to a high dispatching priority. This finding applies with z/OS V1R9, and z/OS V1R8 with APAR OA18244.
- Rule WLM315 (*Average concurrent blocked work was more than guidance*) reports that blocked workload waited longer than specified by the BLWLINTHD parameter in IEAOPTxx, and the *average* number of address spaces and enclaves found being blocked during the interval was more than the guidance provided to CPEXpert. This finding applies with z/OS V1R9, and z/OS V1R8 with APAR OA18244.
- Rule WLM316 (*Peak concurrent blocked work was more than guidance*) reports that blocked workload waited longer than specified by the BLWLINTHD parameter in IEAOPTxx, and the *peak* number of address spaces and enclaves found being blocked during the interval was more than the guidance provided to CPEXpert. This finding applies with z/OS V1R9, and z/OS V1R8 with APAR OA18244.
- Rule WLM318 (*CPU time used by promoted work was more than guidance*) reports that the CPU time used by blocked workload that had been promoted to a high dispatching priority was more than the guidance provided to CPEXpert. This CPEXpert finding is based on a service class period, and may reveal an unwelcome amount of CPU time used by work that installation management does not wish to execute at a high dispatching priority. This finding applies with z/OS V1R9, and z/OS V1R8 with APAR OA18244.
- **Updates to the CICS Component.** The CICS Component has been updated in the following areas:
 - Support has been added for CICS/TS for z/OS Version 3, Release 2 (V3R2). All software has been updated for V3R2 changes, and all documents have been updated to reference IBM's V3R2 documentation (in .pdf documents).
 - **Added new rules.** The following rules have been added to the CICS Component:
 - Rule CIC293 (*MAXOPENTCBS was lower than MXT, with transaction isolation*) reports that when running with Transaction Isolation active and connected to DB2 Version 6 or later, the MAXOPENTCBS value was set to less than the value of max tasks (MXT).

- Rule CIC314 (*Excessive number of log streams connected to structure*) reports that an excessive number of log streams were connected to a structure, with the result that the coupling facility structure definitions can cause unnecessary overhead and performance degradation
- Rule CIC450 (*Data table size is approaching data space limit*) reports that the size of the shared data table was approaching the maximum 2GB size¹ of the data space. If the maximum size is reached, CICS will consider the table space to be full.
- Rule CIC545 (*Excessive L8/L9 TCB steals to satisfy JVM requests*) reports that there were excessive steals between L8/L9 TCBs to satisfy program requests for an L8 or L9 TCB.
- Rule CIC550 (*Language Environment Heap statistics were collected*) reports that Language Environment Heap statistics were collected, with the resulting significant overhead and performance degradation.
- Rule CIC600 (*Excessive IPIC session allocate requests were queued*) reports that the number of Transmission Control Protocol/Internet Protocol (TCP/IP) connections, referred to as IP interconnectivity (IPIC), session allocate requests being queued was more than the guidance provided to CPExpert.
- Rule CIC601 (*Queued IPIC session allocate requests approached QUEUELIMIT*) reports that the queued IPIC session allocate requests were approaching the QUEUELIMIT value specified in the IPCONN definition.
- Rule CIC602 (*Mismatched IPIC send/receive session count with partner*) reports that there was a mismatch between the number of IPIC send and receive sessions defined between two CICS regions that had established a connection (a partner group).
- Rule CIC603 (*IPIC session allocate requests were rejected - QUEUELIMIT*) reports that IPIC session allocate requests were rejected because the QUEUELIMIT value had been reached.
- Rule CIC604 (*IPIC session allocate request queue was purged - MAXQTIME value*) reports that the IPIC session allocate request queue was purged because the MAXQTIME value had been exceeded, and CICS queue control algorithms had purged the queue.

¹This finding does not apply with CICS/TS V3R2; up to 100 data spaces can be defined with V3R2, for a total data table space of 200GB.

- Rule CIC605 (*IPIC session allocate requests were rejected - XISQUE user exit*) reports that IPIC session allocate requests were rejected because the QUEUELIMIT value had been reached, and logic in the XISQUE global user exit had rejected the request.
- Rule CIC606 (*IPIC session allocate queue was purged - XISQUE user exit*) reports that the IPIC session allocate request queue was purged because the QUEUELIMIT value had been reached, and logic in the XISQUE global user exit had purged the queue.
- Rule CIC608 (*IPIC session allocate requests failed - connection problem*) reports that IPIC session allocate requests failed because of a connection problem between the two regions.
- Rule CIC609 (*IPIC session allocate requests failed - other problem*) reports that IPIC session allocate requests failed. The cause of the allocate requests failing was not a connection problem between the two regions, but was for some other reason not identified by the CICS interval statistics.
- Rule CIC620 (*Queued ISC/IRC session allocate requests approached QUEUELIMIT*) reports that The number of ISC/IRC session allocate requests approached the QUEUELIMIT value specified in the CONNECTION definition.
- Rule CIC621 (*ISC/IRC session allocate requests were rejected - QUEUELIMIT*) reports that ISC/IRC session allocate requests were rejected because the QUEUELIMIT value on the CONNECTION definition had been reached.
- Rule CIC622 (*ISC/IRC allocate queue was purged - MAXQTIME*) reports that the ISC/IRC session allocate request queue was purged because the MAXQTIME value had been exceeded, and CICS queue control algorithms had purged the queue.
- Rule CIC623 (*ISC/IRC allocate requests rejected - XZIQUE user exit*) reports that ISC/IRC session allocate requests were rejected because the QUEUELIMIT value had been reached, and logic in the XZIQUE global user exit had rejected the request.
- Rule CIC624 (*ISC/IRC allocate queue purges - XZIQUE user exit*) reports that the ISC/IRC session allocate request queue was purged because the QUEUELIMIT value had been reached, and logic in the XZIQUE global user exit had purged the queue.

- **Modified CICS Component rules.** The following CICS Component rule has been modified to reflect increased understanding² of the issue:
 - Rule CIC269 (*Excessive GETMAIN/FREEMAIN activity for MRO sessions*). The discussion of alternatives has been significantly enhanced based on better understanding of how the IOAREALEN parameter value is used.
- **Updates to the DB2 Component.** Changes to the DB2 Component with CPEXpert Release 17.2 include:
 - **Added support for DB2 UDB for z/OS Version 9.1.** All CPEXpert documentation and code have been enhanced to add support for DB2 UDB for z/OS Version 9.1.

Please note that with DB2 Version 9.1, Section 5 (Performance monitoring and tuning) of the *DB2 Administration Guide* has been removed. This performance monitoring and tuning information now is contained in the *DB2 UDB for z/OS Version 9.1 Performance Monitoring and Tuning Guide*. All appropriate references have been updated to refer to the new DB2 document.

- **New rules.** The following rules have been added to the DB2 Component:
 - Rule DB2-112 (*Recording interval for DB2 statistics might be too short*) reports that the recording interval for DB2 statistics was less than 15 minutes³. In many cases, this short recording interval might be a data entry error on Installation Panel DSNTIPN or a specification that was made for a test DB2 subsystem and not corrected once the DB2 subsystem went to production mode.

Note that the default statistics recording interval on Panel DSNTIPN is 5 minutes with DB2 UDB for z/OS Version 9.1, but CPEXpert feels that this default is too short to allow easy analysis and comparison between DB2 statistics and RMF statistics. This short recording interval is more appropriate for a test DB2 environment than for a production DB2 environment.

- Rule DB2-135 (*The LEMAX parameter might be too small*) reports that the LEMAX parameter specified on the DSNTIP7 panel might be inappropriate for the Language Environment (LE) requirements of the DB2 subsystem.

²Thanks to **Rick Gauvreau** (Royal Canadian Mounted Police, Canada) for doing extensive research of this finding, including asking questions of IBM technical support. Rick's efforts produced a better understanding of the intent of the discussion in the CICS Performance Guides and its confusing description of how the IOAREALEN and CICS 24-byte requirements should be used.

³Thanks to Glenn Bowman (Wakefern Food Corporation, NJ) for suggesting this rule.

- Rule DB2-228 (*One or more buffer pool variable thresholds were changed*) reports that DB2 buffer pool statistics showed that one or more of the buffer pool variable thresholds were changed⁴ in the current DB2 statistics recording interval.
- Rule DB2-229 (*The buffer pool size was changed*) reports that the size of a DB2 buffer pool was changed in the current DB2 statistics recording interval.

This finding has increased importance with DB2 UDB for z/OS Version 9.1 when running under z/OS V1R8 or above. When the *AUTOSIZE(YES)* specification is made for a buffer pool, DB2 interacts with WLM to establish and maintain the WLM dynamic buffer pool management function for the buffer pool.

- **Suppress rules.** The following rules have been suppressed beginning with DB2 UDB for z/OS Version 8.1:
 - Rule DB2-601 (*Coupling facility read requests could not complete*) reported that DB2 was unable to register a page or a list of pages in the coupling facility because of a lack of directory entry storage. This finding does not apply with DB2 Version 8.1, since the relevant variables were dropped from the Group Buffer Pool statistics.
 - Rule DB2-606 (*Coupling facility write engine was not available*) reported that a coupling facility write engine was not available for coupling facility writes. This finding does not apply with DB2 Version 8.1, since the relevant variables were dropped from the Group Buffer Pool statistics.
 - Rule DB2-235 (*Dynamic sequential prefetch was invoked frequently*) reported that DB2 invoked dynamic sequential prefetch a large percent of total sequential prefetch, as a result of sequential detection. DB2 improved the algorithms sufficiently that dynamic prefetch is not a potential problem, even if sequential detection is used to invoke dynamic prefetch. With DB2 UDB for z/OS Version 9.1, DB2 uses dynamic prefetch in most situations, with a few exceptions (such as table space scans).
- **Modified rule.** The following rule has been modified:
 - Rule DB2-644 (*Assisting DB2 had VPSEQT, VPPSEQT, or VPXPSEQT = zero*) has been modified⁵ by reordered logic to produce only the paragraph and a single line showing the finding. Otherwise, multiple lines of the same information could be produced for each buffer pool.

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

⁵Thanks to Glenn Bowman (Wakefern Food Corporation, NJ) for suggesting the modification of this rule.

- **New reports.** The following additional reports⁶ are optionally produced by the DB2 Component, to provide information about selected findings:

- **Deadlock report.** CPEXpert will produce a report relating to deadlocks. This report is produced if DB2 accounting data is available, and if %LET DB2ACCTX=Y; is specified in USOURCE(DB2GUIDE) to tell CPEXpert that the DB2 accounting data is available.

This Deadlock Report will provide information about the holder of the resource holder and the resource wanter, to help identify the cause of the deadlock and help resolve the deadlock. Information will show the Correlation ID, the Plan Name, and the Connection ID for both the resource holder and the resource wanter.

- **Stored procedures ABEND report.** CPEXpert will produce a report relating to stored procedure abends. This report is produced if DB2 accounting data is available, and if %LET DB2ACCTX=Y; is specified in USOURCE(DB2GUIDE) to tell CPEXpert that the DB2 accounting data is available.

This Stored Procedure ABEND Report will provide information about the time of the abend, Job name, Correlation ID, DB2 Plan, WLM Service Class, and CICS transaction.

- **Option to reorder reporting⁷ (REPORTB guidance).** The standard DB2 reporting is to produce an overview of the rules produced, for each DB2 subsystem. This overview is followed by the findings, with the findings produced separately for each subsystem. Following the findings, separate reports (such as ABEND reports) would be produced.

Users of the CPEXpert DB2 Component often analyze a large number of DB2 subsystems on multiple systems.

- Some of these users like the standard reporting approach, since this approach allows a quick review of the overview to see whether potentially serious problems were discovered by CPEXpert's analysis of the DB2 statistics.
- Other users do not want the standard reporting produced, but want an alternate reporting. These users want the report order to be based on DB2 subsystem. These users want to see an overview of a specific DB2 subsystem, followed by the findings related to that specific DB2 subsystem, followed by any separate

⁶Thanks to Glenn Bowman (Wakefern Food Corporation, NJ) for suggesting these new reports.

⁷Thanks to Glenn Bowman (Wakefern Food Corporation, NJ) for suggesting this reporting option and for providing voluminous test data for other improvements in the DB2 Component.

reports (such as ABEND reports) related to that specific DB2 subsystem. The order would be repeated for each DB2 subsystem that CPEXpert analyzed.

The REPORTB⁸ guidance variable controls the order in which the reporting is done. The default value for the REPORTB variable is "N" to indicate that the standard reporting is to be done. The alternate reporting is produced if **%LET REPORTB=Y**; is specified in USOURCE(DB2GUIDE).

- **Updates to the WMQ Component.** The following enhancement has been added to the WMQ Component:

Support has been provided for analyzing WebSphere MQ data in a NeuMICS⁹ performance data base. This support does not yet include shared queues. I will welcome test data from any CPEXpert user operating with shared queues.

- **Updates to the DASD Component.** The main changes to the DASD Component for CPEXpert Release 17.2 are to correct minor errors reported by users.
- **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 17.2. 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 17.1. This error log is in the GENER171 module in SOURCE.

Update Distribution Media

In past CPEXpert updates, updates were distributed on 3480 tape cartridges for most of the users who wanted to receive media distribution of the CPEXpert update. With Release 17.2, updates to CPEXpert are distributed by CD as a default, with FTP download an option.

⁸Thanks to **Glenn Bowman** (Wakefern Food Corporation, NJ) for suggesting this new feature.

⁹Thanks to **Carl L. Welch Sr.** (Social Security Administration, MD) for providing extensive test data from a NeuMICS performance data base.

Please send an email to Don_Deese@cpexpert.com if you *absolutely must have* updates on a tape cartridge.

FTP download

CPEXpert Release 17.2 (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 ftp download instructions.**

Installation

I suggest that you use the following steps to install Release 17.2;

- Create a new PDS titled "prefix.CPEXPERT.V172.SOURCE".
- Create a new PDS titled "prefix.CPEXPERT.V172.USOURCE".
- Install CPEXpert into the "prefix.CPEXPERT.V172.SOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*.
- Install CPEXpert into the "prefix.CPEXPERT.V172.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.V172.USOURCE". This step should be done so you do not have to recreate all of your unique parameters¹⁰.
- 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.172.ebc* file from `cd:\software\` as binary, to `CPEXPERT.TAPE.REL172`, allocated as `DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50))`,

¹⁰The 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.

DSN=CPEXPRT.REL172.IEBUPDTE. The *source.172.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\rel172\source`. Copy the `cd:\software\usource\` on the CD to `prefix.cpexpert\rel172\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.172.ebc* file to CPEXPRT.TAPE.REL172, allocated as DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)), DSN=CPEXPRT.REL172.IEBUPDTE. The *source.172.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 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.

Special note for SAS/ITRM users of CPEXpert running the CICS Component: With CPEXpert Release 17.2, you must have the following MXG file structure in your performance data base.

CICISR CICS ISC IP CONNECTIONS

SAS gives an invalid return to the `%sysfunc(exist(file))` macro with SAS/ITRM, so the above file must be in your pdb, even if it is a null file.

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:

Markus Bansemir (HUK-COBURG, Germany)
Miguel Barrios (Social Security Administration, MD)
Glenn Bowman (Wakefern Food Corporation, NJ)
Michael Duffy (Lloyds TSB, United Kingdom)
Kris Ferrier (State of Washington, WA)
Rodger Foreman (Transunion/ACXIOM, IL)
Rick Gauvreau (Royal Canadian Mounted Police, Canada)
Wayne Hammond (Bank of America, GA)
Kenneth D Jones (Bell Aliant, Halifax, Nova Scotia, Canada)
Hugh Lapham (Royal Canadian Mounted Police, Canada)
Barry Merrill (Merrill Consultants, TX)
Kim Morrell (Royal Canadian Mounted Police, Canada)
John den Os (Rabobank, Netherlands)
Bruce Perry (Bell Aliant, Halifax, Nova Scotia, Canada)
Dennis Pugh (Social Security Administration, MD)
Lori Ramsey (Computer Associates, VA)
Homayoun Riazi (United Health Technologies, WI)
Al Sherkow (I/S Management Strategies, Ltd., WI)
Harald Seifert (HUK-Coburg, Germany)
Randall Springs (Branch Bank and Trust, NC)
Andreas von Imhof (Rabobank, Netherlands)
Carl L. Welch Sr. (Social Security Administration, MD)
Bruce Widlund (Merrill Consultants, TX)
Don Williams (University of North Carolina Hospitals, NC)

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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