



Product Update Bulletin 2012-1

This product update forwards changes to both software and documentation. The software update is Release 22.1 of CPEXPERT. The release number indicates that it is the first release of 2012.

With Release 22.1, CPEXPERT has been updated to: (1) provide additional analysis in the WLM Component; (2) provide additional analysis and features in the CICS Component; (3) provide additional analysis and features in the DB2 Component; (4) provide updated documentation; and (5) correct errors that have been reported.

- **Provide additional analysis in the WLM Component.** The following rules have been added to the WLM component:

Rule WLM052 (*Critical auxiliary storage shortage might exist*) reports that the percent of page slots used versus the number of page slots allocated to local page data sets was so large that z/OS might conclude that a critical auxiliary storage shortage exists. This finding provides an alert about a situation that can have a HIGH IMPACT on performance of your computer system.

Rule WLM072 (*Large Frame Area encountered a shortage of storage*) reports that the Large Frame Area encountered a shortage of storage because of the amount of the Large Frame Area that was allocated.

Rule WLM073 (*Large Frame Area encountered a critical shortage of storage*) reports that the Large Frame Area encountered a **critical** shortage of storage because of the amount of the Large Frame Area that was allocated.

Rule WLM075 (*High amount of CPU was used by work with promoted priority*) reports that an excessive amount of CPU time was used by work that had been promoted to a high dispatching priority. As of z/OS V1R13, there are five categories of promoted dispatching priority when relatively low importance work can have its dispatching priority increased (or *promoted*) to a higher CPU dispatching priority. This work could execute at a very high dispatching priority in some cases, even with a dispatching priority higher than the dispatching priority assigned by WLM to service class periods with important WLM Goals.

Rule WLM076 (*CPU promoted priority used by work holding local suspend lock*) reports that excessive CPU time was used by work that had been promoted to a high dispatching priority, because the work was holding a local suspend lock. This work would execute at the highest possible CPU dispatching priority (x'FF'). Any work units that execute at this highest dispatching priority could have **serious** performance implications for other work

running on the system, depending on the number of unparked logical processors that are assigned to the LPAR.

- **Updates to the CICS Component.** The following rules have been added to the CICS Component:

Rule CIC152 (*z/OS Communications Server reported Short on Storage*) reports that the z/OS Communications Server reported an excessive number of temporary Short on Storage conditions. This finding applies with CICS/TS Release 4.2 and subsequent releases of CICS.

Rule CIC287 (*DB2ENTRY reached maximum number of protected threads*) reports that the peak number of protected threads for a DB2ENTRY reached the current maximum number of protected threads allowed for the DB2ENTRY.

Rule CIC555 (*Heap size after garbage collection is close to the maximum heap size*) reports that JVM server statistics showed that the heap size after garbage collection was close to the maximum heap size. This means that garbage collection might be occurring too frequently. This finding applies with CICS/TS Release 4.2 and subsequent releases of CICS.

Rule CIC556 (*Peak heap size was much lower than the maximum heap size*) reports that JVM server statistics showed that the peak heap size was significantly lower than the maximum heap size. This means that either more work can be run in the JVM server, or the maximum heap size can be reduced. This finding applies with CICS/TS Release 4.2 and subsequent releases of CICS.

Rule CIC557 (*Tasks spent excessive time waiting for a system thread in the JVM server*) reports that the JVM server statistics showed that tasks spent an excessive amount of time waiting for a system thread in the JVM server. This finding applies with CICS/TS Release 4.2 and subsequent releases of CICS.

Rule CIC558 (*Excessive number of tasks waited for a system thread in the JVM server*) reports that the JVM server statistics showed that an excessive number of tasks waited for a system thread in the JVM server. This finding applies with CICS/TS Release 4.2 and subsequent releases of CICS.

- **Updates to the DB2 Component.** The following rules and features have been added to the DB2 Component:

Rule DB2-607 (*Castout write I/O was inefficient for Group Buffer Pool*) reports that the number of pages cast out from a Group Buffer Pool by a DB2 subsystem was not *significantly larger* than the number of UNLOCK CASTOUT operations sent to the Group Buffer Pool by the DB2 subsystem. This indicates that castout write I/O operations were inefficient for the Group Buffer Pool.

Rule DB2-608 (*Group buffer pool caching not working effectively for prefetch*) reports that the number of pages read from the group buffer pool was not significantly larger

than the number of clean pages written to the group buffer pool. This indicates that group buffer pool caching was not working effectively for prefetch. This finding is applicable only if GBPCACHE ALL was specified for the group buffer pool.

Rule DB2-609 (*Excessive percent changed pages synchronously written*) reports that an excessive percent of changed pages were synchronously written to a group buffer pool in “burst” mode at commit time.

Rule DB2-610 (*Excessive Group Buffer Pool pages retrieved from DASD*) reports that an excessive number of pages were read from DASD because the pages were not found in a buffer pool and the pages were not found in a group buffer pool. This finding applies only if GBPCACHE ALL was specified for the group buffer pool.

Rule DB2-611 (*Low percent data returned vs. writes for Group Buffer Pool*) reports that the ratio of READS, DATA RETURNED / PAGES WRITTEN was very low (e.g., less than 1%). This finding implies that a different specification for the GBPCACHE option might yield better performance.

New features. The following new features have been added to the DB2 component:

- CPEXpert optionally¹ lists summary buffer pool statistics by measurement interval within each buffer pool. This option allows a user to review DB2 buffer pool statistics *collectively* by time of day, or *individually* time of day.
- The Physical I/O count, I/O intensity, page fix attribute, and page steal algorithm attribute information is now included in the summary DB2 buffer pool statistics.
- **Updates to the DASD Component.** Changes to the DASD Component with CPEXpert Release 22.1 were to correct minor errors reported by users, and to provide an optional feature² that allows users to dynamically control where the guidance variables for the DASD Component are located. The guidance variables normally are included in USOURCE(DASGUIDE). With this new feature, the guidance variables are obtained from the location specified by the user.
- **Updates to the WebSphere MQ Component.** Changes to the WebSphere MQ Component with CPEXpert Release 22.1 were to correct minor errors reported by users.
- **Updated documentation.** 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/reader/>.

¹Thanks to **Glenn Bowman** (Wakefern Food Corporation, NJ) for suggesting this new feature.

²Thanks to **Glenn Bowman** (Wakefern Food Corporation, NJ) for suggesting this new feature.

- **Add a log of changes to code.** A log of changes to the CPEXpert code for Release 22.1 has been included, and additions or changes to USOURCE members are included in the changes log. 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. CPEXpert follows 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).

FTP download

CPEXpert Release 22.1 (both code and documentation) is available via ftp download from the CPEXpert 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, the ftp download instructions will automatically be sent to you.**

Installation

I suggest that you use the following steps to install Release 22.1:

- Create a new PDS titled "prefix.CPEXPRT.V221.SOURCE".
- Create a new PDS titled "prefix.CPEXPRT.V221.USOURCE".
- Install CPEXpert SOURCE members into the "prefix.CPEXPRT.V221.SOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*.
- Install CPEXpert USOURCE members into the "prefix.CPEXPRT.V221.USOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*. This step also will cause the email macros to be loaded into USOURCE.
- Copy your **old** USOURCE guidance members into "prefix.CPEXPRT.V221.USOURCE". This step should be done so you do not have to recreate all of your unique parameters³.
- If you elected to receive updates to CPEXpert on CD, the software is distributed on the CD that contains the CPEXpert user documentation.
 - **Installing CPEXpert from CD to MVS.** Copy the *source.221.ebc* file from cd:\software\ as binary, to CPEXPRT.TAPE.RELV221, allocated as

³The 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 altering a SOURCE member. Consequently, if you copy your old USOURCE(GENGUIDE) member to CPEXPRT.V221.USOURCE, you may wish to append the PREVIOUS macro from your old USOURCE(GENGUIDE) into your new USOURCE(GENGUIDE).

DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)),
DSN=CPEXPERT.RELV221.IEBUPDTE. The *source.221.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\rel221\source. Copy the `cd:\software\usource\` on the CD to
prefix.cpexpert\rel221\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.221.ebc* file to CPEXPERT.TAPE.RELV221, allocated as
DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)),
DSN=CPEXPERT.RELV212.IEBUPDTE. The *source.221.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 the *Individual Rule Documentation.zip* file on the ftp site.

- If you have implemented 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.
- If you chose to implement the CPEXpert email option, please update the xxxEMAIL
modules in USOURCE to reflect your unique email requirements.

Special note for SAS/ITRM users of CPEXpert running the CICS Component: With
CPEXpert Release 22.1, you must have the following MXG file structure in your performance
data base:

CICSJS CICS JVMSERVER STATS RESID

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

Thanks

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

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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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