



Product Update Bulletin 2008-1

This product update forwards updates to both software and documentation. The software update is Release 18.1 of CPEXPERT. The release number indicates that it is the first release of 2008.

With Release 18.1, CPEXPERT has been updated to: (1) provide support for z10 server (including analyzing HiperDispatch performance issues), (2) provide additional analysis in the WLM Component, (3) provides additional analysis and reporting of DB2 performance issues, (4) provide new features for the DASD Component and WebSphere MQ Component, (5) provide updated documentation on CD; and (6) correct errors that have been reported.

- **Provide support for z10 server.** The z10 server was announced February 26, 2008.
 - All CPEXPERT components have been updated to provide support for z10, including HiperDispatch Management Mode available with z10.
 - All CPEXPERT documentation has been updated with references to applicable z10 documents from IBM.
- **Updates to the WLM Component.** The following rules and features have been added to the WLM Component:
 - Rule WLM041 (*There was negative uncaptured CPU time*)¹ reports that the SMF Type 70 and Type 72 statistics showed that the total CPU time represented by data in SMF Type 70 records was less than the "captured" CPU time used by service class periods represented in SMF Type 72 records. This illogical situation normally would be caused by an error in z/OS.
 - Rule WLM254 (*CPU access might be denied because of HiperDispatch*) reports that CPU access might have been denied for the service class missing its performance goal because HiperDispatch algorithms reduced the number of logical processors in the LPAR. This finding applies only with z10 with z/OS operating in HiperDispatch Management Mode.
 - Rule WLM676 (*Dynamic ICF Expansion was specified with low weight for CP*) reports CPEXPERT detected that Dynamic ICF Expansion was specified for the internal coupling facility, but a low weight was specified for the shared Central Processor.

¹Thanks to **Harald Seifert** (HUK-Coburg, Germany) for suggesting this rule.

- Rule WLM677 (*Dynamic ICF Expansion was specified and shared CP was used*) reports that Dynamic ICF Expansion was specified for the internal coupling facility, and the shared Central Processor was actually used by the coupling facility LPAR more than guidance provided to CPEXpert.
- Rule WLM862 (*Excessive initial logical processors defined, z990 only*) reports that the number of initial logical processors defined for an LPAR was more than the number of shared physical processors required to meet the capacity requirements at a peak load. This finding applies only to z990, since the PR/SM algorithms were revised with z9.
- Rule WLM865 (*HiperDispatch was turned off because IRD decreased weight*) reports that the LPAR was not running in HiperDispatch Management Mode because the Intelligent Resource Director (IRD) lowered the weight assigned to the LPAR. This lowered weight resulted in a share of CEC capacity that was less than required to sustain HiperDispatch algorithms.
- Rule WLM866 (*High polarity processor not established, IRD decreased weight*) reports that PR/SM could not establish a logical processor running in High polarity mode, because the Intelligent Resource Director (IRD) lowered the weight assigned to the LPAR. This lowered weight resulted in a share of CEC capacity that was less than required to establish a High polarity processor.
- Rule WLM867 (*HiperDispatch was turned back on because IRD increased weight*) reports that PR/SM was able to run the LPAR in HiperDispatch Management Mode because the Intelligent Resource Director (IRD) increased the weight assigned to the LPAR. This increased weight resulted in a share of CEC capacity that was sufficient for HiperDispatch to be enabled.
- Rule WLM868 (*High polarity processor could be established, IRD increased weight*) reports that PR/SM could establish a logical processor running in High polarity mode, because the Intelligent Resource Director (IRD) increased the weight assigned to the LPAR. This increased weight resulted in a share of CEC capacity that was sufficient to establish a High polarity processor.
- Rule WLM871 (*HiperDispatch could not be activated for LPAR with low weight*) reports that HiperDispatch was specified for one or more LPARs within a CEC. However, at least one LPAR had a weight that resulted in less than 0.5 physical processors for the LPAR. HiperDispatch cannot be activated for an LPAR with such a low weight. Additionally, the LPAR was assigned a relatively large number of logical processors, with the result that each logical processor had a small share of a physical processor.
- Rule WLM875 (*HiperDispatch could not establish a high polarity processor*) reports that HiperDispatch was specified for one or more LPARs within a CEC. However, at

least one LPAR had a weight that resulted in less than 1.5 physical processors for the LPAR. HiperDispatch cannot establish a HIGH polarity processor for an LPAR with such a low weight.

- Rule WLM876 (*HiperDispatch might not be appropriate for LPAR*) reports that HiperDispatch Management Mode was specified for an LPAR. After analyzing the weight and number of logical processors assigned to the LPAR and considering the statistics related to HiperDispatch operation in the LPAR, CPEXpert recommends that the LPAR not operate in HiperDispatch Management Mode.
- Rule WLM877 (*Potentially inadequate logical processors assigned to LPAR*) reports that HiperDispatch Management Mode was specified for an LPAR. After analyzing the weight and number of logical central processors assigned to the LPAR and considering the statistics related to HiperDispatch operation in the LPAR, CPEXpert believes that potentially an inadequate number of logical central processors were assigned to LPAR.
- Rule WLM880 (*HiperDispatch was turned on by operator action*) reports that HiperDispatch Management Mode was turned on by operator specification for an LPAR.
- Rule WLM881 (*HiperDispatch was turned off by operator action*) reports that HiperDispatch Management Mode was turned off by operator specification for an LPAR.
- Rule WLM883 (*Potentially inadequate logical zAAP processors assigned to LPAR*) reports that HiperDispatch Management Mode was specified for an LPAR. After analyzing the weight and number of logical zAAP processors assigned to the LPAR and considering the statistics related to HiperDispatch operation in the LPAR, CPEXpert believes that potentially an inadequate number of zAAP logical processors were assigned to LPAR.
- Rule WLM884 (*HiperDispatch could not establish a high polarity zAAP processor*) reports that HiperDispatch was specified for one or more LPARs in a Central Processor Complex (CPC.) However, at least one LPAR had a weight that resulted in less than 1.5 physical zAAP processors for the LPAR. HiperDispatch cannot establish a high polarity zAAP processor for an LPAR with such a low weight.
- Rule WLM886 (*Potentially inadequate logical zIIP processors assigned to LPAR*) reports that HiperDispatch Management Mode was specified for an LPAR. After analyzing the weight and number of logical zIIP processors assigned to the LPAR and considering the statistics related to HiperDispatch operation in the LPAR, CPEXpert believes that potentially an inadequate number of zIIP logical processors were assigned to LPAR.

- Rule WLM887 (*HiperDispatch could not establish a high polarity zIIP processor*) reports that HiperDispatch was specified for one or more LPARs in a CPC. However, at least one LPAR had a weight that resulted in less than 1.5 physical zIIP processors for the LPAR. HiperDispatch cannot establish a high polarity zIIP processor for an LPAR with such a low weight.
- Rule WLM890 (*LPAR could not use the defined logical processors*) reports that HiperDispatch was specified for one or more LPARs within a CPC, and at least one LPAR used one or more high polarity processors. However, an LPAR that was not operating in HiperDispatch Management Mode could not use all of its defined logical processors because of the high polarity processors used by LPARs running in HiperDispatch Management Mode.
- Rule WLM891 (*LPAR could not use the defined logical zAAP processors*) reports that HiperDispatch was specified for one or more LPARs within a CPC, and this LPAR used at least one high polarity zAAP processor. However, an LPAR that was not operating in HiperDispatch Management Mode could not use all of its defined logical zAAP processors because of the high polarity zAAP processor.
- Rule WLM892 (*LPAR could not use the defined logical zIIP processors*) reports that HiperDispatch was specified for one or more LPARs within a CPC, and this LPAR used at least one high polarity zIIP processor. However, an LPAR that was not operating in HiperDispatch Management Mode could not use all of its defined logical zIIP processors because of the high polarity zIIP processor.
- Rule WLM893 (*Logical processors in LPAR had skewed share of capacity*) reports that HiperDispatch running in one LPAR had a negative performance effect on logical processor performance for one or more LPARs that were not running in HiperDispatch Management Mode.
- **Modified rules.** The following WLM Component rules have been modified:
 - Rule WLM850 (*WLM Management specified but VARYCPU not specified*) was modified so the rule would not be produced if the LPAR is operating in HiperDispatch Management Mode.
 - Rule WLM860 (*Inadequate number of initial logical processors were defined*) does not apply with z9 and z10.
- **Updates to the DB2 Component.** Changes to the DB2 Component with CPExpert Release 18.1 include:

- **New reports and report features.** The following additional reports² are optionally produced by the DB2 Component, to provide information about selected findings:

- **Buffer pool summary report.** The buffer pool summary report 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.

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

- **"Eye catcher" option.** CPEXpert will optionally produce an "eye catcher" showing the buffer pool name listed in the right margin of buffer pool findings. This "eye catcher" can help performance analysts quickly focus on findings related to specific buffer pools. This "eye catcher" is produced if **%LET EYE_BP=Y;** is specified in USOURCE(DB2GUIDE).
- **Updates to the CICS Component.** The main changes to the CICS Component for CPEXpert Release 18.1 are to correct minor errors reported by users.
- **Updates to the DASD Component.** Changes to the DASD Component with CPEXpert Release 18.1 include:
 - **Email option.** The CPEXpert option to send an email to selected recipients has been extended to the DASD Component. The *dasemail* macro now is in USOURCE.
 - **Guidance for email.** The email option with the DASD Component normally would be used to provide an alert when the average I/O response for selected devices exceeds a guidance value³. A new guidance variable is provided so the CPEXpert DASD Component can send an email when average I/O response is unacceptable.
- **Updates to the WebSphere MQ Component.** Changes to the WebSphere MQ Component with CPEXpert Release 18.1 include:

²Thanks to Glenn Bowman (Wakefern Food Corporation, NJ) for suggesting these new reports.

³Thanks to **Harald Seifert** (HUK-Coburg, Germany) for suggesting this feature.

- **Guidance to exclude specific users from analysis.** A new option is provided to allow any number of user ids to be *excluded*⁴ from CPEXpert WebSphere MQ analysis.
- **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 18.1. 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 18.1 (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 18.1;

- Create a new PDS titled "prefix.CPEXPRT.V181.SOURCE".
- Create a new PDS titled "prefix.CPEXPRT.V181.USOURCE".
- Install CPEXpert into the "prefix.CPEXPRT.V181.SOURCE" using the normal installation procedures described in the *CPEXpert Installation Guide*.

⁴Thanks to Dennis Pugh (Social Security Administration, MD) for suggesting this feature.

- Install CPEXpert into the "prefix.CPEXPRT.V181.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.CPEXPRT.V181.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.181.ebc* file from cd:\software\ as binary, to CPEXPRT.TAPE.REL181, allocated as DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)), DSN=CPEXPRT.REL181.IEBUPDTE. The *source.181.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\rel181\source. Copy the cd:\software\usource\ on the CD to prefix.cpexpert\rel181\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.181.ebc* file to CPEXPRT.TAPE.REL181, allocated as DSORG=PS,RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=K,SPACE(80,(150,50)), DSN=CPEXPRT.REL181.IEBUPDTE. The *source.181.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.

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 CPEXPRT.V171.USOURCE, you may wish to append the PREVIOUS macro from the Release 16.2 USOURCE into your USOURCE(GENGUIDE) member.

- 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:

Markus Bansemir (HUK-COBURG, Germany)
Miguel Barrios (Social Security Administration, MD)
Janice Borys (Royal Canadian Mounted Police, Canada)
Glenn Bowman (Wakefern Food Corporation, NJ)
Craig Collins (State of Wisconsin, WI)
Michael Duffy (Lloyds TSB, United Kingdom)
Norman Hollander (Computer Associates, CA)
Chuck Knapp (United Health Technologies, WI)
Barry Merrill (Merrill Consultants, TX)
Dennis Pugh (Social Security Administration, MD)
Al Sherkow (I/S Management Strategies, Ltd., WI)
Wayne Schumack (United Health Technologies, WI)
Harald Seifert (HUK-Coburg, Germany)
Andreas von Imhof (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

Computer Management Sciences, Inc.
634 Lakeview Drive
Hartfield, Virginia 23071-3113
(804) 776-7109 FAX: (804) 776-7139
www.cpexpert.com
Don_Deese@cpexpert.com