Product Update Bulletin 2004-2

This product update forwards updates to both software and documentation. The software update is Release 14.2 of CPExpert. The release number indicates that it is the second release of 2004.

This release (1) updates all CPExpert components for z/OS Version 1 Release 6 (V1R6); (2) provides updates to the WLM Component (*including support for IFA/zAAP*); (3) provides updates to the WebSphere MQ Component; (4) provides minor documentation and coding updates to the the CICS Component, the DB2 Component, and the DASD Component; (5) provides updated documentation on CD; and (7) corrects errors that have been reported.

- **z/OS Version 1 Release 6 (V1R6).** z/OS V1R6 was made Generally Available (GA) by IBM in September 2004. 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 V1R6.

  - All CPExpert documentation has been updated with references to applicable z/OS V1R6 documents from IBM.

- **Updates to the WLM Component**. The WLM Component has been updated in the following areas:

  - All appropriate references have been updated to show detail references for z/OS Version 1 Release 6, and all logic has been updated for z/OS Version 1 Release 6.

  - **Provide support for IFA/zAAP**. Starting with z/OS V1R6 on z890 and z990 servers, Java applications can run on a new type of processor called the *IFA (Integrated Facility for Applications)*. The term "IFA" is used in most IBM technical documents and in SMF field descriptions. For marketing purposes, IBM also refers to the IFA as the *eServer zSeries Application Assist Processor (zAAP)*. Additionally, zAAP is used in some technical documents to refer to properties of Java work (e.g., "*zAAP-eligible*" is used to refer to Java work that is eligible to run on an IFA (zAAP).

    IFAs operate *asynchronously* with the central processors (CPs) to execute **only** Java work under control of the IBM Java Virtual Machine (JVM). The IFAs are not IPLed, and do not execute an operating system. In this regard, IFAs are conceptually similar to System Assist Processors (SAP) or Integrated Offload Processors (IOPs). Within a particular application, some work might be Java and the JVM has designated the

work as zAAP-eligible, while other work might be non-Java (or might be Java work that was not marked zAAP-eligible by the JVM). The zAAP-eligible work can be switched to an IFA for processing, and when the work that is not zAAP-eligible is ready to execute, this work would execute on a standard CP.

Section 4 (*Analyzing the Workload Manager*) of the WLM Component User Manual has been updated to provide an extensive description of IFA/zAAP concepts and performance considerations.

The following new rules have been added to the WLM Component to analyze IFA/zAAP performance issues:

- Rule WLM500 (*Processor use (CP + IFA) per transaction was major cause of response delay*) reports that average processor use (central processor use and IFA processor use) by zAAP-eligible work was a major cause of transaction response delay.

- Rule WLM501 (*Goal may be unrealistic - average processor use was high*) reports that average processor use (central processor use and IFA processor use) per transaction for zAAP-eligible work was high for the service class period.

- Rule WLM502 (*Processor use was higher than response goal*) reports that average processor use (central processor use and IFA processor use) per transaction for zAAP-eligible work was higher than the *response* goal for the service class period.

- Rule WLM510 (*Server processor use per transaction was major cause of response delay*) reports that average processor use (central processor use and IFA processor use) per transaction by servers processing zAAP-eligible work was a major cause of transaction response delay.

- Rule WLM511 (*Goal may be unrealistic - average processor use was high*) reports that average processor use (central processor use and IFA processor use) by servers processing zAAP-eligible work was high for the service class period.

- Rule WLM512 (*Processor use was higher than response goal*) reports that average processor use (central processor use and IFA processor use) per transaction by servers processing zAAP-eligible work was higher than the *response* goal for the service class period.

- Rule WLM520 (*zAAP-eligible work waited for access to IFA processor*) analyzes the times when zAAP-eligible work missed its performance goal, and was delayed waiting for access to an IFA. A report optionally is produced to show the IFA processor time used by all zAAP-eligible work.

- Rule WLM521 (*Higher Importance zAAP-eligible work used IFA* processor) analyzes the amount of IFA processor time used by zAAP-eligible work in a service class at a higher Goal Importance than zAAP-eligible work missing its performance goal.

- Rule WLM522 (*Same Importance zAAP-eligible work used IFA processor*) analyzes the amount of IFA processor time used by zAAP-eligible work in a service class at the same Goal Importance as zAAP-eligible work missing its performance goal.

- Rule WLM525 (*zAAP-eligible work missed goal and IFACROSSOVER=N*) reports that zAAP-eligible work missed its performance goal, waited for access to a processor, and was restricted to be processed only on an IFA processor.

- Rule WLM526 (*zAAP-eligible work missed goal and IFAHONORPRIORITY=N*) reports that zAAP-eligible work missed its performance goal, waited for access to a processor, and was restricted to execute at a dispatching priority below discretionary on a central processor.

- Rule WLM530 (*Significant central processor time was used by zAAP-eligible work*) reports that a significant amount of central processor time was used by zAAP-eligible work than executing on an IFA. Depending on the hardware configuration and site parameters, a central processor rather than by an IFA could be used by zAAP-eligible work. In this case, the benefit of purchasing an IFA would be diminished.

- Rule WLM535 (*Significant zAAP-eligible work executed on a central processor*) reports that a significant amount of zAAP-eligible work executed on a central processor rather than an available IFA. Depending on the hardware configuration and site parameters, a significant percent of zAAP-eligible work might be processed by a central processor rather than by an IFA. In this case, the benefit of purchasing an IFA would be diminished. Rule WLM535 is similar to Rule WLM530, but the data is analyzed and presented from a different perspective.

- Rule WLM536 (*LPAR had high ratio of central processors to IFA processors*) reports that the LPAR had a high ratio of central processors to available IFA processors. This configuration potentially causes zAAP-eligible work to be executed on a central processor rather than on an IFA processor.

- Rule WLM537 (*zAAP-eligible work had high Goal Importance*) reports that zAAP-eligible work had a high Goal Importance. This specification potentially causes zAAP-eligible work to be executed on a central processor rather than on an available IFA.

- **Added additional new rules**. The following new rules have been added to the WLM Component to analyze additional performance issues:

  - Rule WLM065 (*RMF cache collection was run on multiple systems in sysplex*) notifies users that the RMF cache collection was run on multiple systems, causing unnecessary overhead.

  - Rule WLM066[1] (*Potentially excessive CPU time in SYSTEM service class*) notifies uses that there was potentially excessive CPU time used by the SYSTEM service class. Address spaces in the SYSTEM service class are assigned a very high

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[1]Thanks to **Michael Duffy** (Lloyds TSB, London, UK) for suggesting this analysis.

dispatching priority, and the dispatching priority is not managed by the WLM. This dispatching priority is just below MASTER (work in the SYSTEM service class has a dispatching priority of 255, or X'FF').

- Rule WLM067(*CPU time used by programs in SYSTEM service class*) identifies the programs that executed in the SYSTEM service class and shows the amount of CPU and CPU percent used by the programs executing in the SYSTEM service class.

- Rule WLM068[1] (*Potentially excessive CPU time in SYSSTC service class*) notifies uses that there was potentially excessive CPU time used by the SYSSTC service class. Address spaces in the SYSSTC service class are assigned a very high dispatching priority, and the dispatching priority is not managed by the WLM (unless the address spaces are servers). This dispatching priority is just below the SYSTEM service class, and has a dispatching priority of 254, or X'FE').

- Rule WLM069 (*CPU time used by programs in SYSSTC service class*) identifies the programs that executed in the SYSSTC service class and shows the amount of CPU and CPU percent used by the programs executing in the SYSSTC service class.

- Rule WLM090[2] (*IOP resources were imbalanced*) the resources assigned to one or more integrated offload processors (IOPs), to determine whether there was significantly imbalanced activity to the IOPs. This analysis is performed from a central electronic complex (CEC) view rather than a system view, applies only with a MXG performance data base, and can be performed only if TYPE78IO is available.

- **Modified existing rules**. The following rules have been modified:

  - Rule WLM012 (*A server executed in the SYSSTC Service Class*) has been modified to discuss implications of "servers" other than CICS or IMS regions executing in SYSSTC. These address spaces (such as CMAS with CICSPlex/SM) are recorded in the Service Class Served section of SMF Type 72, although they are not the "traditional" servers serving subsystem transactions.

  - Renamed Rule WLM090 to Rule WLM089 to allow a new rule sequence dealing with IOP analysis to start with WLM090.

- **Updates to the WebSphere MQ Component**. With Release 14.2, the WebSphere MQ Component has been updated in the following areas:

  - *Rule WMQ296 (Large percent of buffers in buffer pool were unused)*[3] analyzes whether a large number of buffers were assigned to a buffer pool, but most of the buffers were unused. The amount of storage used by the buffer pools could cause

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[2]Thanks to **Glenn Bowman** (Wakefern Food Corporation, NJ) for suggesting this analysis.

[3]Thanks to **Sam Knutson** (GEICO, Maryland)) for suggesting this analysis.

WebSphere MQ to experience S878-0C abends if system virtual storage requirements should increase because of other demands for virtual storage.

- Various errors identified by users have been corrected.

- **Updates to the CICS Component**. With Release 14.2, the CICS Component has been updated in the following areas:

  - A variety of rules have been updated to provide more information in the output.

  - A default MAXACTIVE guidance variable has been provided for the TCLASS analysis.

  - Various errors identified by users have been corrected.

- **Updates to the DB2 Component**. The main changes to the DB2 Component for CPExpert Release 14.2 are to update the DB2 Component to support z/OS Version 1 Release 6, and to correct errors reported by users.

- **Updates to the DASD Component**. The main changes to the DASD Component for CPExpert Release 14.2 are to make minor revisions to the documentation and to correct 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*.

  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.

- **Add log of changes to code**. I've added a log of changes to the CPExpert code for Release 14.2. 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 show changes in the new release, while the CHANGESS log is an accumulation of changes.

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!

FTP download

CPExpert Release 14.2 (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, your user id, and the password.

Installation

I suggest that you use the following steps to install Release 14.2:

- Create a new PDS titled "prefix.CPEXPERT.V142.SOURCE".

- Create a new PDS titled "prefix.CPEXPERT.V142.USOURCE".

- Install CPExpert into the "prefix.CPEXPERT.V142.SOURCE" using the normal installation procedures described in the *CPExpert Installation Guide*.

- Copy your **old** USOURCE members into "prefix.CPEXPERT.V142.USOURCE". This step should be done so you do not have to recreate all of your unique parameters[4].

- If you elected to receive updates to CPExpert on CD, the software is distributed on the CD that contains the CPExpert user documentation. With this release, I have adopted the MXG style of providing CPExpert updates on CD:

  - **Installing CPExpert from CD to MVS**. Copy the *ebc142.ebc* file from cd:\source\ebc142.ebc as binary, to CPEXPERT.TAPE.REL142, allocated as RECFM=FB,LRECL=80,BLKSIZE=0,AVGREC=M,SPACE=(80,2,1). The *ebc142.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 SOURCE directory on the CD to prefix\cpexpert\source. Copy your old USOURCE members as described above.

- 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**.

Special note of SAS/ITRM users of CPExpert: With CPExpert Release 14.2, you must have MXG TYPE78IO file structure (whether populated or not) in your performance data base. SAS gives an invalid return to the %sysfunc(exist(file)) macro, so TYPE78IO must be in your pdb, even if it is a null file. While you are making sure that TYPE78IO is there, you might as well make sure that TYPE77 is in your PDB. I plan to start looking at enqueue problems for CPExpert Release 15.1.

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[4]The 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.V14.USOURCE, you may wish to append the PREVIOUS macro from the Release 14.2 USOURCE into your USOURCE(GENGUIDE) member.

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)
    James Barton (Department of Veterans Affairs, TX)
    Glenn Bowman (Wakefern Food Corporation, NJ)
    Michael Duffy (Lloyds TSB, United Kingdom)
    Hans-Joachim Gerdes (HUK Coburg, Germany)
    Paul Gordon (Bank of America, GA)
    Sam Knutson (GEICO, MD)
    Barry Merrill (Merrill Consultants, TX)
    William Nicholson (Bank of America, VA)
    Alex Torben Nielsen (TELE DANMARK A/S, Denmark)
    Patrick O'Brien (Health Insurance Plan of Greater New York, NY)
    Bryant Osborn (Bank of America, VA)
    Keli Prado (Farmers Insurance Group, CA)
    Harald Seifert (HUK-Coburg, Germany)
    Marty Stahl (Social Security Administration, MD)
    Kathy Walsh (IBM, Washington Systems Center, MD)
    Bruce Widlund (Merrill Consultants, TX)

Please send me an email or phone 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