PRODUCT SHEET
CA Insight Database Performance Monitor for DB2 for z/OS

CA Insight™ Database Performance Monitor for DB2 for z/OS

CA Insight™ Database Performance Monitor for DB2 for z/OS (CA Insight DPM) provides real-time performance monitoring of DB2 applications and subsystems, enabling the rapid detection and correction of performance problems.

Overview

As DB2 applications increase in complexity and the DB2 databases grow in size, ensuring performance is becoming increasingly critical. When transactions use dynamic SQL that enters DB2 through various gateways or JDBC connections, it is crucial that your DB2 subsystems and applications are performing at their best. CA Insight DPM collects data from the z/OS subsystem interface, DB2 and z/OS control blocks and DB2 performance traces to provide online access to critical performance statistics. In addition, the product monitors subsystems, connections from CICS, IMS and network applications, as well as application statistics to assess and troubleshoot problems as they arise.

Business value

CA Insight DPM is a real-time monitor that provides your database administrators (DBAs) with the tools they need to maximize DB2 system and application performance. With its extensive Insight Query Language (IQL), you can tailor and extend CA Insight DPM to perform customized monitoring functions.

Features

Mainframe 2.0

CA Insight DPM has adopted key Mainframe 2.0 features that are designed to simplify your use of CA Insight DPM and enable your staff to install, deploy and maintain it more effectively and quickly.

- **CA Mainframe Software Manager™:** CA Mainframe Software Manager (CA MSM) automates CA Insight DPM installation, deployment and maintenance and removes SMP/E complexities.
  - The Software Acquisition Service enables you to more easily move product installation packages and maintenance from CA Support Online directly to your mainframe environment and prepare them for installation.
  - The Software Installation Service standardizes CA Insight DPM installation, which includes a new, streamlined Electronic Software Delivery (ESD) method that allows CA Insight DPM to be installed using standard utilities. This service also provides standardized SMP/E product installation and maintenance via APARs and PTFs, and simplifies SMP/E processing through an intuitive graphical user interface and an intelligent Installation Wizard.
  - The Software Deployment Service enables you to more easily deploy CA Insight DPM in your mainframe environment.
  - CA MSM Consolidated Software Inventory (CSI) updates and infrastructure improvements add flexibility to CA MSM processing of CSIs and enable CA MSM to more effectively utilize CPU and system memory.
- **Installation Verification Program (IVP) and Execution Verification Program (EVP):** As part of qualification for inclusion in the set of mainframe products from CA Technologies released every May, CA Insight DPM has passed stringent tests performed through the IVP and EVP to find and resolve interoperability problems prior to release. These programs are an extension of our ongoing interoperability certification initiative launched in May 2009.
- **Best Practices guide:** This guide provides information on CA Insight DPM installation, initial configuration and deployment to shorten the learning curve for staff who are responsible for the installation and management of this product.
- **Health Checker:** The Mainframe 2.0 Health Checker provides CA Insight DPM Health Checks that execute under the IBM Health Checker for z/OS. The CA Insight DPM Health Checks verify that the product is running with the correct dispatching priority, memory and buffer settings and other parameters so that performance information is properly collected for monitoring and tuning your DB2 systems.

What's new in release r14.5 and r15

- **DB2 10 support:** CA Insight DPM runs in DB2 10 NFM (New Function Mode) with a converted catalog (except for the EXPLAIN functionality) and in DB2 10 CM (Conversion Mode).
- **Additional thread history filters**: CA Insight DPM now provides additional thread history filters for I/O time, SP time, lock/latch time, zIIP time, and parallelism usage. These filters can be accessed on the Thread History Selection panels.
- **EDM pool details real-time support improvement:** CA Insight DPM can now display database descriptor (DBD), cursor table (CT), and package table (PT) details in real time. This enhancement helps you determine which objects are consuming the most pages in the EDM pool.
- **Concurrent thread HWM display support:** CA Insight DPM can now display the high water mark (HWM) for concurrent threads during a specified statistics interval as opposed to the HWM since DB2 startup. This feature lets you observe workload fluctuations and helps to diagnose the resulting problems that can occur. It also provides information to measure the DB2 impact of a system-wide issue, such as a spike in concurrent threads caused by an I/O issue.
- **New coupling facility metrics:** CA Insight DPM now provides a set of metrics that display information about a subsystem's data sharing group. These metrics help you monitor use of the DB2 coupling facility SCA (Shared Communications Area) and LOCK1 record list entries to help prevent failures due to insufficient resources.
- **GSSILOG switching support:** CA Insight DPM now lets you define the ILOG files for a DB2 subsystem to GSS ISERVE address spaces on multiple LPARs. If the DB2 subsystem is switched to another LPAR, GSS closes the ILOG files on the previous LPAR and opens the associated ILOG files on the LPAR where the DB2 subsystem is restarted.
- **Current exception definition variable values support:** CA Insight DPM now supports the specification of new variables in exception message text to reflect the current exception definition variable values.
- **Exception field variables panel support:** The Exception Field Variables panel now provides the following information for each exception field variable: DB2 or CA Insight DPM field name, IFCID of DB2 record, if applicable, and field type (cumulative or snapshot).
- **Browse an exception definition:** CA Insight DPM now allows you to browse the exception definition panels. Exception definitions can be viewed, but not updated.
- **Multiple VTAM user interface sessions support:** CA Insight DPM now lets you use the same user ID to log on to multiple VTAM user interface sessions.
- **Enhanced Security for the REPEAT Command:** CA Insight DPM now provides enhanced security for the REPEAT command that specifies whether a connected user can issue the repeat command and the minimum time value for a repeat.

Other key features

CA Insight DPM provides:

- **Real-time monitoring:** CA Insight DPM provides a wealth of information through its real-time monitoring displays, including those that allow you to monitor DB2 subsystems, DB2 applications and resource consumption.
  - System condition monitor: The System Condition Monitor provides a single point for viewing the status of all DB2 subsystems across local and remote z/OS images. This information helps you identify areas for performance improvement and diagnose the causes of DB2 problems.
  - DB2 system information: The product collects system activity based on user-defined time intervals. System information is displayed as an accumulation of all intervals, or the difference between the current and most recent interval. You can view information about buffer pool usage, EDM pool usage, zIIP usage, storage usage, locks, log activity, SQL counts, system parameters and more. Moreover, the data collection task can be customized for each DB2 subsystem, making it easy to vary the set of collected performance information from one subsystem to the next—and get the precise amount of detail desired.
  - DB2 application activity: You can view DB2 application (thread) activity and drill down into a thread for deeper analysis of potential problems, such as determining how long the thread has been active, how much of that time is spent in DB2 and how much time is spent waiting for DB2 resources. Thread information includes SQL text, timing information, SQL counts, buffer pool activity, lock activity, Distributed Data Facility (DDF) data, Resource Limit Facility (RLF) data, Instrumentation Facility Interface (IFI) data, data propagation information and package-specific timing and SQL counts.
- **Exception monitor:** CA Insight DPM includes hundreds of predefined exception conditions, which you can selectively activate as needed. When a DB2 processing limit is reached or exceeded, that value is highlighted, enabling you to instantly identify a performance issue and fix the problem. An exception can also be configured to submit a user-defined Intelligent Module (IMOD) to automatically initiate corrective action.
  - System exceptions: System exceptions are triggered when an item in the DB2 subsystem exceeds the defined threshold. When performance problems are indicated, the product allows you to quickly drill down to get more detailed information, uncover the root cause of the problem and take corrective action.
  - Application exceptions: Applications may also trigger exceptions due to threads requiring attention. CA Insight DPM triggers these exceptions through real-time events or when a specific subsystem, connection and plan combination reaches a threshold based on a historical summarization of averages or totals.

FIGURE A.

System statistics display

CA Insight DPM displays key subsystem statistics in one place.

```
Menu  Print  Tools  Help    CA-Insight
                                                          DF1G CA11
_  1 SnapShot  2 Buffer Pool  3 EDM Pool  4 Logs  5 Threads  6 More...

R/SYSSTATS      System Snapshot - 30 Seconds                  Row 1-14 of 26
                                                               Delta
EXCEPTIONS Crit Warn Info   BUFFERS            EDM POOL
 Subsystem    2    2    0    Warnings       0  Free Pg    476    % Total  19.5
 Database     6    0    0    Act Pools      6  DBD Lds      0    % Rqsts   0.0
 Applicatn    0    0    0    % Act Pgs    0.1  CT  Lds      0    % Rqsts   0.0
                             Getpages       0  PT  Lds      0    % Rqsts   0.0
                             Sync Rds       0  Dyn Ins      0    % Rqsts   0.0
LIMITS    Count  % Max       Read Eff     0.0
 Users        6      3      Buf Updts      0  LOCKING          LOGGING
 TSO          0      0      Pg Writes      0  Suspend      2   Dlyd Wrts    0
 Batch        1      0      Write I/O      0  Escalate     0   Arch Read    0
 DDF Actv     0      0                        Timeout      0   Warnings     0
 DDF Inac     0      0      RID POOL          Deadlock     0
 Datasets   246      2       Failures       0


Command ===> _
  F1=Help       2=Split      3=End        4=Plot                  6=History
  F7=Up         8=Down       9=Swap                              12=Return
MA    b                                                                22/015
```

FIGURE B.

Exception monitor

CA Insight DPM displays subsystem exceptions that indicate performance degradation.

```
Menu  Print  Tools  Help    CA-Insight
                                                          DF1G CA11
_ 1 All   2 Subsystem   3 Application   4 Database   5 IQL    Type . IN-ALERT
                                                              (IN-ALERT, INUSE,
EXCDISP                   All Exceptions In Alert             TRIPPED)
                                                               Row 1-12 of 30
Actions: H=Help, G="Goto" screen, U=Update current and permanent, T=Temp update

 ------------------------- SUBSYSTEM EXCEPTIONS -------------------------
  _ CRIT 13:24:04-CURRENT  DB2 is taking too few checkpoints. The average
         02/02/05          number of minutes between checkpoints is 687
  _ CRIT 13:24:04-CURRENT  High number of times multiple index processing
         02/02/05          was disabled due to not enough storage 83402
  _ WARN 13:24:04-CURRENT  IRLM is running in cross memory mode (PC=YES).
         02/02/05
  _ WARN 13:24:04-CURRENT  The resource limit facility is inactive.
         02/02/05
 ---------------- APPLICATION EXCEPTIONS: ACTIVE THREADS ----------------
                          NO EXCEPTIONS DETECTED
 -------------- APPLICATION EXCEPTIONS: HISTORICAL SUMMARY --------------

Command ===> _
  F1=Help       2=Split      3=End                    5=Rfind
  F7=Up         8=Down       9=Swap                              12=Return
MA    b                                                                22/015
```

- SQL exceptions: Alerts are received when SQL performance exceeds defined bounds.
- Insight Query Language (IQL) exceptions: The power of IQL can be used to detect and trigger exceptions. DB2 trace data can be monitored for exceptional conditions that can be passed to the exception monitor.
- External alerts: The exception processor also handles alerts raised by external sources. External sources include other CA Database Management Solutions for DB2 for z/OS that have been coded to pass exceptional conditions or alerts to CA Insight DPM. These alerts are handled similar to the existing IQL based exceptions.
- **Enhanced explain facility:** CA Insight DPM retrieves explain information from existing plan tables for static SQL, and allows you to perform a dynamic explain on any SQL displayed within the product. It also shows key catalog statistics used by DB2 to determine the access path. This simplifies application performance investigation.
- **Historical performance data:** Along with real-time data, CA Insight DPM can display historical performance data that enables you to review past performance issues to detect trends.
  - System history: The historical system data provides information similar to that provided for the real-time subsystem displays. In addition, summarization reports help you spot trends and take proactive action when trends indicate any future problems.
  - Thread history: You can view near-term history to analyze the performance issues that have just occurred. The historical thread information also closely matches the data displayed for real-time threads that contain summary information.
  - Saving historical data: Services are available to load the historical data collected by CA Insight DPM into external DB2 tables for longer-term retention and future viewing and analysis.
- **Insight query language:** Although CA Insight DPM is delivered with many monitoring screens, it is easily extended by use of IQL, allowing you to customize the product to meet your organization's specific requirements.
  - Enhance built-in requests: The screens supplied with CA Insight DPM are written in IQL, making it easy to change the built-in monitoring screens to reflect installation standards or differing priorities.
  - Write new requests: If additional information is needed, you can write a new IQL request and permanently incorporate it into the product's monitoring routine.
  - Create on-demand requests: The product simplifies the task of writing an on-demand monitoring request to address a new, temporary information requirement.
  - Separation of installed and user requests: User-written IQL requests are held separately from CA Insight DPM supplied requests. Instead, these requests are placed in their own

data set, helping you eliminate the chance that they are overwritten by a new maintenance install. Moving modified CA Insight DPM-supplied requests to the user-written requests library helps ensure that any changes persist across product upgrades.

- **Enhanced focus and trace qualification:** Enhanced focus and trace qualification allows you to trace (start trace qualification) and "focus" by end-user workstation and application fields. In addition to the fields that are already available, you can either focus or start requests using any of the following fields:
  - End-user fields: Indicate the end user's ID, the workstation ID or the transaction name as specified by a workstation application.
  - Application fields: The application collection ID or application program name (package or DBRM name) can also be used to start requests.
- **Integration with other products:** Broad integration enables the information in CA Insight DPM to be displayed alongside performance data from other sources, providing an overall view of performance across the enterprise.
  - CA SYSVIEW® Performance Management (CA SYSVIEW PM): CA SYSVIEW PM can invoke CA Insight DPM to display DB2 performance information. CA Insight DPM can provide the CA SYSVIEW System Condition Monitor with DB2 status information, allowing CA SYSVIEW PM to monitor the status of the DB2 subsystems defined and enabling you to investigate any system performance problems that may be caused by DB2.
  - CA Detector® for DB2 for z/OS (CA Detector): CA Insight DPM integrates with the CA Detector to use the data captured by CA Detector for the SQL statement data.
  - CA Value Pack for DB2 for z/OS: If an idle or runaway thread needs to be cancelled, CA Insight DPM can use the thread termination functionality included in the CA Value Pack. In addition, CA Insight DPM can invoke CA Value Pack functionality to change ZPARM settings based upon current performance data. The CA Value Pack is automatically included with any licensed CA Database Management Solution for DB2 for z/OS.
- **CA Insight DPM for Distributed Databases:** CA Insight DPM for Distributed Databases provides database performance management for Oracle, SQL Server, Sybase and DB2 for Linux, UNIX, Windows databases. The addition of performance information collected by CA Insight DPM into the CA Insight DPM for Distributed Databases displays and reports provides a more complete view of database performance across the databases in your organization.

- DB2 for z/OS Data within CA Introscope®: By using CA Insight DPM for Distributed Databases to provide the data to CA Introscope, the applications team now has visibility into key DB2 for z/OS metrics within CA Introscope dashboards and investigator so database performance issues that could impact application availability can be quickly identified.

- **Reporting capabilities:** CA Insight DPM automatically starts the most commonly used reports, and allows you to control many of the other available reports. In addition, the product includes a mechanism for creating the customized reports that deliver the information you need.
  - Application probes: These reports give you an efficient way to trace DB2 activity for a DB2 user and/or plan, and collect and display significant activities in the life of a thread.
  - Auditor reports: The product provides auditors with a special set of reports that help them examine system and application usage and performance. These include DB2 commands issued, GRANT/REVOKE statements processed, authorization failures and BINDs on dynamic SQL.
  - Thread and system request reports: These reports provide information about routine thread and DB2 system actions, as well as those that are in heavy use or cause high overhead. In addition, SQL summary reports are useful in determining those programs that execute inefficient stage-two predicates.
  - Batch reports: CA Insight DPM provides batch reports that can be used to report subsystem and application activity based upon collected and externalized DB2 trace data. These reports are based on the IQL and can be used as provided, or can be customized as needed. New batch reports can also be written using IQL.

Delivery approach

CA Services provides a portfolio of mainframe services delivered through CA Technologies internal staff and a network of established partners chosen to help you achieve a successful deployment and get the desired business results as quickly as possible. Our standard service offerings are designed to speed deployment and accelerate the learning curve for your staff. CA Technologies field-proven mainframe best practices and training help you lower risk, improve use/adoption and ultimately align the product configuration to your business requirements.

Benefits

CA Insight DPM is a real-time monitor that provides DBAs with the tools needed to maximize DB2 system and application performance. With its extensive IQL, you can tailor and extend CA Insight DPM to perform customized monitoring functions.

In addition, the product's exception processor detects subsystem resource utilization that has exceeded a user-defined limit and notifies DBAs about exceptions as they occur—helping them take immediate corrective action, or examine a log of recent exceptions to detect trends.

CA Insight DPM uses subsystem statistics and thread accounting data to analyze the performance of new or modified applications during stress testing, before they are migrated to a production environment. What's more, the product helps DBAs determine the cause of DB2 application performance problems and provides the information needed to tune an application.

The CA Technologies advantage

CA Technologies has 30 years of recognized expertise in robust, reliable, scalable, and secure enterprise-class IT management software. CA Insight DPM for DB2 for z/OS is a key component of the Mainframe 2.0 initiative from CA Technologies to change the way the mainframe is managed forever by helping you maximize the value of our mainframe products and by providing a simplified experience and innovative solutions that deliver value quickly and flexibly.

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