CA Detector® for DB2 for z/OS

CA Detector® for DB2 for z/OS (CA Detector) provides in-depth analysis capabilities that enable you to identify the programs and SQL statements that most significantly affect your DB2 system performance—regardless of whether these SQL statements originate from CICS, IMS, Batch, TSO, J2EE, ODBC or other connection mechanisms.

Overview

As enterprises rely more on their DB2 database applications, high performance and ongoing reliability become increasingly important. IT organizations must locate, analyze and control resource-hungry or poorly performing DB2 applications and SQL to optimize performance and minimize resource consumption. CA Detector provides in-depth analysis capabilities that help you identify the programs and SQL statements that most significantly affect your DB2 system performance. CA Detector can be implemented alone or to complement such traditional real-time performance monitors as CA Insight™ Database Performance Monitor for DB2 for z/OS (CA Insight).

Business value

CA Detector is a DB2 application performance analysis tool that helps you optimize SQL and conserve resources. Moreover, the product also helps to minimize development costs by identifying poorly performing SQL during the application development cycle, well before it is released into a production environment.
Features

Mainframe 2.0

CA Detector has adopted key Mainframe 2.0 features that are designed to simplify your use of CA Detector 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 Detector 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 Detector installation, which includes a new, streamlined Electronic Software Delivery (ESD) method that allows CA Detector 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 Detector 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 CA Technologies mainframe products released every May, CA Detector 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 Detector installation, initial configuration and deployment to shorten the learning curve for staff who are responsible for the installation and management of this product.
**Release r14.5 and r15**

- **DB2 10 support:** CA Detector runs in DB2 10 NFM (New Function Mode) with a converted catalog and in DB2 10 CM (Conversion Mode).
- **New standard collection statistics:** CA Detector now includes over 35 new fields in standard collection statistics including a number of new zIIP statistics and User Defined Functions (UDF) statistics.
- **Longer SQL statement numbers:** Support is now provided for seven digit SQL statement numbers.

**Release r14**

- **New data types support:** BIGINT, BINARY, DECFLOAT, and VARBINARY data types are supported.
- **Automatic collection start support:** You can now start or restart collection activities automatically from the CA Detector online panels if DB2 terminates and restarts.
- **New keys collection option views:** You can now specify the Keys command for plans, programs, and dynamic SQL to view keys related standard activity collection data organized by additional keys groupings—user ID, correlation ID, connection type, connection name, originating location, end user ID, end user application and end user workstation.

**Other key features**

- **Collection activities:** Using low overhead technology, CA Detector helps enable you to monitor the SQL statements that are processed by the DB2 system, 24 hours a day. This helps you gain a complete view of DB2 activities, understand application workload characteristics and easily identify resource-intensive application components.
  - **SQL sources:** CA Detector collects SQL activity from a wide variety of sources—including online and batch mainframe applications using static SQL, client/server applications, reporting applications and such ERP systems that access DB2 via dynamic SQL as PeopleSoft and SAP. In addition, data warehousing applications using dynamic or static SQL, and host variable values can also be collected.
  - **Collection intervals:** CA Detector collects performance data at intervals by specifying the DB2 subsystem name and the collection time in hours and minutes.
  - **Collection profiles:** Collection profiles define when statistics are collected for particular SQL statements and enable the creation of limits that cause a SQL statement to be terminated if it exceeds these thresholds. For example, if the PREPARE cost of a dynamic SQL statement exceeds user-defined thresholds, the SQL can be prevented from executing.
— **Information retention**: CA Detector saves collected performance information in internal files for near-term analysis and display. You can keep this performance information for long-term historical analysis by externalizing the data collected to your own files and loading it into DB2 tables for additional analysis.

— **SQL ERROR ONLY collection**: CA Detector collection includes the option to watch for SQL errors without collecting SQL statistics or exceptions. This feature provides you with the flexibility to choose the type of collection monitoring that best serves your specific needs.

- **Identification of resource consumers**: To assist in tuning efforts, CA Detector displays the highest resource consumers in a given DB2 subsystem. The online displays allow you to view real-time or historical DB2 performance information at a number of different levels, helping you better understand resource consumption. In addition, you can go directly to the SQL level or start higher and drill down to any level of granularity.

— **Application level**: By defining which plans belong to which applications, the product allows you to view a high-level overview of the performance of each application that can indicate if an application is monopolizing resources.

— **Plan level**: The next level of detail, plan level, shows how each plan is performing relative to the other plans in the system. This is an ideal view for targeting tuning efforts.

— **Program level**: Within program level views you see all of the subprograms within a plan, and how each contributes to the plan’s overall resource consumption.

— **Statement level**: The ultimate level of granularity, statement-level views help you determine which SQL statements in a given DB2 system are the most resource intensive.

— **Finding resource-intensive SQL**: CA Detector makes it easy to compare costs by summarizing performance data over a specified interval, sorting the data and displaying the highest resource consumers at the top of the list. Starting at either the plan or detailed SQL level, you can easily see the components that are contributing to excessive resource consumption.

— **Summary dynamic SQL statistics**: CA Detector includes a View By option that allows you to select a dynamic SQL text view. The summary statistics collected on dynamic SQL statements let you view the DB2 resource use associated with each executed dynamic SQL statement and identify the plans and programs that executed a dynamic SQL statement.
Exceptions: Along with monitoring actual SQL activity, CA Detector can also be configured to watch for errors and exceptions.

- Errors: CA Detector automatically traps SQL error codes, and displays them, along with the associated SQLCA error diagnostics, SQL statement text and host variables, after the event. In addition, the plan and authorization ID causing the error are captured, greatly simplifying the process of debugging application failures.

- Exceptions: Any SQL statements exceeding user-defined thresholds are captured and stored in the CA Detector data store and flagged for further performance investigation.

Integration with other products from CA Technologies: CA Detector is designed to work in concert with other CA Database Management Solutions for DB2 for z/OS. When using CA Detector, you move in context directly into other products, providing you with additional information that helps to determine the root cause of a performance issue.
FIGURE B.

SQL error display

This image displays the error text and SQLCA diagnostic information for an SQLCODE-803.

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CA Plan Analyzer® for DB2 for z/OS: If CA Detector identifies a query that is causing performance problems, you can request an enhanced explanation and immediately be placed into the CA Plan Analyzer Enhanced Explain Facility to obtain detailed SQL performance information and recommendations for improving the SQL.

CA Subsystem Analyzer for DB2 for z/OS: CA Subsystem Analyzer and CA Detector share information about data collection intervals, enabling you to move directly into CA Subsystem Analyzer for DB2 for z/OS to analyze buffer pool hit ratios, get page requests and physical object I/O. This integration allows problem tracking to be extended to database objects, programs and SQL statements.

CA Index Expert™ for DB2 for z/OS: When using CA Index Expert to recommend indexes, the execution frequency information on SQL activity collected by CA Detector can be fed into CA Index Expert for DB2 for z/OS to prioritize SQL importance. In addition, CA Detector collects dynamic SQL for use by CA Index Expert.

CA Insight: CA Insight: can use the SQL statement statistics captured by CA Detector for viewing in the active thread displays, and for storing and viewing with thread history data. CA Insight summarizes the data collected from CA Detector and stores it in its own thread accounting record which is written to the online history file along with the DB2 accounting record.
CA Detector for DB2 for z/OS

— **CA Value Pack for DB2 for z/OS:** If an idle or runaway thread needs to be cancelled, CA Detector uses the thread termination functionality included in the CA Value Pack. The Detector SQL Call Text Display allows you to invoke the SQL editor included in the CA Value Pack for DB2, giving you the ability to directly modify, execute and save the SQL text captured by CA Detector. The CA Value Pack is automatically included with any licensed CA Database Management Solution for DB2 for z/OS.

- **Batch reporting:** The batch report facility program provides full support for reporting and unloading CA Detector historical data, and includes full functional and control card compatibility with the unload utility program.
  - Aggregation: The AGGREGATE parameter is supported by the batch reporting program, which allows you to produce summary reports and unload data for the selected intervals. The unload data can then be loaded into the optional CA Detector DB2 tables, helping you produce CA Detector SQL statistics as needed.
  - Batch option for Integrated data sharing statistics: A batch option for viewing and reporting collection activity across the members of a data sharing group allows you to report and unload historical data aggregated across the member subsystems of the data sharing group. Statistics for all members active during reporting intervals are aggregated for selected reports.
  - Interval selection filter: The INTERVALS parameter is supported by batch reporting functionality that allows you to limit the number of data store intervals in the batch report or unload records. This facilitates the automated unloading of the CA Detector data store data at the end of each collection interval.

- **Data unload capabilities:** The product’s data unloading options provide additional information for later analysis.
  - **Unload end user data:** End user data supplied by such applications as PeopleSoft is included in the SQL exception unload records produced by the CA Detector batch utility. The product also loads end user data into any new columns that have been added to the optional CA Detector DYNAMREQ DB2 table.
  - **Unload host variable data:** The HOSTVARS parameter that is supported by the batch reporting and unload utilities allows you to unload the host variables associated with SQL exceptions. What’s more, the host variables can be loaded into an optional CA Detector HOSTVARS DB2 table.

- **Real-time or historical views:** CA Detector displays any information for currently active threads or historical collected data.
— **Active threads**: Performance statistics that are usually collected as part of thread termination—the DB2 Accounting record statistics—are available, even for currently executing threads. These statistics are collected at the statement level.

— **Historical information**: All captured information is saved in a data store for later review. Again, information is collected at the statement level and aggregated upwards at the different levels of granularity.

— **Application-based views**: CA Detector includes a Keys collection and View By option that organizes SQL statistics by a range of application-based views, including job name, CICS transaction, user ID, correlation ID, connection type, connection name, originating location, end user ID, end user application and end user workstation.

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**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/adoptions and ultimately align the product configuration to your business requirements.

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**Benefits**

CA Detector is a DB2 application performance analysis tool that helps you optimize SQL and conserve resources. The product can be implemented alone or as a complementary installation to a traditional, real-time performance monitor, such as CA Insight for DB2 for z/OS.

The information collected with CA Detector enables you to identify and analyze the most resource-intensive application programs and SQL statements. It also helps to minimize development costs by identifying poorly performing SQL during the application development cycle, well before it is released into a production environment.
The CA Technologies advantage

CA Technologies has 30 years of recognized expertise in robust, reliable, scalable, and secure enterprise-class IT management software. CA Detector 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.