CA Datacom®

Release Notes

Version 14.02

CA Technologies Product References

This document references the following CA products:

- CA Datacom®/DB
- CA Datacom® CICS Services
- CA Datacom® Datadictionary™
- CA Datacom® DB2 Transparency
- CA Datacom® DL1 Transparency
- CA Datacom® Fast Restore
- CA Datacom® Presspack
- CA Datacom® Server
- CA Datacom® SQL (SQL)
- CA Datacom® STAR
- CA Datacom® VSAM Transparency
- CA Dataquery™ for CA Datacom® (CA Dataquery)
- CA Ideal™ for CA Datacom® (CA Ideal)
- CA IPC
- CA Common Services for z/OS
- CA Mainframe Software Manager™ (CA CSM)
- CA OPS/MVS® Event Management and Automation (CA OPS/MVS)
- CA SYSVIEW® Performance Management (CA SYSVIEW)

Contact CA Technologies

Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information that you need for your Home Office, Small Business, and Enterprise CA Technologies products. At http://ca.com/support, you can access the following resources:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

Providing Feedback About Product Documentation

If you have comments or questions about CA Technologies product documentation, you can send a message to techpubs@ca.com.

To provide feedback about CA Technologies product documentation, complete our short customer survey which is available on the CA Support website at http://ca.com/docs.

Reservation of Rights

CA Technologies reserves the right to change the layout of our reports, message text, internal records, screen maps, and other such aspects at any time to support ongoing enhancement or modification of any CA Datacom product.

Customers who write their own code to parse the output of CA Datacom reports or messages for their own site's purposes assume some level of risk that a change CA Technologies makes could impact their process.

CA Datacom development tries to minimize such changes, especially within the life of a release, but we cannot guarantee these items will not change from time to time. Should it become necessary for us to make changes to a report, message, internal record, or screen, we will attempt to note those changes in the affected Release Notes or README documentation.

The use of the Dynamic System Tables is the recommended way to obtain CXX, MUF, SQL, and other information under program control while controlling your own report formats and minimizing the impact that our changes can have on you. Similarly, the READRXX routine should be used for referencing log data and the Datadictionary Service Facility for obtaining dictionary information.

If you have any questions regarding this position, please contact CA Support for CA Datacom.

Contents

Chapter 7: Version 14.0 49

Chapter 1: Introduction to Version 14.0

This document provides an ongoing overview of the changes in Version 14.0 products that are delivered as part of the Version 14.02 Active Delivery project. The Version 14.02 project delivered a set of requested customer enhancements that improved the productivity and functionality of the base Version 14.0 environment. Each of the Version 14.02 enhancements was developed with one or more customer sites participating in the agile team.

Because this document contains history from Version 12.0, information is also provided about upgrading to Version 14.0.

Intended Audience: Sites that currently have Version 14.0 that is installed or plan to upgrade from Version 12.0 to Version 14.0.

Chapter 2: Summary of Version 14.02

These enhancements were made in response to customer requests through the agile development process. In most cases, the customers requesting the enhancement were active participants in the agile team and provided functional input, BETA testing, and certification. Once testing was complete, each enhancement was packaged and delivered as part of the normal CA Datacom service stream as a published PTF.

The Version 14.02 project delivered significant functionality as individual “drops” of GA code in the form of standard PTFs. These enhancements are automatically available to customers maintaining a current maintenance level of their Version 14.0 products.

Chapter 3: New Features and Enhancements for Version 14.02

CA Datacom Active Delivery for Version 14.02 delivers enhancements that provide you with improved usability, reduced costs, and more high-availability functionality.

Enhancements and Benefits

The following information provides an overview of the enhancements for the core set of CA Datacom products. For more information, see the PDCs, PTFs, and scenarios available through CA Support online and also on the CA Datacom Version 14.02 bookshelf.

CA Datacom Core Products

The following information provides an overview of the enhancements for the core set of products. For more information, see the PDCs, PTFs, and scenarios available through CA Support online and also on the Version 14.02 bookshelf.

SQL Plan Versioning

SQL plan versioning provides a simple way to have multiple versions of a plan in a single environment by using the @TIMESTAMP value. For example, you can generate plans that include a date/timestamp YYMMDDHHMM:

COBOL only

- PLANAME=@TIMESTAMP

  Plan name = *program idYYMMDDHHMM*

- PLANAME=*value*@TIMESTAMP

  Plan name = *valueYYMMDDHHMM*

PL/I and Assembler only

- PLANNAME=

  The same as PLANAME=

Benefits

Alleviates the requirement that the plan and load module must be loaded into an environment at the same time. With versioning the plan can be preloaded and is available when the load module is activated.

For more information and examples, see the *SQL User Guide*.

24x7 Utilities

Online Fast Compress supports requirements of continuous 24x7 operations. Table Alter 24 (TA24) provides the ability to dynamically implement data compression without interrupting user access. TA24 uses some existing processed that are available to Datadictionary. The following attributes can be modified:

- Compression
- Compress-exit
- Encryption key

For more information about this enhancement, see the article about Using Table Alter 24 located on the 14.02 bookshelf,

Benefit

Provides the ability to implement high-speed (zIIP enabled) compression without interrupting user access. Functionality can seamlessly convert non-CA compressed tables to CA compressed tables as necessary.

Change Data Capture Support for Maintaining an Active-Query Environment

The EXCEPTION_FOR_JOBNAME command supports sites utilizing the Change Data Capture (CDC) facility to move changes from one Datacom MUF to another. This enhancement is targeted for CDC Active-Standby or Active-Query environments. However, it can be used for other situations where the actions provided are needed.

This command replaces the existing CDC processing option "CDC_EXCLUDE_JOBNAME" which permitted CDC users to exclude one job name from change capture by CDC.

Fast ADDIT and High Used Mark

The Fast ADDIT and High Used Mark enhancements provide built-in process intelligence that improves performance for physical processing.

- Fast ADDIT with DSOP
- High Used Mark (see page 15)

Benefits

Provides significant data variations and a performance boost by automatically detecting key physical attributes and applying them to your requested process.

Fast ADDIT with DSOP

The Data Area Space Optimization (DSOP) strategy governs the overall placement of the data rows. CA Datacom uses this uniquely designed space optimization process to find unused space in existing data area blocks to store new data rows. This space optimization is designed to maintain the density of rows that are stored in data area blocks. Processing performance is improved while maintaining the minimal number of in-use data blocks.

This enhancement was created to avoid certain long running row adds. These long running row adds can occur when a larger than normal data row is added to a data area. This happens when the area has a significant number of available partially used data blocks with a smaller amount of free space.

For more information:

- About the DSOP strategies, see the *CA Datacom/DB Database and System Administration Guide*
- About the space optimization for adding rows, see the Enhanced Space Optimization for Adding Rows in Data Areas with Mixed Physical Row Lengths article on the bookshelf

High Used Mark

The RETIX KEYNAME=*DTHU enhancement allows you to enable the High Used Mark in the CXX. You can set the value for a selected data area without requiring the data access interruption.

For more information about how to enable the High Used Mark in the CXX, see:

- CXXMAINT ALTER OPTION2-datahu in the *DBUTLTY Reference Guide*
- Activating the Data High Used Mark in Data Areas that are not Already Set article on the 14.02 bookshelf

Benefits

Provides significant data variations including:

- Physical processing performance
- Sizing of data areas for ONLINE AREA MOVE
- Visibility of the High Used Mark through the DBUTLTY REPORT AREA=CXX function

Online Area Move for CXX and FXX Scenarios

The Online Area Move (OAM) functionality allows you to move datasets to support your business needs without causing outages to your users. Two new scenarios are available with this release:

- How to Perform an Online Area Move for the Directory CXX

  Provides information and steps on how to move System Area CXX datasets from one physical 3390 dataset to another 3390 dataset while the areas are open by MUF.

- How to Perform an Online Area Move for the Log Area FXX

  Provides the rules, characteristics, and steps for performing n Online Area Move for the Log Area FXX.

Note: Before performing an OAM for a CXX or FXX, read the following scenarios located on the bookshelf:

- How to Prepare for an Online Area Move for Index and Data Areas
- How to Perform an Online Area Move for Index and Data Areas

Performance Improvements

The Index Queue is used to make changes to the IXX which balances the index for optimal performance. Most Index Queue requests are short in duration but there are times when the balancing is complex and must take both more time and IOs. Prior to this enhancement, a QUIESCE request had to wait for an active Index Queue request to complete before the QUIESCE took effect. With this enhancement the QUIESCE interrupts an active Index Queue request. The Index Queue request resumes once a QUIESCE OFF is issued

Benefit

This enhancement allows a QUIESCE to take effect even if there is a long running Index Queue request.

Messages

The following messages and codes are new for this release:

Datacom

- DB13155W - INVALID BLOCK FORMAT, DBID-*nnnn area-aaa* BLOCK/TTTR-*nnnnnnnn* CASE-*n* COUNT-*n*

Active-Query

- DBCDRPR Replication Receiver Program - DB03400I - DB03486E
- DBCDSPR Replication Sending Program - DB03300I - DB03380W

Online Area Move (OAM)

- DB02818I - ONLINE_AREA_MOVE *dbid area* STATUS - *variable-info*
- DB02819I - ONLINE_AREA_MOVE 897 C01 MOVED BLOCK 1 OF 60
- DB02820I - ONLINE_AREA_MOVE STATUS_OAM *dbid area variable-info*
- DB02821I -OLDEP (CBLDBMS/DATACOM? PROGRAM ACCESSED *dbid table, job, tranid*

Table Alter 24 (TA24)

- DB02822E - TABLE_ALTER_24X7 797 C01 ERROR xxx
- DB02823I - TABLE_ALTER_24X7 1397 C01 STATUS xxx
- DB02824I - TABLE_ALTER_24X7 *dbid table-name* ALTERED ROW *1* of ABOUT *10*
- DB02825I - TABLE_ALTER_24X7 STATUS_TA24 1397 F02 TRANSITION xxx
- DB Return Code 94 (046) - ALTER TABLE 24X7 NOT OTHER RC

Datadictionary

- DDPIFP001 - INVALID FOR TABLE PARTITION

DSF Return Codes

- IFP - INVALID FOR TABLE PARTITION

Updated Messages and Codes

The following DSF Internal Reference Codes were generated due to no available space.

- BDM229
- BFM229
- CAM229
- CFP229

- DDD229
- DGB220
- IUS220
- MNK229
- MNR229
- PRF229
- SRS229
- SMG229
- SRD229
- VER229

The following messages were updated:

- DB10059E
- DB90155E

Chapter 4: CA Datacom Tools Products

The following information provides an overview of the enhancements for the tools set products. For more information, see the PDCs, PTFs, and scenarios available through CA Support online and also on the CA Datacom CICS Services, CA Datacom Server, CA Ideal, and CA IPC Version 14.02 bookshelves.

The tools include:

- CA Datacom CICS Services (see page 39)
- CA Datacom Server (see page 41)

CA Datacom CICS Services

Version 14.02 delivered the following new features and capabilities.

- Enhancements to provide an additional optimization by rearranging some request processing logic.
- The default for the CICS user tracing in the DBCVTPR macro is now set to NO (CICSTRA=NO) and the SKPSYNC default is set to YES (SKPSYNC=YES).
- The keyword PGMNAME= can now be coded in the DBCVTPR macro as PGMNAME=TASK or RQST. This provides an option for capturing the program name per task instead of per request.
- The DBCVTPR performance option keyword FLOWTRA= collects diagnostic data in a wrap around in-core table.

CA Datacom Server

The following information provides an overview of the Version 14.02 enhancements. For more information, see the Product Documentation Changes (PDCs), PTFs, and scenarios available through CA Support online. In-depth information is also provided on the CA Datacom and CA Datacom Server Version 14.02 bookshelves.

For Version 14.02, we delivered the following enhancements to the Server Version 14.0 code line to help streamline processing, improve performance, and allow customer flexibility.

Enhancements

- Customizing Code Pages for Server JDBC Type 4 Connections
- Setting the local time zone for a Server Trace

For more information about these enhancements, see the By Scenario or Feature section on the 14.02 bookshelf.

Chapter 5: New Features and Enhancements for Version 14.01

CA Datacom Active Delivery for Version 14.01 delivers enhancements that provide you with improved usability, reduced costs, and more high-availability functionality.

Enhancements and Benefits

The following information provides an overview of the enhancements for the core set of CA Datacom products. For more information, see the PDCs, PTFs, and scenarios available through CA Support online and also on the CA Datacom Version 14.01 bookshelf.

- Enhanced zIIP exploitation increasing the offload from 50 percent to above 90 percent of MUF CPU.
- Expanded Change Data Capture abilities that allow you to separate captured data by security group, functional process, and so on.
- Online Area Move utility that allows you to move the datasets underlying your active database environments while they are in use (patent pending). This utility allows you to address critical DR and other DASD architecture changes without causing a data access outage.
- Automatic CXX (directory) information updates to improve user visibility into the fullness of tables and areas (datasets).
- Additional functionality for the CA Datacom SQL and CA Datacom Server users.
- New "how to" scenario documents that provide detailed implementation and how to use information on the new enhancements.

This section contains new or enhanced information for the following topics:

CA Datacom Core Products

CA Datacom Tools Products

- CA Datacom CICS Services
  - CICS Services Support of the SKPSYNC=YES parameter (see page 39)
- CA Datacom Server
  - Remove CA CCI Dependency from Server (see page 41)
  - PROTOCOL=TCP in Server Startup Options (see page 41)
  - Add TCP/IP Communication to SVCOMPR (see page 42)
  - DB THREADS Command for SVCOMPR and Console (see page 43)
  - SQL Syntax Trace per User ID (see page 44)
- CA Ideal
  - Add new messages around enqueued resources (see page 46)
- CA IPC
  - Add new messages around enqueued resources (see page 47)

CA Datacom Core Products

The following information provides an overview of the enhancements for the core set of products. For more information, see the PDCs, PTFs, and scenarios available through CA Support online and also on the Version 14.01 bookshelf.

zIIP Exploitation

The Version 14.01 zIIP enhancement delivers an improved internal architecture that increases the amount of CA Datacom Multi-User Facility (MUF) processing that is processed on a WLM enabled SRB. Therefore, it is available for execution on an IBM zIIP processor.

The end result is that early customer adopters have seen their CA Datacom MUF regions offloading over 90 percent of the total CPU to an IBM zIIP processor.

Benefits

- Significant improvement in zIIP offload capability which can significantly reduce the general processor CPU consumption and significantly reduce the overall cost of operations
- Easy to install
- Easy to use
- MUF start-up option ZIIP_USER_LIMIT can be used to reduce zIIP offload percentages for sites that want to limit MUF use of the zIIP processors

Available documentation

The Version 14.01 bookshelf provides a link under By Scenario or Feature for “Enhanced zIIP Exploitation.” This link contains a FAQ document and a pre-recorded presentation that explains the enhanced zIIP exploitation feature.

For more information, see the *Database and Systems Administration Guide.* This guide provides information about how to set up the MUF to start the MUF region with the zIIP feature enabled.

How to Implement

The additional zIIP offload capabilities are immediately available to user sites that are running with the current maintenance (PTFs) applied for Version 14.0.

Additional Information

The two Dynamic System Tables that provide information on the zIIP eligibility and zIIP actual CPU usage are:

MUF_SRB_ZIIP (MZI)

This table provides information about the WLM-enabled SRB tasks and their zIIP eligibility CPU, actual CPU, and other related information.

MUF_TCB_OR_SRB (MTC)

This table provides information about the CPU seconds consumed by each of the TCB and WLM-enabled SRB tasks (and their zIIP eligibility).

CDC PLUS

The Change Data Capture (CDC) PLUS option allows the CDC environment to add up to eight additional CDC PLUS databases for the CDC captured data row storage. These additional PLUS databases allow you to separate the CDC captured data rows by application function, security access, or other business need that requires the captured data rows to be logically separated.

You can send captured data row changes to one or more of the CDC PLUS databases. This allows you to select the change capture information that is needed for each business case. Each of the CDC PLUS databases can be secured using different external security rules providing access protection to the data in the captured rows.

Benefits

- Users with existing CDC implementations can continue to run unchanged if the CDC PLUS functionality is not required
- Ability to separate captured data row information according to security requirements allowing user sites to limit access to only those that are permitted to see the data
- Ability to separate captured data row information according to business requirements such as processing cycles and information analysis requests
- Ability to replicate a single data row change to multiple change repositories when the information needs to be processed by more than one downstream process, allowing significant flexibility around when change data rows can be deleted
- Ability to add and remove a change data row repository while the MUF is active to allow quick response to downstream application requirements
- Easy to install
- Easy to use

Available documentation

The "How to Build CDC PLUS Databases" scenario provides information that guides you through the necessary steps to establish the CDC PLUS environment.

Supplemental reference information is also provided for:

- CDC MUF startup options that include the CDC PLUS parameters
- Support from the DBUTLTY GAPFIX function
- CDC PLUS messages
- Adding or removing the CDC data row change collection

For more information, see "How to Build CDC PLUS Databases" on the 14.01 bookshelf under the Scenario section.

How to Implement

Implementing the Version 14.01 CDC PLUS databases requires the definition of the additional CDC PLUS repositories (databases). These databases are defined similarly to the existing BASE database definition (DBID 2009). The database definitions (BTG decks) are available through CA Support online PTFs and their installation is covered in the CDC PLUS Scenario.

Once the additional change capture (PLUS) databases are defined, update your CDC parameters in the MUF region. As with the database definitions, these parameter definitions and implementation instructions can be found in the CDC PLUS scenario.

Additional Information

On request, CA Support can provide a recorded webcast presentation that can guide you through the process of implementing a CDC PLUS environment.

Messages

As part of the implementation of CDC PLUS, many existing CDC messages were updated to include information on the CDC change capture database that is being targeted. These necessary changes in the messages are to help you understand which of the CDC repositories is affected. For the sites using the basic setup, the CDC change repository is considered the "base." Sites implementing the additional CDC repositories see those as PLUS 2, PLUS 3, and so on.

The CDC PLUS option could generate messages for:

- CDC base
- CDC Monitor (CDCM) that watches the CA Datacom Listener and the User Listener
- CDC Listener (CDCL) that pushes output data, acquired from watching the log area, to the CDC

The following messages are new for the CDC PLUS option.

DB03102I - CDC PLUS-n MNT-*n* LAST CDC-*ccccmmddhhmmss*

This message was generated because a STATUS_CDC console command was issued to monitor the status of Change Data Capture (CDC).

DB03131I - CDCM *status progstat* CDCL--*mm:ss* CDCU--*mm:ss* TSN-*n* MNT-*n*--DBID-*n*

This message is generated in response to a STATUS_CDC command as the second line in that response.

DB03132I - CDCM PLUS-*n* CDCU--*mm:ss* TSN-*n* MNT-*n*--DBID-*n*

This message is generated in response to a STATUS_CDC command as the second line in that response.

DB03164I - CDCL *mufname* PLUS-*n* MNT-*n* DBID-*n*

This message was generated because a STATUS_CDC console command was issued to monitor the status of Change Data Capture (CDC). Information is provided relating to the output slots with the number of AUD log records to process and the DBID where the slot output is directed.

For more information about these messages, see the *Message Reference Guide* on the Version 14.01 bookshelf.

Online Area Move for Index and Data Areas

The Online Area Move (OAM) functionality provides a unique capability for CA Datacom users. The OAM is a patent-pending technology. This new technology allows you to move the underlying data blocks for a data or index area from one physical DASD dataset to another without interrupting your access to the data stored in the index and data area.

The only requirement is that the dataset architecture for the source and target datasets must be a 3390 device with both datasets having the same block size.

With OAM, the database administrator or system programmer can move index and data areas from one physical dataset to another to fulfill a significant business need without interrupting user access. OAM is another tool in the arsenal of CA Datacom that allows businesses to keep their data up and accessible 24x7.

The OAM functionality is performed within the MUF address space which allows the coordination necessary to permit user access. Since it is a MUF resident task, it is controlled and monitored using all of the standard MUF monitoring tools such as, SYSVIEW and Dynamic System tables. A new OAM status command is provided to assist you in monitoring the online move process.

Benefits

- Allows you to move underlying datasets without interrupting your access to support:
  - Moving datasets as part of implementing new DASD hardware devices
  - Changing DASD architecture such as moving from a 3390 MOD 3 to a 3390 MOD 27 to allow larger dataset allocations
  - Ability to resize a dataset that is nearing or has reached its volume/extent limits to prevent an outage to physically re-size the dataset
  - Ability in certain cases to reduce dataset size
    - Requires HIGH-USE watermark implementation (See the *Database and Systems Administration Guide*)
- Since OAM runs as a MUF task, its CPU processing is done on a WLM SRB and is zIIP eligible
- Easy to install
- Easy to use

Available documentation

Two scenarios are provided to help you prepare for and perform an OAM.

- **How to Prepare for an Online Area Move for Index and Data**

  Provides information to guide you through the necessary steps to create (PREINIT) the dataset that is used as the target for an OAM process.

  Additional information is also provided on the DBUTLTY functions that are used to:

  - Create (PREINIT) the target dataset and store its definition in the CXX
  - Produce a list of available PREINIT definitions that are stored in the CXX
  - Delete PREINIT dataset definitions that were created in error or are no longer needed

- **How to Perform an Online Area Move for Index and Data Areas**

  Provides information to guide you through the process to move the contents of the underlying dataset of an index or data area to a new dataset. This action is done without interrupting your access to the data stored in those areas.

  Step by step instructions are provided to assist you in successfully moving the underlying datasets for your index or data areas. The new DBUTLTY commands are included that are used to trigger (ONLINE_AREA_MOVE) and monitor (STATUS_OAM) the OAM process. The scenario includes information on the following topics:

  - Move process
  - Best practices
  - Execution criteria
  - Execution examples
  - Limitations/restrictions
  - New messages

For more information about these scenarios, see the Version 14.01 bookshelf under the Scenario section.

How to Implement

Implementing the Version 14.01 OAM utilizes a new set of DBUTLTY functions to set up the target dataset and a simple console command to MUF to activate the OAM process.

Since you are actively moving database data while other users may be accessing the data, we recommend that you become familiar with the process and do various test executions using a test or sandbox environment.

The OAM process is straight forward. However, it is something that you want to test and become familiar with before attempting to use it in a production environment.

Additional Information

On request, CA Datacom support can provide a recorded webcast presentation to guide you through the process of using OAM to move an active index or data area.

Messages

There are three types of messages that you might receive during your Online Area Move:

Progress Message

DB02819I **- ONLINE_AREA_MOVE *dbid area* MOVED *variable-info* OF *variable-info***

This informational message can occur for the following reasons and requires no action:

- When the move starts to show the start and the number of blocks that are subject to the move.
- If the move is restarted to show blocks remaining to be done.
- To show progress about once every 2 minutes

Status Message

DB02818I - ONLINE_AREA_MOVE *dbid area* STATUS - *variable-info*

This informational message provides information about the status of the online move and requires no action.

Error Message

DB02817E - ONLINE_AREA_MOVE ***dbid area*** ERROR - ***variable-info***

This message provides information about the failure of an online move request. Each message should be analyzed to determine the appropriate course of action.

Automatic CXX (directory) Information Updates

The CXX (directory) dataset maintains various sets of information on the database, areas, and tables in the Datacom environment. For many years, the DBUTLTY REPORT AREA=CXX function has been used to list information in the CXX dataset.

Most of the CXX information is relatively stable and only changes when a database change is catalogued from the Datadictionary. However, there is certain statistical information that changes continuously for databases that tasks running in the MUF process.

For the last several releases, there has been a continuous effort to keep as much of the MUF processing done in memory to:

- Improve MUF performance
- Reduce I/O
- Utilize low-cost zIIP processors

One of these efforts included keeping CXX statistical information for active databases in the MUF memory. Typically, a database is opened shortly after the MUF is enabled. Its CXX information is copied into the MUF memory. That information remains in the MUF memory until the database is closed to MUF. While the database is open to MUF, all of the changes to the statistical information, such as row counts and blocks in use, are updated in CXX definition in MUF memory. This information is only copied back to the CXX dataset when the database is closed to MUF.

Since Release 11.0, when you issued the DBUTLTY COMM OPTION=STATS command you could force the CXX information for a given database in MUF memory to be updated back to the CXX dataset. If you were running a CXX report (which prints its information directly from the CXX dataset), you were instructed to execute the COMM OPTION=STATS function before running any CXX report to ensure that the report would have the latest CXX statistical information.

However, many sites have implemented automated processes to print and analyze CXX reports. In other cases, the COMM OPTION=STATS command was forgotten. The end result is that the information retrieved from the CXX report would have inaccurate statics. These inaccurate statistics might lead to an incorrect decision such as whether a data area needs to be extended or not.

In a different case, the MUF could ABEND due to an unplanned event. When this happens, the normal processing to copy the in-memory CXX statistical information back to the CXX dataset may not get a chance to complete. When this occurs, the next iteration of the MUF starts with CXX statistical information from the CXX dataset which may no longer represent the correct values. The current MUF iteration would appropriately update the statistical information as it changes. However, since the values started out incorrect, they will most likely remain incorrect. In some cases, these incorrect values may not be noticed for long periods of time.

Once the incorrect value is uncovered, DBUTLTY functions can be executed to correct key statistics such as row counts and blocks in use.

To improve the reliability of the statistical information in the CXX, Version 14.01 has delivered four separate enhancements to provide Automatic CXX (Directory) Information Updates.

Enhancements

Automatic COMM OPTION=STATS when running DBUTLTY REPORT AREA=CXX

If a database is open in MUF at the time a CXX report is requested for that database, the DBUTLTY process automatically issues the COMM OPTION=STATS command. This command ensures that the CXX dataset information is updated with the current information in MUF memory before the CXX report is created.

Benefits

- No need for you to remember to include the COMM OPTION=STATS function before each CXX report
- Easy to use
- No consequences if the DBUTLTY job is executed with a COMM OPTION=STATS card that is coded in the SYSIN

Automatic COMM OPTION=STATS when the History database is updated

Most sites have the History database (DBID 1007) enabled. This functionality triggers MUF to record information on a daily basis regarding data area usage and record when LXX spill processes are used to create RXX datasets.

If a database is open in MUF when the History database daily collection of area usage is written, a COMM OPTION=STATS command is issued. This action ensures that the CXX dataset information is updated from MUF memory at least once every 24 hours.

Benefits

- Removes the need for you to schedule a periodic COMM OPTION=STATS function to update the CXX information from MUF memory
- Easy to use
- No consequences if the scheduled DBUTLTY job is still periodically executed with a COMM OPTION=STATS card that is coded in the SYSIN

Automatic COMM OPTION=STATS when the RETIX KEYNAME=*DATA or KEYNAME=*SETR

In previous releases, a sub-function of the DBUTLTY RETIX function was provided to update specific information regarding data area block usage (KEYNAME=*DATA) and table row counts (KEYNAME=*SETR). These functions run while the database is open in MUF and update the statistical information stored in the MUF memory (CXX definition) for that database.

If either of these functions are executed with a database open in the MUF, the COMM OPTION=STATS process is executed at the end of the KEYNAME=*DATA or KEYNAME=*SETR function. This action ensures that the statistical information from the MUF memory is also updated into the CXX dataset.

Benefits

- Ensures that the updated statistical information is copied to the CXX dataset anytime a KEYNAME=*DATA or KEYNAME=*SETR function is executed
- Easy to use
- No consequences if the scheduled DBUTLTY job that does the *DATA or *SETR is executed with a COMM OPTION=STATS card also coded

Automatic COMM OPTION=STATS when the MUF ABENDs or is cancelled

During an abnormal termination of the MUF address space, the CA Datacom code attempts to gain control of the address space and perform certain abnormal termination processes.

If the ABEND processing does get control and the CXX statistical information in the MUF is still intact in the MUF memory, a process (similar to the COMM OPTION=STATS command) is executed to update the statistical information from the MUF memory to the CXX dataset.

Benefits

- Attempts to update statistical information in CXX dataset during MUF abnormal termination processing
- Easy to use

Note: If the MUF region is flushed or the LPAR crashes without the MUF ABEND routines being executed, the CXX statistical information is not updated. In these cases, you can choose to execute the *DATA and *SETR functions to reset the area block usage information and table row count statistics.

Available documentation

There are no scenarios or other articles around these four enhancements since most of the automated CXX updates occur without requiring you to be involved. We have added brief updates to the various CA Datacom manuals to explain when the automated CXX statistical updates are triggered.

Index Queue Processing Updates

The IXX (index) dataset maintains various indexes (or keys) for the tables that are associated with the IXX dataset. The IXX design uses a “balanced binary tree” process to store index values and quickly provide the information that is required to find a specific data row.

To maintain the balance and performance of the index, CA Datacom includes an Index Queue process. The Index Queue process can run anytime that a database is open to MUF and it is detected that rebalancing of the index tree is needed. Typically this occurs when there are many additions and or deletions of data rows which cause a significant shift in the index values stored in the index.

This enhancement includes three separate improvements to the Index Queue process to improve its performance and abilities.

Since most of the “Index Queue Processing” occurs without you being involved, there is no scenario or other articles around these three enhancements.

SQL Processing Updates

The SQL language provides significant capabilities for you to access your data using the simple and flexible SQL language syntax.

This enhancement includes five separate improvements to the SQL language processing within CA Datacom. Each of these enhancements is described in the following topics.

- SQL Syntax for Group by Expressions (see page 35)
- SQL Index-Only processing for VARCHAR Columns (see page 35)
- SQL Multiple Tables under an OR Predicate Evaluation (see page 35)
- SQL Return Row Count for COUNT(*) (see page 35)
- SQL Elimination of Left Outer Join Tables (see page 36)

SQL Syntax for Group by Expressions

The GROUP BY clause can now contain SQL Expressions, to allow you to create more flexible SQL queries to retrieve and group data rows using SQL expressions.

For more information about the SQL GROUP BY clause and the use of SQL expressions, see the *SQL User Guide* on the Version 14.01 bookshelf.

SQL Index-Only Processing for VARCHAR Columns

SQL can now use index-only processing for columns that are defined as VARCHAR (and are part of the index).

Index-only processing eliminates the cost of reading the data row by returning data columns directly from the traversal index when that index contains all columns that the query references, and isolation level is not 'R' (repeatable read).

Since the index does not store the VARCHAR length, it is recomputed without trailing blanks.

For more information about the SQL Index only processing for VARCHAR columns, see the *SQL User Guide* on the Version 14.01 bookshelf.

SQL Multiple Tables under an OR Predicate Evaluation

Performance is improved on complex SQL queries where multiple tables are accessed by the SQL statement using the OR predicate by evaluating predicates for previous tables before calling Compound Boolean Selection (CBS).

Example

```
SELECT * FROM T1,T2 WHERE T1.COL1 = 1 OR T2.COL2 = 2;
```

Previously, neither predicate could be passed to CBS to possibly restrict an index scan range because CBS accesses a single table. Predicates can now be sent to CBS for the second table T2 by evaluating the predicates on previous tables.

In this example, if COL1 = 1 is TRUE, the COL2 =2 predicate is not passed to CBS since the row has already been accepted. If COL1 is not 1, then the COL2 = 2 predicate is passed to CBS. This predicate is the only one that can accept the row.

For more information about SQL Multiple Tables under an OR Predicate Evaluation, see the *SQL User Guide* on the Version 14.01 bookshelf.

SQL Return Row Count for COUNT(*)

SQL can now use the internally stored row-count value to respond to a SELECT COUNT(*) query when only one table is referenced and no WHERE clause is present.

This enhancement was done with the Automatic CXX Update Enhancement (as described previously) which takes multiple steps to keep the internally stored (MUF memory) row count as accurate as possible.

Add a simple WHERE clause that has an always “true” condition if you want to force the SELECT COUNT(*) query to read and count every data row. For example: SELECT COUNT(*) FROM SYSUSR.PAYROLL WHERE 1 > 0.

For more information about the SQL SELECT COUNT(*) enhancement, see the *SQL User Guide* on the Version 14.01 bookshelf.

SQL Elimination of Left Outer Join tables

This enhancement applies to queries that join a master table to one or more optional tables with only one possible matching row. Not accessing unreferenced optional tables improves performance. The most common example is when a view is defined to return all possible optional data, but a query is only interested in some of the optional data.

Example

An insurance company may have a master contact record for a customer and optional matching rows for an auto, home, or life insurance policy.

For convenience, a view is defined to return data from all four tables by using a LEFT JOIN to select the optional policy tables. Since there is a matching Primary Key on all four tables on customer-id, there can only be one matching row on each of the optional policy tables.

With this enhancement, a query using this view to analyze only auto insurance data now only accesses the master and auto policy tables. Accessing the other optional tables and then doing nothing with that data is eliminated.

Note: “SELECT COUNT(*)” benefits from this optimization because there can only be one matching row with the equijoin condition on the common Primary Key.

For more information about the SQL Elimination of Left Outer Join tables, see the *SQL User Guide* on the Version 14.01 bookshelf.

Available documentation

Since most of the “SQL processing updates” occur without requiring your involvement, there is no scenario or other articles around these four enhancements. Instead we have added brief updates to the *SQL User Guide* to explain the implementation of these enhancements.

Messages

DB00248I - PARM PGMDT=*ccyymdd, load-mod-name(program-name) ccyy/mm/dd-hhmm release ptf*

This informational message is issued in response to a selected module loaded by MUF or DBUTLTY. The message is also issued each time DBSQLPR is used.

Chapter 6: CA Datacom Tools Products

The following information provides an overview of the enhancements for the tools set products. For more information, see the PDCs, PTFs, and scenarios available through CA Support online and also on the CA Datacom CICS Services, CA Datacom Server, CA Ideal, and CA IPC Version 14.02 bookshelves.

The tools include:

- CA Datacom CICS Services
- CA Datacom Server (see page 22)
- CA Ideal
- CA IPC

CA Datacom CICS Services

Version 14.0 delivered numerous new features and capabilities. Additionally, multiple changes were implemented to standardize the handling of SYNCPOINT processing for CICS transactions. This implementation employs the IBM standard SYNCPOINT command as a dynamic replacement of the CA Datacom commit and rollback commands. This ensures that the transaction processes according to CICS standards for the transactions interacting with resource managers such as:

- CA Datacom
- IBM DB2
- IBM Websphere MQ

For Version 14.01, we delivered an enhancement to the CICS Services Version 14.0 code line to:

- Help streamline processing
- Improve performance
- Allow customer flexibility in certain situations

CICS support of SKPSYNC=YES parm

As noted previously, CA Datacom CICS Services 14.0 code replaced all user LOG commands such as with the IBM standard CICS SYNCPOINT commands. This conforms to IBM standard protocol for COMIT/ROLLBACK processing in CICS.

In Version 14.01 you can now determine if the CICS SYNCPOINT processing could be suppressed in cases where the CA Datacom LOG command processing would provide the same result.

The SKPSYNC=YES selection in the DBCVTPR macro assembly allows CICS Services to use the CA Datacom LOG commands when there is a single resource manager that is being updated. This includes CICS Services regions that are connected to multiple MUF (Multi-MUF) environments as long as there is only one MUF participating in an update type transaction.

Example

A transaction can have a read or locate type command on one MUF and an ADD or UPDAT on a second MUF. In this case, the user LOG commands are not replaced by CICS SYNCPOINT commands (with SKPSYNC=YES). Instead, they are sent down the locked thread to the updating MUF. If there are no locked threads to any MUF, the command is sent to the first MUF, if connected.

If two or more MUFs are being updated, the user LOG command must be replaced by a CICS SYNCPOINT or SYNCPOINT ROLLBACK to ensure transaction integrity.

Restriction on the use of Datacom Multi-MUF support

As documented previously, use the standard IBM CICS SYNCPOINT processing when the application is updating multiple MUFs.

Contact CA Support if you have any questions about your application and its implementation under CA Datacom Multi-MUF.

How to Implement

To implement the Version 14.01 support of the SKPSYNC=YES parameter, use the following process.

1. Add the new SKPSYNC=YES parameter to the DBCVTPR source for the CICS Services region that you are planning to implement.
2. Re-assemble the DBCVTPR source into the DBCVTPR load module and recycle the target CICS environment.

For more information about the CICS Services support of the SKPSYNC=YES parameter, see the *System Guide* on the Version 14.01 bookshelf.

Messages

The following messages and errors may be encountered when you attempt to use the SKPSYNC=YES parameter where SKPSYNC is not supported.

Errors:

- DBCVTPR SKPSYNC entry not honored
- READNEXT attempt failed
- ADPL ABEND in CSF 14.0

IMPACT:

You are not able to use SKPSYNC=YES

CA Datacom Server

The following information provides an overview of the Version 14.01 enhancements. For more information, see the Product Documentation Changes (PDCs), PTFs, and scenarios available through CA Support online. In-depth information is also provided on the CA Datacom and CA Datacom Server Version 14.01 bookshelves.

For Version 14.01, we delivered several enhancements to the Server Version 14.0 code line to help streamline processing, improve performance, and allow customer flexibility.

Enhancements

- Remove CA CCI Dependency from Server (see page 41)
- PROTOCOL=TCP in Server Startup Options (see page 41)
- Add TCP/IP Communication to SVCOMPR (see page 42)
- DB_THREADS Command for SVCOMPR and Console (see page 43)
- SQL Syntax Trace per User ID (see page 44)

Remove CA CCI Dependency from Server

The following enhancements were implemented to remove the requirement for the use of CA CCI (CCI) in Server. These enhancements allow you to implement Server using TCP/IP connectivity only. Sites using the CCI connectivity remain fully supported.

PROTOCOL=TCP in Server Startup Options

This enhancement enables the startup of the mainframe server region supporting the use of TCP/IP only. For the sites specifying PROTCOL=TCP, CCI is not used for mainframe Server communication.

Available documentation

PDC RI69295, in association with the application of PTF RO69384, documents the following options:

PROTOCOL=

Specifies the communication protocol that is used to transmit data between workstations or client applications to the Mainframe Server.

- If PROTOCOL=CCI is specified, the native TCP/IP protocol is not available and all TCP/IP parameters are ignored.
- If PROTOCOL=TCP is specified, only the native TCP/IP interface is initialized. TCPIP_PORT, TCPIP_HOST, and TCPIP_CONNECT_QUEUE can be coded or allowed to default. No CCI communications are allowed in the Mainframe Server address space when using the CA Datacom Server Communication Utility (SVCOMPR) to issue commands, such as EOJ or STATUS. See PDC RI66876 for the SVCOMPR options when using PROTOCOL=TCP.
- If PROTOCOL=BOTH is specified, both the native TCP/IP and CCI communications are initialized. TCPIP_PORT, TCPIP_HOST, and TCPIP_CONNECT_QUEUE can be specified or allowed to default.

JDBC Type 4 Driver connections require PROTOCOL=BOTH or PROTOCOL=TCP.

Valid Entries: CCI, BOTH, TCP

Default: CCI

How to Implement

To implement the Version 14.01 PROTOCOL=TCP parameter, use the following process.

1. Make sure that you have the required PTF applied. We recommend that you keep your product maintenance level current using the CA Recommended Service (CA RS) quarterly maintenance.
2. Add the new parameter to your mainframe Server region startup parameters and recycle the Server region.

Note: We also recommend that you review the enhancement to SVCOMPR to add TCP/IP communications before you make this change.

Add TCP/IP Communication to SVCOMPR

This enhancement enables the use of TCP/IP in the communications between the batch region submitting commands to the mainframe Server region using the SVCOMPR utility program.

Available documentation

PDC RI66876, in association with the application of PTF RO69384, documents the following parameters for the new HOSTNAME and PORT input options for the SVCOMPR utility.

HOSTNAME=xxxxxxxx

Specifies the hostname or IP address of the Mainframe Server region (SVDBSPR) to which you want to communicate. PORT= is required with HOSTNAME= and must match the corresponding SVDBSPR startup options. Additionally, PROTOCOL=BOTH or PROTOCOL=TCP is required in the startup options.

Note: The HOSTNAME and PORT options permit TCP/IP communication with the Server Mainframe region as an alternative to CAICCI. They are required if PROTOCOL=TCP is specified in the startup options as documented in PDC RI69295.

PORT=xxxxx

Specifies the TCP/IP listener PORT of the Mainframe Server (SVDBSPR) region. HOSTNAME= is required with PORT= and must match the corresponding SVDBSPR startup options. Additionally, PROTOCOL=BOTH or TCP is required in the SVDBSPR startup options.

Note: A timeout may occur if all TCP/IP ports are in use and the request is a STATUS or OPTIONS command. To issue the STATUS or OPTIONS command, resubmit the job or use the console interface.

How to Implement

To implement the Version 14.01, add TCP/IP Communication to SVCOMPR, use the following process.

1. Make sure you have the required PTF applied. We recommend that you keep your product maintenance level current using the CA RS monthly maintenance.
2. Update your batch job that executes the SVCOMPR to include the parameters as specified previously.

DB_THREADS Command for SVCOMPR and Console

This enhancement adds a new command for you to generate a report showing the depth of MUF thread utilization for the threads/tasks allocated to the Server region by the DBUSERS startup option.

Available documentation

PDC RI71374, in association with the application of PTF RO71091, documents the SVCOMPR utility program and console interface of the new DB_THREADS command option:

DB_THREADS

The DB_THREADS command prints a DB Queue Depth Report. This report shows a measure of the CA Datacom/DB MUF thread utilization for the threads/tasks allocated to the Server region by the DBUSERS startup option.

DB_THREADS *command output* - DB Queue Depth Report

The DB Queue Depth Report can be used to tune the DBUSERS startup option. If the report shows that some threads are never used, then DBUSERS is too high and the MUF resources are misallocated to the Server region. If the report shows that the Held Task count is very high and each thread is used at least once, then DBUSERS is too low to handle all of the communications to the MUF and affects the performance of the client application.

DB_THREADS (for the console command, SVCONPR)

(*Optional*) Displays a DB Queue Depth Report on the console. The number of lines of output for this command is related to the number of DBUSERS specified in the Server startup options. If DBUSERS is very high, consider using the SVCOMPR utility rather than the console command. The SVCOMPR utility eliminates the display of DBUSERS on the console.

How to Implement

To implement the Version 14.01 DB_THREADS Command, use the following process.

1. Make sure you have the required PTF applied. We recommend that you keep your product maintenance level current using the CA RS monthly maintenance.
2. Cycle your mainframe Server region.
3. Update your batch job that executes SVCOMPR to include the parameters as specified previously or execute the available console command.

SQL Syntax Trace per User ID

This enhancement adds the flexibility to trace up to 5 USERIDs selectively when performing SQL Syntax traces through the mainframe Server region.

Available documentation

PDC RI65691, in association with the application of PTF RO65727, provides an update for the TRUSERx= options.

The explanation of the TRUSERx= Server Mainframe Component Input Parameters was replaced with the following:

TRUSERx=*uuuuuuuu*

(*Optional*) Enables an SQL Syntax trace and defines the USERIDs to be traced. When enabled, the SQL syntax that is generated by the application of the user is written to SYSPRINT. The output of the SQL Syntax trace is typically brief but depends on the length of the SQL statements.

Up to five USERIDs or ALL USERIDs can be traced at one time. Trace up to five USERIDs using TRUSER1= through TRUSER5= where *uuuuuuuu* is any valid userid. Use TRUSER1=TRUSRALL to enable the SQL Syntax trace for ALL USERIDs.

The TRACEON=YES option overrides TRUSERx=. If TRACEON=YES is also specified in the startup JCL, the SQL syntax trace entries are not displayed.

Valid Entries: A valid userid or TRUSRALL.

Default: No default

For an example of the SQL Syntax Trace Output, see PDC RI65691.

How to Implement

To implement the Version 14.01 SQL Syntax Trace, use the following process.

1. Make sure you have the required PTF applied. We recommend that you keep your product maintenance level current using the CA RS monthly maintenance.
2. Cycle your mainframe Server region.
3. Update you batch job that executes the SVCOMPR commands to enable the SQL tracing using the TRUSERx USERID selection.

Messages

APAR RI66876 provides the following information for the new CA Datacom Server error messages:

DSV00131E SVCOMPR TCP/IP Communication error see Message

Specifies that an IBM message containing the error number and error text follows this message.

DSV00132E SVCOMPR IBM error *nnnnn* message: *xxxxxxxxxxxxxx*

Provides the IBM TCP/IP error number (*nnnnn)* and the text (*xxxx)* that is associated with that message.

CA Ideal for CA Datacom

The following information provides an overview of the Version 14.01 enhancements for the CA Ideal product. For more information, see the Product Documentation Changes (PDCs), and PTFs available through CA Support online and on the CA Ideal Version 14.01 bookshelf.

Add new messages around enqueued resources

This enhancement adds the CA Ideal user SHORT-ID to the messages generated when you attempt to update/access a CA Ideal program Procedure, Working Data, Parameter, or Report Definitions and the resource is marked “in-use” by another user. You can contact the user holding the resource to determine if the resource can be freed for your access.

Available documentation

Improved text imbedded in the enqueue messages

New message text with the phrase “in use by user *xxx*, please try later.” The “*xxx*” is the CA Ideal SHORT-ID of the user editing a program Procedure, Working Data, Parameters, or Report Definition.

How to Implement

To implement adding the new Version 14.01 messages, use the following process.

1. Make sure that you have the required PTF applied. We recommend that you keep your product maintenance level current using the CA RS monthly maintenance.
2. Follow the ++HOLD instructions on the PTF to execute VLSUTIL RESTORE function to update your ADRLIB message file with the new “in use” messages.

Note: See the CA IPC enhancement to implement this new functionality for Panel resources.

CA IPC

The following information provides an overview of the Version 14.01 enhancements for the CA IPC product. For more information, see the Product Documentation Changes (PDCs), and PTFs available through CA Support online and also on the CA IPC Version 14.01 bookshelf.

Add new messages around enqueued resources

This enhancement adds the CA Ideal user SHORT-ID to the messages generated when you attempt to update (access) a CA Ideal Panel definitions and the resource is marked "in-use" by another user. This allows you to contact the user holding the resource to determine if the resource can be freed for your access.

Available documentation

Improved text imbedded in the enqueue messages

New message text with the phrase "Panel in use by user *xxx*, try again later." The "*xxx*" is the CA Ideal SHORT-ID of the user who has a CA Ideal edit session accessing the PANEL.

How to Implement

To implement adding the new Version 14.01 messages, use the following process.

1. Make sure that you have the required PTF applied. We recommend that you keep your product maintenance level current using the CA RS monthly maintenance.
2. Follow the ++HOLD instructions on the PTF to execute VLSUTIL RESTORE function to update your ADRLIB message file with the new "in use" message.

Note: See the CA Ideal enhancement (shown previously) to implement this new functionality for CA Ideal program Procedure, Working Data, Parameter, or Report Definitions.

Chapter 7: Version 14.0

This section contains the following topics:

CA Datacom (14)

New Features and Enhancements

CA Datacom Version 14.0 is a major release level that includes a number of new features and functions. Some key features are designed to lower your Total Cost of Ownership (TCO), such as through additional performance enhancements and support for the zIIP specialty processor. Other features are designed to provide a more intuitive approach to managing a CA Datacom environment that can help you in your efforts to train new personnel.

Concurrent Releases

You can install this release of CA Datacom and continue to use an older release in your production environment. If you plan to continue to run a previous release, consider the following points:

- When installing into an existing SMP/E environment, this installation deletes previous releases.
- If you acquired your product from tape or with Pax-Enhanced ESD, select different target and distribution zones for your new release from where your current release is installed. The new zones use different libraries than your current release.

  Note: CA CSM installs into a new CSI by default.
- Define DDDEF entries in your new zones to point SMP/E to the proper libraries for installation. Ensure that they point to the new release libraries.

Migration from Version 12.0 to Version 14.0

The following is pertinent in multiple MUF applications.

- A MUF at Version 14.0 must execute with libraries that contain Version 14.0 code exclusively.
- A DBUTLTY step at Version 14.0 must execute with libraries that contain Version 14.0 code exclusively.

A batch user program that communicates to a single MUF should execute with libraries that contain that MUF's version, but the situation is more complicated when a batch user program communicates to multiple MUFs. Because each MUF is likely to be migrated from Version 12.0 to Version 14.0 at different times, batch jobs that communicate with multiple MUFs cannot execute with the libraries for all MUF versions. Therefore, to allow an easier migration, the CA Datacom/DB interface module set that executes in the user address space supports user applications at both Version 14.0 and Version 12.0. This allows batch user programs that execute with multiple or single MUFs to use this module set at Version 14.0 to communicate with a MUF at Version 14.0 and also with a MUF at Version 12.0. Special actions a user must take to accomplish this are as follows (this batch requirement also applies to CA Datacom CICS Services):

1. Copy the following modules from the Version 14.0 library set to a special library and use that library for those batch jobs that require multiple MUF communication. The modules are:

   DBDUMPR

   DBINFPR

   DBINRPR

   DBSGMPR

2. After the modules are copied, ensure that they are kept current with maintenance changes and that the library is updated as needed.
3. After all the MUFs have been upgraded to the same version, correct the JCL to point to the complete Version 14.0 libraries.

Note: It is possible that for batch user programs simply using only CA Datacom/DB, pointing to the full Version 14.0 might work, but it would not work for applications that use the CA Datacom Datadictionary Service Facility, and It would not work for executions of CA Datacom Datadictionary utilities or CA Dataquery utilities.

An exception exists that user programs that request multiple task areas, and therefore do private multiple tasking, need to run with the interface modules matching the release of the MUF.

CXX Versions 14.0 and 12.0

A Version 14.0 Directory (CXX) has no compatibility with a Version 12.0 CXX, and there is no support in Version 12.0 to access a Version 14.0 CXX. The CXX is installed as Version 14.0, but there is a procedure by which the CXX can be made to fall back to a Version 12.0 CXX. Another procedure provides a way to fall forward from a Version 12.0 CXX to a Version 14.0 CXX.

Added Features with Version 14.0

The lack of compatibility between a Version 14.0 CXX and a Version 12.0 CXX is due to the added features Version 14.0 provides. For example, the Version 14.0 CXX possesses information about the following:

- CXX-level encryption key handle
- How each table is defined for encryption
- Version 14.0 SIMPLIFY feature

Note: Some structures are larger with Version 14.0, but the difference is most likely invisible. It is possible to find that a full CXX at Version 12.0 has converted to Version 14.0 with the same number of tracks found in Version 12.0.

Falling Back to Version 12.0 from Version 14.0

The procedure to fall back to a Version 12.0 CXX from a Version 14.0 CXX takes the following into account:

- Any table set as encrypted has the Version 14.0 encryption flag unset and the table set as not loaded during the DBUTLTY CXXMAINT OPTION=CONVERT1412 execution.

LXX Versions 12.0 and 14.0

The Version 12.0 Log File (LXX) fixed block format is not supported in Version 14.0. The Version 14.0 Multi-User Facility (MUF) requires the LXX to be either variable or spanned before it can be successfully opened in Version 14.0.

Variable:

```
INIT AREA=LXX,BLKSIZE=32760,VARIABLE=YES)
```

Spanned:

```
INIT AREA=LXX,BLKSIZE=nnnnn,BLOCKS=n
```

Both formats are valid in Version 12.0. Therefore, this can be done either before upgrading to Version 14.0 or in conjunction with upgrading to Version 14.0. In either case, the FXX must also be initialized using the same block size as the LXX.

Note: For acceptable values, see the *CA Datacom DBUTLTY Reference Guide for z/OS* Version 14.0.

Data Encryption

Data Encryption Overview

Data encryption is a table-level option that allows tables to store encrypted data.

Data encryption and decryption can be done at a basic level, using the encryption method provided by the processor hardware of z10 or later. The basic method allows one unique encryption key "handle" for each Directory (CXX), or group of Directories as data is loaded. The basic option does not provide a key manager. The basic method has simple strategies for managing the one key. The key is only available if you have read access to the CXX or a data area with an encrypted table.

Note: The DBUTLTY ENCRYPT function provides a SET_BASIC_KEY_*n* option (see DBUTLTY Encryption (see page 54)). The dynamic system tables related to data encryption are the tables DIR_TABLE (see Dynamic System Tables Data Encryption Considerations (see page 56)).

Important: Use data encryption with care. If the "handles" for the encryption key (explained in a following section) become corrupted, the data cannot be made useable again.

Requirements and Restrictions

Consider the following when using data encryption:

- The specification that the data be encrypted is done by defining tables in CA Datacom Datadictionary, not in SQL (see Datadictionary Data Encryption Considerations).
- Encryption requires that the data to be encrypted be a multiple of 16 bytes. CA Datacom handles the final non-multiple bytes after one or more multiples of 16. CA Datacom requires that no table is defined as less than 16 bytes. Compressed tables are handled so that no individual compressed tables are stored as less than 16 bytes, which could affect the DASD extent size.
- Variable-length tables defined with a user compression exit of DBVVRPR are not supported.
- Tables defined with RECOVERY NO are not supported.
- The data area block size must be at least 2048 bytes.
- With encryption, every DBUTLTY function that accesses rows of a table in the DBUTLTY address space from DASD must be done with an authorized execution of DBUTLTY. The same is true for setting or changing any encryption function.
- When using encryption, we recommend that you use the CA Datacom SIMPLIFY option. SIMPLIFY is required for CA Datacom/AD but optional, though recommended, for CA Datacom/DB. With the SIMPLIFY option, the Directory (CXX) can be security restricted to the submitter of the MUF, and one or two users, to run the few functions that must run with the MUF not enabled. Without SIMPLIFY, anyone who can run almost any DBUTLTY function is required to have both read and write access to the CXX. The CXX is where the external form of the basic encryption key is stored.

Other Considerations

An option involved in defining a Log Area (LXX) as FORMAT 1 (see the *CA Datacom/DB Database and System Administration Guide*) allows you to specify that encrypted table data is logged to the Log Area (LXX) instead of to the default, clear table data. If the LXX has the data encrypted, so does the Recovery File (RXX), because the RXX is a copy of the LXX, built during a SPILL of the LXX to the RXX. With the option of having the LXX as FORMAT 1, the external key must be stored with each log record to allow the decryption for DBUTLTY functions (or READRXX routines) that require it. If this option is used, every DBUTLTY execution using the RXX must be from an authorized execution. If the option is used, every READRXX program is required to be authorized using z/OS facilities, because the decryption can only occur from an authorized program.

Note: Do not select the option of recording encrypted data on the LXX (and then the RXX) if you do not want to allow application programs with READRXX to be authorized.

Running not authorized generates an error code ‘N’ during READRXX, DBUTLTY SPLIT, RECOVERY, or REPORT AREA=RXX. The LXX flag indicating encrypted data can only be reset by an INIT or RESET of the LXX.

Important: The error code ‘N’ is for any read of an RXX, no matter whether a particular RXX contains encrypted data. Termination occurs before access to any RXX data.

Note: A table that is both encrypted and user compressed is written as encrypted, if the LXX as FORMAT 1 option is selected, overriding any use of the option to not log user compressed data in its compressed format.

Important: No table encryption is available in releases prior to CA Datacom Version 14.0. A table loaded with encryption must be done after every absolute condition has been met that ensures that you do not convert back from Version 14.0 to Version 12.0. If you choose to do so, in disregard of stated warnings, the convert CXX process marks the table as not loaded, the table as not encrypted, and removes all encryption information. Also, the CXX itself has no encryption key information converted from Version 14.0 to Version 12.0, and any encryption information is therefore lost. A conversion from Version 12.0 back to Version 14.0 has no encryption information at the table level or CXX level to be converted, because Version 12.0 has no knowledge of encryption. A data area with an encrypted table is set so that it cannot be opened by any CA Datacom versions prior to Version 14.0. Any use of the database area by a release earlier than Version 14.0 is required to start with an initialize overlaying everything in the area.

DBUTLTY Encryption

DBUTLTY ENCRYPT Function

The DBUTLTY ENCRYPT function provides a SET_BASIC_KEY_1 option. For details and examples, see the *CA Datacom/DB DBUTLTY Reference Guide*.

Encryption Report (TYPE=K)

DBUTLTY provides a new report that includes encryption information, including any basic encryption key information and the tables encrypted. The new report is requested with the DBUTLTY REPORT function, TYPE=K. Encryption information is not considered a secret. Having an encryption report allows you to externally secure the use of this DBUTLTY function. For details and examples, see the *CA Datacom/DB DBUTLTY Reference Guide*.

Encryption Information in Full CXX Report

Table information relating to encryption is provided as part of a full CXX report without TYPE=A. For details and examples, see the *CA Datacom/DB DBUTLTY Reference Guide*.

Encryption Information Backup

The CXX encryption information is backed up with a BACKUP AREA=CXX function. The DBUTLTY BACKUP AREA=CXX function backs up the encryption information stored in the CXX. The information is restored to the CXX by either the LOAD AREA=CXX function or the CXXCLONE function when the options DBID is not specified. For details and examples, see the *CA Datacom/DB DBUTLTY Reference Guide*.

Opening and Backing Up Encrypted Tables

Opening a Table that is Defined as Encrypted

During the opening of a table defined as encrypted, CA Datacom/DB performs several edits (validation checks), including that the table is defined currently with the same basic requirements as existed at the time the data was loaded.

Specifically, the edit validates that the table definition being opened matches the definition either during the LOAD of the area or during the REPLACE of the table. This edit set is not for every facet of definition but for those facets that would clearly block the successful decryption of data. The current list of facets that must match (and that have not been changed) include the following:

- Table name
- Table ID
- Row length
- Use of DB compression
- Use of user compression and its user data
- Variable-length table
- Recovery option
- Encryption type and method

DBUTLTY LOAD and REORG BASIC Encryption Functions

Each DBUTLTY LOAD (or REORG) copies the current CXX key 1 information to the data area control block and uses that information for all basic encryption. A REPLACE function uses the basic encryption information in the control block, if it has been set. If not set, REPLACE copies the key 1 information from the CXX and sets the area as not openable by releases before Version 14.0.

In addition to the CXX encryption information, the data area has table level information also preserved to help ensure that data can be accessed correctly.

The addition of the CXX information and table information can cause the data block size to be insufficient to load the data. If this occurs, a return code is issued and the load terminated. This is likely only for areas with a high number of tables (the maximum is 240) and areas that have a small block size, for example, less than 4096.

A data area loaded with encryption is set at a 'level' that is not openable by releases of CA Datacom/DB before Version 14.0, ensuring that back-level code does not try to read or add data out of sync with encryption options.

Similar to the REPORT AREA=CXX,TYPE=K that can print the encryption information stored in the CXX, the copy stored in the data area can be reported. Because they are intended to always match, this should be a rare need. As such, it is added to the REPORT TYPE=U function where a DD statement is provided to a dataset considered as unknown. The execution for a dataset that contains encrypted data formats the information. For details and examples, see the *CA Datacom/DB DBUTLTY Reference Guide*.

CA Datacom Datadictionary Data Encryption Considerations

CA Datacom Datadictionary considerations regarding data encryption include table definitions involving the following:

- DDUPDATE 3154 TABLE Transaction
  For details, see the *CA Datacom Datadictionary Batch Guide*.
- TABLE Attribute Type
  For details, see the *CA Datacom Datadictionary Attribute Reference Guide*.

Dynamic System Tables Data Encryption Considerations

The dynamic system table DIR_TABLE (DRT) has columns for ENCRYPTION_METHOD and ENCRYPTION_TYPE.

For more information about these and all other dynamic system tables, see the *CA Datacom/DB System Tables Reference Guide*.

SIMPLIFY Feature SUM

The management of a CA Datacom environment has been simplified and protection has been increased.

Because there are conversion considerations, the SIMPLIFY feature is forced only for CA Datacom/AD z/OS users and is optional but recommended for CA Datacom/DB z/OS users.

Note: The SIMPLIFY feature is not currently an option for z/VSE users because the environment is simpler and there is much less need of the feature, and the z/VSE platform does not provide the required tools.

Benefits of the Simplify Feature

The main benefits of the simplification are to force the MUF to always be enabled and actively connect all DBUTLTY functions with the MUF. The MUF is the only updater of the CXX and is in complete control with full knowledge of all the on-going activities. Without this control, situations can occur that require research to understand and present risk to data and roadblocks to the normal 24x7 MUF availability.

With the MUF enabled, no DBUTLTY opens the CXX but instead obtains current information from the CXX through the MUF. Only a few users need security access to the CXX making it much more secure. Without the feature, you must have full write access to the CXX if you are executing any DBUTLTY function using the CXX .

Substantial additional safety of datasets is provided to prevent accidental misuse along with fundamental 24x7 processing.

Because of these reasons, it is mandatory for the CA Datacom/AD users to provide the safe 24x7 access required by the using product. We also recommend SIMPLIFY for the CA Datacom/DB z/OS users for the same reasons. However, it is not appropriate for every user because it enforces many best practices and tightens many abilities. For example, without this feature, it is possible for a production MUF and a test MUF to share a single CXX causing you to be responsible for controlling the databases that each use. It is never acceptable for multiple MUF executions other than MUFplex to share LXX and FXX datasets.

SIMPLIFY and the MUF

One MUF is the controller of the environment and needs to be enabled to perform that task. It is enabled during or soon after each IPL and remains enabled until the next IPL. Few CA Datacom requirements exist that require an outage and it is very rare for the MUF not to be enabled on purpose or due to an unscheduled outage. There should be no condition where a MUF cannot restart itself and continue processing. If an event prevents the restart, then it is handled as a very special condition with special controls.

The one MUF always knows the status of every part of the environment. The needed control is handled simply, efficiently, and safely. Because the MUF is always enabled, the DBUTLTY functions can run safely by using more MUF services. For example, DBUTLTY uses MUF for CXX activity that allows accurate information to constantly be provided and controlled. There are only a few rare conditions where MUF is not enabled and DBUTLTY is forced to open the CXX and where it uses the same protections as when not running SIMPLIFY.

Update Considerations

The database control in the CXX directory is always opened with update intent. With MUF enabled, the MUF fully controls the CXX. The URT option of UPDATE is honored for specific read versus write command support.

Dataset Protection in a Datacom Environment

Dataset protection ensures that a dataset currently in use by a MUF or DBUTLTY cannot be used in a contrary way by another DBUTLTY or MUF. It ensures that a dataset being created by DBUTLTY cannot be used by a MUF or other DBUTLTY until the creation process completes.

Dataset protection is provided in two layers.

Layer 1

ENQ is provided to protect datasets within CA Datacom processing for Version 14.0 and later releases.

It uses the z/OS Global Resource Serialization (GRS) facility to ENQ across the systems to ensure a dataset can be used for the intended purpose.

With this layer of protection, any protection of the CXX, LXX, or FXX lasts for the entire job step. Any protection for database data sets for the index or data areas lasts just for the specific DBUTLTY function having the requirement. The temporary condition is valid if the datasets are dynamically allocated, and not provided as JCL DD statements.

Layer 2

DISPOLD is provided to protect datasets within CA Datacom processing for all releases and also outside CA Datacom processing. It provides similar protection to Layer 1.

With this layer of protection, any protection of the CXX, LXX, or FXX, lasts for the entire job step. Any protection for database datasets for the index or data areas lasts just for the specific DBUTLTY function having the requirement. An exception exists if the specific dataset name protected is referenced in a subsequent step of the job. The protection is extended by the operating system to include the remainder of the step where acquired through all the succeeding steps and through the step where it is last specified. Layer 2 is very important protection but it can be disabled in individual JCL streams or completely as an option in the DBSIDPR member being used.

For more information, see the *CA Datacom/DB Database and System Administration Guide*.

DBUTLTY with MUF Enabled

With the SIMPLIFY feature, normal DBUTLTY functions can access and update control data and user data using MUF. This ensures MUF has control while providing current and updated information.

DBUTLTY with MUF Not Enabled

A small set of normal, but rare, DBUTLTY functions must execute with MUF not enabled.

Another set of functions normally execute with MUF enabled, but can execute with the MUF not enabled. These functions have this ability for the very rare and special case that a MUF cannot enable due to restart errors. These functions can run in the same DBUTLTY step as a function that must run with MUF not enabled or they must declare the intent to run this complete DBUTLTY step with MUF not enabled using the function SET OPTION1=MUF_NOT_ENABLED.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

Automation of the Installation for the DB Subsystem

In Version 14.0, enhancements were made to simplify, for z/OS users, the CA Datacom install and usage. This includes removing the need for a CA Datacom SVC and the CA Datacom subsystem that had to be manually installed. The changes include the following:

- A new Program Call PC routine, DBPCCPR, was built to support Version 14.0 normal MUF requirements. CAIRIM installs DBPCCPR during the IPL process, or later. If DBPCCPR is not installed at the time of the first MUF execution, MUF dynamically does the install, creating a PC number for Version 14.0. DBPCCPR supports all MUF functions, basic DBUTLTY functions, and MUF user interface requirements.
- MUF does not use the old PC subsystem, and therefore it can be removed after Version 14.0 is the only, or oldest, CA Datacom release executed on the system. The old subsystem is present if the DBUTLTY function REPORT AREA=MVS prints the line: CA DATACOM/DB SUBSYSTEM IS PRESENT. The old subsystem is also represented by the modules being displayed of DBESPPR and DBSSPPR.
- MUF does not use a CA Datacom/DB SVC. The current release interface does not use the CA Datacom/DB SVC. The SVC should not be installed because it exists only in case of some future requirement that is not expected.
- A new Program Call PC subroutine has been built that is subordinate to the CAMASTER Subsystem to support special requirements. Those special requirements include the use of XCF communications and RRS for two-phase processing. CAIRIM installs the DBPCSPR routine during the IPL process, or later. If not installed by CAIRIM, there is no support for XCF and RRS. CAMASTER is part of CA Common Services for z/OS.

Production and Test Subsystem and Subroutine Support

When Datacom used an SVC it was possible to have two. One SVC could be used for production and one could be used for testing rare changes to the SVC. Most users never had this requirement even for the rare changes as they waited until the change was confirmed and provided with normal maintenance.

The subsystem and subroutine have a similar need but do not have the SVC number strategy. To provide the equivalent, the ability was built to allow a Production version to be installed for normal use and also a Test version installed for testing the rare changes. Most users should not require the Test version.

You can select the Production or Test version by using the keyword PC= in the DBSYSID Macro used to generate the DBSIDPR and related modules. Specify PC=PRODUCTION or PC=PROD (the default) to request the Production Subsystem and subroutine. Specify PC=TEST to request the Test Subsystem and subroutine. This option applies to the set of both DBPCCPR and DBPCSPR.

CAIRIM Installation

CAIRIM installation has changed. For more information, see the *CA Datacom/DB Database and System Administration Guide*.

MUF Changes

The following are changes that occur in MUF:

- The FORCE_SVC startup option is no longer needed. If specified, a message occurs indicating it is obsolete and ignored. Remove this option.
- The MUFMSG startup option defaults to YES,NO,YES and does not display the SVC number of 000. You can set it to YES in case there are message interception routines that skip over the message prefix based upon an expected size.
- The first MUF execution after an IPL installs the Version 14.0 Program Call PC routine DBPCCPR if it was not previously installed by CAIRIM or a previous Version 14.0 MUF.
- A new MUF startup option has been added, but only for testing or in the event of a serious memory overlay. X_FORCE_CAAT_REFRESH YES causes the MUF to abandon any previous Version 14.0 common memory and start fresh and instantly causes errors for existing Version 14.0 MUFs executing. The most likely symptom is RC 68, RC 86, or hung executing programs. If the common memory is overlaid and needs refreshing then other MUFs are not successfully running.

For more information, see the *CA Datacom/DB Database and System Administration Guide*.

Messages Added

- DB00205 - 1206 CACS CAAT ERROR NNN
- DB00205 - 1207 INSTALL SYSTEM ANCHOR FAILED
- DB00205 - 1208 DBSIDPR PC=INVALID
- DB00205 - 1209 UNABLE TO GET SYSTEM LINKAGE
- DB00205 - 1210 UNABLE TO CREATE DATA SPACE

Messages Changed

- DB00249I - message reflecting fields of the DBSIDPR being used, no longer prints the SUBID keyword and now prints the PC=value of either PROD or Test. For example:

  DB00249I - DBSIDPR 2010/09/14 10.19 SVC=000 TOGROUP=DBDVM0   CCISYS=
  PC=PROD

  Note: User programs use the same PC as the MUF selected.
- DB00201 - removed the SVC=nn

Messages Removed

- Existing DB00205 message number 1113
- DB00219I - MVS ECSA REQUIREMENT -9999,999 K

For more information, see the *CA Datacom/DB Message Reference Guide.*

Large Page Support

(z/OS only) Large Page support provides improved performance by putting some or all index buffers in memory backed by large page frames. Memory in these pages is fixed and provides a faster access path.

Discovering what performance effects to expect from this feature, either positive or negative, can only come from experimenting at your specific site. Taking memory away from the 4 KB page memory to create 1 MB of "not-page" memory has benefits to the user of the memory and costs to all the other address spaces. Having any absolute benchmark is therefore not to be expected, and for that reason the wisest course to take when experimenting at your site is to start relatively small and watch for changes.

Large Frame Area on SYSPOOL Option

For information about the Large Frame Area parameter (LFAREAsize) on the SYSPOOL MUF startup option, see Exploit 64-bit Memory (see page 68).

Related New Dynamic System Table Column

A new LARGE_PAGES_IN_1M column was added to dynamic system table MUF_MEM_SUMMARY in support of the total number of SYSPOOL index buffer 64-bit memory allocations in 1 MB increments being backed by large pages.

For more information, see the *CA Datacom/DB System Tables Reference Guide*.

Related COMM SNAP Change

In conjunction with Large Page support, COMM SNAP BUFFERS (or DBUTLTY COMM OPTION=SNAP,BUFFERS=YES) Is changed to take an SVC dump (SDUMP) instead of the normal PXX dump, if 64-bit index buffers are used.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

URT option EOJ_OK

Under normal processing, a MUF is intended to be enabled 24x7 starting during the IPL process and ending just prior to the next IPL. If the EOJ is needed, then it was built to be orderly where all connections to the MUF have been closed and disconnected. Therefore, the EOJ naturally waits on all current jobs.

For many releases, there has been an exception where connections through CA SYSVIEW have been allowed to be forced ended during an EOJ request. This ability also exists for the Change Data Capture (CDC) facility.

With Version 14.0, these exceptions are formally changed to be a specific option, EOJ_OK. This parameter is set in the DBURSTR macro generating a User Requirements Table used to connect to a MUF. The requirement is considered to be rare and the feature is not intended to be commonly used. It has a number of restrictions and presents special considerations for the applications running with the option set.

The following are a few restrictions for the EOJ_OK parameter:

- Meant for single task applications.
- Is not allowed for applications such as CA Datacom CICS Services and CA Datacom Server that connect to MUF with multiple task areas.
- Is for read-only applications, but updating is allowed, subject to certain rules.
- Is not intended for applications that have multiple URTs, but is allowed with certain rules.

For more information, see the DBURSTR parameter EOJ_OK in the *CA Datacom/DB Database and System Administration Guide*.

An independent but related change is a similar, but different option for applications that have multiple URTs known as EOJ_OK_S. For Extended Options Programming, see that chapter in the *CA Datacom/DB Database and System Administration Guide.*

Other EOJ_OK Related Items

Dynamic System Table Change

The Dynamic System Table MUF_ACTIVE_TASKS has been enhanced to add a column EOJ_OK with the value Y for yes, N for no, or S for EOJ_OK_S.

DBUTLTY Function COMM OPTION=STATUS

Information related to EOJ_OK has also been added to the DBUTLTY function COMM OPTION=STATUS.

Note: The information is not available to the console STATUS command.

For more information, see the *CA Datacom/DB System Tables Reference Guide* and the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

MUF-Related Change

Another new feature related to the use of EOJ_OK is that the MUF sets a value indicating that an EOJ has been requested on each request that has a blank return code. This provides a way for applications that are long running, or that require multiple tasks, to be made aware that an EOJ has been requested. The application could be enhanced to make use of the fact. The value is in the request area at +x'3B'. The bit x'01' is currently on the MUF as an EOJ request.

Note: An exception exists for requests that do not interact with the MUF. This includes the command INQIN. It also includes blocked sequential processing GETIT/GETPS commands where calls that get a block have the setting correct but requests within the blocking could have the value accurate or inaccurate.

Health Checks

The following health checks are now available.

DTCM_DB_FORCE_CHKPT@mufname

The CA Datacom/DB DTCM_DB_FORCE_CHKPT@mufname verifies if any force checkpoints have occurred in this MUF.

Configuring your MUF with LOGRCV of NO (inactive recovery) and RXXROLLBACK YES protects you against force checkpoints. A force checkpoint can compromise transaction integrity.

Reference

- For more information about modifying MUF startup options and maintenance using console commands, see the *CA Datacom/DB Database and System Administration Guide*.
- For more information about the INIT LXX (Format Log Area), see the *DBUTLTY Reference Guide for z/OS*.
- For more information about messages, see the *CA Datacom/DB Message Reference Guide*.

DTCM_DB_CF_LIST_STR@mufname

The CA Datacom/DB DTCM_DB_CF_LIST_STR@mufname health check verifies if the Coupling Facility list structure size is sufficient when the MUFPLEX MUF startup option is specified.

It is important that you define your Coupling Facility list structure with sufficient size to support the data which is shared across the MUFPLEX.

Reference

- For more information, see the following chapters in the *CA Datacom/DB Database and System Administration Guide:*
  - Modifying MUF Startup Options
  - Parallel Sysplex
  - Data sharing MUFplex
  - Shadow MUF Environment
- For more information about messages, see the *CA Datacom/DB Message Reference Guide*.

TASKS_XCF New Console-Like Command

After MUF is enabled, TASKS_XCF *nnnn* can be used to change the value for the maximum number of tasks that are available for the processing of XCF requests to the MUF.

Value *nnnn* is an integer in the range of 1 (one) through 6999, representing the maximum number of tasks that can be simultaneously allocated to process XCF requests to the MUF.

Note: If th*e nnnn* specified with TASKS_XCF is larger than the number of tasks specified with the TASKS startup option when the MUF was enabled, the value for TASKS_XCF is lowered to match the value that was specified with TASKS.

For more information, see the *CA Datacom/DB Database and System Administration Guide*.

XCF_FROM New MUF Startup Option and Console-Like Command

The XCF_FROM startup option and console-like command replaces the options: XCFFROM and X_XCFFROM_JOB.

XCF_FROM can be entered at MUF startup or as a command while MUF is executing to define permissible origins for XCF requests to MUF.

Multiple occurrences of XCF_FROM are permitted in the startup parameters. New connections are evaluated against existing XCF_FROM occurrences so that the most specific values are evaluated first, and the most generic are evaluated last. You are responsible for ensuring that the entries form a logical set.

For more information, see the *CA Datacom/DB Database and System Administration Guide*.

Related External Security Changes

Related to the use of XCF_FROM, XCF External Security changed in the following two ways:

- When security is checked
- What error is produced when an XCF connection is blocked by security

At MUF startup, *cxxname*.XCF is checked, as it always has been, to determine if XCF connectivity is externally secured, as described in the *CA Datacom Security Reference Guide*. But only that one XCF security resource is checked at startup.

Individual XCF remote connections are checked when a remote job opens a URT, which in turn initiates a connection to MUF through XCF (if XCF is externally secured). The check has the same format as in Version 12.0: *cxxname*.XCFFOM.*from-system.groupname*. It is done using the USERID submitting the MUF startup.

If access is allowed, the open continues. If access is denied, the open fails with a return code 87(003) and no connection is established.

Message DB00205E (error 1081) Removed

Related to the change in XCF security, message DB00205E (error 1081), can no longer occur because XCF security is no longer checked at startup.

Mainframe 2.0 Serviceability

Standardizing CA Product Active and Heartbeat Events

CA Datacom attempts to connect to OPS/MVS when running in z/OS. It sets the STATE of a specific instance to one of four states:

- STARTING indicates the MUF has determined it to be starting and is the only one doing so with the specific MUF name.
- UP is the point where it starts accepting requests.
- STOPPING indicates that an EOJ is committed.
- DOWN occurs before it releases its hold on the MUF name.

Note: If you are using CA Datacom/DB, the short product name for CA Datacom MUF is CADTCMDB , CADTCMAD if you are usingCA Datacom/AD, and CADCMMSM if you are using CA Datacom MSM.

To fit common standards, it has no state change relating to EOJ requested but not committed. This situation is rare and subject to removing the EOJ. If an error is generated with the OPS/MVS communication, the following message is issued and the error is ignored by MUF:

DB00284W - CA OPS/MVS API error return code *nn*, reason code *nn*.

For more information about messages, see the *CA Datacom/DB Message Reference Guide*.

CA OPS/MVS Heartbeat

Approximately every two minutes, MUF issues a CA OPS/MVS heartbeat notification. It provides a 'status' of NORMAL and 'reason' of blank for all conditions other than the following special cases:

- A status of PROBLEM and a reason of TERMINATION IN PROCESS if the MUF has recognized that it is failing and in the process of being terminated.
- A status of NORMAL and a reason of EOJ REQUESTED, NOT COMMITTED if an EOJ has been requested but is not yet committed to occur. An EOJOFF is allowed at this time.
- A status of NORMAL and a reason of EOJ COMMITTED if an EOJ has been requested and is now committed to occur. An EOJOFF is no longer valid.

You can receive a CA OPS/MVS message such as:

OPSLOGSV CAHEARTBT DBDVM

applid:CADTCMDB

version: 14.0

level:DBDVM01

status: Normal

reason:

In this message, DBDVM0 is the MUF job name, CADTCMDB is the short product name, 14.0 is the version, DBDVM01 is the MUF name, and NORMAL is the status.

COMM_STATS_AT_CLOSE= New DBURSTR Parm

The DBURSTR macro parameter COMM_STATS_AT_CLOSE=YES is not for general use because it adds substantial overhead to the close process and generates a large number of write I/Os. However, the use of this parameter can be appropriate for special case requirements.

For more information, see Defining a User Requirements Table (URT) in the *CA Datacom/DB Database and System Administration Guide*.

Exploit 64-bit Memory Change

This feature gives you the option of defining the index buffers at the DXX layer in all places as residing in 64-bit memory. This includes the DXX buffers at MUF startup defined by the MUF startup options SYSPOOL and FLEXPOOL and any index buffer in a new alternate pool added with Version 14.0. Specifically, you can use the 64-bit parameter on the SYSPOOL MUF startup option to specify whether both DXX and IXX buffers are to be allocated using 31-bit or 64-bit storage, with the default being 64-bit.

In Version 12.0, the 64-bit parameter on the SYSPOOL MUF startup option specified only whether IXX buffers were to be allocated using 31-bit or 64 bit storage, and the default was 31 bit. Also note that FLEXPOOL can be used to specify flexible buffers in addition to the buffers specified with SYSPOOL.

In Version 12.0, the default was 31 bit buffers. With Version 14.0, the default is 64 bit buffers, which we recommend using. Moving the index buffers from 31 bit to 64 bit allows more 31-bit memory for data buffers, code, and other memory usage.

For more information, see the *CA Datacom/DB Database and Administration Guide.*

zIIP Additional Exploitation

The MUF has been enhanced to allow more zIIP-eligible work to execute on zIIP processors when the MUF is running in SRB mode. Because of the variables involved, the precise amount of the improvement cannot be predicted.Your EOJ reports show that more work is off-loaded with Version 14.0 than occurred with Version 12.0.

The target improvement was to increase by about 50 percent what was provided with Version 12.0. For example, if your Version 12.0 MUF is getting 25 percent zIIP usage, then at Version 14.0 that might increase to around 37.5 percent zIIP usage.

MUF Additional Buffer Pools

Support has been added for additional buffer pools as alternatives to the DATAPOOL and SYSPOOL Multi-User Facility (MUF) startup options. This enhancement provides a process by which databases and data areas can be assigned to the alternate buffer pools.

In Version 12.0, the CA Datacom/DB MUF supported one common high level index (IXX) buffer pool, one common low level index (DXX) buffer pool, and two data area buffer pools (normal and large). This enhancement allows more pools of each type, that is, alternate IXX buffer pools, alternate DXX buffer pools, and alternate data buffer pools. These pools are completely optional. Each of these three types of buffers can have up to 99 alternate buffer pools.

If you want to use these alternate buffer pools, define the pools and specify which areas and database IDs (DBIDs) use these alternate pools.

This facility can be used to increase memory resources for selected areas and to restrict memory for other selected areas. The reason it would be used is to improve performance with regard to accessing selected databases.

Important:

- Take into consideration that using additional buffer pools makes tuning the MUF more complex. For example, if an area is restricted to a small number of buffers, I/O for the area can be exponentially increased by additions to the MUF I/O counts and CPU time, as well as increasing the user program elapsed times significantly.
- The MUF startup option ACCESS is required to be set to OPTIMIZE for every DBID with an area in an alternate buffer pool.
- Areas (and all data areas) that use alternative buffer pools are required to be loaded with URI.
- Moving an open area to a different pool requires that the DBID be fully closed.
- Index buffers (IXX/DXX) default to (and should be) 64-bit memory in z/OS. Data buffers, however, are in 31-bit memory and are constrained by the region size which has many requirements placed upon it that limit it to much less that 2g. Also take into consideration that virtual memory is, at some point, backed by real memory.

Defining Alternate Buffer Pools

Alternate buffer pools can be defined only during MUF startup. They are defined with a new MUF startup option of BUFFER_POOL_DEF. One BUFFER_POOL_DEF statement is used to define each alternate buffer pool.

Specifying Alternate Buffer Pool Usage

During MUF startup or after MUF is enabled, by using various console-like APIs, you can define areas that are to use an alternate pool instead of the four standard pools. The statement is:

BUFFER_POOL_CONTENT *pool-name,item*

Both parameters on this statement are required.

The *pool-name* matches a pool name specified on the MUF startup option BUFFER_POOL_DEF.

At MUF startup, the *item* is a single entry or a list of entries separated by a comma. Each entry can be an area name and DBID (examples are IXX2 and PAY5000), or it can be a DBID (such as 400), or it can be a range of bases (for example, 300-800). If the area name is not provided, all areas of that type for the DBID or DBIDs specified are placed in the defined pool.

If the content is changed after the MUF is up, the 'item' can only be specified as a single item or a DBID range. A database cannot be open at the time the BUFFER_POOL_CONTENT statement is processed. The pairing of the buffer pool with the area occurs during an open of the database where it is not currently open. The open fails if the block size needed is larger than the defined pool size.

For an individual DBID for each buffer type, you can only specify an alternate buffer pool at the area level or at the DBID level, but not both. For example, specifying DATA*nn*,PAY001 and DATA*nn,*1 is not allowed.

Just as different data areas in a database can be defined for different buffer pools, multiple dataset index areas with the IXX can go in one pool, and a possible I22 in a second pool, and a possible I01 in a third pool.

New MUF EOJ Report

The alternate buffer pool information has been added to the existing EOJ report.

New and Updated Dynamic System Tables

The alternate buffer pool information has been added to the existing Dynamic System Tables reporting on buffer content and usage. For details, see Dynamic System Tables Enhancements.

New Messages and Return Codes

For details about the following messages and return codes, see the *CA Datacom/DB Message Reference Guide*.

Messages

The following messages were added to Version 14.0 because of the additional buffer pools feature:

- DB00619E
- DB00620E
- DB00621W

Return Codes

The BUFFER TOO SMALL return code 70 has three new internal return codes in Version 14.0 because of the additional buffer pools feature as follows:

- 70 (001)
- 70 (002)
- 70 (003)

MUF LXX Format Options

The MUF LXX format options feature is a performance enhancement that allows MUF to process more maintenance requests per second while reducing the "Total Cost of Ownership." This enhancement reduces the number of bytes stored with selected log records, thus reducing the number of bytes written to the LXX Data Set. Less bytes to write allows for less I/O, which results in better performance.

The LXX is used for temporary storage of data changes and control information. The size of the LXX should be large enough to contain all active transactions. The LXX should also have room to allow spilling to a Recovery File (RXX) to complete without the log becoming full.

Note: For most users, this feature can simply be turned on after reviewing the specific options. Much more information is provided to explain what the specific savings are and what to expect than is needed by most users.

LXX-Related MUF Startup Options Changes

A change that is not optional in Version 14.0 has to do with the format of log records that are subject to 'default' processing as follows:

- During an ADDIT, fields defined with a default that are not part of the element list or that are set with FORCEADD are added with a special element name that starts with a dash and percent sign (-%).
- During an UPDAT, a column with FORCEUPD has an element added similarly to that described for ADDIT, except that for UPDAT, starting with Version 14.0, the full record is logged with a special element name that starts with a dash and a pound-sign (-#).

Following are MUF startup option changes related to Version 14.0 changes to the LXX record format.

- LOG_RECORD_FORMAT
- LOG_RECORD_USER_CMPRS
- LOG_RECORD_UPDAT_SIZE
- LOG_RECORD_ENCRYPT

Details of the options are as follows:

- For tables that are not compressed (and user compressed with LOG_RECORD_USER_CMPRS NO):
  - ADDIT - The smaller of the Work Area plus internal element list or record size. For example, if the element list represents the full record as is most common, the element list of 11+ bytes is excluded from the log and is therefore a savings.
  - DELET - No change.
  - UPDAT - The before record is unchanged. The after is the smaller of the user Work Area plus internal element list or record size or LOG-RECORD_UPDAT_SIZE Work Area plus its internal element list.
- For tables that are variable (DBVVRPR):
  - ADDIT - The element list is removed (the Work Area is the full record to the user specified size). This saves 11+ bytes.
  - DELET - No change.
  - UPDAT - The element list is removed (the Work Area is the full record to the user specified size). This saves 11+ bytes.
- For tables that are CA Datacom/DB-compressed (and user compressed with LOG_RECORD_USER_CMPRS YES):
  - ADDIT - The smaller of the Work Area plus internal element list or record size or compressed record size (+16 if user compressed). Except if a table is encrypted and LOG_RECORD_ENCRYPT YES is set, where it takes precedence, and the compressed record or full record are selected.
  - DELET - The smaller of the record size or the compressed record size (+16 if user compressed). Except if a table is encrypted and LOG_RECORD_ENCRYPT YES is set, where it takes precedence, and the compressed record or full record are selected.

- UPDAT - The before record is the smaller of the record size or the compressed record size (+16 if user compressed). The after is the smaller of the user Work Area plus internal element list or record size or compressed record size (+16 if user compressed) or LOG-RECORD_UPDAT_SIZE Work Area plus its internal element list. Except if a table is encrypted and LOG_RECORD_ENCRYPT YES is set, where it takes precedence, and the compressed record or full record are selected.

READRXX Routine with FORMAT 1 Records

With FORMAT 1 records, the READRXX routine might see some information in a different way from what was seen in FORMAT 0 records, therefore requiring a minor change as described in this section.

In the READRXX routine in Version 14.0:

- All control information is the same between FORMAT 0 and FORMAT 1 records.
- The before record for UPDAT and DELET is always presented as the full record.
- The Work Area for ADDIT and UPDAT is always presented as the full record with FORMAT 1, but this could be different with regard to FORMAT 0 records.
- The element list is changed with FORMAT 1 records to a single 'special' element of '-#*ttt*' where *ttt* is the table name. This element represents the full record, and this element name can be used in all DBNTRY calls. The element list ends, as usual, with 5 blanks.
- If the READRXX routine simply prints the information or uses it for DBNTRY calls, no change is required.
- If the elements are looked up in a table or in CA Datacom Datadictionary, a minor change is required, specifically to not look up the special element in a table or CA Datacom Datadictionary, because the special element has been available for many releases and might already be handled by the routine.

Note: A benefit of FORMAT 1 processing is that it allows the READRXX routine to be simplified by having the before and after records, and therefore having no need to understand elements.

MUF EOJ Report Logging Section Changes

In support of this log feature, the logging section of the MUF EOJ report has a new set of headings and detail lines as follows:

- One detail information line was added for each of the following: ADDIT, DELET, and UPDAT.
- One detail information line was added for TSN records, that is, transaction-related information.
- One detail information line was added for moved records in support of compressed tables or the DBUTLTY OLREORG function.
- One detail information line was added for OTHER records, including LOGIT, LOGDW, OPEN, and a CLOSE that was not done as a commit.

Note: Many of the fields in the report are provided to show that features are working and their results, largely for use by CA Support, CA Datacom development, and QA debugging.

For more information, see the *CA Datacom/DB Database and System Administration Guide*

Changes to the DBSYSID Macro Building the DBSIDPR Module

The DBSYSID macro changes include the following.

Removed from the z/OS DBSYSID Macro for Version 14.0

- CCIAPPL= has been removed from the macro.
- CCIUSER= has been removed from the macro.
- SUBID= has been removed from the macro.
- TOMUF= has been removed from the macro.
- XMEM= has been removed from the macro.
- CONSOLE= has been removed from the macro. It was replaced by CONSOLE_MINUTES=.

Removed from the z/VSE DBSYSID macro for Version 12.0

- FORCEDT= has been removed from the macro.
- FORCECLC= has been removed from the macro.
- CONSOLE= has been removed from the macro. Console support is always present.
- The SVC= keyword is obsolete and should not be specified. If specified, a warning is issued but the assembly continues.
- The VMSVC= keyword is obsolete and should not be specified. If specified, a warning is issued but the assembly continues

Performance Dispatching

Performance improvements in dispatching and subtask management have been added in CA Datacom/DB Version 14.0.

RXXROLLBACK

The RXXROLLBACK option setting can now be changed dynamically with MUF enabled. This is geared for sites that want to clear an exception found by the new force check point health check without cycling MUF.

Handling z/OS Job Timeout S522 Abends

A System 522 (S522) timeout abend can occur if the operating system cancels a task because its CA Datacom call had to wait, with no CPU time, longer than z/OS permitted. Before Version 14.0, you could protect your tasks from S522 abends by having a subtask attached by the interface during the connection to MUF and then detached during the disconnect from MUF. That subtask used a STIMER macro to generate CPU usage that prevented the S522.

Note: If CA Datacom CICS Services was the caller, the STIMER subtask was never performed.

The STIMER subtask could cause occasional problems. For example, an A03 abend could occur if you tried to end a job that was executing while a CA Datacom User Requirements Table (URT) was still connected to a MUF. The correction to this problem was for the application to properly CLOSE all URTs that were opened.

In Version 14.0, the STIMERM macro provides another way to avoid S522 timeout abends. We recommend that you use STIMERM because it is more efficient than the subtask. The STIMERM macro is driven and stopped at the same points as a subtask would be attached and detached. However, STIMERM can have 16 different occurrences in each TCB, and can usually be done in the same TCB as the user application, instead of as a subtask. Because of the limit of 16, it is possible for you to have an application that is using, or expects to use, all 16, in which case the subtask method is still required to be an option.

New DBSYSID Macro Parameter PREVENT_S522=

The PREVENT_S522= parameter in the DBSYSID Macro (used in the generation of the DBSIDPR module) gives you the ability to set a default action for applications using PREVENT_S522= in DBSIDPR and a User Requirements Table (URT) with neither NO522=NO nor PREVENT_S522= specified in the DBURSTR Macro. If not specified in the DBSYSID macro, DBSIDPR provides no default and allows the URT DBURSTR macro parameters NO522= and PREVENT_S522= to apply. If no option is specified in the DBSIDPR module or the URT assembly, the default, as in prior releases, is to have System 522 timeouts prevented using the subtask method.

User applications that provide their own protection should have PREVENT_S522= specified as NO to save the very small overhead. User applications that have multiple independent CA Datacom environments active in one address space and needing protection would be most efficient if only one has PREVENT_S522= specified as other than NO.

For more information, see the *CA Datacom/DB Database and System Administration Guide.*

DBURSTR Macro Parameters NO522= and PREVENT_S522=

The NO522= parameter is optional in the DBURSTR macro if PREVENT_S522= in DBURSTR is not also specified with a value. The PREVENT_S522= option is recommended for a new URT.

Note: You cannot specify in DBURSTR both PREVENT_S522= with a value and NO522= with a value.

The PREVENT_S522= parameter in the DBURSTR macro is optional if NO522= in DBURSTR is not specified. The PREVENT_S522= option is recommended for a new URT.

Note: You cannot specify in DBURSTR both PREVENT_S522= with a value and NO522= with a value.

For more information, see the *CA Datacom/DB Database and System Administration Guide.*

Changed TASKS at MUF Startup

The number of TASKS has been lowered from 6999 to 4000. The change allows for more efficient memory management of tasks.

For more information, see the *CA Datacom/DB Database and System Administration Guide.*

Removed EXPAND from MUF Startup

The EXPAND option has been removed from the MUF startup and if specified, displays an ignored message.

The Dynamic System Tables have been changed as follows:

- MUF_OPTIONS
  - EXPAND_LENGTH field always returns as 0
  - EXPAND_NUMBER field always returns as 0
- MUF_SMP_STATS - EXPAND_BUFFER field always returns as 0
- MUF_SYSTEM_STATS
  - NO_EXPAND_BUFFER field always returns as 0
  - EXPAND_SEQUENCE field always returns as 0
  - REEXPANDS field always returns as 0

For more information, see the *CA Datacom/DB System Tables Reference Guide.*

DBUTLTY Features

The following DBUTLTY features have been added to Version 14.0.

AutoScope Features

The S_MUF_ACTIVE_TASKS (MFQ) AutoStatus table has columns from the MUF_ACTIVE_TASKS (MFQ) Dynamic Systems Table. The tables have been updated as follows:

- The EOJ_OK field has been added. Possible values are as follows:
  - Y - Task will be removed after EOJ.
  - N - Task will not be removed after EOJ or the source MUF is Version 12 where no such field exists.
  - S - Task is part of a multiple task application with a special form of EOJ_OK.

- USER_PATH is now character length 5 instead of character length1 which caused a shift in USER_SYSTEM and USER_JOBID by 4 bytes. The path contains one of the following:
  - LOCAL - Specifies if the application connected with the MUF on the same system and using the internal subsystem or SVC.
  - XCF - Specifies if the application connected using the Cross Communication Facility XCF in z/OS.
  - CCI - Specifies if the application connected using the CA CCI facility in z/OS.
  - IUCV - Specifies if the application connected using the IUCV facility in z/VSE.
  - *MUF* - Specifies if the task area was assigned internal to the MUF itself. This includes system task areas such as the index queue, console task areas, restart driven task areas, and so forth.
  - UNKN - Specifies the path was not set. This is not expected but may be possible.
- Changes were also made to the DDUTILTY FIELD report for the S_MUF_ACTIVE_TASKS (MFQ) table.

For more information, see the *CA Datacom/DB AutoScope User Guide* and the *CA Datacom/DBSystem Tables Reference Guide*.

CXXCLONE

The CXXCLONE function was created to help you clone an environment to a new environment that is modeled after an existing environment. For example, if you had an environment named TEST5, and you had a reason for needing another environment you decided to name TEST6, one step in the creation of the new environment would be to build a TEST6 CXX. In this case, using a LOAD AREA=CXX from a backup of the TEST5 CXX would leave every area in a loaded status and with the data set names from the TEST5 environment. The new TEST6 environment, however, needs its own data sets for every index and data area. Leaving all the areas in loaded status, and with the TEST5 data set names, risks that they might not get corrected and can be used by both the TEST5 environment and the TEST6 environment, leading to large numbers of error conditions.

The DBUTLTY CXXCLONE function is similar to the LOAD AREA=CXX function of DBUTLTY in that it accepts a backup of a Directory (CXX) as an input data set and loads that data to an output CXX. But CXXCLONE is different from using the LOAD function in that it offers you potentially useful options that you can use to make changes during the load. Such as when you are not just restoring a backup of a CXX to the same CXX. If your goal is to make the CXX larger by doing a backup, then an INIT and a LOAD, using LOAD AREA=CXX is the tool we recommend that you use.

Using CXXCLONE to do CXX cloning avoids the problems described because one strategy of using CXXCLONE is to set all the loaded tables to a status of not loaded and to do a deletion of all data set names. Using that capability, you can plan to create new data sets for the entire TEST6 environment during the initialize and load process. This is a safe approach, because the data for the loads can come from data backups of TEST5 data areas or elsewhere, such as the installation "clean" databases for system areas such as CA Datacom Datadictionary, usually databases 2 and 15.

Another general CXX cloning strategy is to copy all of the database data sets after building the new CXX. With this strategy, the data sets can be left loaded, but the data set names need to be altered from TEST5 to TEST6, or they should be deleted and the new names established using the DBUTLTY function CXXMAINT with OPTION=ALTER and DSN=. Also with this strategy, the data sets need to be updated to be "linked" to the new CXX named TEST6, and this is done with the DBUTLTY function LINK.

Another difference between CXXCLONE and LOAD AREA=CXX is that, with the LOAD, if the database being loaded does not exist, the tables are set as not loaded and, if it exists, the status is left unchanged (usually loaded). But by using the STATUS= keyword of CXXCLONE, you can choose how you want the loaded status handled.

CXXCLONE and LOAD AREA=CXX are also different in that the LOAD function requires as input a backup of the same release as itself, while CXXCLONE allows input of a CXX of the same release or a CXX of the prior release. CXXCLONE therefore supports a function similar to the DBUTLTY function CXXMAINT OPTION=CONVERT1214 but with the additional options detailed in the following syntax diagrams and descriptions.

The CXXCLONE function, depending on the options specified, can restore one database, a range of databases, or a list with any combination of databases and ranges. Alternately, if no database ID is specified, every database of input is added to the current CXX.

Note: In addition to the following information about the CXXCLONE function, also see the information about CXXCLONE in the section on the SIMPLIFY feature in Common Actions Performed.

Using CXXCLONE in the SIMPLIFY Mode

When using SIMPLIFY mode when no DBID is specified, the function is required to execute with the MUF not enabled. It requires that the CXX has just been initialized with the INIT function.

When at least one DBID is specified, the function expects to execute using the MUF, and all access to the CXX is controlled by and done by the MUF. However, the function might execute with the MUF not enabled and by using a local CXX, if the CXX is protected by either having this function follow a previous function that must run with MUF not enabled (such as INIT AREA=CXX), or having the MUF declared down using a function SET OPTION1=MUF_NOT_ENABLED. It is also possible to follow a function SET OPTION=MUF_ENABLED_OR_DISABLED that indicates the function should run with MUF if enabled or without MUF using a CXX locally.

Using CXXCLONE when not in the SIMPLIFY Mode

When not in the SIMPLIFY mode, CXXCLONE executes similarly to the LOAD function with AREA=CXX, in that it executes without the MUF using the CXX locally, if no DBID is specified, and with MUF and not any CXX locally, if a DBID is specified.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

Debugging Using an Additional SYSIN with the DBUTLTY SET Function

The additional SYSIN SET feature allows you to debug DBUTLTY functions by processing JCL containing DBUTLTY DIAGOPTIONs and debugging messages in front of the SYSIN JCL. The DIAGOPTIONs and debugging messages are turned on using DBUTLTY SET functions with the OPTION1= keyword. This is not a common requirement. The option is also used to define configuration options, including many of the SET functions, the FORCE function, and the DEFAULT function.

Note: Some of the valid additional SYSIN SET options can be used for more than just debugging.

The additional SYSIN JCL is defined by a module, DBIN1PR, that is assembled using a DBIN1PR macro. When a DBIN1PR module is loaded before SYSIN processing begins, the DBIN1PR module is processed as an alternate SYSIN before the processing of the provided SYSIN. The DBUTLTY SET function must start column 1 followed by one blank and OPTION1= keyword. Each SET statement is echoed to the console. No SYSPRINT/SYSLST output occurs.

Each SET statement must be contained in a single line. The value after the equal sign (=) cannot be in quote values as is allowed or required when processed during the normal SYSIN. Not all OPTION1= values can be used. The FORCE and DEFAULT values must also be specified in column 1, followed by one blank and OPTION1=.

Note: If an asterisk (*) is used in column 1, the statement is ignored, and IGNORED is displayed.

The DBIN1PR macro providing the additional SYSIN can be built using two different techniques. The first is to define the input statements in place. This is the simpler approach.

Note: z/OS and z/VSE support the technique of putting the statements directly into the DBIN1PR Macro.

The second is to define a PDS data set that is to contain the additional SYSIN statements along with the member name in the PDS.

Note: z/OS supports the PDS data set technique.

The following are examples of the message that occurs when the additional SYSIN is processed:

- DB10096I - DBIN1PR PROCESSED - SET OPTION1=ECHO_FUNCTIONS
- DB10096I - DBIN1PR PROCESSED - SET OPTION1=DIAGOPTION 12,32,ON

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

External Security for DBUTLTY

The following DBUTLTY features have been added to Version 14.0 to support external security:

- The ENCRYPT function has a function of ENCRYPT with no sub function and no table rights.
- REPORT AREA=CXX,TYPE=K uses REPORT.ENCRYPT with no table rights.
- REPORT TYPE=U,DDNAME uses REPORT.DDNAME with no table rights.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

DBUTLTY DEFAULT and FORCE Functions

By making use of the ability of the DBIN1PR Macro to process user configuration options prior to normal SYSIN processing, beginning in Version 14.0, a DBUTLTY DEFAULT function allows you to control two defaults, and a DBUTLTY FORCE function allows you to force one keyword value.

Important! We recommend that you use the DBUTLTY DEFAULT and FORCE functions with caution. Users have a tendency to only note a condition code of 0 (zero), and do not additionally view output, not noticing results that were other than expected. A simpler and less potential confusing practice is to adjust the actual JCL streams for site standards instead of making use of the DEFAULT and FORCE functions.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

DBUTLTY SET OPTION1= Changes

Following is one of several changes (others are described elsewhere) to DBUTLTY SET OPTION1=:

DBUTLTY SET OPTION1=CONSOLE_SECONDS=*nn*

In DBUTLTY SET OPTION1=CONSOLE_SECONDS=*nn*, the *nn* can be numbers 01 through 30.

What you specify for *nn* overrides the DBSYSID Macro option CONSOLE_MINUTES=. The CONSOLE_SECONDS=*nn* was built to make it easier for development and QA to test the console commands with smaller volumes of data than would be the case in a production environment. The seconds value specified with *nn* is too small for production systems to use.

This particular SET option can only be done using the DBIN1PR macro.

Note: This particular SET option causes no action in z/VSE, that is to say, it is accepted but ignored in z/VSE because this option is not available in z/VSE.

STATUS Command Change

The STATUS command has changed with regard to the way the status of the owning task is treated. This change is also reflected in the OWNER_TASK column in the MUF_ACTIVE_TASKS Dynamic System Table. In Version 14.0, if the owning task is not a specific task but instead the CA Datacom MUF itself, the number is reported as blanks for the STATUS command and a zero (0) for the MUF_ACTIVE_TASKS Dynamic System Table.

DBSIDPR parameter - DBUTLTY_EDIT_DDNAME=

The optional DBUTLTY_EDIT_DDNAME= ensures that sequential datasets named by the DBUTLTY functions with the DDNAME=keyword do not match names of existing or potential CA Datacom system areas, database index areas, or data areas.

The value FULL_1 provides the protection and is the default. We recommend it for new environments being built and for existing environments, if you are willing to correct existing JCL that is in conflict with the editing rules.

The value NO provides no restrictions to the DDNAME value. We recommend it for existing environments that have been validated as correct and if you are not willing to correct existing JCL.

Related DBUTLTY Changes

The REPORT MEMORY=MVS report has up to five (5) new, optional lines added to common memory that print if the named memory has been allocated, as follows:

- Version 14.0 system anchor
- Module DBPCCPR specified as being for PROD usage
- Module DBPCCPR specified as being for TEST usage
- Module DBPCSPR specified as being for PROD usage
- Module DBPCSPR specified as being for TEST usage

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide for z/OS*.

Other Related Changes

Other related changes include the following:

- In the DB00101 message, the SVC= is printed only if the SVC is being used, but this should not occur with Version 14.0.
- The interface dynamically executes the new MUF PC routine DBPCCPR unless using XCF or RRS, where it uses a CA common PC subroutine DBPCSPR.

LINK Function

The LINK function of DBUTLTY has been enhanced for all users. Each area in the database is processed starting with the IXX, then other index areas followed by data areas. For each area, the following applies:

- The area data set name from the Directory CXX is accessed.
- The area is opened if the data set name is not blanks.
- Its control block is read if the open is successful.
- If the CXX name is not current, it is updated and written if the read is successful.

Any error preventing the area open or during the I/O events is reported and that area is skipped from having the CXXNAME updated in its control block. Each area successfully processed is reflected in the report. Error messages force the DBUTLTY function to fail so that it is easy to identify success or failure. A blank data set name (common for bases defined as VIRTUAL, SYSTEMDBID) or a base just being built and having no data sets is considered not in error. Even on a return code 0, the report can be viewed to easily see those that have no CXXNAME printed. If necessary, research can be done to verify that the LINK option is not needed.

DBUTLTY LOAD Function Sort Default (SORTDFLT=)

The DBUTLTY LOAD function has a new keyword, SORTDFLT=, that allows the DBUTLTY SORT value when specified as greater than 0 for a LOAD to be overridden with an estimate expected to be more accurate. SORTDFLT= can only be used in conjunction with the SORT= keyword. When set as SORTDFLT=YES, the LOAD looks for record counts in the control records of the BACKUP input or the current CXX to use for the SORT= override. If the count in both places is zero (no records) for all tables to be loaded then the SORT=*n* value is used and not overwritten. Verify that it is in the appropriate range to allow a successful LOAD.

The record count and the number of key definitions per table are multiplied for each table to be loaded and the products are summed as the estimate for record index entries. Based on the areas space management (DSOP) options, additional counts are added to verify a successful sort.

When using this DBUTLTY LOAD enhancement, consider the following:

- The number of records in a table is not always known.
- The number of records in a table after a MUF outage is likely to be inaccurate.
- A backup taken before Version 12.0 does not include information regarding the record count.
- The backup with Version 12.0 or later has the count as stored in the CXX at the time of the backup.
- Extract files never have a count, because they have no control records.
- For each table, the record count in the BACKUP control record is used if known and not zero, otherwise, the current CXX record count is used. Either could be more accurate.
- The record count information from BACKUP input is taken from the control records that exist before the first data record, and any use of concatenated input is inappropriate to using the SORTDFLT=YES option, for example, if a database has two areas and they are each backed up separately. That is, if the two backups are concatenated into one base load, the control records at the start of the first input provide information about the first area, but the control records for the second input are not seen until the first area is complete, which is therefore too late to use to start the SORT. The pairing of base backups with base loads and area backups with areas loads do not have this issue.

SORTDFLT=

(z/OS only) As previously noted, the DBUTLTY SORT= value can now be overridden with what is expected to be a more accurate number. SORTDFLT= can be set to the following:

- YES - SORT value must be specified with a value greater than zero
- NO - Default

Note: The option has no equivalent in the DBFLSUB process.

DBUTLTY LOAD Report Changes

An additional section to the LOAD report was added after the optional BACKUP INFORMATION, if present, and before the INPUT FILE INFORMATION if SORDTDFLT is set to YES. The heading of the new section is SORTDFLT INFORMATION. After the heading, one line is printed for each table to be loaded.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide.*

DBUTLTY RETIX Function Sort Default (SORTDFLT=)

The DBUTLTY RETIX function has a new keyword, SORTDFLT=, that allows the SORT value when specified as greater than 0 for a RETIX to be overridden with an estimate expected to be more accurate. SORTDFLT= can only be used in conjunction with the SORT= keyword. When set as SORTDFLT=YES, the RETIX uses the current CXX count of records and definition to calculate a value for the SORT= override. If the count is zero (no records) for all tables to be loaded then the SORT=*n* value is used and not overwritten. Verify that it is in the appropriate range to allow a successful RETIX.

The record count and the number of key definitions per table are multiplied for each table to be loaded and the products are summed as the estimate for record index entries. Based on the areas space management (DSOP) options, additional counts are added to verify a successful sort.

When using this DBUTLTY RETIX enhancement, take into consideration that the number of records in a table after a MUF outage is likely to be inaccurate.

SORTDFLT=

(z/OS only) As previously noted, the SORT= value can now be overridden with what is expected to be a more accurate number. SORTDFLT= can be set to the following:

- YES - SORT value must be specified with a value greater than zero
- NO - Default

DBUTLTY RETIX Report Changes

An additional section to the RETIX report was added before the table and count information.

For more information, see the *CA Datacom/DB DBUTLTY Reference Guide.*

DBUTLTY CXXMAINT Enhancement

The DBUTLTY function CXXMAINT with DBID=n, AREA=aaa, and DSN= has been enhanced in Version 14.0 as follows.

Prior to Version 14.0, the data set name (DSN=) had to be set to a value.

In Version 14.0, the data set name can be specified as an asterisk (DSN=*), which sets the data set name to blanks and therefore removes the stored data set name.

DBUTLTY INIT Enhancements

The INIT function has been enhanced as follows.

OPTION1=REINIT

A new option, OPTION1=REINIT, can be used during initialization to "re-initialize" an index area or data area. Specifying OPTION1=REINIT requires that you also specify VERIFY=YES.

OPTION1=REINIT causes history information in the control block to be retained. Without OPTION1=REINIT, all history data is removed.

When using OPTION1=REINIT, the data set is re-initialized with the same number of tracks that were in use before the INIT, and no additional tracks are found or added to the data set during the INIT. When OPTION1=REINIT is not specified, the INIT closes the data set for update, opens the data set for output (honoring current, complete JCL specifications), closes the data set for output, then reopens the data set for update.

Adding space to an index or data area is normally accomplished using a DBUTLTY EXTEND function, but it can be done during an INIT function as well. A benefit of the OPTION1=REINIT for z/OS users is that it allows unused volumes to be added to data sets that do not have to be removed before an INIT. For example, in a z/OS environment, if you are not using SMS, you could INIT an area on 3 volumes and load the area. You might then manually uncatalog the area and recatalog it with an additional volume or volumes. Those additional volumes would be available for any dynamic extend for the area that was needed, but to prevent the INIT from forcing the use of the volumes that were added solely for the use of dynamic extend, you would need to manually uncatalog the area before another INIT and recatalog it without any additional volumes.

A benefit of OPTION1=REINIT for z/VSE users is that unexpired files do not have to be deleted.

VOLUMES=*n*

With the INIT function VOLUMES=*n,* you can specify the maximum number of volumes to initialize. Without the VOLUMES= option, the number of volumes having specific VOLSER information is initialized. The VOLUMES= option allows more volumes to be cataloged as part of the data set and made available to a DBUTLTY EXTEND or dynamic EXTEND, while being effectively held in reserve without a specific allocation. For example, you could specify VOLUMES=3 when using an INIT to initialize an area that needs three volumes, intending to only initialize the space on three volumes. But the JCL could specify six specific volumes, for example, VOL=SER=(VOL001,VOL002,VOL003,VOL004,VOL005,VOL006), so that volumes 4, 5, and 6 are not allocated or used during the INIT but are available to a dynamic extend. In this case, the extra volumes would not need to be removed before another INIT.

DBUTLTY OLREORG Options to Allow Use of Empty Blocks

The CA Datacom DBUTLTY function OLREORG has been enhanced to allow the use of empty blocks in a reorganization when the amount of free space is limited in used data blocks. Support for the new OLREORG empty block includes the following categories:

- Implementation of a way to keep track of empty blocks
- New DBUTLTY behaviors
- Changes to the REPORT produced by OLREORG.
- External limits

Keeping Track of Empty Blocks

CA Datacom/DB keeps track of the available space of a data area using a special key ID in each DBID index. In Version 12.0, data space options 1, basic space reclamation, and 2, wraparound mode, did not keep track of which blocks were logically empty, that is, blocks that were used in the past but currently have all their rows deleted.

To enhance the efficiency of OLREORG, the following space options were added that keep track of empty blocks:

- Option 4 is basic space reclamation with an empty block index.
- Option 5 is wraparound mode with an empty block index.

Support for these Space Management Options were added to the Datadictionary 3002 Area transaction.

Support was also added to the DBUTLTY CXXMAINT ALTER DSOP function, but we recommend that you change your space option in CA Datacom Datadictionary.

Changing the space option does not affect the loaded status of the data area and is effective immediately following its change in the CXX. Because the empty block index was not maintained in the past for basic and wraparound modes, we recommend that, when changing to a DSOP 4 or 5, you run a RETIX KEYNAME=*DATA to rebuild the space index, including the new empty block component of the space index.

Note: You are not required to run this RETIX.

External Limits

If there are no more blocks in the empty block index, OLREORG uses the next available overflow (NAO) block. OLREORG never causes a dynamic extend.

DBUTLTY External Security

A CXX load performed with CXXCLONE is treated the same way as a LOAD AREA=CXX by External Security. It uses LOAD.CXX (full load, no table rights) or LOAD.CXXBASE (DBIDs specified, CATALOG DTUTIL table rights).

Dynamic System Tables Enhancements

The following tables have been updated:

DIR_DIRECTORY

New columns:

Column Name	SQL Data Type	Nullable	Description
SIMPLIFY_MODE	Char (1)	No	This column contains a Y if the CXX was initiated with SIMPLIFY mode as Yes, otherwise, it is N.

DIR_TABLE

New columns:

Column Name	SQL Data Type	Nullable	Description
ENCRYPTION_METHOD	Char (1)	No	Indicates the method of encryption to be used. Contains one of the following: - Blank no encryption - A - AES-128 - B - AES-192 - C - AES-256
ENCRYPTION_TYPE	Char (1)	No	Indicates the type of encryption to be used. Contains one of the following: - Blank - No encryption - B - Basic encryption performed by Datacom/DB with no key management

MUF_ACCOUNTING

Changed columns:

TOTAL_REQUESTS is now DEC (13,0).

MUF_ACTIVE_TASKS

Changed column:

The description of the OWNER_TASK column for Version 14.0 has been changed to read as follows

If the status is WAIT E/C, the number of the task which owns the lock is reported. Some locks have an owner which is the MUF itself and not a specific task, in which case the OWNER_TASK is reported as a zero (0). This does not occur for data row locks but does for some of the value locks.

New columns:

Column Name	SQL Data Type	Nullable	Description
EOJ_OK	Char (1)	No	For single task area connections, EOJ_OK contains a Y if the URT used to connect to the MUF specified EOJ_OK=YES, otherwise contains an N. The EOJ_OK option allows MUF to EOJ without the application closing all URTs. For multiple task area connections EOJ_OK contains a 'S' if the application driving the multiple task area connection connected with an option EOJ_OK_S, otherwise contains an N.

MUF_AREA_STATS

A row for the PXX Area is now included in this table.

MUF_BUF_USE

Changed columns:

BUFFER_USED_1 is now DEC (13,0).

BUFFER_USED_5 is now DEC (13,0).

MUF_IDENTITY

New columns:

Column Name	SQL Data Type	Nullable	Description
MUF_JOBID	Char (8)	No	This column contains the MUF JOB ID if z/OS, or blanks if z/VSE.
MUF_SYSTEM_NAME	Char (8)	No	Name of the system on which MUF is running if z/OS, or blanks if z/VSE.
PC	Char (1)	No	In z/OS, this column contains a P if the production PC is being used, or T if the test PC is being used. This is specified in the DBSYSID macro, PC parameter and normally is P. For z/VSE, it contains the SUBID of the DBSYSID macro.

Removed columns:

SUB_ID

SVC

MUF_INTERNAL _STATS

Changed columns:

BREAKS_DONE is now DEC (11,0).

MRDF_IXX_DIRECT is now DEC (11,0).

MUF_OPTIONS

Changed descriptions:

EXPAND_LENGTH, this column is provided for prior release compatibility and contains a 0 (zero).

EXPAND_NUMBER, this column is provided for prior release compatibility and contains a 0 (zero).

MUF_SMP _STATS

Changed columns:

POSTED_0 is now DEC (11,0).

POSTED_1_5 is now DEC (11,0).

MUF_SMP _TASK

Changed columns:

TIMES_USED is now DEC (13,0).

MUF_SYSTEMS_STATS (MSS)

The MUF_SYSTEMS_STATS (MSS) table is designed as a replacement table for MUF-SYS_STATS (MFS). It has many columns with a larger capacity than the old table and removes obsolete columns that are in other dynamic systems tables or provide no value and may lead to confusion. We recommend that you start using this table to collect systems statistics even though the MFS table still exists.

MUF_TCB_OR_SRB

Changed columns:

TIMES_POSTED is now DEC (13,0).

TIMES_USED is now DEC (13,0).

MUF_XCF

Changed columns:

REQUESTS_TOTAL is now DEC (11,0).

New columns:

Column Name	SQL Data Type	Nullable	Description
CURRENT_STATUS	Char (6)	No	Either DELETE, NO, or YES, as specified with the XCF_FROM option.
JOBNAME	Char (8)	No	Job name from which this MUF can accept requests, as specified with the XCF_FROM option.
SYSTEM_NAME	Char (8)	No	System from which this MUF can accept requests, as specified with the XCF_FROM option.

Removed Columns:

DIRECTION

XCF_MUF_NAME

For more information, see the *CA Datacom/DB System Tables Reference Guide*.

Reporting Facility Enhancements

The CA Datacom/DB Reporting Facility has been enhanced as follows. For more information, see the *CA Datacom/DB Reporting Facility Guide*.

Request Data from Multiple MUFs

- On the FILE/INPUT statement, the following additional parameters are available:
  - SIDNAME=xxxxxxxx where xxxxxxxx is the load module name of the SID of the MUF you want to access. SIDNAME defaults to DBSIDPR.
  - DBIDUSER=9999 where 9999 is the DBID that you use in the Reporting Facility program with DBIDMUF. These parameters are only needed if you are using the same DBID in one DR program from the two different MUFS.
  - DBIDMUF=9999 where 9999 is the DBID that MUF knows about.

  Note: Code and link the DBSIDPR macro as xxxxxxxx matching the SIDNAME=parameter coded. For more information about coding the DBSIDPR macro, see the *CA Datacom Database and System Administration Guide*.
- URT existing options honored by the Reporting Facility:
  - DBPRI=,
  - DBSEQBUF(s)=
- New error message: DRA1248E - DBIDUSER/DBIDMUF conflict

Dynamic System Tables Access

- Allows limited access to Dynamic System Tables (of most interest for sites without SQL).
  - Excludes tables starting with SQL_ that are only accessible using SQL
  - RAAT commands REDKX, REDKG, and REDNX only
  - The MUFNAME field or DIRNAME field is forced to the MUF being used and the CXX being used
  - With the CA Datacom fix for COPYDD, you have access to simple fields for fields defined as SQL DATE, TIME, and TIMESTAMP

Note: For more information about excluded SQL tables, see the *CA Datacom/DB System Tables Reference Guide*.

Timestamp DEF Statement

With the latest CA Datacom Datadictionary and CA Datacom/DB Reporting Facility enhancement that includes a three-character suffix, you can now print fields defined as SQL TIMESTAMP.

When the Reporting Facility requests a view of a table containing an SQL TIMESTAMP column, CA Datacom Datadictionary provides the SQL TIMESTAMP with a breakdown of simple fields that can be individually processed by the Reporting Facility. Currently, the Reporting Facility can only process the SQL TIMESTAMP as a single, binary-formatted field with a length of ten.

LINE=OLD/NEW Option in DBSIDPR

In releases prior to Version 14.0, LINE=OLD was used to have DBMUFPR and DBUTLTY build and print lines at the length of 121. This option provides compatibility should it be required. It is rare but possible that users could have JCL streams that are built specifically for the 121 byte output stream. In z/OS, the use of LINE=OLD does more than just setting the print size. It forces the DCB LRECL option to 121 and if the DD statement DCB BLKSIZE option is set as zero then it is modified to be 121. This mimics how older releases did printing.

When using LINE=NEW, DBMUFPR and DBUTLTY build and print lines with a length of 133 in z/VSE and a default length of 133 in z/OS. In z/OS, if the JCL provides a SYSPRINT DD statement and it has LRECL specified then it is honored, otherwise LRECL is forced to 133. The BLKSIZE is left alone to provide z/OS defaulting.

The DBSIDPR option LINE= can be overridden in a specific DBUTLTY execution. This override requires use of the DBIN1PR facility to provide configuration information prior to normal function processing. The SET function can be used with OPTION1=LINE=OLD or SET OPTION1=LINE=NEW.

To minimize change to any existing user applications that read current reports such as REPORT AREA=CXX, there are no specific plans to change any existing print output to make use of the larger print lines. In Versions after Version 14.0, new information made to existing reports or new reports can make use of the full print line.

Datadictionary Features

The following are new features and functions specifically for CA Datacom Datadictionary.

Datadictionary Report Comparing DATA-DICT

You can use the CA Datacom Datadictionary Structure Definition Comparator Program (DDSDCLM) to assure the DATA-DICT database structure at your site is consistent with the structure as it would be installed by a new customer. The DDSDCLM reads the DATA-DICT database structure in PROD status at your site and compares it to the structure that would be installed at a new customer site. Any inconsistencies between your definition and the expected DATA-DICT definition are reported.

The purpose of the DDSDCLM is to catch those inconsistencies that could be present before upgrading from one version of the CA Datacom Datadictionary to another. These errors are most often caused by some inconsistency in the definition of the DATA-DICT database. The benefits are as follows:

- Before beginning the upgrade process, the DDSDCLM module assists you in making the necessary corrections to bring your definition into alignment with the expected baseline for the upgrade.
- Using it after the upgrade completes, helps ensure that the resulting structure is consistent with the new version.

DDSDCLM Processing

The DDSDCLM performs two functions:

- Reads the DATA-DICT DATABASE Structure in PROD status at your site. The DDSDCLM compares selected information regarding the structure to the information provided in the module created and delivered by CA Technologies that reflects the minimum expected structure.
- Reads all PRODuction and TEST occurrences of certain entity-types and edits them from compliance with current requirements.

The processing performed by DDSDCLM is as follows:

1. Reads the SYSIN input file and processes the following records:
    a. The first record in the SYSIN file must be a standard USR transaction unless the CA Datacom Datadictionary System Resource Table (DDSYSTBL) indicates that the external security system User ID is used. This transaction is processed as described for all other CA Datacom Datadictionary batch utilities. The user-specified in the USR transaction must have DDADMIN authority or processing does not proceed.
    b. The records described in this section are optional. The records are SET transactions as documented in the *CA Datacom/DB System and Database Administration Guide*. One additional SET transaction is accepted for this utility which is formatted as follows:
        - Bytes 1-4 contain -SET.
        - Byte 5 is blank.

- Bytes 6-9 contain Warning Messages OFF (WMOF) specifies that messages indicating differences in the structures that are not incompatible with a valid structure but are not part of the standard installation will not be printed. These are messages that indicate such things as additional tables in the database, additional keys or elements not in the standard structure, and additional columns not in the standard structure. All of these could indicate that you have implemented user-defined extensions. The default is to print these messages.

c. The final record must be a DDSDCLM transaction that is formatted as follows:

Comparator Transaction

```
-SDC vvv,stat
```

- Bytes 1-4 contain –SDC
- Byte 5 is blank
- Bytes 6-8 contain the version identifier of the DATA-DICT structure being processed (for example, 140, 120, 121)
- Byte 9 is, optionally, a comma
- Bytes 10-13 are, optionally, the Status of the DATA-DICT Database Structure to be processed (for example, PROD, T001, and so forth). If not provided, the default status is PROD. History versions are not allowed.

Verifier Transaction

```
-SDC VERIFY
```

- Bytes 1-4 contain -SDC
- Byte 5 is blank
- Bytes 6-11 contain VERIFY

2. For the Comparator Transaction, the following processing is performed:

a. Loads the Basis module corresponding to the version identifier specified in the DDSDCLM transaction. For example, if the DDSDCLM transaction contained 140, then DDSDCLM attempts to load module DD140SD. If the load fails, an error message is printed describing the problem. For more information, see DDSDC messages in the *CA Datacom/DB Message Reference Guide*.

b. Reads the DATA-DICT database structure in PRODuction status in the MUF accessed based on the DBSIDPR module used. DDSDCLM reads through the entire DATA-DICT structure and reports on differences between your DATA-DICT structure and the expected structure as defined by the Basis module.

3. For the Verifier Transaction, the following processing is performed:
   a. Reads all occurrences of the following entity-types:
      - AREA
      - DATABASE
      - CONSTRAINT
      - ELEMENT
      - FILE
      - FIELD
      - KEY
      - PARTITION-COLUMN-VALUE
      - SYNONYM
      - TABLE
      - VIEW
   b. Verifies that each occurrence passes the edit requirements for the current release of CA Datacom Datadictionary.

SDC Message Identifier Format

The DDSDCLM generates messages. The Verifier Transaction generated the same messages used in the DDUPDATE Batch Processor.

Message Identifier Format

Messages generated by DDSDCLM have the following identifier format:

DDSDCtnnnl

- DDSDC – Constant for all messages from DDSDCLM.
- t – Entity-type associated with the message or other generic messages:
  - D – Database
  - A – Area
  - T – Table
  - C – Column
  - E – Element
  - K – Key
  - N – No specific entity-type associated
  - G – General processing messages
- *nnn* – Numeric value unique within the set of messages defined by the first six characters.
- l – Error level:
  - **I – Informational messages.** No action required. Sets condition code to 00 if no other message levels are generated.
  - **W – Warning messages.** These are messages generated unless the –SET WMOF is used. If WMOF is set, then these messages do not affect the condition code. If WMON is in effect, then the condition code is set to 04 if no higher message level is generated.
  - **A – Attention messages.** These are messages indicating there is an inconsistency in the structure that requires user attention to correct. The condition code is set to 08 if no higher message level is generated.
  - **P – Processing messages.** These messages indicate a failure that typically ends processing immediately. For example, when an unexpected database return code is encountered during processing. The condition code is set to 16 and a snapshot dump may be taken.

Message Occurrence Names

Most messages have an entity occurrence associated with them. For FIELD, ELEMENT and KEY occurrences, the name displayed consists of the occurrence name of the owning TABLE occurrence followed by a period (.) followed by the occurrence name of the particular entity occurrence.

Message Values

Many messages are followed by two values separated by a slash (/) and contained within parentheses. The first value is the local value and the second value is contained in the Basis.

Finalization

If any messages indicate that corrective action is required, restore the DATA-DICT production structure to a test status and make the necessary changes. Once the DATA-DICT structure is determined as correct, copy the structure to PRODuction status and use the DDCFBLD batch program –CXX BUILD function and the CA Datacom/DB DBUTLTY batch program CXXMAINT DDPROD function to update the Directory (CXX).

AREA Entity-type SPACE_MNGMNT Attribute

Two new valid values have been added to the AREA entity-type SPACE-MNGMNT attribute:

- 4 – Basic space reclamation (Option 1) with an empty block index
- 5 – Wraparound reclamation (Option 2) with an empty block index

Timestamp DEF Statement

For more information about the SQL TIMESTAMP enhancement, see Timestamp DEF Statement (see page 96).

-SET Formats Allowing Condition Code 0

The new SET transactions have been implemented for several reasons. One of these is an internal requirement that every step in the product install needs to have a condition code 0. In the past, some CA Datacom Datadictionary steps could have condition codes greater than zero but the processing would still be valid.

Note: These transactions are effective for the DDCFBLD, DDUPDATE, and DDUTILTY batch programs.

Not all DDUPDATE condition code 8 can be treated as equal. Care has to be taken regarding which condition code 8 can be reset. If you receive condition code 8 due to not found conditions, the use of the SET NTFFN is a much better choice. Do not use the blanket SET CCn0 as a blanket reset of the condition code without prior knowledge if you think the error can be ignored or not. Use extreme prejudice when using this SET CCn0 option.

–SET CCn0

The –SET CCn0 transaction sets the condition code of the job step to 0 if an error code causes it to be set to n or less, where n can be 8, 4 or 0. If n is 0, the condition code handling is reset to the standard processing. If necessary, the –SET can be included multiple times in an input set of transactions so that specific groups of transactions can be handled as needed. The –SET CCn0 transactions would have to fall between the –END and the next header transaction (-ADD, -DEL, and so forth) or prior to the first header transaction excluding the -USR.

–SET NTFF*n*

The SET NTFn transaction sets the external condition code to n if the occurrence specified in the header transaction is not found (NTF) where n can be 8, 4, or 0. This is useful if you precede a set of BTG or ADD transactions with a DEL/1000 OBSOLETE without knowing whether the structure is there or not. Also, if there is a generic report included and you do not know if there are any occurrences meeting the RPT transaction criteria. Again, there can be multiples of these transactions in a single execution to allow for cases where occurrences must be present and others might or might not be in the same job step. The rules for inclusion are the same as for the SET CCn0.

BUILD Function of DDCFBLD

The BUILD function of the DDCFBLD batch utility has not allowed user databases to be processed. This functionality is now allowed, but comes with a strict warning that this is *not* the recommended method of defining databases to the CXX. When this function is attempted for a database other than DATA-DICT or DDD-DATABASE, the following DDFCFM0034 message is issued and the batch condition code is set to 08.

DDFCFM0034 WARNING: DATABASE NOT RECOMMENDED

For more information, see Messages and Codes or the *CA Datacom/DB Message Reference Guide*.

Enhancements to the Previous Release

After CA Datacom Version 12.0 became Generally Available (GA), various informational solutions, called Product Documentation Change (PDC), were issued to support PTFs that were issued. The PDCs are included here for the following products:

- CA Datacom/DB (see page 103)
- CA Datacom Datadictionary
- CA Datacom SQL

PDCs for CA Datacom/DB

APAR RI13085 Solution 35

DBPNGPR is a program that you can use to evaluate XCF and CCI communication protocols. It is similar to the other techniques used in CA Datacom/DB. You can use it to ping XCF to find information about XCF groups and XCF members in existence at the time on your system. This utility is beneficial for those sites using XCF when certain XCF-related problems occur and can identify connection problems at detailed level.

Information has been added to the *CA Datacom/DB Database and System Administration Guide.*

APAR RI21102 Solution 48

With the application of APAR RO13308, a greater requirement for jobs to be run APF authorized is recognized. Several places in the CA Datacom/DB documentation are updated:

- CA Datacom/DB Message Reference Guide, two new messages and one removed message
- CA Datacom/DB DBUTLTY Reference Guide for z/OS
  - Overview section
  - REORG (Parallel BACKUP/LOAD)
  - REPORT MEMORY=CF function
- CA Datacom/DB Database and System Administration Guide
  - DBMSTLST Macro Parameters section, under the SMFRTY= parameter

APAR RI23671 Solution 154 (z/OS and z/VSE)

In CA Datacom Version 12.0, the default for all databases was set as OPTIMIZE for the MUF startup option ACCESS. CA Datacom SQL requires the database to have this turned on in order to use SQL Data Definition Language (DDL) statements such as CREATE TABLE, ALTER TABLE (for example to add, modify or drop an INDEX or a CONSTRAINT) or DROP TABLE. If SQL DDL is attempted on a database not set as OPTIMIZE, return code 94(170) is given.

SQL Data Definition Language (DDL) statements are not allowed when running in a MUFplex configuration with two or more Multi-User Facilities (MUFs) enabled.

This Product Documentation Change (PDC) provided changes in the following:

- *CA Datacom/DB Database and System Administration Guide*
  - Using the Multi-User Facility
  - Parallel Sysplex, Datacom Sharing (MUFplex)
- *CA Datacom/DB SQL User Guide*
  - Before You Start, Creating SQL Tables
  - SQL DDL Statements in a MUFplex
  - Creating SQL Objects
  - SQL Statements
- *CA Datacom/DB Message Reference Guide*
  - Return Code 90 (170)

APAR RI29501 Solution 237 (z/OS)

This PDC introduceD the CA Datacom/DB Data Reorganization Update for Version 12.0. This update included significant new functionality for the 12.0 users combined with a new documentation delivery. This update included:

- This informational solution
- The CA Technologies Green Book CA Datacom/DB Data Reorganization
- A set of confirmed PTFs that deliveedr several key enhancements for the Version 12.0 environment
- A PDF document provided documentation on the new options and reports involved
- An informational solution that provided documentation for the use of the new Version 12.0 enhancements

APAR RI29664 Solution 243 (z/OS)

The CA Datacom/DB Data Reorganization Green Book was delivered in 2011. The Green Book discusses many techniques for managing and performing data row reorganizations.

The Green Book describes the following five pairs of Accounting tables:

- High Level Accounting tables (A90 and A91)
- High Level Accounting tables with Key Information (A92 and A93)
- High Level Access with Key Information for Non-CICS (A94 and A95)
- High Level Access with Key Information for Selected DBIDs (A96 and A97)
- High Level Access with Key Information for Selected Time Periods (A98 and A99)

Steps are also provided on how to download the DDUPDATE transactions for sample Accounting tables A90-A99.

APAR RI29752 Solution 244 (z/OS and z/VSE)

This PDC clarified the meaning of CBSIO and MAXSTIO.

PDCs for CA Datacom Datadictionary

APAR: RI17403 Solution 17 (z/OS)

In CA Datacom Datadictionary Version 12.0, FUNCTION is a reserved name for a table.

If you have previously created a user-defined table with the name FUNCTION, you must rename it before upgrading to CA Datacom Version 12.0. FUNCTION was added to the table of SQL Reserved words.

APAR: RI23660 Solution 30 (z/OS)

Program Link-Edit and Execution

After your user program is assembled and compiled, you must link edit it with the appropriate DSF modules prior to execution. All calls must be made from the same load module.

Note: Use the NODYNAM option when compiling a COBOL program. In the link-edit sequence, the user program must be first. Because of limitations in CA VPE, specify a value of 24 for the address mode (AMODE) in the link-edit parameters.

z/OS Link-Editing

The link-edit control statements for z/OS are as follows:

INCLUDE objlib(usercode)
INCLUDE cavpe(VPE9864)
INCLUDE cadd(DDDDBxx)
NAME userprogram(R)Product: CA DatacomDatadictionary Version 12

Link-Editing in CICS

Programs accessing the Service Facility through Datadictionary Service Facility/CICS must include the user's code and the Datadictionary object module DDBSCnn in the link-edit execution. Use the following to determine the last two digits of the Datadictionary object module name.

For CICS Release	**Running Under**	**Use**
2.3	z/VSE	23
For CICS Transaction Server	**Running Under**	**Use**
1.1	z/VSE	11
3.1	z/OS	31
3.2	z/OS	32
4.1 or higher	z/OS	32

PDCs for CA Datacom SQL

APAR: RI33540 Solution 98 (z/OS and z/VSE)

For the SQL code -316, this solution replaced the existing Explanation section with the following text:

Explanation: The indicated column reference in an ON clause refers to a column in a table that may be accessed after the join of the ON clause. Column references in predicates of the ON clause must refer to the tables in the ON clause or tables that must to be accessed before the join of the ON clause due to the order of the INNER or LEFT joins. Tables in the FROM list separated by commas may be joined in a different order than written to provide the lowest possible cost of execution.

The following are examples of queries that will result in the -316 SQL code:

Example 1: Join order may change such that T1 is read after the join of T3 and T4.

```
select count(*)
from sql_status T1, sql_status T2,
   (sql_status T3 left join sql_status T4
    on T1.urts = 1)
;
```

Example 2: T4 has not been read before the join of T1 and T2.

```
select count(*)
from (sql_status T1 left join sql_status T2 on T4.urts = 1)
   left join
   (sql_status T3 left join sql_status T4)
```

APAR: RI33608 Solution 99 (z/OS and z/VSE)

This PDC updated CA Technologies recommendation on the Multi-User Facility (MUF) startup option, SQL_OPTIMIZATION_LEVEL.

There are three updates in this PDC:

- Add documentation on the SQL_OPTIMIZATION_LEVEL MUF startup option *CA Datacom/DB Database and System Administration Guide*. It was previously omitted.
- Update the recommended value for SQL_OPTIMIZATION_LEVEL in *CA Datacom Release Notes*.
- Update the recommended value for SQL_OPTIMIZATION_LEVEL in *CA Datacom/DB Database and System Administration Guide*.

APAR: RI23690 Solution 153

If your COBOL compiler supports 'OPTION PGMN(LM)' and you use a program name longer than 8 bytes, this Product Documentation Change applies to you.

Replace the current content for message DB21020E in the *CA Datacom/DB Message Reference Guide* Version 12.0.00 with the following:

DB21020E PROGRAM-ID > 32 CHARACTERS

APAR: RI23690 Solution 153

There is a need to set SQLDATA and SQLIND in SQLVAR to address of host variable, but COBOL does not allow these fields to be declared as pointer variables. DBXHAPR is only for COBOL programs using dynamic SQL. COBOL does not allow the SQLDATA and SQLIND fields to be declared as pointer variables. When you nevertheless need to set them to the address of host variables in SQLVAR, follow these steps:

1. Link DBXHAPR to the OBJLIB that is being used by adding the following to your COBOL programs:

   CALL 'DBXHAPR' USING <SQLDATA>, <host-var>.

2. Set the address of each SQLDATA and SQLIND field used before SQLDA with the following in the linkedit step:

   INCLUDE OBJLIB(DBXHAPR)

Changes from the Previous Release

CA Dataquery

Beginning with Version 14.0, the CA Dataquery Report Facility is no longer distributed as part of the product. You may want to use the CA Datacom/DB Reporting Facility, CA Datacom SQL queries or other facilities instead.

Messages and Codes

The following sections are comprised of messages related to the product or features:

- CA Datacom/DB
  - General (see page 110)
  - SIMPLIFY (see page 111)
  - CAIRIM Install (see page 112)
  - Reporting Facility (see page 112)
- Return Codes (see page 113)
- Datadictionary (see page 115)
- Removed (see page 118)

CA Datacom/DB Related Messages

The following are new or changed CA Datacom/DB messages:

- DB00135I - CONNECT TO a b c d e f g h
- DB00136I - DISCONNECT a b c d e f g h
- DB00141I - DBUTLTY start/end function(-modifier) base optional-area Job-name
- DB00205E (1095) - MULTIPLE MUFS THIS CXX DSN
- DB00205E (1206) - CACS CAAT ERROR nnn
- DB00205E (1207) - INSTALL SYSTEM ANCHOR FAILED
- DB00205E (1208) - DBSIDPR PC=INVALID
- DB00205E (1209) - UNABLE TO GET SYSTEM LINKAGE
- DB00205E (1210) - UNABLE TO CREATE DATA SPACE
- DB00222I - MULTI-USER ENDING CCI SUPPORT (ssssssss,mmmmmmmmmmmm)
- DB00283I - INSUFFICIENT LARGE PAGE FRAMES, MULTI-USER USED nM
- DB00284W - CA OPS/MVS API error, return code nn, reason code nn
- DB00289I - CXX ESTAE UPDATES
- DB00506C - REQUEST RETURN HANDLER FAILURE
- DB00619E - BUFFER_POOL name DOES NOT EXIST
- DB00620E - BUFFER_POOL_CONTENT DBID n ccc
- DB00621W - BUFFER_POOL_COUNT ccc COUNT IS NOW n REST IN USE
- DB01404I - DATA SET xxxxxx, yyyyyyyy zzzzzz n OF n EXT-n TRK-nn EOF yes/no
- DB01405I - DATA SET VOLUME IGNORED, NOT CHAINED - volser n of n
- DB01406I - OCS n a b c
- DB01407I - DATA SET a-OPEN b c DCB d DEB e
- DB01411 - DBUG OPENED CXX DCB a DEB b DCB c DSAB d
- DB01412I - DIAG OC2 UNLOCK a

  DIAG SUB UNLOCK a

  DIAG OC2 b LOCK DSN c

  DIAG SUB b LOCK DSN c

  DIAG OC2 SHR LOCK a

  DIAG SUB SHR LOCK a
- DB01413I - DEBUG a b c
- DB02337I - Shadow MUF wait complete, xxxxxxx

- DB10044E - UNABLE TO REFRESH DBPCCPR
- DB10088I - DBUTLTY ABEND HANDLER DRIVEN - NO SDWA
- DB10089I - DBUTLTY ABEND HANDLER DRIVEN - reason
- DB13130E - CXX BACKUP DATASET IS NOT RECOGNIZED
- DB13284E - CXXCLONE ALTER DSN NOT MATCHED - BASE n AREA a DSN name
- DB13285E - CXXCLONE ALTER DSN TOO LONG - BASE n AREA a DSN name
- DB13286W - BASE b TABLE ttt ENCRYPTION NOT SUPPORTED IN VERSION 12.0

For information, see the *CA Datacom/DB Message Reference Guide.*

SIMPLIFY Messages

The following are new or changed CA Datacom/DB messages specifically for the Simply feature:

- DB00205E - MULTI-USER ERROR – 1211 CXXNAME x VS y
- DB00905I - DIRECTORY (CXX) VERSION 14.0

  DIRECTORY (CXX) VERSION 14.0 LEVEL 1 DB SIMPLIFY YES SYSPLEX PLEXC1
- DB00912E - CXX SYSPLEX x DOES NOT MATCH CURRENT SYSPLEX y

DB00913E - CXX OPEN BASE dbid LOCKED BY job-name date-time WHERE-xx

- DB01408E - UNAVAILABLE DATA SET dd-name data-set-name REQUIRED FOR x by y

DB01409E - DATA SET NAME MISMATCH xxx-y DBSIDPR-z

- DB01410E - DATA SET NAME WRONG CXXNAME x y z
- DB10053E - MUF RUNNING, FUNCTION REQUIRES MUF DOWN

DB10054E - FUNCTION REQUIRES xxx NOT TO BE OPEN

- DB10055E - A MUF RUNNING WITH CXX, NOT ALLOWED
- DB10057E - REQUIRES DBSIDPR SIMPLIFY YES
- DB10058E - INVALID WHEN USING EXF/CCI TO MUF
- DB10059E - DDNAME RESERVED FOR DATACOM AREA
- DB10091W - SIMPLIFY WITH MUF DISABLED
- DB10092E - CXX NAME MISMATCH, SID=xxxxxxxx CXX=yyyyyyyy
- DB13027E - SIMPLIFY REQUIRED WITH DATACOM/AD CXX

For information, see the *CA Datacom/DB Message Reference Guide.*

CAIRIM Install Messages

The following are new or changed CA Datacom/DB messages that apply to the use of CAIRIM:

- DB90150I - DATACOM name CCYY/MM/DD-HHMM VV.R
- DB90151I - DATACOM INITIALIZATION SUCCESSFUL
- DB90152E - DATACOM PARM SYNTAX ERROR (x)
- DB90153E - DATACOM INITIALIZATION FAILED
- DB90154I - DATACOM name CCYY/MM/DD-HHMM VV.R
- DB90155E - ERROR DEFINE RETCODE - NNN RSNCODE NNN

For information, see the *CA Datacom/DB Message Reference Guide.*

Reporting Facility Messages

The following are new or changed CA Datacom/DB Reporting Facility messages:

- DRA1248E - DBIDUSER/DBIDMUF CONFLICT
- DRA1310E - DEFINE SPECIFICATION AFTER REPORT DEFINITIONS

For information, see the *CA Datacom/DB Message Reference Guide.*

Return Codes

The following are new or changed CA Datacom/DB messages:

- Return Code 07 (005) - Data Area Full
- Return Code 008 (005, 006) - System Area Full
- Return Codes for message DB00912E:
  - Return Code 47 (006) SIMPLIFY CXX BUT DBSIDPR IS NOT
  - Return Code 47 (007) SIMPLIFY DBSIDPR BUT CXX IS NOT
  - Return Code 47 (008) EXECUTION IS ON WRONG SYSPLEX
  - Return Code 94 (146) CALLER INVALID OR UNKNOWN
  - Return Code 94 (202) DATA SET OTHER THAN CXX
  - Return Code 94 (202) DATA SET OTHER THAN CXX
- Return Code 70 - Buffer too Small
  - (001) DATA AREA TOO LARGE
  - (002) DXX TOO LARGE
  - (003) IXX TOO LARGE
- Return Code 74 - Open Allocation Error
  - (012) CXX USAGE CONFLICT
- Return Code 76
  - (012) UNAVAILABLE DATA SET
  - (013) CONFLICT DBDSNPR DSN
  - (014) CONFLICT DD DSN VS DSN FROM CXX
- Return Code 84 - MULTI-TASKING ERROR
  - (001) ERROR M. T. FAILURE JOB--nnn-aaaaaaa TASK
  - (031) Internal Error having to do with an XCF protocol
  - (032) Internal Error having to do with an XCF protocol
  - (033) Internal Error having to do with an XCF protocol
  - (034) Internal Error having to do with an XCF protocol
  - (035) Internal Error having to do with an XCF protocol
  - (036) Internal Error having to do with an XCF protocol
- Return Code 94
  - (137) ENCRYPT NO BASIC 1 SET
  - (138) OPEN BASIC ENCRYPT NOT CXX

- (139) OPEN TABLE DEFINITION CHANGE
- (140) ENCRYPT NOT AUTHORIZED
- (142) ENCRYPT HARDWARE
- (144) OPEN DATA CONTROL NOT OK
- (145) DATA BLOCK TOO SMALL

For more information, see the *CA Datacom/DB Message Reference Guide.*

CA Datacom Datadictionary Messages

The following are new or changed CA Datacom Datadictionary messages:

- DDFCFM0034 - WARNING: DATABASE NOT RECOMMENDED
- DDOL000527A - TABLE LENGTH INVALID FOR ENCRYPTION - DE1
- DDOL000528A - ENCRYPTION NOT ALLOWED FOR VAR TBL – DE2
- DDOL000529A - ENCRYPTION NOT ALLOWED W/O RECOVERY – DE3
- DDOL000530A - ENCRYPT TYP AND METHOD INCOMPATABLE – DE4
- DDOL000531A - ENCRYPT KEY NOT VALID FOR TYPE USED – DE5
- DDPDE10001 - TABLE LENGTH INVALID FOR ENCRYPTION
- DDPDE20001 - ENCRYPTION NOT ALLOWED FOR VAR TBL
- DDPDE30001 - ENCRYPTION NOT ALLOWED W/O RECOVERY
- DDPDE40001 - ENCRYPT TYP AND METHOD INCOMPATIBLE
- DDPDE50001 - ENCRYPT KEY NOT VALID FOR TYPE USED
- DDSDCA001W - AREA xxxx… NOT IN BASIS
- DDSDCA002W - AREA xxxx… IN BASIS NOT IN LOCAL STRUCTURE
- DDSDCA003W - AREA xxxx… DATACOM-NAME DOES NOT MATCH BASIS (nmL/nmB)
- DDSDCA100A - AREA xxxx… PASSWORD DOES NOT MATCH BASIS (****/pswdB)
- DDSDCC001W - COLUMN (FIELD) xxxx… NOT IN BASIS
- DDSDCC002A - COLUMN (FIELD) xxxx… IN BASIS NOT IN LOCAL STRUCTURE
- DDSDCC003A - COLUMN (FIELD) xxxx… DISPLACEMENT NOT IN USER ELEMENT
- DDSDCD004W - NUMBER OF TABLES IS GREATER THAN THE BASIS (ntL/ntB)
- DDSDCD005A - NUMBER OF TABLES IS LESS THAN THE BASIS (ntL/ntB)
- DDSDCC006A - COLUMN (FIELD) xxxx… LENGTH DOES NOT MATCH BASIS (lenL/lenB)
- DDSDCC007A - COLUMN (FIELD) xxxx… DISP-IN-TABLE DOES NOT MATCH BASIS (dspL/dspB)
- DDSDCC008A - COLUMN (FIELD) xxxx… SQLNAME DOES NOT MATCH BASIS (sqnL/sqnB)
- DDSDCC009A - COLUMN (FIELD) xxxx… VALUE DOES NOT MATCH BASIS (valL/valB)
- DDSDCC010A - COLUMN (FIELD) xxxx… MEDIA LENGTH DOES NOT MATCH BASIS (mlnL/mlnB)
- DDSDCC011A - COLUMN (FIELD) xxxx… FIELD ACCESS DOES NOT MATCH BASIS (accL/accB)

- DDSDCC100A - COLUMN (FIELD) xxxx… PASSWORD DOES NOT MATCH BASIS (****/pswdB)
- DDSDCD001W - DATABASE ID DOES NOT MATCH (dbidL/dbidB)
- DDSDCD002W - NUMBER OF AREAS IS GREATER THAN THE BASIS (naL/naB)
- DDSDCD003P - NUMBER OF AREAS IS LESS THAN THE BASIS (naL/naB)
- DDSDCD004W - NUMBER OF TABLES IS GREATER THAN THE BASIS (ntL/ntB)
- DDSDCD005A - NUMBER OF TABLES IS LESS THAN THE BASIS (ntL/ntB)
- DDSDCD100A - DATABASE xxxx… PASSWORD DOES NOT MATCH BASIS (****/pswdB)
- DDSDCE001W - ELEMENT xxxx...NOT IN BASIS
- DDSDCE002A - ELEMENT xxxx...IN BASIS NOT IN LOCAL STRUCTURE
- DDSDCE003A - ELEMENT xxxx...DATACOM-NAME DOES NOT MATCH BASIS (dbnmL/dbnmB)
- DDSDCE004A - ELEMENT xxxx...LENGTH DOES NOT MATCH BASIS (lenL/lenB)
- DDSDCE005A - ELEMENT xxxx...DISP-IN-TABLE DOES NOT MATCH BASIS (dspL/dspB)
- DDSDCE100A - ELEMENT xxxx… PASSWORD DOES NOT MATCH BASIS (****/pswdB)
- DDSDCG000I - COMPARATOR EXECUTION COMPLETE
- DDSDCG001I - WMOF IS ACTIVE
- DDSDCG002P - NO DATA-DICT DATABASE STRUCTURE IN stat STATUS
- DDSDCG003P - BASIS MODULE xxxxxxxx NOT FOUND IN LOAD LIBRARY CONTATENATION
- DDSDCG004A - INVALID –SDC TRANSACTION
- DDSDCK001W - KEY xxxx… NOT IN BASIS
- DDSDCK002A - KEY xxxx… IN BASIS NOT IN LOCAL STRUCTURE
- DDSDCK003A - KEY xxxx… DATACOM-NAME DOES NOT MATCH BASIS (dbnmL/dbnmB)
- DDSDCK004A - KEY xxxx… LENGTH DOES NOT MATCH BASIS (lenL/lenB)
- DDSDCK005A - KEY xxxx… COLUMN ORDER DOES NOT MATCH BASIS
- DDSDCK006A - KEY xxxx… NUMBER OF COLUMNS IS GREATER THAN THE BASIS (ncL/ncB)
- DDSDCK007A - KEY xxxx… NUMBER OF COLUMNS IS LESS THAN THE BASIS (ncL/ncB)
- DDSDCK100A - KEY xxxx… PASSWORD DOES NOT MATCH BASIS (****/pswdB)
- DDSDCT001W - TABLE xxxx… NOT IN BASIS
- DDSDCT002A - TABLE xxxx… IN BASIS NOT IN LOCAL STRUCTURE

- DDSDCT003A - TABLE xxxx… DATACOM-NAME DOES NOT MATCH BASIS (dbnmL/dbnmB)
- DDSDCT004A - TABLE xxxx… MAX-RECORD-SIZE IS NOT ZERO
- DDSDCT005W - TABLE xxxx… LENGTH IS GREATER THAN BASIS (lenL/lenB)
- DDSDCT006A - TABLE xxxx… LENGTH IS LESS THAN BASIS (lenL/lenB)
- DDSDCT007W - TABLE xxxx… NUMBER OF COLUMNS IS GREATER THAN THE BASIS (ncL/ncB)
- DDSDCT008A - TABLE xxxx… NUMBER OF COLUMNS IS LESS THAN THE BASIS (ncL/ncB)
- DDSDCT009W - TABLE xxxx… NUMBER OF ELEMENTS IS GREATER THAN THE BASIS (neL/neB)
- DDSDCT010A - TABLE xxxx… NUMBER OF ELEMENTS IS LESS THAN THE BASIS (neL/neB)
- DDSDCT011W - TABLE xxxx… NUMBER OF KEYS IS GREATER THAN THE BASIS (nkL/nkB)
- DDSDCT012A - TABLE xxxx… NUMBER OF KEYS IS LESS THAN THE BASIS (nkL/nkB)
- DDSDCT013A - TABLE xxxx… SQLNAME DOES NOT MATCH BASIS (ssnL/sqnB)
- DDSDCT100A - TABLE xxxx… PASSWORD DOES NOT MATCH BASIS (****/pswdB)
- DDTRS0023I - DSF CHANGES COMMITTED
- DDTRS0024I - SQL CHANGES COMMITTED
- DDTRS0025I - SQL STATEMENT EXECUTED
- DDTRS0026E - DSF STRUCTURE VERIFY ERRORS (MORE MAY EXIST): <error list>
- DDTRS0713I - CREATED T999 VERSION OF <occ type> <occ name>
- DDTRS0714I - COPIED T999 OF <occ type> <occ name> TO PROD
- DDTRS0715I - <occ type> <occ name> CATALOGED
- DDVTBL0045 - AREA BLOCKSIZE INVALID FOR ENCRYPTION
- DDVTBL0046 - TABLE LENGTH INVALID FOR ENCRYPTION

For more information, see the *CA Datacom/DB Message Reference Guide.*

Removed Messages

The following messages have been removed in Version 14.0:

- DB00205E error code 1081
- DB00205E error code 1113
- DB00219I - MVS ECSA REQUIREMENT -9999,999 K
- DB00408E ABEND 'x' DURING RXXn 'y'
- DB00809E DBOCSPR SUBTASK RETRY NOT ATTEMPTED
- DB10095E - DBUTLTY NOT RUNNING AUTHORIZED

CA Datacom CICS Services

The following information provides an overview of the Version 14.0 enhancements for the CA Datacom CICS Services product. For more information, see the Product Documentation Changes (PDCs), and PTFs available through CA Support online.

New Features

CA Mainframe Software Manager

CA CSM is an application that simplifies and unifies the management of CA Technologies mainframe products on z/OS systems.

CA CSM provides services that make it easier for you to do the following:

- Acquire, install, deploy, and configure products
- Automatically obtain and apply maintenance

These services enable you to easily manage your software based on industry accepted best practices. A web-based interface makes the look and feel of the environment friendly and familiar, enabling you to install and maintain your products faster and with less chance of error.

You can acquire CA CSM from the CA Support website.

Note: For more information, see your product's installation instructions and the CA Mainframe Software Manager online help.

DBOCPRT Messages Date Added

An 8-byte date (MM/DD/YY) was added to the front of the messages that are logged in the DBOCPRT destination.

Examples

10/12/11 14:58:26.0.DB: U058 8OZ - DBOC INQ=TRACE

10/12/11 15:57:10.0.DB: U027 8OZ - DBOC STARTUP

10/12/11 15:57:10.0.DB: U027 8OZ - DC00190I INTERFACE ALREADY INITIALIZED

10/12/11 15:57:10.0.DB: U027 8OZ - DC00380I TRANSACTION COMPLETED

10/12/11 15:57:27.0.DB: U027 8OZ - DBOC OPEN=1

10/12/11 15:57:27.0.DB: U027 8OZ - DC00185I MUF DBSIDPR NOW CONNECTED

10/12/11 15:57:27.0.DB: U027 8OZ - DC00177E URT 0001 OPEN ERROR, RC=43 007

10/12/11 15:57:27.07DB: U027 8OZ - DC00380I TRANSACTION COMPLETED

DBCVTPR Macro Startup Warning

The assembly of the macro DBCVTPR with DYNPPT=YES generates the following informational message during the DBC startup:

```
DC00243W  DYNPPT=YES; STARTUP may be delayed in order to AUTOINSTALL URT entries
```

Batch Execution for CONNECT, DISCONNECT, and IMMEDIATE of MUFs

Use the following commands in a batch or online application to perform the equivalent of the online commands CONNECT, DISCONNECT, and IMMEDIATE.

```
Datacom/DB request nnDBOC CONNECT=nn
LINK PROGRAM('DCCOCPR') COMMAREA('DBLC CONNECT=nn')
XCTL PROGRAM('DCCOCPR') COMMAREA('DBOC DISCONNECT=nn')
START TRANS TD('DBOC') FROM('DBOC IMMEDIATE=nn')
```

You can also issue the following commands as console commands:

```
DBOC CONNECT=nn
DBOC DISCONNECT=nn
DBOC IMMEDIATE=nn
DBEC PERFORM CONNECT/DISCONNECT/IMMEDIATE commands in local or remote
mode
```

Note: For DBEC responses, the results are logged to the DBOCPRT file on which the action was performed.

DBAS Transaction to Test Multiple Environment Control Commands

The CA Datacom/DB Assembler Started (DBAS) transaction code is used to start multiple DBOC transactions. DBAS is a QA type transaction that can be used to test multiple opens, closes, and connection type requests in a true multitasking OTE environment.

DBAS can start up to 14 DBOC type transactions in one execution. For more information, see the *System Reference Guide*.

Enabled IBM OTE

This release enables the IBM Open Transaction Environment (OTE) multitasking support.

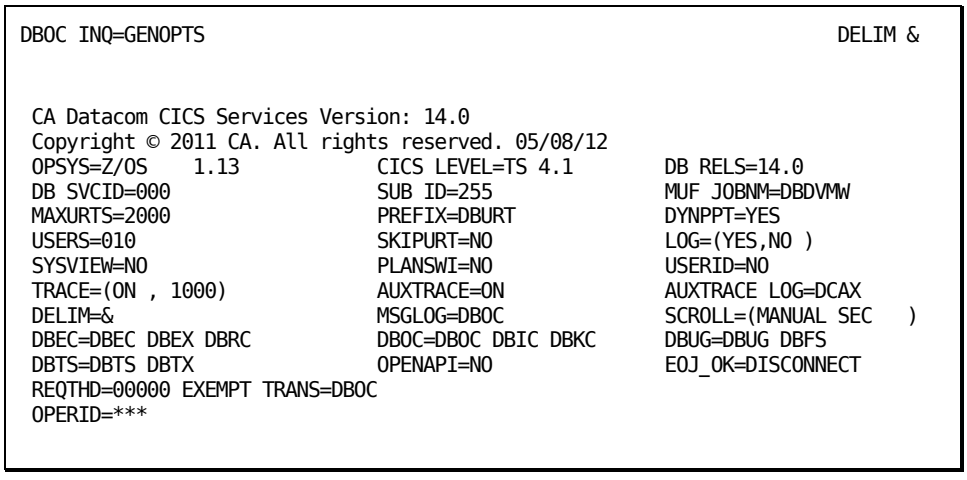
All programs that perform request processing have been made Threadsafe. Using one of the many serialization techniques available in CICS or z/OS environments, all programs that modify shared resources can serialize use of the shared resources.

The changes include the following commands:

- OPEN
- CLOSE
- CONNECT
- DISCONNECT
- DISCONNECT IMMEDIATE
- Extended Transactions (DBEC)

Select the DBCVTPR option OPENAPI=YES or NO, and modify the MAXOPENTCBS. For more information, see the *IBM CICS System Definition Guide*.

This DBCVTPR parameter and its value are now part of the DBOC INQ=GENOPTS screen.



```
DBOC INQ=GENOPTS                                                DELIM &


 CA Datacom CICS Services Version: 14.0
 Copyright © 2011 CA. All rights reserved. 05/08/12
 OPSYS=Z/OS    1.13          CICS LEVEL=TS 4.1       DB RELS=14.0
 DB SVCID=000                SUB ID=255              MUF JOBNM=DBDVMW
 MAXURTS=2000                PREFIX=DBURT            DYNPPT=YES
 USERS=010                   SKIPURT=NO              LOG=(YES,NO )
 SYSVIEW=NO                  PLANSWI=NO              USERID=NO
 TRACE=(ON , 1000)           AUXTRACE=ON             AUXTRACE LOG=DCAX
 DELIM=&                     MSGLOG=DBOC             SCROLL=(MANUAL SEC   )
 DBEC=DBEC DBEX DBRC         DBOC=DBOC DBIC DBKC     DBUG=DBUG DBFS
 DBTS=DBTS DBTX              OPENAPI=NO              EOJ_OK=DISCONNECT
 REQTHD=00000 EXEMPT TRANS=DBOC
 OPERID=***
```

SKIPLOAD Macro

The SKIPLOAD macro allows you to avoid the unnecessary attempted loads of non-existent URTs during startup and initialization only. The following is an example of coding SKIPLOAD macros in the DBCVTPR:

```
DBCVTPR USERS=3,MULTUSE=YES,MSTOPR=***,
      PREFIX=DBURT,MAXURTS=500,SCROLL=MANUAL,DYNPPT=YES,
      DEFER=(70-100),SYSV=YES,INTRSIZE=50000000,
      TRACE=(ON,1000),AUXTRCE=(ON,DCAX,DCBX),OPENAPI=YES,
      AUTO=(001,010,014,020,37,60-69),SYSRCV=NO
DBCSID SIDNAME=DBDVM5,USERS=3,CONNECT=AUTO
DBCSID SIDNAME=DBDVMS,USERS=6,CONNECT=AUTO
DBCSID SIDNAME=DBDVMT,USERS=6,CONNECT=AUTO
DBCSID SIDNAME=PRODMU2,USERS=3,CONNECT=DEFER
DBCSID SIDNAME=DBDVMR,USERS=6,CONNECT=AUTO
DBCSID SIDNAME=MUFW,USERS=6,CONNECT=AUTO
DBCSID SIDNAME=MUF1,USERS=3,CONNECT=DEFER
DBCSID SIDNAME=MUF6,USERS=3,CONNECT=DEFER
DBCSID SIDNAME=MUF7,USERS=3,CONNECT=DEFER
SKIPLOAD SKIP_LOAD_FROM=4,SKIP_LOAD_TO=9
SKIPLOAD SKIP_LOAD_FROM=70,SKIP_LOAD_TO=95
SKIPLOAD SKIP_LOAD_FROM=310,SKIP_LOAD_TO=399
SKIPLOAD SKIP_LOAD_FROM=410,SKIP_LOAD_TO=499
```

Added to the DBOC URT is a status for the URT's that have been specified to be SKIPLOAD.

```
DBOC INQ=???                                                    DELIM &


URT 0001(STD UNOPENED AUTO )                      PRTY=07 TXNUD
URT 0002(STD OPEN          ) ACTIVE=000 RESRVD=000 PRTY=07 TXNUD
URT 0003(STD UNOPENED      ) OPEN  FAILED RC46 046 PRTY=07 TXNUD=NO
URT 0004-0009                INVALID, DISABLED, NOT LINK EDITED OR SKIPLOAD
URT 0010(STD UNOPENED AUTO )                      PRTY=07 TXNUD
URT 0011-0013                HAVE NO CSD ENTRIES
URT 0014(STD UNOPENED AUTO )                      PRTY=07 TXNUD
URT 0015                     HAS NO CSD ENTRY
URT 0016(STD UNOPENED      ) OPEN  FAILED RC02 052 PRTY=07 TXNUD=NO
URT 0017-0019                HAVE NO CSD ENTRIES
URT 0020(SQL UNOPENED AUTO )                      PRTY=07 TXNUD
URT 0021-0024                HAVE NO CSD ENTRIES
URT 0025                     INVALID, DISABLED, NOT LINK EDITED OR SKIPLOAD
URT 0026-0034                HAVE NO CSD ENTRIES
URT 0035-0037                INVALID, DISABLED, NOT LINK EDITED OR SKIPLOAD
URT 0038-0049                HAVE NO CSD ENTRIES
URT 0050-0052                INVALID, DISABLED, NOT LINK EDITED OR SKIPLOAD
URT 0053-0059                HAVE NO CSD ENTRIES
URT 0060(STD UNOPENED AUTO )                      PRTY=07 TXNUD=NO
URT 0061(STD UNOPENED AUTO )                      PRTY=07 TXNUD

                                          ENTER = NEXT PAGE   CLEAR = END TRANS
```

EOJ_OK Support for the Multi-User Facility

EOJ-OK allows the MUF to EOJ using a STOP or COMM EOJ console command, for example, with CA Datacom CICS Services attached (connected to the MUF). The EOJ_OK parameter of the DBCVTPR and DBCSID macros has been added. Three options are available to determine what action CA Datacom CICS Services and the MUF can take when a MUF EOJ has been requested. EOJ_OK=NO is the default and does not allow Multi-User to EOJ while CICS is connected to MUF as in previous releases. The other two options are EOJ_OK=DISCONNECT and EOJ_OK=IMMEDIATE that indicate that CA Datacom CICS Services participates with Multi-User in handling a MUF EOJ. If either the DISCONNECT or IMMEDIATE option is specified, when there is no online activity or outstanding exclusive control causing a reply from the MUF telling CA Datacom CICS Services the EOJ has been requested, the MUF terminates the connection with CICS as soon as the interval set in the MUF startup option X_EOJ_OK_S_DELAY has passed. When there is online activity and CA Datacom CICS Services is notified by the MUF that an EOJ was requested, CA Datacom CICS Services either initiates a DISCONNECT or IMMEDIATE as specified in the DBCVTPR or in the DBCSID for that MUF.

Note: Specifications in the DBCSID override the DBCVTPR options.

For the DISCONNECT option, the active transactions with exclusive control are allowed to go to normal transaction end with one exception. Any request for a URT that does not have a locked request for the transaction receives an RC=36. No new requests from new transactions are accepted for that MUF. If there are other connections to this Multi-User in other CICS regions that are specified with the NO option then Multi-User will not EOJ until those connections are manually disconnected in CA Datacom CICS Services. Be careful when selecting the EOJ_OK option for all CICS's connected for a MUF.

For more information about coding the DBCVTPR and DBCSID EOJ_OK parameter, see the *System Reference Guide*.

Note: CA Datacom/DB Release 12.0 does not support EOJ_OK.

```
DBOC INQ=GENOPTS                                                    DELIM &


 CA Datacom CICS Services Version: 14.0
 Copyright ?2011 CA. All rights reserved. 05/08/12
 OPSYS=Z/OS    1.13           CICS LEVEL=TS 4.1        DB RELS=14.0
 DB SVCID=000                 SUB ID=255               MUF JOBNM=DBDVMW
 MAXURTS=2000                 PREFIX=DBURT             DYNPPT=YES
 USERS=010                    SKIPURT=NO               LOG=(YES,NO )
 SYSVIEW=NO                   PLANSWI=NO               USERID=NO
 TRACE=(ON , 1000)            AUXTRACE=ON              AUXTRACE LOG=DCAX
 DELIM=&                      MSGLOG=DBOC              SCROLL=(MANUAL SEC   )
 DBEC=DBEC DBEX DBRC          DBOC=DBOC DBIC DBKC      DBUG=DBUG DBFS
 DBTS=DBTS DBTX               OPENAPI=NO               EOJ_OK=DISCONNECT
 REQTHD=00000 EXEMPT TRANS=DBOC
 OPERID=***

DC00380I  TRANSACTION COMPLETED.
```

The EOJ_OK= field in the DBOC INQ=GENOPTS represents the assigned option for the default MUF. The DBKC value of the DBOC= represents the internal only transaction to support this feature which can be modified as wanted.

```
      SYSID = CZDS       CA Datacom CICS Services        APPLID = A31ICZDS
DBEX I,MUF(0?)
A SYS MUF    STATUS    W E USERS SIDNAME    JOB    LVL MUFN/SUB   CONDITIONS
  *LOC 01 CONNECTED    A D 003   DBDVM5   DBDVM5   12  DBDVMUF5
  *LOC 02 UNCONNECTED  A D 006   DBDVMS                DBDVMS1
  *LOC 03 UNCONNECTED  A D 006   DBDVMT                DBDVMT1
  *LOC 04 UNCONNECTED  D D 003   PRODMU2               DSL2MU12
  *LOC 05 UNCONNECTED  A D 006   DBDVMR                DBDVMR1
  *LOC 06 UNCONNECTED  A D 006   MUFW                  MUFW1
  *LOC 07 UNCONNECTED  D D 003   MUF1                  MUF1
  *LOC 08 UNCONNECTED  D D 003   MUF6                  MUF6
  *LOC 09 UNCONNECTED  D D 003   MUF7                  MUF7









                     PF1: REFRESH               PF7: BACKWARD   PF8: FORWARD
```

The E column of the DBEC MUF display represents the assigned value for each MUF in a Multi-MUF environment.

Enhancements to Existing Features

Documentation

This section contains topics that are related to documentation enhancements.

Installation Guide

The *Installation Guide for z/OS* has been restructured and describes the following methods of installing CA Datacom:

- CA MSM
- Electronic Software Delivery (ESD)

Best Practices Guide

The documentation set now includes a *Best Practices Guide*. This guide provides a brief introduction to CA Technologies Mainframe 2.0 strategy and functionality, and describes the best practices for installing and configuring CA Datacom.

These best practices represent years of product experience, much of which is based on customer experience reported through interviews with development, technical support, and technical services. Therefore, many of these best practices are truly a collaborative effort stemming from customer feedback.

CA HTML Bookshelf

This release contains the CA HTML bookshelf, which is an HTML help system that provides access to all deliverables in the product documentation set in both HTML and PDF. HTML provides robust online viewing and search capabilities, while PDF provides a print-friendly option.

The HTML bookshelf features include:

- A single help screen that displays all documentation for this release.
- An all-in-one search tool that searches the entire documentation set and returns matches found in both the HTML and PDF formatted documentation, without the need for a specialized .PDX index file.
- Additional links for using the bookshelf, downloading Acrobat Reader, and contacting CA Technologies.

Note: You must have Adobe Reader 8 or above to view the PDF files in the bookshelf.

Search the Bookshelf

The bookshelf includes a search facility that helps you locate information throughout the set.

To search the bookshelf

1. Enter your search criteria in the Search field in the upper right corner of the bookshelf and press Enter.

   The search returns HTML results listed by topic and PDF results listed by guide. The results are sorted by date so that the most recently updated topics or PDFs appear at the top of the list. To find a topic in a PDF, open the PDF and view the list of topics within the PDF that match the search criteria.

2. (Optional) Click Sort by Relevance.

   The list is reordered so that the HTML topics or PDFs that contain the most matches appear at the top of the list.

Message DC00503I BACKOUT

The DC00503I BACKOUT message is not always complete because the old transaction information can be missing. The following conditions must occur.

1. CICS ABENDS after the LOGPR and before the END-OF-PHASE-1 MVS logger record (or the CICS Journal File for z/VSE) is written.
2. CICS and CA Datacom CICS Services are restarted after a CA Datacom/DB restart.
3. And a force checkpoint occurred on the in-doubt CICS ABENDED task on the old CA Datacom/DB Multi-User before it ABENDED.

The CA Datacom/DB FXX file is left with the in-doubt record for RESTART to process. In this case, the LXX record does not exist.

For more information about DC00503I, see Numbered Messages in the *Message Reference Guide*.

MSIDNAME Limiter Allowed

The DBEC INQUIRY and PERFORM MUF(??) allow the limiter MSIDNAME(xxxxxxxx).

```
      SYSID = CZDS       CA Datacom CICS Services        APPLID = A31ICZDS
DBEC I,MSID(DB*)
A SYS MUF    STATUS    W E USERS SIDNAME    JOB    LVL MUFN/SUB   CONDITIONS
  *LOC 01 CONNECTED    A D 003   DBDVM5   DBDVM5   12  DBDVMUF5
  *LOC 02 UNCONNECTED  A D 006   DBDVMS                DBDVMS1
  *LOC 03 UNCONNECTED  A D 006   DBDVMT                DBDVMT1
  *LOC 05 UNCONNECTED  A D 006   DBDVMR                DBDVMR1









                    PF1: REFRESH               PF7: BACKWARD   PF8: FORWARD
```

DBOC INQ=PTF Display Change

The version of the module has been added. In particular, the CA Datacom/DB version of the interface modules reflect Release 12 or Version 14.0. The APAR/PTF field has been added to reflect the test APAR or published PTF level of the module. If the RESERVE is displayed, then the module is at the base level.

```
DBOC INQ=PTF                                                          DELIM &

 CA Datacom CICS Services Version: 14.0
 Copyright © 2011 CA. All rights reserved. 05/17/12
MODULE     DATE   VERSION APAR/PTF
DBCVTPR  05/11/12 14.0
DBCSVPR  05/03/12 14.0    RO45413
DBCSRPR  05/03/12 14.0    RO45413
DCCTPPR  05/08/12 14.0    RO45627
DCCTRPR  05/08/12 14.0    RO45627
DCCTFPR  05/08/12 14.0    RO45627
DCCTXPR  AVAILABLE
DCCV1PR  12/09/11 14.0    RESERVE
DCCOCPR  05/08/12 14.0    RO45627
DCCO1PR  05/08/12 14.0    RO45627
DCCO2PR  05/08/12 14.0    RO45627
DCCO3PR  05/08/12 14.0    RO45627
DCCO4PR  05/08/12 14.0    RO45627
DCCECPR  05/08/12 14.0    RO45627
DCCETPR  05/08/12 14.0    RO45627
DCCFPPR  05/08/12 14.0    RO45627
DBSGMPR  02/27/12 14.0    RO42275
DCCERPR  05/08/12 14.0    RO45627
DCCELPR  05/08/12 14.0    RO45627
DCUTSPR  05/08/12 14.0    RO45627
                                        ENTER = NEXT PAGE   CLEAR = END TRANS
```

```
DBOC INQ=PTF                                                          DELIM &

DCUT1PR  12/09/11 14.0    RESERVE
DCUT2PR  12/09/11 14.0    RESERVE
DCUT3PR  12/09/11 14.0    RESERVE
DCCUTPR  05/08/12 14.0    TR45627
DCCFBPR  05/08/12 14.0    RO45627
DCCFCPR  05/08/12 14.0    RO45627
DCCFSPR  05/08/12 14.0    RO45627
DCCFRPR  05/08/12 14.0    RO45627
DCCFTPR  05/08/12 14.0    RO45627
DCCFQPR  05/08/12 14.0    RO45627
DBINRPR  05/04/12 14.0    RO45503
DC00380I  TRANSACTION COMPLETED.
```

DBCVTPR Macro MNOTE Change

The obsolete MNOTE 4 parameters of the DBCVTPR macro were changed to MNOTE 0.

- MNOTE 0,'DC02004W MULTUSE OPERAND IS OBSOLETE AND IGNORED'
- MNOTE 0,'DC02004W NOTIFY OPERAND IS OBSOLETE AND IGNORED'
- MNOTE 0,'DC02004W FASPATH OPERAND IS OBSOLETE AND IGNORED'
- MNOTE 0,'DC02004W ECBADDR OPERAND IS OBSOLETE AND IGNORED'

DBEC Screen Updated with SYSID= Field

Every DBEC screen now includes the SYSID= field in the header line.

```
      SYSID = CXDS       CA Datacom CICS Services        APPLID = A31ICXDS
DBEC P,STARTUP
A SYS  URT  TYP STATUS   W REL CBSIO  PR U MIN SEC   CONDITIONS     SIDNAME MUF
  *LOC 0001 DC00331I  CA Datacom CICS Services INITIALIZED                  01









                    PF1: REFRESH   PF3: RETURN/END   PF7: BACKWARD   PF8: FORWARD
```

DBUG URT Screen Updated with USRINFO and AUTHID Data

The DBUG URT display screen now includes the USRINFO and AUTHID data.

```
DBUG 52                    URT 0001 BEING USED                      CA Datacom
TRAN ID: DBAC    PROGRAM: DCCACPR  +0200      TASK NR: 0000099     DISPLAY:  01
CALL: DBNTRY     TERM ID: U003        INTERCEPTED AFTER EXECUTION

TYPE: STD WHEN TO OPEN: AUTO  STATUS: OPEN     MUF: 01
ABEND= NO    CBSIO= 000000   PRTY= 07  TXUNDO= YES  TIMEMIN= 000  TIMESEC= 000
USRINFO= DBSAMPLE-ONL-URT    AUTHID= xxxxxxxxxxxxxxxxx

    TABLE      DBID       SYNONYM     BYPOPEN     UPDATE    AUTODXC   MDBID
     PAY      00001         YES         NO          YES       NO
     PMF      00001         YES         NO          YES       NO
     POH      00001         YES         NO          YES       NO
     POL      00001         YES         NO          YES       NO
     PNC      00001         YES         NO          YES       NO
     PNM      00001         YES         NO          YES       NO




PF1 :                    PF2 : REMEMBER            PF3 :
PF4 :                    PF5 : STORAGE AREAS       PF6 : USERS DISPLAY
PF7 : BACKWARD           PF8 : FORWARD             PF9 :
PF10:                    PF11: REVIEW TRACE        PF12: RETURN TO PRIMARY
```

Batch Execution for DELETE, LOAD, and RESTART of URTS Added

The following have been updated to allow DELETE, LOAD, and RESTART of URT from batch or online applications:

```
CA Datacom/DB request nnDBOC LOAD=nnnn
LINK PROGRAM('DCCOCPR') COMMAREA('DBLC DELETE=nnnn')
XCTL PROGRAM('DCCOCPR') COMMAREA('DBOC RESTART=nnnn')
START TRANSID('DBOC') FROM('DBOC LOAD=nnnn')
```

The following were updated to allow DELETE, LOAD, and RESTART of URT using console commands:

```
DBOC DELETE=nnnn
DBOC LOAD=nnnn
DBOC RESTART=nnnn
DBEC PERFORM DELETE/LOAD/RESTART commands in local or remote mode
```

Note: For DBEC responses, the results are logged to the DBOCPRT file on which the action was performed.

Simplified Management of CICS Resources Using CICS SYNCPOINT

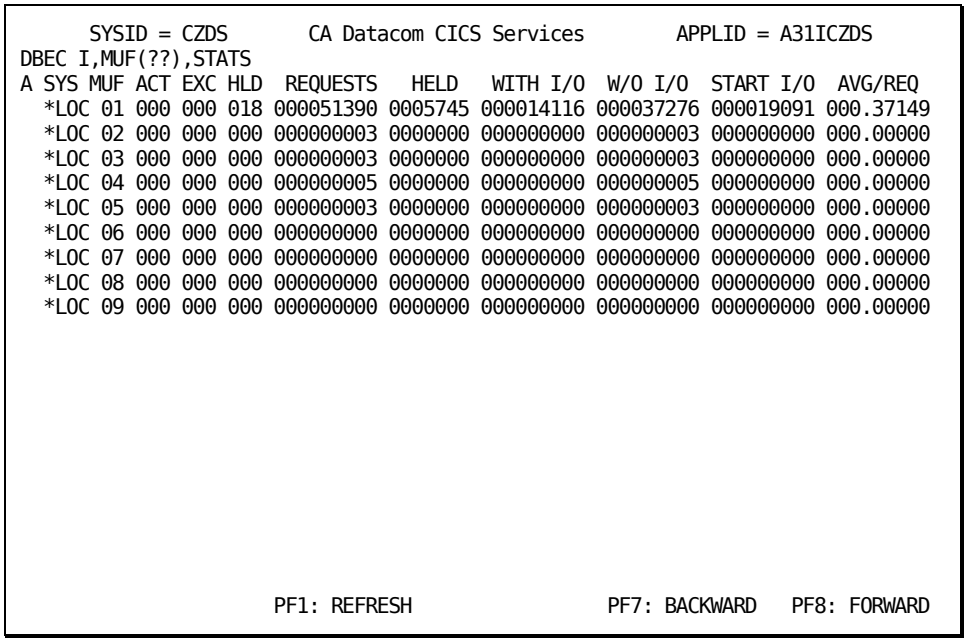
Simplified management of CICS resources using CICS SYNCPOINT implementation for user log type commands is available.

Simplification includes:

- Helps ensure that all resources are kept synchronized
- Helps ensure that every LOGxx that checkpoints data participates in both the MVS LOGGER and the LXX
- Allows for SYNCPOINT optimization of DB logging commands
- Preserves the original user log command on the CA Datacom/DB LXX file

DBEC STATS Screen Updated with W/O I/O Field

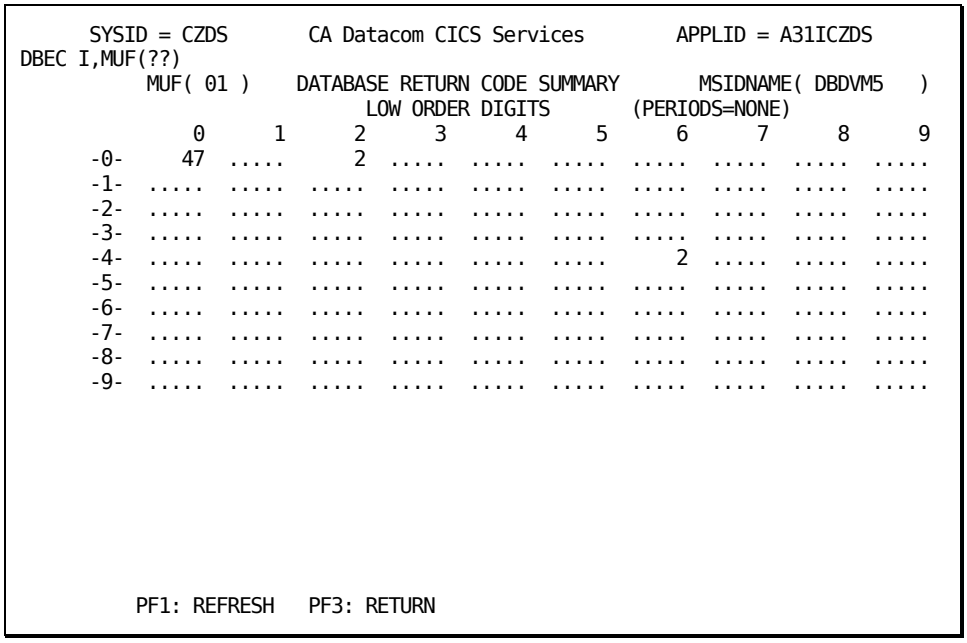
The W/O I/O field replaced the DC17 field in the DBEC I,MUF(??),STATS screen. This field means the same as the DBOC INQ=STATS field "REQUEST WITHOUT I/O" but for each MUF selected in the statistics inquiry by the MUF or MSIDNAME qualification specified in the command.



```
      SYSID = CZDS       CA Datacom CICS Services        APPLID = A31ICZDS
DBEC I,MUF(??),STATS
A SYS MUF ACT EXC HLD  REQUESTS   HELD   WITH I/O  W/O I/O  START I/O  AVG/REQ
  *LOC 01 000 000 018 000051390 0005745 000014116 000037276 000019091 000.37149
  *LOC 02 000 000 000 000000003 0000000 000000000 000000003 000000000 000.00000
  *LOC 03 000 000 000 000000003 0000000 000000000 000000003 000000000 000.00000
  *LOC 04 000 000 000 000000005 0000000 000000000 000000005 000000000 000.00000
  *LOC 05 000 000 000 000000003 0000000 000000000 000000003 000000000 000.00000
  *LOC 06 000 000 000 000000000 0000000 000000000 000000000 000000000 000.00000
  *LOC 07 000 000 000 000000000 0000000 000000000 000000000 000000000 000.00000
  *LOC 08 000 000 000 000000000 0000000 000000000 000000000 000000000 000.00000
  *LOC 09 000 000 000 000000000 0000000 000000000 000000000 000000000 000.00000
                    PF1: REFRESH                PF7: BACKWARD   PF8: FORWARD
```

DBEC Error Codes Screen Updated with MUF Number and MSIDNAME Name

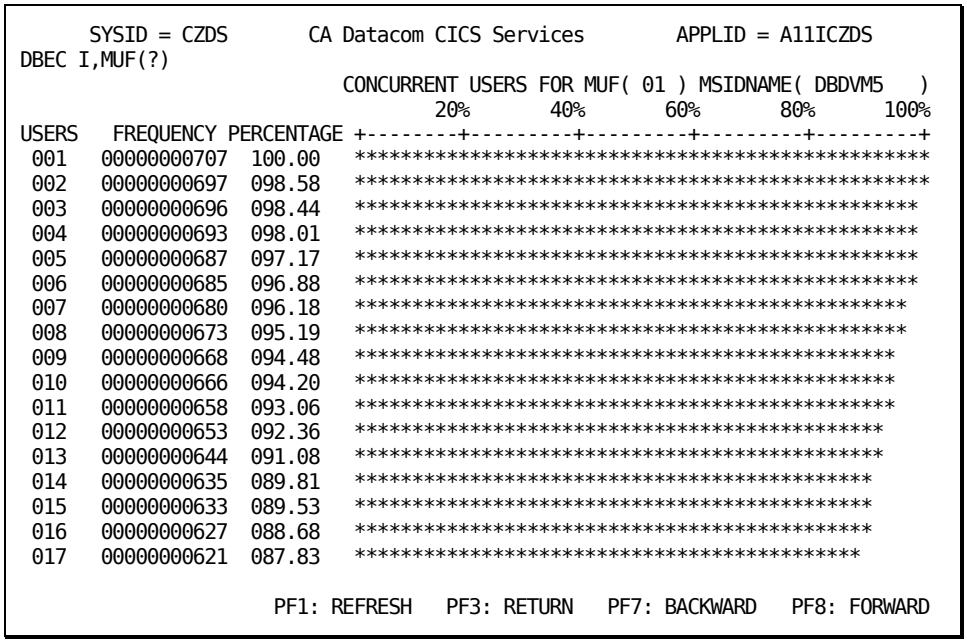
Using the E line command on a DBEC MUF inquiry screen displays the Database Return Code Summary where you can now see the MUF number and MUF name for the selected MUF.



```
      SYSID = CZDS       CA Datacom CICS Services        APPLID = A31ICZDS
DBEC I,MUF(??)
           MUF( 01 )    DATABASE RETURN CODE SUMMARY       MSIDNAME( DBDVM5   )
                              LOW ORDER DIGITS          (PERIODS=NONE)
               0     1     2     3     4     5     6     7     8     9
      -0-     47  .....     2  .....  .....  .....  .....  .....  .....  .....
      -1-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -2-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -3-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -4-  .....  .....  .....  .....  .....  .....     2  .....  .....  .....
      -5-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -6-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -7-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -8-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....
      -9-  .....  .....  .....  .....  .....  .....  .....  .....  .....  .....









          PF1: REFRESH   PF3: RETURN
```

DBEC USERS Screen Updated with MUF Number and MSIDNAME

Using the U line command on a DBEC MUF inquiry screen displays the Concurrent Users screen where you can now see the MUF number and MUF name for the selected MUF.



```
      SYSID = CZDS       CA Datacom CICS Services        APPLID = A11ICZDS
DBEC I,MUF(?)
                              CONCURRENT USERS FOR MUF( 01 ) MSIDNAME( DBDVM5   )
                                      20%       40%       60%       80%      100%
USERS   FREQUENCY PERCENTAGE +--------+---------+---------+---------+---------+
 001   00000000707  100.00   **************************************************
 002   00000000697  098.58   **************************************************
 003   00000000696  098.44   *************************************************
 004   00000000693  098.01   *************************************************
 005   00000000687  097.17   *************************************************
 006   00000000685  096.88   *************************************************
 007   00000000680  096.18   ************************************************
 008   00000000673  095.19   *************************************************
 009   00000000668  094.48   ************************************************
 010   00000000666  094.20   ************************************************
 011   00000000658  093.06   ************************************************
 012   00000000653  092.36   ***********************************************
 013   00000000644  091.08   ***********************************************
 014   00000000635  089.81   *********************************************
 015   00000000633  089.53   *********************************************
 016   00000000627  088.68   *********************************************
 017   00000000621  087.83   *******************************************

                       PF1: REFRESH    PF3: RETURN    PF7: BACKWARD    PF8: FORWARD
```

DBOC INQ=TRACE Screen Updated with TCBNAM Field

The TRACE inquiry screen has been updated to display the type of CICS TCB on which the request was processed. This field either shows the QR TCB name or it shows the CICS OPEN TCB type of L8 or L9 that was used to process the request.

```
TRACE TABLE INQUIRE

SEQ   TIME   TASK TERM TRAN PROGRAM  TCB TCB CMMD  TBL  KEY  RTN    URT DBID MUF
NR   HHMMSS    ID   ID   ID NAME     NAM  ID       NAM  NAME CODE    ID       ID

0001 121516    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0000       01
0002 121516    38 U052 DBEC DCCO4PR  L8  002 INQIN                  0000       01
0003 121516    38 U052 DBEC DCCO4PR  L8  002 INQMU                  0000       01
0004 121516    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0002       01
0005 121516    38 U052 DBEC DCCO4PR  L8  001 OPEN  IXX 00003 74.51 0003       01
0006 121516    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0025       01
0007 121517    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0201       01
0008 121517    38 U052 DBEC DCCO4PR  L8  001 OPEN  BRN 00255 25.14 0255       01
0009 121517    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0400       01
0010 121517    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0401       01
0011 121518    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0000       02
0012 121518    38 U052 DBEC DCCO4PR  L8  002 INQIN                  0000       02
0013 121518    38 U052 DBEC DCCO4PR  L8  002 INQMU                  0000       02
0014 121518    38 U052 DBEC DCCO4PR  L8  001 OPEN                   0500       02

                                                        **** ALL SHOWN ****
                                          ENTER = NEXT PAGE   CLEAR = END TRANS
```

CA Datacom CICS Services Auxiliary Trace Report Updated with TCB NAME Field

The Auxiliary Trace Print Batch Utility, DCTUPPR, has been updated to include the name of the CICS TCB used for processing the request. This field is either QR or the five-character CICS OPEN TCB name.

```
DATE: 03/21/12      ********************************************************************************        PAGE:      1
                    *                         CA Datacom CICS Services                               *
                    *              A U X I L I A R Y   T R A C E   R E P O R T                       *
                    ********************************************************************************
                SEQ    TIME    TASK TERM TRAN PROGRAM  TCB    TCB COMMD TABLE  KEY  RETURN  URT DBID  MUF  SIDNAME  OPRID/
                 NR  HH.MM.SS    ID   ID   ID NAME     NAME   ID        NAME NAME   CODE    ID        ID            USERID
               0001  13:01:24     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0000        01  DBDVM5
               0002  13:01:24     6 ???? CPLT DCCO4PR  L8000 002 INQIN                    0000        01  DBDVM5
               0003  13:01:24     6 ???? CPLT DCCO4PR  L8000 002 INQMU                    0000        01  DBDVM5
               0004  13:01:24     6 ???? CPLT DCCO4PR  L8000 002 LOGCI                    0000        01  DBDVM5
               0005  13:01:24     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0002        01  DBDVM5
               0006  13:01:26     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0000        04  PRODMU2
               0007  13:01:26     6 ???? CPLT DCCO4PR  L8000 002 INQIN                    0000        04  PRODMU2
               0008  13:01:26     6 ???? CPLT DCCO4PR  L8000 002 INQMU                    0000        04  PRODMU2
               0009  13:01:26     6 ???? CPLT DCCO4PR  L8000 002 LOGCI                    0000        04  PRODMU2
               0010  13:01:26     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0102        04  PRODMU2
               0011  13:01:27     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0201        01  DBDVM5
               0012  13:01:28     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0340        01  DBDVM5
               0013  13:01:28     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0341        01  DBDVM5
               0014  13:01:28     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0000        05  DBDVMR
               0015  13:01:28     6 ???? CPLT DCCO4PR  L8000 002 INQIN                    0000        05  DBDVMR
               0016  13:01:28     6 ???? CPLT DCCO4PR  L8000 002 INQMU                    0000        05  DBDVMR
               0017  13:01:28     6 ???? CPLT DCCO4PR  L8000 002 LOGCI                    0000        05  DBDVMR
               0018  13:01:30     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0351        05  DBDVMR
               0019  13:01:31     6 ???? CPLT DCCO4PR  L8000 001 OPEN                     0354        04  PRODMU2
               0020  11:25:48   205 ???? NXXU B4XXNTVU L8001 003 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0021  11:25:48   208 ???? NXXU B4XXNTVU L8002 005 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0022  11:25:49   214 ???? NXXU B4XXNTVU L8005 007 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0023  11:25:49   208 ???? NXXU B4XXNTVU L8002 005 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
               0024  11:25:49   215 ???? NXXU B4XXNTVU L8006 008 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0025  11:25:49   213 ???? NXXU B4XXNTVU L8004 006 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0026  11:25:48   209 ???? NXXU B4XXNTVU L8003 004 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0027  11:25:49   218 ???? NXXU B4XXNTVU L8009 011 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0028  11:25:49   214 ???? NXXU B4XXNTVU L8005 007 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
               0029  11:25:50   223 ???? NXXU B4XXNTVU L800E 016 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0030  11:25:49   220 ???? NXXU B4XXNTVU L800B 013 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0031  11:25:50   228 ???? NXXU B4XXNTVU L800I 019 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0032  11:25:50   206 ???? NXXU B4XXNTVU L800J 020 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0033  11:25:49   222 ???? NXXU B4XXNTVU L800D 014 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0034  11:25:49   219 ???? NXXU B4XXNTVU L800A 012 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0035  11:25:50   225 ???? NXXU B4XXNTVU L800G 018 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0036  11:25:50   224 ???? NXXU B4XXNTVU L800F 017 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0037  11:25:49   216 ???? NXXU B4XXNTVU L8007 009 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0038  11:25:50   213 ???? NXXU B4XXNTVU L8004 006 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
               0039  11:25:50   209 ???? NXXU B4XXNTVU L8003 004 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
               0040  11:25:50   228 ???? NXXU B4XXNTVU L800I 019 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
               0041  11:25:50   223 ???? NXXU B4XXNTVU L800E 016 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
               0042  11:25:44   112 ???? NXXU B4XXNTVU L8000 002 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0043  11:25:49   217 ???? NXXU B4XXNTVU L8008 010 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
               0044  11:25:59   205 ???? NXXU B4XXNTVU L8001 003 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
```

```
0045  11:25:50   208 ???? NXXU B4XXNTVU L8002 002 RDUKY  TEL SQ002  86.04  0354 00350  04  PRODMU2
0046  11:25:49   221 ???? NXXU B4XXNTVU L800C 015 RDUKY  ACC SQ004         0340 00350  01  DBDVM5
0047  11:25:59   215 ???? NXXU B4XXNTVU L8006 008 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0048  11:25:59   218 ???? NXXU B4XXNTVU L8009 011 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0049  11:25:59   224 ???? NXXU B4XXNTVU L800F 017 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0050  11:25:59   225 ???? NXXU B4XXNTVU L800G 018 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0051  11:25:50   220 ???? NXXU B4XXNTVU L800B 013 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0052  11:25:50   223 ???? NXXU B4XXNTVU L800E 003 RDUKY  TEL SQ002  86.BA  0354 00350  04  PRODMU2
0053  11:25:50   228 ???? NXXU B4XXNTVU L800I 004 RDUKY  TEL SQ002  86.BA  0354 00350  04  PRODMU2
0054  11:26:00   112 ???? NXXU B4XXNTVU L8000 002 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0055  11:25:59   216 ???? NXXU B4XXNTVU L8007 009 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0056  11:25:59   206 ???? NXXU B4XXNTVU L800J 020 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0057  11:25:59   219 ???? NXXU B4XXNTVU L800A 012 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
0058  11:25:59   222 ???? NXXU B4XXNTVU L800D 014 UPDAT  ACC SQ004         0340 00350  01  DBDVM5
```

Page 1,204

```
 SEQ    TIME    TASK TERM TRAN PROGRAM  TCB   TCB COMMD TABLE  KEY  RETURN  URT DBID  MUF  SIDNAME  OPRID/
  NR  HH.MM.SS   ID   ID   ID NAME     NAME   ID        NAME NAME   CODE    ID        ID           USERID
9775  11:33:44  5058 ???? NXXU B4XXNTVU L803R 013 REDKY  ACC SQ004         0340 00350  01  DBDVM5
9776  11:33:44  5090 ???? NXXU          L8045 014 LOGPR  CIC               0000        01  DBDVM5
9777  11:33:44  5096 ???? NXXU B4XXNTVU L804U 010 RDUKY  BRN SQ001         0341 00350  01  DBDVM5
9778  11:33:44  5090 ???? NXXU          L8045 014 COMIT                    0000        01  DBDVM5
9779  11:33:44  5096 ???? NXXU B4XXNTVU L804U 010 UPDAT  BRN SQ001         0341 00350  01  DBDVM5
9780  11:33:44  5058 ???? NXXU          L803R 005 LOGPR  CIC               0000        04  PRODMU2
9781  11:33:44  5096 ???? NXXU B4XXNTVU L804U 004 ADDIT  HST SQ005         0351 00350  05  DBDVMR
9782  11:33:44  5096 ???? NXXU B4XXNTVU L804U 010 REDKY  ACC SQ004         0340 00350  01  DBDVM5
9783  11:33:44  5090 ???? NXXU          L8045 009 COMIT                    0000        04  PRODMU2
9784  11:33:44  5058 ???? NXXU          L803R 003 LOGPR  CIC               0000        05  DBDVMR
9785  11:33:44  5096 ???? NXXU          L804U 008 LOGPR  CIC               0000        04  PRODMU2
9786  11:33:44  5058 ???? NXXU          L803R 013 LOGPR  CIC               0000        01  DBDVM5
9787  11:33:44  5090 ???? NXXU          L8045 002 COMIT                    0000        05  DBDVMR
9788  11:33:44  5058 ???? NXXU          L803R 013 COMIT                    0000        01  DBDVM5
9789  11:33:44  5096 ???? NXXU          L804U 004 LOGPR  CIC               0000        05  DBDVMR
9790  11:33:44  5096 ???? NXXU          L804U 010 LOGPR  CIC               0000        01  DBDVM5
9791  11:33:44  5058 ???? NXXU          L803R 005 COMIT                    0000        04  PRODMU2
9792  11:33:44  5096 ???? NXXU          L804U 010 COMIT                    0000        01  DBDVM5
9793  11:33:44  5058 ???? NXXU          L803R 003 COMIT                    0000        05  DBDVMR
9794  11:33:44  5096 ???? NXXU          L804U 008 COMIT                    0000        04  PRODMU2
9795  11:33:44  5096 ???? NXXU          L804U 004 COMIT                    0000        05  DBDVMR
*********       E N D   O F   A U X I L I A R Y   T R A C E       ***********
```

User Exit Restrictions

Third Party Vendor DCCTXPR Restriction for OTE

For best performance in an OTE environment, verify with the vendor supplying the DCCTXPR exit that the supplied exit meets all of the OTE requirements. Verification is required only if the site plans to use CA Datacom applications to run in an OTE environment.

User DCCTFPR Modules not Supported

The following user DCCTFPR modules are not supported:

- Replacement module - No longer supported by CA Datacom CICS Services Version 14.0.
- Suffix module - No longer supported by CA Datacom CICS Services r11 or Version 14.0 due to additional complexities of Multi-MUF support. In most cases, with additional options of global URTs and DBID switching, suffix exits can be converted to prefix exits.

Contact CA Support for help converting these exits to DCCTFPR Prefix Exits.

Messages and Abend Codes

This section lists the new messages in Version 14.0.

Removed Abend Codes

DC05S

DC17S

Numbered Messages

Note: For more information about each message, see the *Messages Reference Guide*.

DC01014E

MSIDNAME OPERAND FORMAT INVALID

Reason:

The MSIDNAME name given in the command is not in the correct format to specify a specific SID name or is not specified correctly for a range of SID names.

Action:

Correct the MSIDNAME ( ) qualification value and retry the command.

DC01015C

CA Datacom CICS Services ABENDED - SEE REGION

Reason:

Check the region output and transaction dump data sets for the reason.

Action:

Verify that all the connections and sessions have been set up correctly. Call CA Support.

DC01016I

Text varies

Reason:

The displayed data is informational, variable, and an echo of temporary storage records that reflect the results of the DBEC console command.

Action:

None.

Unnumbered DBEC Messages

The new DBEC error and help screen is displayed when you enter an invalid command or no operand:

```
      SYSID = CXDS       CA Datacom CICS Services        APPLID = A31ICXDS
DBEC
DC01002I - INVALID COMMAND FORMAT
                  FUNCTION          ACTION/LIMITER            MUF
                  |                 |                         |
   FORMAT:   DBEC AAAAAAA,BBBBBBBBB,CCCCCCCCCCCC,DDDDDDDDDD,EEEEEEEEEEEEEEEE
                         |                       |

                         OBJECT                  SYSTEM


FUNCTIONS: INQUIRE,INQ,I   OBJECTS: MUF(2)   URT(4)     TBL(0210) <= SPECIFIC
           PERFORM,PER,P            MUF(1?)  URT(001?)  TBL(01??) <= RANGE
                                    MUF(??)  URT(????)  TBL(????) <= ALL
                                    MSID(DBSIDPR)                 <= SPECIFIC
                                    MSIDNAME(DBSID*)              <= RANGE
                                    MSID(*)                       <= ALL
ACTION : OPEN    CLOSE  NEWCOPY   RESTART  DEFER  AUTO  STARTUP  SHUTDOWN
         CONNECT DISCONNECT IMMEDIATE
LIMITER: OPEN CLOSE UNOPENED OPENING CLOSING  DEFER  AUTO  NOCSD  SQL  DYN  PLT
         CONNECT CONNECTING DISCONNECT DISCONNECTING UNCONNECTED STATS


SYSTEM:             <= BLANK-LOCAL CICS    MUF (URT OR TBL ONLY): <= BLANK-ALL
        SYSID(AAAA) <= SPECIFIC CICS            SIDNAME(XXXXXXXX) <= SPECIFIC
        SYSID(*)    <= ALL CICS SYSTEMS         SIDNAME(XXXX*)    <= RANGE
```

The following DBEC messages are listed alphabetically.

ACT=XXX RES=XXX

Reason:

The URT is open and the values reflect the active tasks using this URT and the tasks that have exclusive control.

Action:

None. This message is for information only.

BEGINNING MUF NUMBER GREATER THAN MUFS DEFINED

Reason:

The MUF inquiry or perform was specified with a MUF number greater than the number of MUFs that have been defined with DBCSID macros in the DBCVTPR.

Action:

Correct the MUF operand in the command and retry.

BEGINNING URT NUMBER GREATER THAN MAXURT COUNT

Reason:

The URT inquiry was specified with a URT number greater than the maximum URT count.

Action:

Correct the URT operand in the command and retry.

CANNOT DELETE URT

Reason:

The Newcopy line command on a URT failed due to an error deleting the module.

Action:

Call CA Support.

CBSIO INVALID

Reason:

An invalid CBSIO value has been typed for URT.

Action:

See the CA Datacom/DB documentation for valid values that are allowed for the field and correct the value.

CHANGE MIN/SEC

Reason:

Both MIN and SEC were changed for the URT.

Action:

See the CA Datacom/DB documentation for the valid values that are allowed for the parameters. Correct the entry to reflect either MIN or SEC but not both.

CLOS RC=XX.YYY

Reason:

The C line command to issue a URT CLOSE failed with CA Datacom/DB return code xx, internal return code (yyy).

Action:

Informational. See the CA Datacom/DB documentation for the explanation of the return code.

CLOSE URT FIRST

Reason:

The Newcopy line command was requested for a URT that is open.

Action:

Close the URT, perform the Newcopy, and reopen the URT.

CONN RC=XX.YYY

Reason:

The C line command to issue a MUF CONNECT has failed with a CA Datacom/DB return code xx, internal return code (yyy).

Action:

Informational. See the CA Datacom/DB documentation for the explanation of the return code.

CSD DISABLED

Reason:

The URT module has been disabled and is not available for use.

Action:

Enable the URT module in CICS and retry the command.

DISC RC=XX.YYY

Reason:

The D line command to issue a MUF DISCONNECT failed with a CA Datacom/DB return code xx, internal code (yyy).

Action:

Informational. See the CA Datacom/DB documentation for the explanation of the return code.

INQ ONLY TRANID

Reason:

A perform action line command has been typed for a URT or MUF using the DBEX inquiry only transaction ID.

Action:

Use the correct DBEC command specified in the DBCVTPR for the update transactions value and retry the action.

INV USER VALUE

Reason:

An invalid number of user tasks has been typed for the MUF.

Action:

The value for USERS has been changed to a value that is out of range for the valid number of USERS. Correct the value and retry the command.

INVALID ACTION

Reason:

An invalid command has been typed on the command line or an invalid line command has been typed.

Action:

See the help screen for valid actions for the perform or inquiry command, Alternately, see the valid actions available for the MUF or URT. Correct the action value and retry the command.

INVALID UNDO VAL

Reason:

A value other than Y or N has been typed for the URT in the UNDO column.

Action:

Correct the value typed in the field and retry the command.

MIN INVALID

Reason:

An invalid MIN value has been typed for the URT.

Action:

See the CA Datacom/DB documentation for valid values that are allowed for the field and correct the value.

MUST NEWCOPY URT

Reason:

A request against a URT failed because the URT was not defined in the CSD.

Action:

Create the URT module in the CSD, install it, and retry the command.

NEWCOPY ERROR

Reason:

The Newcopy command to CICS failed with an error.

Action:

Informational. If this URT is intended to be used in CA Datacom CICS Services, the URT has not been loaded. Correct the library concatenation or move the module into a library in the CICS DFHRPL to include the URT module, cycle CA Datacom CICS Services, and retry the command.

NEWCOPY LOADED

Reason:

The Newcopy line command to newcopy the URT was successful.

Action:

None. This message is for information only.

NO CSD ENTRY

Reason:

The URT was not defined in the CSD.

Action:

Informational. If this URT is intended to be used in CA Datacom CICS Services, define it to CICS in the CSD, install it, provide it in the DFHRPL, load it, and retry the command.

NO LOAD MODULE

Reason:

The URT module was not loaded into the CICS region.

Action:

Informational. If the URT is used in CA Datacom CICS Services, provide the module in the DFHRPL and retry this command.

NO MUF DEFINED FOR THIS RANGE

Reason:

The MUF inquiry was specified with wildcards but no qualified MUF was found.

Action:

Informational. If results are expected, modify your MUF qualification and retry your command.

NO MUF WITH LIMITER CONDITION

Reason:

A limiter was specified with the MUF inquiry but no qualified MUFs were found.

Action:

Informational. If results are expected, modify your MUF qualification and retry your command.

NO TASKS IN USE IN THIS MUF

Reason:

The T line command was issued for the MUF but there are no active tasks for this MUF.

Action:

None. This message is for information only.

NO URT DEFINED FOR THIS RANGE

Reason:

The URT inquiry was specified with wildcards but no qualified URT was found.

Action:

Informational. If results are expected, modify your URT qualification and retry your command.

NO URT WITH LIMITER CONDITION

Reason:

A limiter was specified for the URT inquiry but no qualified URTs were found.

Action:

Informational. If results are expected, modify your URT qualification and retry your command.

OPEN RC=XX.YYY

Reason:

The O line command or perform command to issue a URT OPEN failed with CA Datacom/DB return code xx, internal return code (yyy).

Action:

Informational. See the CA Datacom/DB documentation for the explanation of the return code.

PRTY INVALID

Reason:

An invalid PRTY value for the URT has been typed.

Action:

See the CA Datacom/DB documentation for valid values that are allowed for the field and correct the value.

SEC INVALID

Reason:

An invalid SEC value has been typed for the URT.

Action:

See the CA Datacom/DB documentation for valid values that are allowed for the field and correct the value.

UNKNOWN MUF

Reason:

The global URT identified a MUF that is not known to the DBCVTPR by a DBCSID macro.

Action:

Correct the global URT to specify only MUFs defined in the DBCVTPR by DBCSID macros, newcopy the URT, and recycle CA Datacom CICS Services.

URT DELETED/SKIPPED

Reason:

A DELETE command deleted the URT or the URT is within a SKIPLOAD and was not loaded for use.

Action:

Informational. If the URT is used in CA Datacom CICS Services, exclude it in a SKIPLOAD macro in the DBCVTPR. Alternately, make the URT module available to CA Datacom CICS Services, cycle CA Datacom CICS Services, and retry the command.

MRO Connections in DBEC

The following messages belong to MRO connections in DBEC.

CICS SERVICE NOT INSTALLED

Reason:

An abend has occurred trying to receive MRO input. Check the remote system for the DBRC transaction abend. A possible cause of a remote system abend is that the remote system is not also version 14.0 of CA Datacom CICS Services. Mixed releases are not supported in DBEC.

Action:

Correct the reason for the abend in the remote system or correct the SYSID in the command not to reference a CICS that has any release of CA Datacom CICS Services installed other than 14.0.

INVREQ

Reason:

An invalid command was issued for the MRO conversation receive.

Action:

The session and connections resources were incorrectly defined for communication with the regions specified in the SYSID operand. Alternately, the ISC and IRCSTRT were not specified both as YES in the CICS startup parameters. A likely cause of this error is the remote SYSID is a CA Datacom CICS Services release other than 14.0.

IS NOT A SYSTEM NAME

Reason:

No session is available for the connection specified.

Action:

The SYSID operand specifies a remote system for which no connection is defined in this CICS. Correct the CSD and retry the command.

Note: This action usually requires a recycle of the CICS.

LENGERR

Reason:

An incorrect length was specified on receiving input from the session for the connection.

Action:

Correct the SYSID parameter to verify that the requested communication is only for a CICS with CA Datacom CICS Services 14.0 installed. Alternately, you can also check all connections and sessions defined in this CICS and the remote system for errors and correct them.

LINK TO SYSTEM IS OUT OF SERVICE

Reason:

The connection was not found. Possible causes for this error are:

- SYSIDNT for the remote system is not recognized.
- IRC is not enabled on this system or the remote system.
- Remote CICS is not up.

Action:

Correct any of the applicable situations and recycle the CICS that is incorrect.

NON-CICS SYSTEM

Reason:

The protocol for this connection is not a valid CICS connection.

Action:

Possible causes for this error:

- SYSIDNT for the remote system is not recognized.
- IRC is not enabled on this system or the remote system.
- Connection or sessions have not been defined correctly are not unique.

Correct any errors that apply, recycle the CICS systems, and retry.

SYSTEM BUSY

Reason:

A SYSBUSY condition was returned acquiring a session for this connection.

Action:

The possible error could be caused by the RECEIVEPFX or SENDPFX in the session definitions that are not unique. Check all connection and sessions definitions, correct any errors, cycle the CICS regions, and retry.

SYSTEM NAME IS NOT KNOWN

Reason:

The connection is not known to the system.

Action:

Define the connection and session in the CICS, cycle the CICS, and retry.

UNABLE TO ESTABLISH LINK TO SYSTEM

Reason:

A SYSIDERR occurred allocating the connection.

Action:

Correct the SYSIDNT for the remote system, recycle the CICS, and retry.

UNKNOWN ERROR

Reason:

An unknown error occurred receiving input from the session for the connection.

Action:

The connections or sessions are not defined correctly. Possibly because the send or receive prefixes are not defined correctly.

CA Ideal

The following information provides an overview of the Version 14.0 enhancements for the CA Ideal product. For more information, see the Product Documentation Changes (PDCs), and PTFs available through CA Support online.

New Features

CA Mainframe Software Manager

CA CSM is an application that simplifies and unifies the management of CA Technologies mainframe products on z/OS systems.

CA CSM provides services that make it easier for you to do the following:

- Acquire, install, and deploy products
- Automatically obtain and apply maintenance

These services enable you to easily manage your software based on industry accepted best practices. A web-based interface makes the look and feel of the environment friendly and familiar, enabling you to install and maintain your products faster and with less chance of error.

You can acquire CA CSM from the CA Support website.

Note: For more information, see your product's installation instructions and the CA Mainframe Software Manager online help.

Web Interface

The CA Ideal Web Interface is now based on CICS Web Support instead of the earlier CICS Web Interface API. This allows the transactions to be marked as Web-aware. Existing CA Ideal Web applications can be run unaltered as Web-aware transactions.

31-bit Storage

The majority of CA Ideal code has been moved into 31-bit storage, and the largest control blocks are also moved above the line. In particular, the Load Module Table and the Run Control Block for each application, are now above the line.

There are a few panel-related blocks that remain below, and parameters passed to non-Ideal subprograms will continue to be placed there as this area is allocated before the subprogram’s AMODE is known.

Enhancements to Existing Features

Documentation

This section contains topics that are related to documentation enhancements.

Installation Guide

The Installation Guide has been restructured and describes the following methods of installing your product:

- CA CSM

Best Practices Guide

The documentation set now includes a *Best Practices Guide*. This guide provides a brief introduction to CA Technologies Mainframe 2.0 strategy and functionality, and describes the best practices for installing and configuring CA Datacom.

These best practices represent years of product experience, much of which is based on customer experience reported through interviews with development, technical support, and technical services. Therefore, many of these best practices are truly a collaborative effort stemming from customer feedback.

CA HTML Bookshelf

This release contains the CA HTML bookshelf, which is an HTML help system that provides access to all deliverables in the product documentation set in both HTML and PDF. HTML provides robust online viewing and search capabilities, while PDF provides a print-friendly option.

The HTML bookshelf features include:

- A single help screen that displays all documentation for this release.
- An all-in-one search tool that searches the entire documentation set and returns matches found in both the HTML and PDF formatted documentation, without the need for a specialized .PDX index file.
- Additional links for using the bookshelf, downloading Acrobat Reader, and contacting CA Technologies.

Note: You must have Adobe Reader 8 or above to view the PDF files in the bookshelf.

Search the Bookshelf

The bookshelf includes a search facility that helps you locate information throughout the set.

To search the bookshelf

1. Enter your search criteria in the Search field in the upper right corner of the bookshelf and press Enter.

   The search returns HTML results listed by topic and PDF results listed by guide. The results are sorted by date so that the most recently updated topics or PDFs appear at the top of the list. To find a topic in a PDF, open the PDF and view the list of topics within the PDF that match the search criteria.

2. (Optional) Click Sort by Relevance.

   The list is reordered so that the HTML topics or PDFs that contain the most matches appear at the top of the list.

VLS Library Size Increase

There is a new option for formatting VLS Libraries to increase the maximum size. This can be used to accommodate CA Ideal sites with large numbers of programs in a single system.

RECFM Backup Record Format Requirement

The backup record format for VLS has been RECFM=U and sequential backup files of the message library (ADRLIB) and product panel library (ADRPNL) are part of the installation required by DataDictionary and CA Ideal.

Because SMP/E does not support RECFM=U and to comply with Mainframe 2.0 requirements, VLS backup files must use RECFM=V or F format. For compatibility, VLSUTIL now reads both RECFM=U and RECFM=V formats, although it will write only RECFM=V.

The enhanced BACKUP function uses RECFM=V, and the RESTORE function allows both the old RECFM=U and new RECFM=V so that old backups can be restored.

VLS Blocked Data Table (BDT) Removed

The VLS Blocked Data Table (BDT) has been eliminated due to potentially negative performance impact.

Virtual Processing Environment Enhancements

Virtual Processing Environment (VPE) provides the CICS interface for CA Ideal and CA Datacom DataDictionary Online (DDOL). It now executes in 31-bit mode, which permits RMODE(31) code to call VPE. This allows client code, primarily CA Ideal and CA Datacom DataDictionary, to be moved above the line.

VPE for CICS now recognizes the use of the 3270 Bridge and passes that information to client code.

Upgrading from an Earlier Release

Concurrent Releases

You can install this release of CA Datacom and continue to use an older release in your production environment. If you plan to continue to run a previous release, consider the following points:

- When installing into an existing SMP/E environment, this installation deletes previous releases.
- If you acquired your product from tape or with Pax-Enhanced ESD, select different target and distribution zones for your new release from where your current release is installed. The new zones use different libraries than your current release.

  Note: CA CSM installs into a new CSI by default.
- Define DDDEF entries in your new zones to point SMP/E to the proper libraries for installation. Ensure that they point to the new release libraries.

Parallel releases

Typically you should upgrade and test a development environment before upgrading your production environment. Because programs compiled with CA Ideal Version 14.0 will not run in a CA Ideal r2.2 or r11.0 environment, the programs updated in your Version 14.0 development environment can be re-compiled in batch with r2.2 or r11.0 to run in these environments until the production environment is upgraded to Version 14.0.

The following procedure is for running and testing programs in a development environment on a new release of CA Ideal and running the same programs in your current production environment that uses a different release of CA Ideal.

- Save your current release installed software load libraries for continued use by production. The ADRLIB, ADRPNL, and ADROUT data sets used by the current release development environment need to be saved for the batch procedure.
- Upgrade the development system to the new release. Plan for an interim period with the new release in development and the current release in production.
- Developers can continue development with the following warning: During the interim period, ongoing maintenance of production applications should not use any new release features, since these would not be recognized in the current release production environment. New applications that will be moved into production after the interim test period may use new release features. This should thoroughly test the new release code in the development environment.
- For any maintained programs that must be moved from development to production during the interim period, the following steps should be followed:

  1. Develop the changes to the application on the new release development system.
  2. Run a CA Ideal batch job to compile the application program(s) and mark status to production.

     This batch job must use the current release's load libraries and ADRLIB, ADRPNL, and ADROUT data sets. The new release development source, object, and panel VLS libraries should also be included.
  3. Run the CA Ideal object transport utility unload next or as the second step of the batch compile and mark. The new release load library for the object transport should be used for the unload process and the current release load library should be used for the loading of the application into the current release production environment.

     This loads the application into the current release production environment.

Note: If the QCODE value in the SCF options block was changed in the current release development environment to modify the enqueue names, the same value must be used for the new release development environment. When transporting, ensure that the correct load library is supplied so that the enqueue names match the system with which they are running.

CA IPC

The following information provides an overview of the Version 14.0 enhancements for the CA IPC product. For more information, see the Product Documentation Changes (PDCs), and PTFs available through CA Support online.

New Features

CA Mainframe Software Manager

CA CSM is an application that simplifies and unifies the management of CA Technologies mainframe products on z/OS systems.

CA CSM provides services that make it easier for you to do the following:

- Acquire, install, and deploy products
- Automatically obtain and apply maintenance

These services enable you to easily manage your software based on industry accepted best practices. A web-based interface makes the look and feel of the environment friendly and familiar, enabling you to install and maintain your products faster and with less chance of error.

You can acquire CA CSM from the CA Support website.

Note: For more information, see your product's installation instructions and the CA Mainframe Software Manager online help.

Enhancements to Existing Features

Documentation

This section contains topics that are related to documentation enhancements.

Installation Guide

The *Installation Guide* has been restructured and describes installing CA Datacom:with CA CSM in addition to Pax-Enhanced ESD and tape (upon request).

CA HTML Bookshelf

This release contains the CA HTML bookshelf, which is an HTML help system that provides access to all deliverables in the product documentation set in both HTML and PDF. HTML provides robust online viewing and search capabilities, while PDF provides a print-friendly option.

The HTML bookshelf features include:

- A single help screen that displays all documentation for this release.
- An all-in-one search tool that searches the entire documentation set and returns matches found in both the HTML and PDF formatted documentation, without the need for a specialized .PDX index file.
- Additional links for using the bookshelf, downloading Acrobat Reader, and contacting CA Technologies.

Note: You must have Adobe Reader 8 or above to view the PDF files in the bookshelf.

Search the Bookshelf

The bookshelf includes a search facility that helps you locate information throughout the set.

To search the bookshelf

1. Enter your search criteria in the Search field in the upper right corner of the bookshelf and press Enter.

   The search returns HTML results listed by topic and PDF results listed by guide. The results are sorted by date so that the most recently updated topics or PDFs appear at the top of the list. To find a topic in a PDF, open the PDF and view the list of topics within the PDF that match the search criteria.

2. (Optional) Click Sort by Relevance.

   The list is reordered so that the HTML topics or PDFs that contain the most matches appear at the top of the list.

Concurrent Releases

You can install this release of CA Datacom and continue to use an older release in your production environment. If you plan to continue to run a previous release, consider the following points:

- When installing into an existing SMP/E environment, this installation deletes previous releases.
- If you acquired your product from tape or with Pax-Enhanced ESD, select different target and distribution zones for your new release from where your current release is installed. The new zones use different libraries than your current release.

  Note: CA CSM installs into a new CSI by default.
- Define DDDEF entries in your new zones to point SMP/E to the proper libraries for installation. Ensure that they point to the new release libraries.

CA Datacom Server

The following information provides an overview of the Version 14.0 enhancements for the CA Datacom Server product. For more information, see the Product Documentation Changes (PDCs), and PTFs available through CA Support online.

New Features

CA Mainframe Software Manager

CA CSM is an application that simplifies and unifies the management of CA Technologies mainframe products on z/OS systems.

CA CSM provides services that make it easier for you to do the following:

- Acquire, install, deploy, and configure products
- Automatically obtain and apply maintenance

These services enable you to easily manage your software based on industry accepted best practices. A web-based interface makes the look and feel of the environment friendly and familiar, enabling you to install and maintain your products faster and with less chance of error.

You can acquire CA CSM from the CA Support website.

Note: For more information, see your product's installation instructions and the CA Mainframe Software Manager online help.

Console Commands

The current implementation of CA Datacom Server provides the ability to execute commands using a utility that communicates with the server address space through CAICCI. This release adds an additional feature to provide command input through console commands. In z/OS, this is accomplished using the MODIFY/QEDIT command and, in z/VSE, it is through opening the console DTF.

Proxy Windows Service

You can now start and stop the CA Datacom Proxy server as a Windows service. Once installed, the service can be controlled through Control Panel -> Administrative Tools -> Services. Previously, the CA Datacom Proxy server was run using the cadcjsrv.exe program. You must download a self extracting zip file from the CA Datacom page on CA Support Online and unzip the contents into the Datacom installation folder\Java\Classes folder. The zip file contains Jna.jar which is required by the Java classes in the cadcjdbc.jar which would install, run, and, if required, uninstall the service.

Support for Linux and Sun Solaris

The JDBC jar file, cadcjdbc.jar, is the only thing that is required to be deployed in any environment including Linux and any UNIX system when a type 4 connection is specified. A type 4 connection uses Java to communicate through TCP/IP to a subtask in the CA Datacom mainframe region.

Enhancements to Existing Features

64-Bit Implementation

Native interface binaries have been modified to run on a 64-bit system in 64-bit mode. Both JDBC and ODBC drivers have the ability to run in a Windows system. JDBC binaries have been modified to run in a 64-bit JVM on USS and Windows.

CAICCI-PC Option

With TCP/IP as a communications interface, the CAICCI-PC component is now optional on a workstation.

Enhanced Trace Processing

Trace processing has been enhanced to identify a given user from any source, the time various processes take, and the amount of time between transmit and receive times.

JDBC Control Block Format

The JDBC control block format has been updated to support the current releases of Java.

JDBC 4.0 Driver Support

A number of changes have been implemented to support the driver requirements in the JDBC 4.0 API.

SQLSTATE Reporting Improved

The method of reporting back the SQLSTATE from SQL within the Multi-User Facility (MUF) has changed. Since the SQLSTATE is now being reported out from the SQL engine from within the MUF, it will be reported back to the CA Datacom Server user.

Documentation

This section contains topics that are related to documentation enhancements.

Installation Guide

The Installation Guide has been restructured and describes the following methods of installing your product:

- CA CSM
- Electronic Software Delivery (ESD)
- Tape

CA HTML Bookshelf

This release contains the CA HTML bookshelf, which is an HTML help system that provides access to all deliverables in the product documentation set in both HTML and PDF. HTML provides robust online viewing and search capabilities, while PDF provides a print-friendly option.

The HTML bookshelf features include:

- A single help screen that displays all documentation for this release.
- An all-in-one search tool that searches the entire documentation set and returns matches found in both the HTML and PDF formatted documentation, without the need for a specialized .PDX index file.
- Additional links for using the bookshelf, downloading Acrobat Reader, and contacting CA Technologies.

Note: You must have Adobe Reader 8 or above to view the PDF files in the bookshelf.

Search the Bookshelf

The bookshelf includes a search facility that helps you locate information throughout the set.

To search the bookshelf

1. Enter your search criteria in the Search field in the upper right corner of the bookshelf and press Enter.

   The search returns HTML results listed by topic and PDF results listed by guide. The results are sorted by date so that the most recently updated topics or PDFs appear at the top of the list. To find a topic in a PDF, open the PDF and view the list of topics within the PDF that match the search criteria.

2. (Optional) Click Sort by Relevance.

   The list is reordered so that the HTML topics or PDFs that contain the most matches appear at the top of the list.

Changes to Data Set Names

The names of some data sets and libraries have changed. We recommend that you review the following table to determine the impact this may have to your installation:

Original Name	New Name	Description
CAILIB	CAYTLOAD	
CAIMAC	CAYTMAC	
PPOPTION	n/a	Not used
	SRVHFS1	Shell script
	SRVHFS2	HFS JAR
	SRVHFS3	HFS

Third-party Acknowledgements

JNA v.3.0.0

This product includes Lesser General Public License (LGPL) software. The software is distributed in accordance with the following license agreement:

JNA v.3.0.0

This product is distributed with JNA v.3.0.0 (the LGPL Software), the use of which is governed by the following terms:

The LGPL Software is open source software that is used with this CA software program (the CA Product). The LGPL Software is not owned by CA, Inc. (CA). Use, copying, distribution and modification of the LGPL Software are governed by the GNU Lesser General Public License (LGPL) version 2.1. A copy of the LGPL license can be found in the same directory on the installation disk on which the LGPL Software is distributed. Additionally, a copy of the LGPL license can be found at http://www.opensource.org/licenses/lgpl-2.1.php or write to the Free Software Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA. CA makes the source code for the LGPL Software available at http://opensrcd.ca.com, and includes a copy of the source code on the same disk as the executable code. Use of the CA Product is governed solely by the CA end user license agreement (EULA), not by the LGPL license. You cannot use, copy, modify or redistribute any CA Product code except as may be expressly set forth in the EULA. The LGPL Software is provided AS IS WITHOUT WARRANTY OR CONDITION OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Further details of the disclaimer of warranty with respect to the LGPL Software can be found in the LGPL license itself. To the full extent permitted under applicable law, CA disclaims all warranties and liability arising from or related to any use of the LGPL Software.