CA Datacom® CICS Services

System Reference Guide
Version 14.02

CA technologies

CA Technologies Product References

This document references the following CA products:

- CA CIS
- CA Datacom® CICS Services
- CA Datacom® Datadictionary™
- CA Datacom®/DB
- CA Datacom® DB2 Transparency
- CA Datacom® DL1 Transparency
- CA Datacom® Fast Restore™
- CA Datacom® IMS/DC Services
- CA Datacom® Presspack
- CA Datacom® Server
- CA Datacom® SQL
- CA Datacom® STAR
- CA Datacom® TOTAL Transparency
- CA Datacom® VSAM Transparency
- CA Dataquery™ for CA Datacom® (CA Dataquery)
- CA Dynam®/T Tape Management for z/VSE (CA Dynam/T for z/VSE)
- CA Ideal™ for CA Datacom® (CA Ideal)
- CA IPC

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.

Contents

Chapter 4: Specifying DBCSID Macros   43

Chapter 5: Using the SKIPLOAD Macro   51

Chapter 6: Initiating Services   55

Chapter 7: Shutting Down Services   57

Chapter 8: Changing Generation Options Online (DBOC GENOPTS)   61

Appendix E: User Issued Log Commands 155

Chapter 1: Introduction

This guide describes the following systems programmer responsibilities for maintaining and tuning CA Datacom CICS Services:

■ Installing the product (see Post-Installation Requirements (see page 13) and also refer to the installation materials accompanying your install tape).

■ Modifying CA Datacom CICS Services generation options specified in the DBCVTPR macro.

■ Defining User Requirements Tables (URTs) used by CA Datacom CICS Services when providing online access to CA Datacom/DB.

■ Initiating and shutting down CA Datacom CICS Services.

■ Handling recovery, restart, and transaction backouts.

■ Tuning your system to use resources effectively.

Before installing CA Datacom CICS Services at your site, see the *CA Datacom CICS Services Installation Guide for z/OS* for information about CICS releases supported by CA Datacom CICS Services and compatibility with other CA Datacom products.

JCL Example Notation

This guide uses the following JCL notation.

Notation	Description
UPPERCASE	Identifies commands, keywords, and keyword values which must be coded exactly as shown.
symbols	Symbols, such as commas, equal signs, and slashes, must be coded exactly as shown.

Do not type the following when they appear in the JCL examples. They are provided to clarify the JCL syntax.

Notation	Description
lowercase	Identifies a value or values that you must supply.
. . .	Indicates the omission of one or more keywords or parameters that you must code according to the specific installation at your site.

Chapter 2: Post-Installation Requirements

CA Datacom CICS Services is installed by following the installation procedures shown in the *Installation Guide*. Make sure all those tasks are completed before implementing these post-installation tasks.

Before operating CA Datacom CICS Services, be sure that your system meets the CICS system requirements discussed in this chapter. Also, review CA Datacom CICS Services generation options (see Specifying Generation Options (DBCVTPR) (see page 19)).The specifications for these options may require adjustment to meet the needs of your system.

This section contains the following topics:

CA Datacom/DB Requirements

To operate CA Datacom CICS Services Version 14.0, you must be using CA Datacom/DB Version 12.0 or later.

The use of the multiple MUFs feature requires a default CA Datacom/DB MUF that must be at CA Datacom/DB Version 12.0 or later. The MUF with the most recent version must be listed first in the DFHRPL (the load library concatenation for loading modules in CICS). For example, if you are connecting to both CA Datacom/DB 14.0 and 12.0, the 14.0 libraries must be first in the concatenation. As for custom libraries, the default MUF custom libraries should be first in the concatenation.

In a z/OS CICS/TS environment, CA Datacom CICS Services does not support the CCI interface from CICS to CA Datacom/DB. Therefore, if you supply the DBSYSID macro CCI parameters CCIAPPL= and CCISYS= in a DBSIDPR module assembly for CA Datacom CICS Services, they are ignored.

CICS System Requirements

To operate CA Datacom CICS Services, your system must meet the following requirements:

- IBM supported releases of CICS Transaction Server:

  - z/OS: CICS Transaction Server 3.2, 4.1, or later as supported by IBM.

  - z/VSE: CICS Transaction Server 1.1.1 or later as supported by IBM.

- Record size of at least 136 bytes on the DBOC Message Log destination. (The default Message Log destination is DBOC.)

- Availability of Full Function Basic Mapping Support (BMS) and temporary storage support.

- For DBOC or DBEC full screen output on 3270 M3/M4/M5 terminals, define the terminal with an alternate screen size.

CICS Table Requirements

Requirements for CICS tables follow:

- Update the indicated tables with the copybooks provided in the downloaded library as described in the *Installation Guide for z/OS*. For more information about copybooks for CICS table assemblies, see CICS modifications in the section on post-installation steps in the *Installation Guide for z/OS*.

  Note: If the B114CSD member (as described in the *Installation Guide for z/OS*) does not include the DBCSID SIDNAME= modules that are added to the DBCVTPR macro (Specifying Generation Options (DBCVTPR) (see page 19)) using the DBCSID macro (Specifying DBCSID Macros (see page 43)), modify B114CSD so that it does include those names. For more information about DBSIDPR, see the *CA Datacom/DB Database and System Administration Guide*.

- *(Optional)* Execute the Program List Table (PLT) both at CICS startup and at CICS shutdown. At CICS startup, place the PLT B114PLTA entry into your PLTPI for the third stage of initialization, that is, after DFHDELIM.

- *(Optional)* At CICS shutdown, place the PLT B114PLTB entry into your PLTSD for the first (quiesce) stage, that is, before DFHDELIM.

  In a z/VSE environment, a shutdown PLT entry for DCCOCPR is required.

  Caution! Define other CA products that are using CA Datacom after DCCOCPR in the PLTPI table. Define other CA products that are using CA Datacom before DCCOCPR in the PLTSD table.

Authorization and Security

You grant and restrict access (through CICS SIGNON or through an authorization product such as CA Top Secret or CA ACF2) to the following CA Datacom CICS Services transactions:

DBIC

Provides a series of inquiry commands for monitoring the status of system resources. For details on DBIC functions, see the *User Guide*.

DBOC

Provides all of the facilities of DBIC plus the ability to control and alter system resources and generation options. For more information about DBOC functions, see Changing Generation Options Online (DBOC GENOPTS) .

DBEX

Provides an inquiry function for monitoring the status of system resources on a pageable display in a single CICS or in a MRO/ISC environment. For details on DBEX, see the *User Guide*.

DBEC

Provides all of the facilities of DBEX plus the ability to alter system resources on a pageable display in a single CICS or in a MRO/ISC environment. For details about DBEC functions, see the *User Guide*.

DBTX

Provides facilities for issuing CA Datacom/DB read-only requests for examining command syntax and simulating program logic. For details about DBTX functions, see the *User Guide*.

DBTS

Provides the same facilities as DBTX, but DBTS users are not restricted to read-only CA Datacom/DB access. DBTS users can update the databases. For details about DBTS functions, see the *User Guide*.

DBUG

Provides facilities for intercepting CA Datacom/DB requests issued by an executing application program, allowing examination of its processing. For details about DBUG functions, see the *User Guide*.

DBUT

Provides facilities for examining whatever is stored in the CICS region. This utility gives the user online access to any CICS program. We recommend tightly limiting the number of authorized users for this transaction. For details about DBUT functions, see Using the Display Utility (DBUT) .

DBRC

Internal only transaction (used with DBEC and DBEX).

DBKC

Internal only transaction used with DBOC and DBEC for EOJ_OK feature; must have the same security credentials as DBOC and DBEC.

DBFS

Internal only transaction used with DBUG for remote terminal interception.

Carefully review the needs of potential CA Datacom CICS Services users at your site. Be sure that you authorize users for the transaction or transactions appropriate for their needs.

Note: Use the DBCVTPR parameters, DBEC=, DBOC=, DBTS=, DBUG= to change transaction IDs for any CA Datacom CICS Services transaction except DBUT. For information, see Specifying Generation Options (DBCVTPR) (see page 19).

These transaction IDs can also be changed online through the DBOC GENOPTS transaction. Verify that the new transaction IDs are defined to CICS. For more information, see Changing Generation Options Online (DBOC GENOPTS) (see page 61). Before using either of these facilities to change the transaction IDs, establish user authorizations for the new transaction ID names.

Additional Security

You can use the DBCVTPR macro to establish a list of master operators who can control access to CA Datacom CICS Services. Only those operators are allowed to start up or shut down CA Datacom CICS Services and change characteristics of the environment. See MSTOPR= (see page 29).

If CA Datacom CICS Services is started during CICS initialization PLT time then all operations are available when CICS begins control.

If you want to stop using CA Datacom CICS Services, issue the DBOC SHUTDOWN or DBEC PERFORM,SHUTDOWN command which afterwards can only be started by one of the master operators.

Other CA Product Dependencies

If the following products are used at your site, they must be at the following release levels:

- CA Datacom VSAM Transparency must be at r2.2 or later for z/OS and r2.1 or later for z/VSE to support CICS/TS.

- CA Datacom DL1 Transparency must be at Version 12.0 or later to support CA Datacom/DB 12.0 and later and CICS/TS.

Chapter 3: Specifying Generation Options (DBCVTPR)

The DBCVTPR macro specifies all system generation options for CA Datacom CICS Services. See the installation materials accompanying your install tape for a model DBCVTPR assembly job. To tailor CA Datacom CICS Services to your site or change any of the options, modify the parameters of the DBCVTPR macro and reassemble.

Most of the DBCVTPR parameter specifications can be modified through the DBOC transaction. Modifications made through DBOC are in effect only until the end of the current CICS cycle. For more information, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Note: When you change one or more options in the DBCVTPR and reassemble/relink the module, the only way the options take effect is to load a new copy of DBCVTPR when CA Datacom CICS Services is shut down. As long as CA Datacom CICS Services is running, the system does not allow a new copy of the DBCVTPR to be loaded into the CICS region.

CA Datacom CICS Services Generation Options (DBCVTPR)

See the following alphabetical list of DBCVTPR parameters for valid entries and default values. When specifying multiple operands for a parameter, separate the operands with commas and enclose the entire string within parentheses.

AUTHID=

Only use this parameter when you want to establish a system-level authorization identifier, or when you want to disable (by specifying DEFAULT) dynamic plan selection. For more information about dynamic plan selection, see the information about the PLANSWI= parameter in PLANSWI= (see page 30) and in Controlling Dynamic Plan Selection (see page 137).

Specifying AUTHID=DEFAULT indicates that there is no system-level AUTHID defined. It also indicates not to reference the Dynamic Plan Selection Table (DCTABPR). If you specify DEFAULT, the incoming AUTHID is left intact in all cases.

If you specify AUTHID=authid, CA Datacom CICS Services does not perform dynamic plan selection but uses this authid value for all requests. Therefore, the specified authid value becomes the system-level AUTHID.

Valid Entries:

DEFAULT, or a 1- to 18-character authorization identifier to be used as the system-level AUTHID.

Note: The AUTHID= and PLANSWI= parameters are mutually exclusive.

Default Value:

DEFAULT

AUTOn=

(Optional) Specifies delayed opening of URT until a CA Datacom/DB application requiring its use begins processing.

When the parameter list exceeds assembler macro operand length, use the continuation parameter AUTOn=, for example:

```
AUTO=(urt1,urt2,urt3),
AUTO1=(urt4,urt5,urt6),
 .
 .
 .
AUTO9=urtn
```

You can use DBOC AUTO= to add URTs to this list for the current CICS cycle. For details, see the *User Guide*.

Valid Entries:

4-digit URT IDs. (Valid IDs are numbers which do not exceed the MAXURTS= specification and are greater than zero.) IDs can be listed individually, with or without leading zeros, or with an inclusive range, for example, AUTO=(9,004,10,13-25).

Default Value:

All URTs not specified here or in the DEFER= parameter list are opened at CA Datacom CICS Services startup.

Note: The SQL URT is not eligible for AUTO= specification. It must be opened at PLT startup time, or else by explicitly using the DBOC OPEN=nnnn command.

AUXTRCE=

(Optional) Specifies if the Auxiliary Trace Facility is on or off and the primary (aaaa) and secondary (bbbb) destinations for the file to which internal DB request trace entries are written if the Auxiliary Trace Facility is turned on. Users defined as master operators (see MSTOPR= (see page 29)) can use the DBOC GENOPTS command to modify the status and the primary destination for the current CICS session.

Note: For AUXTRCE=ON to take effect, TRACE=ON must also be specified. To reference the data set, AUXTRCE=ON requires DBAUXTA and DBAUXTB DD (in z/OS) or DLBL (in z/VSE) statements in the CICS startup JCL. This data set cannot be shared across CICS regions. The data set has to be a sequential data set.

Valid Entries:

(ON,aaaa,bbbb)
(OFF,aaaa,bbbb)

Default Value:

(OFF,DCAX,DCBX)

CICSTRA=

(Optional) You can use this parameter to place trace information in the trace table.

Valid Entries:

YES specifies that you want to place trace information in the trace table.

NO specifies that you do not want to place trace information in the trace table.

Default Value:

YES

DATE=

(Optional) Specifies the date when you compiled the vector table (DBCVTPR). If you do not specify a date, the system date is used. This field is not edited and is eight characters in length.

Valid Entries:

Suggested is a date in the format mm/dd/yy. However, the value could be in the format as shown in the following example: 01JAN12

Default Value:

System date

DBEC=

(Optional) If you are already using the transaction IDs DBEC, DBEX, or DBRC for another application, use this parameter to specify alternate transaction IDs for CA Datacom CICS Services enhanced inquiry and control functions. These transactions must be defined in the CICS System Definition data set (CSD). For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Note: To use DBEC INQ,SYSID(*) in an MRO environment, see the information about using the SYSID parameter in an MRO environment in the *User Guide*.

Valid Entries:

(aaaa,bbbb,cccc) Three valid transaction IDs, where aaaa is the replacement ID for DBEC, bbbb replaces DBEX, and cccc replaces DBRC. Specify all IDs even if only one is being replaced.

Default Value:

(DBEC,DBEX,DBRC)

DBOC=

(Optional) If you are already using the transaction IDs DBOC, DBIC, or DBKC for another application, use this parameter to specify alternate transaction IDs for CA Datacom CICS Services inquiry and control functions. These transactions must be defined in the CICS System Definition data set (CSD). For details on modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

(aaaa,bbbb,cccc) Three valid transaction IDs, where aaaa is the replacement ID for DBOC, bbbb replaces DBIC, and cccc replaces DBKC. Specify both IDs even if only one is being replaced.

Default Value:

(DBOC,DBIC,DBKC)

DBTS=

(Optional) If you are already using the transaction IDs DBTS or DBTX for another application, use this parameter to specify alternate transaction IDs for CA Datacom CICS Services Test Facility. These transactions must be defined in the CICS System Definition data set (CSD). For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

(aaaa,bbbb) Two valid transaction IDs, where aaaa is the replacement ID for DBTS, and bbbb replaces DBTX. Specify both IDs even if only one is being replaced.

Default Value:

(DBTS,DBTX)

DBUG=

(Optional) If you are already using the transaction IDs DBUG or DBFS for another application, use this parameter to specify an alternate transaction ID for the Debugging Facility. These transactions must be defined in the CICS System Definition data set (CSD). For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

(aaaa,bbbb) Two valid transaction IDs, where aaaa is the replacement ID for DBUG and bbbb replaces DBFS. Specify both IDs even if only one is being replaced.

Default Value:

(DBUG,DBFS)

DEFERn=

(Optional) Specifies delayed opening of URT until requested by the DBOC OPEN= command.

When the parameter list exceeds assembler macro operand length, use the continuation parameter DEFERn=, for example:

```
DEFER=(urt1,urt2,urt3),
DEFER1=(urt1,urt2,urt3),
 .
 .
 .
DEFER9=urtn
```

You can use DBOC DEFER= to add URTs to this list for the current CICS cycle. For details, see the *User Guide*.

Valid Entries:

4-digit URT IDs. (Valid IDs are numbers which do not exceed the MAXURTS= specification and are greater than zero.) IDs can be listed individually, with or without leading zeros, or with an inclusive range, for example, DEFER=(9,004,10,13-25).

Default Value:

All URTs not specified here or in the AUTO= parameter list are opened at CA Datacom CICS Services startup.

DELIM=

(Optional) Specifies the delimiting character to be used to string together two or more DBOC commands within a single input statement. When used, this character indicates the end of one command, including its operands, and the beginning of another command. For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61). You can also change this specification using the DBOC DELIM= command described in the *User Guide*.

Note: If you choose to specify the single quote character (') or the ampersand (&, which is the default delimiter character) as the value for DELIM=, because of Assembler restrictions you must enter the value twice, for example, DELIM=&& or DELIM=''.

Any special (not alphanumeric) character may be used as the command delimiter except the following:

- ?
- =
- .
- ,

Valid Entries:

Valid entries include, but are not limited to, the following:

- ¬
- #
- $
- ¢
- {
- }
- \
- &

- %

- *

- @

- &tilde.

- '

- "

- :

- ;

- >

- <

Default Value:

&

Note: Because of Assembler restrictions, the default is actually defined in the macro as two ampersands (&&).

DFLTUSR=

(Required) Specifies a default user ID for a task that does not have a terminal or printer attached to it. If you do not sign on to the terminal, that is, if there is no user ID information for that task, CA Datacom CICS Services passes the default user ID specified with DFLTUSR= to the MUF.

Valid Entries:

A valid user ID

Default Value:

CA##DCOM

Note: If external security is in use, you have to define CA##DCOM to external security.

Also, see the information regarding security implications in the note in the information.

DYNPPT=

(Optional) Use DYNPPT=YES if you want to use the program AUTOINSTALL function (PGAIPGM=ACTIVE in DFHSIT) for URTs.

Note: By using the program AUTOINSTALL function, you prolong the initialization process during PLT.

With CA Datacom CICS Services, take care in assigning URT numbers when using this feature. Using MAXURTS=9999 with DYNPPT=YES significantly lengthens the startup process due to the need for CICS to auto-install all of the modules from DBURT000 to DBUR9999. This is an unnecessary overhead if there are large gaps of unused URT numbers in the maximum range.

If there are known to be large ranges of URT numbers to be skipped, using SKIPLOAD (see page 51) can significantly reduce the startup process when using DYNPPT.

Valid Entries:

YES or NO

Default Value:

NO

EOJ_OK

(*Optional*) Use EOJ_OK=DISCONNECT or IMMEDIATE to participate with CA Datacom Multi-User in support of a request to EOJ MUF. CA Datacom CICS Services is notified that a MUF EOJ has been requested if EOJ_OK=NO is not specified or the default is taken when there is activity in the CICS region. Depending on the value specified, CA Datacom CICS Services issues and performs an orderly DISCONNECT (EOJ_OK=DISCONNECT) or an IMMEDIATE disconnect (EOJ_OK=IMMEDIATE) of the Multi-User. For more information the EOJ_OK feature, see the *Release Notes*. For more information about the DISCONNECT and IMMEDIATE commands, see the *User Guide*.

Note: If you specify other than EOJ_OK=NO, evaluate the CA Datacom/DB startup parameter X_EOJ_OK_S_DELAY for setting the correct time interval for your environment. This value is used by the CA Datacom/DB MUF to wait before severing the connection with CA Datacom CICS Services when there is no activity. CA Datacom/DB Version 12.0 does not support this feature.

Valid Entries

DISCONNECT, IMMEDIATE, or NO

Default Value

NO

Note: The value specified in the EOJ_OK= parameter of the DBCVTPR becomes the default for any DBCSID macros that are coded with the DBCVTPR macro.

FLOWTRA=

(Optional.) Collects diagnostic data in a wrap around in-core table. Setting FLOWTRA=NO may save a small amount of CPU for request processing depending on the workload. However, the trade off is reduced data collection for diagnostic purposes.

Valid Entries:

YES, NO

Default Value:

YES

JOBNAME=

(Optional. For multiple CICS environments.) Specifies whether the CICS job name is to overlay the message number in console responses to DBOC commands.

Valid Entries:

YES, NO

Default Value:

NO

INTLTRA=

(Optional) Specifies whether to use an internal trace, a diagnostic tool that generates trace entries for each CICS task connected to a MUF and each database request. Internal traces are generally used by CA Support to research a reported problem. The results are found in the core dump in case of an ABEND that generates a dump. You can choose INTLTRA=YES, but there is some slight performance degradation associated with its resource allocation and usage.

Valid Entries:

YES, NO

Default Value:

NO

LOG=

(Optional) Specifies whether responses to DBIC/DBOC commands are written to the Message Log file. The second operand specifies if inquiry command responses are written to the Message Log file. Use the DBCVTPR MSGLOG= parameter, to assign a destination ID for the Message Log file. For details about modifying this parameter for the current CICS session through DBOC GENOPTS, see Changing Generation Options Online (DBOC GENOPTS) (see page 61), or through DBOC LOG=, see the *User Guide*. If NO is specified for the first operand, then the second operand is automatically set to NO in the assembly.

Valid Entries:

(YES,YES) (YES,NO) (NO,NO)

Default Value:

(YES,NO)

MAXURTS=

(Required) Specifies the maximum number of URTs that can be defined for use. CA Datacom CICS Services creates URT module names with the value assigned to PREFIX= suffixed by a 4-digit number starting with 0001 and ending with a number equal to the specified MAXURTS= value. For more information, see the description of the PREFIX= (see page 31) parameter.

For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

1—9999

Default Value:

(No default)

MSGLOG=

(Optional) Specifies the destination ID for logging DBOC and DBIC messages. This destination ID must be defined in the CICS Destination Control Table (DCT). (MSGLOG=DBOC requires a DBOCPRT DD (DLBL for z/VSE) statement in the CICS startup JCL to reference the data set; this data set is not shareable across CICS regions.) For z/OS, the Message Log can be either SYSOUT or a sequential data set with a record size of 131. For z/VSE, the Message Log must be a sequential data set. After CICS is shut down, z/VSE prints the Message Log file. For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

4-character destination ID

Default Value:

DBOC

MSTOPR=

(Optional) Identifies up to 50 operators who are authorized for DBOC as "master operators." Only master operators can start up and shut down CA Datacom CICS Services or modify DBCVTPR options online during a CICS session.

For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61). If you accept the default, MSTOPR=***, any user authorized for DBOC is able to use the DBOC GENOPTS transaction.

Valid Entries:

1 to 50 3-character operator IDs (xxx,xxx,...,xxx)
*** (no master operator security enforced)

Note: Only the first 10 of these 50 can later be modified online through DBOC GENOPTS.

Default Value:

***

OPENAPI=

YES specifies that CA Datacom CICS Services starts the execution of the DBNTRY TRUE and OPEN/CLOSE processes on an OPEN TCB. In this case, it is the L8 TCB since CA Datacom CICS Services programs run with EXECKEY=CICS.

NO specifies that the CA Datacom CICS Services programs are enabled as API(CICSSAPI). Specifically, the CA Datacom CICS Services programs (request processing) run on the same TCB as the calling program, that is, either a QR TCB or an OPEN TCB, whichever the application program is running.

Important! Take caution in setting the proper value. Monitor the system performance and measure it to adjust the value appropriately.

The MAXOPENTCBS system initialization parameter controls the number of open TCBs permitted for this purpose.

Valid Entries:

YES, NO

Default Value:

NO

PLANSWI=

YES specifies you want to perform dynamic plan selection.

NO specifies you do not want to perform dynamic plan selection.

Note: The AUTHID= and PLANSWI= parameters are mutually exclusive.

Valid Entries:

YES, NO

Default Value:

NO

PREFIX=

(Optional) Specifies the prefix to be used for URT names. CA Datacom CICS Services creates URT module names with the value assigned to PREFIX= suffixed by a 3-digit number starting with 001 and ending with a number equal to the specified MAXURTS= value.

Note: Because, beginning in r11, the maximum valid value for MAXURTS= became 9999, the PREFIX= parameter has been updated as follows. For User Requirements Table numbers above 999, the fifth character of the 5-character prefix is translated to 1 (one) for URTs in the range 1000-1999, translated to 2 (two) for URTs in the range 2000-2999, and so on for deriving the load name of a User Requirements Table.

Sites that have previously defined a prefix with 1 through 9 as the last character of the 5-character prefix should modify their specification for the PREFIX= parameter and the appropriate URT load module names prior to upgrading.

For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61). You can also use the DBOC PREFIX= command to modify this specification for the current CICS session, as described in the *User Guide*.

Valid Entries:

   5-character prefix

Default Value:

   DBURT

REQTHD=

(Optional) First operand specifies the threshold number of CA Datacom/DB requests to allow in any unit of work. If this number is exceeded, CA Datacom CICS Services causes the task to abend with a code of DC18.

Additional operands identify the transactions to exempt from the specified request threshold, if any. Up to 10 exception transaction IDs (or groups of IDs) can be specified to bypass interruption of high-volume tasks. Use the wildcard character (?) to specify a transaction ID group. For example:

REQTHD=(5000,DDOL,DQ??,SCF?,DB??)

Specifies a threshold of 5000 requests; exempting DDOL Datadictionary and the group of transaction IDs beginning with the characters DQ (CA Dataquery), SCF (CA Ideal), and DB (CA Datacom/DB).

For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

First operand: 0—99999

Additional operands (Optional): 1 to 10 4-character transaction IDs, separated by commas.

Default Value:

(0,DBOC) where the zero means no limit.

SCROLL=

(Optional) Specifies the method used to control the DBOC and DBIC display paging. For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

If (AUTO,sss) is specified, CA Datacom CICS Services waits sss seconds and automatically pages to the next set of lines when the DBOC command generates more lines than can be displayed on a single screen.

If MANUAL is specified, a full display remains on the screen until you press Enter to page forward or Clear to end the process. If the CSD RTIMOUT= parameter is specified for the DBOC and DBIC transaction and Enter or Clear is not pressed before the specified RTIMOUT= elapsed time, the transaction is terminated by CICS.

Valid Entries:

MANUAL
(AUTO,sss)— where sss is seconds

Default Value:

(AUTO,10)

SKIPURT=

(Optional) Specifies whether CA Datacom CICS Services is to skip certain URTs when searching for a URT to satisfy a request from CA Datacom/DB, where the URTs to skip are those that are closed and those that are unopened but not marked for AUTO-open. For an explanation of the logic used by CA Datacom CICS Services when selecting a URT to use in satisfying a request, see Using the Standard URT Selection Logic (see page 128) and the flowchart in Category 4: All Other User Commands. For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61). Specifying SKIPURT=YES has the same effect as deleting URTs which have been closed.

- Specify SKIPURT=YES to limit the search to URTs in the following status and "when to open" categories.

Status	When
OPENED	any
UNOPENED	AUTO

- Accept the default, SKIPURT=NO to skip no URT during the search

Valid Entries:

YES, NO

Default Value:

NO

SKPSYNC=

(Optional) Specifies whether CA Datacom CICS Services issues a CICS SYNCPOINT when only one MUF in the environment has received a DB log command.

Valid Entries:

NO specifies that CA Datacom CICS Services will issue a SYNCPOINT instead of a user DB log command.

YES specifies that CA Datacom CICS Services will issue the user DB log command as is, without issuing a CICS SYNCPOINT.

Defaul Value:

YES

SYSRCV=

With SYSRCV=YES specified, two-phase commit processing is performed. Two-phase commit processing is a mandatory function in an environment that uses multiple resource managers, that is, multiple MUFs or combinations of MUF, the IBM DB2 product, the IBM IMS product, and other resource managers that participate in CICS SYNCPOINT/ROLLBACK processing.

Valid Entries:

YES, NO

Default Value:

YES

SYSV=

(Optional) (z/OS only) Specifies if the release of CA SYSVIEW compatible with this release of CA Datacom CICS Services is supported in this CA Datacom CICS Services environment. CA SYSVIEW can run in the CICS environment without SYSV=YES, but CA SYSVIEW cannot run in the CA Datacom CICS Services environment without SYSV=YES. If SYSV=YES, the DC00400I message is produced at startup. For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Valid Entries:

YES, NO

Default Value:

NO

Note: The SYSV= parameter used to specify CA SYSVIEW should only be specified as YES in z/OS environments. In z/VSE environments, SYSV= should be allowed to default to NO. If SYSV=YES, be sure to have the Version of CA SYSVIEW installed that supports CA Datacom CICS Services Version 14.0.

TRACE=

(Optional) The first operand specifies whether the Trace Facility is to be activated automatically when CA Datacom CICS Services is initiated (ON) or activated only upon request (OFF). The second operand specifies the maximum number of entries to be held at one time in the CA Datacom/DB Trace Table. For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) (see page 61).

Note: OPEN and CLOSE commands are traced regardless of ON/OFF status.

Valid Entries:

(ON,nnnn) or (OFF,nnnn)
where nnnn is a number between 1 and 9999,
inclusive.

Default Value:

(ON,1000)

USERID=

Indicates the format of the USER identification that is passed to CA Datacom/DB with each request.

USERID=NO

When external security is used, specifying USERID=NO forces CA Datacom/DB to use the 3-byte operator ID (CICS OPERID) instead of the 8-byte user ID (CICS USERID). In a RACF environment, USERID=NO means that CA Datacom/DB uses the 3-byte operator ID, not the group ID, to secure the database. In CA Datacom CICS Services r2.5 and before, if USERID=NO and external security was in use, CA Datacom/DB used an 8-byte user ID to secure the database.

USERID=YES

Specifying USERID=YES forces CA Datacom/DB to use the 8-byte CICS USERID.

Beginning with r11, security integrity has been enhanced so that the same USERID/OPERID is used for the entire duration of the transaction/task. This secures data from transactions where users sign off in the middle of transactions, that is, it prevents such transactions from getting a USERID/OPERID that has more security rights than the original user.

The USERID and OPERID are obtained from the EXEC CICS ASSIGN command. It is possible to have *other* OPERID/USERIDs that need to be secured.

Valid Entries:

YES, NO

Default Value:

NO

USERS=

(Optional) Specifies the maximum number of concurrent CICS users of the database (users with transactions physically waiting on CA Datacom/DB read events and transactions having exclusive control, that is, adds, writes, and reads for update). For the maximum number of concurrent CA Datacom/DB users, see the section on the TASKS MUF startup option in the *CA Datacom/DB Database and System Administration Guide*.

For details about modifying this parameter for the current CICS session, see Changing Generation Options Online (DBOC GENOPTS) .

You can use the DBIC/DBOC INQ=USERS display to evaluate the impact of the value specified for this parameter. For instructions on using DBIC/DBOC INQ=USERS, see the *User Guide*.

Note: The USERS= parameter of the first DBCSID macro (USERS= (see page 47)) overrides the USERS= parameter specified in the DBCVTPR macro.

Valid Entries:

   2—255

Default Value:

   3

Example DBCVTPR Specifications

The following examples illustrate requirements for typical sites:

Example 1

```
DBCVTPR USERS=4,MAXURTS=15,AUTO=(2,3),SYSRCV=YES
```

USERS=4

Specifies in this example a MUF environment in which up to four concurrent requests can be serviced.

MAXURTS=15

Specifies in this example that the highest number assigned to any URT is 0015.

AUTO=(2,3)

Specifies that in this example URTs 0002 and 0003 are opened automatically when first required.

SYSRCV=YES

Specifies that two-phase commit processing be performed.

Example 2

```
DBCVTPR MAXURTS=1,PREFIX=AFILE,USERS=2,SYSRCV=YES,EOJ_OK=DISCONNECT
```

MAXURTS=1

Specifies in this example a MUF environment with a single URT.

PREFIX=AFILE

Specifies that the single URT in this example is named AFILE001.

USERS=2

Specifies that in this example the system can service up to two requests concurrently.

SYSRCV=YES

Specifies that two-phase commit processing be performed.

EOJ_OK=DISCONNECT

Specifies that when CA Datacom CICS Services is actively processing requests and is notified by MUF that an EOJ has been requested, the CA Datacom CICS Services issues a DISCONNECT for the MUF connection. This action allows an orderly end for transaction with exclusive control.

Example 3

```
DBCVTPR MAXURTS=20,DEFER=(1,2),SYSRCV=YES,EOJ_OK=IMMEDIATE
```

MAXURTS=20

Specifies in this example that in this MUF environment the highest numbered URT is 0020 (MAXURTS=20).

DEFER=(1,2)

Specifies that in this example URTs 0001 and 0002 are to remain unopened unless they are opened by the user.

SYSRCV=YES

Specifies that two-phase commit processing be performed.

EOJ_OK=IMMEDIATE

Specifies that when CA Datacom CICS Services is actively processing requests and is notified by MUF that an EOJ has been requested, the CA Datacom CICS Services issues a IMMEDIATE disconnect from the MUF regardless of the state of current transactions.

Example 4

```
DBCVTPR MAXURTS=200,AUTO=(21-100),DEFER=(101-200),               X
           SKIPURT=YES,TRACE=(ON,500),AUXTRCE=(OFF,CLUA,CLUB),   X
           USERS=15,REQTHD=(60000,DB??,AP??),SCROLL=MANUAL,      X
           MSTOPR=(DRK,DBY),MSGLOG=DBLT,LOG=(YES,NO),            X
           SYSV=YES,DBTS=(TEST,DBTX),SYSRCV=YES, OPENAPI=(YES)
```

MAXURTS=200

Specifies in this example a MUF environment in which there are 200 possible URTs. The first 20 URTs (001—020) are opened at startup.

AUTO=(21-100)

Specifies in this example that the next 80 URTs (021—100) are opened when a task requiring them executes.

DEFER=(101-200)

Specifies in this example that the remaining URTs (101—200) are opened only when explicitly opened with a DBOC OPEN= command.

SKIPURT=YES

Specifies in this example that URTs that are closed and those that are unopened but not marked for AUTO-open are to be skipped when searching for a URT to satisfy a request from CA Datacom/DB.

TRACE=(ON,500)

Specifies in this example that the Trace Facility is running from CA Datacom CICS Services startup with up to 500 entries maintained in the Trace Table.

AUXTRCE=(OFF,CLUA,CLUB)

Specifies in this example that the auxiliary trace is off at startup, and the name of the primary and secondary destinations are CLUA and CLUB.

USERS=15

Specifies in this example that 15 is the maximum number of allowed concurrent CICS users of the database.

REQTHD=(60000,DB??,AP??)

Specifies in this example that any transaction can issue 60,000 CA Datacom/DB requests before CA Datacom CICS Services forces it to abend, but any transaction beginning with a prefix of DB or AP is never forced to abend because of too many CA Datacom/DB requests.

SCROLL=MANUAL

Specifies in this example that the MANUAL method is to be used to control the DBOC and DBIC display paging.

MSTOPR=(DRK,DBY)

Specifies in this example that the master operators are DRK and DBY.

MSGLOG=DBLT

Specifies in this example that DBLT is the destination ID for logging DBOC and DBIC messages. DBOC commands (but *not* DBOC responses) are to be logged to the file DBLTPRT.

LOG=(YES,NO)

Specifies in this example that responses to DBIC/DBOC commands are to be written to the Message Log file (CSMT), but inquiry command responses are not to be written to the Message Log file.

SYSV=YES

Specifies in this example that the release of CA SYSVIEW that is compatible with this release of CA Datacom CICS Services is supported (in z/OS only) in this CA Datacom CICS Services environment.

DBTS=(TEST,DBTX)

Specifies in this example that TEST is the alternate transaction ID for the CA Datacom CICS Services Test Facility as the replacement ID for DBTS (but DBTX is *not* replaced).

SYSRCV=YES

Specifies that two-phase commit processing be performed.

OPENAPI=YES

Specifies that CA Datacom CICS Services TRUEs start execution on OPEN TCBs. In this case, it is L8 because they run with EXECKEY=CICS.

Sample Assembly JCL for DBCVTPR (z/OS)

The following example shows sample z/OS JCL for assembling and linking DBCVTPR. Modify the JCL as required to meet your site standards.

```
//DBCVTPR JOB (acct info),'job desc',CLASS=X,MSGCLASS=X
//PROCLIB  DD DSN=SYS1.PROCLIB,DISP=SHR
//*******************************************************************
//*                                                                 *
//* ASSEMBLE AND LINKEDIT -- DBCVTPR CICS SERVICES OPTIONS          *
//*                                                                 *
//*******************************************************************
//STEP1   EXEC HLASMCL,
//  PARM.C='OBJECT,NODECK',
//  PARM.L='MAP,LET,LIST'
//C.SYSLIB   DD DSN=SYS1.MACLIB,DISP=SHR
//           DD DSN=CAI.THLQ.CAB1MAC,DISP=SHR
//           DD DSN=CAI.DHLQ.CABDMAC,DISP=SHR
//           DD DSN=CICS.SDFHMAC,DISP=SHR
//C.SYSPRINT DD SYSOUT=*
//C.SYSIN    DD DSN=CAI.CHLQ.CUSMAC(DBCVTPR),DISP=SHR
//L.SYSLMOD  DD DSN=CAI.CHLQ.CUSLIB,DISP=SHR
//L.SYSPRINT DD SYSOUT=*
//L.SYSIN    DD *
   NAME DBCVTPR(R)
/*
//
```

Notes:

1. The previous PROC invokes the ASMA90 program.

2. With previous reference to SYSLMOD, see the product installation procedures to determine the correct custom load library (CUSLIB) data set to contain DBCVTPR. This data set must be included in your CICS DFHRPL library concatenation ahead of the CA Datacom CICS Services target load library.

3. Caution. Linking the DBCVTPR module with RENT results in an ABEND during startup if CICS is set up with (read-only memory) RDSA and this storage option is supported by the hardware.

Sample Assembly JCL for DBCVTPR (z/VSE)

The following example shows sample z/VSE JCL for assembling and linking DBCVTPR.
Modify the JCL as required to meet your site standards.

```
* $$ JOB JNM=jobname,CLASS=0,PDEST=(*,username),LDEST=(*,username)
* $$ LST CLASS=A
* $$ PUN CLASS=A
// JOB Job Statement Information
// LIBDEF SOURCE,SEARCH=(BASE.DBC140,BASE.DBBASE,PRD1.BASE)
// LIBDEF PHASE,CATALOG=users.DBC140
// OPTION LIST,ALIGN,CATAL
      PHASE DBCVTPR,*
// EXEC ASMA90,SIZE=ASMA90
       DBCVTPR AUXTRCE=(OFF,DCAX,DCBX),                              X
               DATE=02/02/12,                                        X
               DELIM=;,                                              X
               JOBNAME=YES,                                          X
               LOG=(YES,YES),                                        X
               MAXURTS=030,                                          X
               MSGLOG=DB0C,                                          X
               MSTOPR=(***),                                         X
               PREFIX=DBURT,                                         X
               REQTHD=(10000,AAAA,BBBB,CCCC,DDDD,EEEE),              X
               SCROLL=MANUAL,                                        X
               TRACE=(ON,1000),                                      X
               USERS=4,                                              X
               USERID=YES
          END
/*
// EXEC LNKEDT,PARM=MSHP
/&
* $$ EOJ
```

Chapter 4: Specifying DBCSID Macros

(z/OS only) Each occurrence of a DBCSID macro defines one connection of CA Datacom CICS Services to a given CA Datacom/DB Multi-User Facility (MUF). This association is established by giving the DBCSID macro parameter SIDNAME= the same load module name as specified in a global User Requirements Table (URT) by the SIDNAME= parameter in the CA Datacom/DB URT Start macro (DBURSTR). For information on the DBURSTR macro, see the *CA Datacom/DB Database and System Administration Guide*. For more information about global URTs, see Coding the URT Macros (see page 87).

Restriction

In general, batch global URTs (multiple MUF interface URTs) have many DBURSTR SIDNAME= parameters, while online global URTs are restricted to one and only one DBURSTR SIDNAME= parameter per URT.

Global URT SIDNAME= parameters can only be defined in a DBURSTR macro *once per URT.* A single URT *may not* cause a connection to more than one MUF.

Note: Although this is a restriction, it is not a limitation, because online environments use more than one URT.

The sub-identifier ID (SID) load module name, that can now be specified in the DBCSID macro parameter SIDNAME=, was known in prior releases by a single load module named DBSIDPR, assembled by the CA Datacom/DB DBSYSID macro. For information about DBSYSID, see the *CA Datacom/DB Database and System Administration Guide*.

Place the DBCSID macros immediately after the DBCVTPR macro with its DBCVTPR parameters (see Specifying Generation Options (DBCVTPR) (see page 19)). In CA Datacom CICS Services, you can specify a maximum of 99 DBCSID macros in a single assembly of the DBCVTPR macro, but we recommend you specify only the minimum number of DBCSID macros required. A DBCSID macro is only required if connecting to two or more CA Datacom/DB MUFs. If no DBCSID macro is supplied, CA Datacom CICS Services loads DBSIDPR as the SID module, as in previous releases. Therefore, if you are only connecting to one MUF, no DBCSID macro is needed. However, if you are connecting to two MUFs, two DBCSID macros are required, while three DBCSID macros are required to connect to three MUFs, and so on.

The first DBCSID macro defines the connection to the default MUF. This is important because, except for CA Ideal and CA Datacom VSAM Transparency, the default MUF *must* be used for CA Datacom system tables. The system tables include database 1000, the Datadictionary databases (DataDict and DDD), the CA Dataquery database, the FAT-TAT database, and all SQL requests. Therefore:

- All of the following *must* run on the default MUF identified in the first DBCSID macro:
  - SQL
  - CA Datacom/DB Datadictionary Online (DDOL)
  - CA Dataquery (DQRY)
  - CA Datacom DL1 Transparency
  - CA Datacom TOTAL Transparency
- All non-converted (non-global) URTs use the default MUF connection.
- All CA Dataquery security and Datadictionary security is done in the default MUF.

  Note: Actual CA Dataquery (DQRY) DQL user data requests can go to other MUFs, based upon URT specifications.

Any SQL executed in CICS must only go against the default MUF.

The use of the multiple MUFs feature requires a default CA Datacom/DB MUF that must be at CA Datacom/DB Version 12.0 or later. The MUF with the most recent version must be listed first in the DFHRPL (the load library concatenation for loading modules in CICS). For example, if you are connecting to both CA Datacom/DB 14.0 and 12.0, the 14.0 libraries must be first in the concatenation. For custom libraries, the default MUF custom libraries must be first in the concatenation.

Only the URTs that need new functions, such as DBID switching or going against a DBCSID MUF that is not the default, need to be reassembled with global URT macros. CA Datacom CICS Services selects the given MUF based upon the current URT selection criteria. Only a global URT with a SIDNAME= specified in the CA Datacom/DB DBURSTR macro can support requests going to the non-default DBCSID MUF. Because of security issues, make certain that you have done careful site planning when deciding what your site requires.

Note: To support multiple MUFs, CA Datacom CICS Services also supports the use of the DBIDUSER= and DBIDMUF= parameters of the CA Datacom/DB global URT Entry macro (DBURTBL). See the information about DBURTBL in the *CA Datacom/DB Database and System Administration Guide*.

Specifying DBCSID Macro Parameters

Following are the DBCSID macro parameters you can specify.

CONNECT=

(Required) Specifies how CA Datacom CICS Services is to connect to a given MUF. The three choices are as follows:

PLT

Specifies that a connection to a given MUF be attempted when CA Datacom CICS Services starts up.

AUTO

Specifies that a connection to a given MUF be attempted when the first URT that needs this connection opens.

DEFER

Specifies that a connection to a given MUF should be delayed until a CONNECT is manually issued for that given MUF.

Valid Entries:

PLT, AUTO, DEFER

Default Value:

(No default)

EOJ_OK=

(*Optional*) Use EOJ_OK=DISCONNECT or IMMEDIATE if you want to participate with CA Datacom Multi-User in support of a request to EOJ MUF. CA Datacom CICS Services is notified that a MUF EOJ has been requested if EOJ_OK=NO is not specified or the default is taken when there is activity in the CICS region. Depending on the value specified, CA Datacom CICS Services issues and performs an orderly DISCONNECT (EOJ_OK=DISCONNECT) or an IMMEDIATE disconnect (EOJ_OK=IMMEDIATE) of the Multi-User. For more information about the EOJ_OK feature, see the *Release Notes.* For more information about the DISCONNECT and IMMEDIATE commands, see the *User Guide*.

Note: If you specify other than EOJ_OK=NO, evaluate the CA Datacom/DB startup parameter X_EOJ_OK_S_DELAY for setting the correct time interval for your environment. The CA Datacom/DB MUF uses this value to wait before severing the connection with CA Datacom CICS Services when there is no activity. CA Datacom/DB Version 12.0 does not support this feature.

Valid Entries

DISCONNECT, IMMEDIATE, or NO

Default Value:

NO

Note: The value specified in the EOJ_OK= parameter of the DBCVTPR becomes the default for any DBCSID macros that are coded with the DBCVTPR macro. When EOJ_OK= is specified in the DBCSID macro, it overrides the default taken or specified in the DBCVTPR macro.

SIDNAME=

(Required) Specifies the sub-identifier ID (SID) load module name. This load module name is the output from a DBSYSID assembly that contains the needed information (SVC, SUBID, and so on) about the given MUF. For information about DBSYSID and the DBURSTR macro SIDNAME= parameter, see the *CA Datacom/DB Database and System Administration Guide*.

Valid Entries:

Valid load module name (output from a DBSYSID assembly)

Default Value:

(No default)

USERS=

(Required) Specifies the number of threads or MUF tasks requested by this CICS from the MUF to which it is connected, based upon the sub-identifier ID (SID) load module name specified in the SIDNAME= (see page 46) parameter.

Note: The USERS= parameter of the first DBCSID macro overrides the USERS= parameter specified in the DBCVTPR macro. For more information, see USERS= (see page 35).

Valid Entries:

2—255

Default Value:

No default

Sample Assembly JCL for DBCVTPR with DBCSID Macros (z/OS)

The following example shows sample z/OS JCL for assembling and linking DBCVTPR that includes DBCSID macros for defining MUF connections. Modify the JCL as required to meet your site standards.

```
//DBCVTPR JOB (acct info),'job desc',CLASS=X,MSGCLASS=X
//PROCLIB  DD DSN=SYS1.PROCLIB,DISP=SHR
//********************************************************************
//*                                                                  *
//* ASSEMBLE AND LINKEDIT -- DBCVTPR CICS SERVICES OPTIONS           *
//*                                                                  *
//********************************************************************
//STEP1    EXEC HLASMCL,
//  PARM.C='OBJECT,NODECK',
//  PARM.L='MAP,LET,LIST'
//C.SYSLIB   DD DSN=SYS1.MACLIB,DISP=SHR
//           DD DSN=CAI.THLQ.CAB1MAC,DISP=SHR
//           DD DSN=CAI.DHLQ.CABDMAC,DISP=SHR
//           DD DSN=CICS.SDFHMAC,DISP=SHR
//C.SYSPRINT DD SYSOUT=*
//C.SYSIN    DD *
         DBCVTPR USERS=6,MULTUSE=YES,MSTOPR=***,             X
                 PREFIX=DBURT,MAXURTS=500,SCROLL=MANUAL,     X
                 SYSRCV=NO,AUTO=(001,002,003,010)
         DBCSID  SIDNAME=DBSIDPR,USERS=3,CONNECT=PLT,        X
                 EOJ_OK=DISCONNECT
         DBCSID  SIDNAME=PRODMU1,USERS=3,CONNECT=AUTO
         DBCSID  SIDNAME=PRODMUF,USERS=4,CONNECT=DEFER
         END
//L.SYSLMOD  DD DSN=CAI.CHLQ.CUSLIB,DISP=SHR
//L.SYSPRINT DD SYSOUT=*
//L.SYSIN    DD *
    NAME DBCVTPR(R)
/*
//
```

Notes:

1. The previous PROC invokes the ASMA90 program.

2. With previous reference to SYSLMOD, see the product installation procedures to determine the correct custom load library (CUSLIB) data set to contain DBCVTPR. This data set must also be included in your CICS DFHRPL library concatenation ahead of the CA Datacom CICS Services target load library.

3. When placing the DBCVTPR, carefully place the CA Datacom/DB custom load libraries containing the DBCSID DBSIDPR=named modules so that the first of those in the concatenation is the default MUF as specified by the first DBCSID macro.

Caution! Linking the DBCVTPR module with RENT results in an ABEND during startup if CICS is set up with RDSA (read-only memory) and this storage option is supported by the hardware.

Chapter 5: Using the SKIPLOAD Macro

The SKIPLOAD macro allows you to avoid the unnecessary attempted loads of non-existent URTs during startup and initialization only. It is especially useful when using DBCVTPR DYNPPT=YES for AUTO install and when most of the MAXURT range is skipped.

For example, your standard might require having URT 1-20, 4900-4999 and 9900-9999. In this case, only 220 URTs are to be loaded. In the previous release there would have been at least 9999 look ups. In this example, two SKIPLOAD macros could reduce the lookup/loads from 9999 to 220, significantly increasing startup performance.

The SKIPLOAD macro has two parameters.

- SKIP_LOAD_FROM

- SKIP_LOAD_TO

The values for these parameters are only valid for URT ranges. There can be multiple SKIPLOAD macro occurrences. They are assembled with the DBCVTPR macro and DBCSID macros. The SKIPLOAD macros must be together and must immediately follow the last DBCSID macro. The combined assembly is linked as DBCVTPR.

SKIPLOAD Parameters

SKIP_LOAD_FROM

The first URT number in the range to be skipped .

Valid values

1 to 9998

Default

No default.

SKIP_LOAD_TO

The last URT number in the range to be skipped.

Valid values

2 to 9999

Default

No default.

Warning: Leave some empty slots (entries) for CA Dataquery Online DQL mode to generate dynamic URTs.

Example of the SKIPLOAD Macro:

```
DBCVTPR   AUTO=1-19,MAXURT=3000,...
DBCSID       SIDNAME=DBSIDPR,USER=10,CTYPE=PLT
SKIPLOAD  SKIP_LOAD_FROM=100,SKIP_LOAD_TO=900
SKIPLOAD  SKIP_LOAD_FROM=2100,SKIP_LOAD_TO=2900
END
```

Sample Assembly JCL for DBCVTPR with SKIPLOAD Macros (z/OS)

The following example shows sample z/OS JCL for assembling and linking DBCVTR that includes SKIPLOAD macros for URTs that you want to skip for loading at STARTUP Services time. Modify the JCL as required to meet your site standards.

```
//DBCVTPR JOB (acct info),'job desc',CLASS=X,MSGCLASS=X
//PROCLIB  DD DSN=SYS1,PROCLIB,DISP=SHR
//******************************************************************
//*                                                                *
//* ASSEMBLE AND LINKEDIT -- DBCVTPR CICS SERVICES OPTIONS         *
//*                                                                *
//******************************************************************
//STEP1   EXEC HLASMCL,
//  PARM.C='OBJECT,NODECK',
//  PARM.L='MAP,LET,LIST'
//C.SYSLIB   DD DSN=SYS1.MACLIB,DISP=SHR
//           DD DSN=CAI.THLQ.CAB1MAC,DISP=SHR
//           DD DSN=CAI.DHLQ.CABDMAC,DISP=SHR
//           DD DSN=CICS.SDFHMAC,DISP=SHR
//C.SYSPRINT DD SYSOUT=*
//C.SYSIN    DD   *
        DBCVTPR USERS=6,MULTUSE=YES,MSTOPR=***,                 X
            PREFIX=DBURT,MAXURTS=5000,SCROLL=MANUAL,        X
            SYSRCV=YES,AUTO=(001,002,003,010)
        SKIPLOAD SKIP_LOAD_FROM=11,SKIP_LOAD_TO=19
        SKIPLOAD SKIP_LOAD_FROM=500,SKIP_LOAD_TO=510
        SKIPLOAD SKIP_LOAD_FROM=600,SKIP_LOAD_TO=4000
        END
//L.SYSLMOD  DD DSN=CAI.CHLQ.CUSLIB,DISP=SHR
//L.SYSPRINT DD SYSOUT=*
//L.SYSIN    DD *
    NAME DBCVTPR(R)
/*
//
```

Note: The previous PROC invokes the ASMA90 program. With previous reference to SYSLMOD, see the product installation procedures to determine the correct custom load library (CUSLIB) data set to contain DBCVTPR. This data set must also be included in your CICS DFHRPL library concatenation ahead of the CA Datacom CICS Services target library.

Sample Assembly JCL for DBCVTPR with SKIPLOAD Macros z/VSE

The following example shows sample z/VSE JCL for assembling and linking DBCVTPR. Modify the JCL as required to meet your site standards.

```
 * $$ JOB JNM=jobname,CLASS=0,PDEST=(*,username),LDEST=(*,username)
 * $$ LST CLASS=A
 * $$ PUN CLASS=A
// JOB Job Statement Information
// LIBDEF SOURCE,SEARCH=(BASE.DBC140,BASE.DBBASE,PRD1.BASE)
// LIBDEF PHASE,CATALOG=users.DBC140
// OPTION LIST,ALIGN,CATAL
       PHASE DBCVTPR,*
// EXEC ASMA90,SIZE=ASMA90
        DBCVTPR AUXTRCE=(OFF,DCAX,DCBX),                          X
                DATE=02/02/12,                                    X
                DELIM=;,                                          X
                JOBNAME=YES,                                      X
                LOG=(YES,YES),                                    X
                MAXURTS=300,                                      X
                MSGLOG=DBOC,                                      X
                MSTOPR=(***),                                     X
                PREFIX=DBURT,                                     X
                REQTHD=(10000,AAAA,BBBB,CCCC,DDDD,EEEE),          X
                SCROLL=MANUAL,                                    X
                TRACE=(ON,1000),                                  X
                USERS=4,                                          X
                USERID=YES
        SKIPLOAD SKIP_LOAD_FROM=11,SKIP_LOAD_TO=19
        SKIPLOAD SKIP_LOAD_FROM=100,SKIP_LOAD_TO=199
        END
/*
// EXEC LNKEDT,PARM=MSHP
/&
 * $$ EOJ
```

Chapter 6: Initiating Services

CA Datacom CICS Services is initiated by the first invocation of the DCCOCPR program. This first invocation may be accomplished in either of the following ways:

- Automatically by execution of the PLT entry when CICS is brought up, or

- Manually by issuing DBOC STARTUP or DBEC PERFORM,STARTUP while in a CICS session.

Initiation Steps

Whether initiation is automatic or manual, it consists of the following steps:

1. Loading of DBCVTPR, which contains a list of all programs and User Requirements Tables (URTs) accessible to CA Datacom CICS Services.

    a. Formatting internal control blocks for Load List, Trace entries, user tables, and MUF system blocks (MSBs).

    b. Verifying that DBCVTPR contains the core mark for the current release.

2. Loading of DBINRPR through a CICS LOAD. CICS System Definition data set (CSD) entries are provided for DBINRPR, DBSIDPR, DBDUMPR, DBSGMPR and DBXCIPR for z/OS and DBINRPR, DBSIDPR, DBDMPPR, and DBSGMPR for z/VSE.

    Note: For z/OS sites, you are required to use this method, because it conserves resources and does not require an authorized library.

3. Loading CA Datacom CICS Services modules.

    a. Verifying that all modules are from a valid release level, and verifying URTs are valid online CA Datacom/DB URTs.

    b. Activating any other CA product which is specified for support.

4. Allocating storage for the number of threads specified by the USERS= parameter of the DBCVTPR assembly.

5. Creating the hashing table for URT search requirements.

6. Connecting to the MUF specified by the DBSIDPR default module or to multiple MUFs specified by SIDNAME= and CONNECT=PLT.

7. Opening of URTs not specified as operands of the DEFER= or AUTO= parameters of the DBCVTPR assembly.

8. Generating one message per MUF to indicate whether CA Datacom CICS Services was able to connect to that MUF.

9. Writing a message to the console stating that the CA Datacom CICS Services is started, in order to identify the operator or PLT.

Automatic Initiation

We recommend that you include the PLT entry contained on the installation tape so that CA Datacom CICS Services is initiated automatically. If you prefer to manually control when CA Datacom CICS Services is initiated, do not include the PLT entry during installation. If you omit the PLT entry, an information message is issued on the first use of the DBOC transaction. It is necessary when CA Datacom CICS Services is not automatically started that the first command is either a DBOC STARTUP or a DBEC P,STARTUP command to help ensure a complete startup. Otherwise, a partial startup is done and your system state is unpredictable.

Only a master operator is authorized to issue a DBOC/DBEC command that initiates CA Datacom CICS Services. All other operators or other inquire operands receive a message stating that CA Datacom CICS Services is not started. For more information, see MSTOPR= (see page 29).

Manual Initiation

To manually initiate CA Datacom CICS Services, invoke the STARTUP command in the following format:

DBOC STARTUP

or

DBEC PERFORM,STARTUP

DBOC

>   *(Required)* Specify the transaction ID used with Operational commands to control system resources. Leave a space between the transaction ID and the command.

DBEC

>   *(Required)* Specify the transaction ID used with Enhanced commands to control MUFs/URTs and startup/shutdown. Leave a space between the transaction ID and the command.

P, PER, PERform

>   *(Required)* Command that CA Datacom CICS Services perform the specified action. (PER and P are valid abbreviations.)

STARTup

>   *(Required)* Initiates CA Datacom CICS Services, when entered by a user designated as master operator in DBCVTPR.

Note: A return code of 36 is passed to an application program which issues a CA Datacom/DB request prior to the initialization of CA Datacom CICS Services.

Chapter 7: Shutting Down Services

Shutting down CA Datacom CICS Services can be accomplished in either of the following ways:

- Automatically through execution of the PLT entry when CICS is brought down (first quiesce stage)

- Manually through issuing the SHUTDOWN command in a DBOC or DBEC transaction at anytime while in a CICS session.

    Note: To reinitiate CA Datacom CICS Services after DBOC SHUTDOWN has been issued, the user designated as the master operator (in DBCVTPR) may enter the DBOC STARTUP command or DBEC PERFORM,STARTUP.

We recommend that you include the PLT entry contained on the release tape during installation of CA Datacom CICS Services, so that CA Datacom CICS Services is shut down automatically under normal conditions.

Note: z/VSE systems using the CA Datacom/DB Multi-Guest Sharing option or non-shared VAE configuration, must close all User Requirements Tables (URTs) prior to shutting down CA Datacom CICS Services either manually or automatically. If any URTs are open when CA Datacom CICS Services shuts down in a z/VSE system with one of these configurations, CICS abends.

Manual Shutdown

Use the manual procedure for shutting down CA Datacom CICS Services under the following circumstances:

- If you do not include the PLT entry during installation.

- If an emergency requires immediate shutdown of CA Datacom CICS Services.

- If CICS is to be terminated through CSMT or CEMT transactions with immediate shutdown.

To manually shut down CA Datacom CICS Services, invoke the SHUTDOWN command using one of the following formats:

```
DBOC SHUTDOWN
```

```
DBEC PERFORM,SHUTDOWN
```

DBOC

(Required) Specify the transaction ID used with Operational commands to control system resources. Leave a space between the transaction ID and the command.

DBEC

(Required) Specify the transaction ID used with Enhanced commands to control MUFs/URTs and startup/shutdown. Leave a space between the transaction ID and the command.

P, PER, PERform,

(Required) Command that CA Datacom CICS Services perform the specified action. (PER and P are valid abbreviations.)

SHUTdown

(Required) Shuts down CA Datacom CICS Services.

The result of issuing the SHUTDOWN command is as follows:

- If update requests are in progress, they are allowed to finish. That is, the status of the URT is changed from OPEN to CLOSING and the MUF connection is changed from CONNECTED to DISCONNECTING. When current tasks are complete, the URT is closed and the MUF is disconnected.

- Shutdown statistics are printed in the Message Log file (DBOC).

- All CICS resources used by CA Datacom CICS Services are released.

- A message stating that the CA Datacom CICS Services has been shut down is written to the console identifying the operator.

Automatic Shutdown

CA Datacom CICS Services is designed to be shut down automatically through the PLT. Automatic, non-immediate shutdown consists of two phases. During the first phase, no new transactions are accepted, but the following current operations are processed to completion:

- Applications specified in the DFHXLT Table

- Active conversational transactions

- CA Datacom/DB requests having or waiting for exclusive control

When all active transactions have been processed, the second phase of the automatic shutdown is invoked. The second phase consists of the following steps:

1. All opened URTs are closed.

2. All connected MUFs are disconnected.

3. Statistics, like those resulting from the following commands, are written to the Message Log file (DBOC) and reset:

    ■   DBOC INQ=STATS

    ■   DBOC INQ=CODES

    ■   DBOC INQ=USERS

4. All CICS resources used by CA Datacom CICS Services are released.

Chapter 8: Changing Generation Options Online (DBOC GENOPTS)

The DBOC transaction allows the master operators to change several CA Datacom CICS Services system generation options specified in the DBCVTPR macro. Modifications made through DBOC remain in effect only for the life of the CICS cycle. For details about making permanent changes to these options, see Specifying Generation Options (DBCVTPR) (see page 19).

Use the DBOC GENOPTS command to view and modify system generation options for the current CICS session.

Note: The DBOC GENOPTS and DBOC INQ=GENOPTS only applies to the default MUF for Multi-User-specific fields, that is, the first MUF defined by the DBCSID macro in the DBCVTPR module. The use of the multiple MUFs feature requires a default CA Datacom/DB MUF that must be at CA Datacom/DB Version 12.0 or later. The MUF with the most recent version must be listed first in the DFHRPL (the load library concatenation for loading modules in CICS). For example, if you are connecting to both CA Datacom/DB 14.0 and 12.0, the 14.0 libraries must be first in the concatenation. For custom libraries, the default MUF custom libraries must be first in the concatenation.

Also, consider that if the MUF JOBNAME is filled on this screen, it does not necessarily indicate that CICS is still connected to the default MUF. It only indicates that at some point in the past it had been connected. To get MUF Connection information, use the DBEC transaction.

DBOC INQ=GENOPTS

DBOC

> (*Required*) Specify the transaction ID used with Operational commands to control system resources. Leave a space between the transaction ID and the command.

INQ=GENOPTS

> (*Required*) Specifies that CA Datacom CICS Services display the current system generation option values.

```
DBOC INQ=GENOPTS                                                   DELIM &

 CA Datacom CICS Services Version: 14.0
Copyright © 2011 CA. All rights reserved. 10/07/14
 OPSYS=Z/OS    2.01            CICS LEVEL=TS 4.2       DB RELS=14.0
 DB SVCID=000                  SUB ID=255             MUF JOBNM=DBDVMS
 MAXURTS=9999                  PREFIX=DBURT           DYNPPT=NO
 USERS=004                     SKIPURT=NO             LOG=(YES,NO )
 SYSVIEW=YES                   PLANSWI=NO             USERID=YES
 TRACE=(ON , 1000)            AUXTRACE=OFF            AUXTRACE LOG=DCAX
 DELIM=}                       MSGLOG=DBOC            SCROLL=(MANUAL SEC   )
 DBEC=DBEC DBEX DBRC           DBOC=DBOC DBIC DBKC    DBUG=DBUG DBFS
 DBTS=DBTS DBTX                OPENAPI=YES            EOJ_OK=IMMEDIATE
 FLOWTRACE=YES                 PGMNAME=RQST
 REQTHD=00000 EXEMPT TRANS=SCFD AAAA BBBB DDDD EEEE FFFF GGGG HHHH IIII JJJJ
              EXEMPT TRANS=KKKK LLLL MMMM NNNN OOOO
 OPERID=***
 SKPSYNC=YES

DC00380I  TRANSACTION COMPLETED.
```

In addition to the modifiable fields displayed on the DBOC GENOPTS screen, the following fields are displayed on the GENOPTS inquiry that are *not* modifiable online.

DYNPPT=

> YES specifies that you want to use the program AUTOINSTALL function (PGAIPGM=ACTIVE in DFHSIT) for the URTs.

> NO specifies that you do not want to AUTOINSTALL URTs but want them defined in the CSD.

EOJ_OK=

> NO (the default) specifies that CA Datacom CICS Services is not participating in the support of a request to EOJ MUF.

> DISCONNECT specifies when MUF has notified CA Datacom CICS Services with a return from an active request that a MUF EOJ has been issued, CA Datacom CICS Services issues a DISCONNECT from the MUF

> IMMEDIATE specifies when MUF has notified CA Datacom CICS Services with a return from an active request that a MUF EOJ has been issued, CA Datacom CICS Services issues an IMMEDIATE disconnect from the MUF.

The displayed value is what has been specified for the default MUF. This value is the default for any DBCSID macros coded in the DBCVTPR macro when not overridden. CA Datacom/DB Version 12.0 does not support this feature.

OPENAPI=

YES specifies that CA Datacom CICS Services starts the execution of the DBNTRY TRUE and the OPEN/CLOSE TRUEs on an OPEN TCB. In this case, it is the L8 TCB because CA Datacom CICS Services programs run with EXECKEY=CICS.

NO specifies that CA Datacom CICS Services is enabled as API(CICSSAPI) meaning the CA Datacom CICS Services programs run on the same TCB as the calling program runs and that could mean a QR TCB or an OPEN TCB.

PLANSWI=

YES specifies that dynamic plan selection is used.

NO specifies that dynamic plan selection is not used.

SKPSYNC=

(Optional) specifies whether CA Datacom CICS Services issues a CICS SYNCPOINT when only one MUF in the environment has received a DB log command.

NO specifies that CA Datacom CICS Services will issue a CICS SYNCPOINT instead of a user a DB log command.

YES, the default, specifies that CA Datacom CICS Services will issue the user DB log command as is, without a CICS SYNCPOINT whenever appropriate.

DBOC INQ=GENOPTS

DBOC

(*Required*) Specify the transaction ID used with Operational commands to control system resources. Leave a space between the transaction ID and the command.

INQ=GENOPTS

(*Required*) Specifies that CA Datacom CICS Services display the current system generation option values.

```
DBOC INQ=GENOPTS                                                    DELIM &

 CA Datacom CICS Services Version: 14.0
Copyright © 2011 CA. All rights reserved. 10/07/14
 OPSYS=Z/OS    2.01          CICS LEVEL=TS 4.2      DB RELS=14.0
 DB SVCID=000                SUB ID=255             MUF JOBNM=DBDVMS
 MAXURTS=9999                PREFIX=DBURT           DYNPPT=NO
 USERS=004                   SKIPURT=NO             LOG=(YES,NO )
 SYSVIEW=YES                 PLANSWI=NO             USERID=YES
 TRACE=(ON , 1000)           AUXTRACE=OFF           AUXTRACE LOG=DCAX
 DELIM=}                     MSGLOG=DBOC            SCROLL=(MANUAL SEC   )
 DBEC=DBEC DBEX DBRC         DBOC=DBOC DBIC DBKC    DBUG=DBUG DBFS
 DBTS=DBTS DBTX              OPENAPI=YES            EOJ_OK=IMMEDIATE
 FLOWTRACE=YES               PGMNAME=RQST
 REQTHD=00000 EXEMPT TRANS=SCFD AAAA BBBB DDDD EEEE FFFF GGGG HHHH IIII JJJJ
              EXEMPT TRANS=KKKK LLLL MMMM NNNN OOOO
 OPERID=***
 SKPSYNC=YES

DC00380I  TRANSACTION COMPLETED.
```

In addition to the modifiable fields displayed on the DBOC GENOPTS screen, the following fields are displayed on the GENOPTS inquiry that are *not* modifiable online.

DYNPPT=

YES specifies that you want to use the program AUTOINSTALL function (PGAIPGM=ACTIVE in DFHSIT) for the URTs.

NO specifies that you do not want to AUTOINSTALL URTs but want them defined in the CSD.

EOJ_OK=

NO (the default) specifies that CA Datacom CICS Services is not participating in the support of a request to EOJ MUF.

DISCONNECT specifies when MUF has notified CA Datacom CICS Services with a return from an active request that a MUF EOJ has been issued, CA Datacom CICS Services issues a DISCONNECT from the MUF

IMMEDIATE specifies when MUF has notified CA Datacom CICS Services with a return from an active request that a MUF EOJ has been issued, CA Datacom CICS Services issues an IMMEDIATE disconnect from the MUF.

The displayed value is what has been specified for the default MUF. This value is the default for any DBCSID macros coded in the DBCVTPR macro when not overridden. CA Datacom/DB Version 12.0 does not support this feature.

OPENAPI=

YES specifies that CA Datacom CICS Services starts the execution of the DBNTRY TRUE and the OPEN/CLOSE TRUEs on an OPEN TCB. In this case, it is the L8 TCB because CA Datacom CICS Services programs run with EXECKEY=CICS.

NO specifies that CA Datacom CICS Services is enabled as API(CICSSAPI) meaning the CA Datacom CICS Services programs run on the same TCB as the calling program runs and that could mean a QR TCB or an OPEN TCB.

PLANSWI=

YES specifies that dynamic plan selection is used.

NO specifies that dynamic plan selection is not used.

SKPSYNC=

(Optional) specifies whether CA Datacom CICS Services issues a CICS SYNCPOINT when only one MUF in the environment has received a DB log command.

NO specifies that CA Datacom CICS Services will issue a CICS SYNCPOINT instead of a user a DB log command.

YES, the default, specifies that CA Datacom CICS Services will issue the user DB log command as is, without a CICS SYNCPOINT whenever appropriate.

Chapter 9: Recovery and Restart Procedures

When CICS and the MUF go down, use the following recovery and restart procedures:

1. Run the COMM STATUS function of the CA Datacom/DB Utility (DBUTLTY) to release all threads that are not in in-doubt status.

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

2. Bring up the MUF.

3. Warm start CICS.

Before the re-synchronization process for resolving the in-doubt status can start, make certain the following have first been completed:

1. Enable the MUF.

2. Complete a warm start of CICS.

3. Start up CA Datacom CICS Services if DCCOCPR is not in the PLT, DBEC P,STARTUP or DBOC STARTUP.

4. Connect CA Datacom CICS Services to the MUF (or MUFs). If the connect type is not PLT, DBEC I,MUF(??), issue C for connect.

Be aware that if DCCOCPR is not in the CICS PLT or if the DBCSID does not have CONNECT=PLT, Step 3. or Step 4. in the list just shown may have to be done manually with DBOC STARTUP and possibly a DBEC P,CONNECT.

This section contains the following topics:

CICS Abend

User Action

When CICS abends, use the following procedures to synchronize all the updates to CA Datacom/DB, VSAM, and any other file access.

1. Execute the COMM OPTION=STATUS function of the CA Datacom/DB Utility (DBUTLTY) to notify the MUF that CICS has abended. The MUF then frees the threads used by CICS and accomplishes the transaction backout for the in-flight task in CICS. This must be the batch execution and not from the console to be effective.

2. Bring up CICS by running Emergency Restart.

System Action

During the emergency restart process, CICS automatically accomplishes the transaction backout process for all the tasks in-flight when the abend occurred.

XRF

CA Datacom CICS Services runs in a XRF environment but does not reestablish CONNECT-MUF conditions from the previous CICS.

CICS Emergency Restart Environmental Considerations

If your site connects to only one MUF and no other resources, emergency restart considerations have not changed compared to the previous release, and you therefore do not need the information in this section. When there is only one resource (not records) being updated, a single-phase commit is involved but no two-phase commits.

If your site has CA Datacom/DB transactions that also update other resources, such as the VSAM and DB2 products of IBM, or if more than one MUF is involved in the same transaction, this section contains important information.

We recommend that you always do a WARM START of CICS in a production environment, even if no more CICS production work is to be done at that time. The only WARM START exception to this might be if CA Datacom/DB is the only updating resource and it is using only one MUF, that is, it is not using VSAM, DB2, or DL/I, and so on.

Note: In an XRF environment, the CICS APPLID must be the same as the original CICS for the connection process to work.

Because CA Datacom CICS Services only runs in a CICS Transaction Server, CA Datacom CICS Services fully exploits the CICS two-phase commit protocol, including INDOUBTWAIT for both z/VSE and z/OS. It is a Best Practice to always use WARMSTART. For those sites already using the CICS WARM START recovery option, CA Datacom CICS Services works without requiring any additional steps to re-synchronize CA Datacom/DB with CICS. There can be additional steps required for those sites that choose to continue using the CICS COLD START recovery option.

If CICS or CA Datacom/DB abends while transactions are in two-phase commit, those records that were updated may exist in an in-doubt state. Such records are no longer available for updating by batch or online until the same CICS APPLID and CA Datacom/DB have reconnected with each other and all in-doubt states have been resolved. That is to say, records in an in-doubt state remain in that state and *cannot be updated* until the associated CICS APPLID is reconnected. In previous releases, when a CICS abend occurred records were either committed or backed out almost at once. For further information, see messages DC00501I, DC00502E, DC00503I, and DC00504I, including the example in DC00504I.

It is important to understand and test the ramifications of the previously discussed information before placing CA Datacom CICS Services into a production environment. To summarize, the changes of which you should be aware are as follows:

- There is greater integrity or a higher degree of integrity and more automation for CICS and CA Datacom/DB MUF restarts from system abends.

- Substantial delays can occur on subsequent updates while records are in an in-doubt state.

- CICS must be restarted and connected to CA Datacom/DB to clear in-doubt conditions, if it was the CICS that abended.

- If the CA Datacom/DB MUF abended but CICS remained running, only the CA Datacom/DB MUF must be restarted and reconnected to CICS to eliminate in-doubt states.

- Only those transactions in the middle of a two-phase commit when the system abend occurs are affected. Here the term *system abend* can mean that CICS abended, or the MUF abended, or both abended. The term *middle* as used here is a complex term that must be considered for each MUF involved between its Phase 1 request (LOGPR) and its Phase 2 request (COMIT). For the same task, the two-phase commit may be at different phases for different MUFs involved. Only those MUFs for a given task that are between LOGPR and COMIT are in-doubt, while there can be other MUFs records for this same task that would not be in-doubt from the system abend.

- When CICS and CA Datacom/DB are reconnecting and in-doubt status conditions are being resolved, message DC00501I, DC00502E, DC00503I, or DC00504I is generated to inform you about what actions were taken by CA Datacom/DB for each in-doubt MUF/unit of work.

- A CICS COLD START does *not* clear an in-doubt condition in CA Datacom/DB.

CICS COLD START requires a manual recovery. All CICS in-doubt log records are lost and therefore automated recovery is impossible. A manual recovery is often dangerous and time consuming. During this time, those in-doubt records cannot be updated by any task or job.

CA Datacom/DB has provided a way to manually resolve those in-doubt states. Sites must interrogate all other updateable resources (other CA Datacom and *non* CA Datacom) to determine if those other resources were committed, backed out, or mixed. This interrogation must take place on each task in question.

For example, a CICS abends while a given task containing DB2, VSAM, and CA Datacom/DB was in a SYNCPOINT. CICS was then cold started. The DB2 records then might be committed while the VSAM records were not, and MUF records are in-doubt. A decision would need to be made for both the VSAM and MUF records.

CICS COLD STARTs are therefore *not* recommended for production CICS systems.

■   The next two paragraphs explain the steps involved in manually re-synchronizing CA Datacom/DB for a cold start. Remember that these steps should only be done after the interrogation phase has been completed. CA Datacom CICS Services provides a message to warn the site that a cold start has been done and what units of work need to be researched from the perspective of CA Datacom/DB.

    –   The CA Datacom/DB Utility (DBUTLTY) COMM STATUS function must be run. The site has to decide on an individual case by case basis whether this unit of work is to be committed or backed out. The site must run a COMM REQCOMIT or a COMM REQROLBK (see the *CA Datacom/DB DBUTLTY Reference Guide*) for each cold-started sequence number after determining whether it was committed in CICS or backed out in CICS.

    –   COMM REQCOMIT and COMM REQROLBK can *only* be run *after* CICS has been brought up and reconnected to CA Datacom/DB.

Note: The term *log records:*

■   In z/OS environments means "MVS LOGGER records for CICS."

■   In VSE environments means "records in the CICS journal files."

MUF ABEND

When the MUF abends but CICS regions do not abend, CA Datacom CICS Services detects the abend and performs the following:

CA Datacom CICS Services Action

1. The CA Datacom/DB interface sends a CA Datacom/DB return code 86 to the request once it detects that the MUF has abended.

2. CA Datacom CICS Services closes all open User Requirements Tables (URTs) and marks them for reopening. CA Datacom CICS Services is typically restarted automatically when end users run reconnection transactions. If CICS transactions continue flowing to CA Datacom/DB, no action is required by anyone. Transactions continuing to flow automatically causes reconnections to MUF. If no work is flowing, no automatic processing is possible. Work generated in the CICS region or a manual connection using DBEC I,MUF(??) again makes automatic processing possible.

3. CA Datacom CICS Services frees all the resources.

4. After CA Datacom CICS Services has freed all resources for any CA Datacom/DB request from the application program, CA Datacom CICS Services attempts to reconnect to the MUF. If the reconnect fails, CA Datacom CICS Services passes return code 36 back to the application program.

User Action

Follow this procedure to return all URTs to their original status, that is, the status they had before the MUF abend.

1. Do not issue DBOC OPEN/CLOSE commands or use DBEC to perform any OPEN/CLOSE after return code 86 is issued until you see the message DC00187I in the CICS JES job log for z/OS or the console log for VSE. If an OPEN/CLOSE is issued, the process to restore the originally opened status of the URTs cannot be accomplished automatically by CA Datacom CICS Services (to restore the URT environment manually, you have to issue the DBOC OPEN or RESTART command after the MUF has been enabled).

2. After the MUF has been enabled, CA Datacom CICS Services can be restarted. This restart of CA Datacom CICS Services is usually restarted automatically by the end users running transactions that drive this work of reconnection. Typically, there is no action needed as long as CICS transactions are still flowing to CA DATACOM DB. This drives the connection back to MUF automatically. If no work is flowing, then no automatic processing is possible until work is generated in the CICS region or a manual connection is made using the DBEC I,MUF(??) connection.

System Action

The first CA Datacom/DB request following the MUF start up establishes communication between the MUF and CA Datacom CICS Services. Upon first request from a CICS application program, CA Datacom CICS Services automatically allocates needed resources and reopens all the URTs which were open when the MUF abended. No operator action is required to handle a URT that was open when the MUF abended.

Chapter 10: Maintaining MRO/ISC Environment

CA Datacom CICS Services allows processing from a central facility to control multiple resources effectively. The design of the multiple CICS environment can be complex or simple. If you use MRO/ISC, verify that you have done the following:

- Your CICS SIT parameters are defined to support ISC

- Each CICS has a unique SYSID

- Your connections and sessions are properly defined in your CSD

MRO/ISC Route Processing

The simplest MRO/ISC processing can be the use of the CRTE route transaction. In this case, you route all processing input to a particular AOR CICS. Issue a new CRTE transaction when connection to other AORs is required and issue multiple CA Datacom CICS Services control transactions. CRTE is an excellent tool to use in debugging problems if they are encountered in an MRO configured environment or in specific cases.

MRO/ISC Transaction Routing

This MRO/ISC setup is where each transaction is defined to the TOR as a remote transaction. You enter the desired transaction and through internal CICS definitions it is routed to the defined AOR CICS.

A transaction defined in the TOR can be defined as the same transaction in the AOR. This method requires the user to remember which transaction is associated to which AOR CICS. Also, this method requires a separate DBCVTPR macro be defined in each AOR CICS to allow processing to proceed. For example, the following table illustrates a TOR connected to three AORs defined as SYSA, SYSB and SYSC with transactions DBC1, DBC2, and DBC3 being DBOC in each AOR CICS respectively. The following table graphically shows that when DBC2 is entered in the TOR it is routed to AOR CICS name SYSB and runs transaction DBC2 in that AOR.

AOR	Local TOR	AOR CICS	DBCVTPR AOR
AOR1 **(SYSA)**	TRansaction : DBC1 REMOTEName : DBC1 REMOTESystem : SYSA	**DBC1**	DBOC=(DBC1,DBI1)

AOR	Local TOR	AOR CICS	DBCVTPR AOR
AOR2 **(SYSB)**	TRansaction : DBC2 REMOTEName : DBC2 REMOTESystem : SYSB	**DBC2**	DBOC=(DBC2,DBI2)
AOR3 **(SYSC)**	TRansaction : DBC3 REMOTEName : DBC3 REMOTESystem : SYSC	**DBC3**	DBOC=(DBC3,DBI3)

A transaction defined in the TOR can be defined as another transaction in the AOR. If DBOC is not renamed in the AORs, it is not necessary to supply the DBOC parameter in the DBCVTPR macro for the AORs. In the TOR, each transaction definition that routes a DBOC to an AOR must have a remote name of DBOC, as illustrated in the following table.

AOR	Local TOR	AOR CICS	DBCVTPR AOR
AOR1 **(SYSA)**	TRansaction : DBC1 REMOTEName : DBOC REMOTESystem : SYSA	**DBOC**	DBOC=(DBOC,DBIC)
AOR2 **(SYSB)**	TRansaction : DBC2 REMOTEName : DBOC REMOTESystem : SYSB	**DBOC**	DBOC=(DBOC,DBIC)
AOR3 **(SYSC)**	TRansaction : DBC3 REMOTEName : DBOC REMOTESystem : SYSC	**DBOC**	DBOC=(DBOC,DBIC)

DBC1 would then route a DBOC to AOR SYSA, and DBC2 would route a DBOC to AOR SYSB, and so on.

MRO/ISC Enhanced Control

This MRO/ISC setup is where CA Datacom CICS Services enhanced control transaction is implemented. The user enters the DBEC or DBEX transaction and it runs within the TOR CICS with connections to the other AORs through internal transaction DBRC. To set up this type of MRO/ISC process:

■ Define only transaction DBEC and DBEX to run in the TOR.

■ The DBRC internal transaction is defined only in the AOR, together with CA Datacom CICS Services.

■ When other control functions are needed, define the other DBOC, DBTS and DBUG transaction IDs by one of the previous two methods.

Restrictions

DBEC does not support executing any command that involves a version of CA Datacom CICS Services other than the current version. Therefore, Version 14.0 DBEC does not support connecting to a CICS executing Version 12.0 or less. Also, DBEC creates transaction affinities so it cannot be used to process connections in a CICSPLEX.

Chapter 11: Utilizing Resources Effectively

We recommend the following procedures for the most effective use of your resources:

- Turn off the Auxiliary Trace function when not in use. For details, see the *User Guide*.

- Use the CICS SYNCPOINT to free resources as soon as possible. For details, see the *User Guide*.

- Read a record once before requesting it with intent to update. For details, see the *User Guide*.

- Specify RES=YES in the CICS System Definition data set (CSD) for the most frequently used User Requirements Tables (URTs).

- Allocate enough threads that users need not wait an inordinate amount of time for a free thread. For details, see Allocating Threads (see page 77).

- Adjust priority specifications both in the operating system and in CA Datacom/DB. For details, see Setting Priority in the Operating System and CA Datacom/DB (see page 79).

This section contains the following topics:

Allocating Threads

During installation, you specified a value for the USERS= parameter in the DBCVTPR. CA Datacom CICS Services uses this value for the number of threads allocated to service all requests. Since any number of non-update tasks can share threads, thread use and need is mainly determined by the number of concurrent update requests. When a task issues an update request, the thread it is using is held for this task until:

- The task is finished, or

- The program issues a CICS SYNCPOINT or SYNCPOINT ROLLBACK command, or

- The program issues a CA Datacom/DB COMIT or ROLBK command, or

- CA Datacom/DB determines that there are no longer any resources that need to be held for this task.

We recommend that the application program issue CICS SYNCPOINTs to synchronize update processing between CA Datacom/DB and *non* CA Datacom/DB resources such as VSAM or DL/I. Also see the chapter about updating technique in the *User Guide*. For programs that issue CA Datacom/DB commands for LOG type that do commits or rollbacks, these commands are forced to perform CICS SYNCPOINT or CICS SYNCPOINT ROLLBACK.

In estimating thread allocation, consider the number of update tasks operating concurrently a large percentage of the time. Allocate one thread per concurrent update task. For example, if an average of 6 update tasks and 20 read-only tasks operate concurrently 80 percent of the time, allocate 6 threads to the 6 update tasks and, for example, 3 or 4 threads for the 20 read-only tasks, making a total or 9 or 10.

Periodically, analyze thread utilization to verify that the percentage waiting for a thread is not too high. If it is, allocate more threads. CA Datacom CICS Services produces a thread utilization report automatically and writes it to the Message Log file (DBOC) at CICS shutdown. Use the DBOC INQ=USERS transaction to view this report online during the CICS session. For details, see the *User Guide*.

Automatic shutdown of CA Datacom CICS Services is delayed when HELD TRANS or RESERVE TRANS is not 000. RESERVE TRANS are due to transactions needing resources before completing. For example, needed resources include such things as terminal response time, enqueues, delays, and waiting on I/Os.

Issue DBOC INQ=STATS to display the current number of held transactions. For details, see the *User Guide*. A HELD TRANS value greater than zero indicates the number of requests held waiting for a free thread. HELD TRANS values greater than zero are likely to occur when the number of CICS tasks allowed to be started is larger than the number of concurrent users permitted, that is to say when the AMXT= value is greater than the USERS= value.

To limit the amount of time shutdown can take:

1. Increase the value of the USERS= parameter to increase the number of Task Control Blocks generated by the DBCVTPR macro, and

2. Increase the value specified in the MUF startup option TASKS in CA Datacom/DB to specify more tasks.

To support additional batch tasks in a MUF environment, the MUF startup option TASKS may specify a value larger than the value specified by the DBCVTPR macro. The TASKS value, however, may not be less than the value specified by the DBCVTPR macro.

Setting Priority in the Operating System and CA Datacom/DB

The performance of your system can be affected by setting an appropriate priority in both the operating system and in CA Datacom/DB.

CA Datacom/DB MUF versus CA Datacom CICS Services

If there are many CICS activities involving CA Datacom/DB, assign the CA Datacom/DB MUF a higher priority than CA Datacom CICS Services within your operating system. However, if you have few CICS activities involving CA Datacom/DB, assign the same operating system priority to both the MUF and CA Datacom CICS Services.

Task Priority in CICS

You can assign priority to specific transactions within CICS by using parameters in the TCT, CSD, or Sign-on table. We recommend assigning a priority of 254 for the DBOC and DBUT transactions in the CSD (255 is the highest priority).

Task Priority in CA Datacom/DB

Transactions which use the CA Datacom/DB MUF, are assigned a priority within the MUF. This priority is specified in the URT used with the transaction. A low priority task, which has a resource under exclusive control, could block other users from accessing that resource indefinitely.

Open Transaction Environment (OTE)

You can increase your system performance if your applications are programmed as Threadsafe to operate concurrently in an Open Transaction Environment (OTE) as defined by IBM.

Verify that your programs or modules have the following Threadsafe characteristics:

- The modules must be designated as re-entrant (RENT). Typically RENT modules do not modify anything in the program storage and can be loaded into *read only memory*.

- The modules either do not modify shared resources or they serialize the use of shared resources by using a serialization technique such as ENQ/DEQ or CS/CDS/CSG and so forth.

- All modules that modify a shared resource must use the *same serialization technique*.

Perform the following tests to verify that your programs are running concurrently:

- The first test is to take a look at the level one and level two IBM tracing and examine the TCB switching that occurs in a transaction from initiation through termination.

  The examination should answer the following questions:

  a. Where did the application commence execution when called by the TRUE?

  b. Where did the DBNTRY TRUE commence execution when called by the application program?

  c. Was there any TCB switching involved in the course of running a transaction for example, QR to L8 to L9 and back and forth?

  d. Was there a lot of TCB switching because of non-Threadsafe CICS commands or between program calls and returns (because of their Concurrency value in CICS tables)?

  e. Was there supposed to be DB2 calls in the mix and were there any calls made to DB2?

  f. Was TCB switching involved when calling DB2 attachment facility and returning from DB2 to the application or just calling DBNTRY, or both or neither?

     Note: If there are no DB2 calls but the site has DB2 applications mixed with DATACOM calls, select a transaction that has both calls, and examine the TCB switching for DB2 and DATACOM calls in the same manner.

- The second test is to benchmark a fixed number of transactions. For example, run 100,000 or even 500,000 transactions in both environments separately, and then compare the processing time of the two test cases.

The test environments must be similar in both cases in order for the comparison to be valid. It is best to run each test multiple times and use the average for comparisons.

Define the application and Datacom as API(CICSAPI) and benchmark it in one set of tests as a base of your measurement. If the application can only run with EXECKEY=USER, then it is probably better to define both the application and the Datacom TRUE as API(CICSAPI). If the application can run with EXECKEY=CICS, then it might be worthwhile to benchmark both with API(OPENAPI) as well and conduct another test with those values in place.

For more information about selecting CICSAPI or OPENAPI, see Migration Issues (see page 82) in this section.

Compatibility

- Significant changes are in the interface protocol between DBINRPR and DCCTPPR from release 11.0 to Version 14.0 of the CA Datacom CICS Services. These changes relate to the CONNECT, DISCONNECT, and DISCONNECT IMMEDIATE functions. For these functions to work properly, DBINRPR Version 12.0 PTF RO32572 or higher must move in conjunction with CA Datacom CICS Services releases.

- Moving backwards to CA Datacom CICS Services r11 from Version 14.0 would require restoration of CICS CSD and the DBCVTPR module before the migration, since the new DBCVTPR 14.0 is not compatible with the CA Datacom CICS Services release 11.0.

- There are no changes to any of the temporary storage queue DSECTS. Do not mix CA Datacom CICS Services Version 14.0 with release 11.0 in MRO since they are not compatible.

Library Changes

Recommended path for sites running CA Datacom CICS Services 14.0 with Version 12.0 MUF (or multiple Version 12.0 MUFs) upgrading to a MUF or multiple MUFs running CA Datacom/DB 14.0 code line. In all cases, cycle CICS to do the following library changes:

1. Replace the Version 12.0 CABDLOAD in the DFHRPL to use the Version 14.0 CABDLOAD. Continue to use the library that has the Version 12.0 SID or in the case of multiple MUF, the Version 12.0 SIDs for those MUFs that have not been upgraded to Version 14.0. In a multiple MUF environment, you do not have to repeat this step because you upgraded at least one MUF from CA Datacom/DB 12.0 to CA Datacom/DB 14.0.

2. Once you are satisfied that the CA Datacom CICS Services Version 14.0 and CABDLOAD in DFHRPL is working, then the upgrade of Version 12.0 MUF (or MUFs in the case of a multiple MUF environment) can begin.

3. Upgrade each Version 12.0 MUF to Version 14.0 MUF. Part of this process generates a MUF-specific CUSLIB that has a DBSIDPR at the CA Datacom/DB 14.0 code line.

4. After the upgrade for each Version 12.0 MUF is complete, replace the Version 12.0 CUSLIB in the DFHRPL with a CA Datacom/DB 14.0 CUSLIB for each MUF that you are upgrading.

5. If you have to fall back from a CA Datacom/DB 14.0 MUF (or from any of the MUFs in a multiple MUF environment) to Version 12.0, replace the CA Datacom/DB Version 14.0 CUSLIB with the Version 12.0 CUSLIB for that MUF (or MUFs) and complete the fallback process for the MUF (or each MUF in a multiple MUF environment) for which you want to fall back from Version 14.0 to Version 12.0.

6. Leave the CA Datacom/DB Version 14.0 CABDLOAD for the fall back process. Always leave the CA Datacom/DB Version 14.0 CABDLOAD in the DFHRPL if there are any CA Datacom/DB Version 14.0 MUFs in the multiple MUF environment of this CICS.

7. If you decide to upgrade the Version 12.0 MUF (or any MUF in the case of a multiple MUF environment) back to CA Datacom/DB Version 14.0 MUF, perform the same action in item 4. However, replace the Version 12.0 CUSLIB with the CA Datacom/DB Version 14.0 CUSLIB for the MUF (or MUFs in a multiple MUF environment) you upgrade.

Migration Issues

Note: No CA Datacom CICS Services solutions exist to migrate from CTS 3.2 to CTS 4.1. However, follow CICS migration steps. For instructions, see IBM documentation.

A Quasi Reentrant (QR) TCB in CICS along with the dispatcher allow for tasks to be executed in a serialized manner. A QR TCB protects the shared resources from being overridden by concurrently running tasks. If the system is very much QR TCB bound, such as too much demand on the QR TCB, some of the work can be offloaded to L8 or L9 for processing.

For migration purposes, select the option of either OPENAPI=YES or NO, and then assemble the macro DBCVTPR. This allows enablement of the DBNTRY and OPEN/CLOSE TRUEs with API(OPENAPI) or API(CICSAPI) during the CA Datacom CICS Services STARTUP.

This choice is important to be made correctly. If the application is not threadsafe then it begins execution on a QR TCB. When it calls the DBNTRY TRUE, then it would switch from QR to L8. On the way back to the application program it would switch back to QR, and therefore this TCB switching introduces unnecessary overhead.

To determine whether to use the CICSAPI or the OPENAPI, answer two questions at the outset:

■ Are the application programs written to threadsafe standards?

■ Do the application programs run with the EXECKEY CICS or USER?

Selecting CICSAPI

A CICSAPI program commences execution on a QR TCB. However, programs commence execution on L9 if EXECKEY=USER. DATACOM TRUE runs with EXECKEY=CICS, so it commences execution on L8 if defined as API(OPENAPI). Therefore, to avoid switching back and forth from L8 to L9, it is best to define the DATACOM TRUE and the application as API(CICSAPI).

If the customer application is not threadsafe or the application runs with the EXECKEY=USER even though it might be threadsafe, define the DBNTRY TRUE as API(CICSAPI) since the user application cannot run on the L8 TCB. In this case, CA Datacom CICS Services runs on the same TCB as the application and there is no unnecessary TCB switching.

If you are using third-party vendor software to interface with CA Datacom, get confirmation from the third-party vendor or request a threadsafe version of the product and install it.

The decision of where to run each process or program must be an elaborate decision, thoroughly tested for TCB switching, and verified for efficiency, since many factors are involved in the efficiency of the overall request processing system.

Selecting OPENAPI

To potentially make your transaction processing more efficient, you can commence execution of CA Datacom TRUE, DBNTRY on an OPENAPI TCB such as L8 or L9. This can be especially effective if there are DB2 calls mixed with the CA Datacom calls in the application.

An OPENAPI program commences execution on an OPEN TCB, either L8 if EXECKEY=CICS or L9 if EXECKEY=USER.

If the application is fully threadsafe and can be defined as an API(OPENAPI), then the user may prefer to define the DBNTRY TRUE as API(OPENAPI) as well. The EXECKEY of the application and the EXECKEY of the TRUE must be the same for maximum efficiency.

If the EXECKEY for the two programs are not the same, the control toggles between L8 and L9 which is not the best scenario.

If the customer application uses DB2 calls mixed with CA Datacom calls, then it makes sense to define the DBNTRY TRUE as OPENAPI so the CA Datacom calls run on L8 along with the DB2 calls that must run on L8. Unnecessary TCB switching is avoided if the application is threadsafe.

The MAXOPENTCBS system initialization parameter controls the number of open TCBs permitted for this purpose. Therefore, set the necessary value.The factors that determine this value include the total number of USERS defined in the DBCVTPR macro for all connections in addition to the OTE TCB requirements for other applications that may be running in the same CICS region. Measure the system performance to determine the optimum number. For more information, see the IBM *CICS System Definition Guide*.

Chapter 12: Online User Requirements Tables

Differences between Batch and Online

Each batch application must be linked or dynamically loaded to a URT before it is executed. An online application, however, is not linked to any particular URT. Rather, a URT is selected by CA Datacom CICS Services to satisfy each request.

In an online CICS environment, if you have the SQL option of CA Datacom/DB you do not need to code more than one URT for SQL. If you elect to have more than one, only the first SQL URT opened is ever used as the SQL URT as long as that URT remains open.

This section contains the following topics:

Planning the User Environment

Determining Scope of URTs

Every CICS program requesting CA Datacom/DB service requires at least one URT defined in the CICS region. For a task to execute, the URT needed for each request must be open or eligible to be opened. During normal operation, all URTs may remain open. During recovery and reload, however, the processing on the databases being recovered or reloaded must be quiesced by closing the URTs which declared them open for access or update.

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

The contents of URTs can be based on the applications that use them, as in batch. However, for CICS they need not be, since CA Datacom CICS Services makes a URT selection for each request rather than for each application. For example, if a batch program reads data from three databases, the URT you link to that program must define the required tables from each of the three databases. If an online application reads the same three databases, you could define CA Datacom/DB tables for each of these databases in different URTs and CA Datacom CICS Services would select the appropriate one as needed.

Note: You may alter the DCCTFPR exit to control URT selection with a prefix.

Determining Number of URTs to Define

Generally, you define multiple URTs. The amount of time it takes to open and load a URT increases with the quantity of CA Datacom/DB tables within the URT and by the number of URTs to be loaded. This processing time can be included in CICS initialization by:

- Using the default PLT method to open a URT at STARTUP as described in the information regarding the AUTOn= (see page 20) parameter used with the DEFER= parameter of the DBCVTPR macro, or

- Defining the URT to be opened when required by using the AUTO= parameter as described in the information about controlling resources with operational commands in the *User Guide*.

Defining SQL URTs

CA Datacom CICS Services opens only one URT. If all your programs use SQL, define only one URT containing no CA Datacom/DB tables.

Procedure for Preparing URTs

Your responsibilities include the following:

1. Define the URTs required by your CICS applications as described in Coding the URT Macros (see page 87).

2. Assemble and link each URT separately.

   Note: URT cannot be assembled/linked as RENT.

3. Link edit URTs into the CICS library, specifying the 8-byte module name as DBURTnnn if PREFIx=DBURT. For the URTs greater than 999 and PREFIX=DBURT, then the 8-byte name would be DBURnnnn. DBURT is the default value for the DBCVTPR PREFIX= parameter. You provide the name for a given URT in the JCL used for assembling and link editing. The name is a combination of the selected prefix name and a sequential number. For information about what happens with the prefix when a higher number than 999 is used, and to highlight that aspect of the following examples, see PREFIX= (see page 31) and Assembling and Linking Each URT (see page 88).

4. Use the DFHCSDUP batch utility or the online CEDA transaction to define each new URT in the CICS CSD data set:

   ```
   DEFINE PROGRAM(DBURTnnn)GROUP(B114GRP)LANGUAGE(ASSEM)RESIDENT(YES)CEDF(NO)
   ```

   Or, in the case of a URT number greater than 999:

   ```
   DEFINE PROGRAM(DBURnnnn)GROUP(B114GRP)LANGUAGE(ASSEM)RESIDENT(YES)CEDF(NO)
   ```

5. Define the MAXURTS= value in DBCVTPR to accommodate the number of URTs you desire.

URT Selection

Before accessing CA Datacom/DB, CA Datacom CICS Services passes control to the URT selection module (DCCTFPR). This module determines which URT CA Datacom CICS Services uses when processing a request. Your company may write a prefix CA Datacom CICS Services URT Selection Exit for specific security, or accounting purposes.

Details on the standard URT selection logic are described in URT Selection (DCCTFPR). A simplified explanation of URT selection processing for a non-SQL request follows:

1. Examines the Request Area to determine the name of the CA Datacom/DB table to be accessed and the DBID in which the table resides.

2. Searches available URTs (URTs) in ascending order by number and selects the first one it encounters which is eligible for processing the request. The following criteria determines eligibility:

   ■ If the Request Area contains only a DBID, the first URT within the list having the same DBID is used.

   ■ If the Request Area contains both a table name and a DBID, eligibility is based on how SYNONYM= is coded in the URT. If SYNONYM=NO, the URT must list a matching table name. If SYNONYM=YES, the URT must list a matching table name and DBID.

   Note: If, within one URT, the same TBLNAM= is specified twice for different DBIDs and has SYNONYM=NO for the first in the list but SYNONYM=YES for the second in the list, CA Datacom/DB finds a match on the first entry and does not look for the second entry. If two URTs have the same TBLNAM= specified for different DBIDs and the lower numbered URT specifies SYNONYM=NO and the higher numbered URT specifies SYNONYM=YES, CA Datacom CICS Services selects the lower numbered URT without regard to DBID.

Coding the URT Macros

The CICS region in which an online application is executing must have at least one URT available which can satisfy each request to CA Datacom/DB.

Online URT Macros

An online URT begins with a DBURSTR Start macro, includes one or more DBURTBL Entry macros (if not an SQL URT) and ends with a DBUREND End macro. The SQL URT must have at least one DBURTBL, and that one can have the bypass open option (BYPOPEN=YES in the DBURTBL macro) in it. The SQL URT is also composed of the DBURSTR and DBUREND macros. For non-SQL URTs, the Start macro passes its parameters to each included Entry macro.

Global URTs

Beginning with CA Datacom CICS Services r11, support was added for global URTs. A global URT is a URT from CA Datacom/DB r10 or higher that either has multiple MUFs support or DBID remapping support, that is to say, either the DBURSTR macro uses the SIDNAME= parameter or the DBURTBL macro uses the DBIDMUF= parameter.

In a multiple MUF environment, it is necessary to code the SIDNAME= parameter on the DBURSTR macro in order for the URT to request service from a MUF other than the default or first MUF defined by a DBCSID macro. Any URT can only reference one MUF.

Also beginning with CA Datacom CICS Services r11, support has been added for DBID remapping. If you want to use this feature, you must code the DBIDUSER= in the DBURTBL macro to match the DBID specified in the request and also code the DBIDMUF= parameter of the DBURTBL macro to specify the DBID that is actually passed to the MUF in the request. Following is an example:

```
TITLE 'GLOBAL URT'
PRINT GEN
DBURSTR SIDNAME=DBSIDPR
DBURTBL DBIDUSER=1,DBIDMUF=100,TBLNAM=PAY
DBUREND SYSTEM=OS
END
```

Note: For more information about defining URTs, see the *CA Datacom/DB Database and System Administration Guide*.

Assembling and Linking Each URT

After coding an online URT, assemble and link it to produce a load module.

URT Naming Conventions

Use the following naming conventions for your URTs:

■ The 5-character prefix you code in the PREFIX= parameter (default is DBURT) in the System Options Table (DBCVTPR), plus

■ A 3-digit numeric suffix starting with 001 and ending with a number up to 999, and then

■ The first 4 characters of the 5-character prefix you code in the PREFIX= parameter, plus

■ A 4-digit numeric suffix starting with 1000 and ending with a number equal to the specified MAXURTS= value.

The 3-digit or 4-digit numeric identifier can be any number, but generally it is associated with a database ID.

Note: Because CA Datacom/DB supports 4-digit database IDs and CA Datacom CICS Services now supports up to 9999 URTs, you can only have a one-to-one relationship between the 3-digit or 4-digit numeric identifier suffix and a database ID if the database ID is less than 1000. Therefore, PREFIX=DBUR2 (or 3, 4, ...) is invalid since there would be no distinction between URT 2nnn and nnn. For example, DBUR2005: is it URT5 or URT 2005.

z/OS JCL Example

The JOB, SYSLIB and SYSLMOD statements are for example only. Code these statements according to site standards.

```
//jobname  JOB    Job Statement Information
//*------------------------------------------------------------------*
//*            ASSEMBLE/LINK ONLINE USER REQUIREMENTS TABLE         *
//*------------------------------------------------------------------*
//ASM      EXEC PGM=ASMA90,PARM='NODECK,LOAD'
//SYSLIB    DD DSN=SYS1.MACLIB,DISP=SHR
//          DD DSN=CAI.DHLQ.CABDMAC,DISP=SHR
//SYSUT1    DD DSN=&.&SYSUT1.,UNIT=SYSDA,SPACE=(8800,(1200,100))
//SYSUT2    DD DSN=&.&SYSUT2.,UNIT=SYSDA,SPACE=(8800,(1200,50))
//SYSUT3    DD DSN=&.&SYSUT3.,UNIT=SYSDA,SPACE=(8800,(1200,50))
//SYSPRINT  DD SYSOUT=*
//SYSPUNCH  DD SYSOUT=*
//SYSLIN    DD DSN=&.&OBJSET.,UNIT=SYSDA,SPACE=(80,(200,50)),
//          DISP=(MOD,PASS)
//SYSIN     DD *
   .
   .
   .
   .
   .
   .
/*
//*
//LKED  EXEC PGM=IEWL,PARM='XREF,LET,LIST,NCAL',COND=(8,LT,ASM)
//SYSLIN    DD DSN=&.&OBJSET.,DISP=(OLD,DELETE)
//          DD DDNAME=SYSIN
//SYSUT1    DD DSN=&.&SYSUT1.,UNIT=SYSDA,SPACE=(1024,(50,20))
//SYSPRINT  DD SYSOUT=*
//SYSLMOD   DD DSN=CAI.CHLQ.CUSLIB,DISP=SHR
//SYSIN     DD *
 NAME DBURT025(R)
/*
//
```

- Insert the URT definitions in the continuation area of the JCL. For more information, see Coding the URT Macros (see page 87).

- The load module name for the URT in this example is DBURT025. Use the naming conventions for your URTs as described in the coding of the DBCVTPR PREFIX= macro parameter. DBURT is the default 5-character prefix for the PREFIX= parameter in the System Options Table (DBCVTPR).

z/VSE JCL Example

The JOB statement, power statements, and EXTENT statements in the following JCL are for example only. Code these statements according to site standards.

```
 * $$ JOB JNM=jobname,CLASS=n
 * $$ LST CLASS=n
// JOB ASMBLNK
// DLBL    BASE,'customer.designated.db.install.library'
// EXTENT  SYS009,volser
// ASSGN   SYS009,DISK.,VOL=vvvvvv,SHR
// DLBL    CUSLIB,'customer.designated.local.library'
// EXTENT  SYS009,volser
// LIBDEF  *,SEARCH=BASE.DBBASE
// LIBDEF  *,CATALOG=CUSLIB.sublib
// OPTION CATAL
   PHASE DBURT025,*
// EXEC ASSEMBLY
    .
    .
    .
    .
    .
    .
// EXEC LNKEDT
/&
 * $$ EOJ
```

- Each URT must be link edited with a 5-character prefix and a unique number between 001 and 999 or a 4-character prefix and a unique number between 1000 and the MAXURTS= value in the System Options Table (DBCVTPR).

- Insert the URT definitions in the continuation area of the JCL. For more information, see Coding the URT Macros (see page 87).

Chapter 13: Using the Display Utility (DBUT)

The Display Utility (DBUT) enables you to examine online whatever is stored in your CICS region. This utility gives you the ability to display any CICS program or CICS storage beginning at a specified address. We recommend tight security measures be implemented for access to the DBUT transaction.

This section contains the following topics:

DBUT Display Format

Issuing a DBUT transaction results in a display similar to the following:

```
  (1)                                                      2)
DBUT=13F67A0                                          ADDRESS=013F67A0

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT ------- -CHARACTER FORMAT- ADDRESS
                 +0       +4       +8       +C        0   4   8   C

013F67A0 +0000   30001854 47F0C238 58404074 12444780 *.....0B..  .....* 013F67A0
013F67B0 +0010   C2421994 4780C26A 47F0C22E 18455840 *B..m..B..0B.... * 013F67B0
013F67C0 +0020   40DC1244 4780C258 19944780 C26A47F0 * .....B..m..B..0* 013F67C0
013F67D0 +0030   C24458F0 CF9A055F 41F00008 41000008 *B..0.....0......* 013F67D0
013F67E0 +0040   47F0CEFE 182A185B 1F11BF17 B02DB20A *.0.....$........* 013F67E0
013F67F0 +0050   00005010 606C4330 6060B20A 300018A4 *..&.-%..--....u* 013F67F0
013F6800 +0060   58300010 58F03148 58F0F008 05EF4700 *.....0...00.....* 013F6800
013F6810 +0070   000012FF 4770C258 18B518A2 18911FFF *......B....s.j..* 013F6810
013F6820 +0080   BFF79019 19BF4770 C2589110 900E47E0 *.7......B.j.....* 013F6820
013F6830 +0090   C2589101 900E4780 C2E841E0 00101829 *B.j.....BY......* 013F6830
013F6840 +00A0   1B2E5820 2008BF2F 20404780 C2E85820 *.........  ..BY..* 013F6840
013F6850 +00B0   20305820 201441E0 20149120 E0084710 *..........j.....* 013F6850
013F6860 +00C0   C2F658F0 9020BFF8 CF6D12FF 4780C258 *B6.0...8......B.* 013F6860
013F6870 +00D0   58F0CF9A 055F43B0 6060B20A B00058B0 *.0......--......* 013F6870
013F6880 +00E0   60249120 606147E0 C314BFB8 CF6D5850 *-.j.-/..C......&* 013F6880
013F6890 +00F0   CF960DE5 55F0CF7A 4780CEFE 12FF4770 *.o.V.0.:........* 013F6890
013F68A0 +0100   CE1AD207 D148C00D D207D150 C015D207 *..K.J...K.J&..K.* 013F68A0
013F68B0 +0110   D158C01D 58300010 59B03008 4780C378 *J.............C.* 013F68B0
013F68C0 +0120   58F00224 58F0F150 58F0F0EC 59B0F00C *.0...01&.00...0.* 013F68C0
  (2)     (4)            (5)                          (6)             (7)
```

The DBUT display has the following areas:

(1)

Command entry field.

(2)

Starting address of displayed storage.

Note: The remainder of the display is filled with lines that contain the following fields.

(3) and (7)

Starting address of this line of the displayed storage.

(4)

Offset of this line of displayed storage.

(5)

16 bytes of data in hexadecimal format.

(6)

The same 16 bytes of data in character format.

DBUT Command Syntax

To use the Display Utility, issue the following transaction:

```
►►─ DBUT ─ location ──┬──────────┬──┬────────┬──┬─────────────────────┬──◄◄
                      └ operation ┘  └ scroll ┘  └──────┬────┬─ scan ─┘
                                                        └ range ┘
```

Note: The DBUT command is not available from the console.

Multiple operations may be specified.

DBUT

> *(Required)* Specify DBUT as the transaction ID.

location

> *(Required)* Specify one of the following to indicate the starting location for the display operation:

> **=*address* (or *address*)**

> > Identifies the storage location for the start of the display. Specify the address in hexadecimal and code a space or the equal sign (=) immediately following the transaction ID (DBUT=*address;* DBUT *address*).

> **M=*module***

> > Identifies the location from the entry point address (EPA) of the named CICS program module. Include a blank space between DBUT and M=*module*.

> **L=*module***

> > Identifies the location from the load point address (LPA) of the named CICS program module. Include a blank space between DBUT and L=*module*.

> > **Note:** Although VSE environments can use either M=*module* or L=*module,* we recommend using L=*module* in VSE environments.

> > The named module must be defined in the CICS System Definition data set (CSD). Valid entries include application programs and CA Datacom CICS Services modules.

operation

> *(Optional)* Specify one or more of the following operations to indicate the display location relative to the starting location. If you specify more than one operation, the Display Utility performs the operations serially. That is, it starts at the specified starting location, performs the first operation to arrive at a new location which it uses as a starting location for the second operation.

> **+*xxxxxxxx***

> > Display the data *xxxxxxxx* bytes following the starting location. Specify *xxxxxxxx* as a hexadecimal value.

-xxxxxxxx

Display the data *xxxxxxxx* bytes preceding the starting location. Specify *xxxxxxxx* as a hexadecimal value.

-> or =>

Display the contents at the location pointed to by the address indicated in the specified location. Use -> to indicate that the fullword pointed to is treated as a 24-bit address (only the three low-order bytes in the fullword is used). Use => if the fullword pointed to is to be treated as a 31-bit address (all four bytes are considered as making up the address).

scroll

(Optional) Specify one of the following to indicate the amount and direction to scroll from the display location:

P*xx*+

Indicates that the next display should be xx pages forward. A page is 256 bytes (16 lines).

P*xx*-

Indicates that the next display should be xx pages backward.

H*xx*+

Indicates that the next display should be xx half-pages forward. A half-page is 128 bytes (8 lines).

H*xx*-

Indicates that the next display should be xx half-pages backward.

L*xx*+

Indicates that the next display should be xx lines forward.

L*xx*-

Indicates that the next display should be xx lines backward.

If you specify a scroll operand, the Display Utility scrolls the indicated amount and direction each time you press **Enter**.

range

(Valid only if used with a scan operand.) Specify either H=*xxxxxxxx* or H=*nn*K to limit the search to *xxxxxxxx* bytes or *nn* KB (kilobytes) following the current location. Specify *xxxxxxxx* as a hexadecimal value or *nn* as a decimal value.

Note: If you specify both the range operand and the scan operand, you must specify the range value before you specify the scan value.

scan

> *(Optional)* To scan for the first occurrence of a given target following the current location, enter one of the following:

> **=C'*target*'**

>> where *target* is a character representation of the scan target.

> **=X'*target*'**

>> where *target* is the hexadecimal representation of the scan target. This must be in full byte, that is, the target must be an even number of characters (for example, 2, 4, 6, 8, 10…).

DBUT Usage Examples

> The following are examples of screens presented after executing DBUT transactions.

Displaying Data at an Address

To display the contents of storage beginning at the address EB20, issue the following transaction:

DBUT=EB20

CA Datacom CICS Services responds with the following display:

```
DBUT=EB20                                              ADDRESS=0000EB20

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT ------- -CHARACTER FORMAT- ADDRESS
                 +0       +4       +8       +C        0    4   8   C

0000EB20  +0000 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB20
0000EB30  +0010 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB30
0000EB40  +0020 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB40
0000EB50  +0030 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB50
0000EB60  +0040 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB60
0000EB70  +0050 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB70
0000EB80  +0060 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB80
0000EB90  +0070 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EB90
0000EBA0  +0080 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EBA0
0000EBB0  +0090 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EBB0
0000EBC0  +00A0 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EBC0
0000EBD0  +00B0 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EBD0
0000EBE0  +00C0 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EBE0
0000EBF0  +00D0 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EBF0
0000EC00  +00E0 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EC00
0000EC10  +00F0 BAE6E7B0 3AE6E900 00000080 00000000 *.WX..WZ.........* 0000EC10
0000EC20  +0100 C4C6C8C5 D4404040 0000001E 00400000 *DFHEM    ..... ..* 0000EC20
0000EC30  +0110 3C21F000 80000000 C0000000 00000000 *..0.............* 0000EC30
0000EC40  +0120 00000000 00000000 C7C1E3C5 C8C5C1C4 *........GATEHEAD* 0000EC40
```

Scrolling Through a Module

To display the contents of the module DCCUTPR at a positive offset of 3C (hexadecimal) from its beginning, issue the following transaction:

DBUT M=DCCUTPR+3C

CA Datacom CICS Services responds with the following display:

```
DBUT M=DCCUTPR+3C                                     ADDRESS=3D0E7564

ADDRESS  OFFSET  -------   DATA IN HEX FORMAT -------  -CHARACTER FORMAT- ADDRESS
                 +0        +4        +8        +C       0    4   8   C

3D0E7564  +003C 100058F0 A6F005EF 50D01004 18F1BF1F *...0w0..&....1..* 3D0E7564
3D0E7574  +004C D0184780 A058D207 F05C1000 18DF58B0 *......K.0*......* 3D0E7574
3D0E7584  +005C D05C41A0 A00047F0 A1D80000 CA7BD4C9 *.*.....0.Q...#MI* 3D0E7584
3D0E7594  +006C C4CA0100 004800A8 00000068 C4C3C3E4 *D......y....DCCU* 3D0E7594
3D0E75A4  +007C E3D7D940 40C3C2F1 C5F0F0F0 4040A1D9 *TPR  CB1E000  .R* 3D0E75A4
3D0E75B4  +008C D4C9C44D D9C5E2C5 D9E5C55D A140F2F0 *MID(RESERVE). 20* 3D0E75B4
3D0E75C4  +009C F1F0F0F9 F1F740F1 F54BF1F1 40000000 *100917 15.11 ...* 3D0E75C4
3D0E75D4  +00AC 00000000 C3C140C4 81A38183 9694AF40 *....CA Datacom. * 3D0E75D4
3D0E75E4  +00BC C3C9C3E2 40E28599 A5898385 40D9F1F4 *CICS Service R14* 3D0E75E4
3D0E75F4  +00CC 4BF04040 406040C3 D6D7E8D9 C9C7C8E3 *.0   - COPYRIGHT* 3D0E75F4
3D0E7604  +00DC 404DC35D 40F1F9F8 F860F2F0 F1F040C3 * (C) 1988-2010 C* 3D0E7604
3D0E7614  +00EC C14B4040 40C1D3D3 40D9C9C7 C8E3E240 *A.   ALL RIGHTS * 3D0E7614
3D0E7624  +00FC D9C5E2C5 D9E5C5C4 4B404040 40404040 *RESERVED.       * 3D0E7624
3D0E7634  +010C 40404040 A110A112 A114A116 A118A11A *    ............* 3D0E7634
3D0E7644  +011C A11CA11E A120A122 A124A126 A128A12A *................* 3D0E7644
3D0E7654  +012C A12CA12E A130A132 A134A136 A138A13A *................* 3D0E7654
3D0E7664  +013C A13CA13E A140A142 A144A146 A148A14A *..... .........¢* 3D0E7664
3D0E7674  +014C A14CA14E A150A152 A154A156 A158A15A *.<.+.&.........!* 3D0E7674
3D0E7684  +015C A15CA15E A160A162 A164A166 A168A16A *.*.;.-..........* 3D0E7684
```

To scroll forward one page in the module, add p1+ to the end of the command displayed in the command field, as shown in the following:

```
DBUT M=DCCUTPR+3C p1+                                 ADDRESS=3D0E7564

ADDRESS  OFFSET  -------   DATA IN HEX FORMAT -------  -CHARACTER FORMAT- ADDRESS
                 +0        +4        +8        +C       0    4   8   C

 3D0E7564  +003C 100058F0 A6F005EF 50D01004 18F1BF1F *...0w0..&....1..* 3D0E7564
 3D0E7574  +004C D0184780 A058D207 F05C1000 18DF58B0 *......K.0*......* 3D0E7574
```

When you press Enter, CA Datacom CICS Services displays the next page of the module and changes the p1+ on the command line to p2+.

```
DBUT M=DCCUTPR+3C p2+                                   ADDRESS=3D0E7564

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT ------- -CHARACTER
FORMAT- ADDRESS
                +0        +4        +8        +C       0   4   8   C

3D0E7694  +016C A16CA16E A170A172 A174A176 A178A17A *.%.>...........:* 3D0E7694
3D0E76A4  +017C A17CA17E A180A182 A184A186 A188A18A *.@.=...b.d.f.h..* 3D0E76A
3D0E76B4  +018C A18CA18E A190A192 A194A196 A198A19A *.......k.m.o.q..* 3D0E76B4
3D0E76C4  +019C A19CA19E A1A0A1A2 A1A4A1A6 A1A8A1AA *.......s.u.w.y..* 3D0E76C4
3D0E76D4  +01AC A1ACA1AE A1B0A1B2 A1B4A1B6 A1B8A1BA *...............* 3D0E76D4
3D0E76E4  +01BC A1BCA1BE A1C0A1C2 A1C4A1C6 A1C8A1CA *.......B.D.F.H..* 3D0E76E4
3D0E76F4  +01CC A1CCA1CE A1D0A1D2 A1D4A1D6 9180949B *.......K.M.Oj.m.* 3D0E76F4
3D0E7704  +01DC 4710A1F6 4110D068 41E0A758 50E01000 *...6......x.&...* 3D0E7704
3D0E7714  +01EC 96801000 58F0A6F4 0DEF9200 D1B0D703 *o....0w4..k.J.P.* 3D0E7714
3D0E7724  +01FC D358D358 D203D354 A6F890BD D184D70A *L.L.K.L.w8..JdP.* 3D0E7724
3D0E7734  +020C D235D235 4110D068 41E0A75F 1BFF1B00 *K.K.......x.....* 3D0E7734
3D0E7744  +021C 90E01000 1BEE90E0 100C90E0 101841F0 *..............0* 3D0E7744
3D0E7754  +022C D22C90EF 10249680 102858F0 A6F40DEF *K.....o....0w4..* 3D0E7754
3D0E7764  +023C 95C5D22C 4780A260 58200010 58220000 *nEK...s-........* 3D0E7764
3D0E7774  +024C 58220004 582200D0 58220014 58220008 *...............* 3D0E7774
3D0E7784  +025C 47F0A26C 58200014 582200B4 58220008 *.0s%............* 3D0E7784
3D0E7794  +026C 5020D180 4110D068 41E0A724 41F0D19C *&.J.......x..0J.* 3D0E7794
3D0E77A4  +027C 4100D1A0 90E01000 41E0D1A2 50E0100C *..J.......Js&...* 3D0E77A4
3D0E77B4  +028C 9680100C 58F0A6F4 0DEF4110 D06841E0 *o....0w4........* 3D0E77B4
```

If you press Enter again, CA Datacom CICS Services displays the next page of the module and changes the p2+ on the command line to p3+.

Note: A useful tip, if you plan on scrolling start with "P00+" (a P, two zeros, and a plus sign).

```
DBUT M=DCCUTPR+3C p3+                                    ADDRESS=3D0E7564

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT ------- -CHARACTER
FORMAT- ADDRESS
                  +0       +4       +8       +C      0   4   8   C

3D0E77C4  +029C A76C1BFF 1B0090E0 10001BEE 90E0100C *x%.............* 3D0E77C4
3D0E77D4  +02AC 90E01018 41E0D236 41F0D235 4100D1B1 *......K..0K...J.* 3D0E77D4
3D0E77E4  +02BC 90E01024 9680102C 58F0A6F4 0DEF4800 *....o....0w4....* 3D0E77E4
3D0E77F4  +02CC D1A24C00 D1A05000 D1A44110 D06841E0 *Js<.J.&.Ju......* 3D0E77F4
3D0E7804  +02DC A77941F0 D1701B00 90E01000 41E0A782 *x..0J.........xb* 3D0E7804
3D0E7814  +02EC 41F0D1A4 90EF100C 96801010 58F0A6F4 *.0Ju...o....0w4* 3D0E7814
3D0E7824  +02FC 0DEF5860 D1705060 D1A81806 5A00D1A4 *....-J.&-Jy..!.Ju* 3D0E7824
3D0E7834  +030C 4B00D1A2 5000D1AC 4800D1A2 1E001E06 *..Js&.J...Js....* 3D0E7834
3D0E7844  +031C 5000D194 4110D068 41E0A73A 50E01000 *&.Jm......x.&...* 3D0E7844
3D0E7854  +032C 96801000 58F0A6F4 0DEFD201 D24CA750 *o....0w4..K.K<x&* 3D0E7854
3D0E7864  +033C 4110D068 41E0A783 41F60000 4100D24C *......xc.6....K<* 3D0E7864
3D0E7874  +034C 90E01000 96801008 58F0A6F4 0DEF9511 *....o....0w4..n.* 3D0E7874
3D0E7884  +035C 60004770 A38248F0 D24C06F0 44F0A37C *-...tb.0K<.0.0t@* 3D0E7884
3D0E7894  +036C 1AF606F0 06F0D202 F000944B 47F0A382 *.6.0.0K.0.m..0tb* 3D0E7894
3D0E78A4  +037C D2006000 6003D203 D35CA6FC D507603C *K.-.-.K.L*w.N.-.* 3D0E78A4
3D0E78B4  +038C A6E84770 A3BCD207 D1B86044 DD076044 *wY..t.K.J.-....-* 3D0E78B4
3D0E78C4  +039C 93184770 A3BCDC07 D1B89351 F247D35C *l...t...J.l.2.L**  3D0E78C4
3D0E78D4  +03AC D1B89540 604C4770 A3BCF384 1044D228 *J.n -<..t.3d..K.* 3D0E78D4
3D0E78E4  +03BC 92006050 18164A60 D1A248F0 D24C41F0 *k.-&..¢-Js.0K<.0* 3D0E78E4
```

Displaying a Module

To display the contents of the module DBCVTPR from its beginning, enter the following command:

DBUT M=DBCVTPR

Or, if you plan on scrolling, start with "P00+" (a P, two zeros, and a plus sign) as follows:

DBUT M=DBCVTPR P00+

CA Datacom CICS Services responds with the following display:

```
DBUT M=DBCVTPR                                           ADDRESS=00049000

ADDRESS  OFFSET  -------   DATA IN HEX FORMAT -------  -CHARACTER FORMAT- ADDRESS
                 +0        +4        +8        +C        0    4    8    C
00049000  +0000 05700670  067058E0  700C0000  0004900C *................* 00049000
00049010  +0010 C4C2C3E5  E3D7D940  F1F44BF0  40404040 *DBCVTPR 14.0    * 00049010
00049020  +0020 4040C396  97A89989  8788A340  B440F2F0 *  Copyright . 20* 00049020
00049030  +0030 F1F040C3  C14B40C1  93934099  898788A3 *10 CA. All right* 00049030
00049040  +0040 A2409985  A28599A5  85844B40  F1F061F1 *s reserved. 10/1* 00049040
00049050  +0050 F361F1F0  40404040  40404040  40400000 *3/10          ..* 00049050
00049060  +0060 00000000  0000A000  4800B900  04600000 *.............-..* 00049060
00049070  +0070 00000004  00040100  00000000  00000000 *................* 00049070
00049080  +0080 00049080  C4C5C6C1  E4D3E340  40404040 *....DEFAULT     * 00049080
00049090  +0090 40404040  40400000  0004907C  000000C3 *       .....@...C* 00049090
000490A0  +00A0 E7C4E240  C3C17B7B  C4C3D6D4  C1F3F1C9 *XDS CA##DCOMA31I* 000490A0
000490B0  +00B0 C3E7C4E2  00002100  00000000  3D1BBD90 *CXDS............* 000490B0
000490C0  +00C0 3D1BC000  00049354  3D110000  000A0000 *......l.........* 000490C0
000490D0  +00D0 00000000  00000000  00000000  00000000 *................* 000490D0
000490E0  +00E0 00000000  00000000  00000000  00000000 *................* 000490E0
000490F0  +00F0 00000000  00000000  00000000  00000000 *................* 000490F0
00049100  +0100 00000000  00000000  00000000  00000000 *................* 00049100
00049110  +0110 00000000  00000000  00000000  00000000 *................* 00049110
00049120  +0120 00000000  00000000  3D1CCFD0  3CEF5000 *.............&.* 00049120
```

To move the display location forward 248 bytes, add the operation +248 to the displayed command as shown in the following.

```
DBUT M=DBCVTPR+248                                       ADDRESS=00049000

ADDRESS  OFFSET  -------   DATA IN HEX FORMAT -------  -CHARACTER
FORMAT- ADDRESS
                 +0        +4        +8        +C        0    4    8    C
00049000  +0000 05700670  067058E0  700C0000  0004900C *................* 00049000
00049010  +0010 C4C2C3E5  E3D7D940  F1F44BF0  40404040 *DBCVTPR 14.0    * 00049010
```

After you press Enter with the +248 operation added to the command, the following screen appears. This location contains an address of 2066A690, shown in bold-faced type in the following.

```
DBUT M=DBCVTPR+248                                       ADDRESS=00049248

ADDRESS  OFFSET  -------   DATA IN HEX FORMAT -------  -CHARACTER FORMAT- ADDRESS
                 +0        +4        +8        +C        0    4    8    C
00049248  +0248 3D1CE4D0  00000040  3D1D6190  C6E50BC2 *..U.... ../.FV.B* 00049248
00049258  +0258 00049BD8  000001F4  0004A134  3D1FA310 *...Q...4......t.* 00049258
```

To display the data at the address pointed to by this new location, add the operation => to the displayed command and press Enter.

```
DBUT M=DBCVTPR+248=>                                    ADDRESS=3D1CE4D0

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT -------  -CHARACTER
FORMAT- ADDRESS
                 +0       +4       +8       +C        0  4  8  C

3D1CE4D0  +0000 3D1CE4E8 C4C2E2C9 C4D7D940 C4C2E4D9 *..UYDBSIDPR DBUR* 3D1CE4D0
3D1CE4E0  +0010 E3F0F0F1 48404000 000C1000 000C1000 *T001.  .........* 3D1CE4E0
```

To move the display location forward 18 bytes, add the operation +18 to the displayed command and press Enter.

```
DBUT M=DBCVTPR+248=>+18                                 ADDRESS=3D1CE4E8

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT -------  -CHARACTER FORMAT- ADDRESS
                 +0       +4       +8       +C        0  4  8  C

3D1CE4E8  +0018 000C1000 000C1000 08040000 00800001 *................* 3D1CE4E8
3D1CE4F8  +0028 F0F10100 00000000 00000000 3D1CE500 *01............V.* 3D1CE4F8
```

To display the data at the address pointed to by this new location, add the operation -> to the displayed command and press Enter.

```
DBUT M=DBCVTPR+248=>+18->                               ADDRESS=000C1000

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT -------  -CHARACTER
FORMAT- ADDRESS
                 +0       +4       +8       +C        0  4  8  C

000C1000  +0000 00000090 000000C8 A00A0788 00000000 *.......H...h....* 000C1000
000C1010  +0010 00010000 00000000 00000000 00000000 *................* 000C1010
```

To page forward, add the scroll operand P02+ to the displayed command and press Enter. CA Datacom CICS Services responds with the following display:

```
DBUT M=DBCVTPR+248=>+18->P03+                              ADDRESS=000C1000

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT -------  -CHARACTER
FORMAT- ADDRESS
                 +0       +4       +8       +C        0   4   8   C

000C1260  +0260 D7D5D3F0 F0F22400 32000217 00000000 *PNL002..........* 000C1260
000C1270  +0270 D9D7E3F0 F0F22400 32000219 00000000 *RPT002..........* 000C1270
000C1280  +0280 E2E3D7F0 F0F22400 32000188 00000000 *STP002.....h....* 000C1280
000C1290  +0290 E2E8E2F0 F0F22400 320001BE 00000000 *SYS002..........* 000C1290
000C12A0  +02A0 C8E2C4F0 F0F22400 32000FD0 00000000 *HSD002..........* 000C12A0
000C12B0  +02B0 C6C3D5F0 F0F22400 3200025C 00000000 *FCN002.....*....* 000C12B0
000C12C0  +02C0 D7D3D5F0 F0F22400 320002B4 00000000 *PLN002..........* 000C12C0
000C12D0  +02D0 D7D9C3F0 F0F22400 3200024A 00000000 *PRC002.....¢....* 000C12D0
000C12E0  +02E0 E2E3D4F0 F0F22400 32000266 00000000 *STM002..........* 000C12E0
000C12F0  +02F0 E3D9C7F0 F0F22400 32000285 00000000 *TRG002.....e....* 000C12F0
000C1300  +0300 D7D9E3F0 F0F22400 720006EC 00000000 *PRT002..........* 000C1300
000C1310  +0310 C4C4C4F0 F1F52400 B20008F0 00000000 *DDD015.....0....* 000C1310
000C1320  +0320 C3D5C4F0 F1F52400 32000089 00000000 *CND015.....i....* 000C1320
000C1330  +0330 C3D5D6F0 F1F52400 32000874 00000000 *CNO015..........* 000C1330
000C1340  +0340 C3D5E2F0 F1F52400 32000136 00000000 *CNS015..........* 000C1340
000C1350  +0350 D4E2C7F0 F1F52400 7200007A 00000000 *MSG015.....:....* 000C1350
000C1360  +0360 FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF *................* 000C1360
000C1370  +0370 FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF *................* 000C1370
000C1380  +0380 C4C2E4D9 E3C2D340 F0F961F0 F161F1F0 *DBURTBL 09/01/10* 000C1380
```

Pressing Enter again causes the Display Utility to scroll forward another page:

```
DBUT M=DBCVTPR+248=>+18->P04+                              ADDRESS=000C1000

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT -------  -CHARACTER
FORMAT- ADDRESS
                 +0       +4       +8       +C        0   4   8   C

000C1390  +0390 F1F24BF3 F8404040 D5D660E4 E2C5D960 *12.38   NO-USER-* 000C1390
000C13A0  +03A0 C9D5C6D6 40404040 40404040 40404040 *INFO            * 000C13A0
```

Scanning for a Literal

As an example, to scan the first two KB (kilobytes) of the CA Datacom CICS Services Communication Vector Table for the first occurrence of the literal 'CICS LEVEL', issue the following transaction:

DBUT M=DBCVTPR H=2K =C'CICS LEVEL'

CA Datacom CICS Services responds with the following display:

```
DBUT M=DBCVTPR H=2K =C'CICS LEVEL'                          ADDRESS=00049176

ADDRESS  OFFSET  -------  DATA IN HEX FORMAT ------- -CHARACTER  FORMAT- ADDRESS
                 +0       +4       +8       +C        0   4   8   C
 
00049176 +0176 C3C9C3E2 40D3C5E5 C5D37EE3 E240F34B *CICS LEVEL=TS 3.* 00049176
00049186 +0186 F240C4C2 40D9C5D3 E27EF1F4 40F04040 *2 DB RELS=14 0  * 00049186
00049196 +0196 40404040 40E4E2C5 D9E27EF0 F0F34040 *    USERS=003   * 00049196
000491A6 +01A6 40404040 404040D4 C1E7E4D9 E3E27EF0 *        MAXURTS=0* 000491A6
000491B6 +01B6 F5F0F040 40404040 40D7D9C5 C6C9E77E *500       PREFIX=* 000491B6
000491C6 +01C6 C4C2E4D9 E3404040 404040D4 C1E7D9C5 *DBURT       MAXRE* 000491C6
000491D6 +01D6 C37EF3F2 F7F2F040 40404040 00000004 *C=32720     ....* 000491D6
000491E6 +01E6 91E80000 0000020C 01A00003 04800000 *jY..............* 000491E6
000491F6 +01F6 00000000 00000000 00000000 00000000 *................* 000491F6
00049206 +0206 0000003C 00000000 00000000 00000000 *................* 00049206
00049216 +0216 00003D1D 6F103D1E A7903D1D 84A00001 *....?...x...d...* 00049216
00049226 +0226 38803D1E A7B03D1E E7B03D1E AB300000 *....x...X.......* 00049226
00049236 +0236 40000004 B1403D1C E3D00000 00403D1C * .... ..T.... ..* 00049236
00049246 +0246 E4903D1C E4D00000 00403D1D 6190C6E5 *U...U.... ../.FV* 00049246
00049256 +0256 0BC20004 9BD80000 01F40004 A1343D1F *.B...Q...4......* 00049256
00049266 +0266 A3103D1E E7D03D1F A0000000 00004040 *t...X.........  * 00049266
00049276 +0276 40404040 4040003C 00005040 4040C4C3 *       ....&  DC* 00049276
00049286 +0286 C1E7C4C3 C2E7C4C2 D6C30000 00000000 *AXDCBXDBOC......* 00049286
00049296 +0296 0000C4C2 D6C3C4C2 C9C3C4C2 E4C7C4C2 *..DBOCDBICDBUGDB* 00049296
```

Chapter 14: Using the AUXTRACE Utility

The CA Datacom CICS Services AUXTRACE utility provides a means to print the auxiliary trace data sets.

AUXTRACE Utility Control Card

The batch AUXTRACE utility program uses a control statement to allow you to print ALL or selected records in the auxiliary trace data sets. The format of the control card is as follows:

Position	Data	
1—3	ALL	Issues the instruction to print all records in the file.
1—4	Trans ID	Place a transaction ID here if all records for a specified ID are desired.
5—8	Terminal ID	Place a terminal ID here if all records for a specific ID are desired.
9—13	Task ID	Place the 6-digit CICS transaction ID here if all records for a specified task are desired.
14—15	MUF ID	Place the 2-digit number of the MUF here if all records for a specified MUF are desired.
16—23	SID name	Place the 8-character SID name associated with MUF here if all records for a specified MUF by SID name are desired.

z/OS JCL Example

In the following example, the data set names are samples only. Code your data set names as per your site's standards.

```
//jobname  JOB    Job Statement Information
//*-------------------------------------------------------------------*
//*  PRINT DBC AUXILIARY TRACE FILE
//*-------------------------------------------------------------------*
//AUXP      EXEC PGM=DCTUPPR
//STEPLIB   DD DSN=CAI.CHLQ.CUSLIB,DISP=SHR
//          DD DSN=CAI.THLQ.CAB1LOAD.DISP=SHR
//DCAUXTRC  DD DSN=CAI.CHLQ.DBAUXTA,DISP=SHR
//SYSLST    DD SYSOUT=*,DCB=BLKSIZE=133
//*-------------------------------------------------------------------*
//*INPUT PARM FORMAT:
//*CHAR 1-4, CHAR 5-8, CHAR 9-13, CHAR 14-15, CHAR 16-23
//*ALL
//*TRANSID   TERMID    TASKNO    MUFID      SIDNAME
//*-------------------------------------------------------------------*
//SYSIPT    DD *
ALL
//
```

- In the previous JCL example, the DCAUXTRC DD statement specifies the CA Datacom CICS Services auxiliary trace data set to be printed. If the Auxiliary Trace Facility is used, there is a primary trace data set and a secondary data set defined at installation time.

- Before using this utility to print the auxiliary trace data set, use DBOC AUX=SWI or CEMT to close the current auxiliary trace data set. If the current auxiliary trace data set is not first closed, the utility program receives a program check.

z/VSE JCL

In the following example, the data set names are samples only. Code your names as per your site's standards.

```
 * $$ JOB JNM=DCTUPPR,CLASS=n
 * $$ LST CLASS=x
// JOB     DCTUPPR
// DLBL    BASE,'customer.designated.DBC.install.library'
// EXTENT  SYS009,vvvvvv
// ASSGN   SYS009,DISK.,VOL=vvvvvv,SHR
// LIBDEF  *,SEARCH=BASE.DBC14
// DLBL    AUXFILE,'customer.dbauxta.dbc14'
// EXTENT  SYS050,vvvvvv
// ASSGN   SYS050,DISK,VOL=vvvvvv,SHR
// ASSGN   SYSLST,PRINTER
// EXEC DCTUPPR
ALL
/*
/&
 * $$ EOJ
```

Sample Report

For field descriptions, see the list following the sample.

```
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

```
DATE: 03/21/12      ****************************************************************************      PAGE:  1,204
                    *                       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
          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       ***********
```

Field Descriptions

SEQ NR

The number of the trace entry within the trace table. This indicates where within the trace table the display is positioned.

TIME

The time of day to the second at which each CA Datacom/DB request occurred.

TASK ID

The CICS task number.

TERM ID

The ID of the terminal which initiated the listed command or ???? if no terminal was attached to the issue of the command.

TRAN ID

The CICS transaction ID associated with the listed task.

PROGRAM NAME

The name of the program which issued the listed command.

TCB NAME

The Task Control Block name used by CICS to run the transaction. The values can be QR for Quasi Reentrant, L8 or L9 for OTE TCBs (Open Transaction Environment). Where L8s are used in case the transaction is running with EXEC Key of "CICS" and L9s, where transaction is running with EXEC Key of "application". The three digits following the L8 or L9 are the Open TCB numbers within the L8 or L9 TCB type.

COMMD

The CA Datacom/DB command being traced.

TCB ID

The Task Control Block sequence number which identifies the thread being used by this request, if any, within a given MUF.

TABLE NAME

CA Datacom/DB table being accessed by the current event, if any.

KEY NAME

The name of the key for the listed CA Datacom/DB table.

RETURN CODE

Interpret the return code *xx.yy* as follows:

xx

CA Datacom/DB external return code (decimal).

yy

CA Datacom/DB internal return code (hexadecimal), 40 is a blank internal return code.

URT ID

The number of the User Requirements Table (URT) being accessed by the current event.

OPRID/USERID

The USERID of the user if USERID=YES was indicated in DBCVTPR. If USERID=NO was indicated in DBCVTPR, this is the ID of the operator (OPRID) initiating the current event, if any. Be aware that if the data in this field is three characters, it is the OPRID. If it is longer than three characters, usually eight characters, it is the USERID.

MUF ID

The identity by MUF ID *nn* (where *nn* can be 01 through 99) of the MUF on which the CA Datacom/DB request was serviced.

SIDNAME

The sub-identifier ID used to identify the specific MUF on which the request was serviced.

DBID

The ID *nnnnn* (where *nnnnn* can be 00001 through 05000) of the database being referenced in the request.

Chapter 15: Using the DBAS Transaction to Test Multiple Environment Control Commands

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

DBAS can start up to 14 DBOC type transactions in one execution. Since these are DBOC type transactions, the input can be numeric or ? can be used as a wild card.

The following DBOC function types can be generated:

- open

- close

- load

- delete

- restart

- connect

- disconnect

- disconnect immediate.

No screen output or messages are produced.

This section contains the following topics:

Input Format

The following input format allows up to 14 DBOC tasks to be started with one DBAS command:

- Columns 1-5 must be "DBAS " (note the trailing space).

- Columns 6-10 must be the 4-byte DBCVTPR DBOC= value followed by a blank. In most cases this is "DBOC ".

- Columns 11-80 are for commands to start DBOC tasks. Each command uses five columns. All five columns must be filled in or blank.

Once a blank is encountered, no more input is accepted. The byte command field is in one of the following formats:

- For URTs use a single byte for the command and four bytes for the URT number or generics. Use the following for these commands:

   O for open

   C for close

   D for delete

   L for load.

   R for restart

- For MUFs use three bytes as the command and two bytes for the MUF number or generics. Use the following for these commands:

   CON for connect

   DIS for disconnect

   IMM for disconnect immediate.

One DBAS command can include a mix of both format type fields.

Example:

The following command will start three transactions to create a connection of MUFs 10-19, to open URT 1, and to delete URT 100-199:

DBAS DBOC CON1?O0001D01??

CON1?

   Starts a DBOC CONNECT=1? connecting MUFs 10-19 if available. CON is for the CONNECT command.

O0001

   Starts a DBOC OPEN=0001 transaction. O is for open.

D01??

   Starts a DBOC DELETE=1?? transaction. D is for delete.

There is no specific order in which these transactions are processed in CICS. No messages of any kind are produced by the DBAS transaction.

Chapter 16: Communications

CA Datacom CICS Services does not allow an application program to directly issue such commands as CONNECT, DISCONNECT, IMMEDIATE, OPEN and CLOSE. However, there are situations and procedures which require that an application control environmental conditions. For example, a master menu application might control all transaction executions. To satisfy such special requirements, use one of the following methods of communicating with CA Datacom CICS Services:

Communication Method	Purpose	Output	Location of Details
Standard CA Datacom/DB Call	Issuing CONNECT, DISCONNECT, IMMEDIATE, LOAD, DELETE, RESTART,DEFER, AUTO, OPEN, and CLOSE commands for a specific MUF or User Requirements Table (URT) or issuing an inquiry for a specific URT.	Provides output to the Message Log file (DBOCPRT). Provides a special return code having limited meaning (see Return Codes (see page 117)).	Standard CA Datacom/DB Call (see page 116)
CICS Link	Issuing CONNECT, DISCONNECT, IMMEDIATE, LOAD, DELETE, RESTART, AUTO, DEFER, OPEN and CLOSE commands for a specific MUF or User Requirements Table (URT).	Provides a standard CA Datacom/DB return code indicating the results of the command.	CICS Link (see page 118)

Communication Method	Purpose	Output	Location of Details
CICS XCTL	Issuing any DBOC command or DBEC command. Initiate DBTS or DBUG process.	Provides output to the terminal. Provides output to the Message Log file (DBOCPRT). Provides no response to the linking application.	CICS XCTL (see page 121)
Interval Control Start (start task)	Issuing any DBOC command or inquiry or any DBEC command.	Provides output to the Message Log file (DBOCPRT). Provides no response to the starting task.	CICS Interval Control Start (see page 123)
MVS CONSOLE	Issuing any URT or MUF action excluding inquiry.	Provides output to the DBOCPRT file. For DBEC in remote mode, it is the CICS DBOCPRT where the reuest was routed.	CONSOLE Commands (see page 125)

Note: The commands passed to CA Datacom CICS Services using any of the previous methods are checked for MSTOPR authorization before being allowed to execute.

Standard CA Datacom/DB Call

If an application needs to issue a CA Datacom CICS Services command, the simplest method is to use the CA Datacom/DB Request Area. This method does not return a response or produce output. It does provide a special return code with limited meaning in the CA Datacom/DB Request Area. Any response from CA Datacom CICS Services which would normally appear on a terminal is written only to the Message Log file (DBOC). The failure or success of the command is not returned to the issuing application.

Procedure

Use the following procedure to issue a CA Datacom CICS Services transaction with a CA Datacom/DB call.

1. Place DBOC in the command field of the Request Area. It is presumed that the command field is set to DBOC. No validation of the field is done by CA Datacom CICS Services.

2. Place the length (in hexadecimal) of the command text in the first two bytes of the Work Area, followed by the command text beginning with the transaction ID followed by a space. The wildcard character ? (a question mark) is not supported in this mode.

Example Work Area

In the following example, DBOC CLOSE=nnnn is the CA Datacom CICS Services command (character) and the nn (in nnDBOC) is the length of command text (hexadecimal).

```
 ----+----1----+----2----+----3----+----4----+----5----+----6

 nnDBOC CLOSE=nnnn
```

If the DISCONNECT, CONNECT, and IMMEDIATE commands are used, they must be coded exactly as shown following:

- nnDBOC DISCONNECT=mm where nn is X'0014' or greater and mm is the MUF number

- nnDBOC CONNECT=mm   where nn is X'0011' or greater and mm is the MUF number

- nnDBOC IMMEDIATE=mm   where nn is X'0013' or greater and mm is the MUF number.

Return Codes

When issuing CA Datacom CICS Services transactions with a standard CA Datacom/DB call, CA Datacom CICS Services returns one of the codes listed in the *CA Datacom/DB Message Reference Guide* to the CA Datacom/DB Request Area return code field.

Sample COBOL Program

The following sample program demonstrates how the request and work area are completed when using the CA Datacom/DB Request Area to issue a CA Datacom CICS Services command.

```
      IDENTIFICATION DIVISION.
      ENVIRONMENT DIVISION.
      DATA DIVISION.
        ..
      01  WRK-USER-ID.
          02  WRK-UID-PGM         PIC X(8)           VALUE 'PGMNAME '.
          02  WRK-UID-FILLER       PIC X(24)          VALUE SPACES.
        ..
      01  WRK-RQ-AREA.
          02  WRK-RQ-CMD           PIC X(5)           VALUE 'DBOC '.
          02  WRK-FILLER           PIC X(8)           VALUE SPACES.
          02  WRK-RQ-RTCODE        PIC XX             VALUE SPACES.
          02  WRK-REMINDER         PIC X(241)         VALUE SPACES.
        ..
```

```
01  WRK-WORK-AREA.
    02  WRK-CMD-LTH        PIC S9999  COMP    VALUE +0.
    02  WRK-CMD            PIC X(80)          VALUE SPACES.
 ..
PROCEDURE DIVISION.
 ..
START-UP SECTION.
    MOVE 'DBOC OPEN=0010' TO WRK-CMD.
    MOVE +13             TO WRK-CMD-LTH.
    CALL 'DBNTRY' USING WRK-USER-ID, WRK-RQ-AREA, WRK-WORK-AREA.
    IF WRK-RQ-RTCODE IS NOT EQUAL TO SPACES GO TO ERR-RTN.
 ..
SHUT-DOWN SECTION.
    MOVE 'DBOC CLOSE=0010' TO WRK-CMD.
    MOVE +14             TO WRK-CMD-LTH.
    CALL 'DBNTRY' USING WRK-USER-ID, WRK-RQ-AREA, WRK-WORK-AREA.
    IF WRK-RQ-RTCODE IS NOT EQUAL TO SPACES GO TO ERR-RTN.
 ..
ERR-RTN SECTION.
 ..
 ..
```

CICS Link

With Return Response

An application can issue OPEN and CLOSE commands for a specific MUF or URT. In response, the application receives a standard CA Datacom/DB return code indicating the results of the command. Details on using a CICS link with a communication area are provided following.

When you need to know the results of a CONNECT, DISCONNECT, IMMEDIATE, LOAD, DELETE, RESTART, DEFER, AUTO, OPEN or CLOSE, use a CICS link to DCCOCPR with a communication area (DFHCOMMAREA). This method accepts only one MUF or URT ID per request and returns the CA Datacom/DB return code for that MUF or URT.
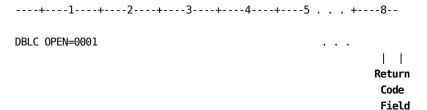
Procedure

Complete the DFHCOMMAREA as follows:

Column	Contents
1—4	**DBLC**—*(Required)* No other format is accepted.

Column	Contents
6—80	Code either CONNECT=muf, DISCONNECT=muf, LOAD=urt, DELETE=urt, RESTART=urt, DEFER=urt, AUTO=urt, OPEN=urt or CLOSE=urt. No other commands are accepted. Express the URT ID as a 4-digit number, for example, use 0001 for URT 1. Each transaction opens or closes one and only one URT. Express the MUF ID as a 2-digit number relative to the order of the DBCSID macros in the DBCVTPR, for example, use 01 for MUF 1 (the default MUF). Each transaction disconnects, connects, or disconnects immediate one and only one MUF. You cannot use a wildcard or delimiter character.
81—82	Blank. Upon completion, CA Datacom CICS Services places a standard CA Datacom/DB return code here.

Example

DFHCOMMAREA

Before executing the link, complete the 82-byte communication area as shown following. Each field is position dependent. Place blanks in the Return Code field (positions 81-82).

```
 ----+----1----+----2----+----3----+----4----+----5 . . . +----8--

 DBLC OPEN=0001                                       . . .
                                                             | |
                                                           Return
                                                            Code
                                                            Field
```

After Link

After the command is completed, control returns to the linking program and the DFHCOMMAREA is changed. CA Datacom CICS Services places a message (if any) in positions 1-80 and the standard CA Datacom/DB return code in positions 81-82. CA Datacom CICS Services messages and return codes are documented in the *CA Datacom/DB Message Reference Guide*. For multiple calls to CA Datacom CICS Services, the program must reestablish the communication area before each call.

```
 ----+----1----+----2----+----3----+----4----+----5 . . . +----8--

 DC00177E  URT 0001 OPEN ERROR, RC=25                 . . .       25
 |                                      |                         | |
   CA Datacom CICS Services                                    Return
        Error Message                                           Code
```

Return Codes

Interpret this return code as follows:

Return Code	Meaning
blank	The command processed successfully.
nonblank	For an explanation of the meaning and action, see the *CA Datacom/DBMessage Reference Guide*.

Sample COBOL Program

The following sample program demonstrates how the communication area is completed to command CA Datacom CICS Services to OPEN URT 0001.

Note: For an assembler example, the delivered DCCALPR sample program provides examples of the various DBLC commands and can be modified to test different functions.

```
    IDENTIFICATION DIVISION.
     ..
    ENVIRONMENT DIVISION.
    DATA DIVISION.
    WORKING-STORAGE SECTION.
      ..
    01  COMM-AREA.
        02  COMM-AREA-ID      PIC  X(05)      VALUE SPACES.
        02  COMM-AREA-COMMAND PIC  X(75)      VALUE SPACES.
        02  COMM-AREA-RTNCDE  PIC  X(02)      VALUE SPACES.
      ..
      ..
    PROCEDURE DIVISION.
      ..
      ..
        MOVE 'DBLC ' TO COMM-AREA-ID.
        MOVE 'OPEN=0001'     TO COMM-AREA-COMMAND.
        EXEC CICS LINK PROGRAM('DCCOCPR') COMMAREA(COMM-AREA)
            LENGTH(82)  END-EXEC.
        IF COMM-AREA-RTNCDE EQUAL TO SPACES
             GO TO NO-ERR.
        MOVE COMM-AREA-COMMAND  TO WORKCMDO.
        MOVE COMM-AREA-RTNCDE   TO WORKCDEO.
        EXEC CICS SEND MAP('XXXXXXX') MAPSET('XXXXXX')
            ERASE END-EXEC.
    NO-ERR.
      ..
```

CICS XCTL

With this method, your application may initiate:

- Any DBOC Command

- Any DBEC Command

- The DBUG Facility

- The DBTS Facility

If you want to develop a menu driver or initiate a DBOC command, use a CICS XCTL to DCCOCPR with a communication area completed as described here. For DBEC, XCTL to DCCECPR.

Procedure for DBOC or DBEC Commands

The communication area (DFHCOMMAREA) must be at least 80 bytes in length.

- Supply the command in the same format as you would type on a terminal.

- Issue an EXEC CICS XCTL to program DCCOCPR for DBOC or to DCCECPR for DBEC. This program examines the communication area and performs the command, overwriting any panel or data on the terminal with the response of the command.

- Once the command is complete, DCCOCPR or DCCECPR returns control to CICS.

Procedure for DBUG Command

The communication area (DFHCOMMAREA) must be at least 80 bytes in length.

- Supply the DBUG transaction as you would on a terminal. You can follow the transaction ID with any valid operand.

- Issue an EXEC CICS XCTL to program DCCFBPR. This program examines the communication area and displays the DEBUG Criteria Selection Panel, overwriting any panel or data on the terminal. If the criteria has been supplied with the transaction, the message is displayed that the request has been serviced and overwrites any panel or data on the terminal.

- Press Clear after all interaction is completed. DCCFBPR returns control to CICS.

Procedure for DBTS

The communication area (DFHCOMMAREA) must be at least 80 bytes in length.

■ Supply the DBTS transaction as you would on a terminal.

■ Issue an EXEC CICS XCTL to program DCUTSPR. This program examines the DFHCOMMAREA to determine that DBTS is required.

■ Place the transaction ID (DBTS) in the DFHCOMMAREA.

■ DBTS is displayed and sent to the terminal where you can interact with the DBTS facility.

■ Press Clear after all interaction is completed. DCUTSPR returns control to CICS.

Example

DFHCOMMAREA

```
 ----+----1----+----2----+----3----+----4----+----5 . . . +----8

 DBOC RESTART=????  (for example)
  or
 DBTS
  or
 DBUG or DBUG BOTH (for example)
  or
 DBEC P,MSIDNAME(DBSIDPR),DISCONNECT,SYSID(CZDS) (for example)
```

Sample COBOL Program

The following sample program demonstrates how to address and format the DFHCOMMAREA to command CA Datacom CICS Services to open URTs or to initiate the DBUG or DBTS facility.

```
      IDENTIFICATION DIVISION.
       ..
      ENVIRONMENT DIVISION.
      DATA DIVISION.
      WORKING-STORAGE SECTION.
       ..
01  COMM-AREA.
    02  COMM-AREA-ID      PIC  X(05)      VALUE 'DBOC '.
    02  COMM-AREA-COMMAND PIC  X(75)      VALUE SPACES.
    02  COMM-AREA-RTNCDE  PIC  X(02)      VALUE SPACES.
   ..
   ..
PROCEDURE DIVISION.
  ..
  ..
    MOVE 'OPEN=0001'    TO COMM-AREA-COMMAND.
    EXEC CICS XCTL PROGRAM('DCCOCPR') COMMAREA(COMM-AREA)
        LENGTH(82)  END-EXEC.
  ..
  ..
  ..
END-PGM.
  ..
```

CICS Interval Control Start

Use this method to issue any DBOC or DBEC command as a separate CICS task. With this method, CA Datacom CICS Services provides no return code or response. When CA Datacom CICS Services processes the command, it writes any response to the Message Log file (DBOCPRT) and to the terminal, if one is specified.

When using an Interval Control Start, provide a data area containing the command in the same format as you would type on a terminal. For details about using an Interval Control Start, see the CICS application programming documentation. Use the terminal ID parameter to identify the output display, if one is available.

Interval Control Start Data Area

```
 ----+----1----+----2----+----3----+----4----+----5 . . . +----8
DBOC OPEN=0001
```

Sample COBOL Program

The following sample program demonstrates issuing a CA Datacom CICS Services command as a separate task using the CICS Interval Control Start.

```
IDENTIFICATION DIVISION
      ..
     ENVIRONMENT DIVISION.
     DATA DIVISION.
     WORKING-STORAGE SECTION.
      ..
     01  WORK-AREA.
         02  WORK-AREA-COMMAND PIC  X(80)       VALUE SPACES.
       ..
       ..
     PROCEDURE DIVISION.
       ..
     *----------------------------------------------------------------*
     *     EXAMPLE WITHOUT TERMID                                      *
     *----------------------------------------------------------------*
         MOVE 'DBOC OPEN=0001'   TO WORK-AREA-COMMAND.
         EXEC CICS START TRANSID('DBOC')
             FROM(WORK-AREA) LENGTH(80)  END-EXEC.
       ..
     *----------------------------------------------------------------*
     *     EXAMPLE WITH TERMID                                         *
     *----------------------------------------------------------------*
         MOVE 'DBOC OPEN=0001'   TO WORK-AREA-COMMAND.
         EXEC CICS START TRANSID('DBOC') TERMID('XXXX')
             FROM(WORK-AREA) LENGTH(80)  END-EXEC.
       ..
```

Note: If you have modified the DBOC or DBEC transaction ID (for example, through the GENOPTS screen) to some other value then the value you specify in the EXEC statement must reflect this new value.

```
EXEC CICS START TRANSID('xxxx')
```

CONSOLE Command (MVSlogmodify)

Use this method to issue a DBOC URT or MUF action command or a DBEC URT or MUF PERFORM command to the console for the CICS region. With this method, CA Datacom CICS Services provides no return code or response. When CA Datacom CICS Services processes the command, it writes any response to the Message Logfile (DBOCPRT). DBEC in remote. For DBEC, in remote mode, this response is written to the CICS specified in the SYSID limiter of the command.

When using a console command, provide a data area containing the command in the same format as you would type on a terminal. The exception to this is DBOC CONNECT, DISCONNECT, and IMMEDIATE which must be in the following format. For more information about using console commands, see your system administrator.

Console Command Examples

```
 ----+----1----+----2----+----3----+----4----+----5 . . . +----8

/DBDCCICS,DBOC CONNECT=01
  or
/DBDCCICS,DBEC,P,CONNECT,MUF(1)
```

Chapter 17: Using Exit Programs

You can create exit programs for use with CA Datacom CICS Services, allowing you to perform security, accounting, or other tasks tailored to your site's needs before and/or after each user CA Datacom/DB request issued by CA Datacom CICS Services. The following are the exit modules:

DCCTFPR

Receives control from CA Datacom CICS Services to make User Requirements Table (URT) selection to use in satisfying a CA Datacom/DB request.

DCCTXPR

Receives control from CA Datacom CICS Services before and after CA Datacom CICS Services accesses CA Datacom/DB.

Note: Regarding previous DCCTFPR, CA Datacom CICS Services uses the CA-supplied module, DCCTFPR, for each request. To make use of this exit, you must modify or replace the supplied module.

This section contains the following topics:

URT Selection (DCCTFPR)

Before accessing CA Datacom/DB, CA Datacom CICS Services passes control to the URT (URT) selection module (DCCTFPR). This module contains logic to determine which URT CA Datacom CICS Services should use when processing a request. Use this standard selection, unless you require site-specific security, accounting, or a pre-CA Datacom/DB access exit. You can modify the standard URT selection by prefixing DCCTFPR with an exit routine or you may replace DCCTFPR with your own URT selection logic. Replacement and suffix exits are no longer allowed.

Note: If you currently have a suffix exit or a replacement exit, contact CA Support to aid you in writing a prefix exit or eliminating the user exit completely. There are methods available in the pre-exit to accomplish the suffix condition.

Prefix exits are the most common type of exit. They are used primarily to alter the DBID prior to finding a valid URT based on USERID or application/transaction/terminal. The suffix exits are used to modify which URT is used after it was selected based on USERID or application/transaction/terminal. These are no longer supported. However, most of the functions can be accomplished in prefix exits using global URTs.

Using the Standard URT Selection Logic

The CA Datacom CICS Services URT selection module determines the proper URT against which to process each request. This selection is based on the logic described following and diagrammed in Category 4: All Other User Commands. DCCTFPR returns the number of the selected URT in register 15. If it does not find a valid URT to satisfy the current request, DCCTFPR places a negative value in register 15.

The basic logic of the search relies on the naming scheme of the URTs. The 5-character prefix is ignored and the 4-digit number is assumed to start at 0001 and end at the MAXURT count. This number is the URT identification. This number determines the order of any hashing synonym strings.

SQL Requests

If you have multiple URTs defined for use with SQL requests, you may have only one open at a time. CA Datacom CICS Services uses this open SQL URT to satisfy any SQL request to CA Datacom/DB. If there is no SQL URT open, the requesting application receives a 36 return code (192 internal return code). CA Datacom CICS Services does not open an AUTO URT for an SQL request.

CA Datacom CICS Services does *not* support a global (or non-global) URT for the SQL URT. That is to say, the SQL URT *must* point to the default MUF.

Multiple URT Mode

The URT selection module examines one or more of the following Request Area fields beginning with the Command name.

Command	Table Name	-	-	DBID

Based on the command, the URT selection module selects one of the following categories appropriate for the CA Datacom/DB command requiring service.

Category 0: DBID Commands

The LOGDR and LOGDW commands use a CA Datacom/DB database ID, and are therefore processed on the DBID instead of the table name.

Category 1: Special Commands

Command	-	-	-	-
INQIN				
NOOPS				
TEST				

These commands can use any URT. Therefore, DCCTFPR selects the first OPEN or AUTO URT.

DCCTFPR places the results of URT selection in register 15. If there is no OPEN or AUTO URT, DCCTFPR places a negative value in register 15.

Category 2: LOG Commands

URT selection for log commands (except for LOGDW and LOGDR), that is, LOGxx, COMIT, ROLBK, and so on, are being handled outside of DCCTFPR in CA Datacom CICS Services.

Category 3: LOCxx Commands

DCCTFPR checks the Request Area for a table name.

Class A: Request Area Table Name Is Blank

Command	Table Name	-	-	-
LOCxx	**blank**			

CA Datacom CICS Services selects the first URT it encounters with one of the following statuses: OPEN or UNOPENED AUTO. DCCTFPR returns the selected URT number to DCCTPPR. If there is no OPEN or UNOPENED AUTO URT, DCCTFPR then the application receives a RC 05(001).

Class B: Request Area Table Name Specifies Database ID

Command	Table Name	-	-	-
LOCxx	**DBID (generic)**			

DCCTFPR performs a hashing search using the specified DBID and uses either the first URT containing a matching DBID if SKIPURTS=NO or the first open URT containing a matching DBID if SKIPURTS=YES. If DCCTFPR does not find a hashing entry for the DBID. A return code 05(001) is returned to the application.

Class C: Request Area Table Name Specifies CA Datacom/DB Table

Command	Table Name	-	-	DBID
LOCxx	**DB table name**			**DBID (if SYNONYM= YES)**

DCCTFPR selects a URT as described in category 3.

Category 4: All Other User Commands

DCCTFPR performs a hashing search to determine whether a hashing entry exists for the table named in the Request Area.

Class A: No Hashing Entry

DCCTFPR returns to DCCTPPR and a return code 05(001) is given to the application.

Class B: Hashing Entry Found

If it finds an entry, DCCTFPR checks to see if the system generation options specify skipping closed URTs (see SKIPURT= (see page 32)).

- If SKIPURT=YES and the URT is closed, DCCTFPR looks for the next hashing entry (if any) and repeats the procedure from the beginning for this class.

- If the URT is open or if SKIPURT=NO, DCCTFPR compares the table name in the hashing entry to the table name in the Request Area.

Case 1:

Table Names Do Not Match

DCCTFPR looks for another hashing table entry and repeats the logic from the beginning of this section.

Case 2:

Table Names Match

DCCTFPR checks whether SYNONYM=YES is specified in the URT DBURTBL macro for that table.

SYNONYM Not Specified or SYNONYM=NO

If the URT does not specify SYNONYM or specifies SYNONYM=NO, DCCTFPR moves the DBID to the Request Area and returns the URT's ID to DCCTPPR.

SYNONYM=YES Specified

If the URT does specify SYNONYM=YES, DCCTFPR compares the DBID specified in the Request Area to the DBID in the URT as follows:

- ■ If the DBIDs match, DCCTFPR returns this URT's ID for additional processing.

- ■ If the DBIDs do not match, DCCTFPR checks for another hashing table entry and repeats the logic from the beginning of this section.

Writing Your Own URT Selection Module

Due to the additional complexity and integrity issues, this function is no longer supported in CA Datacom CICS Services Version 14.0. If your site needs this function, call Sustaining Engineering to help create a prefix exit instead.

Modifying the Standard Selection Module

You can prefix (a suffix is not allowed) DCCTFPR with a user exit routine for security, accounting, or other purposes. You can add a prefix exit module to the standard selection module to place either the character representation of the database ID or the table name in the Request Area, but do not modify Register zero (R0).

Verify that these exits are RENT.

Prefix Exit Routines

Use the guidelines shown on the following pages when writing a prefix to DCCTFPR.

Note: The following is a display of sample member DCCTFAA in the library.

```
*ASM XOPTS(CICS,FE,SPIE,OP,NOPROLOG,NOEPILOG)
DCCTFAA  AMODE 31
DCCTFAA  RMODE ANY
         TITLE 'DCCTFAA   URT SELECTION ROUTINE - PREFIX '
         WXTRN  DCCTFPR
         COPY   CIDCTC30
**********************************************************************
*      COPYBOOKS ARE CIDCTF30 CIDCTG30 CIDCTC30                      *
*         CIDCTC30 HAS ADDITION INFORMATION ON REGISTERS CONVENTION  *
*           AND OTHER CONSIDERATIONS ON WRITING DCCTRPR USER EXITS   *
*         CIDCTF30 CONTAIN THE BELOW FIELDS IN EXTENDED EIS          *
*         CIDCTG30 IS PRIMARY FOR WRITING A DCCTFPR                  *
*             REPLACEMENT MODULE AND THEREFORE IS COMMENTED OUT IN   *
*             THIS VERSION; BUT IT IS IN THE MACLIB FOR REFERENCE    *
*   NEXT 4 LINES ALREADY EXIT IN COPYBOOK CIDCTF30 -  DO NOT ADD THEM *
*** USEREXIT  DS CL80      USE ANY STORAGE IN USEREXIT BYTES 9-80    *
***           ORG USEREXIT                                          *
*** SAVREG    DS  F         REG 11 MUST BE STORED  IN USEREXIT 1-4   *
*** ACCEADDR  DS  A         ADDRS OF ACEE IS PASSED IN USEREXIT 5-8  *
**********************************************************************
          PRINT OFF          DON'T PRINT MACROS
         DBCVTPR TYPE=DSECT,PGMID=DCCTFPR
         DFHUEXIT TYPE=RM
         DFHEISTG
         COPY CIDCTF30                          MODIFED 7/7/04
*        COPY CIDCTG30                          MODIFED 7/7/04
         PRINT GEN
         DFHEIEND
         COPY  DFHEIBLK
DFHEIPLR EQU   R13
DFHEIBR  EQU   R14
DCCTFAA  CSECT
         USING NTLSLOT,R4
         STM   R14,R12,12(R11)
         ST    R11,SAVREG       R13 POINTS TO THIS AREA
         USING DCCTFAA,R11
         LR    R11,R15
         B     OVERHEAD          NO.
```

```
*--------------------------------------------------------------------*
*    ADDRESSIBILITY TO DFHEISTG IS ALREADY SET IN REG 13             *
*--------------------------------------------------------------------*
           DC    48X'00' THE NAME DCCTFPR MUST BE 64 BYTE OFF OF ENTRY
           SPACE 3
        DCSTAMP PGMID=DCCTFPR,RELSLVL=3.0.0
OVERHEAD DS    0H
*
*
*          INSERT USER CODE HERE    BETWEEN OVERHEAD AND CALLCTF
*
*
CALLCTF  DS    0H
           L     R15,V(DCCTFPR)
           L     R11,SAVREG           ADDRESS OF SAVE AREA
           L     R14,12(,R11)
           LM    R0,R12,20(R11)       RELOAD REGISTERS
           BR    R15
           LTORG
           END   DCCTFAA
```

Include your prefix CSECT before the CA-provided DCCTFPR module when link editing the new DCCTFPR module.

Sample Link Edit (z/OS)

```
 // LKED EXEC PGM=HEWL
 // . . .
 // . . .
    ENTRY DCCTFAA
    INCLUDE DFHEAI              (from CICS library)
    INCLUDE DCCTFAA
    INCLUDE DCCTFPR
    NAME (DCCTFPR)
 /*
```

Sample Link Edit (VSE)

```
 //OPTION CATAL
   PHASE DCCTFPR,*
   INCLUDE DFHEAI              (from CICS library)
 // EXEC ASSEMBLY
        COPY DCCTFAA.A         (User Code)
 /*
   INCLUDE DCCTFPR             (User's Updated Version)
   ENTRY DCCTFAA
 // EXEC LNKEDT
```

CA Datacom/DB Access Exit (DCCTXPR)

Control is passed from CA Datacom CICS Services to an exit module (DCCTXPR) before and after CA Datacom CICS Services accesses CA Datacom/DB. (This exit is intended for use by "monitor-type" applications; most exit-related code should be placed in the standard DCCTFPR exit.)

CA provides a source copy in the Source Library created during the installation of this product. Add your code between the label D10000 and the BR 14 instruction. To determine if you are receiving control before or after CA Datacom/DB access, examine the contents of register 0.

User-Written Exit Criteria

The module containing your exit program must be named DCCTXPR. The exit module must adhere to the following guidelines:

- Entry point is the CSECT load name.

- Upon entry, the following registers are available.

Verify that these exits are RENT.

Register 0

The low-order (that is to say, rightmost) byte indicates whether the exit has occurred before or after calling CA Datacom/DB, as follows:

- 'F1'— Exit prior to calling CA Datacom/DB

- 'F2'— Exit after return from CA Datacom/DB

Register 1

Zero in the high-order bit indicates that the DBNTRY entry point is in use. Otherwise, the CA Datacom entry point is in use. The remainder of this register contains the address of the PARMLIST (contents described following) passed to CA Datacom/DB:

- A (Request Area)

- A (Work Area)

- An (Element List)

- A (Request Qualification Area)

Note: For address of UID area, subtract 4 from register 1.

Registers 2—8

Zeros.

Register 9

Address of the URT CA Datacom CICS Services used with CA Datacom/DB access.

Register 10

Zeros.

Register 11

Address of Register Save Area (18 fullwords).

Register 13

EIS (80-byte Work Area available for DCCTXPR use).

Register 14

Return Address.

Register 15

Start of USER Module.

■ Upon entry, save registers in area addressed by register 11 (R11).

■ Upon exit, restore registers from Register Save Area.

■ User may issue any CICS command.

Note: Threadsafe CICS commands should be considered as advantageous when considering making changes or adding code.

Chapter 18: Controlling Dynamic Plan Selection

CA Datacom CICS Services provides the capability to dynamically select plans when running an application program in the CICS environment. Plan selection starts at the beginning of each logical-unit-of-work (LUW) and is controlled by values specified in the Dynamic Plan Selection Table. You create the table by specifying parameter values to the CA Datacom CICS Services DCPLAN macro and then assembling the macro specifications. The table must be named DCTABPR for which a sample is delivered to you. For more information, see Sample JCL for Dynamic Plan Selection Table Assembly (see page 140).

Dynamic plan selection is implemented by replacing the AUTHID value associated with the plan. The substitution value is provided in the Dynamic Plan Selection Table. For example, if transaction ABCD is set (based on precompile values) to access plan PROD01.PLAN1 (AUTHID=PROD01,PLAN=PLAN1), and there exists an entry in the Dynamic Plan Selection Table for transaction ABCD, if the FROM AUTHID clause specifies PROD01, the AUTHID value is changed to reflect the value specified in the TO AUTHID clause.

CA Datacom CICS Services builds two sets of index tables after completing the Dynamic Plan Selection Table. The first index table built is for a transaction without a wildcard character specified. The second index table built is for a transaction with a wildcard character specified. CA Datacom CICS Services first uses a binary search to look for a match in the first index table. If the transaction ID is not found in the first index table, CA Datacom CICS Services uses a sequential search to scan the second index table. If the transaction ID or authorization ID is not defined in the Dynamic Plan Selection Table, CA Datacom CICS Services leaves the original authorization ID intact.

See also the descriptions of the DBCVTPR parameters AUTHID= (see page 19) and PLANSWI= (see page 30). The DBCVTPR AUTHID= parameter allows you to specify a system-level AUTHID. The DBCVTPR PLANSWI= parameter controls whether dynamic plan selection facilities are invoked.

This section contains the following topics:

DCPLAN Macro Parameters

Here are the DCPLAN macro parameters. For example JCL that shows the parameters in use, see Sample JCL for Dynamic Plan Selection Table Assembly (see page 140).

AUTHID=(*xxxxxxxx,yyyyyyyy*,R,*xxxxxxxx,yyyyyyyy*,R...)

Use this parameter to specify the AUTHID substitution value.

xxxxxxxx represents the old, or *from* AUTHID.

yyyyyyyy represents the new, or *to* AUTHID.

Both the *from* and the *to* AUTHID must be specified. The values specified must be complete, that is to say, wildcard characters are not allowed.

Specify R to denote the end of a replacement pair (R is required).

Valid Entries:

A valid AUTHID, not to exceed 18 alphanumeric characters.

Default Value:

(No default)

PLNEXIT=

Use this parameter to indicate whether a plan selection "exit" is to be invoked.

NO specifies no plan selection exit.

YES indicates the system-level plan selection exit is to be used.

Use PLNEXIT=*xxxxxxxx* with the TYPE=INIT parameter to define a system-level plan selection exit. To specify a unique plan selection exit for this set, specify PLNEXIT=*xxxxxxxx* with the other TYPE=ENTRY specifications. For more information about writing plan selection exit routines, see Dynamic Plan Selection Exit Routines (see page 143).

Valid Entries:

NO, YES, or the name (up to 8 alphanumeric characters) of the plan selection exit to be used.

Default Value:

NO

TYPE=

INIT must be specified first (and only once) to set up initialization values for the table. The only other parameter that may be specified together with TYPE=INIT is PLNEXIT=name (if applicable). In this case, PLNEXIT=name specifies the system-level plan selection exit name.

END must be specified last (and only once) to complete generation of the Dynamic Plan Selection Table. No other parameters can be specified with TYPE=END.

ENTRY creates the entries in the Dynamic Plan Selection Table. Specify TYPE=ENTRY as many times as needed to define the criteria for your Dynamic Plan Selection Table.

Valid Entries:

INIT, END, ENTRY

Default Value:

(No default)

TXID=*xxxx*

Defines the transaction identifier for which a switch in an AUTHID value may occur. The transaction ID can be specified as a unique value (that is to say, all four characters specified), or wildcard characters may be used to limit the number of entries that may be required to exist in the table. The following wildcard characters may be used:

?

A question mark means allow any character in this position to be accepted in selection determination.

*

An asterisk means ignore any characters in this and subsequent positions and use only the characters before the * (asterisk) in selection determination.

For example, D?Y? would include any transaction with D in the first position and Y in the third position of the transaction ID in the selection determination, while DB* would include any transaction beginning with DB in the selection determination.

Valid Entries:

Any combination of up to 4 alphanumeric characters, which may include the wildcard characters ? or * (a question mark or an asterisk).

Default Value:

(No default)

Sample JCL for Dynamic Plan Selection Table Assembly

The JOB, SYSLIB, and SYSLMOD statements in this JCL are for example only. Code these statements according to site standards.

z/OS Example JCL

```
//jobname  JOB   Job Statement Information
//*------------------------------------------------------------------*
//*           ASSEMBLE/LINK DYNAMIC PLAN SELECTION TABLE          *
//*------------------------------------------------------------------*
//ASM     EXEC PGM=ASMA90,PARM='NODECK,LOAD'
//SYSLIB   DD DSN=SYS1.MACLIB,DISP=SHR
//         DD DSN=CAI.THLQ.CAB1MAC,DISP=SHR
//SYSUT1   DD DSN=&.&SYSUT1.,UNIT=SYSDA,SPACE=(8800,(1200,100))
//SYSUT2   DD DSN=&.&SYSUT2.,UNIT=SYSDA,SPACE=(8800,(1200,50))
//SYSUT3   DD DSN=&.&SYSUT3.,UNIT=SYSDA,SPACE=(8800,(1200,50))
//SYSPRINT DD SYSOUT=*
//SYSPUNCH DD SYSOUT=*
//SYSGO    DD DSN=&.&OBJSET.,UNIT=SYSDA,SPACE=(80,(200,50)),
//            DISP=(MOD,PASS)
//SYSIN    DD *
        DCPLAN TYPE=INIT,PLNEXIT=DCPLNPR
        DCPLAN TYPE=ENTRY,TXID=DBCC,                             X
            AUTHID=(YU3,YU4,R,YU,YU1,R)
        DCPLAN TYPE=ENTRY,TXID=(0001,0002,0003,0004,0005,0006,0007),  X
            AUTHID=(AAAAAA,HURL101,R)
        DCPLAN TYPE=ENTRY,TXID=10*,PLNEXIT=DCPLN10,              X
            AUTHID=(YU$DA,HURLO,R)
        DCPLAN TYPE=ENTRY,TXID=(2001,?0?2,2*),PLNEXIT=NO,        X
            AUTHID=(YU$D301,HURL301,R,YU$D302,HURL302,R)
        DCPLAN TYPE=ENTRY,TXID=(3003,3004,3005),PLNEXIT=YES,     X
            AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(4003,4004,4005),PLNEXIT=YES,     X
            AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(5003,5004,5005),PLNEXIT=YES,     X
            AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(6003,6004,6005),PLNEXIT=YES,     X
            AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(7003,7004,7005),PLNEXIT=YES,     X
            AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(8003,8004,8005),PLNEXIT=YES,     X
            AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=END
        END
```

```
/*
//*
//LKED   EXEC PGM=IEWL,PARM='XREF,LET,LIST,NCAL',COND=(8,LT,ASM)
//SYSLIN    DD DSN=&.&OBJSET.,DISP=(OLD,DELETE)
//          DD DDNAME=SYSIN
//SYSUT1    DD DSN=&.&SYSUT1.,UNIT=SYSDA,SPACE=(1024,(50,20))
//SYSPRINT  DD SYSOUT=*
//SYSLMOD   DD DSN=CAI.CHLQ.CUSLIB,DISP=SHR
//SYSIN     DD *
 NAME DCTABPR(R)
/*
//
```

z/VSE Example JCL

```
* $$ JOB   JNM=ASSEMBLE,CLASS=A
* $$ LST   CLASS=A
// JOB     ASSEMBLE
// DLBL    BASE,'customer.designated.DBC.install.library',99/365
// EXTENT  SYS009,vvvvvv
// ASSGN   SYS009,DISK,VOL=vvvvvv,SHR
// LIBDEF  *,SEARCH=BASE.DBC140
// LIBDEF  *,CATALOG=users.DBC140
// OPTION  CATAL,NODECK,XREF,LIST
   PHASE   DCTABPR,*
// EXEC ASSEMBLY
        PRINT GEN
        DCPLAN TYPE=INIT,PLNEXIT=DCPLNPR
        DCPLAN TYPE=ENTRY,TXID=DBCC,                               X
              AUTHID=(YU3,YU4,R,YU,YU1,R)
        DCPLAN TYPE=ENTRY,TXID=(0001,0002,0003,0004,0005,0006,0007),  X
              AUTHID=(AAAAAA,HURL101,R)
        DCPLAN TYPE=ENTRY,TXID=10*,PLNEXIT=DCPLN10,                X
              AUTHID=(YU$DA,HURLO,R)
        DCPLAN TYPE=ENTRY,TXID=(2001,?0?2,2*),PLNEXIT=NO,          X
              AUTHID=(YU$D301,HURL301,R,YU$D302,HURL302,R)
        DCPLAN TYPE=ENTRY,TXID=(3003,3004,3005),PLNEXIT=YES,       X
              AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(4003,4004,4005),PLNEXIT=YES,       X
              AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(5003,5004,5005),PLNEXIT=YES,       X
              AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(6003,6004,6005),PLNEXIT=YES,       X
              AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(7003,7004,7005),PLNEXIT=YES,       X
              AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=ENTRY,TXID=(8003,8004,8005),PLNEXIT=YES,       X
              AUTHID=(YU$D401,HURL401,R,YU$D402,HURL402,R)
        DCPLAN TYPE=END
        END
/*
// EXEC LNKEDT,PARM='MSHP'
/*
/&
* $$ EOJ
```

Dynamic Plan Selection Exit Routines

CICS transactions can dynamically select a plan for execution by using a dynamic plan selection exit routine. By specifying PLNEXIT= with the TYPE=INIT statement, the same exit program can be specified for all Dynamic Plan Selection Table (DCTABPR) entries. Link edit the exit program into the CA Datacom CICS Services library that contains custom modules and is concatenated in the CICS startup JCL.

Note: To use this optional feature you must first assemble and link edit this exit. This program must be made Resident.

Specifying the Routine

To use a dynamic plan selection exit routine, specify the exit program's name in the Dynamic Plan Selection Table (DCTABPR). The three-step process is:

1. Code an exit program (Sample Exit Program (see page 145)). A sample is delivered to you.

2. Define the exit program to CICS by either using resource definition online (RDO) or by updating and reassembling the CICS System Definition data set (CSD).

3. Use the plan exit parameters you have chosen to update and reassemble the Dynamic Plan Selection Table (DCTABPR).

The exit program changes the plan that is to be allocated by changing the AUTHID value associated with the plan.

Coding the Plan Selection Exit Program

By using a plan selection exit program, the AUTHID value associated with the plan can be dynamically modified prior to command execution. The exit program is a user-written, command-level program. If each exit program is defined in the CICS tables, you can have a separate exit program for one or more Dynamic Plan Selection Table (DCTABPR) entries. For an example you can use when coding your own exit program, see Sample Exit Program (see page 145). Requirements are as follows:

1. Must be a command-level program adhering to normal CICS conventions.

2. Must be written in a language supported by CICS, for example Assembler, COBOL, PL/I (and other CICS-supported languages).

3. Must establish addressability and update the parameter list (if necessary)—standard CICS command-level conventions are used to establish addressability to the parameter list (DFHCOMMAREA).

4. Can change the authorization identifier (AUTHID) value associated with the plan as passed in the exit parameter list.

5. Must not contain any SQL statements.

6. Must be terminated by an EXEC CICS RETURN command.

Exit Parameter List

A parameter list is passed to the exit program in DFHCOMMAREA when CA Datacom CICS Services links to the exit program. The following table shows the contents of the parameter list.

Name	'Hex' Offset	Data Type and Length	Description
CSPLAN	0	character 8 bytes	Plan name of the first SQL statement on entry to the exit program.
CSAUTHID	7	character 18 bytes	Current authorization ID that is invoked at execution time. This field is to be modified by the exit program to establish the use of a new plan (AUTHID plan).
CSUSER	19	character 4 bytes	User area reserved for the exit program's use. This field is preserved between calls to the exit program.

The CSUSER area function and use are intentionally general in nature. For example, CSUSER can be used to address a special user table or a CICS GETMAIN area. Each DCPLAN entry (with PLNEXIT=YES) has a unique CSUSER area.

DCTABPR Changes

Consider the following with regard to DCTABPR's PLNEXIT= parameter when you implement a dynamic plan selection routine:

■ When you have DCPLAN TYPE=INIT:

    PLNEXIT=*xxx*

        Specifies the name of a system-level dynamic plan exit program.

■ When you have DCPLAN TYPE=ENTRY:

    PLNEXIT=*xxx*

        Specifies a plan exit at the transaction level.

    PLNEXIT=YES

        Specifies to use the system-level plan exit.
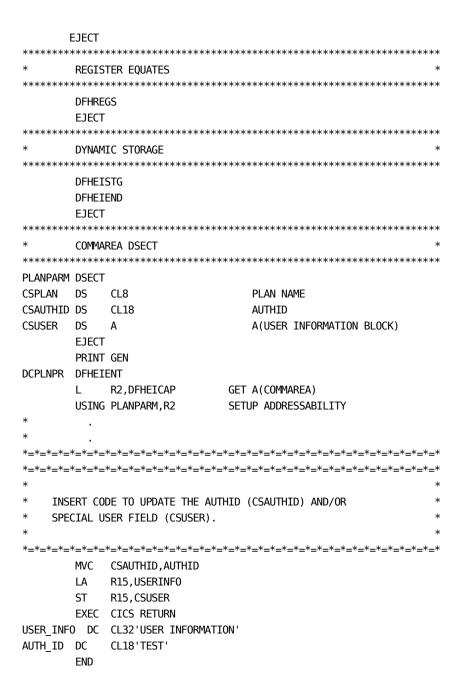
Design Consideration for Dynamic Plan Selection

For transactions designed without CICS SYNCPOINTs, dynamic plan selection is only available once (at first SQL call) during the life of the transaction. For transactions designed with CICS SYNCPOINTs, the exit is invoked for each new logical-unit-of-work (LUW).

Sample Exit Program

Following is a sample plan selection exit program that you can use as a model to design your own plan selection exit routine(s).

```
*ASM XOPTS(NOEIPLOG,NOPROLOG)
        TITLE  'DCPLNPR - SAMPLE DYNAMIC PLAN EXIT'
*************************************************************************
* MODULE NAME=  DCPLNPR                                                 *
*                                                                       *
* DESCRIPTIVE NAME=SAMPLE DYNAMIC PLAN EXIT                             *
*                                                                       *
* FUNCTION=                                                             *
*     SAMPLE USER EXIT PROGRAM USED TO DYNAMICALLY MODIFY               *
*     AUTHORIZATION ID                                                  *
*                                                                       *
* NOTES=                                                                *
*     RESTRICTIONS=  NONE                                               *
*     DISPATCHING =  RUNS UNDER CICS DISPATCHER                         *
*                                                                       *
*     REGISTER CONVENTIONS=                                             *
*         R2 =  PLANPARM           COMMAREA  (PARAMETER LIST)           *
*         R3 =  CODEREG            BASE REGISTER                        *
*         R11 = EIBREG             REGISTER TO ADDRESS THE EIB          *
*         R13 = DATAREG            DYNAMIC STORAGE REGISTER             *
*                                                                       *
* MODULE TYPE=  CICS/VS                                                 *
*                                                                       *
*     PROCESSOR=   ASSEMBLER F                                          *
*                                                                       *
*     ATTRIBUTES= RE-ENTRANT                                            *
*                                                                       *
* INPUT=                                                                *
*  SYMBOLIC LABEL/NAME= DFHEICAP  (COMMONAREA)                          *
*  DESCRIPTION= DYNAMIC PLAN PARAMETER LIST                             *
*                                                                       *
* OUTPUT=                                                               *
*  SYMBOLIC LABEL/NAME= PLANPARM                                        *
*  DESCRIPTION= DYNAMIC PLAN PARAMETER LIST                             *
*                                                                       *
*     CONTROL BLOCKS=                                                   *
*         EIB           CICS COMMAND LEVEL INTERFACE BLOCK              *
*                                                                       *
* MACROS=                                                               *
*   DFHREGS - STANDARD CICS/VS REGISTER EQUATES  (R0-RF)                *
*   EXEC CICS COMMANDS - FOR CICS SERVICES                              *
*                                                                       *
*************************************************************************
```

```
        EJECT
***********************************************************************
*        REGISTER EQUATES                                             *
***********************************************************************
        DFHREGS
        EJECT
***********************************************************************
*        DYNAMIC STORAGE                                              *
***********************************************************************
        DFHEISTG
        DFHEIEND
        EJECT
***********************************************************************
*        COMMAREA DSECT                                               *
***********************************************************************
PLANPARM DSECT
CSPLAN   DS    CL8              PLAN NAME
CSAUTHID DS    CL18             AUTHID
CSUSER   DS    A                A(USER INFORMATION BLOCK)
        EJECT
        PRINT GEN
DCPLNPR  DFHEIENT
        L     R2,DFHEICAP      GET A(COMMAREA)
        USING PLANPARM,R2      SETUP ADDRESSABILITY
*          .
*          .
*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*
*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*
*                                                                   *
*    INSERT CODE TO UPDATE THE AUTHID (CSAUTHID) AND/OR             *
*    SPECIAL USER FIELD (CSUSER).                                   *
*                                                                   *
*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*=*
        MVC   CSAUTHID,AUTHID
        LA    R15,USERINFO
        ST    R15,CSUSER
        EXEC  CICS RETURN
USER_INFO  DC  CL32'USER INFORMATION'
AUTH_ID  DC   CL18'TEST'
        END
```

Appendix A: CICS Trace Table Entries

When an application program abends, a CICS transaction dump is produced. This dump contains Trace Table entries which may aid you in determining the source of the abend. CA Datacom CICS Services issues a USER TRACE entry for each user entering or exiting CA Datacom CICS Services.

An abend between the issue of the USER 186 TRACE and the USER 188 TRACE indicates a CA Datacom CICS Services problem unless the CICS ABCODE is USER. Also, these entries can be written to the CICS Auxiliary File (even if there is no dump involved) when (or while) the CICS AUXTRACE is set ON.

Note: Make sure that both the SIT parameter value USERTR=ON and the DBCVTPR parameter CICSTRA=YES are specified, or the USER 186/188 TRACE entries are suppressed.

See USER 186/188 TRACE Entry Layout (see page 147) for information about the USER 186/188 TRACE entry layout, and see Example Report (see page 148) for a sample report.

USER 186/188 TRACE Entry Layout

The layout for the USER 186/188 TRACE entries follows:

Columns	Function	Description
Bytes 1-4	Trace type	186. For USER 186 before call to CA Datacom/DB, or 188. For USER 188 after call to CA Datacom/DB.
Bytes 5-22	Request Area	First 18 bytes of the Request Area (command-5, table-3, keyname-5, return code-2, internal return code-1B, DBID-2B). Internal Return Code and DBID can only be seen in a Level 2 trace entry and are valid only on USER 188.
Bytes 23,24	URT#	The URT number in binary valid only on U188 and can only be seen in a Level 2 trace entry.
Bytes 37-47	Monitor	CA Datacom/DB monitor info (TRANID-4, TERMID-4, OPID-3).
Bytes 49-56	MUFNAME	This is only valid on U188 entry and is the CA Datacom/DB job name.
Bytes 65-68	TASKID	TASKID-4P can only be seen in Level 2 trace entry.

Example Report

Examples of the USER 186/188 TRACE entries are shown in the following sample report. The example shows one CA Datacom/DB request call to the CA Datacom CICS Services from the start of the request to the return of the request in Level 1 tracing. The bottom part of the example is the Level 2 tracing for the USER 186 and the USER 188 for this same request.

```
CICS/ESA  -  AUXILIARY TRACE FROM 08/01/04  -  TIME OF FIRST ENTRY ON THIS PAGE 17:23:40.8023346879              PAGE 000015

00030 QR    AP 2520 ERM   ENTRY ASSEMBLER-APPLICATION-CALL-TO-TRUE(DBNTRY  )                                      =043236=
00030 QR    SM 0C01 SMMG   ENTRY GETMAIN              710,YES,00,TASK                                             =043236=
00030 QR    SM 0C02 SMMG   EXIT  GETMAIN/OK           13200A78                                                    =043237=
00030 QR    AP 00E1 EIP    ENTRY ASSIGN                                       0004,13200A88 ...h,08000208 ....    =043238=
00030 QR    AP 00E1 EIP    EXIT  ASSIGN               OK                      00F4,00000000 ....,00000208 ....    =043239=
00030 QR    AP 00E1 EIP    ENTRY ASKTIME-ABSTIME                              0004,13200A88 ...h,08004A02 ..¢.    =043240=
00030 QR    AP 00E1 EIP    EXIT  ASKTIME-ABSTIME      OK                      00F4,00000000 ....,00004A02 ..¢.    =043241=
00030 QR    AP 00E1 EIP    ENTRY ENTER-TRACENUM                              0004,13200A88 ...h,08004802 ....    =043242=
00030 QR    AP 00BA USER   EVENT APPLICATION-PROGRAM-ENTRY DCCTPPR 186.REDLEPMFSTZIP .......0.8OZ.....DBACC00180Z.DSL2MU10 =043243=
00030 QR    AP 00E1 EIP    EXIT  ENTER-TRACENUM       OK                      00F4,00000000 ....,00004802 ....    =043244=
00030 QR    SM 0C01 SMMG   ENTRY GETMAIN              765,YES,00,TASK                                             =043245=
00030 QR    SM 0C02 SMMG   EXIT  GETMAIN/OK           13201198                                                    =043246=
00030 QR    AP 00E1 EIP    ENTRY WAIT-EVENT                                   0004,132011A8 ...y,08001202 ....    =043247=
00030 QR    SM 0401 SMSR   ENTRY INQUIRE_ACCESS       13E5D5C0,1                                                  =043248=
00030 QR    SM 0402 SMSR   EXIT  INQUIRE_ACCESS/OK    ESDSA,CICS                                                  =043249=
00030 QR    DS 0004 DSSR   ENTRY WAIT_OLDW            EKCWAIT,13E5D5C0,NO,MISC,SINGLE                             =043250=
00030 QR    DS 0005 DSSR   EXIT  WAIT_OLDW/OK                                                                     =043251=
00030 QR    AP 00E1 EIP    EXIT  WAIT-EVENT           OK                      00F4,00000000 ....,00001202 ....    =043252=
00030 QR    SM 0D01 SMMF   ENTRY FREEMAIN             13201198                                                    =043253=
00030 QR    SM 0D02 SMMF   EXIT  FREEMAIN/OK          USER storage at 13201198                                   =043254=
00030 QR    AP 00E1 EIP    ENTRY ASKTIME-ABSTIME                              0004,13200A88 ...h,08004A02 ..¢.    =043255=
00030 QR    AP 00E1 EIP    EXIT  ASKTIME-ABSTIME      OK                      00F4,00000000 ....,00004A02 ..¢.    =043256=
00030 QR    AP 00E1 EIP    ENTRY ENTER-TRACENUM                              0004,13200A88 ...h,08004802 ....    =043257=
00030 QR    AP 00BC USER   EVENT APPLICATION-PROGRAM-ENTRY DCCTRPR 188.REDLEPMFSTZIP ........8OZ.....DBACC00180Z.DSL2MU10 =043258=
00030 QR    AP 00E1 EIP    EXIT  ENTER-TRACENUM       OK                      00F4,00000000 ....,00004802 ....    =043259=
00030 QR    SM 0D01 SMMF   ENTRY FREEMAIN             13200A78                                                    =043260=
00030 QR    SM 0D02 SMMF   EXIT  FREEMAIN/OK          USER storage at 13200A78                                   =043261=
00030 QR    AP 2521 ERM    EXIT  ASSEMBLER-APPLICATION-CALL-TO-TRUE(DBNTRY  )                                     =043262=




AP 00BA USER  EVENT - APPLICATION-PROGRAM-ENTRY - DCCTPPR  -  186.REDLEPMFSTZIP  .......0.8OZ.....DBACC00180Z.DSL2MU10

            TASK-00030 KE_NUM-002E TCB-QR   /007D0510 RET-80083028 TIME-12:03:16.6882200317 INTERVAL-00.0000006875   =043243=
              1-0000  E4E2C5D9 404040                                                    *USER
              2-0000  F1F8F600 D9C5C4D3 C5D7D4C6 E2E3E9C9  D7404000 00010000 0048F000 F8D6E900 *186.REDLEPMFSTZIP  .......0.8OZ.
                0020  00000000 C4C2C1C3 C3F0F0F1 F8D6E900  C4E2D3F2 D4E4F1F0 40404040 40404040 *....DBACC00180Z.DSL2MU10
                0040  0000030C 1320023F 00000000 D5950000  0104232F 0120316F BBB1435B 62ADB002 *............Nn.........?...$....
                0060  00330190 5796680C                                                 *.....o..
              3-0000  C4C3C3E3 D7D7D940                                                 *DCCTPPR

AP 00BC USER  EVENT - APPLICATION-PROGRAM-ENTRY - DCCTRPR  -  188.REDLEPMFSTZIP   ........8OZ.....DBACC00180Z.DSL2MU10

            TASK-00030 KE_NUM-002E TCB-QR   /007D0510 RET-80083028 TIME-12:03:16.6882915161 INTERVAL-00.0000004843   =043258=
              1-0000  E4E2C5D9 404040                                                    *USER
              2-0000  F1F8F800 D9C5C4D3 C5D7D4C6 E2E3E9C9  D7404040 00010001 01480000 F8D6E900 *188.REDLEPMFSTZIP   ........8OZ.
                0020  00000000 C4C2C1C3 C3F0F0F1 F8D6E900  C4E2D3F2 D4E4F1F0 40404040 40404040 *....DBACC00180Z.DSL2MU10
                0040  0000030C 1320023F 00000000 D5950000  0104232F 0120316F BBB1435B 62B1E142 *............Nn.........?...$....
                0060  00330190 5796680C                                                 *.....o..
              3-0000  C4C3C3E3 D9D7D940                                                 *DCCTRPR
```

Appendix B: Additional Monitoring and Debugging Tools

The following information about the Auxiliary Trace Facility can prove useful in some troubleshooting situations.

Auxiliary Trace Facility

The CA Datacom Trace Facility enables you to monitor all or selected events in your CICS CA Datacom environment. The same type of information you can view by issuing a DBOC/DBIC TASK transaction is collected in the CA Datacom/DB Trace Table. The DBOC/DBIC TASK transaction only displays the task or tasks that are active at the moment you request the report.

The Trace Facility provides history data for the last specified number of events. The number of events for which the data is maintained in the CA Datacom/DB Trace Table can be modified in the TRACE= parameter of the DBCVTPR macro.

The procedure for using the Trace Facility includes the following steps:

1. Display the current system generation options for the trace parameters using either a DBIC or DBOC transaction to check the AUXTRACE= and the TRACE= parameters of the DBCVTPR macro. See INQ=GENOPTS: Displaying System Generation Options in the *User Guide*, and the DBCVTPR (see page 19) in the *System Reference Guide*.

2. See the sample installation JCL in the *Installation Guide for z/OS*. If the CA Datacom/DB Trace Facility was not set up at CA Datacom CICS Services installation, see the information about allocating DBOC Log Areas and Auxiliary Trace Data Sets in the *Installation Guide for z/OS*.

3. Display a list of the current trace criteria using either a DBIC or DBOC transaction. See TRACE: Displaying Trace Criteria List in the *User Guide*.

4. Establish or revise the trace criteria. See Adding/Deleting Trace Criteria.

5. Establish the trace list relationships with AND/OR Boolean qualifiers. See Establishing Trace Criteria Relationship.

6. If the Trace Facility is not automatically started at CA Datacom CICS Services startup, turn it on.

7. Display the Trace Table using either a DBIC or a DBOC transaction.

8. Turn the Trace Facility off.

9. Print the Trace Table. See the information about using the AUXTRACE Utility in the *System Reference Guide*.

Appendix C: Logging (LXX) Considerations and Differences

For applications that update only one CA Datacom/DB MUF and do not access any other resource managers such as VSAM, DB2, and so on, with regard to logging considerations there is no effective difference between Version 14.0 and the previous releases of CA Datacom CICS Services. But a CICS SYNCPOINT is substituted for the original LOG command. This in turn generates a LOG command to CA Datacom/DB. However, it is slightly different beginning in Version 14.0 for transactions and applications that update multiple resources such as a second CA Datacom/DB MUF, using the Log Area (LXX) for logging, because of the use of two-phase commit. Doing updates on two CA Datacom/DB MUFs or on one MUF and another resource such as VSAM or DB2, means using multiple resource managers. Therefore, the potential exists for two physical I/Os to the LXX instead of one. That is, one I/O is for the Prepare phase and one I/O is for the Commit phase. In CA Datacom CICS Services r2.6, there was only one physical I/O to the LXX, even for a two-phase commit. In CA Datacom/DB 11.0 and higher, true two-phase commit protocol was introduced which means two physical I/Os. The number of two-phase commits has been increased beginning in Version 14.0 by converting simple user log commands to SYNCPOINTs.

You should therefore consider possible performance overhead in writing more I/Os to the LXX. There may be a slight size increase required for the extra LXX records as well. Also, user issued log commands will generally produce more LXX I/Os than in releases prior to 14.0. For more information, see CICS Emergency Restart Environmental Considerations (see page 68).

Appendix D: URT Connections Table

These three tables show the relationships of the URTs to DBCSID types. They also show the behavior of the OPENs/CLOSEs and CONNECTs/DISCONNECTs.

Table 1

For this table, assume that all URTs are UNOPENED, and all CONNECTIONs are MUFs and UNCONNECTED. Also assume the transaction is *not* a DBOC/DBEC OPEN URT. An application request (implicit OPEN) then drives the OPENs/CONNECTs in the following manner:

	PLT CONNECT	AUTO CONNECT	DEFER CONNECT
PLT URT	drive a CONNECT drive an OPEN URT	drive a CONNECT drive an OPEN URT	would not CONNECT would not OPEN URT
AUTO URT	drive a CONNECT drive an OPEN URT	drive a CONNECT drive an OPEN URT	would not CONNECT would not OPEN URT
DEFER URT	would not CONNECT would not OPEN URT	would not CONNECT would not OPEN URT	would not CONNECT would not OPEN URT

Note: All implicit CONNECTs drive OPENs for all PLT URTs for that specific CONNECTION.

Table 2

For the following table, assume that all URTs are UNOPENED and, all MUFs are UNCONNECTED. If the transaction is then an explicit OPEN URT (DBOC/DBEC), it drives the OPENs/CONNECTs in the following manner:

	PLT CONNECT	AUTO CONNECT	DEFER CONNECT
PLT URT	drive a CONNECT drive an OPEN URT	drive a CONNECT drive an OPEN URT	would not CONNECT would not OPEN URT
AUTO URT	drive a CONNECT drive an OPEN URT	drive a CONNECT drive an OPEN URT	would not CONNECT would not OPEN URT
DEFER URT	drive a CONNECT drive an OPEN URT	drive a CONNECT drive an OPEN URT	would not CONNECT would not OPEN URT

Table 3

Note: All explicit CONNECTs (DBEC/DBOC) *do not* drive OPENs for any PLT URTs for that specific CONNECTION.

Table 3

Table 3

For the following table, assume that the DBOC STARTUP has already run, all PLT-type CONNECTIONs are CONNECTED, and all PLT-type URTs are OPENED. The following table then displays the status after a successful STARTUP. It also indicates the actions required to OPEN the URTs that are still UNOPENED:

	PLT CONNECT	AUTO CONNECT	DEFER CONNECT
PLT URT	already CONNECTED already OPENED URT	already CONNECTED already OPENED URT	would not CONNECT explicit OPEN would not OPEN implicit OPEN would not OPEN requires explicit CONNECT followed by an implicit or explicit OPEN URT
AUTO URT	already CONNECTED would not OPEN URT requires implicit or explicit OPEN URT	would not CONNECT would not OPEN URT requires implicit or explicit OPEN URT	would not CONNECT explicit OPEN would not OPEN implicit OPEN would not OPEN requires explicit CONNECT followed by an implicit or explicit OPEN URT
DEFER URT	already CONNECTED requires explicit OPEN URT	would not CONNECT would not OPEN URT requires explicit CONNECT followed by an implicit or explicit OPEN URT	would not CONNECT explicit OPEN would not OPEN implicit OPEN would not OPEN requires explicit CONNECT followed by explicit OPEN URT

Appendix E: User Issued Log Commands

The following CA Datacom/DB log commands require special consideration.

- COMIT
- LOGCP
- LOGCR
- LOGDR
- LOGDW
- LOGIT
- LOGLB
- LOGTB
- ROLBK

This section contains the following topics:

Spawning

There is no spawning in CA Datacom/DB Version 14.0 and CA Datacom CICS Services Version 14.0. Whenever possible, applications should avoid issuing the CA Datacom/DB log commands. Instead, use the appropriate EXEC CICS SYNCPOINT or EXEC CICS SYNCPOINT ROLLBACK. This recommendation is based on keeping all the resources of the transaction in synchronization with each other.

Checkpointing

Starting in CA Datacom CICS Services Version 14.0, all user issued CA Datacom/DB log commands that checkpoint user data (COMIT, ROLBK, LOGCP, LOGCR, and LOGTB) are replaced with a CICS SYNCPOINT or CICS SYNCPOINT ROLLBACK. This is needed to help ensure data integrity between resource managers within a single transaction. There are no exceptions.

Mixed Releases

Applications issuing LOGCP, LOGCR, COMIT, ROLBK, or LOGTB cannot run with mixed releases of CA Datacom/DB MUF Version 12.0 and Version 14.0 in the same CICS. This is another reason for using CICS SYNCPOINT.

Note: You can run with mixed releases of CA Datacom/DB Version 12.0 and CA Datacom CICS Services Version 14.0.

Not Replaced

LOGIT, LOGLB, LOGDR, and LOGDW do not checkpoint user data, therefore they are not replaced with a CICS SYNCPOINT.

Exclusive CA Datacom/DB Applications

For exclusive CA Datacom/DB applications that have no other user data resource managers, there is no effective change, but CA Datacom CICS Services Version 14.0 issues a SYNCPOINT(ROLLBACK) instead. In some cases where no locks or updates occurred, then no internal log command is issued to CA Datacom/DB. But for those applications where there are additional user data resource managers involved, a SYNCPOINT or SYNCPOINT ROLLBACK occurs against all resources, not just against CA Datacom/DB. In previous releases only CA Datacom/DB would be affected by the user log command. Therefore, an application issuing a user log command in CA Datacom CICS Services Version 14.0 results in SYNCPOINT of all other data resources involved in this transaction including DB2 and VSAM.

Migration

Careful consideration must be made before migrating a production environment from r11 to Version 14.0 that contains user issued log commands.

Primary and Secondary Exclusive Control

The LOGCP command allows primary exclusive control to cross a SYNCPOINT boundary.

Primary exclusive control is requested with a command that acts as a prerequisite for the UPDAT and DELET commands, such as RDUKX or SELFR with UPDATE-INTENT=Y. Primary exclusive control is dropped when the record is updated or deleted or released with the RELES or RELFL commands.

Secondary exclusive control is the enqueuing of logical records that takes place when a transaction backout task issues a maintenance request, such as add, update or delete. When a transaction backout batch job or online task updates rows, these rows are not available to any other task until the batch job or online task has finished or has taken a checkpoint. In general, if another task issues an update read for a row updated by this batch job or online task, then that task must wait for the batch job or online task to complete or checkpoint. This means an online processor may have to wait for a batch job to finish.

Command Processing

CA Datacom CICS Services Version 14.0 still supports legacy applications issuing user log commands LOGCP, LOGCR, and LOGTB. Version 14.0 still issues the SYNCPOINT or SYNCPOINT ROLLBACK, but preserves the log command's original intent. The following is a detailed explanation for each user issued log command.

CA Datacom CICS Services can support connections to several different CA Datacom/DB MUFs in the same CICS. The desired connections are described by listing the SIDs that point to the various CA Datacom/DB MUFs and are compiled in the DBCVTPR assembly. The first one in the list is known as MUF01 and is the default CA Datacom/DB MUF.

In this section all nine user-issued log commands are listed, however LOGCP and LOGCR each have two sections, one with a meaningful work area and one without a meaningful work area. View the one which is applicable to your application.

Each command section contains the following:

- Connection conditions

- Required connections

- Action taken

- Return code conditions and what happens

- Variations based on number of resource managers involved

- Whether threads are locked

■ Whether exclusive control is retained

This section does not describe what the commands mean. For command meanings, see the CA Datacom/DB manuals.

COMIT

COMIT is replaced with an EXEC CICS SYNCPOINT. If there are any errors during the SYNCPOINT, this info is passed back in the DB RC of the user's application request area, and a backout occurs. Except the backout cannot occur if the error occurred during Phase 2. In this case, the records are to be committed.

When no updates have occurred and no records are locked for update, SYNCPOINT is still issued but no internal log request is sent to the CA Datacom/DB MUF.

If at the time the application issues the user COMIT request, there are update requests on multiple resource managers, then CICS SYSNCPOINT invokes a two-phase commit. If threads are locked, both the CA Datacom/DB thread and the corresponding CA Datacom CICS Services thread are released. All record locks are released.

LOGCP Replaced

LOGCP with a work area of 8 bytes of low-values or 8 blanks, is replaced with an EXEC CICS SYNCPOINT. However, the primary locks with primary exclusive control, remain in effect after the SYNCPOINT, just as in previous releases without the SYNCPOINT.

If there are any errors during the SYNCPOINT, this info is passed back in the DB RC of the user's application request area and a backout occurs.

If no updates have occurred and there are no record locks, then the SYNCPOINT is still issued but no internal log request is sent to CA Datacom/DB MUF.

If there are update type requests on multiple resource managers at the time the application issues the user LOGCP request with a work area of binary zeros or blanks, then CICS SYSNCPOINT results in a two-phase commit.

The CA Datacom/DB threads and the corresponding CA Datacom CICS Services threads are not released for a LOGCP request that has a work area of binary zeros or blanks if there are any primary exclusive controls in effect at the time of the request. Otherwise, the threads are released on any locked thread connections to a CA Datacom/DB MUF where all primary exclusive control associated with this task on this MUF has been dropped due to updates or releases.

LOGCP as a Reference Point

LOGCP with a work area other than 8 bytes of low-values or 8 blanks is a forward-looking command. Therefore it is a reference point command and the default CA Datacom/DB MUF must be involved in the SYNCPOINT. Likewise as in the case of the LOGIT or LOGLB, if the default CA Datacom/DB MUF is not connected, a DB RC 36 is returned to the application without issuing the SYNCPOINT even if there are other CA Datacom/DB MUFs connected. The primary exclusive control locks remain in effect after the SYNCPOINT, just as in previous releases without the SYNCPOINT.

If no updates and no record locks for update have occurred, then the SYNCPOINT is still issued and an internal log request is sent to the default CA Datacom/DB MUF.

If any resource other than the default CA Datacom/DB MUF (MUF01) had record updates or locks this automatically becomes a two-phase commit, even if there were no record locks or updates on the default CA Datacom/DB. This includes a non-default CA Datacom/DB, DB2, or other database.

CA Datacom/DB and CA Datacom CICS Service threads remain locked after the SYNCPOINT. They are not released, but all updated record locks and secondary exclusive controls are released. The CA Datacom CICS Services and CA Datacom/DB threads are not released until after a future SYNCPOINT, task termination, or task ABEND.

LOGCR as a COMIT

LOGCR with a work area of 8 bytes of low-values or 8 blanks, is treated like a COMIT. It is replaced with an EXEC CICS SYNCPOINT. If there are any errors during the SYNCPOINT, this info is passed back in the DB RC of the user's application request area and a backout occurs.

If no updates have occurred and no records are locked for update, the SYNCPOINT is still issued but no internal log request is sent to the CA Datacom/DB MUF.

If there are update requests on multiple resource managers at the time the application issues the user LOGCR request with a work area of binary zeros or blanks, then the CICS SYSNCPOINT results in a two-phase commit.

Any existing CA Datacom/DB threads and the corresponding CA Datacom CICS Services threads are released for a LOGCR request with a work area of binary zeros or blanks. All record locks are also released.

LOGCR as a Reference Point

LOGCR with a work area other than 8 bytes of low-values or 8 blanks is a forward-looking command and therefore is a reference point command. The default CA Datacom/DB MUF must be involved in the SYNCPOINT that is issued on behalf of this type of LOGCR. Likewise as in the case of LOGIT and LOGLB, if the default CA Datacom/DB MUF is not connected, a DB RC 36 is returned to the application without issuing the SYNCPOINT, even if there are other CA Datacom/DB MUFs connected to this CICS.

If there are any errors during the SYNCPOINT, this info is passed back in the DB RC of the user's application request area and a backout occurs releasing all associated threads.

If no updates or record locks for updates have occurred, then the SYNCPOINT is still issued with an internal log command against the default to CA Datacom/DB MUF.

If any resource other than the default CA Datacom/DB MUF (MUF01) had record updates or locks, this automatically becomes a two-phase commit even if there were no record locks or updates on the default CA Datacom/DB. This includes a non-default CA Datacom/DB, DB2, or other database.

CA Datacom/DB and CA Datacom CICS Services threads remain locked after the SYNCPOINT. They are not released for other CICS transactions. All data record locks are released.

LOGDW and LOGDR

LOGDW and LOGDR call DCCTFPR to determine which CA Datacom/DB MUF is used based on DBID. This is just as in previous releases of CA Datacom CICS Services.

LOGDW and LOGDR are not replaced with SYNCPOINT. They are issued without alteration.

LOGDW and LOGDR cause a thread to be locked after the request until a future CICS SYNCPOINT, task termination, or ABEND occurs.

LOGIT and LOGLB

The LOGIT and LOGLB commands request reference-points. These commands are issued only against the default CA Datacom/DB MUF known as MUF01. If the default CA Datacom/DB MUF is not connected, then the user application receives a DB RC (return code) 36 regardless of other CA Datacom/DB MUFs connected to this CICS.

The default CA Datacom/DB MUF must be connected for LOGIT or LOGLB to be successful. Thus the user knows where to find all reference points for all transactions in that CICS. The LOGIT or LOGLB causes a lock of both a CA Datacom/DB thread and a CA Datacom CICS Services thread.

If there is not a thread already locked for this task from the default CA Datacom/DB MUF, it must now acquire one. This thread remains locked until a future SYNCPOINT, task termination, or task ABEND occurs causing the thread to be released.

LOGTB

LOGTB is replaced with an EXEC CICS SYNCPOINT ROLLBACK but the CA Datacom/DB MUF retains the same TSN (Transaction Sequence Number) that existed before the SYNCPOINT ROLLBACK. All record locks are released but the CA Datacom/DB threads and the CA Datacom CICS Services threads are locked if a TSN had been created. Any return code error during the SYNCPOINT ROLLBACK is eventually backed out.

ROLBK

ROLBK is replaced with EXEC CICS SYNCPOINT ROLLBACK. There are no known error conditions on backout. All errors are eventually backed out. However, there are setup conditions that must be met in order for backout to occur, such as URT TXNUNDO=YES and CA Datacom/DB logging parameters. Otherwise the ROLBK result is a commit of the data rather than a backout of the data.

All threads locked by this CICS transaction or task are released. All record locks are released.