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Trevor Eddolls

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CICS Open Transaction Environment enhancements

INTRODUCTION

CICS Transaction Server for z/OS Version 2 Release 2 became generally available in January 2002. One of the many enhancements included in this new release of CICS was the continued evolution of the Open Transaction Environment (OTE). This article discusses the exploitation of OTE within CICS TS 2.2, and describes how OTE support has been extended in the new release.

OTE IN CICS TRANSACTION SERVER 1.3

Support for OTE was introduced in CICS Transaction Server 1.3. It provides the ability to run specific types of program environments under a separate TCB to the CICS quasi-reentrant (QR) TCB, used for subdispatching traditional CICS workloads. Such OTE-managed TCBs are referred to as open TCBs and run independently of the CICS QR TCB; that is, they are dispatched separately by the MVS dispatcher and may well run truly in parallel with the QR TCB, being dispatched on different Central Processors (CPs) at the same time.

By running programs under their own TCB, issues such as the use of MVS services that would lead to TCB suspension (‘blocking’) have been addressed. Such services are documented as being restricted for traditional CICS applications, since they would cause the QR TCB to be suspended whilst they were satisfied by the operating system. Such a suspension would mean that the CICS dispatcher service was unable to subdispatch other tasks on the QR TCB during this time, and so have a detrimental effect on a CICS transaction workload throughput. By limiting the effect of blocking to a particular application running under its own TCB, the impact does not affect other applications running on the CICS system.

When CICS Transaction Server 1.3 was made generally available, OTE supported only JVM programs that interpreted Java class files of

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bytecodes. Such JVM programs were dispatched on OTE open TCBs referred to as J8 TCBs. The naming convention of each two-character open TCB name relates to the type of OTE open TCB mode. For J8 TCBs, the letter J denotes JVM programs and the number 8 denotes that the program environment will run in storage protection key 8. Subsequent to CICS Transaction Server 1.3 being released, CICS Java support was enhanced via PTF UQ44003 to support ‘hot-pooling’ for compiled Java applications processed using the Enterprise Toolkit for OS/390 Compiler and Binder. This type of Java program environment is also referred to as the High Performance Java (HPJ) compiler and run-time. Such HPJ-compiled Java applications are known as Java program objects, to differentiate them from Java class files interpreted in a JVM environment. Hot-pooling support exploits the Language Environment (LE) preinitialization services (known as PIPI) to construct a preinitialized and reusable enclave for use by Java program objects running under CICS TS 1.3. This enclave utilizes batch-LE services. Prior to hot-pooling support, execution of HPJ-compiled program objects was handled under the QR TCB. With hot-pooling, a new OTE open TCB mode was introduced. This is the H8 mode.

The JVM environment provided within CICS Transaction Server 1.3 was not reusable by subsequent transactions. As such, every instance of a JVM program would need to reload and reestablish the Java runtime environment for the JVM to execute in. This was also true for HPJ-compiled Java program objects running under the QR TCB. With Java hot-pooling, however, the LE enclave environment was reusable by subsequent Java programs, subject to certain restrictions. As such, hot-pooling offered a performance improvement for Java programs running under CICS Transaction Server 1.3. (Note: CICS Transaction Server 2.2 provides support for a reusable JVM environment, which offers a significant performance improvement over the original JVM support as provided within CICS Transaction Server 1.3. Applications using Java hot-pooling and HPJ are still supported within CICS Transaction Server 2.2, but these environments are provided for application migration purposes. The JVM environment (running under J8 open OTE TCBs) is the strategic platform for use by Java programs running within CICS Transaction Server 2.2).

The different types of open TCB mode are specific to their type of program environment and OTE therefore handles them in different ways. The type of open TCB mode assigned to a particular program (eg J8 for a JVM, H8 for a Java hot-pooled program object) is determined by CICS, and is not specified by the system programmer nor by the application program itself. Also, it is not possible to exploit OTE for other types of program environment. As such, only JVMs and Java hot-pooled programs could utilize OTE in CICS Transaction Server 1.3.

In CICS Transaction Server 1.3, control of the total number of OTE open TCBs (for all types of mode) was by means of the MAXOPENTCBS system initialization parameter in the SIT, or as a SIT override. The value could also be changed dynamically using the CICS SPI command EXEC CICS SET SYSTEM, or via CEMT or CECI. There could be many open TCBs concurrently allocated to the CICS address space, up to the limiting value of MAXOPENTCBS, subject to the proviso of there being enough virtual storage available to satisfy the TCBs. Again, CEMT, CECI, or the SPI command EXEC CICS INQ SYSTEM could be used to show the current number of OTE open TCBs allocated to tasks (ACTOPENTCBS). A given CICS task can have only one TCB of each OTE mode. The TCB is retained by that task from the time that it is allocated through to the end of the task, at which time it may be allocated to another task or destroyed. All such TCB management is controlled by CICS OTE logic; again, the application program has no control over this activity.

OTE IN CICS TRANSACTION SERVER 2.2

Support for OTE has been extended with CICS Transaction Server 2.2. In addition to providing unique TCB environments for Java programs to exploit, a new open TCB mode has been introduced. This is the L8 mode, for OPENAPI Task-Related User Exit programs. CICS Transaction Server 2.2 has made changes to the CICS DB2 Attachment facility so that this can now exploit OTE and use L8 open TCBs to process DB2 requests from CICS to DB2 6.1 systems (and above). For connections to DB2 5.1 systems (and below), the CICS Transaction Server 2.2 DB2 Adapter will utilize privately managed TCBs, as were used in earlier releases of CICS. (In either case, whether L8 or privately managed TCBs are used by the Adapter, their selection and control is fully automated and managed by CICS. Both techniques have the same requirement of shielding the QR TCB from the potential for blocking during calls to the DB2 subsystem.)

The advantage of utilizing open TCBs for DB2 requests, instead of the privately managed ones, may be seen when CICS DB2 application programs are defined with a CONCURRENCY of THREADSAFE instead of the default value of QUASIRENT. Programs that are quasi-reentrant rely upon the serialization provided by CICS when accessing shared resources – this serialization is achieved by the use of the single QR TCB to dispatch and execute such programs on, and by the use of CICS internal locking mechanisms when other internally-managed CICS TCBs are used to process certain specific aspects of such program's operations. Quasi-reentrancy also means that such programs must be serially reusable between entry and exit points, so that other tasks executing the same program under the QR TCB (but at different times) are presented with the same view of the program. Conversely, threadsafety indicates that applications do not have an affinity towards the QR TCB for their dispatching. A threadsafe program is written to certain standards, and when it accesses shared resources such a program takes into account the possibility that other programs may be executing concurrently (under different TCBs) and may be attempting to modify the same resources at the same time. A threadsafe application uses appropriate techniques, such as locking or assembly language compare and swap instructions, when accessing any such shared resources. The subject of threadsafety is discussed in more detail in the section *Multithreading* in Chapter 11 (*Application design*) of the *CICS Transaction Server 2.2 Application Programming Guide*.

If a CICS application has been defined as being threadsafe, the CICS DB2 Adapter in CICS Transaction Server 2.2 can return control to the application under the L8 TCB used for the DB2 request, rather than having to switch back to the QR TCB as was the case in earlier releases of CICS. Such an approach means that the need for paired TCB switches (from QR TCB to CICS DB2 Adapter TCB, then back again) can be avoided for calls to DB2 from the application. In an ideal case, the application could remain running under its L8 TCB for the duration of its work, until its eventual syncpoint. At this point, CICS would have need to use the QR TCB for some of the syncpointing work, and so TCB switches would be seen during the commitment of the Unit Of Work (UOW). In reality, switches back to QR from the L8 TCB will be dictated by what work the application has to perform upon return from DB2. Not all the EXEC CICS API or SPI functionality is itself threadsafe, and so CICS will have to perform automatic switches back to the QR TCB in order to process such requests.

Also, a holistic approach must be taken when reviewing whether a given program is threadsafe or not. Whilst executing within CICS, the flow of control can pass from an application to CICS, and then through a number of different environments such as User Replaceable Modules (URMs), Global User Exits (GLUEs) and Task-Related User Exits (TRUEs). Each of these environments has a potential requirement to be treated as quasi-reentrant. Unless they can be deemed to be threadsafe programs and so eligible for execution under an open TCB, such URMs, GLUEs, and TRUEs will force CICS to switch from an open TCB to the QR TCB before invoking them. Therefore, careful consideration of the nature of such program environments must be made before the benefits of the new CICS DB2 Attachment OTE exploitation may be seen. Analysis of the definitions and characteristics of all programs invoked during the execution of CICS DB2 applications should be performed, when reviewing the use of threadsafety on application definitions. Such programs may be home-grown, or else supplied by vendors. The use of CICS statistics will be useful in determining further information on both the program and dispatcher environments within CICS. Also, an examination of CICS trace during the execution of a threadsafe application will reveal places where the task was switched from its L8 TCB to the QR TCB. The trace is a useful way of eyeballing such switches very quickly, and so identifying paths within the execution of the task that may require further investigation when trying to improve the exploitation of open TCBs within CICS.

Below is an edited example of a trace from a CICS Transaction Server 2.2 system, where an application has issued an EXEC SQL call to DB2:

```
ØØØ55 QR    AP 252Ø ERM   ENTRY COBOL-APPLICATION-CALL-TO-TRUE(DSNCSQL )     =ØØØ335=

ØØØ55 QR    US Ø4Ø1 USXM  ENTRY INQUIRE_TRANSACTION_USER                     =ØØØ336=
```

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```
ØØØ55 QR    US Ø4Ø2 USXM  EXIT  INQUIRE_TRANSACTION_USER/OK 7F7Ø78C8         =ØØØ337=

ØØØ55 QR    RM Ø3Ø1 RMLN  ENTRY ADD_LINK             RMI,14DFD1E4            =ØØØ338=

ØØØ55 QR    RM Ø3Ø2 RMLN  EXIT  ADD_LINK/OK          Ø1ØØØØØ4,14DFD1E4       =ØØØ339=

ØØØ55 QR    DS ØØØ2 DSAT  ENTRY CHANGE_MODE          L8                      =ØØØ34Ø=

ØØØ55 L8ØØØ DS ØØØ3 DSAT  EXIT  CHANGE_MODE/OK                               =ØØØ341=

ØØØ55 L8ØØØ AP 318Ø D2EX1 ENTRY APPLICATION          REQUEST EXEC SQL        =ØØØ342=

ØØØ55 L8ØØØ AP 325Ø D2D2  ENTRY DB2_API_CALL         14E45Ø3Ø                =ØØØ343=

ØØØ55 L8ØØØ AP 3251 D2D2  EXIT  DB2_API_CALL/OK                              =ØØØ344=
```

The program is running under task number 00055. When CICS invokes the External Resource Manager (DFHERM), control is switched from the QR TCB to an OTE-managed open TCB; in this case it is number L8000. Note the TCB number is given in the second column of the trace data.

Clearly, any CICS application benefits in reduction of CPU utilization by the use of L8 open OTE TCBs for DB2 requests will be dependent on the number of calls to DB2 from within a threadsafe application, and upon the other non-DB2 work that the application has to perform, which may itself dictate a TCB switch back to the QR TCB. Some metrics from CICS Transaction Server 2.2 performance testing were taken from an example threadsafe CICS application that issued 100 DB2 calls. The same program was run on both CICS Transaction Server 2.1 and CICS Transaction Server 2.2, on a 9672 X37 processor. When run on CICS Transaction Server 2.1, the application used 11.27ms of CPU. When run on CICS Transaction Server 2.2, the same application used 8.7ms of CPU. This shows an approximate saving of 22% CPU time when this particular application was migrated to CICS Transaction Server 2.2. However, as stated above, such results are dependent upon the threadsafety of any other CICS work performed by the program and upon the number of calls to DB2. Each application would be expected to reveal differing results.

SYSTEM DEFINITIONAL CHANGES

In CICS Transaction Server 1.3, the single system definition parameter

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MAXOPENTCBS was used to control the maximum number of open TCBs that could coexist within a CICS region. With the introduction of a third mode of open TCB in CICS Transaction Server 2.2 (the L8 mode), this was no longer granular enough for system administration purposes. For example, a larger number of OPENAPI L8 TCBs for DB2 use might be required than the number of J8 TCBs for JVM programs to use. Therefore, separate system definition parameters have been introduced for the different open TCB modes. The maximum number of J8 TCBs is controlled by the new MAXJVMTCBS parameter; similarly, H8 TCBs are controlled by the new MAXHPTCBS parameter. MAXOPENTCBS has been retained, but is now used to solely control the maximum number of L8 TCBs available for use by OPENAPI TRUEs (such as DB2). Each of these parameters can be set in the SIT (or via a SIT override), and can be inquired upon and varied by the CICS SPI, or via the CECI and CEMT transactions. It should be noted that their visibility is now under a new system administration component; that is, they are accessed via inquire or set commands against the DISPATCHER component of CICS rather than via the SYSTEM component as was the case in CICS Transaction Server 1.3. As well as providing these parameters for governing the maximum number of open TCBs of each OTE mode, corresponding parameters exist to return the actual current number of each mode of OTE TCB - these are ACTJVMTCBS, ACTHPTCBS and ACTOPENTCBS.

FURTHER READING AND CONTACT INFORMATION

The *CICS Application Programming Guide* and *Resource Definition Guide* give further information on threadsafety and quasi-reentrancy for programs running within CICS. The CICS DB2 Guide discusses the interface between CICS and DB2 in great detail.

I hope that this article has helped explain the enhancements to the Open Transaction Environment within CICS TS 2.2.

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CICS Change Team
IBM (UK)

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Deactivating and reactivating CICS

This application was designed to make the resources from a CICS region available for batch processing without a CICS stop or restart. Also it's possible to reactivate the resources for the CICS (online) processing with this application.

It's important to copy the CSMI transaction from the DFHISC group as the PROJ transaction with the parameter:

```
PROGram : DFHMIRS
```

otherwise you can't work with the requested COMMAREA!

Actions:

- Close all VSAM user datasets (starting with 'D') and stop the running transactions and lock the selected CICS for online processing.

Or:

- (Re) open all VSAM user datasets (starting with 'D') and reload all user programs (starting with 'CI'), and make the selected CICS ready for online processing again.

JCL to deactivate CICS via batch for online processing:

```
//BØØ1475X JOB ØØ2665,'REIS CLAUS',NOTIFY=BØØ1475,
//*-------------------------------------------------------------------
//*   JOB  SUBMITTED FROM ???????????????(????????)
//*   DOC: DEACTIVATE A CICS
//*   GRP: ????????
//*   DATE: ??.??.??, TIME: ??:??
//*-------------------------------------------------------------------
//             CLASS=T,MSGCLASS=X,REGION=4M,RESTART=*
//*-------------------------------------------------------------------
//STOP    EXEC PGM=CSPROJEX,PARM='C13ST??,STOP'
//*-------------------------------------------------------------------
//STEPLIB  DD  DSN=MVS.NLV.LINKLIB,DISP=SHR
//    DD  DSN=CICSTS13.NLV.SDFHEXCI,DISP=SHR

//SYSABEND     DD  SYSOUT=*
//SYSPRINT     DD  SYSOUT=*
//SYSOUT   DD  SYSOUT=*
/*
//
```

The parameter C13ST?? must be replaced with the application ID from a CICS.

Valid return codes are:

- 0 = OK
- 2222 = invalid parameter
- 3333 = link failed (eg invalid application ID).

JCL to reactivate CICS via batch for online processing:

```
//B001475X JOB 002665,'REIS CLAUS',NOTIFY=B001475,
//*------------------------------------------------------------------
//*   JOB  SUBMITTED FROM ????????????????(????????)
//*   DOC: DEACTIVATE A CICS
//*   GRP: ????????
//*   DATE: ??.??.??, TIME: ??:??
//*------------------------------------------------------------------
//             CLASS=T,MSGCLASS=X,REGION=4M,RESTART=*
//*------------------------------------------------------------------
//STOP    EXEC PGM=CSPROJEX,PARM='C13ST??,STRT'
//*------------------------------------------------------------------
//STEPLIB DD  DSN=MVS.NLV.LINKLIB,DISP=SHR
//    DD  DSN=CICSTS13.NLV.SDFHEXCI,DISP=SHR

//SYSABEND     DD  SYSOUT=*
//SYSPRINT     DD  SYSOUT=*
//SYSOUT  DD  SYSOUT=*
/*
//
```

Again, the parameter C13ST?? must be replaced by the application ID from a CICS.

Valid return codes are:

- 0 = OK
- 2222 = invalid parameter
- 3333 = link failed (eg invalid application ID).

You can find a message from each activity from the server program and in the CICS log.

CSPROJEX

```
*ASM XOPTS(EXCI)
```

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```
**********************************************************************
* MODULE NAME = CSPROJEX                                             *
* PROGRAM MUST BE LINKED WITH AMODE(31) AND RMODE(24) !              *
* DESCRIPTIVE NAME = Assembler batch client program                  *
* Author:          Claus Reis  Nuernberger Lebensversicherung AG     *
*                              February, 2002                        *
* Sample:          Use IBM's SDFHSAMP - library (member DFH$AXCC)    *
* STATUS = 5.3.0                                                     *
* FUNCTION =  Connect a CICS via the Batch and run transaction PROJ  *
*             with program CSPROJ.                                   *
*             Go back to the batch.                                  *
* ENTRY POINT = CSPROJEX                                             *
*  INPUT PARAMETERS:                                                 *
*    The only input to this program is supplied by the JCL PARM      *
*    parameter. This must contain the applid of the target CICS      *
*    system, a comma and a parm like STOP or STRT.                   *
**********************************************************************
         EJECT
*   Include the standard copybook for EXCI return codes and DSECTS.  *
         SPACE
         COPY DFHXCRCD
         EJECT
*   Include the standard copybook for EXCI Parameter list equates.   *
         SPACE
         COPY DFHXCPLD
         EJECT
*         >>>>>>>>>>>>>>> MAINLINE CODE <<<<<<<<<<<<<<<<             *
         SPACE
CSPROJEX AMODE 31
CSPROJEX RMODE 24
CSPROJEX DFHEIENT CODEREG=(R3,R4)
         SPACE
*   Retrieve the target CICS Applid and Userid, passed in PARM.      *
         SPACE
         L     R1,0(,R1)                       R1-->JCL Plist.
         LA    R1,2(,R1)                       Chars at parm start
         MVC   TARGET_SYSTEM(7),0(R1)          MOVE TARGET CICS
         MVC   PROCHAR,8(R1)                   MOVE STRT or STOP
         CLC   PROCHAR,=C'STRT'                Is
         BE    PROCESS                         the
         CLC   PROCHAR,=C'STOP'                parm
         BNE   INVPRCHA                        valid? No: Abend222
         SPACE
PROCESS  EQU   *
         LA    R9,EXEC_RETAREA                 R9--> EXEC returns
         USING EXCI_EXEC_RETURN_CODE,R9
         SPACE
*   Perform LINK request.                                            *
         SPACE
         EXEC CICS LINK PROGRAM(TARGET_PROGRAM)                       C
               TRANSID(TARGET_TRANSID)                                C
               APPLID(TARGET_SYSTEM)                                  C
               COMMAREA(COMMAREA)                                      C
               LENGTH(EXEC_COM_LEN)                                    C
               DATALENGTH(EXEC_DAT_LEN)                                C
               RETCODE(EXEC_RETAREA)                                   C
               SYNCONRETURN
         SPACE
*   Did the call fail?  Check the Return Codes.                        *
         SPACE
         CLC   EXEC_RESP,ZERO
         BNE   LINKFAIL                Abend with rc = 3333
         SPACE
*   Terminate program correctly                                        *
SPACE
         L     R15,EXEC_RESP
         DFHEIRET RCREG=(R15)
         SPACE
*   Terminate program after processing characters aren't valid         *
         SPACE
INVPRCHA EQU   *
         ABEND 2222,DUMP
         DS    D'Ø'
         SPACE
*   Terminate program after call failed                                *
         SPACE
LINKFAIL EQU   *
         ABEND 3333,DUMP
         DS    D'Ø'
         EJECT
*    Constants.                                                        *
         SPACE
TARGET_PROGRAM DC CL8'CSPROJ  '
TARGET_TRANSID DC CL4'PROJ'
EYESYS         DC C'###EYESYS###'
TARGET_SYSTEM  DC CL8'        '
TARGET_USERID  DC CL8'        '
         SPACE
EXEC_INFO      DS ØF             EXEC level specific information
EXEC_DAT_LEN   DC AL2(4)         Outbound length
EXEC_COM_LEN   DC AL2(4)         Inbound length
EXEC_RETAREA   DS CL(EXCI_EXEC_RETURN_CODE__LEN)
         SPACE
ZERO           DC F'Ø'
         SPACE
EYECOM         DC C'###EYECOM###'
COMMAREA DS    ØCL4
PROCHAR  DS    CL4
         ORG   COMMAREA+4
         SPACE
         DFHREGS
         SPACE
         END    CSPROJEX
```

CSPROJ

```
*ASM XOPTS(CICS,SP)
CSPROJ   TITLE '*** Program to make CICS available for the BATCH ***'
         SPACE
*                C S P R O J                                       *
* Note:      Program must be linked with AMODE=ANY / RMODE=ANY      *
* Comment:   This program is designed to make a CICS exclusively    *
*            available for BATCH processing or for the              *
*            reverse case.                                          *
*            CSPROJ must be called via the BATCH as an "EXCI" -     *
*            program.                                               *
*            A COMMAREA with a length  of four bytes  with the      *
*            content STOP (BATCH - processing) or START (ONLI-      *
*            NE - operation) is mandatory.                          *
*            If STOP is requested (BATCH - processing):             *
*            1. VTAM-ACB will be closed.                            *
*            2. Active (user) transactions will be purged.          *
*            3. User - datasets (VSAM) will be closed               *
*               (DD - name starting with "D").                      *
*            If STRT is requested (ONLINE - operation):             *
*            1. User - datasets (VSAM) will be opened               *
*               (DD - name starting with "D").                      *
*            2. User - programs("CI*") will be reloaded.            *
*            3. VTAM - ACB will be opened.                          *
*            SOME INFORMATION - MESSAGES DURING THIS PROCESS AT     *
*            SYSTEM - CONSOLE ARE ALSO AVAILABLE.                   *
         SPACE
* Author: Claus Reis / February, 2002                               *
         EJECT
*        D e f i n i t i o n s                                      *
         SPACE
*       INCLUDE++ CSCWAA          INCLUDE CICS CWA ASSEMBLER STRUCTURE
*         DATA SET CSCWAA     AT LEVEL 047 AS OF 26/10/01
         EJECT
*        C I C S      C W A - R E G I O N                           *
*        INCLUDE-ELEMENT  FOR ASM  PROGRAM CSCWAA                   *
*        ADDRESSING   :   EXEC CICS ADDRESS CWA(CWAPTR)             *
*        WARNING      :   NO CHANGES ALLOWED -                      *
*                         CWAPTR MUST NOT BE DEFINED                *
                SPACE 3
                USING CWADSECT,CWAPTR
                SPACE 3
CWADSECT        DSECT
                SPACE 3
CWAAREA         DS   0CL1536         CWA-BEREICH
                SPACE 1
CWAECSA         DC    AL4(0)         POINTER ECSA-CTL-AREA
CWAENQA         DC    AL4(0)         POINTER ECSA ENQ-AREA
CWATSYS         DC    CL4' '         TERMINAL-SYSID FÜR CWACICID
CWASYSID        DC    CL4' '         ORIGINAL SYSTEM-ID
CWAPPLID        DC    CL8' '         ORIGINAL APPLICATION-ID
```

```
CWANCVT         DC    AL4(Ø)         POINTER NLV-CVT
CWA_PTR_CUATR   DC    AL4(Ø)         ADRESSE D.CUA-TRANSAKTIONSTABELLE
CWA_CICSLEVEL   DC   ØCL4' '         CICS-LEVEL 'Ø311' OR 'Ø33Ø'
CWA_CICSLEV     DC    CL1' '         CICS-LEVEL
CWA_CICSVER     DC    CL1' '         CICS-VERSION
CWA_CICSREL     DC    CL1' '         CICS-RELEASE
CWA_CICSMOD     DC    CL1' '         CICS-MODIFICATION
CWA_CMFSTOP     DC    PL4'Ø'         STOP-TIME FOR CMF-EVENTS HHMMSSTC
                DS    XL56Ø          .........  FREI  .........
                DS    XL12Ø          .........  FREI  .........
                DS    XL22           .........  FREI  .........
CWACICTX        DC    CL4' '         CICS-ID-BESCHREIBUNG
CWACICID        DC    CL1' '         CICS-ID
CWA$PROD        EQU   C'P'            .. PROD
CWA$TEST        EQU   C'T'            .. TEST
CWA$VPRD        EQU   C'V'            .. VORPROD
CWA$BOST        EQU   C'S'            .. SYSTEM-CICS
CWACICNR        DC    CL1' '         CICS-NR
CWA$TERM        EQU   C'T'            .. TERMINAL
CWA$VSAM        EQU   C'V'            .. DATASET VSAM
CWA$PAIS        EQU   C'P'            .. PAISY
CWA$ODM         EQU   C'O'            .. ODM
CWA$PROB        EQU   C'9'            .. APPLICATION 9 / PROBLEMCICS
CWA$APPL        EQU   C'Ø'            .. APPLICATION ØØ-Ø9
*  $APPL        EQU   ????            .. APPLICATION A-C
*  $APPL        EQU   ????            .. APPLICATION E-O
*  $APPL        EQU   ????            .. APPLICATION Q-S
*  $APPL        EQU   ????            .. APPLICATION U-Z
CWADATUM        DC    CL8' '         DATUM FORMAT TT.MM.JJ
CWACTMJ         DC    CL6' '         DATUM TTMMJJ
CWAPTMJ         DC    PL4'Ø'         DATUM ØTTMMJJC
CWACJMT         DC    CL6' '         DATUM JJMMTT
CWAPJMT         DC    PL4'Ø'         DATUM ØJJMMTTC
CWACTMJ4        DC    CL8' '         DATUM TTMMJJJJ
CWAPTMJ4        DC    PL5'Ø'         DATUM ØTTMMJJJJC
CWACJ4MT        DC    CL8' '         DATUM JJJJMMTT
CWAPJ4MT        DC    PL5'Ø'         DATUM ØJJJJMMTTC
CWACMJ          DC    CL4' '         DATUM MMJJ
CWAPMJ          DC    PL3'Ø'         DATUM ØMMJJC
CWACJM          DC    CL4' '         DATUM JJMM
CWAPJM          DC    PL3'Ø'         DATUM ØJJMMC
CWACMJ4         DC    CL6' '         DATUM MMJJJJ
CWAPMJ4         DC    PL4'Ø'         DATUM ØMMJJJJC
CWACJ4M         DC    CL6' '         DATUM JJJJMM
CWAPJ4M         DC    PL4'Ø'         DATUM ØJJJJMMC
CWACT3J         DC    CL5' '         DATUM TTTJJ
CWAPT3J         DC    PL3'Ø'         DATUM TTTJJC
CWACJT3         DC    CL5' '         DATUM JJTTT
CWAPJT3         DC    PL3'Ø'         DATUM JJTTTC
CWACT3J4        DC    CL7' '         DATUM TTTJJJJ
CWAPT3J4        DC    PL4'Ø'         DATUM TTTJJJJC
```

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```
CWACJ4T3        DC    CL7' '         DATUM JJJJTTT
CWAPJ4T3        DC    PL4'Ø'         DATUM JJJJTTTC
CWAZEIT         DC    CL5' '         UHRZEIT  SS:MM
CWATABLE        DS   ØCL24          ,+Ø123456789-,Ø123456789
CWATAB1         DS   ØCL13           TABELLE 1 /,/+/Ø123456789/-/
CWATAB2         DS   ØCL12           TABELLE 2 /,/+/Ø123456789/
CWACHKO1        DC    C','
CWATAB3         DS   ØCL12           TABELLE 3 /+/Ø123456789/-/
CWATAB4         DS   ØCL11           TABELLE 4 /+/Ø123456789/
CWACHARP        DC    C'+'
CWATAB5         DS   ØCL12           TABELLE 5 /Ø123456789/-/,/
CWATAB6         DS   ØCL11           TABELLE 6 /Ø123456789/-/
CWATAB7         DS   ØCL1Ø           TABELLE 7 /Ø123456789/
CWACHØ9         DC    C'Ø123456789'
CWACHARM        DC    C'-'
CWATAB8         DS   ØCL11           TABELLE 8 /,/Ø123456789/
CWACHKO2        DC    C','
CWACHØ92        DC    C'Ø123456789'
CWAZEITP        DC    PL4'Ø'         UHRZEIT  HHMMSSTC
CWADAY          DC    CL1Ø' '        WOCHENTAG
CWAMONTH        DC    CL9' '         MONAT
CWA_PTR_FTT     DC    AL4(Ø)         ADRESSE D. FUNKTIONSTASTENTABELLE
CWA_PTR_ANT     DC    AL4(Ø)         ADRESSE DER AKTIONSNAMENTABELLE
CWA_INFOCICS    DC    C' '           INFO-CICS IDENTIFIER
CWA_INFOCICS_Y  EQU   C'Y'           INFO-CICS IDENTIFIER -JA-
CWA_INFOCICS_N  EQU   C' '           INFO-CICS IDENTIFIER -NEIN-
CWA_DATUM_JJJJ  DC    CL1Ø' '        DATUM FORMAT TT.MM.JJJJ
                SPACE 1
CWAAREAE        EQU   *              ENDE CWA DEFINITIONEN
                SPACE 5
*         END OF THE  CICS   CWA_REGION                              *
*         BEGIN THE DSECT FOR FUNKTIONSTASTENTABELLE                 *
*         ADRESSING OVER   "CWA_PTR_FTT"                             *
CWAFTTDSECT      DSECT
CWA_FTT_TASTE    DC    XL1'Ø'         TASTENIDENTIFIKATION
CWA_FTT_AKTION   DC    CL16' '        KURZBEZEICHNUNG DER TASTE
*                                     BSP. : HILFE
CWA_FTT_ANZEIGE  DC    CL2Ø' '               TEXT FUER DEN FUNKTIONS-
*                                            TASTENBLOCK EINES BILDES
*                                     BSP. : F1=HILFE
CWA_FTT_PFKEY    DC    CL4' '         PF-TASTE Z.B. "PF1 "
CWA_FTT_KURZTEXT DC    CL8' '         TASTENKUERZEL FUER POP-UP-MENUS
*                                     BSP. : F12=ABBR
CWA_FTT_TEXT     DS    CL2Ø7          BESCHREIBUNG DER AKTION
CWAFTTDSECTE     EQU   *
CWAFTTANZAHL     EQU   3Ø             ANZAHL TABELLENEINTRAEGE FTT
                 SPACE 2
*         END OF THE DSECT FOR FUNKTIONSTASTENTABELLE                *
*         BEGIN THE DSECT FOR AKTIONSNAMENTABELLE                    *
*         ADDRESSING OVER  "CWA_PTR_ANT"                             *
CWAANTDSECT DSECT
```

```
CWA_ANT_HILFE         DS CL16             HELP TEXT
CWA_ANT_TASTEN        DS CL16             SHOW THE TASTENBELEGUNG
CWA_ANT_AUSGANG       DS CL16             COMPLETE A FUNCTION
CWA_ANT_REFRESH       DS CL16             RESTORE
CWA_ANT_UPDATE        DS CL16             DATE STORE
CWA_ANT_RUECKWAERTS   DS CL16             BACKWARDS BROWSE
CWA_ANT_VORWAERTS     DS CL16             FORWARDS BROWSE
CWA_ANT_AKTION        DS CL16             ACTIVATE ACTION BAR
CWA_ANT_UNTERBRECHEN  DS CL16             EVENTS UNDER VIEW
CWA_ANT_ABBRUCH       DS CL16             ABORT
CWA_ANT_EINSTIEG      DS CL16             BACK TO EINSTIEGSBILD
CWA_ANT_AUSWAHL       DS CL16             BACK TO AUSWAHLBILD
CWA_ANT_SICHERN       DS CL16             FREEZE THE DTA
CWA_ANT_LINKS         DS CL16             LEFT-SIDE PAGES
CWA_ANT_RECHTS        DS CL16             RIGHT-SIDE PAGE
CWA_ANT_ANFANG        DS CL16             SHOW THE FIRST SIDE
CWA_ANT_SCHLUSS       DS CL16             SHOW THE OTHER SIDE
CWA_ANT_ABMELDEN      DS CL16             ZSS-ABMELDUNG
CWA_ANT_DRUCKEN       DS CL16             PRINT (PA2)
CWA_ANT_LOESCHEN      DS CL16             OUTPUT TO SCREEN
CWA_ANT_DATENFREIGABE DS CL16             DATENFREIGABE
CWA_ANT_HILFE_ANLEGEN DS CL16             BOSHELP HELP START
CWA_ANT_SUCHEN        DS CL16             SEARCH
CWA_ANT_EURODM        DS CL16             CONVERT EURO/DM
CWAANTDSECTE          EQU   *
*         END THE DSECT FOR AKTIONSNAMENTABELLE                      *
*      END INCLUDE++
         SPACE
DFHEISTG DSECT
NBR      DS    F                   NBR OF TASKS
RESP     DS    F                   RESPONSE-CODE
LENGTH   DS    H                   OUTPUT LENGTH
PROGRAM  DS    CL8                 RELOADED PROGRAMS
FILE     DS    CL8                 FILES TO OPEN OR CLOSE
TRAN     DS    CL4                 TRANSACTION NAME
TASKNO   DS    F                   TRANSACTIONS TO PURGE
ABCODE   DS    CL4                 ABEND CODE
INAREA   DS    CL4                 COMMAREA INPUT
OUTAREA  DS    CL5Ø                TERMINAL-OUTPUT-AREA
         EJECT
*        M a i n  -  p r o g r a m                                    *
         SPACE
CSPROJ   DFHEIENT CODEREG=(R3,R4),DATAREG=R12
CSPROJ   AMODE ANY
CSPROJ   RMODE ANY
         EXEC  CICS ADDRESS    CWA         (CWAPTR)                    C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    CSPRØ5ØØ
         MVC   ABCODE,=C'CWAA'         SYSID can't be assigned
```

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```
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
CSPRØ5ØØ EQU   *
         CLI   CWACICID,CWA$BOST        Is it SYSTEM-CICS?
         BE    CSPRØ7ØØ                 YES: Check whether it's a
*                                            TOR/FOR or an AOR
         CLI   CWACICID,CWA$TEST        Is it SYSTEM-CICS?
         BE    CSPRØ7ØØ                 YES: Check whether it's a
*                                            TOR/FOR or an AOR
         SPACE
CSPRØ55Ø EQU   *
         MVC   OUTAREA,MSGØ18           No access to the COMMAREA
         BAS   R7,SENDMSG
         B     ERRORWA
         SPACE
CSPRØ7ØØ EQU   *
         CLI   CWACICNR,CWA$TERM        Is it a TOR?
         BE    CSPRØ55Ø                 YES: Invalid CICS
         CLI   CWACICNR,CWA$VSAM        Is it a FOR?
         BE    CSPRØ55Ø                 YES: Invalid CICS
         CLC   CWASYSID(2),=C'SS'       Is it a SYSTEM-AOR's?
         BE    CSPRØ8ØØ                 YES: Can running in each AOR
         CLC   CWASYSID,=C'STØ9'        Is it a TEST-AOR's and a CICS
*                                       namend "Project-CICS"?
         BNH   CSPRØ55Ø                 No: Invalid CICS
         SPACE
CSPRØ8ØØ EQU   *
         EXEC  CICS ADDRESS COMMAREA(R2)                              C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    CSPR1ØØØ
         MVC   OUTAREA,MSGØØØ           No access to the COMMAREA
         BAS   R7,SENDMSG
         B     ERRORWA
         SPACE
CSPR1ØØØ EQU   *
         CLC   EIBCALEN,=H'4'
         BE    CSPR2ØØØ
         MVC   OUTAREA,MSGØØ1           Invalid COMMAREA detected
         BAS   R7,SENDMSG
         B     ERRORWA
         SPACE
CSPR2ØØØ EQU   *
         MVC   INAREA,Ø(R2)             Move COMMAREA - content
         CLC   INAREA,=C'STOP'
         BNE   CSPR3ØØØ
         BAS   R6,CLVTAACB              BATCH - processing requested
         BAS   R6,DELAY                 Delay processing for a second
         BAS   R6,PURGTRAN
         BAS   R6,DELAY                 Delay processing for a second
         BAS   R6,CLOSEVSA
         B     RETURN
         SPACE
CSPR3ØØØ EQU   *
         CLC   INAREA,=C'STRT'
         BNE   CSPR9ØØØ
         BAS   R6,OPENVSAM             ONLINE - operation requested
         BAS   R6,DELAY                Delay processing for a second
         BAS   R6,RELOADPG
         BAS   R6,DELAY                Delay processing for a second
         BAS   R6,OPVTAACB
         B     RETURN
         SPACE
CSPR9ØØØ EQU   *
         MVC   OUTAREA,MSGØØ2          Wrong processing characters
         MVC   OUTAREA+36(L'INAREA),INAREA
         BAS   R7,SENDMSG
         B     ERRORWA
         SPACE
RETURN   EQU   *
         EXEC  CICS RETURN
         EJECT
*        S u b r o u t i n e s                                        *
         SPACE
*        V T A M - A C B  w i l l  b e  c l o s e d                   *
         SPACE
CLVTAACB EQU   *
         MVC   OUTAREA,MSGØØ3
         BAS   R7,SENDMSG
*
         EXEC  CICS SET VTAM CLOSED                                    C
               RESP(RESP)
*
         CLC   RESP,DFHRESP(NORMAL)
         BNE   ERRORWA
         MVC   OUTAREA,MSGØØ4
         BAS   R7,SENDMSG
         BR    R6
         SPACE
*        P u r g e  a l l  a c t i v e  t r a n s a c t i o n s      *
         SPACE
PURGTRAN EQU   *
         MVC   OUTAREA,MSGØØ5
         BAS   R7,SENDMSG
*                                      Get the task list.
         EXEC  CICS INQUIRE TASK LIST                                  C
                   LISTSIZE(NBR)                                       C
                   SET(R9)                                             C
                   RESP(RESP)
*                                      Get the task list.
         CLC   RESP,DFHRESP(NORMAL)    Was there a problem?
```

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```
         BNE   ERRORWA                 Yes. Take the error exit.
         L     R5,NBR                  No. Get the number of tasks.
         LTR   R5,R5                   Are there any tasks?
         BZ    PUR23Ø                  No, so start the next phase.
         SPACE
PUR21Ø   EQU   *
         MVC   TASKNO,Ø(R9)            Yes. Store the task number.
         CLC   EIBTASKN,Ø(R9)          If its this task..
         BE    PUR22Ø                  ..ignore it
*                                      get the task details.
         EXEC  CICS INQUIRE                                           C
               TASK(TASKNO)                                           C
               TRANSACTION(TRAN)                                      C
               RESP(RESP)
*                                      Go and force purge the task.
         CLC   RESP,DFHRESP(NORMAL)    Is the task still there?
         BNE   PUR22Ø                  No. So nothing to force purge.
         CLC   TRAN,=C'CSKL'           Is it the listener from TCP/IP?
         BE    PUR22Ø                  Yes: Don't purge
         CLC   TRAN(2),=C'TM'          Is it the TMON/CICS?
         BE    PUR22Ø                  Yes: Don't purge
*                                      Go and force purge the task.
         EXEC  CICS SET TASK(TASKNO)                                  C
               FORCEPURGE                                             C
               RESP(RESP)
*                                      ..say that force purge failed.
         CLC   RESP,DFHRESP(NORMAL)    If everything is ok..
         BE    PUR22Ø                  carry on,
         MVC   OUTAREA,MSGØ19          Move message
         MVC   OUTAREA+15(L'TASKNO),TASKNO Move Tasknumber
         MVC   OUTAREA+26(L'TRAN),TRAN     Move Transactionname
         BAS   R7,SENDMSG
         SPACE
PUR22Ø   EQU   *
         AH    R9,=H'4'                Move on to the next task
         BCT   R5,PUR21Ø               Loop back if there is more to do
         SPACE
PUR23Ø   EQU   *
         MVC   OUTAREA,MSGØØ6
         BAS   R7,SENDMSG
         BR    R6
         SPACE
*        U s e r - d a t a s e t s  w i l l  b e  c l o s e d         *
         SPACE
CLOSEVSA EQU   *
         MVC   OUTAREA,MSGØØ7
         BAS   R7,SENDMSG
         EXEC  CICS INQUIRE FILE START                                C
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    CLO1ØØØ
```

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```
         MVC   ABCODE,=C'CINS'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
CL01000  EQU   *
         EXEC  CICS INQUIRE FILE(FILE) NEXT                            C
                   RESP(RESP)
         CLC   RESP,DFHRESP(END)       Is it "End-Condition" ?
         BE    CL08000                 Yes: Stop processing
         CLC   RESP,DFHRESP(NORMAL)    Is it "Normal-Condition" ?
         BE    CL02000                 No: Abend taks
         MVC   ABCODE,=C'CNEX'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
CL02000  EQU   *
         CLI   FILE,C'D'               Is it a User-Dataset?
         BNE   CL01000                 NO: No action
         CLC   FILE(3),=C'DAI'         Is it a PAISY-Dataset?
         BE    CL01000                 YES: No action
         CLC   FILE(3),=C'DFH'         Is it a CICS-Dataset?
         BE    CL01000                 YES: No action
         EXEC CICS SET FILE(FILE) CLOSED                               C
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    Is it "Normal-Condition" ?
         BE    CL01000                 Yes: Next file
         MVC   OUTAREA,MSG016          Move message
         MVC   OUTAREA+26(L'FILE),FILE Move DD-Name
         BAS   R7,SENDMSG
         B     CL01000
         SPACE
CL08000  EQU   *
         EXEC  CICS INQUIRE FILE END                                   C
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    CL09000
         MVC   ABCODE,=C'CINE'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
CL09000  EQU   *
         MVC   OUTAREA,MSG008
         BAS   R7,SENDMSG
         BR    R6
         SPACE
*        U s e r - d a t a s e t s  w i l l  b e  o p e n e d         *
         SPACE
OPENVSAM EQU   *
         MVC   OUTAREA,MSG009
         BAS   R7,SENDMSG
         EXEC  CICS INQUIRE FILE START                                 C
```

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```
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    OPE1000
         MVC   ABCODE,=C'OINS'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
OPE1000  EQU   *
         EXEC  CICS INQUIRE FILE(FILE) NEXT                            C
                   RESP(RESP)
         CLC   RESP,DFHRESP(END)       Is it "End-Condition" ?
         BE    OPE8000                 Yes: Stop processing
         CLC   RESP,DFHRESP(NORMAL)    Is it "Normal-Condition" ?
         BE    OPE2000                 No: Abend taks
         MVC   ABCODE,=C'ONEX'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
OPE2000  EQU   *
         CLI   FILE,C'D'               Is it a User-Dataset?
         BNE   OPE1000
         CLC   FILE(3),=C'DAI'         Is it a PAISY-Dataset?
         BE    OPE1000                 YES: No action
         CLC   FILE(3),=C'DFH'         Is it a CICS-Dataset?
         BE    OPE1000                 YES: No action
         EXEC CICS SET FILE(FILE) OPEN                                 C
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    Is it "Normal-Condition" ?
         BE    OPE1000                 Yes: Next file
         MVC   OUTAREA,MSG015          Move message
         MVC   OUTAREA+25(L'FILE),FILE Move DD-Name
         BAS   R7,SENDMSG
         B     OPE1000
         SPACE
OPE8000  EQU   *
         EXEC  CICS INQUIRE FILE END                                   C
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    OPE9000
         MVC   ABCODE,=C'OINE'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
OPE9000  EQU   *
         MVC   OUTAREA,MSG010
         BAS   R7,SENDMSG
         BR    R6
         SPACE
*        U s e r - p r o g r a m s   w i l l   b e   r e l o a d e d    *
         SPACE
RELOADPG EQU   *
```

```
         MVC   OUTAREA,MSGØ11
         BAS   R7,SENDMSG
         EXEC  CICS INQUIRE PROGRAM START AT('CI')                     C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    RELOAØØØ
         MVC   ABCODE,=C'STAR'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
RELOAØØØ EQU   *
         EXEC  CICS INQUIRE PROGRAM(PROGRAM) NEXT                      C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    RELOA5ØØ
         CLC   RESP,DFHRESP(END)
         BE    RELOA6ØØ
         MVC   ABCODE,=C'NEXT'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
RELOA5ØØ EQU   *
         CLC   PROGRAM(2),=C'CI'
         BNE   RELOA6ØØ
         EXEC  CICS SET PROGRAM(PROGRAM) PHASEIN                       C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    RELOAØØØ
         MVC   OUTAREA,MSGØ17                Move message
         MVC   OUTAREA+19(L'PROGRAM),PROGRAM Move program - name
         BAS   R7,SENDMSG
         B     RELOAØØØ
         SPACE
RELOA6ØØ EQU   *
         EXEC  CICS INQUIRE PROGRAM END                                C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    RELOA9ØØ
         MVC   ABCODE,=C'ENDE'
         BAS   R6,ABEND
         B     ERRORWA
         SPACE
RELOA9ØØ EQU   *
         MVC   OUTAREA,MSGØ12
         BAS   R7,SENDMSG
         BR    R6
         SPACE
*        V T A M - A C B   w i l l   b e   o p e n e d                 *
         SPACE
OPVTAACB EQU   *
         MVC   OUTAREA,MSGØ13
         BAS   R7,SENDMSG
         EXEC  CICS SET VTAM OPEN                                      C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BNE   ERRORWA
         MVC   OUTAREA,MSGØ14
         BAS   R7,SENDMSG
         BR    R6
         SPACE
*        Send message to console                                      *
         SPACE
SENDMSG  EQU   *
         MVC   LENGTH,=H'5Ø'
         EXEC  CICS WRITE OPERATOR TEXT(OUTAREA)                       C
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BNE   ERRORWA
         BR    R7
         SPACE
*        Error with abend ØC1 (operation exception)                   *
         SPACE
ERRORWA  EQU   *                       Error with abend ØC1
         DC    D'Ø'                    Never come back statement
         BR    R6
         SPACE
*        Abend with abendcode "ABCODE"                                *
         SPACE
ABEND    DS    ØH
*
         EXEC  CICS ABEND ABCODE(ABCODE)
*
         BR    R6
         SPACE
*        Delay processing for one second                              *
         SPACE
DELAY    DS    ØH
*
         EXEC  CICS DELAY INTERVAL(1)
*
         BR    R6
         EJECT
*        Register equates and constants                               *
         SPACE
         EQUREG
CWAPTR   EQU   R8
         SPACE
MSGØØØ   DC    CL5Ø'CSPROJ-ØØØ Access to commarea impossible          '
MSGØØ1   DC    CL5Ø'CSPROJ-ØØ1 Invalid commarea length detected       '
MSGØØ2   DC    CL5Ø'CSPROJ-ØØ2 Invalid commarea content xxxx          '
MSGØØ3   DC    CL5Ø'CSPROJ-ØØ3 VTAM-ACB will be closed                '
MSGØØ4   DC    CL5Ø'CSPROJ-ØØ4 VTAM-ACB successfully closed           '
```

```
MSG005   DC    CL50'CSPROJ-005 Active transactions will be purged     '
MSG006   DC    CL50'CSPROJ-006 Active transactions successfully purged'
MSG007   DC    CL50'CSPROJ-007 User - datasets will be closed         '
MSG008   DC    CL50'CSPROJ-008 User - datasets successfully closed    '
MSG009   DC    CL50'CSPROJ-009 User - datasets will be opened         '
MSG010   DC    CL50'CSPROJ-010 User - datasets successfully opened    '
MSG011   DC    CL50'CSPROJ-011 User - programs will be reloaded       '
MSG012   DC    CL50'CSPROJ-012 User - programs successfully reloaded  '
MSG013   DC    CL50'CSPROJ-013 VTAM-ACB will be opened                '
MSG014   DC    CL50'CSPROJ-014 VTAM-ACB successfully opened           '
MSG015   DC    CL50'CSPROJ-015 Open for file xxxxxxxx not possible    '
MSG016   DC    CL50'CSPROJ-016 Close for file xxxxxxxx not possible   '
MSG017   DC    CL50'CSPROJ-017 Program xxxxxxxx can not be reloaded   '
MSG018   DC    CL50'CSPROJ-018 CICS address space not valid           '
MSG019   DC    CL50'CSPROJ-019 Task nnnn (name xxxx) can not purged   '
         EJECT
*        L i t e r a l s                                              *
         SPACE
         LTORG
         SPACE
         DC     C' '
         END
```

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Displaying transaction information

The following program was created to allow for a quick overview of the transactions defined in a CICS region and their most common characteristics. The display produced is illustrated below:

```
+---------------------------------------------------------------------+
|   TSTCICS3                                   2002/01/12  17:23:20    |
| Tran Program Profile Tclass Sta Pur Prt Twas Rname   Rsys Dloc  Dkey|
|      DFH      DFHCICS                                          BE   |
| ------------------------------------------------------------------- |
| CBRC DFHBRCP  DFHCICST DFHTCL00 Ena     001 0000         Below Cics |
| CECI DFHECIP  DFHCICST DFHTCL00 Ena Pur 001 0000         Below User |
| CEHP DFHCHS   DFHCICST DFHTCL00 Ena     001 0000         Below Cics |
| CEHS DFHCHS   DFHCICST DFHTCL00 Ena     001 0000         Below Cics |
| CEMT DFHEMTP  DFHCICST DFHTCL00 Ena     255 0000         Below Cics |
| CEOT DFHEOTP  DFHCICST DFHTCL00 Ena Pur 255 0000         Below Cics |
| CESF DFHSFP   DFHCICST DFHTCL00 Ena Pur 001 0000         Below Cics |
| CESN DFHSNP   DFHCICST DFHTCL00 Ena Pur 001 0000         Below Cics |
| CEST DFHESTP  DFHCICST DFHTCL00 Ena Pur 255 0000         Below Cics |
| CETR DFHCETRA DFHCICST DFHTCLØØ Ena     255 ØØØØ         Below Cics |
| CLS2 DFHLUP   DFHCICSA DFHTCLØØ Ena     254 ØØØØ         Below Cics |
| CLS3 DFHCLS3  DFHCICSA DFHTCLØØ Ena     254 ØØØØ         Below Cics |
| CLS4 DFHCLS4  DFHCICSA DFHTCLØØ Ena     254 ØØØØ         Below Cics |
| CMPX DFHMXP   DFHCICSA DFHTCLØØ Ena     ØØ1 ØØØØ         Below Cics |
| CMSG DFHMSP   DFHCICST DFHTCLØØ Ena Pur ØØ1 Ø528         Below Cics |
| CPMI DFHMIRS  DFHCICSA DFHTCLØØ Ena     ØØ1 ØØØØ         Below User |
| CRSQ DFHCRQ   DFHCICSA DFHTCLØØ Ena Pur ØØ1 ØØØØ         Below Cics |
| CRSR DFHCRS   DFHCICSA DFHTCLØØ Ena     253 ØØØØ         Below Cics |
| ------------------------------------------------------------------- |
|     ENTER  Next page                                PF3/PF15  End   |
+---------------------------------------------------------------------+
```

On the third line of the screen, under the field names, you can input the initial characters of the displayed fields. In the example given, the display is limited to transactions associated with programs whose names start with DFH, who belong to DFHCICS profiles, and whose datalocation is BELOW.

If you do not enter any restriction, all the transactions in the system will be browsed. The columns displayed are: Transaction name, Program associated, Profile, Transaction class, Status (Enabled or Disabled), Purge status, Priority, Twasize, Remotename, Remotesystem, Datalocation (Below or Any) and Datakey (Cics or User).

This application consists of a COBOL program (Vitermp) and a BMS map (Viterms). I chose to call the associated transaction VTRA, but you can choose any name you like. All you need to do is to adjust the transaction name in the last level 77 variable of the program.

VITRANP COBOL SOURCE CODE

```
        IDENTIFICATION DIVISION.
        PROGRAM-ID. VITRANP.
       *
        ENVIRONMENT DIVISION.
        DATA DIVISION.
       ****************************************************************
        WORKING-STORAGE SECTION.
       ****************************************************************
        77  X                 PIC S9(4)  COMP VALUE +Ø.
        77  Z                 PIC S9(4)  COMP VALUE +Ø.
        77  SLENG             PIC S9(4)  COMP VALUE +Ø.
        77  W-RESP            PIC S9(8)  COMP VALUE +Ø.
        77  W-RESP2           PIC S9(8)  COMP VALUE +Ø.
        77  COUNT-I           PIC S9(4)  COMP VALUE +Ø.
        77  ABSTIME           PIC S9(15) COMP-3.
```

```
 77  NUM-AUX           PIC 9(8)   VALUE Ø.
 77  END-MESSAGE       PIC X(3)   VALUE 'END'.
 77  TRANS-NAME        PIC X(4)   VALUE 'VTRA'.
*
 Ø1  SEARCH-FIELDS.
     Ø2  SEARCH-RESULT  PIC  X(1Ø).
     Ø2  SEARCH1        PIC  X(1Ø).
     Ø2  SEARCH-1 REDEFINES SEARCH1 PIC X OCCURS 1Ø.
     Ø2  SEARCH2        PIC  X(1Ø).
*
 Ø1 COMMAREA.
*
     Ø2        COUNT-LAST      PIC   S9(4).
     Ø2        W-LINE.
       Ø5      W-TRAN          PIC   X(4).
       Ø5      W-PROG          PIC   X(8).
       Ø5      W-PROF          PIC   X(8).
       Ø5      W-TCLA          PIC   X(8).
       Ø5      W-STAT  COMP    PIC   S9(8).
       Ø5      W-PURG  COMP    PIC   S9(8).
       Ø5      W-PRTY  COMP    PIC   S9(8).
       Ø5      W-TWAS  COMP    PIC   S9(8).
       Ø5      W-RNAM          PIC   X(8).
       Ø5      W-RSYS          PIC   X(4).
       Ø5      W-DLOC  COMP    PIC   S9(8).
       Ø5      W-DKEY  COMP    PIC   S9(8).
     Ø2        LINE-ACT.
       Ø5      TRAN-ACT        PIC   X(4).
       Ø5      PROG-ACT        PIC   X(8).
       Ø5      PROF-ACT        PIC   X(8).
       Ø5      TCLA-ACT        PIC   X(8).
       Ø5      STAT-ACT        PIC   X(4).
       Ø5      RNAM-ACT        PIC   X(8).
       Ø5      RSYS-ACT        PIC   X(4).
       Ø5      DLOC-ACT        PIC   X(5).
       Ø5      DKEY-ACT        PIC   X(4).
     Ø2        LINE-PRV.
       Ø5      FILLER          PIC   X(53).

     Ø2  VITRANSI.
        Ø4     FILLER          PIC   X(12).
        Ø4     CICSNL    COMP  PIC   S9(4).
        Ø4     CICSNF          PIC   X.
        Ø4     CICSNI          PIC   X(8).
        Ø4     DDATEL    COMP  PIC   S9(4).
        Ø4     DDATEF          PIC   X.
        Ø4     DDATEI          PIC   X(1Ø).
        Ø4     DTIMEL    COMP  PIC   S9(4).
        Ø4     DTIMEF          PIC   X.
        Ø4     DTIMEI          PIC   X(8).
        Ø4     TRANX-L   COMP  PIC   S9(4).
```

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```
Ø4     TRANX-F         PIC   X.
Ø4     TRANX-I         PIC   X(4).
Ø4     PROGX-L   COMP  PIC   S9(4).
Ø4     PROGX-F         PIC   X.
Ø4     PROGX-I         PIC   X(8).
Ø4     PROFX-L   COMP  PIC   S9(4).
Ø4     PROFX-F         PIC   X.
Ø4     PROFX-I         PIC   X(8).
Ø4     TCLAX-L   COMP  PIC   S9(4).
Ø4     TCLAX-F         PIC   X.
Ø4     TCLAX-I         PIC   X(8).
Ø4     STATX-L   COMP  PIC   S9(4).
Ø4     STATX-F         PIC   X.
Ø4     STATX-I         PIC   X(3).
Ø4     RNAMX-L   COMP  PIC   S9(4).
Ø4     RNAMX-F         PIC   X.
Ø4     RNAMX-I         PIC   X(8).
Ø4     RSYSX-L   COMP  PIC   S9(4).
Ø4     RSYSX-F         PIC   X.
Ø4     RSYSX-I         PIC   X(4).
Ø4     DLOCX-L   COMP  PIC   S9(4).
Ø4     DLOCX-F         PIC   X.
Ø4     DLOCX-I         PIC   X(5).
Ø4     DKEYX-L   COMP  PIC   S9(4).
Ø4     DKEYX-F         PIC   X.
Ø4     DKEYX-I         PIC   X(4).
Ø4     SCREEN-LINES    PIC   X(1764).
Ø4     LINEI REDEFINES SCREEN-LINES OCCURS 18.
   Ø6  TRANL     COMP  PIC   S9(4).
   Ø6  TRANF           PIC   X.
   Ø6  TRANI           PIC   X(4).
   Ø6  PROGL     COMP  PIC   S9(4).
   Ø6  PROGF           PIC   X.
   Ø6  PROGI           PIC   X(8).
   Ø6  PROFL     COMP  PIC   S9(4).
   Ø6  PROFF           PIC   X.
   Ø6  PROFI           PIC   X(8).
   Ø6  TCLAL     COMP  PIC   S9(4).
   Ø6  TCLAF           PIC   X.
   Ø6  TCLAI           PIC   X(8).
   Ø6  STATL     COMP  PIC   S9(4).
   Ø6  STATF           PIC   X.
   Ø6  STATI           PIC   X(3).
   Ø6  PURGL     COMP  PIC   S9(4).
   Ø6  PURGF           PIC   X.
   Ø6  PURGI           PIC   X(3).
   Ø6  PRTYL     COMP  PIC   S9(4).
   Ø6  PRTYF           PIC   X.
   Ø6  PRTYI           PIC   X(3).
   Ø6  TWASL     COMP  PIC   S9(4).
   Ø6  TWASF           PIC   X.
```

```
           Ø6  TWASI           PIC   X(4).
           Ø6  RNAML     COMP  PIC   S9(4).
           Ø6  RNAMF           PIC   X.
           Ø6  RNAMI           PIC   X(8).
           Ø6  RSYSL     COMP  PIC   S9(4).
           Ø6  RSYSF           PIC   X.
           Ø6  RSYSI           PIC   X(4).
           Ø6  DLOCL     COMP  PIC   S9(4).
           Ø6  DLOCF           PIC   X.
           Ø6  DLOCI           PIC   X(5).
           Ø6  DKEYL     COMP  PIC   S9(4).
           Ø6  DKEYF           PIC   X.
           Ø6  DKEYI           PIC   X(4).

     Ø2  VITRANSO REDEFINES VITRANSI PIC X(189Ø).
*
****************************************************************
 LINKAGE SECTION.
****************************************************************
 Ø1  DFHCOMMAREA.
     Ø2  FILLER          PIC X(4ØØØ).
****************************************************************
 PROCEDURE DIVISION.
****************************************************************
*
 FIRST-TIME-ONLY.
*****************
     IF EIBCALEN = Ø
        MOVE LOW-VALUES TO COMMAREA
        MOVE 2Ø64 TO EIBCALEN
        PERFORM INITIATE-SCREEN
        PERFORM INPUT-MODIFIED
        PERFORM INQUIRE-CICS
        PERFORM SEND-SCREEN-ERASE
        GO TO RETURN-TRANSID
     END-IF.
*
 OTHER-TIMES.
*************
     MOVE DFHCOMMAREA TO COMMAREA
     PERFORM RECEIVE-SCREEN
     PERFORM INPUT-MODIFIED
     PERFORM INQUIRE-CICS
     PERFORM SEND-SCREEN
     GO TO RETURN-TRANSID.
****************************************************************
*    Subroutines                                               *
****************************************************************
*
 INPUT-MODIFIED.
****************
```

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```
     MOVE  TRANX-I  TO  TRAN-ACT
     MOVE  PROGX-I  TO  PROG-ACT
     MOVE  PROFX-I  TO  PROF-ACT
     MOVE  TCLAX-I  TO  TCLA-ACT
     MOVE  STATX-I  TO  STAT-ACT
     MOVE  RNAMX-I  TO  RNAM-ACT
     MOVE  RSYSX-I  TO  RSYS-ACT
     MOVE  DLOCX-I  TO  DLOC-ACT
     MOVE  DKEYX-I  TO  DKEY-ACT
     IF LINE-PRV NOT EQUAL LINE-ACT
        MOVE LOW-VALUES TO W-TRAN
        MOVE Ø TO COUNT-LAST
     END-IF
     MOVE LINE-ACT  TO  LINE-PRV.
*
 INQUIRE-CICS.
**************
     MOVE Ø TO X.
     EXEC CICS INQUIRE TRANSACTION START
     END-EXEC
     PERFORM INQUIRE-CICS-LOOP THRU
             INQUIRE-CICS-LOOP-EXIT UNTIL X > 18.
     MOVE COUNT-I TO COUNT-LAST
     EXEC CICS INQUIRE TRANSACTION END
     END-EXEC.
*
 INQUIRE-CICS-LOOP.
*******************
     EXEC CICS INQUIRE TRANSACTION   (W-TRAN)
                       PROGRAM       (W-PROG)
                       PROFILE       (W-PROF)
                       TRANCLASS     (W-TCLA)
                       STATUS        (W-STAT)
                       PURGEABILITY  (W-PURG)
                       PRIORITY      (W-PRTY)
                       TWASIZE       (W-TWAS)
                       REMOTENAME    (W-RNAM)
                       REMOTESYSTEM  (W-RSYS)
                       TASKDATALOC   (W-DLOC)
                       TASKDATAKEY   (W-DKEY)
                       RESP          (W-RESP)
                       RESP2         (W-RESP2)
                       NEXT
     END-EXEC

     IF W-RESP2 > Ø
        ADD 1 TO X
        PERFORM CLEAN-SCREEN-LINES
        MOVE 99 TO X
        MOVE Ø  TO COUNT-I
        GO TO INQUIRE-CICS-LOOP-EXIT
```

```
END-IF

ADD 1 TO COUNT-I
IF COUNT-LAST GREATER COUNT-I
   GO TO INQUIRE-CICS-LOOP-EXIT
END-IF

IF NOT (TRANX-I = SPACES OR = LOW-VALUES)
   MOVE 4 TO SLENG
   MOVE TRANX-I TO SEARCH1
   MOVE W-TRAN  TO SEARCH2
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = Ø
   GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (PROGX-I = SPACES OR = LOW-VALUES)
   MOVE 8 TO SLENG
   MOVE PROGX-I TO SEARCH1
   MOVE W-PROG  TO SEARCH2
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = Ø
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (PROFX-I = SPACES OR = LOW-VALUES)
   MOVE 8 TO SLENG
   MOVE PROFX-I TO SEARCH1
   MOVE W-PROF  TO SEARCH2
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = Ø
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (TCLAX-I = SPACES OR = LOW-VALUES)
   MOVE 8 TO SLENG
   MOVE TCLAX-I TO SEARCH1
   MOVE W-TCLA  TO SEARCH2
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = Ø
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (STATX-I = SPACES OR = LOW-VALUES)
   MOVE 3 TO SLENG
   MOVE STATX-I TO SEARCH1
   PERFORM TRANSLATE-STATUS
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = 0
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (RNAMX-I = SPACES OR = LOW-VALUES)
   MOVE 8 TO SLENG
   MOVE RNAMX-I TO SEARCH1
   MOVE W-RNAM  TO SEARCH2
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = 0
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (RSYSX-I = SPACES OR = LOW-VALUES)
   MOVE 4 TO SLENG
   MOVE RSYSX-I TO SEARCH1
   MOVE W-RSYS  TO SEARCH2
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = 0
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (DLOCX-I = SPACES OR = LOW-VALUES)
   MOVE 5 TO SLENG
   MOVE DLOCX-I TO SEARCH1
   PERFORM TRANSLATE-DLOC
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = 0
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

IF NOT (DKEYX-I = SPACES OR = LOW-VALUES)
   MOVE 4 TO SLENG
   MOVE DKEYX-I TO SEARCH1
   PERFORM TRANSLATE-DKEY
   PERFORM COMPARE-STRINGS
   IF SEARCH-RESULT = 0
      GO TO INQUIRE-CICS-LOOP-EXIT
   END-IF
END-IF

ADD 1 TO X

MOVE   W-TRAN  TO  TRANI(X)
MOVE   W-PROG  TO  PROGI(X)
MOVE   W-PROF  TO  PROFI(X)
```

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```
     MOVE   W-TCLA  TO  TCLAI(X)
     MOVE   W-RNAM  TO  RNAMI(X)
     MOVE   W-RSYS  TO  RSYSI(X)

     MOVE   W-PRTY       TO  NUM-AUX
     MOVE   NUM-AUX(6:3) TO  PRTYI(X)
     MOVE   W-TWAS       TO  NUM-AUX
     MOVE   NUM-AUX(5:4) TO  TWASI(X)

     PERFORM  DISPLAY-STAT
     PERFORM  DISPLAY-PURG
     PERFORM  DISPLAY-DLOC
     PERFORM  DISPLAY-DKEY.
*
 INQUIRE-CICS-LOOP-EXIT.
************************
     EXIT.
*
 COMPARE-STRINGS.
*****************
     IF SEARCH-1(SLENG) = SPACE OR = '*'
        SUBTRACT 1 FROM SLENG
        GO TO COMPARE-STRINGS
     END-IF
     IF SEARCH1(1:SLENG) = SEARCH2(1:SLENG)
        MOVE 1 TO SEARCH-RESULT
     ELSE
        MOVE Ø TO SEARCH-RESULT
     END-IF.
*
 TRANSLATE-STATUS.
******************
     IF W-STAT = DFHVALUE(ENABLED)
        MOVE 'ENA' TO SEARCH2
     ELSE
     IF W-STAT = DFHVALUE(DISABLED)
        MOVE 'DIS' TO SEARCH2
     END-IF.
*
 TRANSLATE-DLOC.
****************
     IF W-DLOC = DFHVALUE(BELOW)
        MOVE 'BELOW' TO SEARCH2
     ELSE
     IF W-DLOC = DFHVALUE(ANY)
        MOVE 'ANY  ' TO SEARCH2
     END-IF.
*
 TRANSLATE-DKEY.
****************
     IF W-DKEY = DFHVALUE(USERDATAKEY)
```

```
        MOVE 'USER' TO SEARCH2
     ELSE
     IF W-DKEY = DFHVALUE(CICSDATAKEY)
        MOVE 'CICS' TO SEARCH2
     END-IF.
*
 DISPLAY-STAT.
**************
     IF W-STAT = DFHVALUE(ENABLED)
        MOVE 'Ena' To STATI(X)
     ELSE
     IF W-STAT = DFHVALUE(DISABLED)
        MOVE 'Dis' TO STATI(X)
     END-IF.
*
 DISPLAY-PURG.
**************
     IF W-PURG = DFHVALUE(PURGEABLE)
        MOVE 'Pur' TO PURGI(X)
     ELSE
     IF W-PURG = DFHVALUE(NOTPURGEABLE)
        MOVE '   ' TO PURGI(X)
     END-IF.
*
 DISPLAY-DLOC.
**************
     IF W-DLOC = DFHVALUE(BELOW)
        MOVE 'Below' TO DLOCI(X)
     ELSE
     IF W-DLOC = DFHVALUE(ANY)
        MOVE 'Any  ' TO DLOCI(X)
     END-IF.
*
 DISPLAY-DKEY.
**************
     IF W-DKEY = DFHVALUE(USERDATAKEY)
        MOVE 'User' TO DKEYI(X)
     ELSE
     IF W-DKEY = DFHVALUE(CICSDATAKEY)
        MOVE 'Cics' TO DKEYI(X)
     END-IF.
*
 CLEAN-SCREEN-LINES.
********************
     PERFORM CLEAN-SCREEN-LINES-LOOP
             VARYING Z FROM X BY 1 UNTIL Z > 18.
*
 CLEAN-SCREEN-LINES-LOOP.
*************************
     MOVE SPACES TO TRANI(Z) PROGI(Z) PROFI(Z)
                    TCLAI(Z) STATI(Z) PURGI(Z)
                    PRTYI(Z) TWASI(Z) RNAMI(Z)
                    RSYSI(Z) DLOCI(Z) DKEYI(Z).
*
 INITIATE-SCREEN.
*****************
     EXEC CICS ASSIGN APPLID (CICSNI)
     END-EXEC
     EXEC CICS ASKTIME ABSTIME (ABSTIME)
     END-EXEC
     EXEC CICS FORMATTIME
               ABSTIME (ABSTIME)
               DATE    (DDATEI)
               DATESEP ('/')
               TIME    (DTIMEI)
               TIMESEP (':')
     END-EXEC.
*
 RECEIVE-SCREEN.
****************
     EXEC CICS HANDLE CONDITION MAPFAIL(RETURN-EXIT)
     END-EXEC
     EXEC CICS HANDLE AID PF3  (RETURN-EXIT)
                          PF15 (RETURN-EXIT)
     END-EXEC
     EXEC CICS RECEIVE MAP('VITRANS')
     END-EXEC.
*
 SEND-SCREEN.
*************
     EXEC CICS SEND MAP('VITRANS') DATAONLY
     END-EXEC.
*
 SEND-SCREEN-ERASE.
*******************
     EXEC CICS SEND MAP('VITRANS') ERASE
     END-EXEC.
*
 RETURN-TRANSID.
****************
     EXEC CICS RETURN
               TRANSID  (TRANS-NAME)
               COMMAREA (COMMAREA)
               LENGTH   (EIBCALEN)
     END-EXEC.
*
 RETURN-EXIT.
*************
     EXEC CICS SEND
               FROM   (END-MESSAGE)
               LENGTH (3)
               ERASE
```

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```
           END-EXEC
           EXEC CICS RETURN
           END-EXEC
           GOBACK.
```

VITRANS BMS SOURCE CODE

```
MAPSET   DFHMSD TYPE=&SYSPARM,MODE=INOUT,CTRL=(FREEKB),                *
               LANG=COBOL,TIOAPFX=YES,EXTATT=MAPONLY
*
VITRANS  DFHMDI SIZE=(24,80)
*
CICSN    DFHMDF POS=(01,04),LENGTH=08,ATTRB=(ASKIP,PROT),              *
               COLOR=YELLOW
DDATE    DFHMDF POS=(01,57),LENGTH=10,ATTRB=(ASKIP,PROT),              *
               COLOR=YELLOW
DTIME    DFHMDF POS=(01,68),LENGTH=08,ATTRB=(ASKIP,PROT),              *
               COLOR=YELLOW
*
         DFHMDF POS=(02,02),LENGTH=04,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Tran'
         DFHMDF POS=(02,07),LENGTH=07,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Program'
         DFHMDF POS=(02,16),LENGTH=07,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Profile'
         DFHMDF POS=(02,25),LENGTH=06,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Tclass'
         DFHMDF POS=(02,34),LENGTH=03,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Sta'
         DFHMDF POS=(02,38),LENGTH=03,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Pur'
         DFHMDF POS=(02,42),LENGTH=03,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Prt'
         DFHMDF POS=(02,46),LENGTH=04,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Twas'
         DFHMDF POS=(02,51),LENGTH=05,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Rname'
         DFHMDF POS=(02,60),LENGTH=04,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Rsys'
         DFHMDF POS=(02,65),LENGTH=04,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Dloc'
         DFHMDF POS=(02,71),LENGTH=04,ATTRB=(ASKIP,PROT),              *
               COLOR=PINK,INITIAL='Dkey'
*
TRAN-X   DFHMDF POS=(03,02),LENGTH=04,ATTRB=(UNPROT,FSET,BRT,IC),      *
               COLOR=YELLOW
PROG-X   DFHMDF POS=(03,07),LENGTH=08,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
PROF-X   DFHMDF POS=(03,16),LENGTH=08,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
```

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```
TCLA-X   DFHMDF POS=(Ø3,25),LENGTH=Ø8,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
STAT-X   DFHMDF POS=(Ø3,34),LENGTH=Ø3,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
RNAM-X   DFHMDF POS=(Ø3,51),LENGTH=Ø8,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
RSYS-X   DFHMDF POS=(Ø3,6Ø),LENGTH=Ø4,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
DLOC-X   DFHMDF POS=(Ø3,65),LENGTH=Ø5,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
DKEY-X   DFHMDF POS=(Ø3,71),LENGTH=Ø4,ATTRB=(UNPROT,FSET,BRT),         *
               COLOR=YELLOW
*
         DFHMDF POS=(Ø4,Ø2),LENGTH=76,ATTRB=(ASKIP,PROT),              *
               COLOR=RED,                                              *
               INITIAL='-----------------------------------------------*
               --------------------------------'
*
TRAN-Ø1  DFHMDF POS=(Ø5,Ø2),LENGTH=Ø4,ATTRB=(ASKIP,PROT),COLOR=YELLOW
PROG-Ø1  DFHMDF POS=(Ø5,Ø7),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
PROF-Ø1  DFHMDF POS=(Ø5,16),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
TCLA-Ø1  DFHMDF POS=(Ø5,25),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
STAT-Ø1  DFHMDF POS=(Ø5,34),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PURG-Ø1  DFHMDF POS=(Ø5,38),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PRTY-Ø1  DFHMDF POS=(Ø5,42),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
TWAS-Ø1  DFHMDF POS=(Ø5,46),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
RNAM-Ø1  DFHMDF POS=(Ø5,51),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
RSYS-Ø1  DFHMDF POS=(Ø5,6Ø),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
DLOC-Ø1  DFHMDF POS=(Ø5,65),LENGTH=Ø5,ATTRB=(ASKIP,PROT)
DKEY-Ø1  DFHMDF POS=(Ø5,71),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
*
TRAN-Ø2  DFHMDF POS=(Ø6,Ø2),LENGTH=Ø4,ATTRB=(ASKIP,PROT),COLOR=YELLOW
PROG-Ø2  DFHMDF POS=(Ø6,Ø7),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
PROF-Ø2  DFHMDF POS=(Ø6,16),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
TCLA-Ø2  DFHMDF POS=(Ø6,25),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
STAT-Ø2  DFHMDF POS=(Ø6,34),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PURG-Ø2  DFHMDF POS=(Ø6,38),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PRTY-Ø2  DFHMDF POS=(Ø6,42),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
TWAS-Ø2  DFHMDF POS=(Ø6,46),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
RNAM-Ø2  DFHMDF POS=(Ø6,51),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
RSYS-Ø2  DFHMDF POS=(Ø6,6Ø),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
DLOC-Ø2  DFHMDF POS=(Ø6,65),LENGTH=Ø5,ATTRB=(ASKIP,PROT)
DKEY-Ø2  DFHMDF POS=(Ø6,71),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
*
TRAN-Ø3  DFHMDF POS=(Ø7,Ø2),LENGTH=Ø4,ATTRB=(ASKIP,PROT),COLOR=YELLOW
PROG-Ø3  DFHMDF POS=(Ø7,Ø7),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
PROF-Ø3  DFHMDF POS=(Ø7,16),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
TCLA-Ø3  DFHMDF POS=(Ø7,25),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
STAT-Ø3  DFHMDF POS=(Ø7,34),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PURG-Ø3  DFHMDF POS=(Ø7,38),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PRTY-Ø3  DFHMDF POS=(Ø7,42),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
```

```
TWAS-Ø3  DFHMDF POS=(Ø7,46),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
RNAM-Ø3  DFHMDF POS=(Ø7,51),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
RSYS-Ø3  DFHMDF POS=(Ø7,6Ø),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
DLOC-Ø3  DFHMDF POS=(Ø7,65),LENGTH=Ø5,ATTRB=(ASKIP,PROT)
DKEY-Ø3  DFHMDF POS=(Ø7,71),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
*
```

Editor's note: the code here is repeated (with appropriate modifications) for 04 to 17.

```
TRAN-18  DFHMDF POS=(22,Ø2),LENGTH=Ø4,ATTRB=(ASKIP,PROT),COLOR=YELLOW
PROG-18  DFHMDF POS=(22,Ø7),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
PROF-18  DFHMDF POS=(22,16),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
TCLA-18  DFHMDF POS=(22,25),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
STAT-18  DFHMDF POS=(22,34),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PURG-18  DFHMDF POS=(22,38),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
PRTY-18  DFHMDF POS=(22,42),LENGTH=Ø3,ATTRB=(ASKIP,PROT)
TWAS-18  DFHMDF POS=(22,46),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
RNAM-18  DFHMDF POS=(22,51),LENGTH=Ø8,ATTRB=(ASKIP,PROT)
RSYS-18  DFHMDF POS=(22,6Ø),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
DLOC-18  DFHMDF POS=(22,65),LENGTH=Ø5,ATTRB=(ASKIP,PROT)
DKEY-18  DFHMDF POS=(22,71),LENGTH=Ø4,ATTRB=(ASKIP,PROT)
*
         DFHMDF POS=(23,Ø2),LENGTH=76,ATTRB=(ASKIP,PROT),            *
               COLOR=RED,                                            *
               INITIAL='-----------------------------------------------*
               -----------------------------------'
         DFHMDF POS=(24,Ø6),LENGTH=16,ATTRB=(ASKIP,PROT),            *
               COLOR=NEUTRAL,INITIAL='ENTER  Next page'
         DFHMDF POS=(24,6Ø),LENGTH=13,ATTRB=(ASKIP,PROT),            *
               COLOR=NEUTRAL,INITIAL='PF3/PF15  End'
*
         DFHMSD TYPE=FINAL
         END
```

Systems Programmer
(Portugal)

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Interpreting CICS interval control behaviour

INTRODUCTION

CICS interval control processing provides support for the CICS API to perform time-related operations. These include the asynchronous starting of CICS transactions at some point in the future, the delaying of programs by set periods of time, and the cancelling of outstanding start operations. Such operations are supported by the EXEC CICS START, EXEC CICS DELAY, and EXEC CICS CANCEL commands. Support for interval control processing within CICS Transaction Server has been enhanced in a number of ways when compared with CICS/ESA 4.1.0. This article discusses the relationship between interval control and temporary storage processing within CICS, and reviews the various changes made to this area of the product.

OVERVIEW OF TEMPORARY STORAGE USE BY INTERVAL CONTROL

Before discussing the enhancements to interval control within CICS Transaction Server, it is beneficial to understand the relationship between interval control and CICS temporary storage processing, since this has a bearing on the changes that have been made. Interval control represents an outstanding EXEC CICS START command by means of an Interval Control Element (ICE) control block within CICS. There is a relationship between ICEs and CICS temporary storage records. CICS utilizes temporary storage to hold FROM area data associated with EXEC CICS START commands. There are a number of subtleties to be aware of when considering this relationship.

If an EXEC CICS START command does not specify a REQID value or the PROTECT option, CICS will store the data passed by the FROM area into a system-generated temporary storage queue. The name is unique, and begins with the characters ‘DF’. The remaining suffix of the name is a hexadecimal alphanumeric counter, generated by CICS, which CICS increments for every new START request.

If an EXEC CICS START command specifies a REQID value, CICS uses this as the name of the temporary storage queue to be used to hold the data. Use of a REQID value allows a subsequent EXEC CICS CANCEL command to delete a previous EXEC CICS START request that has yet to expire; the REQID is used as the token to identify the corresponding start command to be cancelled.

If an EXEC CICS START command specifies the PROTECT option, this means that the start request is not to be scheduled by CICS until the task that issues the command has successfully syncpointed and committed its Unit Of work (UOW) forwards. Therefore, CICS will defer the scheduling of the ICE associated with the EXEC CICS START command until the second phase of syncpoint has been reached. EXEC CICS START commands with the PROTECT option will have their FROM data stored by CICS in a temporary storage queue. If the command does not specify REQID, a unique queuename will be generated for use by the command. This will begin with an X'FC' character and be suffixed with a unique hexadecimal alphanumeric counter value. If REQID is specified on an EXEC CICS START command with the PROTECT option, the REQID value will be used as the name of the temporary storage queue to store the FROM data in.

Tasks that are started as the result of an EXEC CICS START command can refer to the FROM data passed on the command. An EXEC CICS RETRIEVE command will read the FROM data from the started task's associated temporary storage queue and return it to the application. This will have the effect of deleting the temporary storage record (and its associated queue if now empty). If the started task does not issue an EXEC CICS RETRIEVE command, CICS will automatically delete the temporary storage data associated with the request as part of the implicit syncpoint during task detach. This tidy-up processing ensures that FROM data for previous START commands is not retained by the CICS system after started tasks have completed.

Information pertaining to unexpired ICEs (outstanding EXEC CICS START commands) is preserved by CICS across a warm or emergency restart of the system. On a warm restarted CICS system, ICEs are rebuilt by CICS restart processing and re-associated with their FROM data, as restored from temporary storage. On an emergency-restarted CICS system, ICEs are rebuilt only if their FROM data was written to a recoverable temporary storage destination. CICS can define specific temporary storage queues as being recoverable by providing RDO TSMODEL entries with associated prefix values for such queuenames, or by using the old-style DFHTST Temporary Storage Table and providing TYPE=RECOVERY entries. Recoverable temporary storage destinations provide the ability to undo changes made to such queues, and to be recovered across a CICS emergency restart.

THE START PROTECT OPTION AND THE TST

There is a subtle difference between CICS/ESA 4.1.0 and CICS

Transaction Server in the way in which CICS handles the recovery of temporary storage queues used to hold the FROM data associated with EXEC CICS START PROTECT commands.

In CICS/ESA 4.1.0, CICS would determine whether a temporary storage queue was recoverable or not by checking for a matching queue prefix in the DFHTST table. If a corresponding prefix was found in a TYPE=RECOVERY entry within the table, CICS would treat the queue as recoverable and so log any changes made to the queue, to enable both task dynamic transaction backout and system emergency restart operations. The logic was optimized to check for certain queuenames before interrogating the DFHTST. It recognized queuenames starting with an X'FC' character as being queues generated by EXEC CICS START PROTECT queues, and therefore recoverable by default. Therefore, X'FC' was not required as a TYPE=RECOVERY prefix within the table. However, before any checks were made on the recoverability of a queue, CICS/ESA 4.1.0 verified whether a DFHTST table existed at all. If no table was provided for that run of CICS, all temporary storage queues (including those prefixed by x’FC’ for EXEC CICS START PROTECT commands) were deemed non-recoverable. This was a known consequence of not needing to provide DFHTST table entries on a CICS/ESA 4.1.0 system. A solution was to provide a dummy DFHTST with no entries. This ensured that CICS/ESA 4.1.0 treated queues for EXEC CICS START PROTECT commands as recoverable temporary storage destinations.

With the introduction of a new object-oriented temporary storage domain in CICS Transaction Server, part of the redesign involved the creation of RDO-managed TSMODELs to define queue attributes (as provided in CICS Transaction Server 1.3). Recoverability is now tested for by checking for a corresponding queuename prefix match in the TSMODEL definitions (if RDO for temporary storage attributes is being used). This logic ensures that queues starting with an X'FC' character are treated as recoverable. The only time when they would not be is if CICS has been started with no auxiliary temporary storage support, and so only the unrecoverable main temporary storage environment is supported.

This change means that a dummy DFHTST is no longer required to ensure EXEC CICS START PROTECT queues are treated as recoverable

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when using CICS Transaction Server and exploiting RDO for temporary storage attribute definitions.

MULTIPLE START REQUESTS FOR THE SAME REQID

Prior to CICS Transaction Server, it was possible to issue multiple EXEC CICS START commands with the same non-recoverable REQID value specified. That is, several EXEC CICS START commands could write their FROM data to the same temporary storage queue, as specified by the REQID parameter. This was supported provided the queue in question was non-recoverable. If the REQID mapped to a recoverable temporary storage queue, only one such EXEC CICS START request for that queue was allowed to be outstanding at any one time. That is, another EXEC CICS START command could not be issued for the same REQID until the task to be started had retrieved its FROM data and then syncpointed. If subsequent EXEC CICS START commands were issued before this point, an IOERR condition was returned by CICS interval control processing which, if unhandled, resulted in an AEIQ abend.

The possibility of having several outstanding EXEC CICS START commands using the same non-recoverable temporary storage queue to hold their FROM data meant that it was possible for the data items to be retrieved from the queue in a different order to that which had been intended. This could have been the case if start operations were delayed for some reason (if, for example, the associated terminal for a started task was not available at the time that the ICE for that START operation had expired). Therefore, to avoid this problem, and to make interval control processing treat such queues in the same way it handled recoverable temporary storage destinations, CICS Transaction Server has restricted non-recoverable REQIDs to be used by only one outstanding EXEC CICS START command at any time. This ensures that problems with incorrect FROM data record retrieval are now avoided.

One consequence of this change is that applications using EXEC CICS START commands with FROM data need to ensure that their started tasks retrieve their data before issuing a further EXEC CICS START command with the same REQID, assuming they use such a means of propagating task activity within CICS.

PROTECTED STARTS AND RECOVERABLE QUEUES

The use of a recoverable temporary storage queue as the repository for FROM data written by an EXEC CICS START command means that there are some implications to consider regarding the task that is to be started. For example, if the task was started before the originating task had completed its UOW and syncpointed, an EXEC CICS RETRIEVE command issued from the started task would have to wait for release of the queue lock by the originating task. This could happen if the expiry interval period on the EXEC CICS START command was omitted, or was of short enough duration to expire before the originating task had completed. Expiry intervals are denoted by the use of INTERVAL on the command, by an explicit time value specified by TIME on the command, or by the use of the command option AFTER, with expiry details given in hours, minutes and/or seconds.

Another possible problem is if the task which had issued the EXEC CICS START command (without the PROTECT option) were to subsequently abend or issue an EXEC CICS SYNCPOINT ROLLBACK command, after the START command. This would back-out the write to the recoverable temporary storage queue. Therefore, a subsequent EXEC CICS RETRIEVE command issued by the started task would fail with a NOTFND condition (abend AEIM).

As part of general CICS redesign and improvement, CICS Transaction Server 1.3 now avoids these problems by treating EXEC CICS START requests with FROM data directed to recoverable temporary storage queues as being protected starts. This ensures that the start request will not be scheduled by CICS until after the originating task has completed its UOW and syncpointed. By committing a start request at syncpoint time, the temporary storage queue lock is released and so the task to be started will no longer have the potential to wait for the originating task to have freed its lock upon the queue. Also, had the originating task abended or rolled-back after the EXEC CICS START command was issued, the fact that it was deemed to be a protected start means that the start would not yet have been scheduled, so avoiding the potential for NOTFND conditions on subsequent EXEC CICS RETRIEVE commands.

SUMMARY AND CONTACT INFORMATION

The changes to CICS interval control processing outlined above are to help provide a consistent approach to the execution of EXEC CICS START commands. I hope that this article has helped explain the way in which CICS interval control processing has been enhanced and works in CICS Transaction Server 1.3 and above.

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CICS Change Team
IBM (UK)

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CLER – a new CICS transaction for displaying and changing some LE options

A new transaction, CLER, was introduced and shipped with Language Environment (LE) z/OS V1.1 and retrofitted to OS/390 V2.8, V2.9, and V2.10. It allows users to:

- Display the LE Region Runtime options.
- Write the LE Runtime options to the CESE transient data queue for printing.
- Modify a subset of the LE Runtime Options.

The transaction is conversational, presenting the user with a standard 3270 Model 2 terminal display. The Runtime options that can be modified with this transaction will only be in effect for the duration of the running of the CICS address space.

The resources for CLER transaction must be defined in the CICS CSD (CICS System Definition file). There are new entries in the LE CEECCSD job in the SCEESAMP dataset for this support. The four definitions that are required if you want to use the CEDA transaction are:

```
DEFINE TRANS(CLER) PROG(CEL4RTO) GROUP(CEE)
DEFINE PROGRAM(CEL4RTO)  GROUP(CEE) LANGUAGE(ASSEMBLER)  EXECKEY(CICS)
DEFINE MAPSET(CELCLEM) GROUP(CEE)
DEFINE MAPSET(CELCLRH) GROUP(CEE)
```

On invoking the CLER transaction the screen below is displayed showing the options that can be changed and their current values:

```
-------------------------Top of screen------------------------------------
   CLER                                                       SUZY IYK2Z701

                Language Environment Region Level Runtime Options


 Type in your Choices.

 Runtime option     Choice      Possible choices.


 TRAP          ==>  ON          ON, OFF
 RPTOPTS       ==>  OFF         ON, OFF
 RPTSTG        ==>  OFF         ON, OFF
 ALL31         ==>  ON          ON, OFF
 CBLPSHPOP     ==>  ON          ON, OFF
 TERMTHDACT    ==>  TRACE
QUIET,MSG,TRACE,DUMP,UAONLY,UATRACE,UADUMP,UAIMM


 When finished, press ENTER.




       PF1=Help    3=Quit    5=Current Settings   9=Error List
-------------------------Bottom of screen---------------------------------
```

The meaning of these options are:

- TRAP – whether Language Environment should handle error conditions and program interrupts.
- RPTOPTS – whether a report of the run-time options in use by the program should be generated.
- RPTSTG – whether a report of the storage used by the program should be generated.
- ALL31 – whether the entire application is running AMODE 31.
- CBLPSHPOP – whether CICS PUSH and POP HANDLE are issued when a COBOL subroutine is called.

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- TERMTHDACT – sets the level of information produced because of an error of severity 2 or greater.

For more information on the other Runtime Options refer to the Language Environment manuals.

Note: if the Runtime Option ALL31 is modified to OFF, the stack will be forced below the 16MB line. A warning message will be issued on the screen for you to indicate whether you want to continue or not. Once the stack is modified to below, it will remain below for the duration of the region (even if you set ALL31 back to on).

For detailed documentation on use of the transaction select PF1=Help from the main menu that is displayed when the CLER transaction is invoked.

```
-------------------------Top of screen--------------------------------
CLER                                                      PAGE 4 OF 6

            Language Environment Region Level Runtime Options.

 Current Settings

 LAST WHERE SET          OPTIONS
 -------------------     ---------------------------------------------
 Installation default    PROFILE(OFF,"")
 Installation default    PRTUNIT(6)
 Installation default    PUNUNIT(7)
 Installation default    RDRUNIT(5)
 Installation default    RECPAD(OFF)
 CICS CLER Trans         RPTOPTS(OFF)
 Region default          RPTSTG(OFF)
 Installation default    NORTEREUS
 Installation default    RTLS(OFF)
 Installation default    NOSIMVRD
 Storage user exit       STACK(4Ø96,4Ø8Ø,ANYWHERE,KEEP,4Ø96,4Ø8Ø)
 Installation default    STORAGE(NONE,NONE,NONE,Ø)



 PF:  1=Help   3=Quit   7=Back   8=Forward   1Ø=RPT->CES
-------------------------Bottom of screen-----------------------------
```

This set of six screens are extremely useful to see where an LE option was set from. The example above shows options being set by the Installation and Region defaults, the CLER transaction, and the newlyintroduced Storage user exit. To send the Runtime option report to the CESE queue for output display or printing, press the PF10 key when viewing the Runtime option screen above.

The list below shows the PTF numbers for the releases where this function has been retrofitted:

- UQ48504 – V2.R8
- UQ48505 – V2.R9
- UQ48506 – V2.R10.

Andy Krasun
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IBM UK Laboratories (UK)

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CICS questions and answers

Q We are new to Sockets in CICS. We seem to have found that when our Sockets programs run and we transmit data, all CICS transactions stop and wait until the transmit completes. Is this common? Have we missed some installation step?

A Sounds like you have the Batch version of EZASOCKET which causes all of CICS to wait on transmissions. You need to INCLUDE EZACICAL in your linkedit of the Sockets program, or if you're writing in C you need to INCLUDE EZACIC17 (the new(ish) Re-entrant version – see APAR: PQ28963 for details of the re-entrant C CICS Sockets interface – this replaces EZACIC07, the NORENT version!).

If you have any CICS-related questions, please send them in and we will do our best to find answers. Alternatively, e-mail them directly to cicsq@xephon.net.

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CICS news

Data21 has announced the availability of Release 2 of ZIP/CICS, its CICS compression tool.

The latest version provides: a built-in FTP client, which simplifies the compression and transmission of files; a built-in e-mail client, allowing files to be compressed and e-mailed in a single step; and a Windows self-extractor, for older Windows versions that may not have a separate unzip tool.

For further information contact:
Data 21, 3510 Torrance Blvd, Suite 300, Torrance, CA 90503, USA.
Tel: (310) 792 1771.
URL: http://www.data21.com/products/zip.asp.

* * *

MacKinney Systems has announced VTAM Virtual Printer (VVP) Release 1.3, which is used to route print from CICS TS to the JES queue for OS/390 and z/OS or to the POWER Queue for VSE.

VVP is said to require no programming changes and it runs as a VTAM application. All printer maintenance may be done through on-line panels.

For further information contact:
Mackinney Systems, 2740 South Glenstone, Suite 103, Springfield, MI 65804, USA.
Tel: (417) 882 8012.
URL: http://www.mackinney.com/news.htm.

* * *

ClientSoft has announced Tanit Objects (CTO) a CICS solution for Web Services, which is, they claim, the only product to offer a direct, non-screen-scraping approach to building and integrating legacy components as Web services.

Application developers can create Web services for their core CICS transactions. Using one of three access methods, CTO creates customized snap-ins or components for the application server in the form of Enterprise JavaBeans (EJBs), Java Beans, COM, or Active X controls. These snap-ins or components enable the application server to interact directly with the mainframe without the need for data scraping or extra coding. This allows Web services to be implemented faster, at lower cost, and without opening up potential failure points or holes in the existing security system.

For further information contact:
ClientSoft, 8323 Northwest 12 Street, Suite 216, Miami, FL 33126, USA.
Tel: (305) 716 1007.
URL: http://www.clientsoft.com.

* * *

Compuware has announced general availability of STROBE 2.5 and introduced iSTROBE, a new browser-based tool for analysing application performance information.

iSTROBE enables interactive analysis of enterprise applications based on WebSphere MQ, CICS/TS, Visual Age for Java, DB2, IMS, and Unix System Services.

For further information contact:
Compuware, 31440 Northwestern Highway, Farmington Hills, MI 48334-2564, USA.
Tel: (248) 737 7300.
URL: http://www.compuware.com/products/strobe/istrobe.