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Non-disruptive START command

This article, the fourth in the series, continues to examine some of the options and features of the API and SPI. A partial discussion of these commands and programs was presented at Xephon's CICS Update *conference held in London in December 1997.*

The main topic of this article is how to implement a non-disruptive START command.

The source code language used to illustrate the concepts is COBOL written to ANSI 85 standards; the BMS macros provided can be converted to the SDF II (and probably other) screen 'painting' packages.

NON-DISRUPTIVE MESSAGE DELIVERY

The SPI is a very powerful area where sophisticated function can be introduced to an application to make it more 'user-friendly'. An example of a 'non-friendly' application is CMSG, the IBM-supplied message-switching transaction of BMS. If this is used to deliver a message to a terminal, it will disrupt any pseudo-conversational transaction sequence that the user is running. In fact, any application that schedules a transaction at an interactive terminal runs the same risk.

To demonstrate how this problem can be overcome, I have written a sample program which implements a non-disruptive method of message delivery from one terminal to another. The application is hardly complete – it consists of two programs and a BMS mapset consisting of two maps. Using these, I will discuss the techniques required to allow you to restore the user's environment if you interrupt what they are doing.

Note that both programs use SPI commands and so need to use the SP translator option, which is why the CBL XOPTS(SP) statement is included as the first line of both the programs.

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MESSAGE ACCEPTANCE PROGRAM

The first program accepts the text of a message and the CICS terminal identifier to which the message is to be delivered. The program is fairly unremarkable, except that it uses what I call a 'defensive programming' technique. These are methods that are designed to catch out supposedly 'impossible' error conditions as soon as they arise. In this case, it tests EIBCALEN for a specific value rather than simply assuming that a non-zero value is valid.

The two programs are mostly independent of the names you choose to call them, as well as the transaction code names you select. However, since this program must know what transaction to START, it assumes that the names of the transactions are related to one another such that the first three characters of the two transactions are identical, the names varying only in the last position. The program is set up so that it expects the last character of the message delivery transaction to be 'D'. If you wish to use something different change the last position of WS-DELIVERY-TRANSID.

The program also uses an INQUIRE TERMINAL command to verify that the identifier entered by the user is valid. The program and map could be modified to allow entry of a NETNAME as an alternative. Note that the program uses XXXXMAP as the name of both the map and the mapset – if you wish to change it, use a global change for that name.

The program uses a delay on the START command with the AFTER SECONDS(WS-DELAY-SECONDS) option. The program is set up to use a five-second delay, but you can change it to something more suitable. It can be in the range 0-359,999 when HOURS and MINUTES are *not* also specified (which is the way the START command is coded in the program as supplied).

A few other minor points to note about the message acceptance program:

- It uses the '@' symbol as a 3270-attribute. This is the combination required for ASKIP, DRK which is one aggregate IBM has failed to include in DFHBMSCA.
- It replaces nulls in the input with spaces (since nulls are not transmitted).

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- It eliminates any trailing blank lines of the input message.

MESSAGE DELIVERY PROGRAM

The other program, which performs the actual message delivery, is more interesting. It uses quite a variety of infrequently used commands and options and also actualizes the technique to ensure that, after reading the message, the user can go back to whatever (s)he was doing. The overall flow is as follows:

- Find out how the transaction was started.

  This is obtained via the STARTCODE option of the ASSIGN command. The program checks that it has been started in the proper way, to ensure that no unnecessary disruption is caused, which again is really a 'defensive programming' technique. This is done by checking that there is a DFHCOMMAREA if it has been initiated by terminal input.

  When the message delivery task is begun via a START command at a terminal, it needs to save the next transaction identifier and also any DFHCOMMAREA data stored by the previous pseudo-conversational transaction. It ensures that it is associated with a terminal by using the FACILITY option of the ASSIGN command.

  – Obtain the NEXTTRANSID using the INQUIRE TERMINAL command.

  – Prevent any other Automatic Task Initiation (ATI) whilst the message is being displayed using the NOATI option of the SET TERMINAL command.

  – Save the DFHCOMMAREA data saved by the previous pseudo-conversational task into a TS queue.

  – Ensure that there is a message to display. Logically there should always be a message for display; however, the general 'defensive programming' approach handles this logically-suspect situation with grace.

    If no FROM option was used on the START, the program frees up the keyboard via the FREEKB option of the SEND

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CONTROL command and returns to CICS as appropriate.

  - Secure the data currently displayed on the screen.

    It uses a RECEIVE BUFFER command with the ASIS option to obtain it, ensuring no erroneous upper-case translation is performed and saving the cursor position as well.

  - Get the passed data containing the message to be delivered. It does this via the standard RETRIEVE command.

  - Send the message to the screen with a standard header.

- The message is delivered using a SEND MAP command, with a map name of 'DELIVRY' and a mapset name of 'XXXXMAP'. If either of these needs to be changed, use a global change for that name. Note that if you changed the mapset name for the message acceptance program, then it will need to be changed in this program as well.

  - End the task but keep control in this application and save the previous screen data. This is done via a run-of-the-mill RETURN command.

- When the message delivery task is begun at a terminal (the user has read the message and pressed ENTER), it needs to restore the saved data from DFHCOMMAREA and re-establish the original environment.

  - Redisplay the original screen. It performs this via SEND FROM and SEND CONTROL commands. The SEND CONTROL command was discussed in a previous article in this series, *Little-known features of API and SPI, CICS Update*, Issue 147, February 1998. Briefly, this can be used to specify options that the ordinary SEND FROM command cannot. These include values such as the position of the cursor (CURSOR), the sounding of the audible alarm (ALARM), the releasing of the keyboard (FREEKB), and the resetting of the modified data tags (FRSET).

  - Re-enable ATI again using the ATI option of the SET TERMINAL command.

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– If there was no previously set transaction code, the program issues a simple RETURN command.

– If there had been a previously set transaction code, then there may have been a COMMAREA. Therefore this must be obtained from TS, the queue deleted, and the task ended with a RETURN command including the RETURN and COMMAREA options. Note that the program also handles the situation where there may have been a previously set next transaction identifier, but no data saved for it.

Finally, note that there are three 'illogical' scenarios that the program might encounter. In all of these cases the program abends the transaction. You may wish to change the codes used in these situations. The area for these codes is called ABEND-CODES and contains the sub-fields AC-WEIRD-START, AC-NO-TERMINAL, and AC-FATAL-ERROR.

ACCEPTANCE PROGRAM

```
CBL XOPTS(SP)
IDENTIFICATION DIVISION.
PROGRAM-ID. SAMPLE.
ENVIRONMENT DIVISION.
DATA DIVISION.
WORKING-STORAGE SECTION.
COPY XXXXMAP.
COPY DFHBMSCA.
COPY DFHAID.

Ø1  FILLER.
    Ø3  WS-DELAY-SECONDS            PIC S9(8) COMP VALUE 5.
    Ø3  WS-INDEX                    PIC S9(8) COMP.
    Ø3  WS-MSGLTH                   PIC S9(4) COMP.
    Ø3  WS-DELIVERY-TRANSID.
        Ø5  WS-DT-PREFIX            PIC X(Ø3).
        Ø5  FILLER                  PIC X(Ø1) VALUE 'D'.
    Ø3  WS-IND1                     PIC X(Ø1) VALUE 'N'.
        88  ERROR-FOUND                      VALUE 'Y'.
    Ø3  WS-IND2                     PIC X(Ø1) VALUE 'N'.
        88  AT-LEAST-ONE-LINE            VALUE 'Y'.
    Ø3  WS-IND3                     PIC X(Ø1) VALUE 'N'.
        88  FOUND-END                    VALUE 'Y'.
    Ø3  FATAL-MSG                   PIC X(24) VALUE
        'FATAL ERROR ENCOUNTERED!'.
```

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```
     03  END-MSG                     PIC X(23) VALUE
         'Transaction terminated.'.
     03  ACCEPTED-MSG.
         05  FILLER                  PIC X(34) VALUE
             'Message accepted for delivery to: '.
         05  AM-TERM                 PIC X(04).
     01  WS-COMMAREA.
     03  WC-TERM                     PIC X(04).
     03  WC-DATA.
         05  WC-FROM                 PIC X(04).
         05  WC-USER                 PIC X(08).
         05  WC-MSGAREA.
             07  WC-LINE             PIC X(79) OCCURS 12.
         05  FILLER REDEFINES WC-MSGAREA.
             07  WC-CHAR            PIC X(01) OCCURS 948.

 LINKAGE SECTION.
 01  DFHCOMMAREA                     PIC X(964).

 PROCEDURE DIVISION.
     IF  EIBCALEN = 0
*
*    When first time, prompt the user for input.
*
         PERFORM SEND-INITIAL
         MOVE LOW-VALUES TO WS-COMMAREA
         MOVE EIBTRMID TO WC-FROM
         EXEC CICS INQUIRE
                   TERMINAL(EIBTRMID)
                   USERID(WC-USER)
         END-EXEC
         PERFORM RET-CA
     ELSE
         IF  EIBCALEN = LENGTH OF DFHCOMMAREA
             MOVE DFHCOMMAREA TO WS-COMMAREA
             MOVE LOW-VALUES TO XXXXMAPI
         ELSE
             PERFORM FATAL-ERROR
         END-IF
     END-IF

*
*    Take the appropriate action requested by the user.
*

     EVALUATE EIBAID
         WHEN DFHENTER
             PERFORM RECEIVE-IT
         WHEN DFHPF3
             PERFORM GET-OUT
```


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```
            WHEN DFHCLEAR
                PERFORM CLEAR-KEY
            WHEN OTHER
                PERFORM INVALID-KEY
        END-EVALUATE
        .
    RECEIVE-IT.
        EXEC CICS RECEIVE
                  MAP('XXXXMAP')
                  NOHANDLE
        END-EXEC
        EVALUATE EIBRESP
            WHEN DFHRESP(NORMAL)
                PERFORM MERGE-RTN
                MOVE LOW-VALUES TO XXXXMAPO
                MOVE '@' TO MSGA
                PERFORM VALIDATE-RTN
                IF  ERROR-FOUND
                    MOVE DFHBMASB TO MSGA
                    IF  AT-LEAST-ONE-LINE
                        MOVE 'Ensure destination terminal is valid.'
                         TO MSGO
                    ELSE
                        MOVE 'Message must have at least one line.'
                         TO MSGO
                    END-IF
                    PERFORM SEND-DATAONLY
                    PERFORM RET-CA
                END-IF
                MOVE DFHBMASB TO MSGA
                MOVE WC-TERM TO AM-TERM
                MOVE ACCEPTED-MSG TO MSGO
                PERFORM VARYING WS-INDEX FROM 1 BY 1
                 UNTIL  WS-INDEX > 948
                    IF  WC-CHAR(WS-INDEX) = LOW-VALUE
                        MOVE SPACE TO WC-CHAR(WS-INDEX)
                    END-IF
                END-PERFORM
                MOVE LENGTH OF WC-DATA TO WS-MSGLTH
                PERFORM VARYING WS-INDEX FROM 12 BY -1
                 UNTIL  FOUND-END
                    IF  WC-LINE(WS-INDEX) = SPACES
                        SUBTRACT 79 FROM WS-MSGLTH
                    ELSE
                        SET FOUND-END TO TRUE
                    END-IF
                END-PERFORM
                MOVE EIBTRNID TO WS-DT-PREFIX
                EXEC CICS START
                          TRANSID(WS-DELIVERY-TRANSID)
```

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```
                    TERMID(WC-TERM)
                    FROM(WC-DATA)
                    LENGTH(WS-MSGLTH)
                    AFTER SECONDS(WS-DELAY-SECONDS)
            END-EXEC
            PERFORM SEND-MERGE
            MOVE LOW-VALUES TO WC-MSGAREA
            PERFORM RET-CA
        WHEN DFHRESP(MAPFAIL)
            MOVE DFHBMASB TO MSGA
            MOVE 'Please enter data.' TO MSGO
            PERFORM SEND-EXISTING-CURSOR
            PERFORM RET-CA
        WHEN OTHER
            PERFORM FATAL-ERROR
    END-EVALUATE
    .
MERGE-RTN.
    IF (TERML NOT = ZERO)
    OR  TERMF = DFHBMEOF
        MOVE TERMI TO WC-TERM
    END-IF
    PERFORM VARYING WS-INDEX FROM 1 BY 1 UNTIL WS-INDEX > 12
        IF (LINEL(WS-INDEX) NOT = ZERO)
        OR  LINEF(WS-INDEX) = DFHBMEOF
            MOVE LINEI(WS-INDEX) TO WC-LINE(WS-INDEX)
        END-IF
    END-PERFORM
    .
VALIDATE-RTN.
    EXEC CICS INQUIRE
              TERMINAL(WC-TERM)
              NOHANDLE
    END-EXEC
    IF  EIBRESP NOT = DFHRESP(NORMAL)
        SET ERROR-FOUND TO TRUE
        MOVE -1         TO TERML
        MOVE DFHBMBRY TO TERMA
    END-IF
    PERFORM VARYING WS-INDEX FROM 1 BY 1 UNTIL WS-INDEX > 12
        IF  (WC-LINE(WS-INDEX) NOT = LOW-VALUES)
        AND (WC-LINE(WS-INDEX) NOT = SPACES    )
            SET AT-LEAST-ONE-LINE TO TRUE
        END-IF
    END-PERFORM
    IF  NOT AT-LEAST-ONE-LINE
        SET ERROR-FOUND TO TRUE
        MOVE -1         TO LINEL(1)
```


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```
    END-IF
    .
INVALID-KEY.
    MOVE 'Invalid key pressed.' TO MSGO
    MOVE DFHBMASB TO MSGA
    PERFORM SEND-EXISTING-CURSOR
    PERFORM RET-CA
    .
SEND-EXISTING-CURSOR.
    EXEC CICS SEND
              MAP('XXXXMAP')
              CURSOR(EIBCPOSN)
              DATAONLY
              FREEKB
    END-EXEC
    .
CLEAR-KEY.
    MOVE 'Invalid key pressed.' TO MSGO
    MOVE DFHBMASB TO MSGA
    PERFORM SEND-EXISTING-DATA
    .
SEND-EXISTING-DATA.
    MOVE WC-TERM TO TERMO
    PERFORM VARYING WS-INDEX FROM 1 BY 1 UNTIL WS-INDEX > 12
        MOVE WC-LINE(WS-INDEX) TO LINEO(WS-INDEX)
    END-PERFORM
    PERFORM SEND-MERGE
    PERFORM RET-CA
    .
GET-OUT.
    EXEC CICS SEND
              FROM(END-MSG)
              ERASE
    END-EXEC
    PERFORM RET
    .
SEND-DATAONLY.
    EXEC CICS SEND
              MAP('XXXXMAP')
              CURSOR
              DATAONLY
              FREEKB
              FRSET
    END-EXEC
    .
SEND-MERGE.
    EXEC CICS SEND
              MAP('XXXXMAP')
              ERASE
    END-EXEC
```

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```
    .
SEND-INITIAL.
    EXEC CICS SEND
              MAP('XXXXMAP')
              MAPONLY
              ERASE
    END-EXEC
    .
RET-CA.
    EXEC CICS RETURN
              TRANSID(EIBTRNID)
              COMMAREA(WS-COMMAREA)
    END-EXEC
    .
RET.
    EXEC CICS RETURN
    END-EXEC
    .
FATAL-ERROR.
    EXEC CICS SEND
              FROM(FATAL-MSG)
              ERASE
    END-EXEC
    PERFORM RET
    .
```

DELIVERY PROGRAM

```
CBL XOPTS(SP)
IDENTIFICATION DIVISION.
PROGRAM-ID. SAMPLE.
ENVIRONMENT DIVISION.
DATA DIVISION.
WORKING-STORAGE SECTION.
Ø1  ABEND-CODES.
    Ø3  AC-WEIRD-START              PIC X(Ø4) VALUE 'STNS'.
    Ø3  AC-NO-TERMINAL              PIC X(Ø4) VALUE 'STNT'.
    Ø3  AC-FATAL-ERROR              PIC X(Ø4) VALUE 'STFE'.

Ø1  WS-COMMAREA.
    Ø3  WS-CPOSN                    PIC S9(4) COMP.
    Ø3  WS-BUFLTH                   PIC S9(4) COMP.
    Ø3  WS-TRANID                   PIC X(Ø4).
    Ø3  WS-INDICATOR                PIC X(Ø1).
        88  HAD-COMMAREA                       VALUE 'Y'.
        88  NO-COMMAREA                        VALUE 'N'.
    Ø3  WS-BUFFER                   PIC X(21Ø1).
```


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```
Ø1  FILLER.
    Ø3  WS-MSGLTH                   PIC S9(4) COMP.
    Ø3  WS-IX                       PIC S9(4) COMP.
    Ø3  TSQ-LEN                     PIC S9(4) COMP.
    Ø3  TSQ-NAME.
        Ø5  TSN-TRAN                PIC X(Ø4).
        Ø5  TSN-TERM                PIC X(Ø4).
    Ø3  WS-TERM                     PIC X(Ø4).
    Ø3  WS-STARTCODE.
        Ø5  WS-SC1                  PIC X(Ø1).
            88  TERMINAL-INPUT             VALUE 'T'.
            88  STARTED-TASK               VALUE 'S'.
        Ø5  WS-SC2                  PIC X(Ø1).
            88  DATA-PROVIDED              VALUE 'D'.
    Ø3  WS-MSG.
        Ø5  WS-INPUT.
            Ø7  WS-FROM             PIC X(Ø4).
            Ø7  WS-USER             PIC X(Ø8).
            Ø7  WS-LINE             PIC X(79) OCCURS 12.
    Ø3  WRONG-MSG                   PIC X(47) VALUE
        '    This txn cannot be started from a terminal!'.

COPY XXXXMAP.

LINKAGE SECTION.
Ø1  DFHCOMMAREA                     PIC X(211Ø).

Ø1  LS-TSREC                        PIC X(32767).

PROCEDURE DIVISION.
    EXEC CICS ASSIGN
              STARTCODE(WS-STARTCODE)
    END-EXEC
    IF  TERMINAL-INPUT
        IF  EIBCALEN = Ø
            EXEC CICS SEND
                      FROM(WRONG-MSG)
                      ERASE
            END-EXEC
            PERFORM RET
        ELSE
            MOVE DFHCOMMAREA TO WS-COMMAREA
            EXEC CICS SEND
                      FROM(WS-BUFFER)
                      LENGTH(WS-BUFLTH)
                      ERASE
            END-EXEC
            EXEC CICS SEND CONTROL
                      CURSOR(WS-CPOSN)
```

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```
            END-EXEC
            EXEC CICS SET
                      TERMINAL(EIBTRMID)
                      ATI
                      NOHANDLE
            END-EXEC
            IF  WS-TRANID = SPACES
                PERFORM RET
            ELSE
                IF  HAD-COMMAREA
                    PERFORM MAKE-TSN
                    EXEC CICS READQ TS
                              QUEUE(TSQ-NAME)
                              SET(ADDRESS OF LS-TSREC)
                              LENGTH(TSQ-LEN)
                              NOHANDLE
                    END-EXEC
                    IF  EIBRESP NOT = DFHRESP(NORMAL)
                        PERFORM FATAL-ABEND
                    END-IF
                    PERFORM DELETE-TSQ
                    EXEC CICS RETURN
                              TRANSID(WS-TRANID)
                              COMMAREA(LS-TSREC)
                              LENGTH(TSQ-LEN)
                    END-EXEC
                ELSE
                    PERFORM RET-TRANSID
                END-IF
            END-IF
        END-IF
    ELSE
        IF  NOT STARTED-TASK
            EXEC CICS ABEND
                      ABCODE(AC-WEIRD-START)
            END-EXEC
        END-IF
        EXEC CICS ASSIGN
                  FACILITY(WS-TERM)
                  NOHANDLE
        END-EXEC
        IF  EIBRESP = DFHRESP(INVREQ)
            EXEC CICS ABEND
                      ABCODE(AC-NO-TERMINAL)
            END-EXEC
        END-IF
        EXEC CICS INQUIRE
                  TERMINAL(EIBTRMID)
                  NEXTTRANSID(WS-TRANID)
                  NOHANDLE
```


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```
END-EXEC
EXEC CICS SET
          TERMINAL(EIBTRMID)
          NOATI
          NOHANDLE
END-EXEC
IF  EIBCALEN > Ø
    MOVE EIBCALEN TO TSQ-LEN
    PERFORM MAKE-TSN
    PERFORM DELETE-TSQ
    EXEC CICS WRITEQ TS
              QUEUE(TSQ-NAME)
              FROM(DFHCOMMAREA)
              LENGTH(TSQ-LEN)
    END-EXEC
    SET HAD-COMMAREA TO TRUE
ELSE
    SET NO-COMMAREA  TO TRUE
END-IF
IF  NOT DATA-PROVIDED
    EXEC CICS SEND CONTROL
              FREEKB
    END-EXEC
    IF  WS-TRANID = SPACES
        PERFORM RET
    ELSE
        IF  HAD-COMMAREA
            PERFORM DELETE-TSQ
            EXEC CICS RETURN
                      TRANSID(WS-TRANID)
                      COMMAREA(DFHCOMMAREA)
                      LENGTH(TSQ-LEN)
            END-EXEC
        ELSE
            PERFORM RET-TRANSID
        END-IF
    END-IF
END-IF
MOVE LENGTH OF WS-BUFFER TO WS-BUFLTH
EXEC CICS RECEIVE BUFFER
          ASIS INTO(WS-BUFFER)
          LENGTH(WS-BUFLTH)
          NOHANDLE
END-EXEC
MOVE EIBCPOSN TO WS-CPOSN
MOVE LENGTH OF WS-INPUT TO WS-MSGLTH
EXEC CICS RETRIEVE
          INTO(WS-INPUT)
          LENGTH(WS-MSGLTH)
          NOHANDLE
```

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```
                END-EXEC
                MOVE LOW-VALUES TO DELIVRYO
                MOVE WS-FROM TO TERMIDO
                MOVE WS-USER TO USERIDO
                COMPUTE WS-IX = (WS-MSGLTH - 12) / LENGTH OF WS-LINE
                PERFORM UNTIL WS-IX = Ø
                    MOVE WS-LINE(WS-IX) TO THEMSGO(WS-IX)
                    SUBTRACT 1 FROM WS-IX
                END-PERFORM
                EXEC CICS SEND
                          MAP('DELIVRY')
                          MAPSET('XXXXMAP')
                          ERASE
                END-EXEC
                EXEC CICS RETURN
                          TRANSID(EIBTRNID)
                          COMMAREA(WS-COMMAREA)
                END-EXEC
            END-IF
            .
        MAKE-TSN.
            MOVE EIBTRNID TO TSN-TRAN
            MOVE EIBTRMID TO TSN-TERM
            .
        DELETE-TSQ.
            EXEC CICS DELETEQ TS
                      QUEUE(TSQ-NAME)
                      NOHANDLE
            END-EXEC
            .
        RET-TRANSID.
            EXEC CICS RETURN
                      TRANSID(WS-TRANID)
            END-EXEC
            .
        RET.
            EXEC CICS RETURN
            END-EXEC
            .
        FATAL-ABEND.
            EXEC CICS ABEND
                      ABCODE(AC-FATAL-ERROR)
            END-EXEC
            .
```

BMS MACROS

```
* Acceptance screen
XXXXMAP  DFHMSD TYPE=SYSPARM,LANG=COBOL,MODE=INOUT,STORAGE=AUTO,       C
```


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```
              TIOAPFX=YES,CTRL=(FREEKB,FRSET),                          C
              MAPATTS=(COLOR,HILIGHT),DSATTS=(COLOR,HILIGHT)
XXXXMAP  DFHMDI SIZE=(24,80)
         DFHMDF POS=(01,25),LENGTH=29,ATTRB=(ASKIP,BRT),                C
               INITIAL='Sample Message Delivery Entry'
         DFHMDF POS=(02,25),LENGTH=29,ATTRB=(ASKIP,BRT),                C
               INITIAL='----------------'
         DFHMDF POS=(03,25),LENGTH=23,ATTRB=(ASKIP),                    C
               INITIAL='Enter CICS Terminal ID:'
TERM     DFHMDF POS=(03,49),LENGTH=04,ATTRB=(UNPROT,IC)
         DFHMDF POS=(03,54),LENGTH=01,ATTRB=(ASKIP)
         DFHMDF POS=(04,17),LENGTH=45,ATTRB=(ASKIP),                    C
               INITIAL='And enter message text on the following lines.'
LINE     DFHMDF POS=(05,01),LENGTH=79,ATTRB=(UNPROT),OCCURS=12
         DFHMDF POS=(17,01),LENGTH=01,ATTRB=(ASKIP)
MSG      DFHMDF POS=(22,10),LENGTH=60,ATTRB=(ASKIP,DRK)
* Delivery screen
DELIVRY  DFHMDI SIZE=(24,80)
         DFHMDF POS=(01,25),LENGTH=28,ATTRB=(ASKIP,BRT),                C
               INITIAL='Sample Message Delivery Task'
         DFHMDF POS=(02,25),LENGTH=28,ATTRB=(ASKIP,BRT),                C
               INITIAL='----------------'
         DFHMDF POS=(03,18),LENGTH=43,ATTRB=(ASKIP),                    C
               INITIAL='The following message has been sent to this'
         DFHMDF POS=(04,18),LENGTH=11,ATTRB=(ASKIP),                    C
               INITIAL='terminal by'
USERID   DFHMDF POS=(04,30),LENGTH=08,ATTRB=(ASKIP,BRT)
         DFHMDF POS=(04,39),LENGTH=13,ATTRB=(ASKIP),                    C
               INITIAL='from terminal'
TERMID   DFHMDF POS=(04,53),LENGTH=04,ATTRB=(ASKIP,BRT)
         DFHMDF POS=(05,01),LENGTH=79,ATTRB=(ASKIP),                    C
               INITIAL='--------------------------C-----------------'
THEMSG   DFHMDF POS=(06,01),LENGTH=79,ATTRB=(ASKIP,BRT),OCCURS=12
         DFHMSD TYPE=FINAL
         END
```

The final article in this series will continue the theme of using some of the useful but uncommonly used options and features of the API and SPI.

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EXEC CICS ADDRESS CSA revisited

INTRODUCTION

In *CICS/CA-IDMS 10.2 programs under CICS/ESA 4.1*, *CICS Update*, Issue 132, November 1996, I described how to modify CICS/CA-IDMS 10.2 load modules, allowing them to run under CICS/ESA 4.1. There was, in fact, another obstacle to overcome for the migration to be a success. The 'EXEC CICS ADDRESS CSA' command was used not only in the CICS/CA-IDMS 10.2 stub, but was actually pervasive in most of the client's older applications. Unlike the dilemma presented by the CICS/CA-IDMS 10.2 stub, where the problem code was isolated to a small section, locating the illegal object code and superzapping them was not a viable solution. However, a solution had to be found – and soon.

PROBLEM DESCRIPTION

The original article described the incompatibility of CICS/CA-IDMS 10.2 and CICS/ESA 4.1. The CICS/CA-IDMS 10.2 stub used the 'EXEC CICS ADDRESS CSA' command and assumed that the Common Work Area (CWA) was exactly 512 bytes past the CSA. CICS/ESA 4.1 no longer supported the 'EXEC CICS ADDRESS CSA' command and the CWA was no longer contiguous with the CSA. I was able to solve the problem by developing superzap data that would convert the illegal instructions into valid ones. The primary reasons for this approach were that the client had low confidence in the currency of their application source code, and there was a pressing need to migrate to CA-IDMS 12.0.

As with many older CICS applications, programmers had often developed, or found a need to use, the 'EXEC CICS ADDRESS CSA' command – this being especially true for this particular client. The client enforced a standard compilation process, which automatically included common code that created date and time values from the CSA. Unfortunately, the same strictness was not diligently applied to their source code management.

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In addition, there were no standards preventing the programmer from using the 'EXEC CICS ADDRESS CSA' command. Since CICS/ESA 4.1 does not support this command, it would seem that most customers would be forced to modify and recompile their programs. The prospect of recompiling questionable source code, and risking additional expense and time correcting the programs, was daunting.

WHAT TO DO?

There are packaged solutions to this problem, some of which capture the illegal command in the CICS Command Interface Exit (XEIIN and XEIOUT), obtain the address of the CSA, and present the caller with the desired result. At the time, this seemed like a reasonable solution. Since I developed a solution for the CICS/CA-IDMS 10.2 problem, I felt that I could create one using the same approach as some of the vendor products. However, during my research I discovered another, far easier approach to this problem.

'EXEC CICS ADDRESS CSA' IS NOT SUPPORTED, UNLESS...

The CICS module DFHEEI is the EXEC interface processor for the DFHEIP ADDRESS, ASSIGN, PUSH, POP, and HANDLE commands. This seemed like a good place to start to see how I should design my exit. Fortunately, DFHEEI is still viewable via the View Program Listing (VPL) facility on IBMLink. As I scanned the source code, I noticed the following:

```
CLC    5(8,R1Ø),=CL8'ADMASLC'   GDDM CICS STUB?
BNE    EIAR1Ø             NO - ADDR PROTECTED CSA
```

In effect, what this code segment shows is that it honours the 'EXEC CICS ADDRESS CSA' request if you are IBM's GDDM product. Otherwise, CICS would set the return value with an address that points to a fetch-protected storage area, thereby causing a program exception once the address is used. When I issued an ETR to IBM regarding the contents of the fetch-protected area, they stated that the information is proprietary. Apparently, IBM's GDDM component that runs under CICS was not rewritten in time to be compliant with CICS/ESA 4.1. This exception provided me with the 'back-door' that I needed. As a result, I wrote a quick one-byte zap that converted the

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BNE instruction shown above into an NOP instruction and, as hoped, a program compiled under CICS/VS 2.1.1 using the illegal instruction now worked. I later created an SMP/E usermod for the zap, to ensure that the modification would not disappear if maintenance were applied in the future. The usermod is written as follows:

```
++USERMOD(yourmodname)
++VER(C150) FMID(HCI4100) PRE(UN86657)
++ZAP(DFHEEI) DISTLIB(ADFHMOD)
  NAME DFHEEI
  VER 03C2 D507,A005,9090
  VER 03C8 4770,9098
  REP 03C8 4700,0000
```

I have not researched the feasibility of applying this modification to a CICS/ESA Version 3.3 system, but I suspect it can be done.

CONCLUSION

Under normal circumstances, I would not support this type of modification to system software. This practice typically causes problems for the customer when a major upgrade is planned and the customer has become overly dependent on their system modifications. However, I also believe that there are situations that make it very difficult for customers to migrate to a current level of software, especially if the functionality they need is dependent upon the software level of other related products, eg IDMS V12.0 requires CICS/ESA Version 3.3 or higher. In addition, forcing users to spend time (and money) modifying and recompiling programs that have been running for years without any problems is harsh, especially if the accuracy of the source code is questionable at best.

This modification provides users with some breathing space, allowing them to run their older applications on a higher level of CICS, and without having to support multiple versions of CICS.

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CICS statement tool

INTRODUCTION

Because it is difficult to remember every CICS API statement, we have developed a menu-driven tool to help our programmers. This tool will help you to import the most common CICS-statements into a source program.

You can add the CICS-statement when you enter an ‘a’ (after) or ‘b’ (before) on your TSO/ISPF edit screen in the source code and call the REXX EXEC CICSAPI.

More statements can easily be added to the control file if required:

```
Command ===> cicsapi
****** ***************************** Top of Data *************
000100     THIS IS YOUR SOURCE CODE
a00200
****** **************************** Bottom of Data ***********
```

```
                  Generating CICS statements

             These are the most used CICS statements
                    Push N for the next menu


Action  ===>          VSAM HANDLING                 QUEUE HANDLING
                      -RF (read file)               -RQTD (readqueue td)
                      -WF (write file)              -RQTS (readqueue ts)
                      -RW (rewrite file)            -WQTD (writequeue td)
                      -UL (unlock file)             -WQTS (writequeue ts)
                      -D  (delete file)             -DQTD (deletequeue td)
                                                    -DQTS (deletequeue ts)
                      VSAM BROWSE HANDLING
                      -SB (start browse)
                      -RN (readnext)           MAP HANDLING
                      -RP (readprev)           -RM (receive map)
                      -EB (end browse)         -SM (send map)
                      -RB (reset browse)
```

Figure 1: CICS statements generator

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After this the menu-driven CICS statements generator will appear, as shown in Figure 1.

Suppose WF is entered, the following statements are inserted in the source program :

```
Command ===>
 ****** ***************************** Top of Data ***
 000100     THIS IS YOUR SOURCE CODE
 000200
 =NOTE=        EXEC CICS  WRITE
 =NOTE=                   FILE(FILENAME)
 =NOTE=                   MASSINSERT
 =NOTE=                   FROM(DATA-AREA)
 =NOTE=                   LENGTH(DATA-VALUE)
 =NOTE=                   RIDFLD(DATA-AREA)
 =NOTE=                   KEYLENGTH(DATA-VALUE)
 =NOTE=                   SYSID(SYSTEMNAME)
 =NOTE=                   RBA|RRN
 =NOTE=        END-EXEC
 ****** **************************** Bottom of Data *
```

You can add these notes with ‘MMD....MMD’ (as line block commands). If you know the abbreviations, these can be entered directly in the first screen.

CICSAPI EXEC

```
/*REXX*/
/*                                                              */
/*Used panels / EXECs                                  */
/* - CICSAPI    EXEC this REXX */
/* - CNTL  the   CICSAPI-database*/
/* - C@GEENAB: message panel */
/* - CICS1: panel 1*/
/* - CICS2: panel 2*/
/* - CICS3: panel 3*/
/* - CICS4: panel 4*/
/* - CICS5: panel 5*/
/*with 'md' you can make the statements permanent in the source*/
ADDRESS ISPEXEC
"LIBDEF ISPPLIB DATASET ID('YOUR.PANEL.LIBRARY')"

TRACE o
ISPEXEC  'Control Errors Return'
ISREDIT 'Macro (ACTIE) NOPROCESS'
UPPER ACTIE
/* if no a or b is placed as a line command */
```


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```
ISREDIT 'PROCESS DEST'
if RC ¬= Ø Then
   Do
     ISPEXEC 'ADDPOP ROW(2) COLUMN(1Ø)'
     ISPEXEC 'DISPLAY PANEL(C@geenab)'
     exit
end
ISREDIT '(ZDEST) = LINENUM .ZDEST'
/* Show first panel */
If ACTIE = '' Then
  Do
     ISPEXEC 'ADDPOP ROW(2) COLUMN(1Ø)'
     ISPEXEC 'DISPLAY PANEL(CICS1)'
     RETC     = RC
End
/* if N pushed: show second panel */
If ACTIE = 'N' Then
  Do
     ISPEXEC 'ADDPOP ROW(2) COLUMN(1Ø)'
     ISPEXEC 'DISPLAY PANEL(CICS2)'
     RETC     = RC
End
/* if N pushed: show third panel */
If ACTIE = 'N' Then
  Do
     ISPEXEC 'ADDPOP ROW(2) COLUMN(1Ø)'
     ISPEXEC 'DISPLAY PANEL(CICS3)'
     RETC     = RC
End
/* if  N pushed: show fourth panel */
If ACTIE = 'N' Then
  Do
     ISPEXEC 'ADDPOP ROW(2) COLUMN(1Ø)'
     ISPEXEC 'DISPLAY PANEL(CICS4)'
     RETC     = RC
End
/* if N pushed: show fifth panel */
If ACTIE = 'N' Then Do
  Do
     ISPEXEC 'ADDPOP ROW(2) COLUMN(1Ø)'
     ISPEXEC 'DISPLAY PANEL(CICS5)'
     RETC     = RC
End
/*if return code not equal Ø, leave programm */
If RETC ¬= Ø Then Exit
/*if variable actie is empty, call lees*/
If ACTIE¬= ''  Then
   DO
     call lees
   END
```

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```
End
/* read control file from database with matching CICS statement */
lees:
bestsds='YOUR.CONTROL.FILE(dataset)'
address tso
"allocate fi(indd1) da('"bestsds"') shr reuse"
k=1
"EXECIO * DISKR indd1 (STEM INdd1. FINIS)"
do i=1 to INDD1.Ø
       comm=substr(indd1.i,1,1Ø)
       comm=strip(comm)
       if comm=actie then
       do
         if k=1 then
         do
           outdd1.k='       exec cics  '||substr(indd1.i,2Ø,2Ø)
         end
         else
         do
           OUTDD1.K='                  '||substr(indd1.i,2Ø,7Ø)
         end
         k=k+1
       end
end
if k>1 then
do
   OUTDD1.K='       end-exec'
   k=k+1
end
K=K-1
Do I=K BY -1 TO 1
   REGEL = outdd1.I
   IsrEdit "LINE_AFTER "ZDEST" = NOTELINE (REGEL)"
End
exit
```

MESSAGE PANEL

```
)BODY window(45 6)
+ %You didn't use after or before %
+ %        ===> PUSH F3 <=====% _Z
+
)INIT
  .ZVARS = ACTIE
)PROC
  VER(&ACTIE,NB,LIST)
)END
```


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CICSAPI PANEL 1 (CICS1)

```
)BODY
+ %                  Generating CICS statements%
+
+ %           These are the most used CICS statements%
+ %                  Push N for the next menu%
+
+Action %===>_Z      +VSAM HANDLING              QUEUE HANDLING
                     -RF (read file)             -RQTD (readqueue td)
                     -WF (write file)            -RQTS (readqueue ts)
                     -RW (rewrite file)          -WQTD (writequeue td)
                     -UL (unlock file)           -WQTS (writequeue ts)
                     -D  (delete file)           -DQTD (deletequeue td)
                     -DQTS (deletequeue ts)
                     VSAM BROWSE HANDLING
                     -SB (start browse)
                     -RN (readnext)        MAP HANDLING
                     -RP (readprev)        -RM (receive map)
                     -EB (end browse)      -SM (send map)
                     -RB (reset browse)
+
)INIT
  .ZVARS = ACTIE
)PROC
)END
```

CICSAPI PANEL 2 (CICS2)

```
)BODY
+ %                  Generating CICS statements%
+
+ %  These are the least used CICS statements from A to D%
+ %                  Push N for the next menu%
+
+Action %===>_Z        +CONTROL HANDLING
                       -FM  (freemain)/GM (getmain)
                       -LI  (link)
                       -XCTL (transfer program control)

                      +-AB  (abnormal end)
                       -AD  (address)
                       -AS  (assign)
                       -AT  (asktime)/FT (formattime)
                       -CA  (cancel)
                       -DEQ (dequeue)/ENQ (enqueue)
                       -DL  (delay)

+
```

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```
)INIT
  .ZVARS = ACTIE
)PROC
)END
```

CICSAPI PANEL 3 (CICS3)

```
)BODY
+ %                  Generating CICS statements%
+
+ %  These are the least used CICS statements from H to R%
+ %                  Push N for the next menu%
+
+Action %===>_Z        +-HA  (handle abnormal end)
                       -HC  (handle condition)
                       -IC  (ignore condition)
                       -IP  (inquire program)
                       -IT  (inquire transaction)
                       -PO  (post)
                       -POH (pop handle)/PUH (push handle)
                       -QS  (query security)
                       -REC (receive)
                       -RL  (release)
                       -RTR (retrieve)
                       -RTU (return)
+
)INIT
  .ZVARS = ACTIE
)PROC
)END
```

CICSAPI PANEL 4 (CICS4)

```
)BODY
+ %                  Generating CICS statements%
+
+ %  These are the least used CICS statements from S to Z%
+ %                  Push N for the next menu%
+
+Action %===>_Z      +-SC   (spoolclose)/SR (spoolread)/SW (spoolwrite)
                     -SU   (suspend)
                     -SENDT (send text)
                     -SOF  (signoff)/SON (signon)
                     -ST   (start)
                     -SY   (syncpoint)
                     -VP   (verify password)
+
)INIT
```


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```
  .ZVARS = ACTIE
)PROC
)END
```

CICSAPI PANEL 5 (CICS5)

```
)BODY
+ %                   Generating CICS statements%
+ %             These are the CICS statements for DATACOMM.%
+
+Action             -IABE  (issue abend)
%===>_Z           +-ICON  (issue connect)
                   -IDISC (issue disconnect)
                   -ICOPY (issue copy)
                   -IERASEAUP (issue eraseaup)
                   -IERR  (issue error)
                   -INOTE (issue note)
                   -IPASS (issue pass)
                   -IPREP (issue prepare)
                   -IRESET (issue reset)
                   -ISIGA  (issue signal APPC)
                   -CO     (connect)
                   -F      (free)/FMRO (free mro)
                   -RECA  (receive APPC)/RECM (receive MRO)
                   -RECD  (receive display)
                   -SENDA (send APPC)/SENDM (receive MRO)
                   -SENDD (receive display)
+
)INIT
  .ZVARS = ACTIE
)PROC
)END
```

CICSAPI CONTROL STATEMENTS

This contains YOUR.CONTROL.FILE (dataset).

```
M_AB               ABEND
M_AD               ADDRESS
M_AS               ASSIGN
M_AT               ASKTIME
M_CA               CANCEL
M_CO               CONNECT
M_D                DELETE
M_DEQ              DEQ
M_DL               DELAY
M_DQTD             DELETEQ TD
M_DQTS             DELETEQ TS
```

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M_EB	ENDBR
M_ENQ	ENQ
M_F	FREE
M_FM	FREEMAIN
M_FMRO	FREE MRO
M_FT	FORMATTIME
M_GM	GETMAIN
M_HA	HANDLE ABEND
M_HC	HANDLE CONDITION
M_IABE	ISSUE ABEND
M_IABO	ISSUE ABORT
M_IADD	ISSUE ADD
M_ICON	ISSUE CONFIRMATION
M_ICOPY	ISSUE COPY
M_IDISC	ISSUE DISCONNECT
M_IEND	ISSUE END
M_IENDF	ISSUE ENDFILE
M_IENDOP	ISSUE ENDOUTPUT
M_IEODS	ISSUE EODS
M_IERASE	ISSUE ERASE
M_IERASEAUP	ISSUE ERASEAUP
M_IERR	ISSUE ERROR
M_ILOAD	ISSUE LOAD
M_INOTE	ISSUE NOTE
M_IPASS	ISSUE PASS
M_IPREP	ISSUE PREPARE
M_IPRINT	ISSUE PRINT
M_IQUERY	ISSUE QUERY
M_IREC	ISSUE RECEIVE
M_IREPL	ISSUE REPLACE
M_IRESET	ISSUE RESET
M_ISEND	ISSUE SEND
M_ISIGA	ISSUE SIGNAL
M_ISIGL	ISSUE SIGNAL
M_IWAIT	ISSUE WAIT
M_IC	IGNORE CONDITION
M_IP	INQUIRE PROGRAM
M_IT	INQUIRE TRANSACTION
M_LI	LINK
M_POH	POP HANDLE
M_PUH	PUSH HANDLE
M_PO	POST
M_QS	QUERY SECURITY
M_REC	RECEIVE
M_RECA	RECEIVE (APPC)
M_RECD	RECEIVE (DISPLAY)
M_RECM	RECEIVE (MRO)
M_RF	READ FILE
M_RB	RESETBR
M_RL	RELEASE

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```
M_RM              RECEIVE MAP
M_RN              READNEXT
M_RP              READPREV
M_RQTD            READQ TD
M_RQTS            READQ TS
M_RTR             RETRIEVE
M_RTU             RETURN
M_SB              STARTBR
M_SC              SPOOLCLOSE
M_SENDA           SEND (APPC)
M_SENDD           SEND (DISPLAY)
M_SENDM           SEND (MRO)
M_SENDT           SEND TEXT
M_SM              SEND MAP
M_SU              SUSPEND
M_SR              SPOOLREAD
M_SW              SPOOLWRITE
M_SOF             SIGNOFF
M_SON             SIGNON
M_ST              START
M_SY              SYNCPOINT
M_UL              UNLOCK
M_VP              VERIFY PASSWORD
M_WF              WRITE FILE
M_WO              WRITE OPERATOR
M_WQTD            WRITEQ TD
M_WQTS            WRITEQ TS
M_XCTL            XCTL
AB                ABEND
AB                ABCODE(NAME)
AB                CANCEL
AB                NODUMP
AD                ADDRESS
AD                COMMAREA(PTR-REF)
AD                ACEE(PTR-REF)
AD                CWA(PTR-REF)
AD                EIB(PTR-REF)
AD                TCTUA(PTR-REF)
AD                TWA(PTR-REF)
AS                ASSIGN
AS                ABCODE(DATA-AREA)
AS                ABDUMP(DATA-AREA)
AS                ABPROGRAM(DATA-AREA)
AS                ALTSCRNHT(DATA-AREA)
AS                ALTSCRNWD(DATA-AREA)
AS                APLKYBD(DATA-AREA)
AS                APLTEXT(DATA-AREA)
AS                APPLID(DATA-AREA)
AS                ASRAINTRPT(DATA-AREA)
AS                ASRAKEY(CVDA)
```

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```
AS                  ASRAPSW(DATA-AREA)
AS                  ASRAREGS(DATA-AREA)
AS                  ASRASPC(CVDA)
AS                  ASRASTG(CVDA)
AS                  BTRANS(DATA-AREA)
AS                  CMDSEC(DATA-AREA)
AS                  COLOR(DATA-AREA)
AS                  CWALENG(DATA-AREA)
AS                  DEFSCRNHT(DATA-AREA)
AS                  DEFSCRNWD(DATA-AREA)
AS                  DELIMITER(DATA-AREA)
AS                  DESTCOUNT(DATA-AREA)
AS                  DESTID(DATA-AREA)
AS                  DESTIDLENG(DATA-AREA)
AS                  DSSCS(DATA-AREA)
AS                  DS327Ø(DATA-AREA)
AS                  EWASUPP(DATA-AREA)
AS                  EXTDS(DATA-AREA)
AS                  FACILITY(DATA-AREA)
AS                  FCI(DATA-AREA)
AS                  GCHARS(DATA-AREA)
AS                  GCODES(DATA-AREA)
AS                  GMMI(DATA-AREA)
AS                  HILIGHT(DATA-AREA)
AS                  INITPARM(DATA-AREA)
AS                  INITPARMLEN(DATA-AREA)
AS                  INPARTN(DATA-AREA)
AS                  INVOKINGPROG(DATA-AREA)
AS                  KATAKANA(DATA-AREA)
AS                  LDCMNEM(DATA-AREA)
AS                  LDCNUM(DATA-AREA)
AS                  MAPCOLUMN(DATA-AREA)
AS                  MAPHEIGHT(DATA-AREA)
AS                  MAPLINE(DATA-AREA)
AS                  MAPWIDTH(DATA-AREA)
AS                  MSRCONTROL(DATA-AREA)
AS                  NATLANGINUSE(DATA-AREA)
AS                  NETNAME(DATA-AREA)
AS                  NEXTTRANSID(DATA-AREA)
AS                  NUMTAB(DATA-AREA)
AS                  OPCLASS(DATA-AREA)
AS                  OPERKEYS(DATA-AREA)
AS                  OPID(DATA-AREA)
AS                  OPSECURITY(DATA-AREA)
AS                  ORGABCODE(DATA-AREA)
```

Editor's note: this article will be continued next month.

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Easing the transition into STGPROT=YES

In the past, when taking advantage of new CICS features, we have often found the need for tools to help ease the transition. We are currently implementing the STGPROT feature of CICS Version 4.1 (change the SIT parm from NO to YES, then cold start) and have found that some programs which previously worked normally in USER_KEY now abend with S0C4/SR0001 because they reference MVS or CICS internal areas.

If we turn on STGPROT=YES, the applications programmer's progress may be hindered because systems programmers are frequently called to set programs to CICS_KEY. This makes life difficult for everybody. The operational concept is to enable STGPROT=YES, with the minimum impact to applications programmers, by automatically setting the program caught in an SR0001 abend to CICS_KEY, while informing the systems programmers that a program has been set to CICS_KEY to continue processing.

We use the XDUREQC global user exit to enable this operational concept. The skeleton XDUREQ exit DFH$XDRQ has been supplied by IBM in CICS410.SDFHSAMP, using the CICS XPI interface and MVS services (WTO) to do the following:

- GETMAIN required working storage.
- INQUIRE the execution key of the offending program.
- WTO to inform systems programmer of the SR0001 occurrence.
- Set the execution key of the offending program.
- WTO to inform systems programmer USER_KEY program has been set to CICS_KEY.
- FREEMAIN acquired working storage.

In addition, we code the following in a DFHPLTPI program:

- Suppress SR0001 SVC dumps:

```
EXEC CICS SET SYSDUMPCODE('SR0001') NOSYSDUMP ADD
```

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- Enable XDUREQC exit:

```
EXEC CICS ENABLE PROGRAM('DFH$XDRQ') EXIT('XDUREQC') START
```

DFH$XDRQ

```
//ASM       EXEC PGM=IEV90,
//          REGION=4096K,
//          PARM='NODECK,OBJECT,XREF(SHORT)'
//SYSLIB    DD DSN=CICS.REL41.SDFHMAC,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
//          DD DISP=SHR,DSN=SYS1.AMODGEN
//SYSUT1    DD UNIT=SYSALLDA,SPACE=(1700,(400,400))
//SYSUT2    DD UNIT=SYSALLDA,SPACE=(1700,(400,400))
//SYSUT3    DD UNIT=SYSALLDA,SPACE=(1700,(400,400))
//SYSLIN    DD DSN=&&LOADSET,
//          UNIT=SYSALLDA,DISP=(,PASS),
//          SPACE=(400,(100,100,1))
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD *
*********************************************************************
*                                                                   *
*   MODULE NAME = DFH$XDRQ                                          *
*                                                                   *
* DESCRIPTIVE NAME = CICS/ESA ....                                  *
*        SAMPLE USER EXIT PROGRAM FOR THE XDUREQC EXIT .            *
*                                                                   *
**** MODIFIED BY CHORNG S. (JACK) HWANG                             *
*    HSA SYSTEM INC FOR STGPROT IMPLEMENTATION                      *
*    XDUREQC EXIT LOGIC:                                            *
*     1) SEE IF THIS IS SR0001 ABEND                                *
*     2) VERIFY PROGRAM IS RDO/GRPLIST/AUTO INSTALL                 *
*     3) WTO PROGRAM PROPERTIES                                     *
*     4) DELETE PROGRAM                                             *
*     5) INSTALL PROGRAM                                            *
*     6) WTO NEW PROGRAM INSTALL                                    *
*                                                                   *
*     5655-018                                                      *
*     COPYRIGHT = NONE                                              *
*                                                                   *
* STATUS = 4.1.0                                                    *
*                                                                   *
*                                                                   *
* NOTES :                                                           *
*    DEPENDENCIES = S/370                                           *
*                   REQUIRES APAR  PN61792                          *
*    RESTRICTIONS = NONE                                            *
*    PATCH LABEL = NONE                                             *
*    RESTRICTIONS = NONE                                            *
```


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```
*    PATCH LABEL = NONE                                                *
*    PROCESSOR = ASSEMBLER                                             *
*    ATTRIBUTES = READ ONLY, REENTRANT                                 *
*                                                                      *
*---------------------------------------- *
*                                                                      *
* ENTRY POINT = DFH$XDRQ                                               *
*                                                                      *
*     LINKAGE = INVOKED FROM THE XDUREQC USER EXIT CALL .              *
*                                                                      *
*     INPUT = REGISTER 1 - ADDRESS OF DFHUEPAR                         *
*                                                                      *
*         DFHUEPAR CONTAINS THE FOLLOWING EXIT SPECIFIC PARAMETERS     *
*                                                                      *
*         UEPTRANID   ADDRESS OF THE 4-BYTE TRANSACTION-ID             *
*                                                                      *
*         UEPUSER     ADDRESS OF THE 8-BYTE USER-ID                    *
*                                                                      *
*         UEPTERM     ADDRESS OF THE 4-BYTE TERMINAL-ID                *
*                                                                      *
*         UEPPROG     ADDRESS OF THE 8-BYTE APPLICATION PROGRAM NAME.  *
*                                                                      *
*         UEPDUMPC    ADDRESS OF COPY OF THE 8-BYTE DUMP CODE.         *
*                                                                      *
*         UEPABCDE    ADDRESS OF A COPY OF THE 8-BYTE KERNEL ERROR     *
*                     CODE IN THE FORMAT XXX/YYYY.                     *
*                                                                      *
*         UEPDUMPT    ADDRESS OF THE 1-BYTE DUMP TYPE. EITHER:         *
*           UEPDTRAN    TRANSACTION DUMP REQUESTED                     *
*           UEPDSYST    SYSTEM DUMP REQUESTED                          *
*                                                                      *
* THE FOLLOWING FIELDS REPRESENT THE DUMP TABLE ENTRY FOR THE          *
* DUMPCODE AT UEPDUMPC.                                                *
*                                                                      *
*         UEPXDSCP   ADDRESS OF A 1-BYTE DUMPSCOPE SETTING. EITHER:    *
*           UEPXDLOC   DUMP ONLY ON LOCAL MVS IMAGE                    *
*           UEPXDREL   DUMPS TAKEN ON RELATED MVS IMAGES               *
*                                                                      *
*         UEPXDTXN   ADDRESS OF A 1-BYTE TRANDUMP SETTING. EITHER:     *
*           UEPXDYES   A TRANSACTION DUMP WOULD BE TAKEN               *
*           UEPXDNO    A TRANSACTION DUMP WOULD NOT BE TAKEN           *
*                                                                      *
*         UEPXDSYS   ADDRESS OF A 1-BYTE SYSDUMP SETTING. EITHER:      *
*           UEPXDYES   A SYSTEM DUMP WOULD BE TAKEN                    *
*           UEPXDNO    A SYSTEM DUMP WOULD NOT BE TAKEN                *
*                                                                      *
*         UEPXDTRM   ADDRESS OF A 1-BYTE SHUTDOWN SETTING. EITHER:     *
*           UEPXDYES   THE CICS SYSTEM WILL SHUTDOWN                   *
*           UEPXDNO    THE CICS SYSTEM WILL NOT SHUTDOWN               *
*                                                                      *
```

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```
*         UEPXDMAX   ADDRESS OF A 4-BYTE MAXIMUM DUMPS VALUE          *
*                                                                      *
*         UEPXDCNT   ADDRESS OF A 4-BYTE CURRENT DUMPS VALUE           *
*                                                                      *
*         UEPXDTST   ADDRESS OF 16-BYTE DUMP STATS AREA.               *
*                      4 CONTIGUOUS FULLWORDS REPRESENT:               *
*                      NUMBER OF TRANSACTION DUMPS TAKEN               *
*                      NUMBER OF TRANSACTION DUMPS SUPPRESSED          *
*                      NUMBER OF SYSTEM DUMPS TAKEN                    *
*                      NUMBER OF SYSTEM DUMPS SUPPRESSED               *
*                                                                      *
*         UEPXDDAE   ADDRESS OF A 1-BYTE DAEOPTION SETTING. EITHER:    *
*           UEPXDYES   THE DUMP IS ELIGIBLE FOR DAE SUPPRESSION        *
*           UEPXDNO    THE DUMP WONT BE SUPPRESSED BY DAE              *
*                                                                      *
*                                                                      *
*     OUTPUT = REGISTER 15 - RETURN CODE (UERCNORM OR UERCMEA)         *
*                                                                      *
*              THE FOLLOWING FIELDS WHICH REPRESENT DUMP TABLE         *
*              SETTINGS MAY BE MODIFIED AND THE MODIFIED VALUES WILL   *
*              BE WRITTEN BACK INTO THE DUMP TABLE ENTRY FOR THE       *
*              CURRENT DUMPCODE. SEE THE CUSTOMIZATION GUIDE FOR       *
*              FURTHER INFORMATION.                                    *
*                UEPXDSCP                                              *
*                UEPXDTXN                                              *
*                UEPXDSYS                                              *
*                UEPXDTRM                                              *
*                UEPXDMAX                                              *
*                UEPXDDAE                                              *
*                                                                      *
*                                                                      *
*     EXIT-NORMAL = RETURN (14,12),RC=UERCNORM (CONTINUE DUMP)         *
*                   RETURN (14,12),RC=UERCBYP  (SUPPRESS DUMP)         *
*                                                                      *
*     EXIT-ERROR = N/A                                                 *
*                                                                      *
*--------------------------------- *
*                                                                      *
* CHANGE ACTIVITY :                                                    *
**                                                                     *
*        $MOD(DFH$XDRQ) COMP(PROGRAM) PROD(CICS/ESA):                  *
*                                                                      *
*     PN= REASON  REL YYMMDD HDXIII : REMARKS                          *
*    $Ø1= PN64292 41Ø 95Ø111 PS     : MODULE CREATION                  *
*                                                                      *
************************************************************************
*
         EJECT
************************************************************************
* SET UP THE GLOBAL USER EXIT ENVIRONMENT :-                           *
```


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```
*     IDENTIFY THE USER EXIT POINT                                    *
*     SET UP EQUATES FOR REGISTERS                                    *
*********************************************************************
*
         DFHUEXIT TYPE=EP,ID=XDUREQC
         DFHUEXIT TYPE=XPIENV
         COPY     DFHPGISY
         COPY     DFHSMMCY
*
*
*
DFH$STOR DSECT
XDRQSAVE DS    18F
PGMNAME  DS    CL8
         DS    ØF
WTO1E    DS    CL(WTO1L)
         DS    ØF
WTO2E    DS    CL(WTO2L)
DFH$STOL EQU   *-DFH$STOR
EXEC_KEY DS    CL1
*
*********************************************************************
* MAIN LINE CODE STARTS HERE                                        *
*********************************************************************
*
DFH$XDRQ CSECT
DFH$XDRQ AMODE 31
DFH$XDRQ RMODE ANY
         USING *,R15
         B     AROUND
         DC    CL8'DFH$XDRQ'
         DC    CL8'&SYSDATE'
AROUND   DS    ØH
         DROP  R15
         SAVE  (14,12)             SAVE REGS
         LR    R12,R15             SET-UP BASE REGISTER
         USING DFH$XDRQ,R12
*
         LR    R2,R1               SET UP ADDRESSABILITY TO
         USING DFHUEPAR,R2         USER EXIT PARM LIST
*
         L     R1,UEPDUMPC         ADDRESS THE DUMP TYPE VALUE
         CLC   =CL6'SRØØØ1',Ø(R1)  IS THIS SRØØØ1?
         BNE   EXITØ               ..NO, WE ARE DONE
*
         L     R1Ø,UEPXSTOR        SET UP ADDRESSING FOR XIP PARM LIST
         USING DFHSMMC_ARG,R1Ø
         L     R13,UEPSTACK        ADDRESS KERNEL STACK
         DFHSMMCX CALL,                                             X
```

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```
              CLEAR,                                                  X
              IN,                                                     X
              FUNCTION(GETMAIN),                                      X
              GET_LENGTH(DFH$STOL),                                   X
              SUSPEND(NO),                                            X
              INITIAL_IMAGE(X'ØØ'),                                   X
              STORAGE_CLASS(CICS),                                    X
              OUT,                                                    X
              ADDRESS((R11)),                                         X
              RESPONSE(*),                                            X
              REASON(*)
         USING DFH$STOR,R11
         ST    R11,Ø(R1Ø)          SAVE ACQUIRED ADDRESS
         LA    R1Ø,4(R1Ø)          ADDRESS 4 BYTE OFFSET
         DROP  R1Ø
*
         L     R1,UEPPROG          MOVE PROGRAM NAME
         MVC   PGMNAME,Ø(R1)
         MVC   WTO1E,WTO1
*
         USING DFHPGIS_ARG,R1Ø
         L     R13,UEPSTACK        ADDRESS KERNEL STACK
         DFHPGISX CALL,                                               X
              CLEAR,                                                  X
              IN,                                                     X
              FUNCTION(INQUIRE_PROGRAM),                              X
              PROGRAM_NAME(PGMNAME),                                  X
              OUT,                                                    X
              EXECUTION_KEY(EXEC_KEY),                                X
              RESPONSE(*),                                            X
              REASON(*)
*
         CLI   PGIS_RESPONSE,PGIS_OK CHECK RESPONSE
         BE    DPGIS_OK
         MVC   WTO1E+41(11),=CL1Ø'INQ FAILED'
         B     DPGIS_OK
         CLI   EXEC_KEY,PGIS_USER
         BE    DPGIS_OK
         MVC   WTO1E+41(8),=CL8'CICS KEY'
DPGIS_OK DS    ØH
*
         LA    R13,XDRQSAVE        SET UP SAVE AREA
*
         L     R1,UEPTRANID        MOVE TRANS-ID
         MVC   WTO1E+13(4),Ø(R1)
         L     R1,UEPUSER          MOVE USER-ID
         MVC   WTO1E+18(8),Ø(R1)
         L     R1,UEPTERM          MOVE TERM-ID
         MVC   WTO1E+27(4),Ø(R1)
         MVC   WTO1E+32(8),PGMNAME
```


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```
*
         LA    R1,WTO1E
         WTO   MF=(E,(R1))
         CLI   PGIS_RESPONSE,PGIS_OK CHECK RESPONSE
         BNE   EXIT
         CLI   EXEC_KEY,PGIS_CICS
         BE    EXIT
*
         MVC   WTO2E,WTO2
         USING DFHPGIS_ARG,R1Ø
         L     R13,UEPSTACK          ADDRESS KERNEL STACK
         DFHPGISX CALL,                                              X
               CLEAR,                                                X
               IN,                                                   X
               FUNCTION(SET_PROGRAM),                                X
               PROGRAM_NAME(PGMNAME),                                X
               EXECUTION_KEY(CICS),                                  X
               OUT,                                                  X
               RESPONSE(*),                                          X
               REASON(*)
*
         CLI   PGIS_RESPONSE,PGIS_OK CHECK RESPONSE
         BE    EPGIS_OK
         MVC   WTO2E+21(13),=CL11'SET KEY ERROR'
EPGIS_OK DS    ØH
         MVC   WTO2E+13(8),PGMNAME
         LA    R1,WTO2E
         WTO   MF=(E,(R1))
*
EXIT     DS    ØH
*
         USING DFHSMMC_ARG,R1Ø
         L     R13,UEPSTACK          ADDRESS KERNEL STACK
         DFHSMMCX CALL,                                              X
               CLEAR,                                                X
               IN,                                                   X
               FUNCTION(FREEMAIN),                                   X
               ADDRESS((R11)),                                       X
               STORAGE_CLASS(CICS),                                  X
               OUT,                                                  X
               RESPONSE(*),                                          X
               REASON(*)
*
EXITØ    DS    ØH
         L     R13,UEPEPSA           LOAD ADDRESS OF THE REG SAVE AREA
         RETURN (14,12),RC=UERCNORM  RESTORE REGS AND RETURN NORMAL
*
*        DROP  R2,R12
         DS    ØF
WTO1     WTO   'DFH$XDRQ TTTT UUUUUUUU TTTT PPPPPPPP USER KEY    ',MF=L
```

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```
WTO1L    EQU   *-WTO1
         DS    ØF
WTO2     WTO   'DFH$XDRQ PPPPPPPP NOW CICS KEY          ',MF=L
WTO2L    EQU   *-WTO2
         LTORG
         END   DFH$XDRQ
//LKED      EXEC PGM=IEWL,REGION=4Ø96K,
//            PARM='LIST,XREF',COND=(7,LT,ASM)
//SYSLIB    DD DSN=CICS.REL41.SDFHLOAD,DISP=SHR
//SYSLMOD   DD DISP=SHR,DSN=CICS.SYS1R41.TAB.LOAD(DFH$XDRQ)
//SYSUT1    DD UNIT=SYSALLDA,DCB=BLKSIZE=1Ø24,
//            SPACE=(1Ø24,(2ØØ,2Ø))
//SYSPRINT  DD SYSOUT=*
//SYSLIN    DD DSN=&&LOADSET,DISP=(OLD,DELETE)
—====================987654321_Ø==_
CONTENT-TYPE: TEXT/PLAIN; CHARSET="US-ASCII"
—====================987654321_Ø==_—
```

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Principal
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CICS date simulator for year 2000 testing – part 2

This month we conclude the code for a CICS date simulator that allows year 2000 testing to be conducted without changing the underlying MVS system date.

```
         DC      PL2'Ø7',PL2'31',PL2'181'
         DC      PL2'Ø8',PL2'31',PL2'212'
         DC      PL2'Ø9',PL2'3Ø',PL2'243'
         DC      PL2'1Ø',PL2'31',PL2'273'
         DC      PL2'11',PL2'3Ø',PL2'3Ø4'
         DC      PL2'12',PL2'31',PL2'334'
         DC      XL4'FFFFFFFF'
MSGØØ    DC      CL24'Welcome to the simulator'
MSGØ1    DC      CL24'DD not valid '
MSGØ2    DC      CL24'MM not Ø1 to 12'
MSGØ3    DC      CL24'Not DD/MM/YYYY or STOP'
MSGØ4    DC      CL24'Simulator turned off'
MSGØ5    DC      CL24'Simulator not active'
MSGØ6    DC      CL24'Year not 19ØØ to 2Ø99'
MSGØ7    DC      CL24'No 19th century support'
MSGØ8    DC      CL24'One day backwards'
MSGØ9    DC      CL24'No 22nd century support'
MSG1Ø    DC      CL24'One day forwards'
```


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```
MSG11     DC      CL24'Welcome to year yyyy!'
MSG12     DC      CL12'A leap year.'
MESS1     DC      CL48'HDAT001I Date simulation started for DD/MM/YYYY.'
MESS2     DC      CL36'HDAT002I Date simulation terminated.'
          LTORG
          END
```

MAP MST2000

```
MAPSET    DFHMSD TYPE=&SYSPARM,MODE=INOUT,CTRL=FREEKB,LANG=ASM,        *
               TIOAPFX=YES
MSY2000   DFHMDI SIZE=(24,80),LINE=1,COLUMN=1,MAPATTS=(COLOR)
          DFHMDF POS=(01,23),LENGTH=32,COLOR=TURQUOISE,                *
               INITIAL='           DATE SIMULATION      '
          DFHMDF POS=(04,1),LENGTH=28,COLOR=NEUTRAL,                   *
               INITIAL='Enter DD/MM/YYYY or STOP ==>'
INCOMD    DFHMDF POS=(04,30),LENGTH=10,ATTRB=(IC,FSET),COLOR=YELLOW
COMDERR   DFHMDF POS=(04,41),LENGTH=24,ATTRB=(ASKIP,BRT),COLOR=RED
LEAP      DFHMDF POS=(04,66),LENGTH=12,ATTRB=(ASKIP,BRT),COLOR=RED
          DFHMDF POS=(05,41),LENGTH=10,COLOR=YELLOW,                   *
               INITIAL='Today is a'
TODAY     DFHMDF POS=(05,52),LENGTH=9,ATTRB=(ASKIP,BRT),COLOR=YELLOW
          DFHMDF POS=(07,1),LENGTH=34,COLOR=NEUTRAL,                   *
               INITIAL='Press PF7 to go one day backwards,'
          DFHMDF POS=(07,36),LENGTH=27,COLOR=NEUTRAL,                  *
               INITIAL='PF8 to go one day forwards.'
          DFHMDF POS=(09,1),LENGTH=35,COLOR=BLUE,                      *
               INITIAL='The following formats are available'
          DFHMDF POS=(09,37),LENGTH=35,COLOR=BLUE,                     *
               INITIAL='from the FORMATTIME EXEC Command.  '
          DFHMDF POS=(11,8),LENGTH=5,COLOR=NEUTRAL,INITIAL='YYDDD'
VAR0      DFHMDF POS=(11,15),LENGTH=5,COLOR=BLUE,INITIAL='YYDDD'
          DFHMDF POS=(11,24),LENGTH=7,COLOR=NEUTRAL,INITIAL='YYYYDDD'
VAR1      DFHMDF POS=(11,34),LENGTH=7,COLOR=BLUE,INITIAL='YYYYDDD'
          DFHMDF POS=(12,8),LENGTH=6,COLOR=NEUTRAL,INITIAL='YYMMDD'
VAR2      DFHMDF POS=(12,15),LENGTH=6,COLOR=BLUE,INITIAL='YYMMDD'
          DFHMDF POS=(12,24),LENGTH=8,COLOR=NEUTRAL,INITIAL='YYYYMMDD'
VAR3      DFHMDF POS=(12,34),LENGTH=8,COLOR=BLUE,INITIAL='YYYYMMDD'
          DFHMDF POS=(13,8),LENGTH=6,COLOR=NEUTRAL,INITIAL='YYDDMM'
VAR4      DFHMDF POS=(13,15),LENGTH=6,COLOR=BLUE,INITIAL='YYDDMM'
          DFHMDF POS=(13,24),LENGTH=8,COLOR=NEUTRAL,INITIAL='YYYYDDMM'
VAR5      DFHMDF POS=(13,34),LENGTH=8,COLOR=BLUE,INITIAL='YYYYDDMM'
          DFHMDF POS=(14,8),LENGTH=6,COLOR=NEUTRAL,INITIAL='DDMMYY'
VAR6      DFHMDF POS=(14,15),LENGTH=6,COLOR=BLUE,INITIAL='DDMMYY'
          DFHMDF POS=(14,24),LENGTH=8,COLOR=NEUTRAL,INITIAL='DDMMYYYY'
VAR7      DFHMDF POS=(14,34),LENGTH=8,COLOR=BLUE,INITIAL='DDMMYYYY'
          DFHMDF POS=(15,8),LENGTH=6,COLOR=NEUTRAL,INITIAL='MMDDYY'
VAR8      DFHMDF POS=(15,15),LENGTH=6,COLOR=BLUE,INITIAL='MMDDYY'
          DFHMDF POS=(15,24),LENGTH=8,COLOR=NEUTRAL,INITIAL='MMDDYYYY'
VAR9      DFHMDF POS=(15,34),LENGTH=8,COLOR=BLUE,INITIAL='MMDDYYYY'
```

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```
          DFHMDF POS=(17,1),LENGTH=34,COLOR=BLUE,                      *
               INITIAL='YYYY Formats are only available at'
          DFHMDF POS=(17,36),LENGTH=34,COLOR=BLUE,                     *
               INITIAL='CICS Version 4.1.0 or higher.     '
          DFHMDF POS=(19,1),LENGTH=34,COLOR=BLUE,                      *
               INITIAL='This date simulator will not alter'
          DFHMDF POS=(19,36),LENGTH=42,COLOR=BLUE,                     *
               INITIAL='any dates that are not obtained from CICS.'
          DFHMDF POS=(20,1),LENGTH=34,COLOR=BLUE,                      *
               INITIAL='This includes dates obtained using'
          DFHMDF POS=(20,36),LENGTH=43,COLOR=BLUE,                     *
               INITIAL='MVS SVCs or illegal COBOL verbs under CICS.'
          DFHMDF POS=(24,1),LENGTH=5,COLOR=NEUTRAL,INITIAL='TIME:'
TIME      DFHMDF POS=(24,7),LENGTH=8,COLOR=BLUE,INITIAL='XX.XX.XX'
          DFHMDF POS=(24,16),LENGTH=5,COLOR=NEUTRAL,INITIAL='DATE:'
DATE      DFHMDF POS=(24,22),LENGTH=10,COLOR=RED,INITIAL='XX.XX.XXXX'
          DFHMDF POS=(24,64),LENGTH=7,COLOR=NEUTRAL,INITIAL='APPLID:'
APPL      DFHMDF POS=(24,72),LENGTH=8,COLOR=BLUE
          DFHMSD TYPE=FINAL
          END
```

SYX2000 MACRO

```
*   Module Name = SYX2000
*   Command call EXIT to simulate year 2000
      DFHUEXIT TYPE=EP,ID=XEIOUT
*************************************************************
* Register Equates
*************************************************************
R1        EQU         1
R2        EQU         2
R7        EQU         7
R8        EQU         8
R9        EQU         9
DFHEIBR   EQU         10
R11       EQU         11
R12       EQU         12
R13       EQU         13
R14       EQU         14
R15       EQU         15
EXIT_RC   EQU         R15
*
          COPY        DFHEIBLK
*
SYX2000   CSECT
SYX2000   AMODE 31
          SAVE        (14,12)              Save registers
          LR          R11,R15
          USING       SYX2000,R11          Base register
          LR          R2,R1
```


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```
          USING       DFHUEPAR,R2          Point to exit parameter list
          ICM         DFHEIBR,15,UEPEXECB  Point to EIB
          BZ          RCNORMAL             Exit as no EIB
          USING       DFHEIBLK,DFHEIBR     Map EIB DSECT
ZAPDAT    DS          ØH
          ICM         R7,15,UEPGAA       Address global area
          BZ          RCNORMAL           None - so leave
          MVC         EIBDATE,Ø(R7)      Set date from global
          ICM         R9,15,UEPARG       Point to command parameter list
          BZ          RCNORMAL           None - so leave
          ICM         R8,15,Ø(R9)        Address ArgØ
          BZ          RCNORMAL           None - so leave
          CLC         Ø(2,R8),=XL2'4AØ2' Asktime/abstime?
          BNE         RCNORMAL           No - so exit
          ICM         R8,15,4(R9)        Address Arg1 ABSTIME address
          BZ          RCNORMAL           None - so leave
          AP          Ø(8,R8),4(8,R7)    Add abstime offset
RCNORMAL  DS          ØH
          LA          EXIT_RC,UERCNORM   Set the return code to NORMAL
          L           R13,UEPEPSA
          RETURN (14,12),RC=(15)
          LTORG
          END         SYX2ØØØ
```

SY2PLT MACRO

```
SY2PLT         RMODE ANY
*-------------------------------------
*  PROGRAM       :SY2PLT
*  DESCRIPTION   :This module changes the date seen by applications by
*                 enabling exit SYX2ØØØ.
*                 It runs in the PLTPI and reads a date from the CICS
*                 override parameter INITPARM=(SY2PLT=dd/mm/yyyy).
*                 This is verified and passed to SYX2ØØØ, the XEIOUT
*                 exit, in its global work area.
*-------------------------------------
R2        EQU     2           Used by TRT instruction
EIBREG    EQU     3           EIB REG
DATAREG   EQU     4           DATA REG
BASE1     EQU     5           Base register
R6        EQU     6           Exit global area pointer
R7        EQU     7           Work register
DFHEISTG  DSECT
ATIME     DS      PL8         Absolute time
YEAR      DS      CL1Ø
YEARLEN   DS      H
DAYCNT    DS      F
HEXDATE   DS      F
COMDATE   DS      PL1Ø
DIVDATE   DS      PL9
DAYCNTP   DS      D
```

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```
DAYCNTQ   DS      PL1Ø
YRDIFF    DS      PL2
DYDIFF    DS      PL2
MMWK      DS      PL2
DDWK      DS      PL2
MESSØ     DS      CL6Ø
LEAPIND   DS      X
DLENG     DS      H
EISTGEND  EQU     *
SY2PLT    DFHEIENT CODEREG=(BASE1),                                     X
                EIBREG=(EIBREG),                                        X
                DATAREG=(DATAREG)
           B      BEGIN
           DC     CL12'PROGRAM ID: '
           DC     CL8'SY2PLT'
           DC     CL4';   '
           DC     CL24'ASSEMBLY TIME AND DATE:'
           DC     CL8'&SYSTIME'
           DC     CL8'&SYSDATE'
BEGIN      DS     ØH
*
*      Input parameter validation section
*
            MVC    MESSØ,MESS2
          EXEC CICS WRITE OPERATOR TEXT(MESSØ)
          EXEC CICS ASSIGN INITPARM(YEAR) INITPARMLEN(YEARLEN)
            CLC    YEARLEN,=H'Ø'          Any parameter?
            BE     RETURN1                No - just return
            MVC    MESSØ,MESS3            Default error message
            CLC    YEARLEN,=H'1Ø'         Parameter correct length?
            BNE    INERR                  No
           TRT     YEAR(2),TRANTAB1       Numeric DD?
           BNZ     INERR                  No
           CLI     YEAR+2,C'/'
           BNE     INERR
           TRT     YEAR+3(2),TRANTAB1     Numeric MM?
           BNZ     INERR                  No
           CLI     YEAR+5,C'/'
           BNE     INERR
           TRT     YEAR+6(4),TRANTAB1     Numeric YYYY?
           BNZ     INERR                  No
           PACK    DDWK,YEAR(2)
           CP      DDWK,=PL1'Ø'           DD = Ø?
           BE      DDERR
           ZAP     DYDIFF,DDWK
           PACK    MMWK,YEAR+3(2)
           LA      R7,MONTAB
MONLOOP    DS      ØH
           CLI     Ø(R7),X'FF'            Month not in table?
           BE      MMERR
           CP      MMWK,Ø(2,R7)           Match in table?
```


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```
          BE      MONMATCH
          LA      R7,6(R7)               No - try next entry
          B       MONLOOP
MONMATCH  DS      ØH
          CP      DDWK,2(2,R7)           Max days this month
          BH      DDERR                  Exceeded
          AP      DYDIFF,4(2,R7)         Add month contribution
          ZAP     HEXDATE,DYDIFF
          CLC     YEAR+6(2),=C'19'
          BNE     VYRØ1
          MVI     HEXDATE,X'ØØ'
          ZAP     YRDIFF,=P'Ø'
          B       VYRØ2
VYRØ1     DS      ØH
          CLC     YEAR+6(2),=C'2Ø'
          BNE     NRANGE
          MVI     HEXDATE,X'Ø1'
          ZAP     YRDIFF,=P'1ØØ'
VYRØ2     DS      ØH
          MVC     HEXDATE+1(1),YEAR+9
          MVO     HEXDATE+1(1),YEAR+8(1)
          MVO     YRDIFF+1(1),YEAR+9(1)
          MVN     YRDIFF(1),YEAR+8
          ZAP     COMDATE,YRDIFF
          ZAP     DIVDATE,YRDIFF         For leap day calculation
          MP      COMDATE,=PL4'315360'   ABSTIME year difference
          MP      COMDATE,=PL2'1ØØ'      Prevent spec exception
          MP      COMDATE,=PL3'1ØØØ'     Prevent spec exception
          MVI     LEAPIND,X'ØØ'          Leap year indicator
          DP      DIVDATE,=PL1'4'        Divide year diff by 4
          CP      DIVDATE+8(1),=PL1'Ø'   Remainder zero - so leap year
          BNZ     NOTLEAP
          CP      DIVDATE(8),=PL1'Ø'     1ØØ was not a leap year
          BZ      NOTLEAP
          MVI     LEAPIND,X'FF'          Set leap year indicator
          AP      HEXDATE,=PL1'1'        Increase EIBDATE by one
          CLC     YEAR+3(2),=C'Ø2'       After February?
          BH      NOTLEAP                Include this years leap day
          SP      HEXDATE,=PL1'1'        Decrease EIBDATE by one
          SP      DIVDATE(8),=PL1'1'     Else take a day off
NOTLEAP   DS      ØH
          AP      DIVDATE(8),DYDIFF      Add in DD/MM contribution
NOTFWD    DS      ØH
          SP      DIVDATE(8),=PL1'1'     Take today off!
          MP      DIVDATE(8),=PL3'86400'
          MP      DIVDATE(8),=PL3'1ØØØ'  Tot days in milliseconds
          AP      COMDATE,DIVDATE(8)     + leap day difference
          CLI     LEAPIND,X'ØØ'
          BNE     EXITSTRT
          CLC     YEAR+3(2),=C'Ø2'       February?
          BNE     EXITSTRT
```

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```
          CP      DDWK,=PL2'29'          DD = 29 but not a leap year
          BE      DDERR
EXITSTRT  DS      ØH
        EXEC CICS ASKTIME ABSTIME(ATIME)
        EXEC CICS FORMATTIME ABSTIME(ATIME) DAYCOUNT(DAYCNT)
          L       R7,DAYCNT
          CVD     R7,DAYCNTP
          ZAP     DAYCNTQ,DAYCNTP
          SP      DAYCNTQ,=PL1'1'        Last night, not tonight
          MP      DAYCNTQ,=PL3'86400'
          MP      DAYCNTQ,=PL3'1000'     Absolute time last midnight
          SP      COMDATE,DAYCNTQ
        EXEC CICS ENABLE EXIT('XEIOUT') PROGRAM('SYX2000')             *
                  GALENGTH(12)
        EXEC CICS EXTRACT EXIT PROGRAM('SYX2000') GASET(R6)            *
                  GALENGTH(DLENG)
          MVC     Ø(4,R6),HEXDATE
          MVC     4(8,R6),COMDATE+2
        EXEC CICS ENABLE PROGRAM('SYX2000') START
          MVC     MESSØ,MESS1            Simulator started message
          MVC     MESSØ+37(1Ø),YEAR
*
* SEND MESSAGE TO CONSOLE
*
SENDMSG   DS      ØH
        EXEC CICS WRITE OPERATOR TEXT(MESSØ)
*
* RETURN AND FINISH
*
RETURN    DS      ØH
        EXEC  CICS RETURN
RETURN1   DS      ØH
          MVC     MESSØ,MESS4            Simulator not active message
          B       SENDMSG
*
* Error Messages
*
DDERR     DS      ØH
          MVC     MESSØ+32(28),MSGØ1
          B       SENDMSG
MMERR     DS      ØH
          MVC     MESSØ+32(28),MSGØ2
          B       SENDMSG
INERR     DS      ØH
          MVC     MESSØ+32(28),MSGØ3
          B       SENDMSG
NRANGE    DS      ØH
          MVC     MESSØ+32(28),MSGØ4
          B       SENDMSG
*
* Constants
```


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```
*
TRANTAB1  DS      ØF Ø 1 2 3 4 5 6 7 8 9 A B C D E F
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF'
          DC      X'ØØØØØØØØØØØØØØØØØØØØFFFFFFFFFFFF'
MONTAB    DC      PL2'Ø1',PL2'31',PL2'ØØØ'
          DC      PL2'Ø2',PL2'29',PL2'Ø31'
          DC      PL2'Ø3',PL2'31',PL2'Ø59'
          DC      PL2'Ø4',PL2'3Ø',PL2'Ø9Ø'
          DC      PL2'Ø5',PL2'31',PL2'12Ø'
          DC      PL2'Ø6',PL2'3Ø',PL2'151'
          DC      PL2'Ø7',PL2'31',PL2'181'
          DC      PL2'Ø8',PL2'31',PL2'212'
          DC      PL2'Ø9',PL2'3Ø',PL2'243'
          DC      PL2'1Ø',PL2'31',PL2'273'
          DC      PL2'11',PL2'3Ø',PL2'3Ø4'
          DC      PL2'12',PL2'31',PL2'334'
          DC      XL4'FFFFFFFF'
MSGØ1     DC      CL28'DD not valid.'
MSGØ2     DC      CL28'MM not Ø1 to 12.'
MSGØ3     DC      CL28'Not DD/MM/YYYY.'
MSGØ4     DC      CL28'Year not 19ØØ to 2Ø99.'
MESS1     DC      CL6Ø'HDATØØ1I Date simulation started for DD/MM/YYYY.'
MESS2     DC      CL6Ø'HDATØØ3I Date simulation SY2PLT invocation.'
MESS3     DC      CL6Ø'HDATØØ4E SY2PLT Initparm error.'
MESS4     DC      CL6Ø'HDATØØ5I Date simulation not active.'
          LTORG
          END
```

SY2FETAB MACRO

```
SY2FETAB  EQU     *
*
* Code transaction in position 1-4
* Code program in position 9-16
* Table must be terminated by X'FFFFFFFF'
*
```

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```
          DC      CL16'SYSG      SYSGPROG '
          DC      X'FFFFFFFF'
          END
```

SY2FE MACRO

```
SY2FE     RMODE ANY
          TITLE 'SY2FE - Front end transactions for SY2000'
*-------------------------------------
*  Program        : SY2FE
*  Description    : Front end applications to ensure EIBDATE is set to
*                   correct value when using the year 2000 simulator.
*                   Loads table SY2FETAB.
*-------------------------------------
R6        EQU     6                       Pointer to commarea
TABPTR    EQU     7                       Pointer to applid table
DATAREG   EQU     8                       Data register
EIBREG    EQU     9                       EIB register
BASE      EQU     10                      Program base register
COMREG    DSECT
DFHEISTG  DSECT
MESS0     DS      0CL60
TERMDATA  DS      0CL78
TRANSACT  DS      CL4
          DS      CL7
SYSTID    DS      CL3
          DS      CL64
PRGNAME   DS      CL8
EISTGEND  EQU     *
SY2FE     DFHEIENT CODEREG=(BASE),EIBREG=(EIBREG),DATAREG=(DATAREG)
          B       A000
          DC      CL12'PROGRAM ID: '
          DC      CL8'SY2FE   '
          DC      CL24'ASSEMBLY TIME AND DATE:'
          DC      CL8'&SYSTIME'
          DC      CL8'&SYSDATE'
A000      DS      0H
        EXEC  CICS LOAD                                                 X
                  PROGRAM('SY2FETAB')                                   X
                  SET(TABPTR)
        EXEC  CICS ASKTIME
R000      DS      0H
          CLC     0(4,TABPTR),EIBTRNID
          BE      Z100                    Give control
          LA      TABPTR,16(TABPTR)       Next table entry
          CLI     0(TABPTR),X'FF'         End of table?
          BNE     R000                    No keep searching
          MVC     TERMDATA,OUTMSG2        Not found error
          MVC     TRANSACT,EIBTRNID       Put tran in message
        EXEC  CICS SEND                                                 X
                  FROM(TERMDATA)                                        X
```


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```
                  LENGTH(78)                                            X
                  ERASE
            MVC   MESSØ,MESS6
            MVC   MESSØ+9(4),EIBTRNID      Put tran in console message
          EXEC CICS WRITE OPERATOR TEXT(MESSØ)
Z000        DS    ØH
          EXEC  CICS RETURN
Z100        DS    ØH
            MVC   PRGNAME(8),8(TABPTR)
            L     R6,DFHEICAP
            USING     COMREG,R6
          EXEC  CICS XCTL                                               X
                  PROGRAM(PRGNAME)                                      X
                  COMMAREA(COMREG)                                      X
                  LENGTH(EIBCALEN)
           B      Z000
*
* CONSTANTS
*
OUTMSG2   DS      ØCL78
          DC      CL16'xxxx is not defi'
          DC      CL3Ø'ned to SY2FETAB. Please contac'
          DC      CL32't support.'
MESS6     DC      CL6Ø'HDAT006E xxxx not defined to SY2FETAB.'
          LTORG
          END     SY2FE
```

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Call for papers

Why not share your expertise and earn money at the same time? *CICS Update* is looking for JCL, macros, program code, etc, that experienced CICS users have written to make their life, or the lives of their users, easier. We will publish it (after vetting by our expert panel) and send you a cheque when the article is published. Articles can be of any length and can be sent or e-mailed to Robert Burgess at any of the addresses shown on page 2. Why not call now for a free copy of our *Notes for contributors*?

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IBM has announced Expedite/CICS Version 4.3, which links a host to the IBM Global Services Information Exchange service. Functions include Year 2000 readiness, a user-specific purge period, definition of alias names, validation of receive criteria, forced purge, sending a distribution list, and help panels.

IBM has also announced improvements in the collecting and reporting functions of the CICS and IMS features in its upgraded and renamed Performance Reporter for MVS. TME 10 Performance Reporter for OS/390 includes seven performance features covering CICS, system, network, IMS, workstation, AS/400, and accounting, and four OS/2-based features for reporting, analysing, or planning resource usage.

For further information contact your local IBM representative.

* * *

Compuware has announced a new release of XPEDITER/CICS, its fullscreen, source-level testing and debugging product. XPEDITER/CICS maintains an audit trail of all production file changes made within the file utility. The logging facility enables organizations to keep track of any changes made within the XPEDITER/CICS file utility, including adds, updates, and deletes of dataset records, IMS segments, temporary storage records and queues, transient data records, and DB2 tables. The logging facility writes formatted data to a dataset. Output can be formatted to suit individual site requirements.

In addition, XPEDITER/CICS offers new functionality that enables users to gain control and test CICS programs that are started independently of a terminal.

Release 7.0 also offers XPEDITER command scripting, four-digit year displays, additional FIND command options, improved on-line help, and support for IBM CICS Transaction Server Release 1.2.

For further information contact:
Compuware, 31440 Northwestern Highway, PO Box 9080, Farmington Hills, MI 48334-2564.
Tel: (800) 737 7300.
Compuware,163 Bath Road, Slough, Berks, SL1 4AA, UK.
Tel: (01753) 774000.

* * *

Netscape Communications has started shipping extensions for accessing BEA Tuxedo and IBM MQSeries, allowing integration with CICS and IMS systems.

New features in the application server include better scalability through load balancing features and end-to-end performance enhancements. Availability comes via distributed state/session management combined with fail-over, failure detection, and failure recovery capabilities. There are a range of management facilities geared to distributed servers and applications, and integration tools provide connectivity to existing applications and legacy systems.

For further information contact:
Netscape Communications, 501 East Middlefield Road, Mountain View, CA 94043, USA.
Tel: (650) 254 1900.