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Xephon
27-35 London Road
Newbury
Berkshire RG14 1JL
England
Telephone: 01635 38030
From USA: 01144 1635 38030
E-mail: xephon@compuserve.com

North American office
Xephon/QNA
1301 West Highway 407, Suite 201-405
Lewisville, TX 75077-2150
USA
Telephone: 940 455 7050

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Editor
Robert Burgess

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CICS SWAP hot key

The title of this article is 'CICS SWAP hot key', but a possible alternative might be 'how to get two terminals for the price of one PF key'.

Of the two types of CICS transaction that can be written – conversational or pseudo-conversational – pseudo-conversational is usually preferred because it holds less CICS resource when the transaction is in 'user wait' (ie waiting for the user to finish input, lunch, etc). However, one of the shortcomings of pseudo-conversational transactions is that they rely on the COMMAREA passed between each invocation of the transaction to return itself to the point from which processing may continue. Why should this be an issue?

As an example, imagine the following scenario. A clerk uses two CICS applications, order and inventory. The clerk may be deep in the order application, after entering several screens of data or going through several screens of menus, when there is a pressing request to retrieve some data from the inventory application. There are several possibilities:

- The clerk may be using a 3270 workstation which allows multiple sessions through the terminal controller, or a PC workstation with multiple 3270 emulators. It is possible to switch to another 3270 session, sign on to the same CICS, and perform the data retrieval from the inventory application, then return to the order application work.
- The clerk may be using a VTAM session manager, which also allows multiple sessions to the same CICS region. Once again the user can perform the retrieval and then continue with the order application work.

Both of these methods are frowned upon by security administrators and may not be available to the user for security reasons, and likewise for multiple user-ids for the same user. Which leaves us with a third method:

- The clerk clears the screen of the application, performs the data

retrieval, then must go through the layers/menus of the original application to return to the point from where the original work can be continued.

This method is the most frequently used – and also the most time-consuming of all! However, I can now offer a fourth option – CICS SWAP hot key.

Wouldn't it be nice if we had a save key? A CICS hot key that would save our application in the state it is in when we press the hot key and return us a cleared screen, and that when we press the hot key again, would return us to the state we were originally in?

The concept is simple, and it uses the following resources:

- The CICS global user exit XZCATT.
- A 3270 function key (PF1-24 or PA1-3).
- Four bytes of TCTUA.
- A PLTPI program to enable the XZCATT global user exit.
- A transaction running a CICS command level program to do the save/extract of CICS transaction data (3270 TIOA, COMMAREA, and transaction-id).

Firstly, we have the RDO definitions:

```
DEF PROG(SWAPEXIT) G(CICSSWAP) LANG(ASSEM) EXECKEY(CICS)
DEF PROG(SWAPINIT) G(CICSSWAP) LANG(ASSEM)
DEF PROG(SWAPPGM)  G(CICSSWAP) LANG(ASSEM)
DEF TRANS(SWAP) G(CICSSWAP) PROG(SWAPPGM)
```

The logic of the operation is as follows:

1 The program SWAPINIT is placed in DFHPLTPI to enable the XZCATT user exit with the program SWAPEXIT.

2 When the user presses the CICS SWAP hot key (in this case PA3), SWAPEXIT tests whether TCTUA is at least four bytes; if so it will save the incoming transaction in the TCTUA and replace it with the SWAP transaction.

3 The SWAP transaction is initiated. It will save the incoming transaction's TIOA, COMMAREA, and transaction-id in three

items of a temporary storage queue with a naming convention of ‘ttttxxxx’, where ‘tttt’ is the terminal-id and ‘xxxx’ is the transaction-id. The SWAP transaction then retrieves any saved information from before, sends the TIOA out to the screen, and returns with the original transaction name and the COMMAREA, completing the SWAP process.

This SWAP process allows users to swap between two CICS applications in mid-pseudo-conversational flight.

There is, however, a security consideration to the SWAP process. Systems programmers may want to delete the temporary storage queue through the auto-install exit terminal delete function. In this way, the next user cannot see the previous user’s saved transactions by using the SWAP key. This is especially relevant in an environment using a VTAM session manager.

SWAPEXIT

```
//ASM    EXEC  PGM=IEV90,PARM='OBJECT,XREF(SHORT),RENT',REGION=2048K
//SYSLIB   DD  DISP=SHR,DSN=SYS1.MACLIB
//         DD  DISP=SHR,DSN=SYS1.AMODGEN
//         DD  DISP=SHR,DSN=CICS.REL330.SDFHMAC
//         DD  DISP=SHR,DSN=CICS.REL330.SDFHSAMP
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(10,5)),DSN=&SYSUT1
//SYSPRINT DD  SYSOUT=*
//SYSPUNCH DD  DUMMY
//SYSLIN   DD  DISP=(,PASS),UNIT=SYSDA,SPACE=(CYL,(5,5,0)),          *
//         DCB=(BLKSIZE=400),DSN=&&LOADSET
//SYSIN    DD  *
*********************************************************************
*                                                                   *
*   MODULE NAME = DFH$ZCAT                                          *
*                                                                   *
* DESCRIPTIVE NAME = CICS/ESA ....                                  *
*        Sample user exit program for task attach (XZCATT)          *
*                                                                   *
*                                                                   *
* STATUS = 3.2.1                                                    *
*                                                                   *
* FUNCTION =                                                        *
*        This is a sample user exit program to be invoked at the    *
*        XZCATT global user exit point when processing Task Attach. *
*                                                                   *
*        It shows how to use CICS/ESA Shared storage below and above  *
```

```
*        16MB anchored in the Global Work Area associated with this   *
*        exit program when it was enabled during PLTPI processing.    *
*                                                                      *
* NOTES :                                                              *
*    DEPENDENCIES = S/370                                              *
*    RESTRICTIONS = None                                               *
*    PATCH LABEL = None                                                *
*    MODULE TYPE = Executable                                          *
*    PROCESSOR = Assembler                                             *
*    ATTRIBUTES = Read only, Serially Reusable                         *
*                                                                      *
*----------------------------------------------------------------------*
*                                                                      *
* ENTRY POINT = DFH$ZCAT                                               *
*     PURPOSE = All Functions                                          *
*     LINKAGE = Invoked from the XZCATT user exit call.                *
*     INPUT = N/A                                                      *
*     OUTPUT = N/A                                                     *
*     EXIT-NORMAL = RETURN (14,12),RC=UERCNORM                         *
*     EXIT-ERROR = None                                                *
*                                                                      *
*----------------------------------------------------------------------*
*                                                                      *
* EXTERNAL REFERENCES = None                                           *
*     ROUTINES = None                                                  *
*     DATA AREAS = N/A                                                 *
*     CONTROL BLOCKS =                                                 *
*         DFH$PCGA - Global Work Area mapping for DFH$PCEX sample      *
*                    user exit program.                                *
*         DFH$ZCGA - Global Work Area mapping for this sample          *
*                    user exit program, DFH$ZCAT.                      *
*     GLOBAL VARIABLES = None                                          *
* TABLES = None                                                        *
* MACROS = DFHUEXIT TYPE=EP,ID=(XZCATT)                                *
*         Generates the User Exit Parameter list for the XZCATT        *
*         global user exit point.                                      *
*                                                                      *
*----------------------------------------------------------------------*
*                                                                      *
* CHANGE ACTIVITY :                                                    *
*        $MOD(DFH$ZCAT) COMP(SAMPLES) PROD(CICS/ESA):                  *
*                                                                      *
*     PN= REASON REL YYMMDD HDXIII : REMARKS                           *
*    $Ø1  Reserved for APAR fix                                        *
*    $Ø2  Reserved for APAR fix                                        *
*    $Ø3  Reserved for APAR fix                                        *
*     DØ= I054Ø4 %ØG 91Ø212 HD1VCJB: Module creation                   *
*    $D1  Reserved for DCR                                             *
*    $D2  Reserved for DCR                                             *
*    $D3  Reserved for DCR                                             *
```

```
*    $H1  Reserved for hardware support                                *
*    $H2  Reserved for hardware support                                *
*    $H3  Reserved for hardware support                                *
*    $L1  Reserved for line item                                       *
*    $L2  Reserved for line item                                       *
*    $L3  Reserved for line item                                       *
*    $P1= M64696 321 910225 HD9LPSM: UPDATE STATUS FLAG TO XB0G        *
*    $P2  Reserved for PTM                                             *
*    $P3  Reserved for PTM                                             *
*                                                                      *
************************************************************************
         SPACE
R0       EQU   0                   NOT USED
R1       EQU   1                   INITIAL USER EXIT PARAMETER LIST
R2       EQU   2                   USER EXIT PARAMETER LIST
R3       EQU   3                   XZCATT GLOBAL WORK AREA ADDRESS
R4       EQU   4                   XPCFTCH GLOBAL WORK AREA ADDRESS
R5       EQU   5                   CICS SHARED STG BELOW 16MB (64K)
R6       EQU   6                   CICS SHARED STG ABOVE 16MB (128K)
R7       EQU   7                   NOT USED
R8       EQU   8                   NOT USED
R9       EQU   9                   NOT USED
R10      EQU   10                  NOT USED
R11      EQU   11                  NOT USED
R12      EQU   12                  PROGRAM BASE
R13      EQU   13                  SAVE AREA
R14      EQU   14                  RETURN ADDRESS
R15      EQU   15                  INITIAL PROGRAM BASE
         EJECT
         DFHUEXIT TYPE=EP,ID=(XZCATT)
         EJECT
         COPY  DFH$PCGA            XPCFTCH GWA DSECT
*        EJECT
         COPY  DFH$ZCGA            XZCATT GWA DSECT
*        EJECT
         COPY     DFHTCTTE
         COPY     DFHAID
*        EJECT
DFH$ZCAT CSECT
DFH$ZCAT AMODE 31
DFH$ZCAT RMODE ANY
         SAVE  (14,12)             SAVE REGS
         LR    R12,R15             SET-UP BASE REGISTER
         USING DFH$ZCAT,R12        ADDRESSABILITY
         LR    R2,R1               GET UEP PARAMETER LIST
         USING DFHUEPAR,R2         ADDRESSABILITY
         SPACE
************************************************************************
* Pick up the address of the Global Work Area (GWA) for this exit     *
* program. Then pick up the addresses of the GWA for the exit program *
```

```
* DFH$PCEX and the CICS Shared storage below and above 16MB.          *
************************************************************************
         SPACE
         L     R3,UEPGAA           GET GWA ADDRESS
         USING DFH$ZCGA,R3         ADDRESSABILITY
         LM    R4,R6,Ø(R3)         GET AREA ADDRESSES
         USING DFH$PCGA,R4         ADDRESSABILITY (COMMON INFO)
         SPACE
         DROP  R3,R4
         SPACE
******   START OF SWAPEXIT CODE
TCTTEAR  EQU   11
         L     11,UEPTCTTE         GET TCTTE ADDRESS
         CLI   TCTTEAID,DFHPA3     WAS PA3 PRESSED?
         BNE   RETURN              NO, GO AWAY
         CLI   TCTTECIL,X'Ø4'      SEE IF TCTUA PRESENT
         BL    RETURN              LESS THAN 4 BYTES, CAN'T DO IT
         L     1,TCTTECIA          GET TCTTE USER AREA
         L     7,UEPTRAN
         MVC   Ø(4,1),Ø(7)         MOVE OLD TRANSACTION-ID
         MVC   Ø(4,7),=CL4'SWAP'   START SWAP XACT
******   END   OF SWAPEXIT CODE
RETURN   DS    ØH                  RETURN TO THE CALLER
         L     R13,UEPEPSA         ADDRESS OF EXIT SAVE AREA
         RETURN (14,12),RC=UERCNORM    RESTORE REGS AND RETURN
         SPACE
         LTORG
         SPACE
         END   DFH$ZCAT
//LINK   EXEC  PGM=IEWL,PARM='XREF,LIST,RENT,REUS'
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(2,1))
//SYSLIN   DD  DISP=(OLD,PASS),DSN=&&LOADSET
//SYSLMOD  DD  DISP=SHR,DSN=CICS.PGMLIB(SWAPEXIT)
//
```

SWAPINIT

```
//*
//TRN       EXEC PGM=DFHEAP1$,
//          REGION=4Ø96K,PARM='SP'
//STEPLIB   DD DSN=CICS.REL33Ø.SDFHLOAD,DISP=SHR
//SYSPRINT  DD SYSOUT=*
//SYSPUNCH  DD DSN=&&SYSCIN,
//          DISP=(,PASS),UNIT=SYSALLDA,
//          DCB=BLKSIZE=4ØØ,
//          SPACE=(4ØØ,(4ØØ,1ØØ))
//SYSIN     DD *
         PRINT NOGEN
```

```
         TITLE 'CICS/SWAP INIT PROGRAM'
*
*
*  REGISTER USAGE TABLE
*
*    R3   BASE REG FOR CODE
*    R4   BASE REG FOR CODE
*    R11  BASE REG FOR EIB
*    R12  BASE REG FOR WORKAREA
*    R13  BASE REG FOR WORKAREA
*
DFHEISTG DSECT
RETURNC  DS    F
*
SWAPINIT DFHEIENT CODEREG=(3,4)
         EXEC CICS ENABLE PROGRAM('SWAPEXIT') EXIT('XZCATT') START     X
               RESP(RETURNC)
         CLC   RETURNC,DFHRESP(NORMAL) NORMAL RETURN?
         BNE   FAILED
         WTO  'SWAPINIT PROGRAM SWAPEXIT FOR XZCATT HAS BEEN ENABLED'
         B     EXIT
FAILED   DS    ØH
         WTO  'SWAPINIT PROGRAM SWAPEXIT FOR XZCATT INIT FAILED'
EXIT     DS    ØH
         EXEC CICS RETURN
*
*
*
         END
//ASM       EXEC PGM=IEV9Ø,
//          REGION=4Ø96K,
//          PARM='NODECK,OBJECT,XREF(SHORT)'
//SYSLIB    DD DSN=CICS.REL33Ø.SDFHMAC,DISP=SHR
//          DD DSN=SYS1.MACLIB,DISP=SHR
//          DD DISP=SHR,DSN=SYS1.AMODGEN
//SYSUT1    DD UNIT=SYSALLDA,SPACE=(17ØØ,(4ØØ,4ØØ))
//SYSUT2    DD UNIT=SYSALLDA,SPACE=(17ØØ,(4ØØ,4ØØ))
//SYSUT3    DD UNIT=SYSALLDA,SPACE=(17ØØ,(4ØØ,4ØØ))
//SYSLIN    DD DSN=&&LOADSET,
//          UNIT=SYSALLDA,DISP=(,PASS),
//          SPACE=(4ØØ,(1ØØ,1ØØ,1))
//SYSPRINT  DD SYSOUT=*
//SYSPUNCH  DD SYSOUT=*
//SYSIN     DD DSN=&&SYSCIN,DISP=(OLD,DELETE)
//COPYLINK  EXEC PGM=IEBGENER,COND=(7,LT,ASM)
//SYSUT1    DD DSN=CICS.REL33Ø.SDFHMAC(DFHEILIA),DISP=SHR
//SYSUT2    DD DSN=&&COPYLINK,DISP=(NEW,PASS),
//          DCB=(LRECL=8Ø,BLKSIZE=4ØØ,RECFM=FB),
//          UNIT=SYSALLDA,SPACE=(4ØØ,(2Ø,2Ø))
//SYSPRINT  DD SYSOUT=*
```

```
//SYSIN     DD DUMMY
//LKED      EXEC PGM=IEWL,REGION=4Ø96K,
//          PARM='LIST,XREF',COND=(7,LT,ASM)
//SYSLIB    DD DSN=CICS.REL33Ø.SDFHLOAD,DISP=SHR
//SYSLMOD   DD DISP=SHR,DSN=CICS.PGMLIB(SWAPINIT)
//SYSUT1    DD UNIT=SYSALLDA,DCB=BLKSIZE=1Ø24,
//          SPACE=(1Ø24,(2ØØ,2Ø))
//SYSPRINT  DD SYSOUT=*
//SYSLIN    DD DSN=&&COPYLINK,DISP=(OLD,DELETE)
//          DD DSN=&&LOADSET,DISP=(OLD,DELETE)
//          DD DDNAME=SYSIN
//*
//*
```

SWAPPGM

```
//TRN       EXEC PGM=DFHEAP1$,
//          REGION=4Ø96K,PARM='SP'
//STEPLIB   DD DSN=CICS.REL33Ø.SDFHLOAD,DISP=SHR
//SYSPRINT  DD SYSOUT=*
//SYSPUNCH  DD DSN=&&SYSCIN,
//          DISP=(,PASS),UNIT=SYSALLDA,
//          DCB=BLKSIZE=4ØØ,
//          SPACE=(4ØØ,(4ØØ,1ØØ))
//SYSIN     DD *
         PRINT NOGEN
         TITLE 'CICS/SWAP MAIN PROGRAM'
*
*
NEWBUFFA DSECT
         DS    CL4Ø96
         USING NEWBUFFA,5
NEWCOMMA DSECT
         DS    CL4Ø96
         USING NEWCOMMA,6
OLDCOMMA DSECT
         DS    CL4Ø96
         USING OLDCOMMA,8
DFHEISTG DSECT
DOUBLE   DS    D
QIDFP    DS    CL4
QIDSP    DS    CL4
OLDXACT  DS    CL4
OLDCURSP DS    CL2
OLDCOMML DS    CL2
OLDBUFFL DS    CL2
TSQLL    EQU   *-OLDXACT
NEWXACT  DS    CL4
NEWCURSP DS    CL2
```

```
NEWCOMML DS    CL2
NEWBUFFL DS    CL2
TSQL     DS    H
RETURNC  DS    F
OLDXACTF DS    C
OLDBUFFA DS    7CL1Ø24                 7KS WORTH OF OLD BUFFER
OLDBUFLL EQU   *-OLDBUFFA
         ORG
*
*  REGISTER USAGE TABLE
*
*    R3   BASE REG FOR CODE
*    R5   BASE REG FOR NEW BUFFER
*    R6   BASE REG FOR NEW COMMAREA
*    R8   BASE REG FOR OLD COMMAREA
*    R11  BASE REG FOR EIB
*    R12  BASE REG FOR WORKAREA
*    R13  BASE REG FOR WORKAREA
*
SWAPPGM  DFHEIENT CODEREG=(3),EIBREG=(11),DATAREG=(12,13)
         MVC   QIDFP,EIBTRMID     TERMID IS FIRST PART OF TS QID
         MVC   QIDSP,EIBTRNID     TRANID IS SECOND PART OF TS QID
*
*   PROCESS INCOMING TRANSACTION INTO TEMPORARY STORAGE
*
         EXEC CICS ADDRESS TCTUA(1)
         C     1,=X'FFØØØØØØ'     SEE IF WE GOT TCTUA
         BNE   GOTTCTUA           YES....
         EXEC CICS SEND TEXT FROM(NOTCTUA) LENGTH(4Ø) ERASE FREEKB
         B     RETURNX
GOTTCTUA DS    ØH
         MVC   NEWXACT,Ø(1)       MOVE NEW XACT ID
         MVC   NEWCURSP,EIBCPOSN  MOVE NEW CURSOR POSITION
         MVC   NEWCOMML,EIBCALEN  MOVE NEW COMMAREA LENGTH
         L     6,DFHEICAP         LOAD POINTER FOR NEW COMMAREA
         XC    NEWBUFFL,NEWBUFFL  CLEAR BUFFER LENGTH
         EXEC CICS RECEIVE BUFFER LENGTH(NEWBUFFL) SET(5)
*
*   PROCESS OUTGOING TRANSACTION
*
         MVI   OLDXACTF,C'N'      INDICATE NO OLD XACT
         MVC   TSQL,=AL2(TSQLL)   MOVE LENGTH OF FIRST RECORD
         EXEC CICS READQ TS QUEUE(QIDFP) LENGTH(TSQL)                  X
               INTO(OLDXACT) RESP(RETURNC) ITEM(ITEM1)
         CLC   RETURNC,DFHRESP(NORMAL)
         BNE   NOLDXACT           NO QUEUE, NO OLD XACT TO PROCESS
         MVI   OLDXACTF,C'Y'      INDICATE OLD XACT EXIST
         MVC   OLDBUFFL,=AL2(OLDBUFLL) MOVE 7K AVAILABLE
         EXEC CICS READQ TS QUEUE(QIDFP) ITEM(ITEM2)                   X
               INTO(OLDBUFFA) LENGTH(OLDBUFFL) RESP(RETURNC)
```

```
         EXEC CICS READQ TS QUEUE(QIDFP) ITEM(ITEM3)                    X
               SET(8) LENGTH(OLDCOMML) RESP(RETURNC)
*
*   FINISH PROCESS INCOMING TRANSACTION
*
NOLDXACT DS    ØH
         EXEC CICS DELETEQ TS QUEUE(QIDFP) RESP(RETURNC)
         MVC   TSQL,=AL2(TSQLL)   MOVE LENGTH OF FIRST RECORD
         EXEC CICS WRITEQ TS QUEUE(QIDFP) ITEM(ITEM1)                   X
               FROM(NEWXACT) LENGTH(TSQL) RESP(RETURNC)
         MVC   TSQL,NEWBUFFL      MOVE 327Ø BUFFER LENGTH
         EXEC CICS WRITEQ TS QUEUE(QIDFP) ITEM(ITEM2)                   X
               FROM(NEWBUFFA) LENGTH(TSQL) RESP(RETURNC)
         CLC   NEWCOMML,=H'Ø'     ANY COMMAREA?
         BE    FOUTGOIN           NO, GO FINISH OUTGOING XACT
         MVC   TSQL,NEWCOMML      MOVE COMMAREA LENGTH
         EXEC CICS WRITEQ TS QUEUE(QIDFP) ITEM(ITEM3)                   X
               FROM(NEWCOMMA) LENGTH(TSQL) RESP(RETURNC)
*
*   PROCESS OUTGOING TRANSACTION
*
FOUTGOIN DS    ØH
         CLI   OLDXACTF,C'Y'       DOES OLD XACT EXIST?
         BE    SENDOLDX            YES, GO SEND OLD XACT STUFF
         EXEC CICS SEND CONTROL ERASE FREEKB
RETURNX  DS    ØH
         EXEC CICS RETURN
SENDOLDX DS   ØH
         EXEC CICS SEND FROM(OLDBUFFA) LENGTH(OLDBUFFL) ERASE
         MVC   OLDCURSP,=H'1'      CURSOR AT POSITION 1 BECUASE OF PA3
         EXEC CICS SEND CONTROL FREEKB CURSOR(OLDCURSP)
         CLI   OLDXACT,C','        WAS ORIGINAL PROGRAM PA3?
         BE    RETURNX             YES, DO NOT RETURN TRANSID
         EXEC CICS RETURN TRANSID(OLDXACT)                              X
               COMMAREA(OLDCOMMA) LENGTH(OLDCOMML)
*
*
*
ITEM1    DC    H'1'
ITEM2    DC    H'2'
ITEM3    DC    H'3'
NOTCTUA  DC    CL4Ø'SWAPPGM - *** NO TCTUA FOUND ***'
*
         END
//ASM       EXEC PGM=IEV9Ø,
//          REGION=4Ø96K,
//          PARM='NODECK,OBJECT,XREF(SHORT)'
//SYSLIB    DD DSN=CICS.REL33Ø.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=*
//SYSPUNCH  DD SYSOUT=*
//SYSIN     DD DSN=&&SYSCIN,DISP=(OLD,DELETE)
//COPYLINK  EXEC PGM=IEBGENER,COND=(7,LT,ASM)
//SYSUT1    DD DSN=CICS.REL330.SDFHMAC(DFHEILIA),DISP=SHR
//SYSUT2    DD DSN=&&COPYLINK,DISP=(NEW,PASS),
//          DCB=(LRECL=80,BLKSIZE=400,RECFM=FB),
//          UNIT=SYSALLDA,SPACE=(400,(20,20))
//SYSPRINT  DD SYSOUT=*
//SYSIN     DD DUMMY
//LKED      EXEC PGM=IEWL,REGION=4096K,
//          PARM='LIST,XREF',COND=(7,LT,ASM)
//SYSLIB    DD DSN=CICS.REL330.SDFHLOAD,DISP=SHR
//SYSLMOD   DD DISP=SHR,DSN=CICS.PGMLIB(SWAPPGM)
//SYSUT1    DD UNIT=SYSALLDA,DCB=BLKSIZE=1024,
//          SPACE=(1024,(200,20))
//SYSPRINT  DD SYSOUT=*
//SYSLIN    DD DSN=&&COPYLINK,DISP=(OLD,DELETE)
//          DD DSN=&&LOADSET,DISP=(OLD,DELETE)
//          DD DDNAME=SYSIN
//*
//*
```

Chorng S (Jack) Hwang
Principal
HSA Systems (USA)

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Using DFHDYP in a parallel sysplex

INTRODUCTION

We are working on a parallel sysplex project that includes CICS and DB2 cloning. Before migrating to parallel sysplex, our CICS regions were interconnected in a classic TOR-AOR architecture as shown in Figure 1.

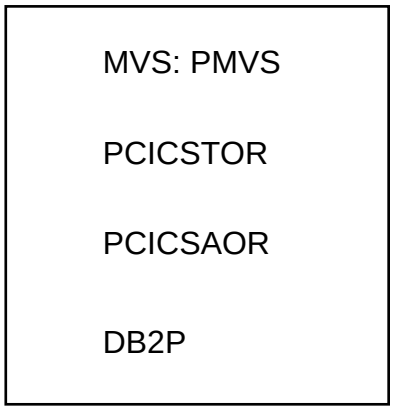

Figure 1: Classic TOR-AOR structure

CICS transactions can be defined as either 'local' or 'remote'. Local transactions are executed in the TOR, whereas remote transactions are routed to other CICS regions connected to the TOR by MRO links.

In this simple configuration, application transactions that must be executed on PCICSAOR are defined in the PCICSTOR with a 'remote system' PAOR. This ensures static routing to the corresponding AOR.

When we decided to migrate our basic architecture to parallel sysplex, with a second MVS image, we firstly had to migrate our DB2 to Data Sharing. Then we had to clone our CICS regions to get the architecture shown in Figure 2.

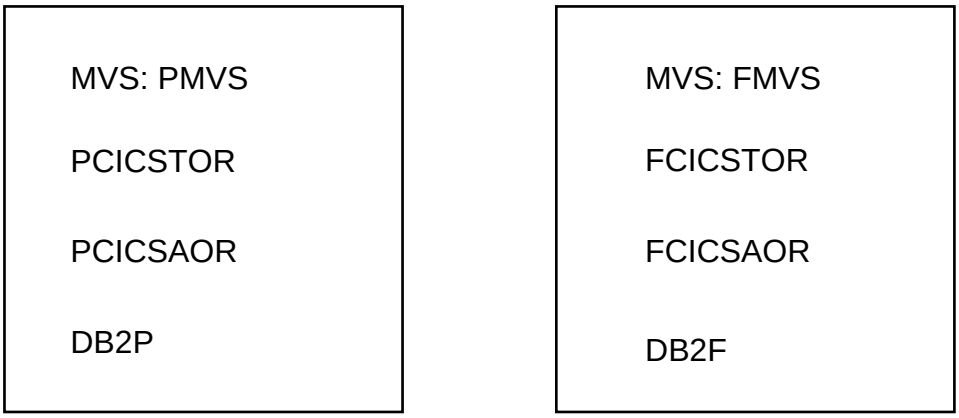

Figure 2: Parallel sysplex architecture

After implementing our parallel sysplex architecture with a second AOR, the static transaction routing rule had to be modified to become dynamic and to allow application transactions to be executed on FCICSAOR.

At this point, we were not ready to use CICSPLEX/SM (and its fully-functioning dynamic transaction routing program supporting workload balancing). Instead, we had to write our own routing exit. This was done using the Dynamic Transaction Routing Program DFHDYP.

Application transactions chosen for workload balancing did not have any affinities, so we decided to define a random rule to direct 50 percent of our workload to our first AOR (PCICSAOR – SYSID: PAOR) and the other 50 percent to our second AOR (FCICSAOR – SYSID: FAOR).

OUR APPROACH

We had to find how to create this kind of routing rule in the DFHDYP module. In this exit module, you can access the EIB block that contains the terminal name and task number of the transaction in the TOR. This is shown below:

```
EIBTRNID DS    CL4                TRANSACTION IDENTIFIER
```

```
EIBTASKN DS    PL4                 TASK NUMBER
EIBTRMID DS    CL4                 TERMINAL IDENTIFIER
```

To get the best results, we decided to use the EIBTASKN field to route transactions to AOR, based on task number parity on the TOR. Our goal was to ensure:

- A balanced workload distribution on our two AORs.
- The re-direction of full workload to the surviving AOR in the case of a planned or unplanned shutdown of the other AOR.

EXIT PROCESSING LOGIC

The exit module DFHDYP is called:

- When a transaction is defined with DYNAMIC(YES).
- Before routing to a remote AOR.
- If an error occurs in a previous route selection.

In our DFHDYP module, we coded the following logic to test the parity of the task number on the TOR:

- When it is even:
  - If it is the first routing exit call, we route the transaction to PAOR.
  - If it is not the first routing exit call (ie PAOR is not operational), we route the transaction to FAOR.
- When it is odd:
  - If it is the first routing exit call, we route the transaction to FAOR.
  - If it is not the first routing exit call (ie FAOR is not operational), we route the transaction to PAOR.

In this way we can ensure a balanced workload between PAOR and FAOR and dynamic back-up of the two CICS regions.

DFHDYP module should be link-edited with the attributes RENT and AMODE=31.

DFHDYP

```
*****************************************************************
*                                                               *
* MODULE NAME = DFHDYP                                          *
*                                                               *
*                                                               *
* FUNCTION =                                                    *
*                                                               *
*    TO ENABLE ROUTING OF TRANSACTION REQUESTS BETWEEN SYSTEMS  *
*    TO BE DONE DYNAMICALLY, IE AT RUN TIME.                    *
*                                                               *
*    WHEN INVOKED, THE DYNAMIC ROUTER'S FUNCTION DEPENDS UPON THE *
*    VALUE HELD IN THE "DYRFUNC" FIELD OF THE COMMAREA DSECT PASSED *
*    TO IT BY CICS (DFHAPRT).                                   *
*    IT MAY TAKE 1 OF 5 VALUES:                                 *
*                                                               *
*    DYRFUNC = C'Ø' WHEN THE ROUTER IS INVOKED INITIALLY        *
*            = C'1' IF THE ROUTER HAS BEEN INVOKED DUE TO A ROUTE *
*                   SELECTION ERROR                             *
*            = C'2' IF THE ROUTER HAS BEEN INVOKED AT ROUTED    *
*                   TRANSACTION TERMINATION                     *
*            = C'3' IF THE ROUTER IS BEING INVOKED TO NOTIFY IT *
*                   THAT A TRANSACTION IS BEING STATICALLY ROUTED *
*            = C'4' IF THE ROUTER IS BEING INVOKED TO NOTIFY IT *
*                   THAT THE TRANSACTION ABENDED                *
*                                                               *
*    THIS SAMPLE ROUTER ACCEPTS THE DEFAULT SYSID & REMOTE TRANID *
*    PASSED TO IT ON INITIAL INVOCATION AND SETS THE RETURN CODE TO *
*    ZERO.                                                      *
*    IT CHOOSES NOT TO BE INVOKED WHEN THE TRANSACTION TERMINATES. *
*    IF INVOKED DUE TO A ROUTE SELECTION ERROR, THE ROUTER CANCELS *
*    THE TRANSACTION AND RETURNS CONTROL TO THE CALLER.         *
*                                                               *
* ------------------------------------------------------------- *
*
*****************************************************************
*        REGISTER DEFINITIONS                                    *
*****************************************************************
*
COMPTR   EQU   1Ø                    POINTER TO COMMAREA PASSED
         SPACE 1
*
*****************************************************************
*        COMMAREA DSECT                                          *
*****************************************************************
*
         COPY  DFHDYPDS              INCLUDE DSECT TO MAP COMMAREA
         EJECT
*
```

```
*********************************************************************
*        DYNAMIC ROUTING PROGRAM CONTROL SECTION                    *
*********************************************************************
*
DFHDYP   CSECT
DFHDYP   AMODE 31                      CAN ADDR STORAGE ABOVE THE LINE
DFHDYP   RMODE ANY                     SAMPLE CAN RUN ABOVE THE LINE
*
         L     COMPTR,DFHEICAP         ESTABLISH ADDRESSABILITY TO THE
         USING DFHDYPDS,COMPTR         COMMAREA PASSED FROM RELAY PROG
         SPACE 1
*
*********************************************************************
*        CHECK THAT THE COMMAREA HAS ACTUALLY BEEN PASSED           *
*********************************************************************
*
         MVC   DYRRETC,RETCOD8         SET RETURN CODE ANTICIPATING
*                                      BAD COMMAREA. WILL BE SET TO
*                                      ZERO VALUE LATER ON IF OK
         CLC   EIBCALEN,=AL2(DYRCLEN)  IS COMMAREA CORRECT LENGTH?
         BNE   FINISHED                .. NO, EXIT FROM ROUTER
         SPACE 1
*
*********************************************************************
*        SELECT WHICH FUNCTION IS REQUIRED OF THE ROUTER            *
*********************************************************************
*
         CLI   DYRFUNC,C'Ø'            INITIAL INVOCATION OF ROUTER?
         BE    RTSELECT                .. YES, PERFORM ROUTE SELECTION
         CLI   DYRFUNC,C'1'            INVOKED DUE TO ROUTING ERROR?
         BE    RTERROR                 .. YES, HANDLE THIS CONDITION
         CLI   DYRFUNC,C'2'            INVOKED AFTER TRANSACTION END?
         BE    TRANTERM                .. YES, PERFORM ANY HOUSEKEEPING
         CLI   DYRFUNC,C'3'            INVOKED FOR STATIC ROUTE
         BE    RTNOTIFY                .. YES, PERFORM ANY HOUSEKEEPING
         CLI   DYRFUNC,C'4'            INVOKED AFTER AOR ABEND
         BE    RTABEND                 .. YES, PERFORM ANY HOUSEKEEPING
*
         MVC   DYRRETC,RETCOD8         INVALID REQUEST.
         B     FINISHED                SHOULD NEVER GET THIS FAR
         SPACE 1
*
*********************************************************************
*        PERFORM ANY ROUTING FUNCTION REQUIRED                      *
*********************************************************************
*
*        NO ALTERATIONS MADE TO PCT ENTRIES FOR SYSID & REMOTE TRANID.
*        TERMINATION OPTION & RETURN CODE SET AS FOR DEFAULT
*
RTSELECT DS    ØH
```

```
*
         MVI   DYROPTER,C'Y'           SET FOR    RE-INVOCATION
*
         TM    EIBTASKN+3,X'1Ø'        TASKS ENDS WITH 1,3,5,7,9.... ?
         BZ    LABEL1                  NO
*
         MVC   DYRSYSID(1),=CL1"F'     FIRST TEST    => FXXX
         B     LABEL1Ø
*
LABEL1   EQU   *
         MVC   DYRSYSID(1),=CL1"P'     FIRST TEST    => PXXX
*
LABEL1Ø  EQU   *
         MVC   DYRRETC,RETCODØ         SET RETURN CODE TO ZERO, (OK)
         B     FINISHED
*
*********************************************************************
*        HANDLE ANY RE-ROUTING REQUIRED AFTER A SELECTION ERROR       *
*********************************************************************
*
RTERROR  DS    ØH
*
         TM    EIBTASKN+3,X'1Ø'        TASK ENDS WITH 1,3,5,7,9.... ?
         BZ    LABEL2                  NO
*
         CLC   DYRSYSID(1),=CL1"F'
         BNE   FLAGØ1
         MVC   DYRSYSID(1),=CL1"P'     2ND   TEST    => PXXX
         B     LABEL2Ø
*
*
LABEL2   EQU   *
         CLC   DYRSYSID(1),=CL1"P'
         BNE   FLAGØ1
         MVC   DYRSYSID(1),=CL1"F'     2ND   TEST    => FXXX
*
LABEL2Ø  EQU   *
         MVC   DYRRETC,RETCODØ         SET RETURN CODE TO ZERO, (OK)
         B     FINISHED
*
FLAGØ1   MVC   DYRRETC,RETCOD8         CANCEL THE TRANSACTION
         B     FINISHED                (ERROR MESSAGE WILL BE ISSUED)
         SPACE 1
*
*********************************************************************
*        PERFORM ANY POST TRANSACTION PROCESSING                     *
*********************************************************************
*
TRANTERM DS    ØH                      (SHOULD NOT GET HERE IN SAMPLE)
         MVI   DYROPTER,C'N'
```

```
         MVC   DYRRETC,RETCOD8
         B     FINISHED
         SPACE 1
*
*********************************************************************
*        PERFORM ANY NOTIFICATION PROCESSING                        *
*********************************************************************
*
RTNOTIFY DS    ØH                     (SHOULD NOT GET HERE IN SAMPLE)
         MVI   DYROPTER,C'N'
         MVC   DYRRETC,RETCODØ
         B     FINISHED
         SPACE 1
*
*********************************************************************
*        PERFORM ANY ABEND NOTIFICATION PROCESSING                  *
*********************************************************************
*
RTABEND  DS    ØH                     (SHOULD NOT GET HERE IN SAMPLE)
         MVI   DYROPTER,C'N'
         MVC   DYRRETC,RETCODØ
         B     FINISHED
         SPACE 1
*
*********************************************************************
*        DEFINE CONSTANTS                                           *
*********************************************************************
*
RETCODØ  DC    F'Ø'                   RETURN CODE ZERO, (OK)
RETCOD8  DC    F'8'                   RETURN CODE EIGHT, (ERROR)
         SPACE 1
*
* WTO TO DEBUG
*
WTOC     WTO   "
XØ1
                                                 ",MF=L,ROUTCDE=(11)
WTOL     EQU   *-WTOC             LENGTH OF MACRO EXPANSION
*
WTO      DS    CL(WTOL)
*
*
*********************************************************************
*        RETURN CONTROL TO CALLER                                   *
*********************************************************************
*
FINISHED DS    ØH
         EXEC CICS RETURN
         END   DFHDYP
```

IMPLEMENTATION

To activate dynamic routing, we modified transaction definitions in our CDS file for transactions that were eligible for cloning – changing DYNAMIC from NO to YES and keeping REMOTE SYSTEM to PAOR (the first character of this field will be modified by the exit to point to PAOR or FAOR).

We have discovered one thing that we could not explain. When you define a transaction with DYNAMIC = YES, you need to add a PROGRAM definition on our TOR! So we had to add a dummy program definition PGMDTR. This is shown below:

```
 OBJECT CHARACTERISTICS                          CICS RELEASE = Ø41Ø
  CEDA  View TRANSaction( DB1Ø )
   TRANSaction    : DB1Ø
   Group          : PCAFSP1
   DEscription    :
   PROGram        : PGMDTR
   TWasize        : ØØØØØ              Ø-32767
   PROFile        : PROFPCT
   ...
 REMOTE ATTRIBUTES
  DYnamic         : Yes                No | Yes
  REMOTESystem    : PAOR
  REMOTEName      : DB1Ø
  TRProf          : DFHCICSS
  Localq          :                    No | Yes
  ...
```

Patrick Renard (France)

Analysing abended transactions – part 2

This month we continue the article describing how to store and analyse abends that occur in a CICS region, as well as obtaining an immediate description using the CICS file DFHMAC.

```
* NETNAMØ                          NETNAMØ
NETNAMØ  DFHMDF POS=(2,4),LENGTH=8,JUSTIFY=(LEFT,BLANK),                *
               INITIAL='Netname-',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(2,13),LENGTH=1,ATTRB=(ASKIP,NORM)
* OPIDØ                            OPIDØ
```

```
OPIDØ    DFHMDF POS=(2,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='User──',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(2,78),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(2,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(3,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
* DATEØ                           DATEØ
DATEØ    DFHMDF POS=(3,4),LENGTH=1Ø,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='DD/MM/YYYY',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(3,15),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(3,33),LENGTH=4,INITIAL='Task',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(3,38),LENGTH=5,INITIAL='Abend',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(3,44),LENGTH=7,INITIAL='Summary',ATTRB=(PROT,NORM)*
               ,COLOR=BLUE
* TIMEØ                           TIMEØ
TIMEØ    DFHMDF POS=(3,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='HH:MM:SS',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(3,78),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(3,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(4,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(4,4),LENGTH=3,INITIAL='Pf7',ATTRB=(PROT,NORM),    *
               COLOR=BLUE
         DFHMDF POS=(4,8),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM),      *
               COLOR=BLUE
         DFHMDF POS=(4,1Ø),LENGTH=4,INITIAL='Prev',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(4,17),LENGTH=3,INITIAL='Pa1',ATTRB=(PROT,NORM),   *
               COLOR=BLUE
         DFHMDF POS=(4,21),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM),     *
               COLOR=BLUE
         DFHMDF POS=(4,23),LENGTH=4,INITIAL='Exit',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
* APPLIDØ                         APPLIDØ
APPLIDØ  DFHMDF POS=(4,37),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='-Applid-',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(4,46),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(4,52),LENGTH=5,INITIAL='Clear',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(4,58),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM),     *
               COLOR=BLUE
         DFHMDF POS=(4,6Ø),LENGTH=4,INITIAL='Exit',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(4,67),LENGTH=3,INITIAL='Pf8',ATTRB=(PROT,NORM),   *
               COLOR=BLUE
         DFHMDF POS=(4,71),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM)
```

```
         DFHMDF POS=(4,73),LENGTH=4,INITIAL='next',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(4,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(5,1),LENGTH=79,                                   *
               INITIAL='+--------------------------------------------*
               ----------------------------------+',ATTRB=(PROT,BRT),  *
               COLOR=NEUTRAL
         DFHMDF POS=(11,6),LENGTH=6,INITIAL='Select',ATTRB=(PROT,NORM),*
               COLOR=BLUE
         DFHMDF POS=(11,13),LENGTH=4,INITIAL='Date',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(11,20),LENGTH=1,INITIAL=':',ATTRB=(PROT,NORM),    *
               COLOR=BLUE
* SDATE0                           SDATE0
SDATE0   DFHMDF POS=(11,22),LENGTH=8,JUSTIFY=(RIGHT,ZERO),             *
               ATTRB=(UNPROT,NUM,BRT,IC,FSET),COLOR=NEUTRAL
         DFHMDF POS=(11,31),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(11,39),LENGTH=9,INITIAL='(YYYYMMDD',ATTRB=(PROT,NO*
               RM),COLOR=GREEN
         DFHMDF POS=(11,49),LENGTH=1,INITIAL='-',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(11,51),LENGTH=9,INITIAL='optional,',ATTRB=(PROT,NO*
               RM),COLOR=GREEN
         DFHMDF POS=(11,61),LENGTH=7,INITIAL='default',ATTRB=(PROT,NORM*
               ),COLOR=GREEN
         DFHMDF POS=(11,69),LENGTH=6,INITIAL='today)',ATTRB=(PROT,NORM)*
               ,COLOR=GREEN
         DFHMDF POS=(12,13),LENGTH=4,INITIAL='Time',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(12,20),LENGTH=1,INITIAL=':',ATTRB=(PROT,NORM),    *
               COLOR=BLUE
* STIME0                           STIME0
STIME0   DFHMDF POS=(12,22),LENGTH=6,JUSTIFY=(RIGHT,ZERO),             *
               INITIAL='000000',ATTRB=(UNPROT,NUM,BRT,FSET),           *
               COLOR=NEUTRAL
         DFHMDF POS=(12,29),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(12,39),LENGTH=7,INITIAL='(HHMMSS',ATTRB=(PROT,NORM*
               ),COLOR=GREEN
         DFHMDF POS=(12,49),LENGTH=1,INITIAL='-',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(12,51),LENGTH=8,INITIAL='Starting',ATTRB=(PROT,NOR*
               M),COLOR=GREEN
         DFHMDF POS=(12,60),LENGTH=5,INITIAL='Time,',ATTRB=(PROT,NORM),*
               COLOR=GREEN
         DFHMDF POS=(12,66),LENGTH=9,INITIAL='optional)',ATTRB=(PROT,NO*
               RM),COLOR=GREEN
         DFHMDF POS=(13,13),LENGTH=8,INITIAL='Transid:',ATTRB=(PROT,NOR*
               M),COLOR=BLUE
* STRAN0                           STRAN0
```

```
STRANØ   DFHMDF POS=(13,22),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='____',ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(13,27),LENGTH=1,ATTRB=(ASKIP,NORM)
* STRACØ                          STRACØ
STRACØ   DFHMDF POS=(13,29),LENGTH=2,JUSTIFY=(LEFT,BLANK),INITIAL='EQ',*
               ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(13,32),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(13,33),LENGTH=5,INITIAL='EQ/NE',ATTRB=(PROT,NORM),*
               COLOR=BLUE
         DFHMDF POS=(13,39),LENGTH=9,INITIAL='(optional',ATTRB=(PROT,NO*
               RM),COLOR=GREEN
         DFHMDF POS=(13,49),LENGTH=1,INITIAL='-',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(13,51),LENGTH=7,INITIAL='default',ATTRB=(PROT,NORM*
               ),COLOR=GREEN
         DFHMDF POS=(13,59),LENGTH=3,INITIAL='all',ATTRB=(PROT,NORM),  *
               COLOR=GREEN
         DFHMDF POS=(13,63),LENGTH=13,INITIAL='transactions)',         *
               ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(14,1Ø),LENGTH=5,INITIAL='Abend',ATTRB=(PROT,NORM),*
               COLOR=BLUE
         DFHMDF POS=(14,16),LENGTH=5,INITIAL='code:',ATTRB=(PROT,NORM),*
               COLOR=BLUE
* ABCØ                            ABCØ
ABCØ     DFHMDF POS=(14,22),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='____',ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(14,27),LENGTH=1,ATTRB=(ASKIP,NORM)
* ABCCØ                           ABCCØ
ABCCØ    DFHMDF POS=(14,29),LENGTH=2,JUSTIFY=(LEFT,BLANK),INITIAL='EQ',*
               ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(14,32),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(14,33),LENGTH=5,INITIAL='EQ/NE',ATTRB=(PROT,NORM),*
               COLOR=BLUE
         DFHMDF POS=(14,39),LENGTH=9,INITIAL='(optional',ATTRB=(PROT,NO*
               RM),COLOR=GREEN
         DFHMDF POS=(14,49),LENGTH=1,INITIAL='-',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(14,51),LENGTH=7,INITIAL='default',ATTRB=(PROT,NORM*
               ),COLOR=GREEN
         DFHMDF POS=(14,59),LENGTH=3,INITIAL='all',ATTRB=(PROT,NORM),  *
               COLOR=GREEN
         DFHMDF POS=(14,63),LENGTH=6,INITIAL='codes)',ATTRB=(PROT,NORM)*
               ,COLOR=GREEN
* MAPNOTØ                         MAPNOTØ
MAPNOTØ  DFHMDF POS=(24,1),LENGTH=79,JUSTIFY=(LEFT,BLANK),ATTRB=(PROT,B*
               RT),COLOR=GREEN
         TITLE 'BMS: MAPTACB  MAP1              '
MAP1     DFHMDI SIZE=(24,8Ø),CTRL=(FREEKB,ALARM),MAPATTS=(COLOR,HILIGHT*
               ,SOSI),DSATTS=(COLOR,HILIGHT,SOSI),COLUMN=1,LINE=1,     *
               DATA=FIELD,TIOAPFX=YES,OBFMT=NO
```

```
         DFHMDF POS=(1,1),LENGTH=79,                                    *
               INITIAL='+————————————————————————————————————————————*
               ————————————————————————————+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(2,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),        *
               COLOR=NEUTRAL
* NETNAME                          NETNAME
NETNAME  DFHMDF POS=(2,4),LENGTH=8,JUSTIFY=(LEFT,BLANK),                *
               INITIAL='Netname-',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(2,13),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(2,32),LENGTH=5,INITIAL='Total',ATTRB=(PROT,NORM), *
               COLOR=GREEN
         DFHMDF POS=(2,38),LENGTH=7,INITIAL='Abends:',ATTRB=(PROT,NORM)*
               ,COLOR=GREEN
* ABNDTOT                          ABNDTOT
ABNDTOT  DFHMDF POS=(2,46),LENGTH=5,JUSTIFY=(LEFT,BLANK),ATTRB=(PROT,BR*
               T),COLOR=YELLOW
         DFHMDF POS=(2,52),LENGTH=1,ATTRB=(PROT,NORM)
* OPID                             OPID
OPID     DFHMDF POS=(2,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='User——',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(2,78),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(2,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(3,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),        *
               COLOR=NEUTRAL
* DATE                             DATE
DATE     DFHMDF POS=(3,4),LENGTH=1Ø,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='DD/MM/YYYY',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(3,15),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(3,33),LENGTH=4,INITIAL='Task',ATTRB=(PROT,NORM),   *
               COLOR=BLUE
         DFHMDF POS=(3,38),LENGTH=5,INITIAL='Abend',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(3,44),LENGTH=7,INITIAL='Summary',ATTRB=(PROT,NORM)*
               ,COLOR=BLUE
* TIME                             TIME
TIME     DFHMDF POS=(3,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='HH:MM:SS',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(3,78),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(3,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(4,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),        *
               COLOR=NEUTRAL
         DFHMDF POS=(4,4),LENGTH=3,INITIAL='Pf7',ATTRB=(PROT,NORM),     *
               COLOR=BLUE
         DFHMDF POS=(4,8),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM),       *
               COLOR=BLUE
         DFHMDF POS=(4,1Ø),LENGTH=4,INITIAL='Prev',ATTRB=(PROT,NORM),   *
               COLOR=BLUE
```

```
         DFHMDF POS=(4,17),LENGTH=5,INITIAL='Enter',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(4,23),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM),     *
               COLOR=BLUE
         DFHMDF POS=(4,25),LENGTH=8,INITIAL='Reselect',ATTRB=(PROT,NORM*
               ),COLOR=BLUE
* APPLID                          APPLID
APPLID   DFHMDF POS=(4,37),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='-Applid-',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(4,46),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(4,52),LENGTH=5,INITIAL='Clear',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(4,58),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM),     *
               COLOR=BLUE
         DFHMDF POS=(4,6Ø),LENGTH=4,INITIAL='Exit',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(4,67),LENGTH=3,INITIAL='Pf8',ATTRB=(PROT,NORM),   *
               COLOR=BLUE
         DFHMDF POS=(4,71),LENGTH=1,INITIAL='=',ATTRB=(PROT,NORM)
         DFHMDF POS=(4,73),LENGTH=4,INITIAL='next',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(4,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(5,1),LENGTH=79,                                   *
               INITIAL='+-------------------------------------------------*
               ---------------------------------+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(7,15),LENGTH=7,INITIAL='Transid',ATTRB=(PROT,BRT),*
               COLOR=NEUTRAL
         DFHMDF POS=(7,25),LENGTH=4,INITIAL='Date',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(7,35),LENGTH=4,INITIAL='Time',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(7,43),LENGTH=5,INITIAL='Abend',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(7,49),LENGTH=9,INITIAL='Code(C/O)',ATTRB=(PROT,NOR*
               M),COLOR=BLUE
         DFHMDF POS=(7,61),LENGTH=5,INITIAL='PgmId',ATTRB=(PROT,BRT),  *
               COLOR=YELLOW
* MAPSEL1                         MAPSEL1
MAPSEL1  DFHMDF POS=(9,13),LENGTH=1,JUSTIFY=(LEFT,BLANK),INITIAL='_',  *
               ATTRB=(UNPROT,BRT,IC,FSET),COLOR=NEUTRAL
         DFHMDF POS=(9,15),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTRX1                         MAPTRX1
MAPTRX1  DFHMDF POS=(9,17),LENGTH=4,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(9,22),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPDAT1                         MAPDAT1
MAPDAT1  DFHMDF POS=(9,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='________',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
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         DFHMDF POS=(9,33),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTIM1                        MAPTIM1
MAPTIM1  DFHMDF POS=(9,35),LENGTH=6,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='______',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(9,42),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABC1                        MAPABC1
MAPABC1  DFHMDF POS=(9,45),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(9,5Ø),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABO1                        MAPABO1
MAPABO1  DFHMDF POS=(9,53),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(9,58),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPPGM1                        MAPPGM1
MAPPGM1  DFHMDF POS=(9,6Ø),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='________',ATTRB=(PROT,BRT),COLOR=YELLOW
         DFHMDF POS=(9,69),LENGTH=1,ATTRB=(PROT,NORM)
         DFHMDF POS=(1Ø,1),LENGTH=79,                                   *
               INITIAL='+-------------------------------------------------*
               ---------------------------------+',ATTRB=(PROT,BRT),     *
               COLOR=BLUE
* MAPSEL2                        MAPSEL2
MAPSEL2  DFHMDF POS=(12,13),LENGTH=1,JUSTIFY=(LEFT,BLANK),INITIAL='_', *
               ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(12,15),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTRX2                        MAPTRX2
MAPTRX2  DFHMDF POS=(12,17),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(12,22),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPDAT2                        MAPDAT2
MAPDAT2  DFHMDF POS=(12,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='________',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(12,33),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTIM2                        MAPTIM2
MAPTIM2  DFHMDF POS=(12,35),LENGTH=6,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='______',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(12,42),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABC2                        MAPABC2
MAPABC2  DFHMDF POS=(12,45),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(12,5Ø),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABO2                        MAPABO2
MAPABO2  DFHMDF POS=(12,53),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(12,58),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPPGM2                        MAPPGM2
MAPPGM2  DFHMDF POS=(12,6Ø),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='________',ATTRB=(PROT,BRT),COLOR=YELLOW
         DFHMDF POS=(12,69),LENGTH=1,ATTRB=(PROT,NORM)
         DFHMDF POS=(13,1),LENGTH=79,                                   *
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              INITIAL='+————————————————————————————————————————————*
              ————————————————————————————+',ATTRB=(PROT,BRT),       *
              COLOR=BLUE
* MAPSEL3                        MAPSEL3
MAPSEL3  DFHMDF POS=(15,13),LENGTH=1,JUSTIFY=(LEFT,BLANK),INITIAL='_', *
              ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(15,15),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTRX3                        MAPTRX3
MAPTRX3  DFHMDF POS=(15,17),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(15,22),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPDAT3                        MAPDAT3
MAPDAT3  DFHMDF POS=(15,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='________',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(15,33),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTIM3                        MAPTIM3
MAPTIM3  DFHMDF POS=(15,35),LENGTH=6,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='______',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(15,42),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABC3                        MAPABC3
MAPABC3  DFHMDF POS=(15,45),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(15,5Ø),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABO3                        MAPABO3
MAPABO3  DFHMDF POS=(15,53),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(15,58),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPPGM3                        MAPPGM3
MAPPGM3  DFHMDF POS=(15,6Ø),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='________',ATTRB=(PROT,BRT),COLOR=YELLOW
         DFHMDF POS=(15,69),LENGTH=1,ATTRB=(PROT,NORM)
         DFHMDF POS=(16,1),LENGTH=79,                                  *
              INITIAL='+————————————————————————————————————————————*
              ————————————————————————————+',ATTRB=(PROT,BRT),       *
              COLOR=BLUE
* MAPSEL4                        MAPSEL4
MAPSEL4  DFHMDF POS=(18,13),LENGTH=1,JUSTIFY=(LEFT,BLANK),INITIAL='_', *
              ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(18,15),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTRX4                        MAPTRX4
MAPTRX4  DFHMDF POS=(18,17),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(18,22),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPDAT4                        MAPDAT4
MAPDAT4  DFHMDF POS=(18,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='________',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(18,33),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTIM4                        MAPTIM4
MAPTIM4  DFHMDF POS=(18,35),LENGTH=6,JUSTIFY=(LEFT,BLANK),             *
              INITIAL='______',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
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         DFHMDF POS=(18,42),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABC4                        MAPABC4
MAPABC4  DFHMDF POS=(18,45),LENGTH=4,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(18,50),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABO4                        MAPABO4
MAPABO4  DFHMDF POS=(18,53),LENGTH=4,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(18,58),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPPGM4                        MAPPGM4
MAPPGM4  DFHMDF POS=(18,60),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='________',ATTRB=(PROT,BRT),COLOR=YELLOW
         DFHMDF POS=(18,69),LENGTH=1,ATTRB=(PROT,NORM)
         DFHMDF POS=(19,1),LENGTH=79,                                    *
               INITIAL='+-------------------------------------------------*
               --------------------------------+',ATTRB=(PROT,BRT),      *
               COLOR=BLUE
* MAPSEL5                        MAPSEL5
MAPSEL5  DFHMDF POS=(21,13),LENGTH=1,JUSTIFY=(LEFT,BLANK),INITIAL='_', *
               ATTRB=(UNPROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(21,15),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTRX5                        MAPTRX5
MAPTRX5  DFHMDF POS=(21,17),LENGTH=4,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=NEUTRAL
         DFHMDF POS=(21,22),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPDAT5                        MAPDAT5
MAPDAT5  DFHMDF POS=(21,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='________',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(21,33),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPTIM5                        MAPTIM5
MAPTIM5  DFHMDF POS=(21,35),LENGTH=6,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='______',ATTRB=(PROT,BRT,FSET),COLOR=BLUE
         DFHMDF POS=(21,42),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABC5                        MAPABC5
MAPABC5  DFHMDF POS=(21,45),LENGTH=4,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(21,50),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPABO5                        MAPABO5
MAPABO5  DFHMDF POS=(21,53),LENGTH=4,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='____',ATTRB=(PROT,BRT,FSET),COLOR=GREEN
         DFHMDF POS=(21,58),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAPPGM5                        MAPPGM5
MAPPGM5  DFHMDF POS=(21,60),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='________',ATTRB=(PROT,BRT),COLOR=YELLOW
         DFHMDF POS=(21,69),LENGTH=1,ATTRB=(PROT,NORM)
         DFHMDF POS=(22,1),LENGTH=79,                                    *
               INITIAL='+-------------------------------------------------*
               --------------------------------+',ATTRB=(PROT,BRT),      *
               COLOR=BLUE
* MAPNOTE                        MAPNOTE
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MAPNOTE  DFHMDF POS=(24,1),LENGTH=79,JUSTIFY=(LEFT,BLANK),ATTRB=(PROT,B*
               RT),COLOR=GREEN
         TITLE 'BMS: MAPTACB  MAP2              '
MAP2     DFHMDI SIZE=(24,8Ø),CTRL=(FREEKB,ALARM),MAPATTS=(COLOR,HILIGHT*
               ,SOSI),DSATTS=(COLOR,HILIGHT,SOSI),COLUMN=1,LINE=1,     *
               DATA=FIELD,TIOAPFX=YES,OBFMT=NO
         DFHMDF POS=(1,1),LENGTH=79,                                   *
               INITIAL='+————————————————————————————————————————————*
               ————————————————————————+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(2,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
* MAP2NET                          MAP2NET
MAP2NET  DFHMDF POS=(2,4),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
               INITIAL='Netname-',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(2,13),LENGTH=1,ATTRB=(ASKIP,NORM)
* MAP2OP                           MAP2OP
MAP2OP   DFHMDF POS=(2,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='User——',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(2,78),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(2,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(3,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
* MAP2DAT                          MAP2DAT
MAP2DAT  DFHMDF POS=(3,4),LENGTH=1Ø,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='DD/MM/YYYY',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(3,15),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(3,33),LENGTH=4,INITIAL='Task',ATTRB=(PROT,NORM),  *
               COLOR=BLUE
         DFHMDF POS=(3,38),LENGTH=5,INITIAL='Abend',ATTRB=(PROT,NORM), *
               COLOR=BLUE
         DFHMDF POS=(3,44),LENGTH=6,INITIAL='Detail',ATTRB=(PROT,NORM),*
               COLOR=BLUE
* MAP2TIM                          MAP2TIM
MAP2TIM  DFHMDF POS=(3,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='HH:MM:SS',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(3,78),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(3,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(4,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
* MAP2APP                          MAP2APP
MAP2APP  DFHMDF POS=(4,37),LENGTH=8,JUSTIFY=(LEFT,BLANK),              *
               INITIAL='-Applid-',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(4,46),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(4,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(5,1),LENGTH=79,                                   *
               INITIAL='+————————————————————————————————————————————*
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                ————————————————————————————+',ATTRB=(PROT,BRT),      *
                COLOR=NEUTRAL
          DFHMDF POS=(7,1),LENGTH=8,INITIAL='Transid:',ATTRB=(PROT,BRT),*
                COLOR=BLUE
* MAP2TRX                          MAP2TRX
MAP2TRX   DFHMDF POS=(7,1Ø),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
                INITIAL='____',ATTRB=(PROT,BRT),COLOR=NEUTRAL
          DFHMDF POS=(7,15),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(7,17),LENGTH=5,INITIAL='Date:',ATTRB=(PROT,BRT),  *
                COLOR=BLUE
* MAP2TDT                          MAP2TDT
MAP2TDT   DFHMDF POS=(7,23),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
                INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
          DFHMDF POS=(7,32),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(7,34),LENGTH=5,INITIAL='Time:',ATTRB=(PROT,BRT),  *
                COLOR=BLUE
* MAP2TTM                          MAP2TTM
MAP2TTM   DFHMDF POS=(7,4Ø),LENGTH=6,JUSTIFY=(LEFT,BLANK),               *
                INITIAL='______',ATTRB=(PROT,NORM),COLOR=GREEN
          DFHMDF POS=(7,47),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(7,49),LENGTH=4,INITIAL='Task',ATTRB=(PROT,BRT),   *
                COLOR=BLUE
          DFHMDF POS=(7,54),LENGTH=7,INITIAL='number:',ATTRB=(PROT,BRT),*
                COLOR=BLUE
* MAP2TKN                          MAP2TKN
MAP2TKN   DFHMDF POS=(7,62),LENGTH=7,JUSTIFY=(LEFT,BLANK),               *
                INITIAL='_______',ATTRB=(PROT,NORM),COLOR=GREEN
          DFHMDF POS=(7,7Ø),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(8,1),LENGTH=6,INITIAL='Termid',ATTRB=(ASKIP,BRT), *
                COLOR=BLUE
          DFHMDF POS=(8,8),LENGTH=1,INITIAL=':',ATTRB=(PROT,NORM)
* MAP2TRM                          MAP2TRM
MAP2TRM   DFHMDF POS=(8,1Ø),LENGTH=4,JUSTIFY=(LEFT,BLANK),               *
                INITIAL='____',ATTRB=(PROT,NORM),COLOR=GREEN
          DFHMDF POS=(8,15),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(8,17),LENGTH=3,INITIAL='Aid',ATTRB=(PROT,BRT),    *
                COLOR=BLUE
          DFHMDF POS=(8,21),LENGTH=1,INITIAL=':',ATTRB=(PROT,NORM)
* MAP2AID                          MAP2AID
MAP2AID   DFHMDF POS=(8,23),LENGTH=2,JUSTIFY=(LEFT,BLANK),INITIAL='__', *
                ATTRB=(PROT,NORM),COLOR=GREEN
          DFHMDF POS=(8,26),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(8,29),LENGTH=8,INITIAL='Program:',ATTRB=(PROT,BRT)*
                ,COLOR=BLUE
* MAP2PGM                          MAP2PGM
MAP2PGM   DFHMDF POS=(8,38),LENGTH=8,JUSTIFY=(LEFT,BLANK),               *
                INITIAL='________',ATTRB=(PROT,BRT),COLOR=NEUTRAL
          DFHMDF POS=(8,47),LENGTH=1,ATTRB=(ASKIP,NORM)
          DFHMDF POS=(8,5Ø),LENGTH=5,INITIAL='Start',ATTRB=(PROT,BRT),  *
                COLOR=BLUE
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         DFHMDF POS=(8,56),LENGTH=5,INITIAL='code:',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
* MAP2STC                          MAP2STC
MAP2STC  DFHMDF POS=(8,62),LENGTH=2,JUSTIFY=(LEFT,BLANK),INITIAL='__', *
               ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(8,65),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(10,1),LENGTH=9,INITIAL='Eibcalen:',ATTRB=(ASKIP,BR*
               T),COLOR=BLUE
* MAP2OML                          MAP2OML
MAP2OML  DFHMDF POS=(10,11),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='____',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(10,16),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(10,18),LENGTH=9,INITIAL='Eibrsrce:',ATTRB=(PROT,BR*
               T),COLOR=BLUE
* MAP2RSR                          MAP2RSR
MAP2RSR  DFHMDF POS=(10,28),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(10,37),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(10,39),LENGTH=6,INITIAL='Eibfn:',ATTRB=(PROT,BRT),*
               COLOR=BLUE
* MAP2FN                           MAP2FN
MAP2FN   DFHMDF POS=(10,46),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='____',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(10,51),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(10,53),LENGTH=9,INITIAL='Eibrcode:',ATTRB=(PROT,BR*
               T),COLOR=BLUE
* MAP2EC                           MAP2EC
MAP2EC   DFHMDF POS=(10,63),LENGTH=12,JUSTIFY=(LEFT,BLANK),            *
               INITIAL='____________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(10,76),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(11,1),LENGTH=6,INITIAL='Eiberr',ATTRB=(ASKIP,BRT),*
               COLOR=BLUE
         DFHMDF POS=(11,8),LENGTH=1,INITIAL=':',ATTRB=(PROT,NORM)
* MAP2ERR                          MAP2ERR
MAP2ERR  DFHMDF POS=(11,10),LENGTH=2,JUSTIFY=(LEFT,BLANK),INITIAL='__',*
               ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(11,13),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(11,18),LENGTH=9,INITIAL='Eiberrcd:',ATTRB=(PROT,BR*
               T),COLOR=BLUE
* MAP2ERC                          MAP2ERC
MAP2ERC  DFHMDF POS=(11,28),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(11,37),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(11,39),LENGTH=8,INITIAL='Eibresp:',ATTRB=(PROT,BRT*
               ),COLOR=BLUE
* MAP2RS                           MAP2RS
MAP2RS   DFHMDF POS=(11,48),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(11,57),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(11,59),LENGTH=9,INITIAL='Eibresp2:',ATTRB=(PROT,BR*
               T),COLOR=BLUE
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* MAP2RS2                          MAP2RS2
MAP2RS2  DFHMDF POS=(11,69),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(11,78),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(12,1),LENGTH=5,INITIAL='Abend',ATTRB=(ASKIP,BRT), *
               COLOR=BLUE
         DFHMDF POS=(12,8),LENGTH=5,INITIAL='codes',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
         DFHMDF POS=(12,14),LENGTH=8,INITIAL='current:',ATTRB=(PROT,BRT*
               ),COLOR=BLUE
* MAP2ABC                          MAP2ABC
MAP2ABC  DFHMDF POS=(12,23),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='____',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(12,28),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(12,30),LENGTH=9,INITIAL='original:',ATTRB=(PROT,BR*
               T),COLOR=BLUE
* MAP2ABO                          MAP2ABO
MAP2ABO  DFHMDF POS=(12,40),LENGTH=4,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='____',ATTRB=(PROT,BRT),COLOR=NEUTRAL
         DFHMDF POS=(12,45),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(13,1),LENGTH=3,INITIAL='Psw',ATTRB=(ASKIP,BRT),   *
               COLOR=BLUE
         DFHMDF POS=(13,5),LENGTH=2,INITIAL='at',ATTRB=(PROT,BRT),     *
               COLOR=BLUE
         DFHMDF POS=(13,8),LENGTH=6,INITIAL='abend:',ATTRB=(PROT,BRT), *
               COLOR=BLUE
* MAP2PSW                          MAP2PSW
MAP2PSW  DFHMDF POS=(13,15),LENGTH=16,JUSTIFY=(LEFT,BLANK),            *
               INITIAL='________________',ATTRB=(PROT,BRT),            *
               COLOR=NEUTRAL
         DFHMDF POS=(13,32),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(13,34),LENGTH=9,INITIAL='Execution',ATTRB=(PROT,BR*
               T),COLOR=BLUE
         DFHMDF POS=(13,44),LENGTH=4,INITIAL='Key:',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
* MAP2EXK                          MAP2EXK
MAP2EXK  DFHMDF POS=(13,49),LENGTH=2,JUSTIFY=(LEFT,BLANK),INITIAL='__',*
               ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(13,52),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(13,54),LENGTH=7,INITIAL='Storage',ATTRB=(PROT,BRT)*
               ,COLOR=BLUE
         DFHMDF POS=(13,62),LENGTH=4,INITIAL='hit:',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
* MAP2STH                          MAP2STH
MAP2STH  DFHMDF POS=(13,67),LENGTH=5,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='_____',ATTRB=(PROT,BRT),COLOR=NEUTRAL
         DFHMDF POS=(13,73),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(14,40),LENGTH=4,INITIAL='User',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
         DFHMDF POS=(14,45),LENGTH=3,INITIAL='Key',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
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         DFHMDF POS=(14,5Ø),LENGTH=1,INITIAL='9',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(14,6Ø),LENGTH=2,INITIAL='No',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
         DFHMDF POS=(14,63),LENGTH=3,INITIAL='Hit',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
         DFHMDF POS=(14,71),LENGTH=1,INITIAL='Ø',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(15,4Ø),LENGTH=4,INITIAL='Cics',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
         DFHMDF POS=(15,45),LENGTH=3,INITIAL='Key',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
         DFHMDF POS=(15,5Ø),LENGTH=1,INITIAL='8',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(15,6Ø),LENGTH=4,INITIAL='CDSA',ATTRB=(PROT,BRT),  *
               COLOR=BLUE
         DFHMDF POS=(15,71),LENGTH=1,INITIAL='1',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(16,59),LENGTH=5,INITIAL='ECDSA',ATTRB=(PROT,BRT), *
               COLOR=BLUE
         DFHMDF POS=(16,71),LENGTH=1,INITIAL='2',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(17,59),LENGTH=5,INITIAL='ERDSA',ATTRB=(PROT,BRT), *
               COLOR=BLUE
         DFHMDF POS=(17,71),LENGTH=1,INITIAL='3',ATTRB=(PROT,NORM),    *
               COLOR=GREEN
         DFHMDF POS=(18,1),LENGTH=1Ø,INITIAL='Registers:',ATTRB=(PROT,B*
               RT),COLOR=BLUE
         DFHMDF POS=(19,7),LENGTH=2,INITIAL='RØ',ATTRB=(PROT,BRT),     *
               COLOR=BLUE
* MAP2RØ                          MAP2RØ
MAP2RØ   DFHMDF POS=(19,1Ø),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(19,19),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(19,21),LENGTH=2,INITIAL='R1',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R1                          MAP2R1
MAP2R1   DFHMDF POS=(19,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(19,33),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(19,35),LENGTH=2,INITIAL='R2',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R2                          MAP2R2
MAP2R2   DFHMDF POS=(19,38),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(19,47),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(19,49),LENGTH=2,INITIAL='R3',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R3                          MAP2R3
MAP2R3   DFHMDF POS=(19,52),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
```

```
         DFHMDF POS=(19,61),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(19,63),LENGTH=2,INITIAL='R4',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R4                          MAP2R4
MAP2R4   DFHMDF POS=(19,66),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(19,75),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(20,7),LENGTH=2,INITIAL='R5',ATTRB=(PROT,BRT),     *
               COLOR=BLUE
* MAP2R5                          MAP2R5
MAP2R5   DFHMDF POS=(20,10),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(20,19),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(20,21),LENGTH=2,INITIAL='R6',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R6                          MAP2R6
MAP2R6   DFHMDF POS=(20,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(20,33),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(20,35),LENGTH=2,INITIAL='R7',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R7                          MAP2R7
MAP2R7   DFHMDF POS=(20,38),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(20,47),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(20,49),LENGTH=2,INITIAL='R8',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R8                          MAP2R8
MAP2R8   DFHMDF POS=(20,52),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(20,61),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(20,63),LENGTH=2,INITIAL='R9',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R9                          MAP2R9
MAP2R9   DFHMDF POS=(20,66),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(20,75),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(21,6),LENGTH=3,INITIAL='R10',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R10                         MAP2R10
MAP2R10  DFHMDF POS=(21,10),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(21,19),LENGTH=0,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(21,20),LENGTH=3,INITIAL='R11',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
* MAP2R11                         MAP2R11
MAP2R11  DFHMDF POS=(21,24),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(21,33),LENGTH=0,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(21,34),LENGTH=3,INITIAL='R12',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
```

```
* MAP2R12                          MAP2R12
MAP2R12  DFHMDF POS=(21,38),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(21,47),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(21,48),LENGTH=3,INITIAL='R13',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
* MAP2R13                          MAP2R13
MAP2R13  DFHMDF POS=(21,52),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(21,61),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(21,62),LENGTH=3,INITIAL='R14',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
* MAP2R14                          MAP2R14
MAP2R14  DFHMDF POS=(21,66),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(21,75),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(22,6),LENGTH=3,INITIAL='R15',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
* MAP2R15                          MAP2R15
MAP2R15  DFHMDF POS=(22,1Ø),LENGTH=8,JUSTIFY=(LEFT,BLANK),             *
               INITIAL='________',ATTRB=(PROT,NORM),COLOR=GREEN
         DFHMDF POS=(22,19),LENGTH=1,ATTRB=(ASKIP,NORM)
         DFHMDF POS=(23,1),LENGTH=79,                                  *
               INITIAL='+-------------------------------------------------*
               -------------------------------+',ATTRB=(ASKIP,BRT),     *
               COLOR=BLUE
* MAP2ABN                          MAP2ABN
MAP2ABN  DFHMDF POS=(24,1),LENGTH=4,JUSTIFY=(LEFT,BLANK),ATTRB=(UNPROT,*
               BRT,IC),COLOR=NEUTRAL
* MAP2NOT                          MAP2NOT
MAP2NOT  DFHMDF POS=(24,6),LENGTH=73,JUSTIFY=(LEFT,BLANK),ATTRB=(ASKIP,*
               BRT),COLOR=NEUTRAL
         DFHMDF POS=(24,8Ø),LENGTH=Ø,ATTRB=(ASKIP,NORM)
         TITLE 'BMS: MAPTACB  MAP3              '
MAP3     DFHMDI SIZE=(5,8Ø),CTRL=(FREEKB,ALARM),MAPATTS=(COLOR,HILIGHT,*
               SOSI),DSATTS=(COLOR,HILIGHT,SOSI),COLUMN=1,LINE=1,      *
               DATA=FIELD,TIOAPFX=YES,HEADER=YES,OBFMT=NO
         DFHMDF POS=(1,1),LENGTH=79,                                   *
               INITIAL='+-------------------------------------------------*
               -------------------------------+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(2,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(2,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(3,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(3,36),LENGTH=3,INITIAL='End',ATTRB=(PROT,BRT),    *
               COLOR=BLUE
         DFHMDF POS=(3,4Ø),LENGTH=2,INITIAL='of',ATTRB=(PROT,BRT),     *
               COLOR=BLUE
```

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         DFHMDF POS=(3,43),LENGTH=4,INITIAL='List',ATTRB=(PROT,BRT),   *
               COLOR=BLUE
         DFHMDF POS=(3,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(4,1),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),       *
               COLOR=NEUTRAL
         DFHMDF POS=(4,79),LENGTH=1,INITIAL='+',ATTRB=(PROT,BRT),      *
               COLOR=NEUTRAL
         DFHMDF POS=(5,1),LENGTH=79,                                   *
               INITIAL='+----------------------------------------------*
               ---------------------------------+',ATTRB=(PROT,BRT),   *
               COLOR=NEUTRAL
         DFHMSD TYPE=FINAL
         END
*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
* COPY MAPTACBD (Type=Dsect)
*
* BMS: MAPTACB  MAPØ
MAPØS    EQU   *                    START OF DEFINITION
         SPACE
         DS    CL12                     TIOA PREFIX
NETNAMØL DS    CL2                      INPUT DATA FIELD LENGTH
NETNAMØF DS    ØC                       DATA FIELD FLAG
NETNAMØA DS    C                        DATA FIELD 327Ø ATTRIBUTE
NETNAMØC DS    C                        COLOUR ATTRIBUTE
NETNAMØH DS    C                        HIGHLIGHTING ATTRIBUTE
NETNAMØM DS    C                        MIXED ATTRIBUTE
NETNAMØI DS    ØCL8                  INPUT DATA FIELD
NETNAMØO DS    CL8                   OUTPUT DATA FIELD
         SPACE
OPIDØL   DS    CL2                      INPUT DATA FIELD LENGTH
OPIDØF   DS    ØC                       DATA FIELD FLAG
OPIDØA   DS    C                        DATA FIELD 327Ø ATTRIBUTE
OPIDØC   DS    C                        COLOUR ATTRIBUTE
OPIDØH   DS    C                        HIGHLIGHTING ATTRIBUTE
OPIDØM   DS    C                        MIXED ATTRIBUTE
OPIDØI   DS    ØCL8                  INPUT DATA FIELD
OPIDØO   DS    CL8                   OUTPUT DATA FIELD
         SPACE
DATEØL   DS    CL2                      INPUT DATA FIELD LENGTH
DATEØF   DS    ØC                       DATA FIELD FLAG
DATEØA   DS    C                        DATA FIELD 327Ø ATTRIBUTE
DATEØC   DS    C                        COLOUR ATTRIBUTE
DATEØH   DS    C                        HIGHLIGHTING ATTRIBUTE
DATEØM   DS    C                        MIXED ATTRIBUTE
DATEØI   DS    ØCL1Ø                 INPUT DATA FIELD
DATEØO   DS    CL1Ø                  OUTPUT DATA FIELD
         SPACE
TIMEØL   DS    CL2                      INPUT DATA FIELD LENGTH
```

```
TIMEØF   DS    ØC                    DATA FIELD FLAG
TIMEØA   DS    C                     DATA FIELD 327Ø ATTRIBUTE
TIMEØC   DS    C                     COLOUR ATTRIBUTE
TIMEØH   DS    C                     HIGHLIGHTING ATTRIBUTE
TIMEØM   DS    C                     MIXED ATTRIBUTE
TIMEØI   DS    ØCL8                INPUT DATA FIELD
TIMEØO   DS    CL8                 OUTPUT DATA FIELD
         SPACE
APPLIDØL DS    CL2                   INPUT DATA FIELD LENGTH
APPLIDØF DS    ØC                    DATA FIELD FLAG
APPLIDØA DS    C                     DATA FIELD 327Ø ATTRIBUTE
APPLIDØC DS    C                     COLOUR ATTRIBUTE
APPLIDØH DS    C                     HIGHLIGHTING ATTRIBUTE
APPLIDØM DS    C                     MIXED ATTRIBUTE
APPLIDØI DS    ØCL8                INPUT DATA FIELD
APPLIDØO DS    CL8                 OUTPUT DATA FIELD
         SPACE
SDATEØL  DS    CL2                   INPUT DATA FIELD LENGTH
SDATEØF  DS    ØC                    DATA FIELD FLAG
SDATEØA  DS    C                     DATA FIELD 327Ø ATTRIBUTE
SDATEØC  DS    C                     COLOUR ATTRIBUTE
SDATEØH  DS    C                     HIGHLIGHTING ATTRIBUTE
SDATEØM  DS    C                     MIXED ATTRIBUTE
SDATEØI  DS    ØCL8                INPUT DATA FIELD
SDATEØO  DS    CL8                 OUTPUT DATA FIELD
         SPACE
STIMEØL  DS    CL2                   INPUT DATA FIELD LENGTH
STIMEØF  DS    ØC                    DATA FIELD FLAG
STIMEØA  DS    C                     DATA FIELD 327Ø ATTRIBUTE
STIMEØC  DS    C                     COLOUR ATTRIBUTE
STIMEØH  DS    C                     HIGHLIGHTING ATTRIBUTE
STIMEØM  DS    C                     MIXED ATTRIBUTE
STIMEØI  DS    ØCL6                INPUT DATA FIELD
STIMEØO  DS    CL6                 OUTPUT DATA FIELD
         SPACE
STRANØL  DS    CL2                   INPUT DATA FIELD LENGTH
STRANØF  DS    ØC                    DATA FIELD FLAG
STRANØA  DS    C                     DATA FIELD 327Ø ATTRIBUTE
STRANØC  DS    C                     COLOUR ATTRIBUTE
STRANØH  DS    C                     HIGHLIGHTING ATTRIBUTE
STRANØM  DS    C                     MIXED ATTRIBUTE
STRANØI  DS    ØCL4                INPUT DATA FIELD
STRANØO  DS    CL4                 OUTPUT DATA FIELD
         SPACE
STRACØL  DS    CL2                   INPUT DATA FIELD LENGTH
STRACØF  DS    ØC                    DATA FIELD FLAG
STRACØA  DS    C                     DATA FIELD 327Ø ATTRIBUTE
STRACØC  DS    C                     COLOUR ATTRIBUTE
STRACØH  DS    C                     HIGHLIGHTING ATTRIBUTE
STRACØM  DS    C                     MIXED ATTRIBUTE
```

```
STRACØI  DS    ØCL2                INPUT DATA FIELD
STRACØO  DS    CL2                 OUTPUT DATA FIELD
         SPACE
ABCØL    DS    CL2                     INPUT DATA FIELD LENGTH
ABCØF    DS    ØC                      DATA FIELD FLAG
ABCØA    DS    C                       DATA FIELD 327Ø ATTRIBUTE
ABCØC    DS    C                       COLOUR ATTRIBUTE
ABCØH    DS    C                       HIGHLIGHTING ATTRIBUTE
ABCØM    DS    C                       MIXED ATTRIBUTE
ABCØI    DS    ØCL4                INPUT DATA FIELD
ABCØO    DS    CL4                 OUTPUT DATA FIELD
         SPACE
ABCCØL   DS    CL2                     INPUT DATA FIELD LENGTH
ABCCØF   DS    ØC                      DATA FIELD FLAG
ABCCØA   DS    C                       DATA FIELD 327Ø ATTRIBUTE
ABCCØC   DS    C                       COLOUR ATTRIBUTE
ABCCØH   DS    C                       HIGHLIGHTING ATTRIBUTE
ABCCØM   DS    C                       MIXED ATTRIBUTE
ABCCØI   DS    ØCL2                INPUT DATA FIELD
ABCCØO   DS    CL2                 OUTPUT DATA FIELD
         SPACE
MAPNOTØL DS    CL2                     INPUT DATA FIELD LENGTH
MAPNOTØF DS    ØC                      DATA FIELD FLAG
MAPNOTØA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPNOTØC DS    C                       COLOUR ATTRIBUTE
MAPNOTØH DS    C                       HIGHLIGHTING ATTRIBUTE
MAPNOTØM DS    C                       MIXED ATTRIBUTE
MAPNOTØI DS    ØCL79               INPUT DATA FIELD
MAPNOTØO DS    CL79                OUTPUT DATA FIELD
         SPACE
MAPØE    EQU   *
         ORG   MAPØS                   ADDRESS START
* CALCULATE MAPLENGTH, ASSIGNING A VALUE OF ONE WHERE LENGTH=ZERO
MAPØL    EQU   MAPØE-MAPØS
MAPØI    DS    ØCL(MAPØL+1-(MAPØL/MAPØL))
MAPØO    DS    ØCL(MAPØL+1-(MAPØL/MAPØL))
         ORG
* * * END OF DEFINITION * * *
         SPACE 3
* BMS: MAPTACB  MAP1
MAP1S    EQU   *                   START OF DEFINITION
         SPACE
         DS    CL12                    TIOA PREFIX
NETNAMEL DS    CL2                     INPUT DATA FIELD LENGTH
NETNAMEF DS    ØC                      DATA FIELD FLAG
NETNAMEA DS    C                       DATA FIELD 327Ø ATTRIBUTE
NETNAMEC DS    C                       COLOUR ATTRIBUTE
NETNAMEH DS    C                       HIGHLIGHTING ATTRIBUTE
NETNAMEM DS    C                       MIXED ATTRIBUTE
NETNAMEI DS    ØCL8                INPUT DATA FIELD
```

```
NETNAMEO DS    CL8                 OUTPUT DATA FIELD
         SPACE
ABNDTOTL DS    CL2                     INPUT DATA FIELD LENGTH
ABNDTOTF DS    ØC                      DATA FIELD FLAG
ABNDTOTA DS    C                       DATA FIELD 327Ø ATTRIBUTE
ABNDTOTC DS    C                       COLOUR ATTRIBUTE
ABNDTOTH DS    C                       HIGHLIGHTING ATTRIBUTE
ABNDTOTM DS    C                       MIXED ATTRIBUTE
ABNDTOTI DS    ØCL5                INPUT DATA FIELD
ABNDTOTO DS    CL5                 OUTPUT DATA FIELD
         SPACE
OPIDL    DS    CL2                     INPUT DATA FIELD LENGTH
OPIDF    DS    ØC                      DATA FIELD FLAG
OPIDA    DS    C                       DATA FIELD 327Ø ATTRIBUTE
OPIDC    DS    C                       COLOUR ATTRIBUTE
OPIDH    DS    C                       HIGHLIGHTING ATTRIBUTE
OPIDM    DS    C                       MIXED ATTRIBUTE
OPIDI    DS    ØCL8                INPUT DATA FIELD
OPIDO    DS    CL8                 OUTPUT DATA FIELD
         SPACE
DATEL    DS    CL2                     INPUT DATA FIELD LENGTH
DATEF    DS    ØC                      DATA FIELD FLAG
DATEA    DS    C                       DATA FIELD 327Ø ATTRIBUTE
DATEC    DS    C                       COLOUR ATTRIBUTE
DATEH    DS    C                       HIGHLIGHTING ATTRIBUTE
DATEM    DS    C                       MIXED ATTRIBUTE
DATEI    DS    ØCL1Ø               INPUT DATA FIELD
DATEO    DS    CL1Ø                OUTPUT DATA FIELD
         SPACE
TIMEL    DS    CL2                     INPUT DATA FIELD LENGTH
TIMEF    DS    ØC                      DATA FIELD FLAG
TIMEA    DS    C                       DATA FIELD 327Ø ATTRIBUTE
TIMEC    DS    C                       COLOUR ATTRIBUTE
TIMEH    DS    C                       HIGHLIGHTING ATTRIBUTE
TIMEM    DS    C                       MIXED ATTRIBUTE
TIMEI    DS    ØCL8                INPUT DATA FIELD
TIMEO    DS    CL8                 OUTPUT DATA FIELD
         SPACE
APPLIDL  DS    CL2                     INPUT DATA FIELD LENGTH
APPLIDF  DS    ØC                      DATA FIELD FLAG
APPLIDA  DS    C                       DATA FIELD 327Ø ATTRIBUTE
APPLIDC  DS    C                       COLOUR ATTRIBUTE
APPLIDH  DS    C                       HIGHLIGHTING ATTRIBUTE
APPLIDM  DS    C                       MIXED ATTRIBUTE
APPLIDI  DS    ØCL8                INPUT DATA FIELD
APPLIDO  DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPSEL1L DS    CL2                     INPUT DATA FIELD LENGTH
MAPSEL1F DS    ØC                      DATA FIELD FLAG
MAPSEL1A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPSEL1C DS    C                       COLOUR ATTRIBUTE
```

```
MAPSEL1H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPSEL1M DS    C                       MIXED ATTRIBUTE
MAPSEL1I DS    ØC                    INPUT DATA FIELD
MAPSEL1O DS    C                     OUTPUT DATA FIELD
         SPACE
MAPTRX1L DS    CL2                     INPUT DATA FIELD LENGTH
MAPTRX1F DS    ØC                      DATA FIELD FLAG
MAPTRX1A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPTRX1C DS    C                       COLOUR ATTRIBUTE
MAPTRX1H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPTRX1M DS    C                       MIXED ATTRIBUTE
MAPTRX1I DS    ØCL4                  INPUT DATA FIELD
MAPTRX1O DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAPDAT1L DS    CL2                     INPUT DATA FIELD LENGTH
MAPDAT1F DS    ØC                      DATA FIELD FLAG
MAPDAT1A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPDAT1C DS    C                       COLOUR ATTRIBUTE
MAPDAT1H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPDAT1M DS    C                       MIXED ATTRIBUTE
MAPDAT1I DS    ØCL8                  INPUT DATA FIELD
MAPDAT1O DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAPTIM1L DS    CL2                     INPUT DATA FIELD LENGTH
MAPTIM1F DS    ØC                      DATA FIELD FLAG
MAPTIM1A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPTIM1C DS    C                       COLOUR ATTRIBUTE
MAPTIM1H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPTIM1M DS    C                       MIXED ATTRIBUTE
MAPTIM1I DS    ØCL6                  INPUT DATA FIELD
MAPTIM1O DS    CL6                   OUTPUT DATA FIELD
         SPACE
MAPABC1L DS    CL2                     INPUT DATA FIELD LENGTH
MAPABC1F DS    ØC                      DATA FIELD FLAG
MAPABC1A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPABC1C DS    C                       COLOUR ATTRIBUTE
MAPABC1H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPABC1M DS    C                       MIXED ATTRIBUTE
MAPABC1I DS    ØCL4                  INPUT DATA FIELD
MAPABC1O DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAPABO1L DS    CL2                     INPUT DATA FIELD LENGTH
MAPABO1F DS    ØC                      DATA FIELD FLAG
MAPABO1A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPABO1C DS    C                       COLOUR ATTRIBUTE
MAPABO1H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPABO1M DS    C                       MIXED ATTRIBUTE
MAPABO1I DS    ØCL4                  INPUT DATA FIELD
MAPABO1O DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAPPGM1L DS    CL2                     INPUT DATA FIELD LENGTH
```

```
MAPPGM1F DS    ØC                    DATA FIELD FLAG
MAPPGM1A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPPGM1C DS    C                     COLOUR ATTRIBUTE
MAPPGM1H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPPGM1M DS    C                     MIXED ATTRIBUTE
MAPPGM1I DS    ØCL8                INPUT DATA FIELD
MAPPGM1O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPSEL2L DS    CL2                   INPUT DATA FIELD LENGTH
MAPSEL2F DS    ØC                    DATA FIELD FLAG
MAPSEL2A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPSEL2C DS    C                     COLOUR ATTRIBUTE
MAPSEL2H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPSEL2M DS    C                     MIXED ATTRIBUTE
MAPSEL2I DS    ØC                  INPUT DATA FIELD
MAPSEL2O DS    C                   OUTPUT DATA FIELD
         SPACE
MAPTRX2L DS    CL2                   INPUT DATA FIELD LENGTH
MAPTRX2F DS    ØC                    DATA FIELD FLAG
MAPTRX2A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPTRX2C DS    C                     COLOUR ATTRIBUTE
MAPTRX2H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPTRX2M DS    C                     MIXED ATTRIBUTE
MAPTRX2I DS    ØCL4                INPUT DATA FIELD
MAPTRX2O DS    CL4                 OUTPUT DATA FIELD
         SPACE
MAPDAT2L DS    CL2                   INPUT DATA FIELD LENGTH
MAPDAT2F DS    ØC                    DATA FIELD FLAG
MAPDAT2A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPDAT2C DS    C                     COLOUR ATTRIBUTE
MAPDAT2H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPDAT2M DS    C                     MIXED ATTRIBUTE
MAPDAT2I DS    ØCL8                INPUT DATA FIELD
MAPDAT2O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPTIM2L DS    CL2                   INPUT DATA FIELD LENGTH
MAPTIM2F DS    ØC                    DATA FIELD FLAG
MAPTIM2A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPTIM2C DS    C                     COLOUR ATTRIBUTE
MAPTIM2H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPTIM2M DS    C                     MIXED ATTRIBUTE
MAPTIM2I DS    ØCL6                INPUT DATA FIELD
MAPTIM2O DS    CL6                 OUTPUT DATA FIELD
         SPACE
MAPABC2L DS    CL2                   INPUT DATA FIELD LENGTH
MAPABC2F DS    ØC                    DATA FIELD FLAG
MAPABC2A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPABC2C DS    C                     COLOUR ATTRIBUTE
MAPABC2H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPABC2M DS    C                     MIXED ATTRIBUTE
MAPABC2I DS    ØCL4                INPUT DATA FIELD
```

```
MAPABC2O DS    CL4                 OUTPUT DATA FIELD
         SPACE
MAPABO2L DS    CL2                     INPUT DATA FIELD LENGTH
MAPABO2F DS    ØC                      DATA FIELD FLAG
MAPABO2A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPABO2C DS    C                       COLOUR ATTRIBUTE
MAPABO2H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPABO2M DS    C                       MIXED ATTRIBUTE
MAPABO2I DS    ØCL4                INPUT DATA FIELD
MAPABO2O DS    CL4                 OUTPUT DATA FIELD
         SPACE
MAPPGM2L DS    CL2                     INPUT DATA FIELD LENGTH
MAPPGM2F DS    ØC                      DATA FIELD FLAG
MAPPGM2A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPPGM2C DS    C                       COLOUR ATTRIBUTE
MAPPGM2H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPPGM2M DS    C                       MIXED ATTRIBUTE
MAPPGM2I DS    ØCL8                INPUT DATA FIELD
MAPPGM2O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPSEL3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPSEL3F DS    ØC                      DATA FIELD FLAG
MAPSEL3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPSEL3C DS    C                       COLOUR ATTRIBUTE
MAPSEL3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPSEL3M DS    C                       MIXED ATTRIBUTE
MAPSEL3I DS    ØC                  INPUT DATA FIELD
MAPSEL3O DS    C                   OUTPUT DATA FIELD
         SPACE
MAPTRX3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPTRX3F DS    ØC                      DATA FIELD FLAG
MAPTRX3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPTRX3C DS    C                       COLOUR ATTRIBUTE
MAPTRX3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPTRX3M DS    C                       MIXED ATTRIBUTE
MAPTRX3I DS    ØCL4                INPUT DATA FIELD
MAPTRX3O DS    CL4                 OUTPUT DATA FIELD
         SPACE
MAPDAT3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPDAT3F DS    ØC                      DATA FIELD FLAG
MAPDAT3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPDAT3C DS    C                       COLOUR ATTRIBUTE
MAPDAT3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPDAT3M DS    C                       MIXED ATTRIBUTE
MAPDAT3I DS    ØCL8                INPUT DATA FIELD
MAPDAT3O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPTIM3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPTIM3F DS    ØC                      DATA FIELD FLAG
MAPTIM3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPTIM3C DS    C                       COLOUR ATTRIBUTE
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MAPTIM3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPTIM3M DS    C                       MIXED ATTRIBUTE
MAPTIM3I DS    ØCL6                  INPUT DATA FIELD
MAPTIM3O DS    CL6                   OUTPUT DATA FIELD
         SPACE
MAPABC3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPABC3F DS    ØC                      DATA FIELD FLAG
MAPABC3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPABC3C DS    C                       COLOUR ATTRIBUTE
MAPABC3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPABC3M DS    C                       MIXED ATTRIBUTE
MAPABC3I DS    ØCL4                  INPUT DATA FIELD
MAPABC3O DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAPABO3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPABO3F DS    ØC                      DATA FIELD FLAG
MAPABO3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPABO3C DS    C                       COLOUR ATTRIBUTE
MAPABO3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPABO3M DS    C                       MIXED ATTRIBUTE
MAPABO3I DS    ØCL4                  INPUT DATA FIELD
MAPABO3O DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAPPGM3L DS    CL2                     INPUT DATA FIELD LENGTH
MAPPGM3F DS    ØC                      DATA FIELD FLAG
MAPPGM3A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPPGM3C DS    C                       COLOUR ATTRIBUTE
MAPPGM3H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPPGM3M DS    C                       MIXED ATTRIBUTE
MAPPGM3I DS    ØCL8                  INPUT DATA FIELD
MAPPGM3O DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAPSEL4L DS    CL2                     INPUT DATA FIELD LENGTH
MAPSEL4F DS    ØC                      DATA FIELD FLAG
MAPSEL4A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPSEL4C DS    C                       COLOUR ATTRIBUTE
MAPSEL4H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPSEL4M DS    C                       MIXED ATTRIBUTE
MAPSEL4I DS    ØC                    INPUT DATA FIELD
MAPSEL4O DS    C                     OUTPUT DATA FIELD
         SPACE
MAPTRX4L DS    CL2                     INPUT DATA FIELD LENGTH
MAPTRX4F DS    ØC                      DATA FIELD FLAG
MAPTRX4A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAPTRX4C DS    C                       COLOUR ATTRIBUTE
MAPTRX4H DS    C                       HIGHLIGHTING ATTRIBUTE
MAPTRX4M DS    C                       MIXED ATTRIBUTE
MAPTRX4I DS    ØCL4                  INPUT DATA FIELD
MAPTRX4O DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAPDAT4L DS    CL2                     INPUT DATA FIELD LENGTH
```

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MAPDAT4F DS    ØC                    DATA FIELD FLAG
MAPDAT4A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPDAT4C DS    C                     COLOUR ATTRIBUTE
MAPDAT4H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPDAT4M DS    C                     MIXED ATTRIBUTE
MAPDAT4I DS    ØCL8                INPUT DATA FIELD
MAPDAT4O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPTIM4L DS    CL2                   INPUT DATA FIELD LENGTH
MAPTIM4F DS    ØC                    DATA FIELD FLAG
MAPTIM4A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPTIM4C DS    C                     COLOUR ATTRIBUTE
MAPTIM4H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPTIM4M DS    C                     MIXED ATTRIBUTE
MAPTIM4I DS    ØCL6                INPUT DATA FIELD
MAPTIM4O DS    CL6                 OUTPUT DATA FIELD
         SPACE
MAPABC4L DS    CL2                   INPUT DATA FIELD LENGTH
MAPABC4F DS    ØC                    DATA FIELD FLAG
MAPABC4A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPABC4C DS    C                     COLOUR ATTRIBUTE
MAPABC4H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPABC4M DS    C                     MIXED ATTRIBUTE
MAPABC4I DS    ØCL4                INPUT DATA FIELD
MAPABC4O DS    CL4                 OUTPUT DATA FIELD
         SPACE
MAPABO4L DS    CL2                   INPUT DATA FIELD LENGTH
MAPABO4F DS    ØC                    DATA FIELD FLAG
MAPABO4A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPABO4C DS    C                     COLOUR ATTRIBUTE
MAPABO4H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPABO4M DS    C                     MIXED ATTRIBUTE
MAPABO4I DS    ØCL4                INPUT DATA FIELD
MAPABO4O DS    CL4                 OUTPUT DATA FIELD
         SPACE
MAPPGM4L DS    CL2                   INPUT DATA FIELD LENGTH
MAPPGM4F DS    ØC                    DATA FIELD FLAG
MAPPGM4A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPPGM4C DS    C                     COLOUR ATTRIBUTE
MAPPGM4H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPPGM4M DS    C                     MIXED ATTRIBUTE
MAPPGM4I DS    ØCL8                INPUT DATA FIELD
MAPPGM4O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAPSEL5L DS    CL2                   INPUT DATA FIELD LENGTH
MAPSEL5F DS    ØC                    DATA FIELD FLAG
MAPSEL5A DS    C                     DATA FIELD 327Ø ATTRIBUTE
MAPSEL5C DS    C                     COLOR ATTRIBUTE
MAPSEL5H DS    C                     HIGHLIGHTING ATTRIBUTE
MAPSEL5M DS    C                     MIXED ATTRIBUTE
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MAPSEL5I DS    ØC                 INPUT DATA FIELD
MAPSEL5O DS    C                  OUTPUT DATA FIELD
         SPACE
MAPTRX5L DS    CL2                    INPUT DATA FIELD LENGTH
MAPTRX5F DS    ØC                     DATA FIELD FLAG
MAPTRX5A DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAPTRX5C DS    C                      COLOR ATTRIBUTE
MAPTRX5H DS    C                      HIGHLIGHTING ATTRIBUTE
MAPTRX5M DS    C                      MIXED ATTRIBUTE
MAPTRX5I DS    ØCL4               INPUT DATA FIELD
MAPTRX5O DS    CL4                OUTPUT DATA FIELD
         SPACE
MAPDAT5L DS    CL2                    INPUT DATA FIELD LENGTH
MAPDAT5F DS    ØC                     DATA FIELD FLAG
MAPDAT5A DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAPDAT5C DS    C                      COLOR ATTRIBUTE
MAPDAT5H DS    C                      HIGHLIGHTING ATTRIBUTE
MAPDAT5M DS    C                      MIXED ATTRIBUTE
MAPDAT5I DS    ØCL8               INPUT DATA FIELD
MAPDAT5O DS    CL8                OUTPUT DATA FIELD
         SPACE
MAPTIM5L DS    CL2                    INPUT DATA FIELD LENGTH
MAPTIM5F DS    ØC                     DATA FIELD FLAG
MAPTIM5A DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAPTIM5C DS    C                      COLOR ATTRIBUTE
MAPTIM5H DS    C                      HIGHLIGHTING ATTRIBUTE
MAPTIM5M DS    C                      MIXED ATTRIBUTE
MAPTIM5I DS    ØCL6               INPUT DATA FIELD
MAPTIM5O DS    CL6                OUTPUT DATA FIELD
         SPACE
MAPABC5L DS    CL2                    INPUT DATA FIELD LENGTH
MAPABC5F DS    ØC                     DATA FIELD FLAG
MAPABC5A DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAPABC5C DS    C                      COLOR ATTRIBUTE
MAPABC5H DS    C                      HIGHLIGHTING ATTRIBUTE
MAPABC5M DS    C                      MIXED ATTRIBUTE
MAPABC5I DS    ØCL4               INPUT DATA FIELD
MAPABC5O DS    CL4                OUTPUT DATA FIELD
         SPACE
MAPABO5L DS    CL2                    INPUT DATA FIELD LENGTH
MAPABO5F DS    ØC                     DATA FIELD FLAG
MAPABO5A DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAPABO5C DS    C                      COLOR ATTRIBUTE
MAPABO5H DS    C                      HIGHLIGHTING ATTRIBUTE
MAPABO5M DS    C                      MIXED ATTRIBUTE
MAPABO5I DS    ØCL4               INPUT DATA FIELD
MAPABO5O DS    CL4                OUTPUT DATA FIELD
         SPACE
MAPPGM5L DS    CL2                    INPUT DATA FIELD LENGTH
MAPPGM5F DS    ØC                     DATA FIELD FLAG
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MAPPGM5A DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAPPGM5C DS    C                        COLOR ATTRIBUTE
MAPPGM5H DS    C                        HIGHLIGHTING ATTRIBUTE
MAPPGM5M DS    C                        MIXED ATTRIBUTE
MAPPGM5I DS    ØCL8                  INPUT DATA FIELD
MAPPGM5O DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAPNOTEL DS    CL2                      INPUT DATA FIELD LENGTH
MAPNOTEF DS    ØC                       DATA FIELD FLAG
MAPNOTEA DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAPNOTEC DS    C                        COLOR ATTRIBUTE
MAPNOTEH DS    C                        HIGHLIGHTING ATTRIBUTE
MAPNOTEM DS    C                        MIXED ATTRIBUTE
MAPNOTEI DS    ØCL79                 INPUT DATA FIELD
MAPNOTEO DS    CL79                  OUTPUT DATA FIELD
         SPACE
MAP1E    EQU   *
         ORG   MAP1S                    ADDRESS START
* CALCULATE MAPLENGTH, ASSIGNING A VALUE OF ONE WHERE LENGTH=ZERO
MAP1L    EQU   MAP1E-MAP1S
MAP1I    DS    ØCL(MAP1L+1-(MAP1L/MAP1L))
MAP1O    DS    ØCL(MAP1L+1-(MAP1L/MAP1L))
         ORG
* * * END OF DEFINITION * * *
         SPACE 3
* BMS: MAPTACB  MAP2
MAP2S    EQU   *                     START OF DEFINITION
         SPACE
         DS    CL12                     TIOA PREFIX
MAP2NETL DS    CL2                      INPUT DATA FIELD LENGTH
MAP2NETF DS    ØC                       DATA FIELD FLAG
MAP2NETA DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAP2NETC DS    C                        COLOR ATTRIBUTE
MAP2NETH DS    C                        HIGHLIGHTING ATTRIBUTE
MAP2NETM DS    C                        MIXED ATTRIBUTE
MAP2NETI DS    ØCL8                  INPUT DATA FIELD
MAP2NETO DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2OPL  DS    CL2                      INPUT DATA FIELD LENGTH
MAP2OPF  DS    ØC                       DATA FIELD FLAG
MAP2OPA  DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAP2OPC  DS    C                        COLOR ATTRIBUTE
MAP2OPH  DS    C                        HIGHLIGHTING ATTRIBUTE
MAP2OPM  DS    C                        MIXED ATTRIBUTE
MAP2OPI  DS    ØCL8                  INPUT DATA FIELD
MAP2OPO  DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2DATL DS    CL2                      INPUT DATA FIELD LENGTH
MAP2DATF DS    ØC                       DATA FIELD FLAG
MAP2DATA DS    C                        DATA FIELD 327Ø ATTRIBUTE
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MAP2DATC DS    C                       COLOR ATTRIBUTE
MAP2DATH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2DATM DS    C                       MIXED ATTRIBUTE
MAP2DATI DS    ØCL1Ø                 INPUT DATA FIELD
MAP2DATO DS    CL1Ø                  OUTPUT DATA FIELD
         SPACE
MAP2TIML DS    CL2                     INPUT DATA FIELD LENGTH
MAP2TIMF DS    ØC                      DATA FIELD FLAG
MAP2TIMA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2TIMC DS    C                       COLOR ATTRIBUTE
MAP2TIMH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2TIMM DS    C                       MIXED ATTRIBUTE
MAP2TIMI DS    ØCL8                  INPUT DATA FIELD
MAP2TIMO DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2APPL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2APPF DS    ØC                      DATA FIELD FLAG
MAP2APPA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2APPC DS    C                       COLOR ATTRIBUTE
MAP2APPH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2APPM DS    C                       MIXED ATTRIBUTE
MAP2APPI DS    ØCL8                  INPUT DATA FIELD
MAP2APPO DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2TRXL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2TRXF DS    ØC                      DATA FIELD FLAG
MAP2TRXA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2TRXC DS    C                       COLOR ATTRIBUTE
MAP2TRXH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2TRXM DS    C                       MIXED ATTRIBUTE
MAP2TRXI DS    ØCL4                  INPUT DATA FIELD
MAP2TRXO DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAP2TDTL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2TDTF DS    ØC                      DATA FIELD FLAG
MAP2TDTA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2TDTC DS    C                       COLOR ATTRIBUTE
MAP2TDTH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2TDTM DS    C                       MIXED ATTRIBUTE
MAP2TDTI DS    ØCL8                  INPUT DATA FIELD
MAP2TDTO DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2TTML DS    CL2                     INPUT DATA FIELD LENGTH
MAP2TTMF DS    ØC                      DATA FIELD FLAG
MAP2TTMA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2TTMC DS    C                       COLOR ATTRIBUTE
MAP2TTMH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2TTMM DS    C                       MIXED ATTRIBUTE
MAP2TTMI DS    ØCL6                  INPUT DATA FIELD
MAP2TTMO DS    CL6                   OUTPUT DATA FIELD
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         SPACE
MAP2TKNL DS    CL2                 INPUT DATA FIELD LENGTH
MAP2TKNF DS    ØC                  DATA FIELD FLAG
MAP2TKNA DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2TKNC DS    C                   COLOR ATTRIBUTE
MAP2TKNH DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2TKNM DS    C                   MIXED ATTRIBUTE
MAP2TKNI DS    ØCL7              INPUT DATA FIELD
MAP2TKNO DS    CL7               OUTPUT DATA FIELD
         SPACE
MAP2TRML DS    CL2                 INPUT DATA FIELD LENGTH
MAP2TRMF DS    ØC                  DATA FIELD FLAG
MAP2TRMA DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2TRMC DS    C                   COLOR ATTRIBUTE
MAP2TRMH DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2TRMM DS    C                   MIXED ATTRIBUTE
MAP2TRMI DS    ØCL4              INPUT DATA FIELD
MAP2TRMO DS    CL4               OUTPUT DATA FIELD
         SPACE
MAP2AIDL DS    CL2                 INPUT DATA FIELD LENGTH
MAP2AIDF DS    ØC                  DATA FIELD FLAG
MAP2AIDA DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2AIDC DS    C                   COLOR ATTRIBUTE
MAP2AIDH DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2AIDM DS    C                   MIXED ATTRIBUTE
MAP2AIDI DS    ØCL2              INPUT DATA FIELD
MAP2AIDO DS    CL2               OUTPUT DATA FIELD
         SPACE
MAP2PGML DS    CL2                 INPUT DATA FIELD LENGTH
MAP2PGMF DS    ØC                  DATA FIELD FLAG
MAP2PGMA DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2PGMC DS    C                   COLOR ATTRIBUTE
MAP2PGMH DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2PGMM DS    C                   MIXED ATTRIBUTE
MAP2PGMI DS    ØCL8              INPUT DATA FIELD
MAP2PGMO DS    CL8               OUTPUT DATA FIELD
         SPACE
MAP2STCL DS    CL2                 INPUT DATA FIELD LENGTH
MAP2STCF DS    ØC                  DATA FIELD FLAG
MAP2STCA DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2STCC DS    C                   COLOR ATTRIBUTE
MAP2STCH DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2STCM DS    C                   MIXED ATTRIBUTE
MAP2STCI DS    ØCL2              INPUT DATA FIELD
MAP2STCO DS    CL2               OUTPUT DATA FIELD
         SPACE
MAP2OMLL DS    CL2                 INPUT DATA FIELD LENGTH
MAP2OMLF DS    ØC                  DATA FIELD FLAG
MAP2OMLA DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2OMLC DS    C                   COLOR ATTRIBUTE
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MAP2OMLH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2OMLM DS    C                       MIXED ATTRIBUTE
MAP2OMLI DS    ØCL4                  INPUT DATA FIELD
MAP2OMLO DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAP2RSRL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2RSRF DS    ØC                      DATA FIELD FLAG
MAP2RSRA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2RSRC DS    C                       COLOR ATTRIBUTE
MAP2RSRH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2RSRM DS    C                       MIXED ATTRIBUTE
MAP2RSRI DS    ØCL8                  INPUT DATA FIELD
MAP2RSRO DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2FNL  DS    CL2                     INPUT DATA FIELD LENGTH
MAP2FNF  DS    ØC                      DATA FIELD FLAG
MAP2FNA  DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2FNC  DS    C                       COLOR ATTRIBUTE
MAP2FNH  DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2FNM  DS    C                       MIXED ATTRIBUTE
MAP2FNI  DS    ØCL4                  INPUT DATA FIELD
MAP2FNO  DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAP2ECL  DS    CL2                     INPUT DATA FIELD LENGTH
MAP2ECF  DS    ØC                      DATA FIELD FLAG
MAP2ECA  DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2ECC  DS    C                       COLOR ATTRIBUTE
MAP2ECH  DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2ECM  DS    C                       MIXED ATTRIBUTE
MAP2ECI  DS    ØCL12                 INPUT DATA FIELD
MAP2ECO  DS    CL12                  OUTPUT DATA FIELD
         SPACE
MAP2ERRL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2ERRF DS    ØC                      DATA FIELD FLAG
MAP2ERRA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2ERRC DS    C                       COLOR ATTRIBUTE
MAP2ERRH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2ERRM DS    C                       MIXED ATTRIBUTE
MAP2ERRI DS    ØCL2                  INPUT DATA FIELD
MAP2ERRO DS    CL2                   OUTPUT DATA FIELD
         SPACE
MAP2ERCL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2ERCF DS    ØC                      DATA FIELD FLAG
MAP2ERCA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2ERCC DS    C                       COLOR ATTRIBUTE
MAP2ERCH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2ERCM DS    C                       MIXED ATTRIBUTE
MAP2ERCI DS    ØCL8                  INPUT DATA FIELD
MAP2ERCO DS    CL8                   OUTPUT DATA FIELD
         SPACE
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MAP2RSL  DS    CL2                    INPUT DATA FIELD LENGTH
MAP2RSF  DS    ØC                     DATA FIELD FLAG
MAP2RSA  DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAP2RSC  DS    C                      COLOR ATTRIBUTE
MAP2RSH  DS    C                      HIGHLIGHTING ATTRIBUTE
MAP2RSM  DS    C                      MIXED ATTRIBUTE
MAP2RSI  DS    ØCL8                 INPUT DATA FIELD
MAP2RSO  DS    CL8                  OUTPUT DATA FIELD
         SPACE
MAP2RS2L DS    CL2                    INPUT DATA FIELD LENGTH
MAP2RS2F DS    ØC                     DATA FIELD FLAG
MAP2RS2A DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAP2RS2C DS    C                      COLOR ATTRIBUTE
MAP2RS2H DS    C                      HIGHLIGHTING ATTRIBUTE
MAP2RS2M DS    C                      MIXED ATTRIBUTE
MAP2RS2I DS    ØCL8                 INPUT DATA FIELD
MAP2RS2O DS    CL8                  OUTPUT DATA FIELD
         SPACE
MAP2ABCL DS    CL2                    INPUT DATA FIELD LENGTH
MAP2ABCF DS    ØC                     DATA FIELD FLAG
MAP2ABCA DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAP2ABCC DS    C                      COLOR ATTRIBUTE
MAP2ABCH DS    C                      HIGHLIGHTING ATTRIBUTE
MAP2ABCM DS    C                      MIXED ATTRIBUTE
MAP2ABCI DS    ØCL4                 INPUT DATA FIELD
MAP2ABCO DS    CL4                  OUTPUT DATA FIELD
         SPACE
MAP2ABOL DS    CL2                    INPUT DATA FIELD LENGTH
MAP2ABOF DS    ØC                     DATA FIELD FLAG
MAP2ABOA DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAP2ABOC DS    C                      COLOR ATTRIBUTE
MAP2ABOH DS    C                      HIGHLIGHTING ATTRIBUTE
MAP2ABOM DS    C                      MIXED ATTRIBUTE
MAP2ABOI DS    ØCL4                 INPUT DATA FIELD
MAP2ABOO DS    CL4                  OUTPUT DATA FIELD
         SPACE
MAP2PSWL DS    CL2                    INPUT DATA FIELD LENGTH
MAP2PSWF DS    ØC                     DATA FIELD FLAG
MAP2PSWA DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAP2PSWC DS    C                      COLOR ATTRIBUTE
MAP2PSWH DS    C                      HIGHLIGHTING ATTRIBUTE
MAP2PSWM DS    C                      MIXED ATTRIBUTE
MAP2PSWI DS    ØCL16                INPUT DATA FIELD
MAP2PSWO DS    CL16                 OUTPUT DATA FIELD
         SPACE
MAP2EXKL DS    CL2                    INPUT DATA FIELD LENGTH
MAP2EXKF DS    ØC                     DATA FIELD FLAG
MAP2EXKA DS    C                      DATA FIELD 327Ø ATTRIBUTE
MAP2EXKC DS    C                      COLOR ATTRIBUTE
MAP2EXKH DS    C                      HIGHLIGHTING ATTRIBUTE
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MAP2EXKM DS    C                       MIXED ATTRIBUTE
MAP2EXKI DS    ØCL2                  INPUT DATA FIELD
MAP2EXKO DS    CL2                   OUTPUT DATA FIELD
         SPACE
MAP2STHL DS    CL2                       INPUT DATA FIELD LENGTH
MAP2STHF DS    ØC                        DATA FIELD FLAG
MAP2STHA DS    C                         DATA FIELD 327Ø ATTRIBUTE
MAP2STHC DS    C                         COLOR ATTRIBUTE
MAP2STHH DS    C                         HIGHLIGHTING ATTRIBUTE
MAP2STHM DS    C                         MIXED ATTRIBUTE
MAP2STHI DS    ØCL5                  INPUT DATA FIELD
MAP2STHO DS    CL5                   OUTPUT DATA FIELD
         SPACE
MAP2RØL  DS    CL2                       INPUT DATA FIELD LENGTH
MAP2RØF  DS    ØC                        DATA FIELD FLAG
MAP2RØA  DS    C                         DATA FIELD 327Ø ATTRIBUTE
MAP2RØC  DS    C                         COLOR ATTRIBUTE
MAP2RØH  DS    C                         HIGHLIGHTING ATTRIBUTE
MAP2RØM  DS    C                         MIXED ATTRIBUTE
MAP2RØI  DS    ØCL8                  INPUT DATA FIELD
MAP2RØO  DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2R1L  DS    CL2                       INPUT DATA FIELD LENGTH
MAP2R1F  DS    ØC                        DATA FIELD FLAG
MAP2R1A  DS    C                         DATA FIELD 327Ø ATTRIBUTE
MAP2R1C  DS    C                         COLOR ATTRIBUTE
MAP2R1H  DS    C                         HIGHLIGHTING ATTRIBUTE
MAP2R1M  DS    C                         MIXED ATTRIBUTE
MAP2R1I  DS    ØCL8                  INPUT DATA FIELD
MAP2R1O  DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2R2L  DS    CL2                       INPUT DATA FIELD LENGTH
MAP2R2F  DS    ØC                        DATA FIELD FLAG
MAP2R2A  DS    C                         DATA FIELD 327Ø ATTRIBUTE
MAP2R2C  DS    C                         COLOR ATTRIBUTE
MAP2R2H  DS    C                         HIGHLIGHTING ATTRIBUTE
MAP2R2M  DS    C                         MIXED ATTRIBUTE
MAP2R2I  DS    ØCL8                  INPUT DATA FIELD
MAP2R2O  DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2R3L  DS    CL2                       INPUT DATA FIELD LENGTH
MAP2R3F  DS    ØC                        DATA FIELD FLAG
MAP2R3A  DS    C                         DATA FIELD 327Ø ATTRIBUTE
MAP2R3C  DS    C                         COLOR ATTRIBUTE
MAP2R3H  DS    C                         HIGHLIGHTING ATTRIBUTE
MAP2R3M  DS    C                         MIXED ATTRIBUTE
MAP2R3I  DS    ØCL8                  INPUT DATA FIELD
MAP2R3O  DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2R4L  DS    CL2                       INPUT DATA FIELD LENGTH
```

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MAP2R4F  DS    ØC                  DATA FIELD FLAG
MAP2R4A  DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2R4C  DS    C                   COLOR ATTRIBUTE
MAP2R4H  DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2R4M  DS    C                   MIXED ATTRIBUTE
MAP2R4I  DS    ØCL8              INPUT DATA FIELD
MAP2R4O  DS    CL8               OUTPUT DATA FIELD
         SPACE
MAP2R5L  DS    CL2                 INPUT DATA FIELD LENGTH
MAP2R5F  DS    ØC                  DATA FIELD FLAG
MAP2R5A  DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2R5C  DS    C                   COLOR ATTRIBUTE
MAP2R5H  DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2R5M  DS    C                   MIXED ATTRIBUTE
MAP2R5I  DS    ØCL8              INPUT DATA FIELD
MAP2R5O  DS    CL8               OUTPUT DATA FIELD
         SPACE
MAP2R6L  DS    CL2                 INPUT DATA FIELD LENGTH
MAP2R6F  DS    ØC                  DATA FIELD FLAG
MAP2R6A  DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2R6C  DS    C                   COLOR ATTRIBUTE
MAP2R6H  DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2R6M  DS    C                   MIXED ATTRIBUTE
MAP2R6I  DS    ØCL8              INPUT DATA FIELD
MAP2R6O  DS    CL8               OUTPUT DATA FIELD
         SPACE
MAP2R7L  DS    CL2                 INPUT DATA FIELD LENGTH
MAP2R7F  DS    ØC                  DATA FIELD FLAG
MAP2R7A  DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2R7C  DS    C                   COLOR ATTRIBUTE
MAP2R7H  DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2R7M  DS    C                   MIXED ATTRIBUTE
MAP2R7I  DS    ØCL8              INPUT DATA FIELD
MAP2R7O  DS    CL8               OUTPUT DATA FIELD
         SPACE
MAP2R8L  DS    CL2                 INPUT DATA FIELD LENGTH
MAP2R8F  DS    ØC                  DATA FIELD FLAG
MAP2R8A  DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2R8C  DS    C                   COLOR ATTRIBUTE
MAP2R8H  DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2R8M  DS    C                   MIXED ATTRIBUTE
MAP2R8I  DS    ØCL8              INPUT DATA FIELD
MAP2R8O  DS    CL8               OUTPUT DATA FIELD
         SPACE
MAP2R9L  DS    CL2                 INPUT DATA FIELD LENGTH
MAP2R9F  DS    ØC                  DATA FIELD FLAG
MAP2R9A  DS    C                   DATA FIELD 327Ø ATTRIBUTE
MAP2R9C  DS    C                   COLOR ATTRIBUTE
MAP2R9H  DS    C                   HIGHLIGHTING ATTRIBUTE
MAP2R9M  DS    C                   MIXED ATTRIBUTE
```

```
MAP2R9I  DS    ØCL8                INPUT DATA FIELD
MAP2R9O  DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAP2R1ØL DS    CL2                     INPUT DATA FIELD LENGTH
MAP2R1ØF DS    ØC                      DATA FIELD FLAG
MAP2R1ØA DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2R1ØC DS    C                       COLOR ATTRIBUTE
MAP2R1ØH DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2R1ØM DS    C                       MIXED ATTRIBUTE
MAP2R1ØI DS    ØCL8                INPUT DATA FIELD
MAP2R1ØO DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAP2R11L DS    CL2                     INPUT DATA FIELD LENGTH
MAP2R11F DS    ØC                      DATA FIELD FLAG
MAP2R11A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2R11C DS    C                       COLOR ATTRIBUTE
MAP2R11H DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2R11M DS    C                       MIXED ATTRIBUTE
MAP2R11I DS    ØCL8                INPUT DATA FIELD
MAP2R11O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAP2R12L DS    CL2                     INPUT DATA FIELD LENGTH
MAP2R12F DS    ØC                      DATA FIELD FLAG
MAP2R12A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2R12C DS    C                       COLOR ATTRIBUTE
MAP2R12H DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2R12M DS    C                       MIXED ATTRIBUTE
MAP2R12I DS    ØCL8                INPUT DATA FIELD
MAP2R12O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAP2R13L DS    CL2                     INPUT DATA FIELD LENGTH
MAP2R13F DS    ØC                      DATA FIELD FLAG
MAP2R13A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2R13C DS    C                       COLOR ATTRIBUTE
MAP2R13H DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2R13M DS    C                       MIXED ATTRIBUTE
MAP2R13I DS    ØCL8                INPUT DATA FIELD
MAP2R13O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAP2R14L DS    CL2                     INPUT DATA FIELD LENGTH
MAP2R14F DS    ØC                      DATA FIELD FLAG
MAP2R14A DS    C                       DATA FIELD 327Ø ATTRIBUTE
MAP2R14C DS    C                       COLOR ATTRIBUTE
MAP2R14H DS    C                       HIGHLIGHTING ATTRIBUTE
MAP2R14M DS    C                       MIXED ATTRIBUTE
MAP2R14I DS    ØCL8                INPUT DATA FIELD
MAP2R14O DS    CL8                 OUTPUT DATA FIELD
         SPACE
MAP2R15L DS    CL2                     INPUT DATA FIELD LENGTH
MAP2R15F DS    ØC                      DATA FIELD FLAG
```

```
MAP2R15A DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAP2R15C DS    C                        COLOR ATTRIBUTE
MAP2R15H DS    C                        HIGHLIGHTING ATTRIBUTE
MAP2R15M DS    C                        MIXED ATTRIBUTE
MAP2R15I DS    ØCL8                  INPUT DATA FIELD
MAP2R15O DS    CL8                   OUTPUT DATA FIELD
         SPACE
MAP2ABNL DS    CL2                      INPUT DATA FIELD LENGTH
MAP2ABNF DS    ØC                       DATA FIELD FLAG
MAP2ABNA DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAP2ABNC DS    C                        COLOR ATTRIBUTE
MAP2ABNH DS    C                        HIGHLIGHTING ATTRIBUTE
MAP2ABNM DS    C                        MIXED ATTRIBUTE
MAP2ABNI DS    ØCL4                  INPUT DATA FIELD
MAP2ABNO DS    CL4                   OUTPUT DATA FIELD
         SPACE
MAP2NOTL DS    CL2                      INPUT DATA FIELD LENGTH
MAP2NOTF DS    ØC                       DATA FIELD FLAG
MAP2NOTA DS    C                        DATA FIELD 327Ø ATTRIBUTE
MAP2NOTC DS    C                        COLOR ATTRIBUTE
MAP2NOTH DS    C                        HIGHLIGHTING ATTRIBUTE
MAP2NOTM DS    C                        MIXED ATTRIBUTE
MAP2NOTI DS    ØCL73                 INPUT DATA FIELD
MAP2NOTO DS    CL73                  OUTPUT DATA FIELD
         SPACE
MAP2E    EQU   *
         ORG   MAP2S                    ADDRESS START
* CALCULATE MAPLENGTH, ASSIGNING A VALUE OF ONE WHERE LENGTH=ZERO
MAP2L    EQU   MAP2E-MAP2S
MAP2I    DS    ØCL(MAP2L+1-(MAP2L/MAP2L))
MAP2O    DS    ØCL(MAP2L+1-(MAP2L/MAP2L))
         ORG
* * * END OF DEFINITION * * *
         SPACE 3
* BMS: MAPTACB  MAP3
MAP3S    EQU   *                   START OF DEFINITION
         SPACE
         DS    CL12                     TIOA PREFIX
MAP3E    EQU   *
         ORG   MAP3S                    ADDRESS START
* CALCULATE MAPLENGTH, ASSIGNING A VALUE OF ONE WHERE LENGTH=ZERO
MAP3L    EQU   MAP3E-MAP3S
MAP3I    DS    ØCL(MAP3L+1-(MAP3L/MAP3L))
MAP3O    DS    ØCL(MAP3L+1-(MAP3L/MAP3L))
         ORG
* * * END OF DEFINITION * * *
         SPACE 3
         ORG
MAPTACBT EQU   *                   * END OF MAP SET
* * * END OF MAP SET DEFINITION * * *
```

```
         SPACE 3
*>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
*
* Program Getcmac
*
*=======================================================================
* <<< SOURCE CODE PROGRAM GETCMAC >>>
* NOTE: THIS PROGRAM LINKS TO DERCODE  TO DECODE ANY EXEC CICS ERROR
*       CONDITION
*=======================================================================
*
         PRINT NOGEN
         TITLE  'MACRO DEFINITIONS'
         MACRO                     MACRO HEADER
         PGMID &MEMBER,&R=          PROTYPE STATEMENT
         AGO   .PGNAME
.PGNAME  ANOP
.*
.*       THIS VARIABLE FOR TIME AND DATE STAMPING
         LCLC  &VMTMDT             TIME/DATE STAMP
         LCLC  &RELEASE            VERSION
.*
.*
        AIF  (T'&R NE 'O').SETR
&RELEASE     SETC 'Ø1Ø1'
        AGO  .DROP
.SETR   ANOP
&RELEASE     SETC '&R'
         SPACE 1
.DROP   ANOP
         PUSH PRINT
         PRINT GEN
***********************************************************************
         DC    C'*',C' '
         DC    C'PROGRAM NAME:'
         DC    CL8'&MEMBER'  NAME
         DC    C' ',C'*',C' '
         DC    C'PROGRAM VERSION:'
         DC    CL4'&RELEASE'
         DC    C' '
         DC    C'*',C' '
         SPACE
         DC    C'ASSEMBLY TIME(HH.MM):'
&VMTMDT  SETC  '&SYSTIME'
         DC    C'&VMTMDT'          ASSEMBLY TIME (HH.MM) AND
         DC    C' '
         DC    C'ASSEMBLY DATE(MM/DD/YY):'
&VMTMDT  SETC  '&SYSDATE'
         DC    C'&VMTMDT'          DATE (MM/DD/YY) SAME AS LISTING
***********************************************************************
```

```
         POP   PRINT
         MEXIT
         MEND
*————————————————————————————————————
         MACRO
*
*
*
*        PROTOTYPE STATEMENT
         CSNAME &NAME
         GBLC  &CSECT
         AIF ('&NAME' EQ '').NONAME
&CSECT   SETC  '&NAME'
         AGO   .SC
.NONAME  ANOP
&CSECT   SETC  '&SYSECT'
.SC      ANOP
         PUSH  PRINT
         PRINT GEN
*=========================================*
*                                         *
*                                         *
CSNAME   DC    CL8'&CSECT'
*                                         *
*                                         *
*=========================================*
         POP   PRINT
         MEND
         DFHCOVER
* DFHCMACD HEADER
MSGD     DSECT
         DS    CL94
MSGB     DS    C
         ORG   MSGD
         DS    XL3Ø646
DFHEISTG DSECT                 DEFINE DYNAMIC STORAGE
* USER COMMAREA
COMMAREA DS    ØCL4
CABCODE  DS    CL4  ABEND CODE
*
* DERCODE Commarea
DEERRØAI DS    ØH
ERFUNCOD DS    CL2  FUNCTION CODE
ERERRCOD DS    CL6  ERROR CODE
ERRESNAM DS    CL8  RESOURCE NAME
ERTDQNAM DS    CL4  TD NAME
*              CL4'XXXX'   TD QUEUE NAME SPECIFIED BY CALLER
*              X'ØØØØØØØØ' DEFAULT TD QUEUE (CSMT)
*              CL4' '      DEFAULT TD QUEUE (CSMT)
*              X'FF'       DO NOT SEND MSG TO TD QUEUE
```

```
ERPGMCAL DS    CL8  CALLING PROGRAM
ERMSGS   DS    CL36 ERROR MSG
*
DEERRØAF EQU   *
         ORG   DEERRØAI
DEERRØAG DS    CL(DEERRØAF-DEERRØAI)
DEERRØAL EQU   L'DEERRØAG
*
CRESP    DS    F
VOXBAL1  DS    A
SAVE142  DS    5A
RECLEN   DS    H
TIOALEN  DS    H
KEYCMAC  DS    XL9
MSGT     DS    CL77
*
RØ       EQU   Ø
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R1Ø      EQU   1Ø
R11      EQU   11
R12      EQU   12
R13      EQU   13
R14      EQU   14
R15      EQU   15
*
RBAL1    EQU   R1  * WORK REGISTER
RWKR1    EQU   R1  * WORK REGISTER
RWKR2    EQU   R2  * WORK REGISTER
RWKR3    EQU   R3  * WORK REGISTER
RWKR14   EQU   R14 * WORK REGISTER
RWKR15   EQU   R15 * WORK REGISTER
         SPACE
*
***
*
*
***
*
         PRINT NOGEN
         EJECT
GETCMAC  DFHEIENT CODEREG=(R4),DATAREG=(R1Ø),EIBREG=(R11)
GETCMAC  AMODE ANY
```

```
GETCMAC  RMODE ANY
         B     ACXID
         PGMID GETCMAC,R=ØØØ1
ACXID    DS    ØH
         CLC   EIBCALEN,=Y(L'COMMAREA)
         BNE   RETURN
         USING MSGD,RWKR3
         MVC   RECLEN,=Y(3Ø646)
         MVC   KEYCMAC(5),=XL5'6F6F6F4Ø4Ø'
         L     RWKR1,DFHEICAP
         MVC   KEYCMAC+5(4),Ø(RWKR1)
         MVC   ERRESNAM,=CL8'DFHCMACD'
*
         EXEC  CICS READ FILE('DFHCMACD') SET(RWKR3) LENGTH(RECLEN)    *
               RIDFLD(KEYCMAC) RESP(CRESP)
*
         CLC   CRESP,DFHRESP(NOTFND)
         BE    USER
         CLC   CRESP,DFHRESP(NORMAL)
         BNE   ERROR
         XC    ERRESNAM,ERRESNAM
         MVC   MSGT,BLANK
         MVC   MSGT(13),=CL13'Pf8 Next page'
         MVC   MSGT+L'MSGT-13(13),=CL13'Pf7 Prev page'
         MVC   MSGT+26(28),=CL28'<<< CICS Abend Code XXXX >>>'
         MVC   MSGT+26+2Ø(4),KEYCMAC+5
         STM   RWKR14,RWKR2,SAVE142
*
         EXEC  CICS SEND TEXT FROM(MSGT) LENGTH(=Y(L'MSGT)) ERASE      *
               FREEKB PAGING ACCUM
*
         MVC   MSGT,BLANK
         MVC   MSGT+33(13),=CL13'Enter to Exit'
*
         EXEC  CICS SEND TEXT FROM(MSGT) LENGTH(=Y(L'MSGT)) ERASE      *
               FREEKB PAGING ACCUM
*
         MVC   MSGT,BLANK
*
         EXEC  CICS SEND TEXT FROM(MSGT) LENGTH(=Y(L'MSGT)) ERASE      *
               FREEKB PAGING ACCUM
*
         LM    RWKR14,RWKR2,SAVE142
         MVC   MSGT,BLANK
         LA    RWKR3,MSGB-MSGD(RWKR3)
         LH    RWKR15,RECLEN
         SH    RWKR15,=Y(MSGB-MSGD)
         STH   RWKR15,TIOALEN
         LR    RWKR1,RWKR3
         LA    RWKR2,MSGT
```

```
         MVC   MSGT,BLANK
LOOPCTR  DS    ØH
         CLI   Ø(RWKR1),X'15'
         BE    F15
         CLC   Ø(2,RWKR1),=XL2'2842'
         BE    HIL
         MVC   Ø(1,RWKR2),Ø(RWKR1)
         LA    RWKR2,1(RWKR2)
         LA    RWKR14,MSGT+L'MSGT-1
         CR    RWKR2,RWKR14
         BH    F15
         LA    RWKR1,1(RWKR1)
         BCT   RWKR15,LOOPCTR
         B     FLOOP
HIL      DS    ØH
         LA    RWKR1,3(RWKR1)
         SH    RWKR15,=H'3'
         BNP   FLOOPX
         B     LOOPCTR
F15      DS    ØH
         STM   RWKR14,RWKR2,SAVE142
*
         EXEC  CICS SEND TEXT FROM(MSGT) LENGTH(=Y(L'MSGT)) ERASE      *
               FREEKB PAGING ACCUM
*
         LM    RWKR14,RWKR2,SAVE142
         CLI   Ø(RWKR1),X'15'
         BNE   SF15
F15A     DS    ØH
         LA    RWKR1,1(RWKR1)
         SH    RWKR15,=H'1'
         BNP   FLOOPX
         CLI   Ø(RWKR1),X'15'
         BNE   F15EX
         LA    RWKR1,1(RWKR1)
         SH    RWKR15,=H'1'
         BNP   FLOOPX
         CLI   Ø(RWKR1),C' '
         BNL   F15B
         LA    RWKR1,3(RWKR1)
         SH    RWKR15,=H'3'
         BNP   FLOOPX
F15B     DS    ØH
         CLC   MSGT,BLANK
         BE    F15EX
         MVC   MSGT,BLANK
         STM   RWKR14,RWKR2,SAVE142
*
         EXEC  CICS SEND TEXT FROM(MSGT) LENGTH(=Y(L'MSGT)) ERASE      *
               FREEKB PAGING ACCUM
```

```
*
         LM    RWKR14,RWKR2,SAVE142
F15EX    DS    ØH
         LA    RWKR2,MSGT
         MVC   MSGT,BLANK
         B     LOOPCTR
SF15     DS    ØH
         LA    RWKR1,1(RWKR1)
         SH    RWKR15,=H'1'
         BNP   FLOOPX
         CLI   Ø(RWKR1),X'15'
         BNE   SF15
         B     F15A
FLOOP    DS    ØH
*
         EXEC  CICS SEND TEXT FROM(MSGT) LENGTH(=Y(L'MSGT)) ERASE      *
               FREEKB PAGING ACCUM
*
FLOOPX   DS    ØH
*
         EXEC  CICS SEND PAGE NOAUTOPAGE RETAIN
*
         B     RETURN
USER     DS    ØH
*
         MVC   TIOALEN,=Y(L'MSG)
*
         EXEC  CICS SEND TEXT FROM(MSG) LENGTH(TIOALEN) ERASE FREEKB   *
               PAGING ACCUM HONEOM
*
         B     FLOOPX
RETURN   DS    ØH
*
         EXEC  CICS RETURN
*
ERROR    DS    ØH
         MVC   ERFUNCOD,EIBFN
         MVC   ERERRCOD,EIBRCODE
         MVC   ERPGMCAL,CSNAME
*
         EXEC  CICS IGNORE CONDITION ERROR
*
         EXEC  CICS LINK PROGRAM('DERCODE') COMMAREA(DEERRØAI)         *
               LENGTH(=Y(DEERRØAL))
*
         EXEC  CICS SEND FROM(MSGE) LENGTH(=Y(L'MSGE)) ERASE
*
         EXEC  CICS DELAY INTERVAL(ØØØØØ2)
*
         B     RETURN
```

```
*
         TITLE '** LTORG ** && CONSTANTS'
         LTORG
*
         CSNAME
*
BLANK    DC    CL8Ø' '
MSGE     DC    CL27'    Request not satisfiable'
MSG      DS    ØCL79
         DC    X'15'
         DC    CL17' '
         DC    CL43'* * * Abend Code NOT in DFHCMACD File * * *'
         DC    CL17' '
         DC    X'15'
         END   GETCMAC
```

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

Giuseppe Rallo
Senior Technical Analyst
Sicilcassa (Italy)

Did I do that?

The actor Jaleel White became famous in a popular American TV situation comedy series for portraying a brilliant but clumsy teenage boy who never seemed to realize the consequences of his actions. The word *geek* was probably coined to describe the character he played. After each disaster, he would utter the same words of amazement: “Did I do that?”.

That is how I felt recently when I single-handedly, and quite innocently, stopped all remote users from gaining access to a CICS system in a data centre nearly three thousand miles away.

BACKGROUND

A recent change from NetWare SAA to TELNET as a Reflection transport type was necessitated for all mainframe users at my local customer site because NetWare SAA became unstable, with users experiencing several temporary hangs per hour and at least one permanent hang every day.

It sounds simple enough, but, unfortunately, the change was seriously complicated by the fact that the NetWare SAA 3270 connections were defined as monochrome, whereas the TELNET connections were defined as colour with 3270 extended attributes.

Only a few of us had changed Reflection’s default colour scheme, but a lot of complaints came in from programmers using ISPF who suddenly had irritating horizontal lines in many of the fields on their favourite screens. Fortunately, ISPF has settings for all of these and it was as simple as specifying NONE instead of USCORE for the type of highlighting for each of these fields (panel elements in ISPF parlance). The problem, of course, was locating the ISPF panels that can be used to set these.

LOOK OUT CICS, HERE I COME

This process satisfied the ISPF users, but a CICS user heard about this

solution and requested one of her own. Emboldened by my success with ISPF, and not recalling anything in CICS that offered the same facility, I knew the only answer would come from Reflection itself.

Not seeing any equivalent function, an idea struck me as I stared at the model-id field in Reflection: 'Model 224x80 Extended'. Why not change the model-id field to the same, except without Extended?

I asked the user to get out of their application and sign off CICS. Then I took over, disconnecting the session in Reflection, changing the model-id in Session Setup, and then reconnecting. My customer's corporate logo reappeared, but connection to the CICS application on the distant data centre failed.

I reversed the process, but the user still could not get on. I assumed, of course, that there had been nothing wrong with my idea – the distant data centre must have been down. I left the user to call the data centre's Help Desk and went back to my desk.

THE AWFUL TRUTH

A few hours later, I found out the awful truth. My idea had hung a VTAM Logical Unit (LU) because of a 3270 model mismatch or incompatibilities.

Because LUs are constantly being reassigned to remote users as they connect, each new user was being given the one LU I had hung. After this had been corrected by the distant data centre's technical support, I was told the story to ensure that I did not offer my advice to others.

This brings me to another, somewhat older, expression from my youth. When asked why you had done something stupid, the answer that no one would argue with was, "It seemed like a good idea at the time".

Jon Pearkins
Adiant Corporation (Canada)

CICS users can benefit from Beyond Software's EnterpriseWeb Legacy Application Server (LASER), a Web server and an applications server for legacy applications running under MVS/ESA or OS/390 platforms.

Functions are similar to other Web servers, but were built specifically to facilitate direct access to mainframe applications and data. OS/390 applications can be accessed, and transactions run, with a point and click of a Web browser via any desktop machine.

LASER comes with a software developer's kit for building business logic and wrappers around existing applications built in CICS, IMS, TSO, and DB2 and is aimed at enabling mainframes and programming staff to play an integral role in corporate intranets, extranets, and e-commerce. It obviates the need for dedicated programmers, middle-tier servers, support people, and Web developers in order to get enterprise-class Web connectivity to CICS, IMS, and DB2 applications.

For further information contact:
Beyond Software, 1040 East Brokaw Road, San Jose, CA 95181, USA.
Tel: (408) 436 5900.
URL: http://www.beyond-software.com.

* * *

IBM has announced CICS Transaction Server for VSE/ESA Release 1, a new version of CICS for the VSE/ESA environment. It includes CICS server, CICS Universal Client, and CICS Transaction Gateway function, and offers extensive virtual storage constraint relief, expanded application programming support, and system management enhancements.

For further information contact your local IBM representative.

* * *

Reasoning has announced software and services for Web-enabling CICS applications, based on the Reasoning5 CBMS. Existing CICS applications will be transformed into Java components by providing a Java wrapper for legacy code. In addition, Reasoning will provide services that profile users' existing CICS applications to build requirements and design specifications for Web-enablement.

Desktop developers can directly access mainframe services by making Java calls instead of going through a host-based gateway or an external application server to access server-based CICS programs. Web developers unfamiliar with CICS and COBOL will be able to build new electronic commerce programs that use existing CICS mainframe programs.

For further information contact:
Reasoning, 700 East El Camino Real, Mountain View, CA 94040, USA.
Tel: (650) 429 0384.
URL: http://www.reasoning.com.

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