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CICS update

August 2000

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CICS Update

Published by

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Subscriptions and back-issues

A year's subscription to *CICS Update*, comprising twelve monthly issues, costs £175.00 in the UK; $270.00 in the USA and Canada; £181.00 in Europe; £187.00 in Australasia and Japan; and £185.50 elsewhere. In all cases the price includes postage. Individual issues, starting with the January 1994 issue, are available separately to subscribers for £16.00 ($23.50) each including postage.

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Editor

Trevor Eddolls

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Printed in England.

Selective autoinstall for programs and maps

This is a customized version of IBM’s DFHPGADX program and it works under CICS/ESA 4.1 and CICS TS 1.3. You can find the original program in your hlq.slq.SDFHSAMP library.

The benefit of this kind of autoinstall is that you are able to choose which program or map should be autoinstalled in an AOR or in a SERVICE-CICS, like a TOR, QOR, or FOR, and you can be sure that only those programs or maps defined via RDO or in this program are active.

To discover whether or not you are running in an AOR, you can use the SYSID(field PSYSID) and then you can activate the indicator in field PSERVICE.

All user programs and maps that should be running in an AOR are defined in the PGMTAB or MAPTAB table. All non-user programs or maps, which should be running in a SERVICE-CICS, are defined in the PGMTABS or MAPTABS table. You can work with a match-code and you don’t need to define each program or map with the full name.

Also, it is possible to autoinstall from system-resources like LE/370 and CSP.

Don’t forget that you must define the autoinstall program in your SIT.

```
***********************************************************************
* MODULE NAME = SELECTAI                                              *
* DESCRIPTIVE NAME = CICS/ESA 4.1    Program autoinstall program exit *
*                    CICS-TS 1.3                                      *
* STATUS = 4.1.Ø AND 1.3.Ø                                            *
* FUNCTION = Provides user input for the program autoinstall function *
*        There are ASM, PL/I, COBOL, and C versions of this program.  *
*        This program is a customized version in Assembler of the pro-*
*        gram autoinstall exit. The program is invoked when a program *
*        is being autoinstalled on behalf of the user and the         *
*        autoinstall exit name is set in the SIT to SELECTAI.         *
*        The exit may be used to specify requirements for the         *
*        program definition.                                          *
*        A parameter list is provided as input to the program. The    *
*        parameter list is passed to the program via the commarea.    *
*        The parameter list is defined in DFHPGACD.                   *
```

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```
*        The parameter list is addressed by the program using the     *
*        normal conventions for a commarea.                           *
*        The parameter list specifies the name of the program to be   *
*        autoinstalled and the module type. The user may use the      *
*        parameter list to return information for the program to be   *
*        autoinstalled. The user may also indicate using the          *
*        return_code parameter that the program should not be         *
*        defined.                                                     *
* NOTES :                                                             *
*    THIS IS A CUSTOMIZED VERSION OF IBM'S PROGRAM "DFHPAGDX".        *
*    REFER TO PRODUCT DOCUMENTATION.                                  *
*    DEPENDENCIES = S/390                                             *
*    MODULE TYPE = Executable                                         *
*    PROCESSOR = Assembler                                            *
*    ATTRIBUTES = Read-only, serially reusable                        *
*---------------------------------------------------------------------*
* ENTRY POINT = SELECTAI                                              *
*     PURPOSE = All functions                                         *
*     LINKAGE =                                                       *
*         This entry point is called by the autoinstall function      *
*         to link to the program autoinstall exit program.            *
*         The parameters are passed to the exit program via the       *
*         commarea. The control block for the parameter list is in    *
*         DFHPGACD.                                                   *
*     INPUT =                                                         *
*         The input parameters provide the user with the name         *
*         and module type for the program to be autoinstalled.        *
*         The following input parameters are passed to the program    *
*         via the commarea:                                           *
*         PGAC_PROGRAM        - name of program to be autoinstalled   *
*         PGAC_MODULE_TYPE    - program, mapset, or partitionset      *
*     OUTPUT =                                                        *
*         The output parameters may be used to specify user           *
*         requirements for the program definition.                    *
*         The following output parameters may be returned to the      *
*         autoinstall function via the commarea:                      *
*         PGAC_MODEL_NAME     - autoinstall model program name        *
*         PGAC_LANGUAGE       - Assembler, COBOL, C370, LE370, PL/I   *
*         PGAC_CEDF_STATUS    - CEDF status, yes or no                *
*         PGAC_DATA_LOCATION  - data location, below or any           *
*         PGAC_EXECUTION_KEY  - execution key, CICS or user           *
*         PGAC_LOAD_ATTRIBUTE - reload, transient, resident, reuseable*
*         PGAC_USE_LPA_COPY   - use LPA copy, yes or no               *
*         PGAC_EXECUTION_SET  - use DPL subset or full API            *
*         PGAC_REMOTE_SYSID   - remote system ID                      *
*         PGAC_REMOTE_PROGID  - remote program name                   *
*         PGAC_REMOTE_TRANSID - remote transaction ID                 *
*     EXIT-NORMAL = Exit is via an EXEC CICS RETURN command.          *
*         The following return codes may be returned via the         *
*         commarea:                                                   *
*         PGAC_RETURN_CODE = PGAC_RETURN_OK                            *
*         PGAC_RETURN_CODE = PGAC_RETURN_DONT_DEFINE_PROGRAM           *
*     EXIT-ERROR =                                                     *
*         If the program abends, an error response is returned        *
*         to the autoinstall function. A message is issued by the     *
*         autoinstall function and the autoinstall function  is       *
*         disabled.                                                    *
*--------------------------------------------------------------------- *
* EXTERNAL REFERENCES =                                                *
*         None.                                                        *
*     ROUTINES =                                                       *
*         EXEC CICS RETURN - return to the calling program.            *
*     CONTROL BLOCKS =                                                 *
*         The PGAC control block, which includes the input and         *
*         output parameters, is in DFHPGACD.                           *
*         See INPUT and OUTPUT description above for a description     *
*         of the parameters.                                           *
*--------------------------------------------------------------------- *
* DESCRIPTION                                                          *
*         The default program autoinstall exit simply sets the         *
*         return code to OK and returns.                               *
*         The user may customize this program to provide information  *
*         for the autoinstalled definition based on the program        *
*         name and the module type.                                    *
*--------------------------------------------------------------------- *
* CHANGE ACTIVITY :                                                    *
*        $MOD(SELECTAI) COMP(PROGRAM) PROD(CICS/ESA AND CICS-TS 1.3): *
*     PN= REASON REL YYMMDD HDXXIII : REMARKS                          *
*    $L0= 646    410 930222 HDBVDMC : Program Autoinstall              *
*    $P1= M83159 410 930713 HDBVDMC : M83159: DSECTGEN changes         *
************************************************************************
DFHEISTG DSECT  ,
*    Insert your own storage definitions here
PPRIVATE DS    0CL20
PSYSID   DS    CL4
PSERVICE DS    CL1
PRESP    DS    F
         ORG   PPRIVATE+20
*    Copy the commarea definitions
         COPY DFHPGACD                Autoinstall commarea
************************************************************************
SELECTAI CSECT
SELECTAI AMODE 31
SELECTAI RMODE ANY
         DFHREGS ,
*        If there is no commarea, return
         OC    EIBCALEN,EIBCALEN
         BZ    RETURN0
*        Address the commarea
         L     R2,DFHEICAP
         USING PGAC,R2
*        Add user specific code here
         CLI   PGAC_MODULE_TYPE,PGAC_TYPE_PARTITIONSET
         BE    RETURNDD                 Accept only programs and maps
         MVI   PPRIVATE,X'00'           FORMAT WORKINGSET
         MVC   PPRIVATE+1(L'PPRIVATE-1),PPRIVATE
*        Assign the sysid
         EXEC CICS ASSIGN SYSID(PSYSID) RESP(PRESP)
         CLC   PRESP,DFHRESP(NORMAL)    ANY ERRORS DETECED ?
         BNE   RETURNDD                 IF YES: DON'T AUTOINSTALL
         LA    R7,SERTAB          LOAD SERVICE-TAB
SERV1000 DS    0H
         CLI   0(R7),C'*'         END OF TABLE ?
         BE    SERV9000           YES: IT'S NOT A SERIVCE-CICS
         CLC   PSYSID+2(1),0(R7)  ENTRY IN TABLE ?
         BE    SERV1900           YES: IT'S A SERVICE-CICS
         LA    R7,L'SERTAB(R7)    NEXT ENTRY
         B     SERV1000
SERV1900 DS    0H
         MVI   PSERVICE,C'1'
SERV9000 DS    0H
*                                       ---- Program ------------
         CLI   PSERVICE,C'1'            is it a service-cics ?
         BNE   PGM0500                  no... load aor-table
         LA    R7,PGMTABS               first entry in table
         LA    R10,PGMCNTS              number of programs
         B     PGM1000
PGM0500  DS    0H
         LA    R7,PGMTAB                first entry in table
         LA    R10,PGMCNT               number of programs
PGM1000  DS    0H
         LA    R8,7                     max.-length -1 (EX|)
         LR    R9,R7                    addr. r9 eq addr. r7
         LA    R9,7(R9)                 last possible character
PGM2000  DS    0H
         CLI   0(R9),C' '               true only gt blank
         BH    PGM3000                  if gt..compare
         BCTR  R9,0                     next column
         BCT   R8,PGM2000               go on
PGM3000  DS    0H
         EX    R8,COMPPGM               compare
         BE    PROCESS                  yes... go on
         LA    R7,L'PGMTAB(,R7)         next entry
         BCT   R10,PGM1000              go on
*                                       ---- Maps ---------------
         CLI   PSERVICE,C'1'            is it a service-cics ?
         BNE   MAP0500                  no... load aor-table
         LA    R7,MAPTABS               first entry in table
         LA    R10,MAPCNTS              number of maps
         B     MAP1000
```

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```
MAPØ5ØØ  DS    ØH
         LA    R7,MAPTAB                first entry in table
         LA    R1Ø,MAPCNT               number of maps
MAP1ØØØ  DS    ØH
         LA    R8,7                     max.-length -1 (EX|)
         LR    R9,R7                    addr. r9 eq addr. r7
         LA    R9,7(R9)                 last possible character
MAP2ØØØ  DS    ØH
         CLI   Ø(R9),C' '               true only gt blank
         BH    MAP3ØØØ                  if gt..compare
         BCTR  R9,Ø                     next column
         BCT   R8,MAP2ØØØ               go on
MAP3ØØØ  DS    ØH
         EX    R8,COMPPGM               compare
         BE    MAP                      yes... go on
         LA    R7,L'MAPTAB(,R7)         next entry
         BCT   R1Ø,MAP1ØØØ              go on
         B     RETURNDD                 no map ... goback
MAP      DS    ØH
         MVC   PGAC_MODEL_NAME,=CL8'DFHPGAMP'       SET DEFAULT-TYPE
         B     RETURNOK
PROCESS  DS    ØH
         MVC   PGAC_MODEL_NAME,=CL8'DFHPGAPG'       SET DEFAULT-TYPE
         MVI   PGAC_CEDF_STATUS,PGAC_CEDF_YES       "CEDF = YES"
         MVI   PGAC_DATA_LOCATION,PGAC_LOCATION_ANY TASKDATALOC=ANY
         MVI   PGAC_EXECUTION_KEY,PGAC_USER_KEY     "EXECKEY=USER"
         LA    R7,RESTAB                            LOAD FIRST ENTRY
PROC1ØØØ DS    ØH
         CLI   Ø(R7),C'*'         END OF TABLE ?
         BE    RETURNOK           YES: LOAD WITH "RESIDENT=NO"
         CLC   PGAC_PROGRAM,Ø(R7) PROGRAM IN TABLE ?
         BE    PROC19ØØ           YES: LOAD WITH "RESIDENT=YES"
         LA    R7,L'RESTAB(R7)    NEXT ENTRY
         B     PROC1ØØØ
COMPPGM  CLC   PGAC_PROGRAM(Ø),Ø(R7)                PROGRAM TRUE?
PROC19ØØ DS    ØH                 LOAD PROGRAM RESIDENT
         MVI   PGAC_LOAD_ATTRIBUTE,PGAC_RESIDENT
*        Set the return code to OK
RETURNOK DS    ØH
         MVI   PGAC_RETURN_CODE,PGAC_RETURN_OK
         B     RETURNØ
*        Branch to this label if you elect not to define the program
RETURNDD DS    ØH
         MVI   PGAC_RETURN_CODE,PGAC_RETURN_DONT_DEFINE_PROGRAM
RETURNØ  DS    ØH
         EXEC CICS RETURN
         EJECT
* PRIVATE DEFINITIONS
RESTAB   DS    ØCL8                        TABLE FOR PROGRAMS, WHICH
         DC    CL8'CI119Ø  '               MUST BE LOADED RESIDENT |
```

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```
         DC    C'*'
SERTAB   DS    ØCL1                        SERVICE-CICS-TABLE
         DC    C'D'                        DOR
         DC    C'S'                        SHARDED (QOR)
         DC    C'T'                        TOR
         DC    C'V'                        FOR
         DC    C'*'
PGMTAB   DS    ØCL8                        TABLE FOR PROGRAMS, WHICH
         DC    CL8'CEE     '               LE/37Ø                 "
         DC    CL8'CI      '               APPLICATION-NAME       "
         DC    CL8'DN      '               APPLICATION-NAME       "
         DC    CL8'DZ      '               APPLICATION-NAME       "
         DC    CL8'DØ      '               APPLICATION-NAME       "
         DC    CL8'D1      '               APPLICATION-NAME       "
         DC    CL8'D2      '               APPLICATION-NAME       "
         DC    CL8'D3      '               APPLICATION-NAME       "
         DC    CL8'D4      '               APPLICATION-NAME       "
         DC    CL8'D5      '               APPLICATION-NAME       "
         DC    CL8'D6      '               APPLICATION-NAME       "
         DC    CL8'D7      '               APPLICATION-NAME       "
         DC    CL8'D8      '               APPLICATION-NAME       "
         DC    CL8'D9      '               APPLICATION-NAME       "
         DC    CL8'EDC     '               C                      "
         DC    CL8'FSN     '               ASF                    "
         DC    CL8'IBM     '               PL1                    "
         DC    CL8'IED     '               C                      "
         DC    CL8'IGZ     '               COBOL                  "
         DC    CL8'IIBM    '               PL1                    "
         DC    CL8'IIGZ    '               COBOL                  "
         DC    CL8'KA      '               CSP 4.1                "
         DC    CL8'KL      '               CSP 4.1                "
         DC    CL8'KS      '               CSP 4.1                "
         DC    CL8'KT      '               CSP 4.1                "
         DC    CL8'KU      '               CSP 4.1                "
         DC    CL8'MCP     '               APPLICATION-NAME       "
         DC    CL8'MSD     '               APPLICATION-NAME       "
         DC    CL8'MSG     '               APPLICATION-NAME       "
         DC    CL8'MSU     '               APPLICATION-NAME       "
         DC    CL8'ZB      '               CSP 4.1                "
PGMTABE  DC    C'*'                        ARE SUPPORTED BY AUTOINST.|
PGMCNT   EQU   (PGMTABE-PGMTAB)/8
MAPTAB   DS    ØCL8                        TABLE FOR MAPS,     WHICH
         DC    CL8'CM      '               MAP-NAME               "
         DC    CL8'CP      '               MAP-NAME               "
         DC    CL8'SD      '               MAP-NAME               "
         DC    CL8'SU      '               MAP-NAME               "
         DC    CL8'TS      '               MAP-NAME               "
MAPTABE  DC    C'*'                        ARE SUPPORTED BY AUTOINST.|
MAPCNT   EQU   (MAPTABE-MAPTAB)/8
PGMTABS  DS    ØCL8                        TABLE FOR PROGRAMS, WHICH
```

```
         DC    CL8'CEE     '              LE/37Ø                 "
         DC    CL8'EDC     '              C                      "
         DC    CL8'IBM     '              PL1                    "
         DC    CL8'IED     '              C                      "
         DC    CL8'IGZ     '              COBOL                  "
         DC    CL8'IIBM    '              PL1                    "
         DC    CL8'IIGZ    '              COBOL                  "
PGMTABES DC    C'*'                       ARE SUPPORTED BY AUTOINST.|
PGMCNTS  EQU   (PGMTABES-PGMTABS)/8
MAPTABS  DS    ØCL8                       TABLE FOR MAPS,     WHICH
         DC    CL8'********'              MAP-NAMES              "
MAPTABES DC    C'*'                       ARE SUPPORTED BY AUTOINST.|
MAPCNTS  EQU   (MAPTABES-MAPTABS)/8
         END   SELECTAI
```

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Interfacing CICS to SMTP – part 2

This month we conclude the package to interface CICS with the SMTP mail capability of TCP/IP for MVS.

```
*    REGISTER USAGE:                                                  *
*     RØ                                                              *
*     R1                                                              *
*     R2                                                              *
*     R3   COMMAREA POINTER                                           *
*     R4   COMMAREA STOPPER                                           *
*     R5   BAL                                                        *
*     R6                                                              *
*     R7                                                              *
*     R8                                                              *
*     R9                                                              *
*     R1Ø                                                             *
*     R11  EIB BASE REGISTER                                          *
*     R12  CODE BASE REGISTER                                         *
*     R13  DATA BASE REGISTER                                         *
*     R14                                                             *
*     R15                                                             *
***********************************************************************
         SPACE 2
         EJECT
***********************************************************************
```

```
*        P R O G R A M     V A R I A B L E S                           *
***********************************************************************
DFHEISTG DSECT
         SPACE 1
RESP     DS    F
TOKEN    DS    CL8
WORKLINE DS    CL8Ø
         SPACE 1
***********************************************************************
*        C O M M A R E A     D S E C T                                 *
***********************************************************************
         SPACE 1
COMMAREA DSECT
CARCPT   DS    CL4Ø
CAFROM   DS    CL4Ø
         ORG   COMMAREA
CAMSG    DS    CL8Ø
CANEXT   EQU   *
         ORG   COMMAREA
CARESP   DS    XL1
         ORG
         SPACE 3
***********************************************************************
         EJECT
SENDMAIL DFHEIENT CODEREG=(12),DATAREG=(13),EIBREG=(11)
SENDMAIL AMODE 31
SENDMAIL RMODE ANY
         XEQU
         EJECT
         SPACE 2
START    DS    ØH                  ** INITIALIZATION **
         L     R3,DFHEICAP         GET ADDRESS OF COMMAREA
         LA    R3,Ø(,R3)           CLEAR VL BIT
         LTR   R3,R3               Q-IS COMMAREA AVAILABLE
         BZ    RETURN8             BIF NO
         USING COMMAREA,R3         SET ADDRESSABILITY
         CLC   EIBCALEN,=H'4ØØ'    Q-IS COMMAREA OF PROPER LENGTH
         BL    RETURN8             YES
         LR    R4,R3               ADDRESS THE
         AH    R4,EIBCALEN             END OF THE COMMAREA
* BUILD EMAIL MESSAGES
         EXEC CICS SPOOLOPEN OUTPUT TOKEN(TOKEN) USERID(TCPSMTP)       *
               NODE(NODE) CLASS(CLASSB) NOCC PUNCH RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BNE   RETURN8
         MVC   WORKLINE,HELLO
         BAL   R5,WRITE
         MVC   WORKLINE,MAILFROM
         MVC   WORKLINE+12(L'CAFROM),CAFROM
         BAL   R5,WRITE
         MVC   WORKLINE,RCPTTO
         MVC   WORKLINE+1Ø(L'CARCPT),CARCPT
         BAL   R5,WRITE
         MVC   WORKLINE,DATA
         BAL   R5,WRITE
         LA    R3,CANEXT
SENDLOOP DS    ØH
         MVC   WORKLINE,CAMSG
         BAL   R5,WRITE
         LA    R3,CANEXT
         CR    R3,R4
         BL    SENDLOOP
         EXEC CICS SPOOLCLOSE TOKEN(TOKEN) KEEP RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    RETURN
RETURN8  DS    ØH                ** INVALID COMMAREA LENGTH **
         MVI   CARESP,X'FF'       SET RC=ERROR
RETURN   DS    ØH
         EXEC CICS RETURN
WRITE    DS    ØH
         EXEC CICS SPOOLWRITE TOKEN(TOKEN) FROM(WORKLINE) RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BNE   RETURN8
         BR    R5
         SPACE 2
***********************************************************************
         EJECT
***********************************************************************
*        P R O G R A M     C O N S T A N T S                          *
***********************************************************************
         SPACE 1
TCPSMTP  DC    CL8'TCPSMTP'
NODE     DC    CL8'HLNCTR'         <=== change this to your JES node
CLASSB   DC    CL1'B'              <=== verify the class is OK
HELLO    DC    CL8Ø'HELO HLNCTR'   <=== change this to your jes node
MAILFROM DC    CL8Ø'MAIL FROM: <123456789Ø123456789Ø123456789Ø123456789*
               Ø>'
RCPTTO   DC    CL8Ø'RCPT TO: <123456789Ø123456789Ø123456789Ø123456789Ø>*
               '
DATA     DC    CL8Ø'DATA'
         SPACE 3
***********************************************************************
         SPACE 1
         END
```

MAILMAP.BMS

```
MAILMAP  DFHMSD TYPE=DSECT,                                            C
               MODE=INOUT,                                             C
               LANG=COBOL,                                             C
               TIOAPFX=YES
CONFIRM  DFHMDI COLUMN=022,LINE=009,                                   C
               CTRL=(FRSET,FREEKB),                                    C
               SIZE=(004,032)
         DFHMDF LENGTH=031,POS=(001,001),                              C
               INITIAL='+-----------------------------+',              C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=031,POS=(002,001),                              C
               INITIAL='|  Message successfully sent  |',              C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=031,POS=(003,001),                              C
               INITIAL='+-----------------------------+',              C
               ATTRB=(ASKIP,NORM,IC)
ERROR    DFHMDI COLUMN=022,LINE=009,                                   C
               CTRL=(FRSET,FREEKB),                                    C
               SIZE=(004,039)
         DFHMDF LENGTH=038,POS=(001,001),                              C
               INITIAL='+------------------------------------+',       C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=038,POS=(002,001),                              C
               INITIAL='|  Send Failed - Contact Programming |',       C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=038,POS=(003,001),                              C
               INITIAL='+------------------------------------+',       C
               ATTRB=(ASKIP,NORM,IC)
MAILMAP  DFHMDI COLUMN=NEXT,LINE=NEXT,                                 C
               CTRL=(FRSET,FREEKB),                                    C
               SIZE=(024,080)
MAIL_DATE DFHMDF LENGTH=010,POS=(001,001),                             C
               INITIAL='MM/DD/YYYY',                                   C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=028,POS=(001,026),                              C
               INITIAL='Send Email Message From CICS',                 C
               ATTRB=(ASKIP,NORM)
MAIL_APPLID DFHMDF LENGTH=008,POS=(001,071),                           C
               INITIAL='APPLID  ',                                     C
               ATTRB=(ASKIP,NORM)
MAIL_TIME DFHMDF LENGTH=008,POS=(002,001),                             C
               INITIAL='HH:MM:SS',                                     C
               ATTRB=(ASKIP,NORM)
MAIL_USERID DFHMDF LENGTH=008,POS=(002,071),                           C
               INITIAL='USERID  ',                                     C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=006,POS=(004,001),                              C
               INITIAL='Email:',                                       C
               ATTRB=(ASKIP,NORM)
MAIL_TO DFHMDF LENGTH=040,POS=(004,011),                               C
               INITIAL='                                        ',     C
               ATTRB=(UNPROT,NORM,FSET,IC)
         DFHMDF LENGTH=000,POS=(004,052),                              C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=Ø24,POS=(ØØ4,Ø53),                              C
               INITIAL='<== Recipient''s Email ID
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=ØØ9,POS=(ØØ5,ØØ1),                              C
               INITIAL='Reply to:',                                    C
               ATTRB=(ASKIP,NORM)
MAIL_REPLY DFHMDF LENGTH=Ø4Ø,POS=(ØØ5,Ø11),                            C
               INITIAL='                                        ',     C
               ATTRB=(UNPROT,NORM,FSET)
         DFHMDF LENGTH=ØØØ,POS=(ØØ5,Ø52),                              C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=Ø21,POS=(ØØ5,Ø53),                              C
               INITIAL='<== Reply to Email ID',                        C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=ØØ5,POS=(ØØ6,ØØ1),                              C
               INITIAL='From:',                                        C
               ATTRB=(ASKIP,NORM)
MAIL_FROM DFHMDF LENGTH=Ø2Ø,POS=(ØØ6,Ø11),                             C
               ATTRB=(UNPROT,NORM,FSET)
         DFHMDF LENGTH=ØØØ,POS=(ØØ6,Ø32),                              C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=Ø13,POS=(ØØ6,Ø53),                              C
               INITIAL='<== Your Name',                                C
               ATTRB=(ASKIP,NORM)
         DFHMDF LENGTH=ØØ8,POS=(ØØ7,ØØ1),                              C
               INITIAL='Subject:',                                     C
               ATTRB=(ASKIP,NORM)
MAIL_SUBJECT DFHMDF LENGTH=Ø69,POS=(ØØ7,Ø11),                          C
               ATTRB=(UNPROT,NORM,FSET)
         DFHMDF LENGTH=Ø5Ø,POS=(ØØ8,ØØ1),                              C
               INITIAL='Enter your message below and press PF9 to send C
               it:',                                                   C
               ATTRB=(ASKIP,NORM)
MAIL_BODY DFHMDF LENGTH=Ø79,POS=(ØØ9,ØØ1),                             C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ1  DFHMDF LENGTH=Ø79,POS=(Ø1Ø,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ2  DFHMDF LENGTH=Ø79,POS=(Ø11,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ3  DFHMDF LENGTH=Ø79,POS=(Ø12,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ4  DFHMDF LENGTH=Ø79,POS=(Ø13,ØØ1),                              C
               INITIAL='                                               C
```

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```
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ5  DFHMDF LENGTH=Ø79,POS=(Ø14,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ6  DFHMDF LENGTH=Ø79,POS=(Ø15,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ7  DFHMDF LENGTH=Ø79,POS=(Ø16,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ8  DFHMDF LENGTH=Ø79,POS=(Ø17,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØØ9  DFHMDF LENGTH=Ø79,POS=(Ø18,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØ1Ø  DFHMDF LENGTH=Ø79,POS=(Ø19,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØ11  DFHMDF LENGTH=Ø79,POS=(Ø2Ø,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØ12  DFHMDF LENGTH=Ø79,POS=(Ø21,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØ13  DFHMDF LENGTH=Ø79,POS=(Ø22,ØØ1),                              C
               INITIAL='                                               C
                                               ',                      C
               ATTRB=(UNPROT,NORM,FSET)
ARRYØ14  DFHMDF LENGTH=Ø79,POS=(Ø23,ØØ1),                              C
               ATTRB=(UNPROT,NORM,FSET)
         DFHMDF LENGTH=ØØ3,POS=(Ø24,ØØ1),                              C
               INITIAL='PF:',                                          C
               ATTRB=(ASKIP,NORM)
MAIL_F1 DFHMDF LENGTH=ØØ5,POS=(Ø24,ØØ5),                               C
               INITIAL='1=Hlp',                                        C
               ATTRB=(ASKIP,NORM)
MAIL_F2 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø11),                               C
               INITIAL='2=???',                                        C
               ATTRB=(ASKIP,DRK)
MAIL_F3 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø17),                               C
               INITIAL='3=End',                                        C
               ATTRB=(ASKIP,NORM)
MAIL_F4 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø23),                               C
               INITIAL='4=???',                                        C
               ATTRB=(ASKIP,DRK)
MAIL_F5 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø29),                               C
               INITIAL='5=???',                                        C
               ATTRB=(ASKIP,DRK)
MAIL_F6 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø35),                               C
               INITIAL='6=???',                                        C
               ATTRB=(ASKIP,DRK)
MAIL_F7 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø41),                               C
               INITIAL='7=???',                                        C
               ATTRB=(ASKIP,DRK)
MAIL_F8 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø47),                               C
               INITIAL='8=???',                                        C
               ATTRB=(ASKIP,DRK)
MAIL_F9 DFHMDF LENGTH=ØØ5,POS=(Ø24,Ø53),                               C
               INITIAL='9=Snd',                                        C
               ATTRB=(ASKIP,NORM)
MAIL_F1Ø DFHMDF LENGTH=ØØ6,POS=(Ø24,Ø59),                              C
               INITIAL='1Ø=???',                                       C
               ATTRB=(ASKIP,DRK)
MAIL_F11 DFHMDF LENGTH=ØØ6,POS=(Ø24,Ø66),                              C
               INITIAL='11=???',                                       C
               ATTRB=(ASKIP,DRK)
MAIL_F12 DFHMDF LENGTH=ØØ6,POS=(Ø24,Ø73),                              C
               INITIAL='12=Ers',                                       C
               ATTRB=(ASKIP,NORM)
         DFHMSD TYPE=FINAL
```

The advent of TCP/IP on OS/390 allowed the use of SMTP mail from TSO and batch. We regularly use the SMTP process at the tail end of batch jobs to facilitate mailing reports or abend notifications to designated users. The following example shows how to use the IEBGENER utility to send an e-mail message from a batch job. The message could be entirely inline or included from concatenated DD statements. The data in this example is formatted as 80-byte records; however, I have successfully tested it with records up to 512 bytes in length.

To accomplish the same thing from CICS, you could simply code up the JCL in working storage and submit it as a batch job. JCL submission is usually accomplished via extra-partition transient data queue output going to a DD statement defined with //JCL DD SYSOUT=(B,INTRDR). Alternatively, you can use the CICS spool interface to queue the e-mail message directly to the TCPSMTP program.

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The CICS SENDMAIL program takes as input a variable length COMMAREA consisting of 80-byte records containing the recipient and sender e-mail addresses and the message to be sent. The program then formats this information into acceptable input to the TCPSMTP process and spools it out to JES. TCPSMTP does the rest.

To properly utilize this program you must have TCPSMTP properly configured on your OS/390 system. You must also have the CICS SPOOL interface active by specifying SPOOL=YES in the SIT or as a start-up override. Following the SENDMAIL program is a small COBOL program and BMS map source that can be used to test the SENDMAIL function from a formatted screen.

```
//IEBGENER EXEC PGM=IEBGENER
//SYSIN DD DUMMY
//*
//SYSUT1 DD *
HELO HLNCTR
MAIL FROM: <CZ0055@HLNCTR.STATE.MT.US>
RCPT TO: <DGRINSELL@STATE.MT.US>
DATA
TO:  Donald Grinsell
FROM: "Grinsell, Donald"<cz0055@hlnctr.state.mt.us>
SUBJECT: TCP/IP Mail from MVS batch on SYSA

This is a test message from batch.

/*
//       DD DISP=SHR,DSN=MORE.EMAIL.DATA
//*
//SYSUT2 DD SYSOUT=(B,TCPSMTP)
//*
```

Editor's note: the MAILMAP BMS from page 11 goes here.

The mailtext COBOL program (from page 42 of last month's issue) goes next.

The send mail Assembler program, started at the end of last month's issue and concluded at the start of this article, goes last.

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CICS Systems Programmer
State of Montana (USA)

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TCP/IP and CICS sockets

At our installation we needed to develop a way for a batch program to communicate with CICS without using APPC. We were interested in a solution which extends beyond our mainframe environment that would or could include alternative platforms such as the RS/6000. We have now accomplished our mission by developing a CICS sockets child server program named TCHSRV1. When we receive an incoming request on a CICS Internet socket from a client, CICS sockets starts our CICS child server transaction SRV1, as indicated by the first four bytes of the incoming datastream. Program TCHSRV1 begins processing by retrieving the CICS sockets parameters and taking control of the socket from CICS sockets. Program TCHSRV1 will acquire a work area and retrieve a 4000-byte data area. From this it will extract the program name which is to process the user data and link to that program with the user data pointed to as a COMMAREA after writing a link message to the CICS log. After the linked-to program has completed processing, the modified user data area and response codes are also written to the CICS log. Finally, program TCHSRV1 sends the modified user data back to the client, closes the socket, and returns control to CICS.

The TCHSRV1 and TCHCLOSE CICS log messages are shown below:

```
TCHSRV1 - LINK TO PROGRAM TCHCLOSE
TCHCLOSE - FILE PROTHLF  CLOSED / DISABLED RESP CODE = 00000000
TCHCLOSE - FILE PROTSYM  CLOSED / DISABLED RESP CODE = 00000000
TCHCLOSE - FILE TESTFILE CLOSED / DISABLED RESP CODE = 00000012
TCHCLOSE RESPONSE CODE = 00000012
PROTHLF  RESP=00000000
PROTSYM  RESP=00000000
TESTFILE RESP=00000012
```

The batch OS/390 client program that we are using to communicate with CICS T/S 1.3 is named TCHTCPIP. This program begins by reading the target IP address and port number from the job step parameters, the user's data from the SYSIN DD is then stored in a GETMAINed storage area, and the TCP/IP API is initialized. Next, TCHTCPIP obtains a TCP/IP socket, connects to that socket, and gets the name of the remote socket to which the local socket is connected.

The user's data is now sent to the target CICS system and the modified user data is read back after being processed and written out to the TCHTCPIP job's sysout DD. Finally, this program issues a shutdown to terminate all communications, closes the socket, and terminates the TCP/IP API. Prior to passing control back to OS/390, the highest processing return code is retrieved and placed in register 15.

An example of TCHTCPIP SYSOUT messages resulting in the following job completing processing with a condition code of 12 is:

```
TCHCLOSE RESPONSE CODE = ØØØØØØ12
PROTHLF  RESP=ØØØØØØØØ
PROTSYM  RESP=ØØØØØØØØ
TESTFILE RESP=00000012
```

The following is an example of a job that can be submitted to execute the above documented programs and processes. In this example a CICS program, TCHCLOSE, is called to close files PROTHLF, PROTSYM, and TESTFILE.

```
//JOBCARD
//*********************************************************************
//*      T C P / I P   -   C I C S   C L I E N T   I N T E R F A C E  *
//*        JOBSTEP PARMS -                                            *
//*       ENCLOSED IN SINGLE QUOTES MUST BE THE DECIMAL IP ADDRESS    *
//*          IMMEDIATELY FOLLOWED BY A COMMA AND THE DECIMAL          *
//*          TARGET PORT.                                             *
//*        SYSIN CARDS -                                              *
//*          THE FIRST CARD MUST BE THE CICS TRANSACTION NAME OF THE  *
//*          CHILD CICS SERVER TO BE STARTED BY CICS SOCKETS.         *
//*          THE SECOND CARD MUST BE THE NAME OF THE CICS PROGRAM     *
//*          THAT IS TO BE LINKED TO FOR DATA PROCESSING.             *
//*          THE THIRD TO THE FIFTIETH CARDS ARE THE DATA INPUT TO    *
//*          BE USED BY THE PROGRAM DEFINED IN CARD TWO VIA A CICS    *
//*          COMMAREA.                                                *
//*********************************************************************
//TCHTCPIP EXEC PGM=TCHTCPIP,
//         PARM='123.456.789.Ø12,1111'
//STEPLIB     DD DISP=SHR,DSN=CICS.TEST.LOADLIB
//*
//SYSPRINT    DD SYSOUT=T,DCB=(RECFM=FBA,LRECL=133,BLKSIZE=133)
//SYSUDUMP    DD SYSOUT=T
//SYSPRINT    DD SYSOUT=T
//SYSOUT      DD SYSOUT=T
//SNAP        DD SYSOUT=T
//SYSIN       DD *
SRV1
TCHCLOSE
```

```
PROTHLF
PROTSYM
TESTFILE
//*
```

The following program, TCHSRV1, executes within the CICS TS address space with CICS sockets:

```
         TITLE 'TCHSRV1 - CICS TCPIP SERVER PROGRAM'
************************************************************************
* TECHNICAL SUPPORT - DAVE MUNGER                                      *
* MODULE NAME - TCHSRV1                                                *
* LANGUAGE - ASSEMBLER                                                 *
* DESCRIPTION - THIS PROGRAM EXECUTES AS A CHILD SERVER FOR TCPIP      *
*               CICS SOCKETS REQUESTS.                                 *
*               INPUT FORMAT -                                         *
*               LINE 1 - PROGRAM NAME TO EXECUTE VIA A CICS LINK       *
*               LINE 2 - 49 PROGRAM DATA                               *
*               OUTPUT FORMAT -                                        *
*               LINE 1 - RETURNS HIGHEST RETURN CODE                   *
*               LINE 2 - 49 PROGRAM DATA WITH RETURN CODE              *
************************************************************************
         DFHEJECT
         DFHREGS
         DFHEISTG
DBLWRD   DS    D                  DATA CONVERSION DOUBLEWORD
PARMLIST DS    3ØA                TCP/IP PARAMETER LIST
*        C I C S   S O C K E T   P A R A M E T E R S
INPUT    DS    ØCL72
DESCRIPT DS    F                  SOCKET DESCIPTOR
CICSNAME DS    CL8                NAME OF CICS LISTNER
TASKID   DS    CL8                LISTNER'S TASK IDENTIFIER
DATAAREA DS    CL35               INPUT AREA FROM LISTNER
         DS    CL1                RESERVED
FAMILY   DS    H                  TCP/IP ADDRESSING FAMILY
PORT     DS    H                  TCP/IP PORT NUMBER
IPADDR   DS    F                  TCP/IP ADDRESS
         DS    D                  RESERVED
         DS    CL8                UNUSED
*        T A K E   S O C K E T   P A R A M E T E R S
TSOCKET  DS    ØCL4Ø
TDOMAIN  DS    F                  AF_INET
TNAME    DS    CL8                NAME OF CICS LISTNER
TTASK    DS    CL8                LISTNER'S TASK IDENTIFIER
         DS    CL2Ø               RESERVED
FUNCTION DS    CL16               TCP/IP FUNCTION
RETCODE  DS    F                  RETURN CODE
ERRNO    DS    F                  ERROR NUMBER
RESP     DS    F                  CICS RESPONSE CODE
SOCKET   DS    H                  SOCKET DESCRIPTOR
LENGTH   DS    H                  LENGTH FIELD
```

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```
BUFFER   DS    F                  BUFFER ADDRESS
OUTPUT   DS    CL8Ø               OUTPUT BUFFER
PROGRAM  DS    CL8                PROGRAM NAME
TCHSRV1 AMODE 31
TCHSRV1 RMODE ANY
TCHSRV1 CSECT
         B     START              MODULE HISTORY
         DC    CL8'TCHSRV1'       MODULE NAME
         DC    CL8'VER - Ø1'      MODULE VERSION NUMBER
         DC    CL8'&SYSDATE'      SYSTEM DATE
         DC    CL8'&SYSTIME'      SYSTEM TIME
START    EQU   *
         MVC   LENGTH(2),=H'72'   SET LENGTH = 72
         EXEC CICS RETRIEVE INTO(INPUT) LENGTH(LENGTH) RESP(RESP)
         MVC   FUNCTION(16),TAKESOCK SET FUNCTION
         MVC   SOCKET(2),DESCRIPT+2  SET SOCKET DESCRIPTOR
         MVC   TDOMAIN(4),=F'2'      SET IF_INET
         MVC   TNAME(8),CICSNAME     SET NAME OF CICS LISTNER
         MVC   TTASK(8),TASKID       SET LISTNER'S TASK IDENTIFIER
         CALL EZASOKET,(FUNCTION,SOCKET,TSOCKET,ERRNO,RETCODE),        X
               VL,MF=(E,PARMLIST)
         CLI   RETCODE,X'FF'         Q. ANY ERRORS DETECTED ?
         BE    ERROR                 A. YES - GO TO ERROR RTN
         MVC   SOCKET(2),RETCODE+2   GET NEW SOCKET DESCRIPTOR
         EXEC CICS GETMAIN SET(R4) FLENGTH(4ØØØ) INITIMG(=X'ØØ')
         ST    R4,BUFFER             SAVE BUFFER ADDRESS
         MVC   FUNCTION(16),READX    SET FUNCTION = READ
         MVC   LENGTH(2),=H'4ØØØ'    SET READ LENGTH = 4ØØØ
         CALL EZASOKET,(FUNCTION,SOCKET,LENGTH,Ø(R4),                  X
               ERRNO,RETCODE),VL,MF=(E,PARMLIST)
         CLI   RETCODE,X'FF'         Q. ANY ERRORS DETECTED ?
         BE    ERROR                 A. YES - GO TO ERROR RTN
         L     R4,BUFFER             R4 => BUFFER DATA
         LA    R4,3Ø(R4)             R4 => USER DATA
         XC    OUTPUT(8Ø),OUTPUT     CLEAR OUTPUT BUFFER
         MVC   OUTPUT(L'LINKMSG),LINKMSG SET LINK MESSAGE INTO BUFFER
         MVC   OUTPUT+L'LINKMSG(8),Ø(R4) SET PROGRAM NAME INTO BUFFER
         MVC   PROGRAM(8),Ø(R4)      SET PROGRAM NAME FOR CICS LINK
         EXEC CICS WRITEQ TD QUEUE('CSSL') FROM(OUTPUT) LENGTH(8Ø)     X
               RESP(RESP)
         EXEC CICS LINK PROGRAM(PROGRAM) COMMAREA(Ø(R4)) LENGTH(4ØØØ)  X
               RESP(RESP)
         L     R5,=F'49'             R5 = 49
LOOP     EQU   *
         EXEC CICS WRITEQ TD QUEUE('CSSL') FROM(Ø(R4)) LENGTH(8Ø)      X
               RESP(RESP)
         LA    R4,8Ø(R4)             R4 => USER DATA
         CLI   Ø(R4),X'4Ø'          Q. SPACES FOUND ?
         BE    WRITE                 A. YES - GO WRITE RESP TO CLIENT
         CLI   Ø(R4),X'ØØ'          Q. LOW VALUES FOUND ?
         BE    WRITE                 A. YES - GO WRITE RESP TO CLIENT
         BCT   R5,LOOP              LOOP CONTROL
WRITE    EQU   *
         MVC   FUNCTION(16),WRITEX   SET FUNCTION = WRITE
         L     R4,BUFFER            R4 => DATA BUFFER
         MVC   LENGTH(2),=H'4ØØØ'    LENGTH = DATA BUFFER LENGTH
         CALL EZASOKET,(FUNCTION,SOCKET,LENGTH,Ø(R4),                  X
               ERRNO,RETCODE),VL,MF=(E,PARMLIST)
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         MVC   FUNCTION(16),CLOSEX SET FUNCTION = CLOSE
CLOSE    EQU   *
         CALL EZASOKET,(FUNCTION,SOCKET,ERRNO,RETCODE),                X
               VL,MF=(E,PARMLIST)
         B     EXIT               GO EXIT
         EJECT
***********************************************************************
*        E R R O R   R O U T I N E                                    *
***********************************************************************
         SPACE 2
ERROR    EQU   *
         MVI   OUTPUT,X'4Ø'       CLEAR OUTPUT
         MVC   OUTPUT+1(79),OUTPUT   BUFFER
         MVC   OUTPUT(61),MESSAGE SET MESSAGE INTO OUTPUT BUFFER
         MVC   OUTPUT+1Ø(16),FUNCTION SET FUNCTION INTO OUTPUT BUFFER
         MVI   OUTPUT+36,C'+'     SET RETURN CODE SIGN
         L     R5,RETCODE         Q. RETURN CODE POSITIVE ?
         LTR   R5,R5              SET CONDITION CODE
         BNM   POSITIVE           A. YES - BYPASS SETTING NEGATIVE
         MVI   OUTPUT+36,C'-'     A. NO - SET RESPONSE CODE NEGATIVE
POSITIVE EQU   *
         CVD   R5,DBLWRD          CONVERT RESPONSE CODE TO DECIMAL
         UNPK  OUTPUT+37(7),DBLWRD+4(4)  UNPACK RESPONSE CODE
         OI    OUTPUT+43,X'FØ'    FORCE NUMERIC ZONE
         L     R5,ERRNO           R5 = ERROR NUMBER
         CVD   R5,DBLWRD          CONVERT ERROR NUMBER TO DECIMAL
         UNPK  OUTPUT+51(7),DBLWRD+4(4) UNPACK ERROR CODE
         OI    OUTPUT+57,X'FØ'    FORCE NUMERIC ZONE
         EXEC CICS WRITEQ TD QUEUE('CSSL') FROM(OUTPUT) LENGTH(8Ø)     X
               RESP(RESP)
         CLC   FUNCTION(16),TAKESOCK Q. TAKESOCKET ERROR ?
         BE    EXIT               A. YES - GO EXIT
         CLC   FUNCTION(16),READX Q. READ ERROR ?
         BE    CLOSE              A. YES - GO CLOSE SOCKET
         CLC   FUNCTION(16),WRITEX Q. WRITE ERROR ?
         BE    CLOSE               A. YES - GO CLOSE SOCKET
         CLC   FUNCTION(16),CLOSEX Q. CLOSE ERROR ?
         BE    EXIT                A. YES - GO EXIT
EXIT     EQU   *
         EXEC CICS RETURN
         EJECT
***********************************************************************
```

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```
*        P R O G R A M   V A R I A B L E S                            *
***********************************************************************
LINKMSG  DC    CL26'TCHSRV1 - LINK TO PROGRAM '
TAKESOCK DC    CL16'TAKESOCKET'
READX    DC    CL16'READ'
WRITEX   DC    CL16'WRITE'
CLOSEX   DC    CL16'CLOSE'
MESSAGE  DC    CL1Ø'TCHSRV1 : '
         DC    CL16' '
         DC    CL1Ø' RETCODE= '
         DC    CL8' '
         DC    CL1Ø' ERRNO='
         DC    CL7' '
         LTORG
         END
```

The following program, TCHTCPIP, executes within a batch OS/390 job:

```
         TITLE 'TCHTCPIP - TCP/IP BATCH - CICS INTERFACE'
         EJECT
         YREGS
         EJECT
***********************************************************************
* TECHNICAL SUPPORT - DAVE MUNGER                                     *
* MODULE NAME - TCHTCPIP                                              *
* LANGUAGE - ASSEMBLER                                                *
* DESCRIPTION - THIS PROGRAM READS IN THE JOBSTEP PARAMETERS AND      *
*               INITIATES A TCP/IP CONVERSATION WITH CICS VIA CICS    *
*               SOCKETS.  THE JOBSTEP SYSIN DATA IS READ AND SENT     *
*               TO CICS FOR PROCESSING.  AFTER CICS PROCESSING, A     *
*               DATA BUFFER IS RETURNED TO THIS PROGRAM AND THE       *
*               HIGHEST RECORDED RETURN CODE FROM CICS PROCESSING     *
*               IS USED AS THE RETURN CODE OF THIS PROGRAM.           *
***********************************************************************
TCHTCPIP CSECT
TCHTCPIP AMODE 24
TCHTCPIP RMODE 24
         STM   R14,R12,12(R13)    STORE ENTRY REGISTERS
         BALR  R3,Ø               SET FIRST BASE REGISTER
         USING *,R3,R4            ESTABLISH ADDRESSABILITY
BASE1    L     R4,BASE2           SET SECOND BASE REGISTER
         B     CONTINUE           BRANCH AROUND EYE CATCHER
         DC    CL8'TCHTCPIP'      MODULE NAME
         DC    CL8'VER - Ø1'      MODULE VERSION NUMBER
         DC    CL8'&SYSDATE'      SYSTEM DATE
         DC    CL8'&SYSTIME'      SYSTEM TIME
BASE2    DC    A(BASE1+4Ø96)      2ND BASE REGISTER ADDRESS
CONTINUE ST    R13,SAVE+4         STORE MVS SAVE AREA ADDRESS
         LA    R13,SAVE           R13 => NEW SAVE AREA
         EJECT
```

```
************************************************************************
*        I N I T I A L I Z A T I O N                                   *
************************************************************************
         SPACE 2
         ST    R1,PARMLST         SAVE PARAMETER LIST POINTER ADDRESS
         MVC   STEPRC(4),FULLWRDØ INITIALIZE STEP RETURN CODE
         GETMAIN R,LV=4ØØØ
         LTR   R15,R15            Q. GETMAIN SUCCESSFUL ?
         BNZ   STGERR             A. NO - GO TO ERROR RTN
         LR    R6,R1              R6 => GETMAIN BUFFER AREA
         ST    R6,BUFFER          SAVE SEND BUFFER ADDRESS
         L     R7,=F'4ØØØ'        R7 = DATA LENGTH
         LR    R8,R6              R8 => DATA BUFFER
         SR    R9,R9              R9 = ZERO
         MVCL  R6,R8              INITIALIZE DATA BUFFER
         EJECT
************************************************************************
*        J O B   S T E P   P A R A M E T E R   P R O C E S S I N G     *
************************************************************************
         SPACE 2
         L     R5,PARMLST         R5 => INPUT PARAMETER AREA
         LH    R5,2(R5)           R5 => INPUT PARM AREA
         CLC   Ø(2,R5),=XL2'ØØØØ' Q. INPUT PARM SUPPLIED ?
         BE    PARMERR1           A. NO - GO TO ERROR RTN
         LA    R7,2(R5)           R7 => BEGINNING OF JOB STEP PARMS
         LH    R6,Ø(R5)           R6 = INPUT PARAMETER AREA LENGTH
         AR    R5,R6              R5 => END OF INPUT PARAMETER LIST
         LA    R5,2(R5)           ADD LENGTH OF LENGTH FIELD TO R5
         LA    R6,IPADDRS         R6 => IP ADDRESS FIELDS
         L     R8,=F'4'           R8 = LOOP CONTROL
         EJECT
************************************************************************
*        I P   A D D R E S S   P R O C E S S I N G                     *
************************************************************************
         SPACE 2
IPLOOP   EQU   *
         XC    NUMFIELD(4),NUMFIELD SET NUMFIELD = BINARY ZEROES
         MVZ   NUMFIELD(3),Ø(R7)  GET ZONES
         CLC   NUMFIELD(3),=XL3'FØFØFØ' Q. NUMERIC ZONES FOUND ?
         BNE   PARMERR2           A. NO - GO TO ERROR RTN
         XC    DBLWRD(8),DBLWRD   SET DBLWRD = BINARY ZEROES
         PACK  DBLWRD+6(2),Ø(3,R7) PACK IP ADDRESS
         CP    DBLWRD+6(2),=PL2'255' Q. VALID IP ADDRESS ?
         BH    PARMERR2           A. NO - GO TO ERROR RTN
         CVB   R9,DBLWRD          CONVERT IP ADDRESS TO BINARY
         STCM  R9,X'Ø1',Ø(R6)     STORE IP ADDRESS
         LA    R6,1(R6)           INCREMENT OUTPUT IP ADDRESS PTR
         LA    R7,4(R7)           INCREMENT INPUT IP ADDRESS PTR
         CR    R7,R5              Q. END OF JOB STEP INPUT PARMS ?
         BH    PARMERR2           A. YES - GO TO ERROR RTN
         BCT   R8,IPLOOP          LOOP CONTROL
         EJECT
************************************************************************
*        P O R T   N U M B E R   P R O C E S S I N G                  *
************************************************************************
         SPACE 2
         XC    NUMFIELD(4),NUMFIELD SET NUMFIELD = BINARY ZEROES
         MVZ   NUMFIELD(4),Ø(R7)  GET ZONES
         CLC   NUMFIELD(4),=XL4'FØFØFØFØ' Q. NUMERIC ZONES FOUND ?
         BNE   PARMERR3           A. NO - GO TO ERROR RTN
         XC    DBLWRD(8),DBLWRD   SET DBLWRD = BINARY ZEROES
         PACK  DBLWRD+5(3),Ø(4,R7) PACK IP ADDRESS
         CVB   R9,DBLWRD          CONVERT PORT NUMBER TO BINARY
         STH   R9,PORT            STORE PORT NUMBER
         EJECT
         OPEN  (SYSINDCB,(INPUT)) OPEN SYSIN DCB
         LTR   R15,R15            Q. ANY ERRORS ?
         BNZ   DCBERR1            A. YES - GO TO ERROR RTN
         L     R5,=F'5Ø'          SET LOOP COUNTER
         L     R6,BUFFER          R6 => SEND BUFFER
READ     EQU   *
         GET   SYSINDCB           READ JOB INPUT
         MVC   Ø(8Ø,R6),Ø(R1)     PLACE COMMAND IN USER STORAGE
         LA    R6,8Ø(R6)          INCREMENT COMMAND POINTER
         BCT   R5,READ            LOOP CONTROL
CLOSEDCB EQU   *
         CLOSE SYSINDCB           CLOSE DCB
         EXTRACT TIOTTAB,FIELDS=(TIOT) GET TIOT ADDRESS
         L     R1,TIOTTAB         R1 => TIOT ADDRESS
         MVC   JOBNAME(8),Ø(R1)   SET JOBNAME
         EJECT
************************************************************************
*        C O N N E C T   T O   P R O G R A M   I N T E R F A C E       *
************************************************************************
         SPACE 2
         MVC   MSGCMD(8),=CL8'INITAPI' SET TCP/IP COMMAND
         EZASMI TYPE=INITAPI,     ISSUE INITAPI MACRO                  X
               SUBTASK=JOBNAME,   SPECIFY SUBTASK IDENTIFIER           X
               MAXSOC=MAXSOC,     SPECIFY MAXIMUM NUMBER OF SOCKETS    X
               MAXSNO=MAXSNO,     RECEIVE SOCKET NUMBER ASSIGNED       X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE,   RETURN CODE FIELD                    X
               APITYPE=APITYPE    AF_INET DEFAULT
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         EJECT
************************************************************************
*        O B T A I N   T C P / I P   S O C K E T   D E S C R I P T O R*
************************************************************************
         SPACE 2
         MVC   MSGCMD(8),=CL8'SOCKET ' SET TCP/IP COMMAND
         EZASMI TYPE=SOCKET,      ISSUE SOCKET MACRO                   X
```

```
               AF='INET',         INET                                 X
               SOCTYPE='STREAM',  STREAM COMMUNICATIONS                X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         MVC   SOCKET(2),RETCODE+2 SET SOCKET DESCRIPTOR
         EJECT
***********************************************************************
*        I S S U E  C O N N E C T  S O C K E T                        *
***********************************************************************
         SPACE 2
         MVC   MSGCMD(8),=CL8'CONNECT ' SET TCP/IP COMMAND
         EZASMI TYPE=CONNECT,     ISSUE CONNECT MACRO                  X
               S=SOCKET,          SOCKET DECRIPTOR                     X
               NAME=CONNPARM,     SOCKET NAME STRUCTURE                X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         EJECT
***********************************************************************
*        I S S U E   G E T P E E R N A M E                            *
***********************************************************************
         SPACE 2
         MVC   MSGCMD(8),=CL8'GETPEER ' SET TCP/IP COMMAND
         EZASMI TYPE=GETPEERNAME, ISSUE GETPEERNAME MACRO              X
               S=SOCKET,          SOCKET DESCRIPTOR
X
               NAME=CONNPARM,     SOCKET NAME STRUCTURE                X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         EJECT
***********************************************************************
*        I S S U E  W R I T E  D A T A  F R O M  B U F F E R         *
***********************************************************************
         SPACE 2
*
         MVC   MSGCMD(8),=CL8'WRITE   ' SET TCP/IP COMMAND
         L     R5,BUFFER          R5 => DATA BUFFER
         EZASMI TYPE=WRITE,       ISSUE WRITE MACRO                    X
               S=SOCKET,          SOCKET DESCRIPTOR                    X
               NBYTE=4ØØØ,        SIZE OF BUFFER                       X
               BUF=(R5),          BUFFER ADDRESS                       X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         EJECT
```

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```
***********************************************************************
*        ISSUE READ - READ DATA AND STORE IN BUFFER                   *
***********************************************************************
         SPACE 2
         MVC   MSGCMD(8),=CL8'READ    ' SET TCP/IP COMMAND
         L     R6,BUFFER          R6 => SEND BUFFER
         L     R7,=F'4ØØØ'        R7 = DATA LENGTH
         LR    R8,R6              R8 => DATA BUFFER
         SR    R9,R9              R9 = ZERO
         MVCL  R6,R8              INITIALIZE DATA BUFFER
         L     R5,BUFFER          R5 => BUFFER
         EZASMI TYPE=READ,        ISSUE READ MACRO                     X
               S=SOCKET,          SOCKET DESCRIPTOR                    X
               NBYTE=4ØØØ,        BUFFER SIZE                          X
               BUF=(R5),          BUFFER ADDRESS                       X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
SYSOUT   EQU   *
         OPEN  (SYOUTDCB,(OUTPUT)) OPEN SYSOUT DCB
         LTR   R15,R15            Q. ANY ERRORS ?
         BNZ   DCBERR2            A. YES - GO TO ERROR RTN
         L     R5,=F'5Ø'          SET LOOP COUNTER
         L     R6,BUFFER          R6 => BUFFER
         LA    R6,3Ø(R6)          R6 => USER DATA
         PUT   SYOUTDCB           GET FIRST BUFFER ADDRESS
WRITE    EQU   *
         MVC   Ø(8Ø,R1),Ø(R6)     SET DATA INTO BUFFER
         LA    R6,8Ø(R6)          INCREMENT DATA POINTER
         CLI   Ø(R6),X'ØØ'        Q. DATA FOUND ?
         BE    CLOSEO             A. NO - GO CLOSE DCB
         CLI   Ø(R6),X'4Ø'        Q. DATA FOUND ?
         BE    CLOSEO             A. NO - GO CLOSE DCB
         PUT   SYOUTDCB           WRITE BUFFERED DATA
         BCT   R5,WRITE           LOOP CONTROL
CLOSEO   EQU   *
         CLOSE SYOUTDCB           CLOSE DCB
         EJECT
***********************************************************************
*        I S S U E   S H U T D O W N                                  *
***********************************************************************
         SPACE 2
SHUTDOWN EQU   *
         MVC   MSGCMD(8),=CL8'SHUTDOWN' SET TCP/IP COMMAND
         EZASMI TYPE=SHUTDOWN,    ISSUE SHUTDOWN MACRO                 X
               S=SOCKET,          SOCKET DESCRIPTOR                    X
               HOW=STOPALL,       END COMMUNICATION                    X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR               A. YES - GO TO ERROR RTN
         EJECT
************************************************************************
*        C L O S E   C O N N E C T I O N                               *
************************************************************************
         SPACE 2
CLOSE    EQU   *
         MVC   MSGCMD(8),=CL8'CLOSE   ' SET TCP/IP COMMAND
         EZASMI TYPE=CLOSE,       ISSUE CLOSE MACRO                    X
               S=SOCKET,          SOCKET DESCRIPTOR                    X
               ERRNO=ERRNO,       ERROR NUMBER FIELD                   X
               RETCODE=RETCODE    RETURN CODE FIELD
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         EJECT
************************************************************************
*        T E R M I N A T E   C O N N E C T I O N   T O   A P I         *
************************************************************************
         SPACE 2
TERMAPI  EQU   *
         MVC   MSGCMD(8),=CL8'TERMAPI ' SET TCP/IP COMMAND
         EZASMI TYPE=TERMAPI      ISSUE TERMAPI MACRO
         CLI   RETCODE,X'FF'      Q. ANY ERRORS DETECTED ?
         BE    ERROR              A. YES - GO TO ERROR RTN
         EJECT
************************************************************************
*        RETURN TO CALLER                                              *
************************************************************************
         SPACE 2
EXIT     EQU   *
         L     R6,BUFFER          R6 => DATA BUFFER
         LA    R6,3Ø(R6)          R6 => USER DATA
         L     R7,=F'1Ø'          R7 = 1Ø
EXITLOOP EQU   *
         CLC   Ø(16,R6),=CL16'RESPONSE CODE = '
         BE    EXITEND
         LA    R6,1(R6)           INCREMENT DATA POINTER
         BCT   R7,EXITLOOP        LOOP CONTROL
         B     FREEMAIN           GO FREEMAIN BUFFER
EXITEND  EQU   *
         LA    R6,16(R6)          R6 => RETURN CODE
         XC    DBLWRD(8),DBLWRD   SET DBLWRD = BINARY ZEROES
         PACK  DBLWRD+3(5),Ø(8,R6) PACK SERVER RETURN CODE
         CVB   R7,DBLWRD          CONVERT RETURN CODE TO BINARY
         C     R7,STEPRC          Q. SERVER RC > STEPRC ?
         BNH   FREEMAIN           A. NO - GO FREEMAIN BUFFER
         ST    R7,STEPRC          A. YES - SET NEW STEP RETURN CODE
FREEMAIN EQU   *
         L     R2,BUFFER          R2 => BUFFER
         FREEMAIN R,LV=4ØØØ,A=(R2)
```

```
SETRC    EQU   *
         L     R15,STEPRC         SET STEP RETURN CODE
         L     R13,SAVE+4         R13 => CALLER'S SAVE AREA
         LM    RØ,R12,2Ø(R13)     RELOAD CALLER'S REGISTERS
         L     R14,12(13)         R14 = CALLER'S RETURN ADDRESS
         BR    R14                RETURN TO CALLER
         EJECT
************************************************************************
*        ERROR ROUTINES                                                *
************************************************************************
         SPACE 2
PARMERR1 EQU   *
         WTO   'JOB PARM LENGTH ERROR DETECTED - PROCESSING TERMINATED'
         MVC   STEPRC(4),=F'8'    SET ERROR RETURN CODE
         B     FREEMAIN           GO ISSUE FREEMAIN AND EXIT
PARMERR2 EQU   *
         WTO   'IP ADDRESS ERROR DETECTED - PROCESSING TERMINATED'
         MVC   STEPRC(4),=F'8'    SET ERROR RETURN CODE
         B     FREEMAIN           GO ISSUE FREEMAIN AND EXIT
PARMERR3 EQU   *
         WTO   'PORT NUMBER ERROR DETECTED - PROCESSING TERMINATED'
         MVC   STEPRC(4),=F'8'    SET ERROR RETURN CODE
         B     FREEMAIN           GO ISSUE FREEMAIN AND EXIT
STGERR   EQU   *
         WTO   'GETMAIN ERROR DETECTED - PROCESSING TERMINATED'
         MVC   STEPRC(4),=F'8'    SET ERROR RETURN CODE
         B     SETRC              GO SET RETURN CODE
DCBERR1  EQU   *
         WTO   'DCB OPEN ERROR DETECTED - PROCESSING TERMINATED'
         MVC   STEPRC(4),=F'8'    SET ERROR RETURN CODE
         B     FREEMAIN
DCBERR2  EQU   *
         WTO   'DCB OPEN ERROR DETECTED - PROCESSING TERMINATED'
         MVC   STEPRC(4),=F'8'    SET ERROR RETURN CODE
         B     SHUTDOWN           GO STOP ALL DATA COMMUNICATIONS
ERROR    EQU   *
         MVI   MSGRCS,C'+'        SET RETURN CODE SIGN
         L     R5,RETCODE         R5 = RETURN CODE
         LTR   R5,R5              Q. RETURN CODE POSITIVE ?
         BNM   POSITIVE           A. YES - GO CONVERT RETURN CODE
         MVI   MSGRCS,C'-'        A. NO - SET RETURN CODE SIGN TO NEG
POSITIVE EQU   *
         CVD   R5,DBLWRD          CONVERT RETURN CODE TO DECIMAL
         UNPK  MSGRC,DBLWRD+4(4)  UNPACK RETURN CODE
         OI    MSGRC+6,X'FØ'      SET ZONE
         L     R5,ERRNO           R5 = ERROR NUMBER
         CVD   R6,DBLWRD          CONVERT ERROR NUMBER TO DECIMAL
         UNPK  MSGERROR,DBLWRD+4(4) UNPACK ERROR NUMBER
         OI    MSGERROR+6,X'FØ'   SET ZONE
         WTO   TEXT=MESSAGE
         MVC   STEPRC(4),=F'8'    SET JOBSTEP RETURN CODE
         CLC   MSGCMD(8),=CL8'INITAPI'  Q. INITAPI ERROR DETECTED ?
         BE    FREEMAIN                 A. YES - GO FREEMAIN BUFFER
         CLC   MSGCMD(8),=CL8'SOCKET '  Q. SOCKET ERROR DETECTED ?
         BE    TERMAPI                  A. YES - GO TERMINATE API
         CLC   MSGCMD(8),=CL8'CONNECT ' Q. CONNECT ERROR ?
         BE    CLOSE                    A. YES - GO CLOSE SOCKET
         CLC   MSGCMD(8),=CL8'GETPEER ' Q. GETPEER ERROR ?
         BE    CLOSE                    A. YES - GO CLOSE SOCKET
         CLC   MSGCMD(8),=CL8'WRITE   ' Q. WRITE ERROR ?
         BE    SHUTDOWN                 A. YES - GO SHUTDOWN COMM
         CLC   MSGCMD(8),=CL8'READ    ' Q. READ ERROR ?
         BE    SHUTDOWN                 A. YES - GO SHUTDOWN COMM
         CLC   MSGCMD(8),=CL8'SHUTDOWN' Q. SHUTDOWN ERROR ?
         BE    CLOSE                    A. YES - GO CLOSE SOCKET
         CLC   MSGCMD(8),=CL8'CLOSE   ' Q. CLOSE ERROR ?
         BE    TERMAPI                  A. YES - GO TERMINATE API
         CLC   MSGCMD(8),=CL8'TERMAPI ' Q. TERMAPI ERROR ?
         BE    FREEMAIN                 A. YES - GO TO FREEMAIN
         EJECT
************************************************************************
*        G L O B A L   V A R I A B L E   S T O R A G E   A R E A       *
************************************************************************
         SPACE 2
EZASMGW  EZASMI TYPE=GLOBAL,STORAGE=CSECT
         EJECT
************************************************************************
*        T A S K   V A R I A B L E   S T O R A G E   A R E A           *
************************************************************************
         SPACE 2
         EZASMI TYPE=TASK,STORAGE=CSECT
         SPACE 2
DBLWRD   DS    D                  WORK AREA
SAVE     DS    18F                SAVE AREA
STEPRC   DS    F                  STEP RETURN CODE
TIOTTAB  DS    F                  TIOT ADDRESS
PARMLST  DS    F                  PARAMETER LIST POINTER
JOBNAME  DS    CL8                SUBTASK PARM VALUE
MAXSNO   DC    F'Ø'               (HIGHEST SOCKET DESCRIPTOR AVAILABLE)
MAXSOC   DC    H'1Ø'              MAXSOC PARM VALUE
SOCKET   DS    H                  PORT NUMBER
APITYPE  DC    H'2'               OR PUT A 3 HERE
         CNOP  Ø,4
CONNPARM DS    ØCL16              SOCKET NAME STRUCTURE
         DC    AL2(2)             FAMILY
PORT     DS    H                  PORT NUMBER
IPADDRS  DS    F                  IP ADDRESS
         DC    XL8'Ø'             RESERVED
FULLWRDØ DC    F'Ø'               STEP RETURN CODE
BUFFER   DS    F                  GETMAINED SEND BUFFER ADDRESS
```

```
STOPALL  DC    F'2'               STOP ALL COMUNICATIONS
MESSAGE  DS    ØF'Ø'              MESSAGE AREA
         DC    AL2(MSGEND-MSGNAME) LENGTH OF MESSAGE
MSGNAME  DC    CL1Ø'TCHTCPIP: '   PROGRAM NAME
MSGCMD   DS    CL8' '             COMMAND ISSUED
         DC    CL1Ø' RETCODE='    ' RETCODE= '
MSGRCS   DS    CL1' '             RETURNED VALUE (RETCODE)
MSGRC    DS    CL7' '             RETURNED VALUE (RETCODE)
         DC    CL1Ø' ERRNO='      ' ERRNO=   '
MSGERROR DS    CL7' '             RETURNED VALUE (ERRNO)
MSGEND   EQU   *                  END OF MESSAGE
NUMFIELD DS    XL4                TCPIP NUMERIC CHECK ADDRESS FIELD
SYSINDCB DCB   DSORG=PS,MACRF=(GL),DDNAME=SYSIN,EODAD=CLOSEDCB,        X
               RECFM=FB,LRECL=8Ø,BLKSIZE=8Ø
SYOUTDCB DCB   DSORG=PS,MACRF=(PL),DDNAME=SYSOUT,RECFM=FB,LRECL=8Ø,    X
               BLKSIZE=8Ø
RETCODE  DS    F
ERRNO    DS    F
         LTORG
         END
```

We use this process to close files for batch processing. The following program, TCHCLOSE, executes within the CICS TS address to close files:

```
         TITLE 'TCHCLOSE - FILE CLOSE PROGRAM'
         EJECT
         DFHREGS
         EJECT
***********************************************************************
* TECHNICAL SUPPORT - DAVE MUNGER                                     *
* MODULE NAME - TCHCLOSE                                              *
* LANGUAGE - ASSEMBLER                                                *
* DESCRIPTION - THIS PROGRAM ADDRESSES A LIST OF FILES TO BE CLOSED   *
*               IN A COMMAREA AND ISSUES THE CICS CLOSE COMMANDS.     *
*               THE RESPONSE CODES FOR EACH FILE CLOSE COMMAND IS     *
*               PLACED TO THE RIGHT OF EACH FILE NAME IN THE COMMAREA.*
*               AS THIS PROGRAM CLOSES FILES THE HIGHEST RETURN CODE  *
*               RETURNED IS RECORDED IN THE FIRST 8Ø-BYTE LOGICAL     *
*               RECORD IN THE COMMAREA.                               *
***********************************************************************
DFHEISTG DSECT ,
BCD      DS    D                  WORK AREA
RESPCODE DS    F                  COMMAREA RECORD RETURN CODE
RESP     DS    F                  CICS RESPONSE CODE
FILENAME DS    CL8                CICS FILE NAME
OUTPUT   DS    CL8Ø               OUTPUT DATA BUFFER
TCHCLOSE CSECT
TCHCLOSE AMODE 31
TCHCLOSE RMODE ANY
```

```
         L     R4,DFHEICAP        R4 => COMMAREA
         XC    RESPCODE(4),RESPCODE RESPCODE = ZEROES
LOOP     EQU   *
         LA    R4,8Ø(R4)          R4 => FILE NAME
         MVC   FILENAME(8),Ø(R4)  SET FILENAME
         CLI   FILENAME,X'4Ø'     Q. FILENAME FOUND ?
         BE    EXIT               A. NO - GO EXIT
         CLI   FILENAME,X'ØØ'     Q. FILENAME FOUND ?
         BE    EXIT               A. NO - GO EXIT
         EXEC CICS SET FILE(FILENAME) CLOSED DISABLED RESP(RESP)
         MVC   OUTPUT(L'MESSAGE),MESSAGE SET MESSAGE INTO DATA BUFFER
         MVC   OUTPUT+16(8),FILENAME SET FILENAME INTO MESSAGE
         L     R5,RESP            R5 = RESP
         CVD   R5,BCD             CONVERT TO DECIMAL
         UNPK  OUTPUT+55(8),BCD   SET RETURN CODE INTO OUTPUT
         OI    OUTPUT+62,X'FØ'    SET SIGN
         EXEC CICS WRITEQ TD QUEUE('CSSL') FROM(OUTPUT) LENGTH(8Ø)
         MVC   9(5,R4),=CL5'RESP=' SET 'RESP=' INTO COMMAREA
         MVC   14(8,R4),OUTPUT+55 SET RESP CODE INTO COMMAREA
         CLC   RESPCODE(4),RESP   Q. RESPCODE > RESP
         BH    LOOP               A. YES - CONTINUE PROCESSING
         MVC   RESPCODE(4),RESP   SET RESPCODE = RESP
         B     LOOP               CONTINUE PROCESSING FILE REQ
         DFHEJECT
********************************************************************
* * *    E X I T   P R O C E S S I N G                         * * *
********************************************************************
         SPACE
EXIT     EQU  *
         L     R4,DFHEICAP        R4 => COMMAREA
         MVC   Ø(25,R4),=CL25'TCHCLOSE RESPONSE CODE = '
         L     R5,RESPCODE        R5 = RESPCODE
         CVD   R5,BCD             CONVERT TO DECIMAL
         UNPK  25(8,R4),BCD       SET RETURN CODE INTO OUTPUT
         OI    32(R4),X'FØ'       SET SIGN
         EXEC CICS RETURN
         DFHEJECT
********************************************************************
* * *    P R O G R A M   C O N S T A N T S                     * * *
********************************************************************
         SPACE
MESSAGE  DC    CL63'TCHCLOSE - FILE XXXXXXXX CLOSED / DISABLED RESPX
               ONCE = XXXXXXXX'
         END
```

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Resource definition display and alter commands – part 1

The resource definition displays provided by CICS standard facilities do not always provide the detail or the summary level information desired. Here is a utility that will list files by various categories and provide the ability to alter individual file and transaction attributes dynamically. It does not use RDO but the dynamic create facility introduced with CICS Version 4.

At the summary level (see Figure1), files are grouped in the following categories:

- By first three bytes of the datasetname.
- By remote system.
- By LSR buffer pool or NSR.

From the summary screen an individual category can be selected using the cursor to display all the files within that category (see Figure 2). The file list can be browsed forwards and backwards.

Individual files can then be selected by cursor from the category lists in order to display the detailed file attributes (see Figure 3). If desired, the attributes can be altered. Files are automatically closed and re-opened in order to change attributes. If an existing file is entered as a remote name or *vice versa* at the detail level, the transaction will switch to the correct mode.

Useful applications of this utility include:

- Identifying files using NSR and moving them into LSR and back easily.
- Finding LRECL and KEYLENGTH easily when preparing remote definitions.
- Creating new files in test environments using existing models.
- Tuning LSR dynamically by moving files from one bufferpool to another.

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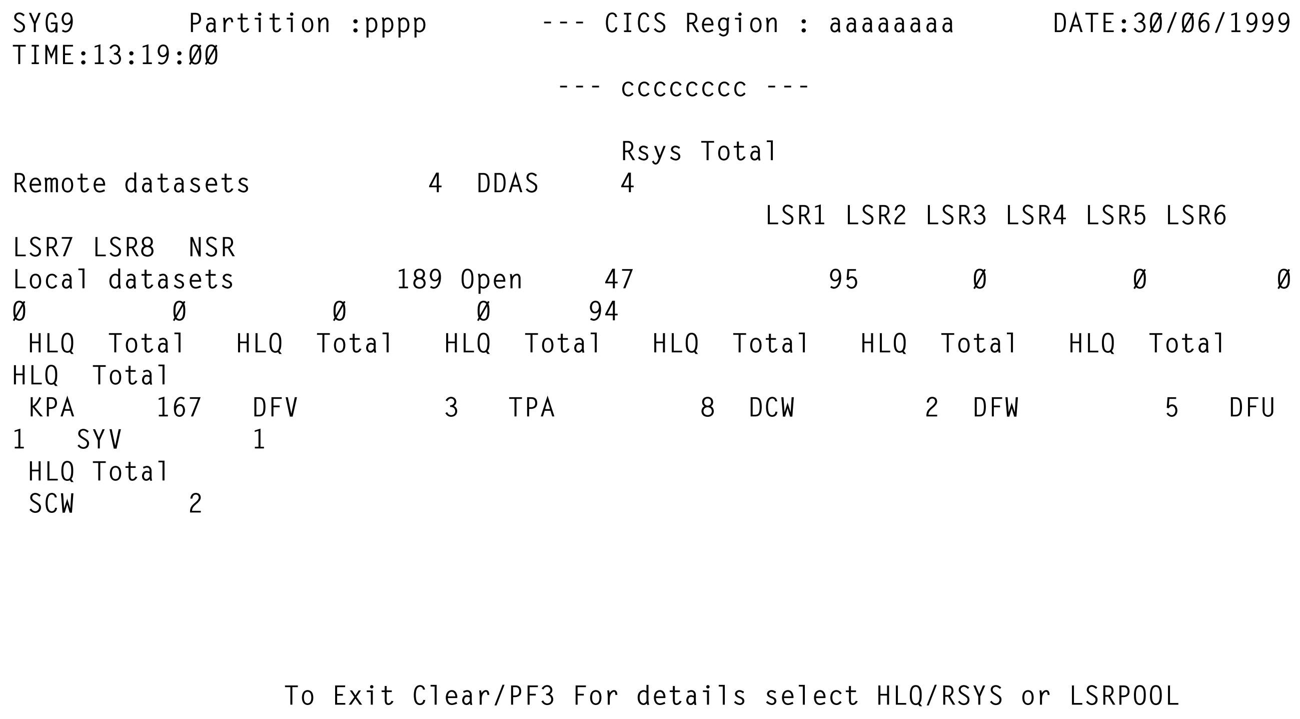

```
SYG9       Partition :pppp       --- CICS Region : aaaaaaaa      DATE:3Ø/Ø6/1999
TIME:13:19:ØØ
                                  --- cccccccc ---

                                      Rsys Total
Remote datasets           4  DDAS     4
                                               LSR1 LSR2 LSR3 LSR4 LSR5 LSR6
LSR7 LSR8  NSR
Local datasets          189 Open     47            95       Ø         Ø        Ø
Ø         Ø         Ø        Ø      94
 HLQ  Total   HLQ  Total   HLQ  Total   HLQ  Total   HLQ  Total   HLQ  Total
HLQ  Total
 KPA    167   DFV         3   TPA         8  DCW        2  DFW         5   DFU
1   SYV        1
 HLQ Total
 SCW      2



                 To Exit Clear/PF3 For details select HLQ/RSYS or LSRPOOL
```

Figure 1: Primary display

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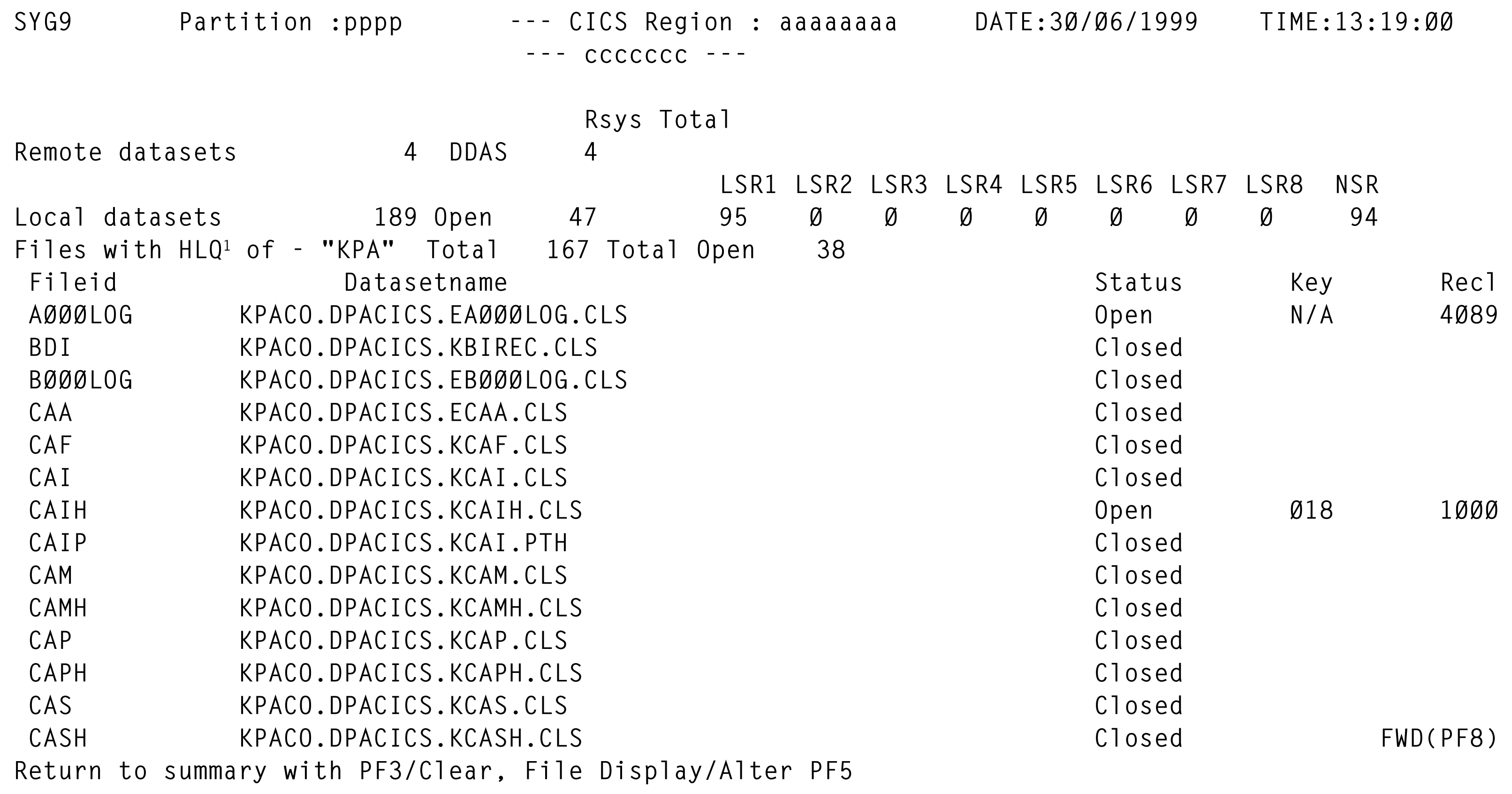
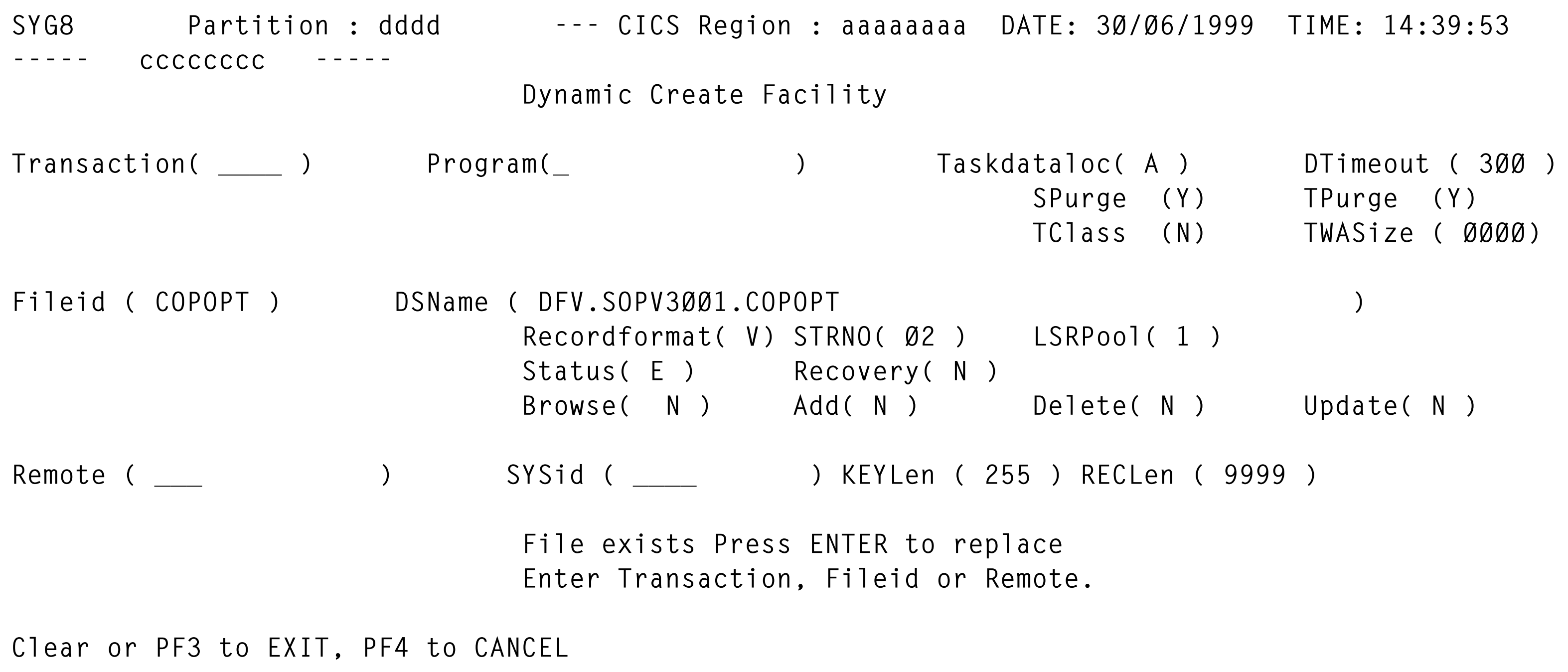


```
SYG9       Partition :pppp       --- CICS Region : aaaaaaaa     DATE:3Ø/Ø6/1999    TIME:13:19:ØØ
                                  --- ccccccc ---

                                      Rsys Total
Remote datasets           4  DDAS     4
                                               LSR1 LSR2 LSR3 LSR4 LSR5 LSR6 LSR7 LSR8  NSR
Local datasets          189 Open     47        95    Ø    Ø    Ø    Ø    Ø    Ø    Ø     94
Files with HLQ[1] of - "KPA"  Total   167 Total Open    38
 Fileid               Datasetname                                       Status       Key       Recl
 AØØØLOG      KPACO.DPACICS.EAØØØLOG.CLS                               Open         N/A       4Ø89
 BDI          KPACO.DPACICS.KBIREC.CLS                                 Closed
 BØØØLOG      KPACO.DPACICS.EBØØØLOG.CLS                               Closed
 CAA          KPACO.DPACICS.ECAA.CLS                                   Closed
 CAF          KPACO.DPACICS.KCAF.CLS                                   Closed
 CAI          KPACO.DPACICS.KCAI.CLS                                   Closed
 CAIH         KPACO.DPACICS.KCAIH.CLS                                  Open         Ø18       1ØØØ
 CAIP         KPACO.DPACICS.KCAI.PTH                                   Closed
 CAM          KPACO.DPACICS.KCAM.CLS                                   Closed
 CAMH         KPACO.DPACICS.KCAMH.CLS                                  Closed
 CAP          KPACO.DPACICS.KCAP.CLS                                   Closed
 CAPH         KPACO.DPACICS.KCAPH.CLS                                  Closed
 CAS          KPACO.DPACICS.KCAS.CLS                                   Closed
 CASH         KPACO.DPACICS.KCASH.CLS                                  Closed             FWD(PF8)
Return to summary with PF3/Clear, File Display/Alter PF5
```

Figure 2: Selected detail display



```
SYG8       Partition : dddd       --- CICS Region : aaaaaaaa  DATE: 3Ø/Ø6/1999  TIME: 14:39:53
-----   cccccccc   -----
                                Dynamic Create Facility

Transaction( ____ )       Program(_              )        Taskdataloc( A )       DTimeout ( 3ØØ )
                                                                SPurge  (Y)      TPurge   (Y)
                                                                TClass  (N)      TWASize ( ØØØØ)

Fileid ( COPOPT )       DSName ( DFV.SOPV3ØØ1.COPOPT                                 )
                                Recordformat( V) STRNO( Ø2 )    LSRPool( 1 )
                                Status( E )      Recovery( N )
                                Browse(  N )     Add( N )       Delete( N )      Update( N )

Remote ( ___           )       SYSid ( ____       ) KEYLen ( 255 ) RECLen ( 9999 )

                                File exists Press ENTER to replace
                                Enter Transaction, Fileid or Remote.

Clear or PF3 to EXIT, PF4 to CANCEL
```

Figure 3: Resource display and detail

The detail level transaction also allows transactions to be displayed, altered, and added. If TCLASS(Y) is chosen, a TRANCLASS is automatically created using the naming convention CMXTtttt, where tttt is the transaction identifier.

All parameters are validated and some rules applied. For example, transactions beginning ‘C’ or programs beginning ‘DFH’ are not allowed. Certain defaults are supplied for new definitions (which can be overridden). These defaults may differ from IBM defaults, for example TASKDATALOC takes the default A (Any).

When CICS create is used, all changes can be logged to the CSSL destination, which can act as an audit trail.

INSTALLING THE UTILITY

There are two Assembler programs, SYG8 and SYG9, and two maps, SYMSYG8 and SYMSYG9, that need to be defined to RDO. Two transactions, SYG8 and SYG9, should be defined pointing to programs SYG8 and SYG9 respectively.

The programs and maps supplied should be assembled/linked into an appropriate library in the CICS RPL chain.

SYG9 – FILE SUMMARY DISPLAY

Adjust the code in TOPMODE to suit your own LPAR naming convention.

```
*ASM XOPTS(SP)
SYG9 RMODE ANY
*-----------------------------------------------------------------------
*      PROGRAM     : SYG9
*      DESCRIPTION : This module counts and displays the number
*                     of local files, remote files, and open files.
*                     It also counts them by HLQ of the DSN,
*                     remote sysid, and LSRPOOL.
*                     HLQs LSRPOOLS and remote sysids can be selected by
*                     cursor in order to display a list of files.
*
*-----------------------------------------------------------------------
R1        EQU   1
R2        EQU   2
```

```
EIBREG   EQU   3
DATAREG  EQU   4
BASE1    EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
RA       EQU   1Ø
LINKREG  EQU   11
RC       EQU   12
         COPY DFHAID
DFHEISTG  DSECT
COMMAS    DS   ØH
OFFSET    DS   H
TSTAT     DS   CL1
HLQPOS    DS   PL4
MOREBWD   DS   CL1
MOREFWD   DS   CL1
MODEFLG   DS   CL1
OPENSTAT  DS   F
FTYPE     DS   F
LSRNUM    DS   F
RSYS      DS   CL4
WDDN      DS   CL8
WDSN      DS   CL44
ATIME     DS   PL8
APPL      DS   CL8
DWORK     DS   D
INQKLEN   DS   F
INQRLEN   DS   F
INLENG    DS   H
TOTLOCL   DS   PL3
TOTOPEN   DS   PL3
TOTREMT   DS   PL3
TOTNSR    DS   PL3
TOTLSR1   DS   PL3
TOTLSR2   DS   PL3
TOTLSR3   DS   PL3
TOTLSR4   DS   PL3
TOTLSR5   DS   PL3
TOTLSR6   DS   PL3
TOTLSR7   DS   PL3
TOTLSR8   DS   PL3
COLCNT    DS   PL1
RSYSTAB   DS   CL35
HLQTAB    DS   CL168
HLQTAB1   DS   CL168
HLQSEL    DS   CL3
RSYSSEL   DS   CL4
HLQCNTR   DS   PL3
```

```
HLQCNTO   DS   PL3
FILETAB   DS   CL98Ø
FILECNT   DS   PL2
FILPOS    DS   PL4
CF        DS   CL9
          COPY SYMSYG9
*
SYG9      DFHEIENT CODEREG=(BASE1),      *
                   EIBREG=(EIBREG),
*
                   DATAREG=(DATAREG)
          B    BEGIN
          DC   CL12'PROGRAM ID: '
          DC   CL8'SYG9 '
          DC   CL4';   '
          DC   CL24'ASSEMBLY TIME AND DATE:'
          DC   CL8'&SYSTIME'
          DC   CL8'&SYSDATE'
BEGIN     DS   ØH
          CLC  EIBCALEN,=H'Ø'        Any Commarea?
          BE   BEGIN1                First Time Through
          L    RA,DFHEICAP           Address Commarea
          MVC  COMMAS(1Ø),Ø(RA)      Move into dynamic
          EXEC CICS HANDLE AID PF3(RETURN1) CLEAR(RETURN1)      *
                               PF7(PAGEBWD) PF8(PAGEFWD)
          EXEC CICS RECEIVE LENGTH(INLENG)
          CLI  TSTAT,X'2Ø'           At detail level ?
          BE   UPORDWN               Hold position
          CLC  EIBCPOSN,=H'344'      Cursor before sysid area
          BL   BEGIN1                So ignore
          CLC  EIBCPOSN,=H'387'      Cursor beyond sysid area
          BH   LSRCUR                So check HLQ area
          XR   R8,R8                             Clear offset reg
          MVI  MODEFLG,C'R'            Set remote mode
          CLC  EIBCPOSN,=H'355'        1st sysid ?
          BL   SELEND                  Yes
          LA   R8,7(R8)
          CLC  EIBCPOSN,=H'366'        2nd sysid ?
          BL   SELEND                  Yes
          LA   R8,7(R8)
          CLC  EIBCPOSN,=H'377'         3rd sysid ?
          BL   SELEND                   Yes
          LA   R8,7(R8)
          B    SELEND                  Must be 4th then
LSRCUR    DS   ØH
          CLC  EIBCPOSN,=H'515'        Cursor before LSR area
          BL   BEGIN1                  So ignore
          CLC  EIBCPOSN,=H'559'        Cursor beyond LSR area
          BH   HLQCUR                  So check HLQ area
          XR   R8,R8                   Clear offset reg
          MVI  MODEFLG,C'L'                Set LSR mode
          CLC  EIBCPOSN,=H'554'            Cursor In NSR area
          BH   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL1
          CLC  EIBCPOSN,=H'52Ø'            Cursor in LSR1 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL2
          CLC  EIBCPOSN,=H'525'            Cursor in LSR2 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL3
          CLC  EIBCPOSN,=H'53Ø'            Cursor in LSR3 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL4
          CLC  EIBCPOSN,=H'535'            Cursor in LSR4 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL5
          CLC  EIBCPOSN,=H'54Ø'            Cursor in LSR5 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL6
          CLC  EIBCPOSN,=H'545'            Cursor in LSR6 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL7
          CLC  EIBCPOSN,=H'55Ø'            Cursor in LSR7 area
          BL   SELEND                      So Finished
          LA   R8,1(R8)                    LSRPOOL8
          B    SELEND                      Finished
HLQCUR    DS   ØH
          CLC  EIBCPOSN,=H'641'            Cursor before HLQ area
          BL   BEGIN1                      So ignore
          CLC  EIBCPOSN,=H'182Ø'           Cursor After last HLQ
          BH   BEGIN1                      So ignore
          XR   R6,R6                       Clear R6
          LH   R7,EIBCPOSN                 Cursor position
          SH   R7,=H'641'                  Minus lines above HLQ
          XR   R8,R8                       Clear R8 (offset)
SELLOOP   DS   ØH
          CH   R7,=H'159'                  On this line ?
          BH   SELNEXT                     Try next
          CH   R7,=H'69'                   Beyond HLQ on this line ?
          BH   BEGIN1                      So ignore
          LH   R9,=H'1Ø'
          DR   R6,R9                       Divide by ten
          MH   R7,=H'6'                    Multiply by six
          AR   R8,R7                       Add to offset
          B    SELEND                      As if by magic !
SELNEXT   DS   ØH
          SH   R7,=H'16Ø'                  Take off a couple of lines
          LA   R8,42(R8)                   Add in the offset
          B    SELLOOP                     And round we go
SELEND    DS   ØH
          STH  R8,OFFSET                   Save for later
```

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```
          MVI  TSTAT,X'1Ø'                     Set flag for later
          ZAP  HLQPOS,=P'Ø'                    Set position
          MVI  MOREBWD,X'ØØ'                   Clear flags
          MVI  MOREFWD,X'ØØ'
          B    BEGIN2                          Run normal Scan
PAGEBWD   DS   ØH
          CLI  TSTAT,X'2Ø'                     Only at detail level
          BNE  BEGIN1                          Ignore request
          CLI  MOREBWD,X'1Ø'                   Are there any ?
          BNE  UPORDWN                         No ignore request
          SP   HLQPOS,=P'14'                   Prev 14 Files
          CP   HLQPOS,=P'Ø'                    Now at start ?
          BNE  UPORDWN                         No
          MVI  MOREBWD,X'ØØ'                   Stop going back
          B    UPORDWN                         Common code
PAGEFWD   DS   ØH
          CLI  TSTAT,X'2Ø'                     Only at detail level
          BNE  BEGIN1                          Ignore request
          CLI  MOREFWD,X'1Ø'                   Are there any ?
          BNE  UPORDWN                         No ignore request
          AP   HLQPOS,=P'14'                   Next 14 Files
          MVI  MOREBWD,X'1Ø'                   Must be now
          MVI  MOREFWD,X'ØØ'                   Reset for counter
UPORDWN   DS   ØH
          ZAP  FILPOS,=P'Ø'
          LA   R8,FILETAB                      To store file info
          ZAP  FILECNT,=P'Ø'                   and a counter
          MVI  TSTAT,X'1Ø'
          B    BEGIN2                          Run normal Scan
BEGIN1    DS   ØH
          MVI  TSTAT,X'ØØ'
BEGIN2    DS   ØH
          ZAP  TOTLOCL,=P'Ø'                   Zero Local  count
          ZAP  TOTREMT,=P'Ø'                   Zero Remote count
          ZAP  TOTOPEN,=P'Ø'                   Zero Open   count
          ZAP  TOTNSR,=P'Ø'                    Zero NSR    count
          ZAP  TOTLSR1,=P'Ø'                   Zero LSR1   count
          ZAP  TOTLSR2,=P'Ø'                   Zero LSR2   count
          ZAP  TOTLSR3,=P'Ø'                   Zero LSR3   count
          ZAP  TOTLSR4,=P'Ø'                   Zero LSR4   count
          ZAP  TOTLSR5,=P'Ø'                   Zero LSR5   count
          ZAP  TOTLSR6,=P'Ø'                   Zero LSR6   count
          ZAP  TOTLSR7,=P'Ø'                   Zero LSR7   count
          ZAP  TOTLSR8,=P'Ø'                   Zero LSR8   count
          MVC  RSYSTAB,RSYITAB                 Initialize RSYSTAB
          MVC  HLQTAB(168),HLQITAB             Initialize
          MVC  HLQTAB1(162),HLQITAB                 HLQ
          MVC  HLQTAB1+162(6),ENDMARK                 Table
          EXEC CICS HANDLE CONDITION END(FILEND)
          EXEC CICS INQUIRE FILE START
FILLOOP   DS   ØH
```

```
          EXEC CICS INQUIRE FILE(WDDN) NEXT                            *
          DSNAME(WDSN) REMOTESYSTEM(RSYS)                              *
          OPENSTATUS(OPENSTAT) LSRPOOLID(LSRNUM)                       *
          KEYLENGTH(INQKLEN) RECORDSIZE(INQRLEN)                       *
          ACCESSMETHOD(FTYPE)
          CLC  FTYPE,DFHVALUE(REMOTE)          Is it Remote ?
          BE   CNTREM                          Count it
          AP   TOTLOCL,=P'1'                   Must be Local then
          CLC  LSRNUM,=F'1'                    LSR Pool count
          BNE  CLSR8
          AP   TOTLSR1,=P'1'
          B    CNTOPEN
CLSR8     DS   ØH
          CLC  LSRNUM,=F'8'                    LSR Pool count
          BNE  CLSRØ
          AP   TOTLSR8,=P'1'
          B    CNTOPEN
CLSRØ     DS   ØH
          CLC  LSRNUM,=F'Ø'                    LSR Pool count
          BNE  CLSR2
          AP   TOTNSR,=P'1'
          B    CNTOPEN
CLSR2     DS   ØH
          CLC  LSRNUM,=F'2'                    LSR Pool count
          BNE  CLSR3
          AP   TOTLSR2,=P'1'
          B    CNTOPEN
CLSR3     DS   ØH
          CLC  LSRNUM,=F'3'                    LSR Pool count
          BNE  CLSR4
          AP   TOTLSR3,=P'1'
          B    CNTOPEN
CLSR4     DS   ØH
          CLC  LSRNUM,=F'4'                    LSR Pool count
          BNE  CLSR5
          AP   TOTLSR4,=P'1'
          B    CNTOPEN
CLSR5     DS   ØH
          CLC  LSRNUM,=F'5'                    LSR Pool count
          BNE  CLSR6
          AP   TOTLSR5,=P'1'
          B    CNTOPEN
CLSR6     DS   ØH
          CLC  LSRNUM,=F'6'                    LSR Pool count
          BNE  CLSR7
          AP   TOTLSR6,=P'1'
          B    CNTOPEN
CLSR7     DS   ØH
          CLC  LSRNUM,=F'7'                   LSR Pool count
          BNE  CNTOPEN                        Shouldn't happen
          AP   TOTLSR7,=P'1'
CNTOPEN   DS   ØH
```

```
          CLC  OPENSTAT,DFHVALUE(OPEN)        Is it Open ?
          BNE  HLQCNT                         No, count HLQ
          AP   TOTOPEN,=P'1'                  Count open
          B    HLQCNT                         And count HLQ
CNTREM    DS   ØH
          AP   TOTREMT,=P'1'
          LA   R7,RSYSTAB
SYSLOOP   DS   ØH
          CLC  RSYS,Ø(R7)                     Match on SYS
          BE   SYSMATCH
          CLI  Ø(R7),X'4Ø'                    Free Entry
          BNE  NOTFSYS
          MVC  Ø(4,R7),RSYS                   Add Table Entry
          B    SYSMATCH
NOTFSYS   DS   ØH
          CLI  Ø(R7),X'ØØ'                    End of Table
          BE   SYSMATCH                       End bucket
          LA   R7,7(R7)                       Try Next Entry
          B    SYSLOOP
SYSMATCH  DS   ØH
          AP   4(3,R7),=P'1'                  Add 1 to count
          CLI  MODEFLG,C'R'                   Remote detail mode ?
          BE   HLQCNT                         Yes
          CLI  MODEFLG,C'L'                   LSR detail mode ?
          BE   HLQCNT                         Yes
          B    FILLOOP                        On to the next File
SETFWD    DS   ØH
          MVI  MOREFWD,X'1Ø'                  Must be now
          B    FILLOOP                        Just count
HLQCNT    DS   ØH
          CLI  TSTAT,X'2Ø'                    Single HLQ scan ?
          BNE  HLQCNT1                        No
          CLI  MODEFLG,C'R'                   Remote detail mode ?
          BNE  NOTREM                         No
          CLC  RSYS,RSYSSEL                   Match on RSYSID
          BNE  FILLOOP                        No Ignore it
          B    NOTOPN
NOTREM    DS   ØH
          CLI  MODEFLG,C'L'                   LSR detail mode ?
          BNE  NOTLSR                         No
          CLC  LSRNUM,RSYSSEL                 Match on LSRPOOL
          BNE  FILLOOP                        No Ignore it
          B    NOTLSR1
NOTLSR    DS   ØH
          CLC  WDSN(3),HLQSEL                 Match on HLQ
          BNE  FILLOOP                        No Ignore it
NOTLSR1   DS   ØH
          CLC  OPENSTAT,DFHVALUE(OPEN)           Is it Open ?
          BNE  NOTOPN                            don't count it
          AP   HLQCNTO,=P'1'                     Count it
NOTOPN    DS   ØH
```

```
          AP   HLQCNTR,=P'1'                      Count for display
          CP   FILECNT,=P'14'                     Only 14 slots
          BE   SETFWD                             Show more
          AP   FILPOS,=P'1'                       Keep position
          CP   FILPOS,HLQPOS                      Are we there yet ?
          BNH  FILLOOP                            No
          MVI  Ø(R8),X'4Ø'                        Store File details
          MVC  1(8,R8),WDDN
          CLI  MODEFLG,C'R'                       Remote ?
          BE   UPCNT                              So no DSN/Open info
          MVI  9(R8),X'4Ø'
          MVC  1Ø(44,R8),WDSN
          MVC  54(8,R8),=C' Closed '
          MVC  62(8,R8),=C'        '              Clear Key/Recl
          CLC  OPENSTAT,DFHVALUE(OPEN)            Is it Open ?
          BNE  UPCNT
          MVC  54(8,R8),=C' Open   '
          L    R7,INQKLEN                         Keyleng in binary
          CVD  R7,DWORK                           must be converted to
          UNPK 62(3,R8),DWORK+5(3)                display
          OC   64(1,R8),=X'FØ'                    Make sign X'Fn
          CLC  62(3,R8),=C'ØØØ'                   No Key ?
          BNE  NAKEY
          MVC  62(3,R8),=C'N/A'
NAKEY     DS   ØH
          L    R7,INQRLEN                         Recleng in binary
          CVD  R7,DWORK                           must be converted to
          UNPK 66(4,R8),DWORK+4(4)                display
          OC   69(1,R8),=X'FØ'                    Make sign X'Fn
UPCNT     DS   ØH
          LA   R8,7Ø(R8)                          Next entry
          AP   FILECNT,=P'1'
          B    FILLOOP                            Get next
HLQCNT1   DS   ØH
          LA   R7,HLQTAB
HLQLOOP   DS   ØH
          CLC  WDSN(3),Ø(R7)                      Match on HLQ
          BE   HLQMATCH
          CLI  Ø(R7),X'4Ø'                        Free Entry
          BNE  NOTFREE
          MVC  Ø(3,R7),WDSN                       Add Table Entry
          B    HLQMATCH
NOTFREE   DS   ØH
          CLI  Ø(R7),X'ØØ'                        End of Table
          BE   HLQMATCH                           End bucket
          LA   R7,6(R7)                           Try Next Entry
          B    HLQLOOP
HLQMATCH  DS   ØH
          AP   3(3,R7),=P'1'                      Add 1 to count
          B    FILLOOP                            On to the next File
FILEND    DS   ØH
```

```
          EXEC CICS INQUIRE FILE END
          CLI  TSTAT,X'ØØ'                        Summary Level ?
          BE   TOPMODE                            Yes go display
          CLI  TSTAT,X'2Ø'                        Detail Display ?
          BE   TOPMODE                            Yes go display
          CLI  MODEFLG,C'R'                       Remote scan ?
          BNE  NORMSCN2                           No check lsr?
          LA   R7,RSYSTAB
          AH   R7,OFFSET                          Get rsysid
          MVC  RSYSSEL,Ø(R7)                      And Store it
          CLI  RSYSSEL,X'4Ø'                      Empty area ?
          BE   BEGIN1                             Ignore
          B    NORMSCN1                           Carry on
NORMSCN2  DS   ØH
          CLI  MODEFLG,C'L'                       LSR scan ?
          BNE  NORMSCN                            No normal
          XC   RSYSSEL,RSYSSEL                    Clear RSYSSEL
          MVC  RSYSSEL+2(2),OFFSET                And Store offset
          B    NORMSCN1                           Carry on
NORMSCN   DS   ØH
          LA   R7,HLQTAB                          Detail scan
          AH   R7,OFFSET                          Get selected HLQ
          MVC  HLQSEL,Ø(R7)                       And Store it
          CLI  HLQSEL,X'4Ø'                       Empty area ?
          BE   BEGIN1                             Ignore
NORMSCN1  DS   ØH
          LA   R8,FILETAB                         To store file info
          ZAP  FILECNT,=P'Ø'                      and a counter
          ZAP  FILPOS,=P'Ø'                       and a positioner
          ZAP  HLQCNTR,=P'Ø'                      HLQ counter
          ZAP  HLQCNTO,=P'Ø'                      HLQ open counter
          MVI  TSTAT,X'2Ø'                        Set Flag and rescan
          B    BEGIN2
TOPMODE   DS   ØH
          EXEC CICS ASSIGN APPLID(APPL)
          MVC  REGIO,APPL                         Move Applid to Map
          MVC  PARTIO,=C'DEVL'
          CLC  APPL+3(1),=C'C'                    PROD is C
          BNE  GTIME
          MVC  PARTIO,=C'PROD'
GTIME     DS   ØH
          EXEC CICS ASKTIME ABSTIME(ATIME)
          EXEC CICS FORMATTIME ABSTIME(ATIME) DDMMYYYY(DATEO)          *
          TIME(TIMEO) DATESEP TIMESEP
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTREMT
          MVC  RTOTOUTO,OUTCTR+1                  Remote Total
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLOCL
          MVC  LTOTOUTO,OUTCTR+1                  Local Total
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTOPEN
          MVC  OTOTOUTO,OUTCTR+1                    Open Total
          LA   R7,LSRHEDO
          LA   R8,LSRDETO
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR1
          MVC  Ø(5,R7),=C'LSR1 '
          MVC  Ø(4,R8),OUTCTR+2                     LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYLSR2   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR2
          MVC  Ø(5,R7),=C'LSR2 '
          MVC  Ø(4,R8),OUTCTR+2                     LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYLSR3   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR3
          MVC  Ø(5,R7),=C'LSR3 '
          MVC  Ø(4,R8),OUTCTR+2                     LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYLSR4   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR4
          MVC  Ø(5,R7),=C'LSR4 '
          MVC  Ø(4,R8),OUTCTR+2                     LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYLSR5   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR5
          MVC  Ø(5,R7),=C'LSR5 '
          MVC  Ø(4,R8),OUTCTR+2                     LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYLSR6   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR6
          MVC  Ø(5,R7),=C'LSR6 '
          MVC  Ø(4,R8),OUTCTR+2                     LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYLSR7   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR7
          MVC  Ø(5,R7),=C'LSR7 '
          MVC  Ø(4,R8),OUTCTR+2                    LSR Totals
          LA   R7,5(R7)
```

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```
          LA   R8,5(R8)
TRYLSR8   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTLSR8
          MVC  Ø(5,R7),=C'LSR8 '
          MVC  Ø(4,R8),OUTCTR+2                   LSR Totals
          LA   R7,5(R7)
          LA   R8,5(R8)
TRYNSR    DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,TOTNSR
          MVC  Ø(5,R7),=C' NSR '
          MVC  Ø(4,R8),OUTCTR+2                   NSR Totals
ENDNSR    DS   ØH
          LA   R7,RSYSTAB
          LA   R8,RDET1O
          LA   R9,RDET2O
SYOLOOP   DS   ØH
          CLI  Ø(R7),X'4Ø'                        Last entry ?
          BE   HLQOUT
          MVC  Ø(1Ø,R8),=C'Rsys Total'            Move heading
          MVC  Ø(4,R9),Ø(R7)                      Move sysid
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,4(R7)
          MVC  5(5,R9),OUTCTR+1                   Move total
          CLI  Ø(R7),X'ØØ'                        Bucket entry ?
          BE   SYSBUCK
          LA   R7,7(R7)                           Get next entry
          LA   R8,11(R8)                          Up display
          LA   R9,11(R9)                          pointers
          B    SYOLOOP                            Any more ?
SYSBUCK   DS   ØH
          MVC  Ø(1Ø,R8),=C'     Other'            Move heading
HLQOUT    DS   ØH
          CLI  TSTAT,X'2Ø'                        Detail Display ?
          BE   HLQDET                             Yes go display
          MVC  HOUTO,HM1                          Move footer
          LA   R7,HLQTAB
          ZAP  COLCNT,=P'1'                       Count HLQ
          LA   R8,LHED1O
          LA   R9,LDET1O
HLOLOOP   DS   ØH
          CLI  Ø(R7),X'4Ø'                        Last entry ?
          BE   SNDMAPE
          MVC  Ø(9,R8),=C'HLQ Total'              Move heading
          MVC  Ø(3,R9),Ø(R7)                      Move HLQ
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,3(R7)
          MVC  4(5,R9),OUTCTR+1                   Move total
          CLI  Ø(R7),X'ØØ'                        Bucket entry ?
          BE   HLQBUCK
          LA   R7,6(R7)                             Get next entry
          LA   R8,1Ø(R8)                            Up display
          LA   R9,1Ø(R9)                            pointers
          AP   COLCNT,=P'1'                         Next Column
          CP   COLCNT,=P'8'                         Seven per row
          BL   HLOLOOP
          LA   R8,92(R8)                            Up display
          LA   R9,92(R9)                            pointers
          ZAP  COLCNT,=P'1'                         Next Line
          B    HLOLOOP                              Any more ?
HLQBUCK   DS   ØH
          MVC  Ø(9,R8),=C'    Other'                Move heading
          B    SNDMAPE                              Send Map
HLQDET    DS   ØH
          MVC  HOUTO,HM2                            Move footer
          LA   R8,LHED1O
          MVI  Ø(R8),C' '                           Make it appear
          CLI  MODEFLG,C'R'                         Remote detail mode ?
          BNE  LSRALS                               LSRPOOL ?
          MVC  23(29,R8),REMDHD1                    Move LSR header1
          MVC  48(4,R8),RSYSSEL                     Move sysid chosen
          MVC  81(8,R8),=C' Fileid '
          B    LOCALS1
LSRALS    DS   ØH
          CLI  MODEFLG,C'L'                         LSR detail mode ?
          BNE  LOCALS                               Must be locals
          MVC  23(26,R8),LSRDHD1                    Move Rem header1
          OC   48(1,R8),RSYSSEL+3                   Move Pool number
          MVC  81(8,R8),=C' Fileid '
          CLI  RSYSSEL+3,X'ØØ'                      Was it NSR ?
          BNE  LOCALS2
          MVC  23(26,R8),LSRDHD2                    Say so
          B    LOCALS2
LOCALS    DS   ØH
          MVC  23(25,R8),HLQDHD1                    Move HLQ header1
          MVC  44(3,R8),HLQSEL                      Move HLQ selected
LOCALS2   DS   ØH
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,HLQCNTR
          MVC  5Ø(5,R8),=C'Total'                   Move total
          MVC  56(5,R8),OUTCTR+1                    Move total
          MVC  OUTCTR,EDPAT
          ED   OUTCTR,HLQCNTO
          MVC  62(1Ø,R8),=C'Total Open'             Move total Open
          MVC  73(5,R8),OUTCTR+1                    Move total Open
          MVC  81(7Ø,R8),HLQDHD2                    Move HLQ header2
          CP   HLQCNTR,=P'Ø'
          BE   SNDMAPE
```

Editor's note: this article will be concluded in the next issue.

M J Masters (UK) © Xephon 2000

CICS news

Sybase has begun shipping Version 12.0 of its MainframeConnect product, geared to moving and accessing information from mainframe sources and LAN datastores.

The new version supports access to both DRDA/MVS and international character sets and enables access to foreign datastores. Support for SQL Server has been added as a source for data replication, as well as enhanced support for access to DB2, Informix, and Oracle data stores.

MainframeConnect provides connectivity between client/server databases and mainframe data, as well as access to DB2/MVS data and on-line production applications in CICS, IMS/TM, and MVS mainframe environments. Production applications in CICS, IMS/TM and MVS environments can also act as clients to LAN-based data and applications.

For further information contact:
Sybase, 6475 Christie Ave, Emeryville, CA 94608, USA.
Tel: (510) 922 3500.
URL: http://www.sybase.com/products/system11/repsrvr.html.

* * *

NEON Systems has unveiled a beta release of its Shadow AutoHTML for CICS/TS, promising direct access from Web and ODBC environments to CICS transactions, promising to Web-enable CICS transactions in minutes, without, it’s claimed, any programming. It includes a High Performance Option, providing pre-built data to deliver large volumes of transactions per second.

It has diagnostics and monitoring capabilities for monitoring the volume of data in the pipeline as well as the number of data transactions queued and waiting to be processed.

A CICS failover feature re-routes users to an available server when the initial server is not accessible. The mapping component allows users to make global changes.

For further information contact:
New Era Of Networks, 7400 E Orchard Rd, Suite 230, Englewood, CO 80111, USA.
Tel: (303) 694 3933.
URL: http://www.neonsoft.com/products.

* * *

WRQ has announced its new suite of integration tools. It includes the Universal Integration Engine, which insulates developers and integrators from interoperability requirements among applications. Also included are visual tools for implementation connectivity options including 25 standard and custom databases and connectors including CICS, XML, CORBA/IIOP, COM/DCOM, Microsoft Repository, MQSeries and Java. It also provides non-SAP information to SAP clients.

New in Apptrieve 3.5, a host integration tool for mining and reusing data in legacy applications on IBM, Unix, and OpenVMS hosts, is multi-processor support, plus new support for HP-UX as well as Solaris.

For further information contact:
WRQ, 1500 Dexter Avenue North, Seattle, WA 98109, USA.
Tel: (206) 217 7500.
URL: http://http://www.wrq.com/news/pr/061300pr.html.