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Editor

Trevor Eddolls

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IBM's Time Machine and the CWA – revisited

In the article entitled *Use IBM's Time Machine and the CWA*, in Issue 197 of *CICS Update*, April 2002, we saw how to use IBM's Time Machine in combination with the CWA. If you wish to modify only the date, you can use the example without change. However, if you want to change the time of day as well, it's better to replace the XPCFTCH exit with the XPCREQ exit (see the following CSXPCREQ program).

CSXPCREQ

```
*ASM XOPTS(CICS,NOEDF)
CSXPCREQ TITLE 'XPCREQ: USER EXIT WILL BE PROCESSED BY EACH E.C.LINK'
         SPACE
*-------------------------------------------------------------------*
*        Module name : CSXPCREQ                                     *
*        Author      : CLAUS REIS                                   *
*        Function    : CICS - EXIT.                                 *
*-------------------------------------------------------------------*
*Abstract: This exit replaces the xpcftch exit using the system -    *
*          time. You should use this exit if you would like to change *
*          the time-of-day via the "Time Machine".                  *
*                                                                   *
*          If you would like to change only the date you can use    *
*          the xpcftch exit.                                        *
*-------------------------------------------------------------------*
         SPACE
*        PRINT    NOGEN
         SPACE
         DFHUEXIT TYPE=EP,ID=XPCREQ
         EJECT
*-------------------------------------------------------------------*
*        C I C S       C W A - R E G I O N                          *
*        INCLUDE-ELEMENT  FOR ASM  PROGRAM  CSCWAA                  *
*-------------------------------------------------------------------*
*        ADDRESSING   :   EXEC CICS ADDRESS CWA(CWAPTR)             *
*                                                                   *
*        WARNING      :   NO CHANGES ALLOWED -                      *
*                         CWAPTR MUST NOT BE DEFINED                *
*-------------------------------------------------------------------*
                SPACE 3
                USING CWADSECT,CWAPTR
                SPACE 3
CWADSECT        DSECT
                SPACE 3
CWAAREA         DS   ØCL1536         CWA-REGION
                SPACE 1
```

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

```
CWACJT3         DC    CL5' '          DATUM JJTTT
CWAPJT3         DC    PL3'Ø'          DATUM JJTTTC
CWACT3J4        DC    CL7' '          DATUM TTTJJJJ
CWAPT3J4        DC    PL4'Ø'          DATUM TTTJJJJC
CWACJ4T3        DC    CL7' '          DATUM JJJJTTT
CWAPJ4T3        DC    PL4'Ø'          DATUM JJJJTTTC
CWAZEIT         DC    CL5' '          UHRZEIT  SS:MM
*                                     ------------------------
CWATABLE        DS   ØCL24            ,+Ø123456789-,Ø123456789
*                                     ------------------------
CWATAB1         DS   ØCL13            TABELLE 1 /,/+/Ø123456789/-/
CWATAB2         DS   ØCL12            TABELLE 2 /,/+/Ø123456789/
CWACHKO1        DC    C','
CWATAB3         DS   ØCL12            TABELLE 3 /+/Ø123456789/-/
CWATAB4         DS   ØCL11            TABELLE 4 /+/Ø123456789/
CWACHARP        DC    C'+'
CWATAB5         DS   ØCL12            TABELLE 5 /Ø123456789/-/,/
CWATAB6         DS   ØCL11            TABELLE 6 /Ø123456789/-/
CWATAB7         DS   ØCL1Ø            TABELLE 7 /Ø123456789/
CWACHØ9         DC    C'Ø123456789'
CWACHARM        DC    C'-'
CWATAB8         DS   ØCL11            TABELLE 8 /,/Ø123456789/
CWACHKO2        DC    C','
CWACHØ92        DC    C'Ø123456789'
CWAZEITP        DC    PL4'Ø'          UHRZEIT  HHMMSSTC
CWADAY          DC    CL1Ø' '         WOCHENTAG
CWAMONTH        DC    CL9' '          MONAT
CWA_PTR_FTT     DC    AL4(Ø)          ADRESSE D. FUNKTIONSTASTENTABELLE
CWA_PTR_ANT     DC    AL4(Ø)          ADRESSE DER AKTIONSNAMENTABELLE
CWA_INFOCICS    DC    C' '            INFO-CICS IDENTIFIER
CWA_INFOCICS_Y  EQU   C'Y'            INFO-CICS IDENTIFIER -JA-
CWA_INFOCICS_N  EQU   C' '            INFO-CICS IDENTIFIER -NEIN-
CWA_DATUM_JJJJ  DC    CL1Ø' '         DATUM FORMAT TT.MM.JJJJ
                SPACE 1
CWAAREAE        EQU   *               ENDE CWA DEFINITIONEN
                SPACE 5
*-------------------------------------------------------------------*
*         END OF THE  CICS   CWA_REGION                             *
*-------------------------------------------------------------------*
*         BEGIN THE DSECT FOR FUNKTIONSTASTENTABELLE                *
*         ADRESSING OVER  "CWA_PTR_FTT"                             *
*-------------------------------------------------------------------*
CWAFTTDSECT      DSECT
CWA_FTT_TASTE    DC    XL1'Ø'           TASTENIDENTIFIKATION
CWA_FTT_AKTION   DC    CL16' '          SHORT DESCRIPTION OF TASTE
*                                       BSP. : HELP
CWA_FTT_ANZEIGE  DC    CL2Ø' '                 TEXT FOR THE FUNCTIONS-
*                                              TASTENBLOCK IMAGES
*                                       BSP. : F1=HILFE
CWA_FTT_PFKEY    DC    CL4' '           PF-TASTE Z.B. "PF1 "
CWA_FTT_KURZTEXT DC    CL8' '           BUTTON FOR POP-UP-MENUS
*                                       BSP. : F12=ABBR
```

```
CWA_FTT_TEXT     DS    CL207          DESCRIBE THEIR ACTION
CWAFTTDSECTE     EQU   *
CWAFTTANZAHL     EQU   30             NUMBER OF TABELLENEINTRAEGE FTT
                 SPACE 2
*-------------------------------------------------------------------*
*         END OF THE DSECT FOR FUNKTIONSTASTENTABELLE                *
*-------------------------------------------------------------------*
*         BEGIN THE DSECT FOR AKTIONSNAMENTABELLE                    *
*         ADDRESSING OVER  "CWA_PTR_ANT"                             *
*-------------------------------------------------------------------*
CWAANTDSECT DSECT
*
CWA_ANT_HILFE         DS CL16            HELP TEXT
CWA_ANT_TASTEN        DS CL16            SHOW THE TASTENBELEGUNG
CWA_ANT_AUSGANG       DS CL16            COMPLETE A FUNCTION
CWA_ANT_REFRESH       DS CL16            RESTORE
CWA_ANT_UPDATE        DS CL16            DATE STORE
CWA_ANT_RUECKWAERTS   DS CL16            BACKWARDS BROWSE
CWA_ANT_VORWAERTS     DS CL16            FORWARDS BROWSE
CWA_ANT_AKTION        DS CL16            ACTIVATE ACTION BAR
CWA_ANT_UNTERBRECHEN  DS CL16            EVENTS UNDER VIEW
CWA_ANT_ABBRUCH       DS CL16            ABORT
CWA_ANT_EINSTIEG      DS CL16            BACK TO EINSTIEGSBILD
CWA_ANT_AUSWAHL       DS CL16            BACK TO AUSWAHLBILD
CWA_ANT_SICHERN       DS CL16            FREEZE THE DTA
CWA_ANT_LINKS         DS CL16            LEFT-SIDE PAGES
CWA_ANT_RECHTS        DS CL16            RIGHT-SIDE PAGE
CWA_ANT_ANFANG        DS CL16            SHOW THE FIRST SIDE
CWA_ANT_SCHLUSS       DS CL16            SHOW THE OTHER SIDE
CWA_ANT_ABMELDEN      DS CL16            ZSS-ABMELDUNG
CWA_ANT_DRUCKEN       DS CL16            PRINT (PA2)
CWA_ANT_LOESCHEN      DS CL16            OUTPUT TO SCREEN
CWA_ANT_DATENFREIGABE DS CL16            DATENFREIGABE
CWA_ANT_HILFE_ANLEGEN DS CL16            BOSHELP HELP START
CWA_ANT_SUCHEN        DS CL16            SEARCH
CWA_ANT_EURODM        DS CL16            CONVERT EURO/DM
CWAANTDSECTE          EQU   *
*-------------------------------------------------------------------*
*         END THE DSECT FOR AKTIONSNAMENTABELLE                      *
*-------------------------------------------------------------------*
         EJECT
DFHEISTG DSECT
EYECATCH       DS        CL8
ABSOTIME       DS        PL8
TIMEPL6        DS        PL6
               ORG       *-6
TIMEZERO       DS        CL2
TIMEPACK       DS        CL4
XPCREQ_TIME    DS        CL10            ' HH:MM:SST'
XPCREQ_TIMEP   DS        PL4             HHMMSSTC
         EJECT
CSXPCREQ DFHEIENT CODEREG=(CODEREG),
```

```
*
               DATAREG=(DATAREG),
*
               EIBREG=(EIBREG)
          SPACE
CSXPCREQ AMODE ANY
CSXPCREQ RMODE ANY
          SPACE
          EXEC  CICS ADDRESS EIB(EIBREG) CWA(CWAPTR)
          USING CWADSECT,CWAPTR
          MVC   EYECATCH,=C'EYECATCH'
          B     START
          DC    CL16'*** CSXPCREQ ***'
          DC    CL8'&SYSDATE'
          DC    CL8'&SYSTIME'
          SPACE
START     DS    ØH
          SPACE
          EXEC  CICS ASKTIME ABSTIME(ABSOTIME)
          SPACE
          ZAP   TIMEPL6,EIBTIME
          MP    TIMEPL6,=P'1Ø'           SET TIME VALUE HHMMSST
          MVZ   TIMEPACK+3(1),ABSOTIME+6 TENTH SECONDS
          ZAP   CWAZEITP,TIMEPACK        CWATIME = TIMEPACK
          MVC   XPCREQ_TIME,MASK         TIME VALUE HH:MM
          ED    XPCREQ_TIME,CWAZEITP     CWATIME = EIBTIME
*                                        TIME OF DAY X'HHMMSSTC'
          MVC   CWAZEIT,XPCREQ_TIME+1
          LA    R15,UERCNORM
          DFHEIRET RCREG=R15
          EJECT
          LTORG
          EJECT
*-------------------------------------------------------------------*
*               R E G I S T E R     E Q U A T E S                   *
*-------------------------------------------------------------------*
          SPACE
EIBREG    EQU   R7                 EIB POINTER (default)
CWAPTR    EQU   R8                 CWA POINTER
CODEREG   EQU   R1Ø                 BASE REGISTER
DATAREG   EQU   R13                EISTG REGISTER (default)
MASK      DC    X'FØ21207A20207A202020'
          SPACE
          DFHREGS
          SPACE
          DC    C' '
          END
```

Claus Reis
CICS Systems Programmer
Nuernberger Lebensversicherung AG (Germany)

A simple program to monitor CICS task storage

The purpose of this simple program is to monitor a task's storage usage in the Dynamic Storage Area (DSA) and Extended Dynamic Storage Area (EDSA). In development systems, where CICS regions are prone to problems such as task looping or short on storage conditions, this program can come in handy if you do not have any monitoring tools running.

The program will show all the displayable tasks that are in the system with their user IDs, and the storage used in the DSA and EDSA, by testing whether the address of the storage is 24-bit or 31-bit. This can help systems programmers to investigate and determine which task is chewing up storage in the DSA or EDSA.

This program makes use of CICS System Programming Interface (SPI) commands 'inquire task list' and 'inquire task storage', and needs to be compiled with the translation option SP. Below is a sample of the output:

```
TRANS  TASKNO    USERID   DSA (K)   EDSA (K)
CONL   00000023  CICDOCM  00000000  00000020
COI0   00000025  CICDOCM  00000000  00000019
COIE   00000027  CICDOCM  00000000  00000030
OMEG   00000032  CICDOCM  00000002  00000000
CSKL   00000033  CICDOCM  00000000  00000013
OMEG   00000034  CICDOCM  00000002  00000000
S002   00000201  OPERHLZ  00000050  00000027
S003   00000204  OPERHLZ  00000045  00000027
CSTG   00000777  SUPPHKX  00000001  00000007
```

DISPSTOR

```
*ASM XOPTS(SP)
         TITLE 'Display tasks storage used in DSA and EDSA'
* AUTHOR : Kah Soon HO
         PRINT  NOGEN
         EJECT
DFHEISTG DSECT
*
R4       EQU   4
R5       EQU   5
R6       EQU   6
```

```
R7       EQU   7
R8       EQU   8
R9       EQU   9
         SPACE 1
         EJECT
DISPSTOR CSECT ,
DISPSTOR AMODE 31
DISPSTOR RMODE ANY
         EXEC  CICS INQUIRE TASK LIST                              +
                   LISTSIZE(N)                                     +
                   SET(R6)                                         +
                   RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    Was there a problem?
         BNE   FAILQUIT                Yes. Take the error exit.
         SPACE 1
         L     R5,N                    No. Get the number of tasks.
         LTR   R5,R5                   Are there any tasks?
         BZ    RETURN                  No, so start the next phase.
         XR    R4,R4                   Clear R4
         M     R4,SIZE                 Calculate size of getmain to
         ST    R5,STGSIZE               save task list
         EXEC CICS GETMAIN                                         +
                SET(R7)                                          +
                FLENGTH(STGSIZE)                                 +
                INITIMG('_')
         CLC   RESP,DFHRESP(NORMAL)    Was there a problem?
         BNE   FAILQUIT                Yes. Take the error exit.
         ST    R7,TLIST                Store new address for task list
         L     R5,N                    No. Get the number of tasks.
STLIST   DS    ØH
         MVC   Ø(4,R7),Ø(R6)           Copy task list to new address
         A     R6,=F'4'                Move on to the next task
         A     R7,=F'4'                Move on to the next task
         BCT   R5,STLIST               Loop back if there is more to do
         SPACE 1
         MVC   DISPLAY,=CL79' '
         MVC   DISPLAY(9),=CL9'TRANS   '
         MVC   DISPLAY+8(8),=CL9'TASKNO  '
         MVC   DISPLAY+17(8),=CL9'USERID  '
         MVC   DISPLAY+26(8),=CL9'DSA (K) '
         MVC   DISPLAY+35(8),=CL9'EDSA (K)'
         EXEC CICS SEND TEXT FROM(DISPLAY) LENGTH(79) FREEKB ERASE    +
           ACCUM PAGING RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    If everything is OK..
         BNE   FAILQUIT                Yes. Take the error exit.
         L     R6,TLIST                Get address of task list
         L     R5,N                    No. Get the number of tasks.
TASKLOOP DS    ØH
         MVC   TASKNO,Ø(R6)            Store the task number.
*                                       get the task details.
```

```
         EXEC  CICS INQUIRE                                          +
               TASK(TASKNO)                                          +
               FACILITY(FAC)                                         +
               TRANSACTION(TRAN)                                     +
               USERID(USER)                                          +
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    Is the task still there?
         BNE   TASKEND                 No. next task
         EXEC  CICS INQUIRE STORAGE                                  +
               NUMELEMENTS(ENUM)                                     +
               ELEMENTLIST(R7)                                       +
               LENGTHLIST(R8)                                        +
               TASK(TASKNO)                                          +
               RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    If everything is OK..
         BNE   FAILQUIT                Yes. Take the error exit.
         SPACE 1
         ST    R7,ELIST                store address of element & ...
         ST    R8,LLIST                length list
         L     R9,ENUM                 set element number as counter
         L     R4,HEXØ                 initialize r4, DSA & EDSA
         ST    R4,DSA
         ST    R4,EDSA
ADDLOOP  EQU   *
         CLC   ADDR24,Ø(R7)            is it a 24bit address ?
         BL    EDSAADD                 no then branch .
         L     R4,Ø(R8)                yes then add the storage ...
         A     R4,DSA                    to DSA
         ST    R4,DSA
         B     ADDEND
EDSAADD EQU    *
         L     R4,Ø(R8)                yes then add the storage ...
         A     R4,EDSA                   to EDSA
         ST    R4,EDSA
ADDEND   EQU   *
         A     R7,=F'4'                move to next byte
         A     R8,=F'4'
         BCT   R9,ADDLOOP              counter loop
*
         L     R8,HEXØ
         L     R9,DSA
         D     R8,HEX1Ø24              convert to number of K
         CVD   R9,DSAK
         UNPK  DSA#,DSAK               convert to text
         OI    DSA#+7,C'Ø'             force X'FØ'
*
         L     R8,HEXØ
         L     R9,EDSA
         D     R8,HEX1Ø24              convert to number of K
         CVD   R9,EDSAK
```

```
         UNPK  EDSA#,EDSAK             convert to text
         OI    EDSA#+7,C'Ø'            force X'FØ'
*
         UNPK  TASKNO#,TASKNO          format the task..
         OI    TASKNO#+7,X'FØ'
         MVC   DISPLAY,=CL79' '
         MVC   DISPLAY(4),TRAN
         MVC   DISPLAY+8(L'TASKNO#),TASKNO#
         MVC   DISPLAY+17(L'USER),USER
         MVC   DISPLAY+26(L'DSA#),DSA#
         MVC   DISPLAY+35(L'EDSA#),EDSA#
         EXEC CICS SEND TEXT FROM(DISPLAY) LENGTH(79) FREEKB ERASE     +
           ACCUM PAGING RESP(RESP)
         CLC   RESP,DFHRESP(NORMAL)    If everything is OK..
         BNE   FAILQUIT                Yes. Take the error exit.
         SPACE 1
TASKEND  DS    ØH
         A     R6,=F'4'                Move on to the next task
         BCT   R5,TASKLOOP             Loop back if there is more to do
*                                       End of task list
         L     R7,TLIST                Get address of task list
         EXEC CICS FREEMAIN DATAPOINTER(R7)
         B     RETURN
         SPACE 1
*********************************************************************
* Abnormal return
*********************************************************************
FAILQUIT DS    ØH
         MVC   DISPLAY,=CL79' '
         MVC   DISPLAY(16),=CL16'TRANSACTION FAIL'
         EXEC CICS SEND TEXT FROM(DISPLAY) LENGTH(79) FREEKB ERASE     +
           ACCUM PAGING RESP(RESP)
RETURN   EXEC CICS SEND PAGE
         EXEC CICS RETURN
         SPACE 3
*********************************************************************
* Data area
*********************************************************************
         LTORG
RESP     DS    F
N        DS    F                       Number of task
TASKNO   DS    F
TASKNO#  DS    D
ENUM     DS    CL8                     Storage element
ELIST    DS    F'Ø'                    Element list
LLIST    DS    F'Ø'                    Storage length list
TLIST    DS    F'Ø'                    Task list
DSA      DS    F'Ø'
EDSA     DS    F'Ø'
HEX1Ø24  DC    XL4'ØØØØ4ØØ'
```

```
HEX0     DC    XL4'00000000'
DSAK     DS    D
EDSAK    DS    D
DSA#     DS    CL8' '
EDSA#    DS    CL8' '
ADDR24   DC    XL4'00FFFFFF'           Highest 24-bit address
STGSIZE  DS    F                       Size of getmain
SIZE     DC    F'4'
TRAN     DS    CL4' '
FAC      DS    CL4' '
USER     DS    CL8' '
DISPLAY  DC    CL79' '
         END   DISPSTOR
```

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A CICS template utility

Like many other sites, we are interested in Web-enabling some of our applications, making them accessible either on an intranet or on the Internet. We have converted some BMS maps to HTML and have written some programs using the Web APIs. We store our templates in a PDS. One problem we encountered is the reinstall or refresh of the templates after they have been modified. We keep access to the CEDA functions in the Technical Support area and we needed a means for the applications area to be able to reinstall the template definitions without having direct access to CEDA and without having to wait for someone in Technical Support to perform the refresh.

The following is a set of programs and templates that allow us to view and refresh (reinstall) document templates through a browser. This enables us to see modifications made to the templates immediately, and eliminates the need for general access to the CEDA transaction, giving more control and security for the Resource Definition File.

There are six programs and two templates necessary to accomplish this.

The programs are written in Assembler and the templates are small – one defines the frames and the other is a title page that displays at start-up.

THE PROGRAMS AND DOCUMENT TEMPLATES

The six programs are:

- CICSDOCU – produces the initial display.
- CICSDOCT – browses the connections defined in the terminal region and produces a display of regions that have TCP/IP service defined.
- CICSTCP – returns the port number and job name of the regions to program CICSDOCT.
- CICSDOCL – lists the defined templates in each region.
- CICSDOCD – displays the selected template.
- CICSDOCR – refreshes the selected template.

The two templates are:

- INDXDOC – defines the frameset.
- DOCINFO – initial display for the utility.

The programs CICSDOCU and CICSDOCT are defined in the terminal region along with the two templates, and the other four programs are defined in the appropriate application regions. We have system utility programs, but no application programs defined in the terminal regions, so we didn't include the terminal region in the region list.

DESCRIPTION OF THE PROGRAMS

The program that starts the process is CICSDOCU. This is started by the URL http://HOST:PORT/cics/cwba/cicsdocu, where HOST and PORT are the host name and port number of the region where this is executing. This program uses the template INDXDOC, which defines the frames, starts program CICSDOCT, and displays template DOCINFO. (Note: HOST and PORT must be changed in programs

CICSDOCT, CICSDOCL, and template INDXDOC to values appropriate to your site.)

The program CICSDOCT browses the connections defined in the terminal region, ignoring APPC and EXCI connections, and links to program CICSTCP in each of the eligible regions to check for a definition of the TCP/IP service. If it finds the definition, it returns the port number and the job name for that region. If there is no TCP/IP service, it returns port number zero, which indicates to CICSDOCT that the region has no TCP/IP service. Program CICSDOCT uses that information to build the display in the left frame, listing the regions as links. These links can then be selected, which causes program CICSDOCL to run in the selected region.

Program CICSDOCL browses the template definitions in the region and produces a list of templates as two sets of links that can be selected to either display (CICSDOCD) or refresh (CICSDOCR) the individual documents. We have installed support pack CA8C, which allows us to include images in the HTML pages. The links built by program CICSDOCL distinguish between HTML and binary definitions and build different links, using the program in the support pack to display the images.

The display program, CICSDOCD, takes the querystring variable that was built in the link for the display option of the template and creates a document using the template name.

The refresh program, CICSDOCR, first determines that the CSD file is available by attempting to open and then close it. Sometimes, since the CSD is shared between several regions, it gets set open in another region because of a generic file open, or sometimes someone else may be updating the entries in the CSD file. If the file is not available, an error message is returned and the template is not processed. If the file is available, the template is then discarded. Then a CEDA display is preformed, using the template name and a partial group name to determine the group the template is defined in. For organizational purposes, we use the last three letters of the SYSID of the region as the first three letters of the group name for the document template definitions. We can then have multiple groups with template definitions in a region (possibly grouped by application) and still be able to search and find the

correct group. We share one CSD among the test regions and others among the various production regions, so it is possible to have the same name for a template in multiple regions and, with this method, we can be sure to get the correct definition for the region. The group name is then used in another CEDA execution to do the actual install. Following a successful installation, a message is returned.

This has solved the problem of providing a means for the applications group to refresh templates without compromising the security of the CEDA transaction and also allows for an easy sharing of ideas and knowledge in that all templates are available for viewing by everyone. By viewing the source of the templates, everyone can benefit from everyone else's experience and methods of coding the presentation aspect of CICS Web-enabled transactions.

The explanation for using the CEDA command in a program is found in the *CICS Customization Guide*, SC33-1683, Chapter 31, *The programmable interface to the RDO transaction, CEDA*.

The support pac CA8C is found at http://www-4.ibm.com/software/ts/cics/txppacs/, Category 2– Freeware.

CICSDOCU

```
         TITLE ' CICSDOCU - DOCUMENT UTILITY'
DFHEISTG DSECT
*     CICS DOCUMENT UTILITY INITIAL DISPLAY
         DS    ØF
TOKEN    DS    CL16
TMPLNAME DS    CL48
CICSDOCU CSECT
CICSDOCU AMODE 31
CICSDOCU RMODE ANY
START    EQU   *
         MVC    TMPLNAME(48),BLANKS
CONTINUE EQU   *
         MVC    TMPLNAME(7),=C'INDXDOC'
         EXEC CICS DOCUMENT CREATE DOCTOKEN(TOKEN)
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEMPLATE (TMPLNAME)
         EXEC CICS WEB SEND DOCTOKEN(TOKEN)                           -
               CLNTCODEPAGE('ISO-8859-1')
EXIT     EQU   *
         EXEC  CICS RETURN
```

```
******
         DS    ØF
BLANKS   DC    CL48' '
         LTORG
         END
```

CICSDOCT

(Note: change HOST to an appropriate value.)

```
         TITLE ' CICSDOCT - LIST CONNECTED REGIONS'
DFHEISTG DSECT
*    BROWSES CONNECTIONS AND CONTACTS APPLICABLE ONES
*     TO DETERMINE WHETHER TCPIP IS ACTIVE. LISTS REGIONS
*     WITH TCPIP ACTIVE.
         DS    ØF
TOKEN    DS    CL16
R6       EQU   6
R7       EQU   7
RESP     DS    F
PROT     DS    F
SERV     DS    F
CVRTAREA DS    D
ZAPTAREA DS    PL3
         DS    ØF
COMMFLDS DS    ØCL12
CPORTNO  DS    CL4
CJOBNAME DS    CL8
CICSDOCT CSECT
CICSDOCT AMODE 31
CICSDOCT RMODE ANY
START    EQU    *
PRESDOC  EQU    *
         EXEC CICS DOCUMENT CREATE DOCTOKEN(TOKEN)
*   START OF HTML DOCUMENT
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (TOP) LENGTH(TOPLEN)
*   TABLE DEFINITION
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (TBL) LENGTH(TBLLEN)
*   HEADING LINE
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (HEADOUT) LENGTH(HEADLEN)
*   BLANK SPACER LINE
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (DUMMYOUT) LENGTH(DUMMYLEN)
*      BROWSE CONNECTION LIST IGNORING APPC AND EXCI CONNECTIONS
         EXEC CICS INQUIRE CONNECTION START
BROWSE   EQU   *
```

```
         EXEC CICS INQUIRE CONNECTION(CONN) NEXT RESP(RESP)
         CLC   RESP(4),DFHRESP(END)
         BE    ENDIT
         EXEC  CICS INQUIRE CONNECTION(CONN)                          -
               PROTOCOL(PROT)
         CLC   PROT,DFHVALUE(APPC)        IGNORE APPC AND
         BE    BROWSE                       EXCI CONNECTIONS.
         CLC   PROT,DFHVALUE(EXCI)
         BE    BROWSE
*****************************************************************
CKTCPIP  EQU   *
*    LINK TO ATTACHED REGIONS AND CHECK TCPIP STATUS...
*    AND GET JOB NAME
         EXEC CICS LINK PROGRAM (TCPTRANS) SYSID (CONN)               -
               COMMAREA (COMMFLDS) LENGTH (COMMLEN) RESP(RESP)
         CLC   RESP,DFHRESP(SYSIDERR)       IGNORE INVALID SYSID
         BE    BROWSE                               AND
         CLC   RESP,DFHRESP(PGMIDERR)       INVALID PROGRAM ID
         BE    BROWSE
         CLC   CPORTNO,=F'Ø'                IF RESPONSE FROM REGION
         BE    BROWSE                       IS PORT=Ø, IGNORE.
         L     R7,CPORTNO                   CONVERT PORT TO
         CVD   R7,CVRTAREA                  DECIMAL NUMBER.
         OI    CVRTAREA+7,X'ØF'
         UNPK  PORTOUT(5),CVRTAREA+5(3)
         MVC   REGIONNM(8),CJOBNAME         BUILD OUTPUT LINE
*    OUTPUT LINE WITH REGION NAME
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (LINEOUT) LENGTH(TLEN)
         B     BROWSE
ENDIT    EQU   *
         EXEC  CICS INQUIRE CONNECTION END
*   END OF TABLE DEFINITION
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (TBLEND) LENGTH(TBLELEN)
*   END OF HTML DOCUMENT
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                    -
               TEXT (BOTTOM) LENGTH(BOTMLEN)
*   SEND
         EXEC CICS WEB SEND DOCTOKEN(TOKEN)                           -
               CLNTCODEPAGE('ISO-8859-1')
EXIT     EQU   *
         EXEC  CICS RETURN
******
         DS    ØF
TMPL     DC    CL12' '
BLANKS   DC    CL48' '
CONN     DC    CL4' '
TCPTRANS DC    CL8'CICSTCP'
COMMLEN  DC    H'12'
```

```
*      TOP OF PAGE DEFINITION
TOP      DC    CL23'<!DOCTYPE HTML PUBLIC "'
         DC    CL39'-//W3C//DTD HTML 4.Ø Transitional//EN">'
         DC    CL6'<HTML>'
         DC    CL6'<HEAD>'
         DC    CL31'<TITLE>CICS region list</TITLE>'
         DC    CL7'</HEAD>'
         DC    CL6'<BODY '
         DC    CL31'BGCOLOR="#FFFF99" TEXT="BLACK">'
TOPLEN   DC    F'149'
*      TABLE DEFINITION LAYOUT
TBL      DC    CL8'<CENTER>'
         DC    CL3Ø'<TABLE WIDTH="12Ø" BORDER="Ø">'
         DC    CL25'<TR><TD WIDTH="12Ø"></TD>'        region name
         DC    CL5'</TR>'
TBLLEN   DC    F'68'
*      HEADING LINE
HEADOUT  DC    CL4'<TR>'
         DC    CL4'<TD>'
         DC    CL29'<FONT SIZE="+1" COLOR="BLUE">'
         DC    CL33'<a target="_top" href="cicsdocu">'
         DC    CL11'Region Name'
         DC    CL4'</a>'
         DC    CL7'</FONT>'
         DC    CL5'</TD>'
         DC    CL5'</TR>'
HEADLEN  DC    F'1Ø2'
*      DUMMY LINE FOR SPACING
DUMMYOUT DC    CL4'<TR>'
DTD1     DC    CL4'<TD>'
DUMMY1   DC    CL4'<BR>'
DTD1A    DC    CL5'</TD>'
DUMMYEND DC    CL5'</TR>'
DUMMYLEN DC    F'22'
*      DATA LINE
LINEOUT  DC    CL4'<TR>'
TD1      DC    CL4'<TD>'
         DC    CL24'<A target="displayframe"'
         DC    CL19' HREF="http://HOST:'  (Change HOST as appropriate)
PORTOUT  DC    CL5' '
         DC    CL21'/cics/cwba/cicsdocl">'
REGIONNM DC    CL8' '
         DC    CL4'</A>'
         DC    CL8'<BR><BR>'
TD1A     DC    CL5'</TD>'
LINEEND  DC    CL5'</TR>'
TLEN     DC    F'1Ø7'
*      TABLE END
TBLEND   DC    CL8'</TABLE>'
         DC    CL9'</CENTER>'
```

```
TBLELEN  DC    F'17'*
*      BOTTOM OF PAGE
BOTTOM   DC    CL7'</BODY>'
         DC    CL7'</HTML>'
BOTMLEN  DC    F'14'
         LTORG
         END
```

CICSTCP

```
         TITLE ' CICSTCP - INQUIRE STATUS OF TCPIP'
DFHEISTG DSECT
*  CHECK STATUS OF TCP CONNECTION. IF OPEN, GET PORT NUMBER
*   TO PASS BACK TO CALLING PROGRAM. OTHERWISE, SET PORT TO
*   ZERO AND SEND BACK. ALSO GET JOBNAME TO SEND BACK.
         DS    ØF
OSTAT    DS    F
RESP     DS    F
R2       EQU   2
COMMFLDS DSECT
CPORTNO  DS    F
CJOBNAME DS    CL8
CICSTCP  CSECT
          L     R2,DFHEICAP
          USING  COMMFLDS,R2
*              DETERMINE THE JOBNAME
         EXEC CICS INQUIRE SYSTEM JOBNAME (JOBNAME)
         MVC    CJOBNAME(8),JOBNAME
*                          CHECK STATUS TCPIP
         EXEC CICS INQUIRE TCPIP  OPENSTATUS (OSTAT) RESP (RESP)
         CLC   RESP,DFHRESP(INVREQ)    IF INVALID REQUEST,
         BNE   CKOSTAT                 SET PORT NUMBER
         MVC   CPORTNO,=F'Ø'           TO F'Ø' AND EXIT.
         BE    EXIT                    OTHERWISE, GO ON.
CKOSTAT  EQU   *
         CLC   OSTAT,DFHVALUE(OPEN)
         BE    CKTCPS              IF NOT OPEN, SET PORT NUMBER
         MVC   CPORTNO,=F'Ø'       TO F'Ø' AND EXIT.
         B     EXIT                OTHERWISE, GET PORT NUMBER
CKTCPS   EQU   *
         EXEC CICS INQUIRE TCPIPSERVICE (TCPNAME)                    -
              PORT (PORTNO) RESP (RESP)
         CLC   RESP,DFHRESP(NORMAL)
         BE    SETPORT
         MVC   CPORTNO,=F'Ø'
         B     EXIT
SETPORT  EQU   *
         MVC   CPORTNO,PORTNO
EXIT     EQU   *
```

```
*          ** RETURN  **
         EXEC  CICS RETURN
TCPNAME  DC    CL8'HTTPNSSL'         CHECK ONLY HTTPNSSL
PORTNO   DC    F'Ø'
JOBNAME  DC    CL8' '
         LTORG
         END
```

CICSDOCD

```
         TITLE ' CICSDOCD - DISPLAY DOCUMENTS'
DFHEISTG DSECT
*    DISPLAYS THE HTML DOCUMENTS
         DS    ØF
TOKEN    DS    CL16
TMPLNAME DS    CL48
R6       EQU   6
R7       EQU   7
R8       EQU   8
CICSDOCD CSECT
CICSDOCD AMODE 31
CICSDOCD RMODE ANY
START    EQU   *
         MVC    STRLEN,=F'12'
         MVC    TMPL(12),BLANKS
         MVC    TMPLNAME(48),BLANKS
CONTINUE EQU   *
         EXEC CICS WEB EXTRACT QUERYSTRING (TMPL)                    -
               QUERYSTRLEN (STRLEN)
CKINPUT  EQU    *
         L      R6,STRLEN              R6 HAS LEN OF STRING RETURNED
         S      R6,=F'3'            (MAX 11) SUBTRACT 3 FOR 'PG='
         LA     R7,TMPL+3           POINT PAST 'PG='
         LA     R8,TMPLNAME         POINT TO START OF TMPLNAME
CLCBLNK  EQU    *
         CLC    Ø(1,R7),=C' '       SEARCH FOR END OF INPUT
         BE     PRESDOC
         MVC    Ø(1,R8),Ø(R7)  BUILD TMPLNAME FOR DOCUMENT TO DISPLAY
         LA     R7,1(R7)             BUMP
         LA     R8,1(R8)              REGISTERS
         BCT    R6,CLCBLNK
PRESDOC  EQU    *
         EXEC CICS DOCUMENT CREATE DOCTOKEN(TOKEN)
         EXEC CICS DOCUMENT INSERT DOCTOKEN(TOKEN)                   -
               TEMPLATE (TMPLNAME)
         EXEC CICS WEB SEND DOCTOKEN(TOKEN)                          -
               CLNTCODEPAGE('ISO-8859-1')
EXIT     EQU   *
         EXEC  CICS RETURN
```

```
******
         DS    ØF
STRLEN   DC    F'12'           QUERY STRING LENGTH
TMPL     DC    CL12' '         DOCUMENT(TEMPLATE) NAME
BLANKS   DC    CL48' '
         LTORG
         END
```

DOCINFO

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.Ø Transitional//EN">
<html>
<head>
     <title>CICS Document Information</title>
</head>
<BODY BGCOLOR="#FFFF99"
TEXT="#33ØØ66" LINK="#6633FF" VLINK="#99ØØØØ" alink="#FF33ØØ">
<center>
<table height="4Ø" width="64Ø">
<tr>
<td align="center" valign="middle" width="5ØØ">
<h3 align="center"><font size="6" color="blue">CICS
 Document Utility</font></h3>
 <br>
 <h3 align="center"><font color="blue" size="5">
 Display and refresh document templates
 </font></h3>
 <br>
</td></tr>
 </table>
</center>
<center>
<ul>
<font size="+1">
Select a region from the list on the left. <br><br><br>
The list of document templates for that region will be displayed here.
<br><br>
Select a template from the list to either refresh it or display it.
</font>
</ul>
</center>
</body>
</html>
```

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

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Understanding CICS Monitoring and Statistics data

CICSPlex SM provides information about CICS runtime resources via two components, namely OPERATIONS and MONITORING. The details of these resources can be found in the *Resource Tables Reference* manual.

OPERATIONS resources are obtained from the Managed Address Space (MAS) at the point in time when the request is made. EXEC CICS INQUIRE, COLLECT STATISTICS, etc are used by the MAS agent code to obtain relevant attribute data for a given resource type. In addition, some attributes are calculated from information obtained via the above interfaces. A typical operations resource would be CICSRGN.

MONITORING resources are obtained from the MON data cache at the point in time the request is made. How this data is produced from the MAS data is, however, a little more involved. Monitoring objects have M prefixes as a naming convention. The Monitoring equivalent of CICSRGN is therefore MCICSRGN.

In common with Operations requests, EXEC CICS INQUIRE, COLLECT STATISTICS etc, are used by the monitoring MAS agent code and again additional attributes are calculated. Monitoring (XMNOUT) and Statistics (XSTOUT) exits are also utilized for capturing information from the MAS . The resource data to be obtained is defined via the relevant MONDEF, PERIODEF definitions. It is obtained at a sampling frequency defined in CSYSDEF and MONSPEC definitions. Data obtained from the MAS agents is placed in N prefixed tables (eg NCICSRGN), which are not available to the external user. They are merely transitory tables used by the CMAS for amalgamating information into the M prefix tables in the MON data cache. At that point in time, additional fields are also calculated by the CMAS (so-called derived fields).

Whilst the relation between base EXEC CICS INQUIRE requests and EXEC CICS COLLECT STATISTICS data to Resource Table attributes is straightforward enough, a common question is how the additional fields are calculated in the MAS, how values are amalgamated into the

M prefix tables, and how derived field data is calculated. This article attempts to provide some answers to those questions.

In the following discussion, the resources are assumed to correspond to the CICS Transaction Server 1.3 level of function. Of course, CICSPlex SM supports all levels of CICS Transaction Server.

MAS AGENT DATA

The operations and monitoring fields that are calculated in the MAS agents, and how those attributes are derived, are shown in Figure 1.

Monitoring exit XMNOUT

The XMNOUT exit copies performance class record data into a storage area for asynchronous processing by another task. Data is processed only if information has been requested for this tranid. Exception class records are *not* processed.

The data is transformed into NTASK tables. This is a straight transformation between data identified by dictionary field identifiers and NTASK fields (eg NTASK_TRANID and dfi 001; NTASK_USERID and dfi 089).

Statistics exit XSTOUT

Resource data is collected for resource types for which monitoring is active (as defined via MONDEFs etc). Only interval statistics, end of day statistics, and requested reset statistics are processed. The required data is placed into a storage area for asynchronous MAS agent processing. Again, additional fields are calculated as defined in the example above.

CMAS PROCESSING

Processing in the CMAS follows a cycle. Events in the cycle are as follows.

Mxxx table initialization

When CPSM MONITORing is activated, the initial values for the

		PAGEOUT		OUXBPOUT	Total page outs
		REALSTG		RAXFMCT-RAX ASCBRSME	Total frame count
		CPUTIME		ASCBEJST+ ASCBSRBT	Total CPU time
		PRGMRCMP	LDGDSASTAT	Sum(LDGDPSCR, LDGMAXDSA)	Programs removed by cmpression
		LOADPNIU		Sum(LDGPROGNIU, LDGMAXDSA)	No of programs on NIU queue
		LOADRNIU		Sum(LDGRECNIU, LDGMAXDSA)	No of reclaims from NIU queue
		LOADTNIU		Sum(LDGDPSCT, LDGMAXDSA)	Times removed program on queue
		MVSSYSID	CVT	SMCASID-SMCABASE	MVS sysid
CICSDSA	NCICSDSA	SIZE	SMSBODY	SMSDSASZ	Storage size
		STGFSIZE		SMSFSTG	Free storage (inc. cushion)
		LIMIT	SMSGLOBAL	SMS(E)DSALIMIT	Max DSA size
		CURRALLOC		SMS(E)DSATOTAL	Cur DSA alloction
		HWMALLOC		SMSHWM(E)DSATOTAL	HWM DSA allocated
		POOLPCTFREE		STGFSIZE*1000/ SIZE	Percent free in the specific storage pool
		PCTFREE		[SMS(E)DSALIMIT-SMS(E)DSATOTAL+ Sum(SMSBODY.SMSFSTG, SMSNPAGP)] *1000/ LIMIT	Percent free in storage area

Figure1a: Operations and Monitoring fields

Operations	*Monitoring*	*Attribute*	*CICS DSECT*	*DSECT Field*	*Comments*
N/A	NCMDT	TOTLREQCNT	DFHA17DS	A17DSRD+ A17DSGU+ A17DSBR+ A17DSWRA+ A17DSWRU+ A17DSDEL	Total request count
		TOTMREQCNT		A17DTRDS+ A17DTRNF+ A17DTAVR+ A17DTADS+ A17DTARJ+ A17DTATF+ A17DTRWS+ A17DTDLS	Total request count
N/A	NLOCFILE	TOTLREQCNT	DFHA17DS	A17DSRD+ A17DSGU+ A17DSBR+ A17DSWRA+ A17DSWRU+ A17DSDEL	Total request count
N/A	NREMFILE	TOTLREQCNT	DFHA17DS	A17DSRD+ A17DSGU+ A17DSBR+ A17DSWRA+ A17DSWRU+ A17RMDEL	Extra partition count
N/A	NCONNECT	TOTFUNCSHIP	DFHA14DS	A14ESTFC+ A14ESTIC+ A14ESTTD+ A14ESTTS+ A14ESTDL+ A14ESTPC	Total function ships
CICSRGN	NCICSRGN	CUTCBCNT	DSGTCB	Sum(DSGTCBCA, DSGASIZE)	Store Number of TCBs
		TOTLTASKS	DFHXMGDS	XMGTNUM+ XMGNUM	Total tasks since startup
		SYSID	SMCABASE	SMCASID	MVS Sysid
		MVSSYSNAME	CVT	CVTSNAME	MVS sysname
		SIOREQ	ASCB	ASCBIOSC	Total IO count
		PAGEIN	OUXB	OUXBPIN+ OUXBCAPI	Page ins

Figure1b: Operations and Monitoring fields

Mxxxx tables are set. All CHAR data types are set to blank, all others to X'00's.

CICS reset command

CICS can have its data collection reset. This action has no effect on the Mxxxx table entries.

CICSPlex SM reset command

CICSPlex SM can request to have its data collection reset. Most fields are unaffected by this action.

The possible CPSM reset actions on attributes can be the following:

- RESET – reset to initialization value
- ZERO – set to X'00's
- BLANK – set to C‘ ’s
- NONE – no change
- ZEROCICS – ignore for CICS reset.

The most common action is NONE.

Combining Nxxxx data with existing Mxxxx data

Each time the data is sampled (Nxxxx), it must be combined with the old Mxxxx data to produce the new Mxxxx data. For most attributes, the action is to replace the attribute with the new value (ie Mxxxx_aaa = Nxxxx_aaa). This is denoted by REPL.

The complete set of calculations that can be performed is as follows:

- ADD – newcurrentdata = newCICSvalue + oldcurrentvalue
- SUB – newcurrentvalue = newCICSvalue – oldcurrentvalue
- DELTA – newcurrentdata = newCICSvalue – seedvalue
- NONE – no processing to take place
- REPL<,how>:

- None: (newCICSvalue)
- RATE_INST: attrlist1((newcurrent) – (oldcurrent))/ (intervalSeconds)
- RATE_INTVL: attrlist1(newcurrent)/ ((intervalseconds)*(numberofintervals))
- PCTG_INST: attrlist1((newcurrent)-(oldcurrent))/ attrlist2((newcurrent) – (oldcurrent))
- PCTG_INTV: attrlist1(newcurrent)/attrlist2(newcurrent)
- PCT_INST: attrlist1((newcurrent)-(oldcurrent))/ attrlist2((newcurrent) – (oldcurrent))
- PCT_INTVL: (((oldcurrentPCT_INST) * (numberofintervals – 1) + (newcurrentPCT_INST))/(numberofintervals)
- AVG_INST: attrlist1((newcurrent) – (oldcurrent))/ attrlist2((newcurrent) – (oldcurrent))
- AVG_INTVL: (((oldcurrentAVG_INST) * (numberofintervals – 1)) + (newcurrentAVG_INST))/ (number of intervals)
- SUM: attrlist1(newcurrent) + attrlist2(newcurrent)
- DEDUCT: attrlist1(newcurrent) – attrlist2(newcurrent)
- STCKDIFF: attrlist1(newcurrentSTCK) – attrlist2(newcurrentSTCK)
- TALLY: (newderived)+(oldurrent).

Processing

It is useful to have a value (called the seed value) to help in the calculation of the Mxxxx values. The seed is set as follows:

1 Activation of monitoring.seedValue = CICS value at this time

2 CICS Reset.seedValue = seedValue – last CICS value before reset

3 CPSM Reset.seedValue = seedValue + currentSMValue

For DELTA type fields, the new value is calculated at sample intervals

	Start MON	*Sample*	*Sample*	*CICS Reset*	*Sample*	*Sample*	*CPSM reset*	*Sample*	*Sample*
Nusecount	12	24	30	36	10	20		36	46
seedvalue	12	12	12	-24	-24	-24	20	20	20
Musecount	0	12	18		34	44	0	16	26

Figure 2: Example values used

via Mvalue = Nvalue – seed.

This is illustrated in Figure 2.

Intermediate fields can also be defined for the duration of the processing of the record, in order to perform more complex calculations.

TABLES

The following tables show attributes that have processing properties other than NONE, REPLace.

MCICSRGN

Base fields

Attribute	*CPSM Reset*	*Calculation*
MAXTRCNT	ZERO	DELTA
LOADREQS	ZERO	DELTA
LOADTIME	ZERO	DELTA
PRGMUCNT	ZERO	DELTA
LOADWCNT	ZERO	DELTA
LOADWAIT	ZERO	DELTA
RDEBRBLD	ZERO	DELTA
PRGMRCMP	ZERO	DELTA
LOADTNIU	ZERO	DELTA
LOADRNIU	ZERO	DELTA
SDMPTOTL	ZERO	DELTA
SDMPSUPP	ZERO	DELTA
TDMPTOTL	ZERO	DELTA
TDMPSUPP	ZERO	DELTA
CPUTIME	ZEROCICS	DELTA
PAGEIN	ZEROCICS	DELTA
PAGEOUT	ZEROCICS	DELTA

SIOREQ	ZEROCICS	DELTA
VTMRPLMAX	ZERO	DELTA
VTMRPLPOST	ZERO	DELTA
VTMSOSCNT	ZERO	DELTA
VTMACBDOPE	ZERO	DELTA
TOTACTVUSRTR	ZERO	DELTA
TOTDELYUSRTR	ZERO	DELTA
TOTQUETIME	ZERO	DELTA
PROGAUTOATTM	ZERO	DELTA
PROGAUTOXREJ	ZERO	DELTA
PROGAUTOFAIL	ZERO	DELTA
INTVTRANS	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURTASKRATE	ZERO	REPL,RATE_INST	TOTLTASKS
INTTASKRATE	ZERO	REPL,RATE_INTVL	TOTLTASKS
CURCPUPER	ZEROCICS	REPL,PCTG_INST	CPUTIME
INTCPUPER	ZEROCICS	REPL,PCTG_INTVL	CPUTIME
CURPGIRATE	ZEROCICS	REPL,RATE_INST	PAGEIN
INTPGIRATE	ZEROCICS	REPL,RATE_INTVL	PAGEIN
CURPGORATE	ZEROCICS	REPL,RATE_INST	PAGEOUT
INTPGORATE	ZEROCICS	REPL,RATE_INTVL	PAGEOUT
CURSIORATE	ZEROCICS	REPL,RATE_INST	SIOREQ
INTSIORATE	ZEROICCS	REPL,RATE_INTVL	SIOREQ

MCICSDSA

Base fields

Attribute	*CPSM Reset*	*Calculation*
GETMTOTL	ZERO	DELTA
FREMTOTL	ZERO	DELTA
ASUBTOTL	ZERO	DELTA
DSUBTOTL	ZERO	DELTA
NSTGTOTL	ZERO	DELTA
STGSTOTL	ZERO	DELTA
STGPWCNT	ZERO	DELTA
STGCRELC	ZERO	DELTA
STGSOSC	ZERO	DELTA
STGSOST	ZERO	DELTA
STGVTOTL	ZERO	DELTA
NSTGTSUSP	DELTA	

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURFRESTG	ZERO	REPL,PCT_INST	STGFSIZE,SIZE

INTFRESTG	ZERO	REPL,PCT_INTVL	STGFSIZE,SIZE

MTRANCLS

Base fields

Attribute	*CPSM Reset*	*Calculation*
QUEUED	ZERO	
PURGETHRESH		DELTA
ATTACHES	ZERO	DELTA
PURGEIMMED	ZERO	DELTA
ACCEPTIMMED	ZERO	DELTA
ACCEPTAFTRQD	ZERO	DELTA
TIMESATMAX	ZERO	DELTA
PURGTHRTIMES	ZERO	DELTA
QUEUETIME	ZERO	DELTA
CURQUEDTIME	ZERO	DELTA

MTDQGBL

Base fields

Attribute	*CPSM Reset*	*Calculation*
NOSPACECNT	ZERO	DELTA
WRITES	ZERO	DELTA
READS	ZERO	DELTA
FMTWRITE	ZERO	DELTA
IOERRS	ZERO	DELTA

Intermediate fields

Field	*CPSM Reset*	*Calculation*	*args*
IMMD_SAMPLACCESS		REPL,SUM	READS,WRITES
IMMD_ACCESMREADS		REPL,DEDUCT	ACCESSCNT,READS

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURACCCNT	ZERO	REPL,RATE_INST	ACCESSMREADS
INTACCCNT	ZERO	REPL,RATE_INTVL	ACCESSMREADS
CURFULLPER	ZERO	REPL,PCTG_INST	NOSPACECNT,SAMPLACCESS
INTFULLPER	ZERO	REPL,PCTG_INTVL	NOSPACECNT,SAMPLACCESS
CURWRITRATE	ZERO	REPL,RATE_INST	WRITES
INTWRITRATE	ZERO	REPL,RATE_INTVL	WRITES
CURREADRATE	ZERO	REPL,RATE_INST	READS
INTREADRATE	ZERO	REPL,RATE_INTVL	READS

MTSQGBL

Base fields

Attribute	*Reset*	*Calculation*
PUTQMAIN	ZERO	DELTA
GETQMAIN	ZERO	DELTA
PUTQAUX	ZERO	DELTA
GETQAUX	ZERO	DELTA
ENTLGQUE	ZERO	DELTA
QUECRECNT	ZERO	DELTA
QUEXTENDS	ZERO	DELTA
WRTGTCISZ	ZERO	DELTA
PEAKCIUSE	ZERO	DELTA
AUXFULL	ZERO	DELTA
BUFFWAITS	ZERO	DELTA
BUFWRITES	ZERO	DELTA
WRTFRECVR	ZERO	DELTA
BUFREADS	ZERO	DELTA
FMTWRT	ZERO	DELTA
IOERRS	ZERO	DELTA
STRINGWAIT	ZERO	DELTA

Intermediate fields

Field	*CPSM Reset*	*Calculation*	*args*
IMMD_SAMPLACCESS		REPL,SUM	PUTQAUX,GETQAUX
IMMD_INTVLACCESS		REPL,SUM	PUTQAUX,GETQAUX
IMMD_SAMPLBUFACC		REPL,SUM	BUFREADS,BUFWRITES
IMMD_INTVLBUFACC		REPL,SUM	BUFWRITES,BUFREADS
IMMD_GETQMREADB		REPL,DEDUCT	GETQAUX,BUFREADS

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURREADRATE	ZERO	REPL,RATE_INST	BUFREADS
INTREADRATE	ZERO	REPL,RATE_INTVL	BUFREADS
CURMPUTQRATE	ZERO	REPL,RATE_INST	PUTQMAIN
INTMPUTQRATE	ZERO	REPL,RATE_INTVL	PUTQMAIN
CURMGETQRATE	ZERO	REPL,RATE_INST	GETQMAIN
INTMGETQRATE	ZERO	REPL,RATE_INTVL	GETQMAIN
CURAPUTQRATE	ZERO	REPL,RATE_INST	PUTQAUX
INTAPUTQRATE	ZERO	REPL,RATE_INTVL	PUTQAUX
CURAGETQRATE	ZERO	REPL,RATE_INST	GETQAUX
INTAGETQRATE	ZERO	REPL,RATE_INTVL	GETQAUX
CURFULLPER	ZERO	REPL,PCT_INST	AUXFULL,SAMPLACCESS
INTFULLPER	ZERO	REPL,PCT_INTVL	AUXFULL,SAMPLACCESS
CURBHITRATE	ZERO	REPL,RATE_INST	GETQMREADB

INTBHITRATE	ZERO	REPL,RATE_INTVL	GETQMREADB
CURWRITRATE	ZERO	REPL,RATE_INST	BUFWRITES
INTWRITRATE	ZERO	REPL,RATE_INTVL	BUFWRITES

MFEPICON

Base fields

Attribute	*CPSM Reset*	*Calculation*
ACQUIRES	ZERO	DELTA
CONVERSATNS	ZERO	DELTA
UNSOLICINP	ZERO	DELTA
CHARSSENT	ZERO	DELTA
CHARSRECVD	ZERO	DELTA
RECVTIMEOUT	ZERO	DELTA
ERRORS	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CSACQRATE	ZERO	REPL,RATE_INST	ACQUIRES
MIACQRATE	ZERO	REPL,RATE_INTVL	ACQUIRES

MCONNECT

Base fields

Attribute	*CPSM Reset*	*Calculation*
ATISBPRI	ZERO	DELTA
ATISBSEC	ZERO	DELTA
BIDSSENT	ZERO	DELTA
ALLOCATES	ZERO	DELTA
FAILINKALLOC	ZERO	DELTA
FAILEDOTHERS	ZERO	DELTA
FCFUNCSHIP	ZERO	DELTA
ICFUNCSHIP	ZERO	DELTA
TDFUNCSHIP	ZERO	DELTA
TSFUNCSHIP	ZERO	DELTA
DLIFUNCSHIP	ZERO	DELTA
TOTFUNCSHIP	ZERO	DELTA
TERMSHAREREQ	ZERO	DELTA
MAXQTPURGCNT	ZERO	
XZIQREJS	ZERO	
XZIQPRGCNT	ZERO	
XZIQALLCPRG	ZERO	
MAXQTALLCPRG	ZERO	
PRICURRUSED	ZERO	DELTA

SECCURRUSED	ZERO	DELTA
DPLFUNCSHIP	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURFCFSRATE	ZERO	REPL,RATE_INST	TOTFUNCSHIP
INTFCFSRATE	ZERO	REPL,RATE_INTVL	TOTFUNCSHIP

MLSRPOOL

Base fields

Attribute	*CPSM Reset*	*Calculation*
TOTWAITREQ	ZERO	DELTA
DBLOOKASIDE	ZERO	DELTA
DBREAD	ZERO	DELTA
DBUIWRITE	ZERO	DELTA
DBNUWRITE	ZERO	DELTA
DCREAD	ZERO	DELTA
DCWRITE	ZERO	DELTA
IBLOOKASIDE	ZERO	DELTA
IBREADS	ZERO	DELTA
IBUIWRITE	ZERO	DELTA
IBNUWRITE	ZERO	DELTA
ICREAD	ZERO	DELTA
ICWRITE	ZERO	DELTA

Intermediate fields

Field	*CPSM Reset*	*Calculation*	*args*
IMMD_SAMPLDWRTCT		REPL,SUM	DBUIWRITE,DBNUWRITE
IMMD_INTVLDWRTCT		REPL,SUM	DBUIWRITE,DBNUWRITE
IMMD_SAMPLIWRTCT		REPL,SUM	IBUIWRITE,IBNUWRITE
IMMD_INTVLIWRTCT		REPL,SUM	IBUIWRITE,IBNUWRITE

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURDBHITRATE	ZERO	REPL,RATE_INST	DBLOOKASIDE
INTDBHITRATE	ZERO	REPL,RATE_INTVL	DBLOOKASIDE
CURDWRITRATE	ZERO	REPL,RATE_INST	SAMPLDWRTCT
INTDWRITRATE	ZERO	REPL,RATE_INTVL	INTVLDWRTCT
CURDREADRATE	ZERO	REPL,RATE_INST	DBREAD
INTDREADRATE	ZERO	REPL,RATE_INTVL	DBREAD
CURDHWRIRATE	ZERO	REPL,RATE_INST	DCWRITE
INTDHWRIRATE	ZERO	REPL,RATE_INTVL	DCWRITE

CURDHREARATE	ZERO	REPL,RATE_INST	DCREAD
INTDHREARATE	ZERO	REPL,RATE_INTVL	DCREAD
CURIBHITRATE	ZERO	REPL,RATE_INST	IBLOOKASIDE
INTIBHITRATE	ZERO	REPL,RATE_INTVL	IBLOOKASIDE
CURIWRITRATE	ZERO	REPL,RATE_INST	SAMPLIWRTCT
INTIWRITRATE	ZERO	REPL,RATE_INTVL	INTVLIWRTCT
CURIREADRATE	ZERO	REPL,RATE_INST	IBREADS
INTIREADRATE	ZERO	REPL,RATE_INTVL	IBREADS
CURIHWRIRATE	ZERO	REPL,RATE_INST	ICWRITE
INTIHWRIRATE	ZERO	REPL,RATE_INTVL	ICWRITE
CURIHREARATE	ZERO	REPL,RATE_INST	ICREAD
INTIHREARATE	ZERO	REPL,RATE_INTVL	ICREAD

MLSRPBUF

Base fields

Attribute	*CPSM Reset*	*Calculation*
READS	ZERO	DELTA
USERIWRITE	ZERO	DELTA
NONUWRITE	ZERO	DELTA
CREADS	ZERO	DELTA
CWRITES	ZERO	DELTA

Intermediate fields

Field	*CPSM Reset*	*Calculation*	*args*
IMMD_SAMPLDWRTCT		REPL,SUM	USERIWRITE,NONUWRITE

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURWRITRATE	ZERO	REPL,RATE_INST	SAMPLDWRTCT
INTWRITRATE	ZERO	REPL,RATE_INTVL	SAMPLDWRTCT
CURREADRATE	ZERO	REPL,RATE_INST	READS
INTREADRATE	ZERO	REPL,RATE_INTVL	READS
CURHWRITRATE	ZERO	REPL,RATE_INST	CWRITES
INTHWRITRATE	ZERO	REPL,RATE_INTVL	CWRITES
CURHREADRATE	ZERO	REPL,RATE_INST	CREADS
INTHREADRATE	ZERO	REPL,RATE_INTVL	CREADS

MCMDT

Base fields

Attribute	*CPSM Reset*	*Calculation*
GETCNT	ZERO	DELTA

GETUPDCNT	ZERO	DELTA
BROWSECNT	ZERO	DELTA
ADDCNT	ZERO	DELTA
UPDATECNT	ZERO	DELTA
LOCDELCNT	ZERO	DELTA
DEXCPCNT	ZERO	DELTA
IEXCPCNT	ZERO	DELTA
WSTRCNT	ZERO	DELTA
WSTRCCURCNT	ZERO	DELTA
READS	ZERO	DELTA
RECNOTFND	ZERO	DELTA
ADDFRREAD	ZERO	DELTA
ADDREQ	ZERO	DELTA
ADDREJ	ZERO	DELTA
ADDTFULL	ZERO	DELTA
REWRITE	ZERO	DELTA
DELETEREQ	ZERO	DELTA
MAXTSIZE	ZERO	DELTA
TOTLREQCNT	ZERO	DELTA
TOTMREQCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*Args*
CURREQRATE	ZERO	REPL,RATE_INST	TOTLREQCNT
INTREQRATE	ZERO	REPL,RATE_INTVL	TOTLREQCNT
CURDEXCPRATE	ZERO	REPL,RATE_INST	DEXCPCNT
INTDEXCPRATE	ZERO	REPL,RATE_INTVL	DEXCPCNT
CURIEXCPRATE	ZERO	REPL,RATE_INST	IEXCPCNT
INTIEXCPRATE	ZERO	REPL,RATE_INTVL	IEXCPCNT
CURMRQRATE	ZERO	REPL,RATE_INST	TOTMREQCNT
INTMRQRATE	ZERO	REPL,RATE_INTVL	TOTMREQCNT
CURREADRATE	ZERO	REPL,RATE_INST	READS
INTREADRATE	ZERO	REPL,RATE_INTVL	READS

MLOCFILE

Base fields

Attribute	*CPSM Reset*	*Calculation*
GETCNT	ZERO	DELTA
GETUPDCNT	ZERO	DELTA
BROWSECNT	ZERO	DELTA
ADDCNT	ZERO	DELTA
UPDATECNT	ZERO	DELTA
LOCDELCNT	ZERO	DELTA
TOTLREQCNT	ZERO	DELTA
DEXCPCNT	ZERO	DELTA

IEXCPCNT	ZERO	DELTA
WSTRCNT	ZERO	DELTA
WSTRCCURCNT	ZERO	DELTA

Derived fields

Field	CPSM Reset	Calculation	args
CURDEXCPRATE	ZERO	REPL,RATE_INST	DEXCPCNT
INTDEXCPRATE	ZERO	REPL,RATE_INTVL	DEXCPCNT
CURIEXCPRATE	ZERO	REPL,RATE_INST	IEXCPCNT
INTIEXCPRATE	ZERO	REPL,RATE_INTVL	IEXCPCNT
CURREQRATE	ZERO	REPL,RATE_INST	TOTLREQCNT
INTREQRATE	ZERO	REPL,RATE_INTVL	TOTLREQCNT

MREMFILE

Base fields

Attribute	*CPSM Reset*	*Calculation*
REMDELCNT	ZERO	DELTA
GETCNT	ZERO	DELTA
GETUPDCNT	ZERO	DELTA
BROWSECNT	ZERO	DELTA
ADDCNT	ZERO	DELTA
UPDATECNT	ZERO	DELTA
TOTLREQCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURREQRATE	ZERO	REPL,RATE_INST	TOTLREQCNT
INTREQRATE	ZERO	REPL,RATE_INTVL	TOTLREQCNT

MJOURNL

Base fields

Attribute	*CPSM Reset*	*Calculation*
TAPESOPEN	ZERO	DELTA
BLKWRCNT	ZERO	DELTA
ARCHSUBCNT	ZERO	DELTA
ARCHWCNT	ZERO	DELTA
DSOPENCNT	ZERO	DELTA
AVGSIZE	ZERO	
RECWRCNT	ZERO	DELTA
BUFULLCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURFULLPER	ZERO	REPL,PCTG_INST	BUFULLCNT,BLKWRCNT
INTFULLPER	ZERO	REPL,PCTG_INTVL	BUFULLCNT,BLKWRCNT

MJRNLNAM

Base fields

Attribute	*CPSM Reset*	*Calculation*
NUMWRITES	ZERO	DELTA
NUMBYTES	ZERO	DELTA
NUMBUFLUSH	ZERO	DELTA

MPROGRAM

Base fields

Attribute	*CPSM Reset*	*Calculation*
NEWCOPYCNT	ZERO	DELTA
USECOUNT	ZEROCICS	DELTA
FETCHCNT	ZERO	DELTA
FETCHTIME	ZERO	DELTA
REMOVECNT	ZERO	DELTA

Intermediate fields

Field	*CPSM Reset*	*Calculation*	*args*
IMMD_USEMIFETCH		REPL,DEDUCT	USECOUNT,FETCHCNT

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURUSERATE	ZERO	REPL,RATE_INST	USECOUNT
INTUSERATE	ZERO	REPL,RATE_INTVL	USECOUNT
CURRUSEPCT	ZERO	REPL,PCTG_INST	USEMIFETCH,USECOUNT
INTRUSEPCT	ZERO	REPL,PCTG_INTVL	USEMIFETCH,USECOUNT
CURAVGFETCH	ZERO	REPL,AVG_INST	FETCHTIME,FETCHCNT
INTAVGFETCH	ZERO	REPL,AVG_INTVL	FETCHTIME,FETCHCNT

MTERMNL

Base fields

Attribute	*CPSM Reset*	*Calculation*
POLLCNT	ZERO	DELTA

INPMSGCNT	ZERO	DELTA
OUTMSGCNT	ZERO	DELTA
TRANCNT	ZERO	DELTA
STGVCNT	ZERO	DELTA
XERRCNT	ZERO	DELTA
TERRCNT	ZERO	DELTA
PMSGCNT	ZERO	DELTA
PMSGGRPCNT	ZERO	DELTA
PMSGCONSEC	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURIMSGRATE	ZERO	REPL,RATE_INST	INPMSGCNT
INTIMSGRATE	ZERO	REPL,RATE_INTVL	INPMSGCNT
CUROMSGRATE	ZERO	REPL,RATE_INST	OUTMSGCNT
INTOMSGRATE	ZERO	REPL,RATE_INTVL	OUTMSGCNT
CURTRANRATE	ZERO	REPL,RATE_INST	TRANCNT
INTTRANRATE	ZERO	REPL,RATE_INTVL	TRANCNT

MLOCTRAN

Base fields

Attribute	*CPSM Reset*	*Calculation*
RESTARTCNT	ZERO	DELTA
USECOUNT	ZERO	DELTA
STGVCNT	ZERO	DELTA
LOCALCNT	ZERO	DELTA
ISOLATEST	ZERO	DELTA
REMSTARTCNT	ZERO	DELTA
REMOTECNT	ZERO	DELTA
CPUTIME	ZERO	ADD
MSGIN	ZERO	ADD
CHARIN	ZERO	ADD
MSGOUT	ZERO	ADD
CHAROUT	ZERO	ADD
MSGINSEC	ZERO	ADD
CHARINSEC	ZERO	ADD
MSGOUTSEC	ZERO	ADD
CHAROUTSEC	ZERO	ADD
ALLOCATES	ZERO	ADD
USTG24CNT	ZERO	ADD
USTG31CNT	ZERO	ADD
USTG24HWM	ZERO	ADD
USTG31HWM	ZERO	ADD
USTG24OCC	ZERO	ADD
USTG31OCC	ZERO	ADD

PSTG31HWM	ZERO	ADD
PSTG24HWM	ZERO	ADD
FCGETCNT	ZERO	ADD
FCPUTCNT	ZERO	ADD
FCBRWCNT	ZERO	ADD
FCADDCNT	ZERO	ADD
FCDELCNT	ZERO	ADD
FCCOUNT	ZERO	ADD
FCAMCNT	ZERO	ADD
TDGETCNT	ZERO	ADD
TDPUTCNT	ZERO	ADD
TDPURCNT	ZERO	ADD
TDCOUNT	ZERO	ADD
TSGETCNT	ZERO	ADD
TSPUTACNT	ZERO	ADD
TSPUTMCNT	ZERO	ADD
TSCOUNT	ZERO	ADD
BMSMAPCNT	ZERO	ADD
BMSINCNT	ZERO	ADD
BMSOUTCNT	ZERO	ADD
BMSCOUNT	ZERO	ADD
PCLINKCNT	ZERO	ADD
PCXCTLCNT	ZERO	ADD
PCLOADCNT	ZERO	ADD
JCUSRWCNT	ZERO	ADD
ICCOUNT	ZERO	ADD
SYNCCOUNT	ZERO	ADD
DISPTIME	ZERO	ADD
SUSPTIME	ZERO	ADD
WAITTIME	ZERO	ADD
PCLOADTM	ZERO	ADD
EXWAIT	ZERO	ADD
TCIOTIME	ZERO	ADD
FCIOTIME	ZERO	ADD
JCIOTIME	ZERO	ADD
TSIOTIME	ZERO	ADD
IRIOTIME	ZERO	ADD
TDIOTIME	ZERO	ADD
RESPONSE	ZERO	ADD
CURAVGRESP	ZERO	ADD
INTAVGRESP	ZERO	ADD
CURAVGCPUT	ZERO	ADD
INTAVGCPUT	ZERO	ADD
DISPCNT	ZERO	ADD
CPUCNT	ZERO	ADD
SUSPCNT	ZERO	ADD
WAITCNT	ZERO	ADD
PCLOADWCNT	ZERO	ADD
EXWAITCNT	ZERO	ADD

TCIOCNT	ZERO	ADD
FCIOCNT	ZERO	ADD
JCIOCNT	ZERO	ADD
TSIOCNT	ZERO	ADD
IRIOCNT	ZERO	ADD
TDIOCNT	ZERO	ADD
RSYSID		ADD
TCM62IN2	ZERO	ADD
TCC62IN2	ZERO	ADD
TCM62OU2	ZERO	ADD
TCC62OU2	ZERO	ADD
PC24RHWM	ZERO	ADD
PC31SHWM	ZERO	ADD
PC24SHWM	ZERO	ADD
SZALLOCT	ZERO	ADD
SZRCVCT	ZERO	ADD
SZSENDCT	ZERO	ADD
SZSTRTCT	ZERO	ADD
SZCHROUT	ZERO	ADD
SZCHRIN	ZERO	ADD
SZALLCTO	ZERO	ADD
SZRCVTO	ZERO	ADD
SZTOTCT	ZERO	ADD
SZWAIT	ZERO	ADD
DSPDELAY	ZERO	ADD
TCLDELAY	ZERO	ADD
MXTDELAY	ZERO	ADD
ENQDELAY	ZERO	ADD
LU61WTT	ZERO	ADD
LU62WTT	ZERO	ADD
RMITIME	ZERO	ADD
RMISUSP	ZERO	ADD
SZWAITCT	ZERO	ADD
DSPDELAYCT	ZERO	ADD
TCLDELAYCT	ZERO	ADD
MXTDELAYCT	ZERO	ADD
ENQDELAYCT	ZERO	ADD
LU61WTTCT	ZERO	ADD
LU62WTTCT	ZERO	ADD
RMITIMECT	ZERO	ADD
RMISUSPCT	ZERO	ADD
DCEDELAYTIME	ZERO	ADD
DCEDELAYCT	ZERO	ADD
DCEWAITTIME	ZERO	ADD
DCEWAITCT	ZERO	ADD
NUMINDOUBWT	ZERO	ADD
FORACTTRNDF	ZERO	ADD
FORACTINDTO	ZERO	ADD
FORACTNOWT	ZERO	ADD

FORACTOPER	ZERO	ADD
FORACTOTHER	ZERO	ADD
ACTMISMATS	ZERO	ADD
PERRECNT	ZERO	ADD
SC24SGCT	ZERO	ADD
SC24GSHR	ZERO	ADD
SC24FSHR	ZERO	ADD
SC31SGCT	ZERO	ADD
SC31GSHR	ZERO	ADD
SC31FSHR	ZERO	ADD
JNLWRTCT	ZERO	ADD
LOGWRTCT	ZERO	ADD
SYNCTIME	ZERO	ADD
SYNCTIMCNT	ZERO	ADD
RLSWAIT	ZERO	ADD
RLSWAITCNT	ZERO	ADD
RLSCPUT	ZERO	ADD
RLSCPUCNT	ZERO	ADD
LOCKMWT	ZERO	ADD
LOCKMWC	ZERO	ADD
EXTERNWT	ZERO	ADD
EXTERNWC	ZERO	ADD
CICSWT	ZERO	ADD
CICSWC	ZERO	ADD
INTVLWT	ZERO	ADD
INTVLWC	ZERO	ADD
CTLWT	ZERO	ADD
CTLWC	ZERO	ADD
SHDTSWT	ZERO	ADD
SHDTSWC	ZERO	ADD
ICTOTCNT	ZERO	ADD
PCLURMCT	ZERO	ADD
CFDTWT	ZERO	ADD
CFDTWC	ZERO	ADD
SRVSPWT	ZERO	ADD
SRVSPWC	ZERO	ADD
BARSYNCT	ZERO	ADD
BARASYCT	ZERO	ADD
BALKPACT	ZERO	ADD
BADPROCT	ZERO	ADD
BADACTCT	ZERO	ADD
BARSPACT	ZERO	ADD
BASUPACT	ZERO	ADD
BARMPACT	ZERO	ADD
BADCPACT	ZERO	ADD
BAACQPCT	ZERO	ADD
BATOTPCT	ZERO	ADD
BAPRDCCT	ZERO	ADD
BAACDCCT	ZERO	ADD

BATOTCCT	ZERO	ADD
BARATECT	ZERO	ADD
BADFIECT	ZERO	ADD
BATIAECT	ZERO	ADD
BATOTECT	ZERO	ADD
RUNTRWTT	ZERO	ADD
RUNTRWTC	ZERO	ADD
SYNCDLY	ZERO	ADD
SYNCDLYC	ZERO	ADD
WBRCVCT	ZERO	ADD
WBCHRIN	ZERO	ADD
WBSENDCT	ZERO	ADD
WBCHROUT	ZERO	ADD
WBTOTCT	ZERO	ADD
WBREPWCT	ZERO	ADD
DHCRECT	ZERO	ADD
DHINSCT	ZERO	ADD
DHSETCT	ZERO	ADD
DHRETCT	ZERO	ADD
DHTOTCT	ZERO	ADD
DHTOTDCL	ZERO	ADD
IMSREQCT	ZERO	ADD
DB2REQCT	ZERO	ADD
CHMODECT	ZERO	ADD
QRDISPT	ZERO	ADD
QRDISPC	ZERO	ADD
QRCPUT	ZERO	ADD
QRCPUC	ZERO	ADD
MSDISPT	ZERO	ADD
MSDISPC	ZERO	ADD
MSCPUT	ZERO	ADD
MSCPUC	ZERO	ADD
L8CPUT	ZERO	ADD
L8CPUC	ZERO	ADD
J8CPUT	ZERO	ADD
J8CPUC	ZERO	ADD
S8CPUT	ZERO	ADD
S8CPUC	ZERO	ADD
QRMODDLY	ZERo	ADD
QRMODDLC	ZERO	ADD
MXTOTDLY	ZERO	ADD
MXTOTDLC	ZERO	ADD
IMSWAIT	ZERO	ADD
IMSWAITC	ZERO	ADD
DB2RDYQW	ZERO	ADD
DB2RDYQC	ZERO	ADD
DB2CONWT	ZERO	ADD
DB2CONWC	ZERO	ADD
DB2WAIT	ZERO	ADD

DB2WAITC	ZERO	ADD
GNQDELAY	ZERO	ADD
GNQDELAC	ZERO	ADD
SOIOWTT	ZERO	ADD
SOIOWTC	ZERO	ADD
RRMSWAIT	ZERO	ADD
RRMSWAIC	ZERO	ADD
PCDPLCT	ZERO	ADD
SOBYENCT	ZERO	ADD
SOBYDECT	ZERO	ADD
TCBATTCT	ZERO	ADD
JVMTIME	ZERO	ADD
JVMSUSP	ZERO	ADD
JVMTIMEC	ZERO	ADD
JVMSUSPC	ZERO	ADD

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURTRANRATE	ZERO	REPL,RATE_INST	USECOUNT
INTTRANRATE	ZERO	REPL,RATE_INTVL	USECOUNT

MTASK

Base fields

Attribute	*CPSM Reset*	*Calculation*
START	NONE	NONE
STOP	NONE	NONE
MSGIN		ADD
CHARIN		ADD
MSGOUT		ADD
CHAROUT		ADD
MSGINSEC		ADD
CHARINSEC		ADD
MSGOUTSEC		ADD
CHAROUTSEC		ADD
ALLOCATES		ADD
TERMSTG		ADD
USTG24CNT		ADD
USTG31CNT		ADD
USTG24HWM		ADD
USTG31HWM		ADD
USTG24OCC		ADD
USTG31OCC		ADD
PSTG31HWM		ADD
PSTG24HWM		ADD
FCGETCNT		ADD

FCPUTCNT	ADD
FCBRWCNT	ADD
FCADDCNT	ADD
FCDELCNT	ADD
FCCOUNT	ADD
FCAMCNT	ADD
TDGETCNT	ADD
TDPUTCNT	ADD
TDPURCNT	ADD
TDCOUNT	ADD
TSGETCNT	ADD
TSPUTACNT	ADD
TSPUTMCNT	ADD
TSCOUNT	ADD
BMSMAPCNT	ADD
BMSINCNT	ADD
BMSOUTCNT	ADD
BMSCOUNT	ADD
PCLINKCNT	ADD
PCXCTLCNT	ADD
PCLOADCNT	ADD
JCUSRWCNT	ADD
ICCOUNT	ADD
SYNCCOUNT	ADD
DISPTIME	ADD
CPUTIME	ADD
SUSPTIME	ADD
WAITTIME	ADD
PCLOADTM	ADD
EXWAIT	ADD
TCIOTIME	ADD
FCIOTIME	ADD
JCIOTIME	ADD
TSIOTIME	ADD
IRIOTIME	ADD
TDIOTIME	ADD
DISPCNT	ADD
CPUCNT	ADD
SUSPCNT	ADD
WAITCNT	ADD
PCLOADWCNT	ADD
EXWAITCNT	ADD
TCIOCNT	ADD
FCIOCNT	ADD
JCIOCNT	ADD
TSIOCNT	ADD
IRIOCNT	ADD
TDIOCNT	ADD
TCM62IN2	ADD

TCC62IN2	ADD
TCM62OU2	ADD
TCC62OU2	ADD
PC24RHWM	ADD
PC31SHWM	ADD
PC24SHWM	ADD
SZALLOCT	ADD
SZRCVCT	ADD
SZSENDCT	ADD
SZSTRTCT	ADD
SZCHROUT	ADD
SZCHRIN	ADD
SZALLCTO	ADD
SZRCVTO	ADD
SZTOTCT	ADD
SZWAIT	ADD
DSPDELAY	ADD
TCLDELAY	ADD
MXTDELAY	ADD
ENQDELAY	ADD
LU61WTT	ADD
LU62WTT	ADD
RMITIME	ADD
RMISUSP	ADD
SZWAITCT	ADD
DSPDELAYCT	ADD
TCLDELAYCT	ADD
MXTDELAYCT	ADD
ENQDELAYCT	ADD
LU61WTTCT	ADD
LU62WTTCT	ADD
RMITIMECT	ADD
RMISUSPCT	ADD
DCEDELAYTIME	ADD
DCEDELAYCT	ADD
DCEWAITTIME	ADD
DCEWAITCT	ADD
PERRECNT	
SC24SGCT	
SC24GSHR	
SC24FSHR	
SC31SGCT	
SC31GSHR	
SC31FSHR	
JNLWRTCT	
LOGWRTCT	
SYNCTIME	ADD
SYNCTIMCNT	ADD
RLSWAIT	ADD
RLSWAITCNT	ADD

RLSCPUT	ADD
RLSCPUCNT	ADD
LOCKMWT	ADD
LOCKMWC	ADD
EXTERNWT	ADD
EXTERNWC	ADD
CICSWT	ADD
CICSWC	ADD
INTVLWT	ADD
INTVLWC	ADD
CTLWT	ADD
CTLWC	ADD
SHDTSWT	ADD
SHDTSWC	ADD
ICTOTCNT	ADD
PCLURMCT	ADD
CFDTWT	ADD
CFDTWC	ADD
SRVSPWT	ADD
SRVSPWC	ADD
BARSYNCT	ADD
BARASYCT	ADD
BALKPACT	ADD
BADPROCT	ADD
BADACTCT	ADD
BARSPACT	ADD
BASUPACT	ADD
BARMPACT	ADD
BADCPACT	ADD
BAACQPCT	ADD
BATOTPCT	ADD
BAPRDCCT	ADD
BAACDCCT	ADD
BATOTCCT	ADD
BARATECT	ADD
BADFIECT	ADD
BATIAECT	ADD
BATOTECT	ADD
RUNTRWTT	ADD
RUNTRWTC	ADD
SYNCDLY	ADD
SYNCDLYC	ADD
WBRCVCT	ADD
WBCHRIN	ADD
WBSENDCT	ADD
WBCHROUT	ADD
WBTOTCT	ADD
WBREPWCT	ADD
DHCRECT	ADD
DHINSCT	ADD

DHSETCT	ADD
DHRETCT	ADD
DHTOTCT	ADD
DHTOTDCL	ADD
IMSREQCT	ADD
DB2REQCT	ADD
CHMODECT	ADD
QRDISPT	ADD
QRDISPC	ADD
QRCPUT	ADD
QRCPUC	ADD
MSDISPT	ADD
MSDISPC	ADD
MSCPUT	ADD
MSCPUC	ADD
L8CPUT	ADD
L8CPUC	ADD
J8CPUT	ADD
J8CPUC	ADD
S8CPUT	ADD
S8CPUC	ADD
QRMODDLY	ADD
QRMODDLC	ADD
MXTOTDLY	ADD
MXTOTDLC	ADD
IMSWAIT	ADD
IMSWAITC	ADD
DB2RDYQW	ADD
DB2RDYQC	ADD
DB2CONWT	ADD
DB2CONWC	ADD
DB2WAIT	ADD
DB2WAITC	ADD
GNQDELAY	ADD
GNQDELAC	ADD
SOIOWTT	ADD
SOIOWTC	ADD
RRMSWAIT	ADD
RRMSWAIC	ADD
PCDPLCT	ADD
SOBYENCT	ADD
SOBYDECT	ADD
TCBATTCT	ADD
JVMTIME	ADD
JVMTIMEC	ADD
JVMSUSP	ADD
JVMSUSPC	ADD

Intermediate fields

Field	*CPSM Reset*	*Calculation*	*args*

PFXA_CPUTIME		ADD	CPUTIME
IMMD_STOPMISTART		REPL,STCKDIFF	STOP,START

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
RESPONSE		REPL,TALLY	STOPMISTART
PFXA_RESPONSE		REPL,TALLY	STOPMISTART
CURAVGRESP	ZERO	REPLO,AVG_INST	PFXA_RESPONSE,@ALTINTERVAL
INTAVGRESP	ZERO	REPL,AVG_INTVL	RESPONSE,@ALTINTERVAL
CURAVGCPUT	ZERO	REPL,AVG_INST	PFXA_CPUTIME,@ALTINTERVAL
INTAVGCPUT	ZERO	REPL,AVG_INTVL	CPUTIME,@ALTINTERVAL

MREMTRAN

Base fields

Attribute	*CPSM Reset*	*Calculation*
REMOTECNT	ZERO	DELTA
USECOUNT	ZERO	DELTA
REMSTARTCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CURTRANRATE	ZERO	REPL,RATE_INST	USECOUNT
INTTRANRATE	ZERO	REPL,RATE_INTVL	USECOUNT
CURAVGRESP	ZERO	REPL,RATE_INST	RESPTIME,USECOUNT
INTAVGRESP	ZERO	REPL,RATE_INTVL	RESPTIME,USECOUNT

MXTRATDQ

Base fields

Attribute	*CPSM Reset*	*Calculation*
OUTCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CUROUTQRATE	ZERO	REPL,RATE_INST	OUTCNT
INTOUTQRATE	ZERO	REPL,RATE_INTVL	OUTCNT

MNTRATDQ

Base fields

Attribute	*CPSM Reset*	*Calculation*

OUTCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CUROUTQRATE	ZERO	REPL,RATE_INST	OUTCNT
INTOUTQRATE	ZERO	REPL,RATE_INTVL	OUTCNT

MREMTDQ

Base fields

Attribute	*CPSM Reset*	*Calculation*
OUTCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CUROUTQRATE	ZERO	REPL,RATE_INST	OUTCNT
INTOUTQRATE	ZERO	REPL,RATE_INTVL	OUTCNT

MINDTDQ

Base fields

Attribute	*CPSM Reset*	*Calculation*
OUTCNT	ZERO	DELTA

Derived fields

Field	*CPSM Reset*	*Calculation*	*args*
CUROUTQRATE	ZERO	REPL,RATE_INST	OUTCNT
INTOUTQRATE	ZERO	REPL,RATE_INTVL	OUTCNT

MDB2THRD

Derived fields

Field	CPSM Reset	Calculation	args
CURUSERATE	ZERO	REPL,RATE_INST	USECOUNT
INTUSERATE	ZERO	REPL,RATE_INTVL	USECOUNT

Dr Paul Johnson
CICS Transaction Server Systems Management Planning/Development
IBM (UK)

CICS questions and answers

Q We are an SNA site converting to IP. We have a requirement to convert CICS SNA printing to IP printing without changes to the relevant CICS applications. Are there any CICS software products that provide this conversion in a seamless fashion?

A Among others, Macro4's VTAMPRINT (http://www.macro4.com/output/om-vtamprint1.html) provides this function. LRS's DRS and VPS (http://www.lrs.com/EOM/OPDRS.htm) also provide this, and IBM's IP Printway (http://www.printers.ibm.com/R5PSC.NSF/Web/ipservprintway) also gives the same function.

I know that CA-Spool provides a Virtual Printer Interface to allow the same function, but CA-Spool is now part of UniCentre and is a Print Management System rather than a product to allow just IP printing, like the other products.

Q I would like to know if CICS/ESA 4.1 runs on z/OS 1.2 without any problems. Otherwise what maintenance level is required for CICS/ESA to run on z/OS 1.2? We would be migrating from OS/390 V2R10.

A CICS/ESA Version 4.1 will run on z/OS 1.1. and 1.2. There is an issue with LE/370 (OS/390 V2.10 and higher) not initializing in CICS because it looks for CEEQMATH rather than CEEPLPKA in the DFHRPL. The following need to be applied:

- PQ35302/UQ40919 (CICS 4.1)
- PQ40678/UQ47316 (CICS TS 1.1)
- PQ35306/UQ40920 (CICS TS 1.2)
- PQ35306/UQ40921 (CICS TS 1.3).

It is always best to check with IBM for the required maintenance level for z/OS support, but, if the above PTFs (and the rather large pre-req chain) have been applied, we are not aware of any other additional PTFs.

Q I am putting a Web front end on a current CICS application that uses the terminal ID as part of the TSQ name for uniqueness. I know Web transactions have no TermID associated with them, but I was wondering, does the CWI assign some kind of session ID for each session and if so how can I get this information? We are talking about CWS in reality with the Web API. The version is CICS TS 1.3

A As you say, eibtermid is nulls for CWI/CWS. There are no session IDs, but state tokens are supported via the DFH$WBST program (see the *CICS InterNet Guide*). You can call this program to get a unique token at the beginning of the process. If you need to string a number of transactions together to make one business transaction, you can hold the state token in a hidden field in an HTML form or pass it in the query string on the URL. This would give you a fixed token instead of a 'termid' for the Web process. There is a field in the Analyser COMMAREA, wbra-alias-termid, but this has to be set to a real logged-on terminal. This is really provided to allow CEDF to be running at the selected terminal to help with debugging. CEDX has superseded this.

Q We are using the MQ CICS Adapter in one of our CICS regions. The manual says that a maximum of eight TCBs will be attached by the adapter. I'm worried that as the system is a busy one and MQ applications frequently wait for a message (task state=suspend, resource type= MQSeries, resource name=GETWAIT) we will soon attach all the TCBs and not be able to run more work. Is there a way around this problem?

A The MQ TCBs in CICS are used only while the task makes MQ calls (PUTs and GETs). A GETWAIT will not hold the TCB, the task is suspended (under the control of QR TCB) while waiting for the message and will be dispatched by CICS once the required message arrives – it's only then it makes use of the MQ TCBs, just to get the message – then back under the control of QR TCB.

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

CommerceQuest has announced the CommerceQuest CICS Process Integrator which accesses, exposes, and re-integrates CICS transactions and VSAM files via XML, supporting existing applications and data while creating new and more modern interfaces without conversions or migrations.

The software will let sites graphically assemble existing CICS transactions and distributed applications into new business processes, access and expose VSAM data stores using XML, and XML-enable CICS and batch COBOL programs.

It will also integrate distributed systems with CICS and VSAM via WebSphere MQ, HTTP/S, and TCP/IP and provide end-to-end visibility of all transactions.

For further information contact:
CommerceQuest, 2202 N Westshore Blvd, Tampa, FL 33607, USA.
Tel: (813) 639 6300.
URL: http://www.commercequest.com/business_process_integrator.asp.

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Candle has announced immediate support for z/OS 1.3 and reaffirmed its support of IBM's Workload Licence Charges software pricing structure for CICS, DB2, and IMS.

Day-one support includes OMEGAMON II for MVS, CICS, DB2, IMS, DBCTL, SMS and mainframe networks; OMEGAMON XE for Sysplex, CICSplex, DB2plex, IMSplex, UNIX Systems Services, OS/390, CICS and DB2; OMEGAMON DE; DB/EXPLAIN, DB/DASD, DB/SMU, DB/WORKBENCH, DB/QUICKCHANGE and DB/QUICK COMPARE; OMEGAVIEW TN3270, OMEGACENTER Gateway, AF/OPERATOR and AF/REMOTE; OMEGAMON XE Management Pac for MQSeries; CL/SUPERSESSION and CL/CONFERENCE; and PQEdit for MQSeries.

The company also supports new CICS Transaction Service for z/OS Version 3, covering OMEGAMON XE for CICS, OMEGAMON XE for CICSplex, and OMEGAMON II for CICS.

Meanwhile, the Candle Workload Licence Charges pricing support extends to CICS, DB2, and IMS solutions for sites using z/OS 1.3 and IBM's reporting tools and can provide an IBM invoice as proof of pricing. For sites with ongoing maintenance, the company will negotiate the maintenance level based on the licensed subcapacity as shown by the IBM invoice and subcapacity report.

Computer Associates has also announced first-day support for z/OS Version 1 Release 3, coinciding with the general availability of the operating systems, as well as with the new zSeries 800 entry-level servers.

For further information contact:
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Tel: (310) 535 3600.
URL: http://www.candle.com.
Computer Associates, One Computer Associates Plaza, Islandia, NY 11749, USA.
Tel: (631) 342 6000.
URL: http://ca.com/products/zos_e.