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CICS

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CICS Update

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Recent CICS Log Manager enhancements

INTRODUCTION

There have been several recent APARs raised against the CICS Log Manager Domain that have enhanced the function of this component of CICS. This article describes the background to these alterations, and gives the relevent APAR and PTF numbers so that readers can opt to install this CICS service if they choose.

CICS TRANSACTION SERVER

This article makes reference to CICS Transaction Server for OS/390 Releases 1 and 2. The CICS Transaction Server is a member of the OS/390 family of MVS-based software servers.

IBM has recently announced the latest release in the CICS Transaction Server series – CICS Transaction Server Release 3. The CICS component of CICS Transaction Server Release 3 will have a release number of 0530. Unless otherwise indicated, the enhancements described in this article will be present at the base code level of CICS Transaction Server Release 3, and no additional service need be applied to that release to exploit the particular new function.

THE CICS LOG MANAGER DOMAIN

A detailed overview of the CICS Log Manager Domain is available in *The CICS Log Manager,* which appeared in *CICS Update*, Issue 151, June 1998.

APAR PQ14545/PTF UQ17321

During an emergency restart of CICS (from CICS Transaction Server Release 1 onwards), the CICS Recovery Manager Domain invokes the Log Manager Domain to read backwards through the CICS system log and retrieve data needed to reinstate the recoverable environment of the CICS system. However, a backwards scan of the system log now occurs on all types of CICS restart except a TYPE=INITIAL (which was not the case with earlier releases of CICS, such as CICS/

ESA Release 4.1.0 and below). CICS/ESA Release 4.1.0 only had need to revisit the system log data from the previous run of CICS when performing an emergency restart operation.

If CICS Transaction Server is emergency restarted, for whatever reason (such as a TSO cancel, SHUT IMMEDIATE, or power failure), there is the likelihood that tasks were present on the system at the time of the CICS termination that had made changes to recoverable resources. These may be resources internal to CICS (eg temporary storage or transient data queues, VSAM files, etc) or external ones under the control of External Resource Managers such as DBCTL, DB2, or MQSeries. The in-flight tasks would have written recovery information to the CICS system log as part of their UOWs, for changes to internal CICS resources, or had the relevent External Resource Manager write its own recovery information to record updates to external resources.

Prior to the failure and emergency restart, CICS Recovery Manager Domain would have maintained unit of work state data representing the UOWs present on the system up to the point of failure. Likewise, the CICS Log Manager Domain would have maintained control blocks and state data representing what was written to the CICS system log for each UOW. The log data is held as logical chains of connected log records, interspersed with the log data for all the UOWs on the system and written out in MVS log blocks to the CICS system log.

A subsequent emergency restart operation would drive the Recovery Manager Domain to rebuild the UOWs for all the in-flight tasks at the point of the CICS failure. This would involve Recovery Manager invoking Log Manager to retrieve the log data for each UOW's log chain.

Having read back to the start of the log data for each UOW, Recovery Manager would then have rebuilt a CICS environment with a recoverable state consistent with the one that had existed prior to the CICS failure and emergency restart. CICS could then back out the in-flight changes in a controlled manner and restore CICS and all its associated recoverable resources to a committed state once more.

Such a backwards scan of the CICS system log would normally be expected to complete reasonably quickly, and not be a major part of

the emergency restart operation as a whole. However, this is not always the case. Certain users have tasks that update many thousands (even millions) of recoverable resources in the same Unit Of Work. This is not regarded as good CICS application programming practice, because CICS has to hold any locks on recoverable resources until the end of a UOW, and so changes that in fact update many different items can result in enqueue delays for other CICS tasks attempting to access the same resources. Also, a subsequent failure and dynamic transaction backout of such a task would take a considerable amount of time. This is because the log chain for the UOW being backed out has to be read backwards and the 'before images' of log data have to be used to restore each recoverable resource to its previously committed state.

It is this latter point that holds true for emergency restart processing too, since the Recovery Manager Domain requires the whole log chain for a UOW to be read to ensure that the UOW state data is rebuilt correctly. If the in-flight tasks represented UOWs that had updated millions of recoverable resources, the portion of time spent scanning backwards through the system log during emergency restart would take much longer to complete. This extended delay would be compounded by the symptoms presented to the CICS operator while it was taking place. No console messages were issued to indicate the backwards scan was continuing. However, CICS would be very busy during the period and the region would be consuming CPU as it repeatedly drove CICS and MVS Logger code to retrieve successive log records. In short, there was no evidence to indicate CICS was not stuck in some processor-intensive loop. For very long delays during such a CICS system log scan, the temptation to cancel and retry the emergency restart could be considerable.

In order to improve this situation, APAR PQ14545/PTF UQ17321 was shipped against CICS Transaction Server Release 2. This APAR modified the CICS Log Manager Domain to issue various messages during the log scan process, to indicate the series of events taking place. Examples of some of these messages are shown in Figure 1. Here, the (edited) joblog for an emergency restart of CICS is shown. The CICS Log Manager issues message DFHLG0745 to indicate the backwards scan of the system log is about to begin. CICS then reads back sequentially until such time it determines that the log chain data for each UOW is 'disjoint' (that is, unrelated to other UOW log data). At that point, message DFHLG0748 is issued to indicate that an

```
DFHSI1502I   IYCLZCCA CICS startup is Emergency.

DFHLG0745I  IYCLZCCA System log full scan has started.

DFHLG0748I  IYCLZCCA System log selective scan has started.

DFHLG0747I  IYCLZCCA System log scan continuing, 500 records processed.

DFHLG0747I  IYCLZCCA System log scan continuing, 1,000 records processed.

DFHLG0747I  IYCLZCCA System log scan continuing, 1,500 records processed.

DFHLG0747I  IYCLZCCA System log scan continuing, 2,000 records processed.

DFHLG0749I  IYCLZCCA System log scan has completed.

DFHSI1517    IYCLZCCA Control is being given to CICS.
```

Figure 1: Examples of (edited) CICS joblog messages

optimized backwards scan can begin. CICS then reads back each UOW's log chain. After 'n' records have been encountered (where 'n' is the greater of 500 and half the AKPFREQ value as defined to CICS), message DFHLG0747 is issued to indicate how many records have been processed so far. This is repeated for every subsequent 'n' records encountered until the last log record for the final UOW is read. The CICS Log Manager then issues message DFHLG0749 to indicate the end of backwards scan processing.

In this way, operators monitoring CICS emergency restarts for systems with very large long-running UOWs can see the activity CICS is performing to reinstate its recoverable environment during the emergency restart operations. For most CICS systems, it is not expected that many DFHLG0747 messages would be seen during a restart, because relatively few log records would need to be retrieved from a typical CICS system log to reinstate all UOW information. However, the occasional long-running task (with large UOW) may lead to these new messages being seen.

APAR PQ14796/PTF UQ18652

When using CICS Transaction Server in a distributed environment, with TORs, AORs, and DORs, users reported unexpectedly large sizes for their DFHSHUNT portions of the CICS system log on the DORs. In some cases, the volume of data on DFHSHUNT was growing at a consistent rate and resulting in spillage of the log records from their primary storage in the Coupling Facility structure onto secondary DASD storage. Analysis of the problem showed that it was because of a subtle result of the way CICS Transaction Server represented UOW's syncpoint status.

When an EXEC CICS command is function shipped from an AOR to a DOR, CICS processes the request under a mirror task running on the DOR. This mirror task will issue the function shipped EXEC CICS requests and send the results back across the session connecting it to the 'real' task running on the AOR. When the application terminates or issues an EXEC CICS SYNCPOINT, CICS Recovery Manager will coordinate the UOWs on both sides of the session to ensure that all participants in the distributed unit of work are synchronized with respect to each other. At the end of its syncpoint operation for the mirror task, the DOR will send a 'committed' response back to the AOR to confirm that the syncpoint was processed successfully. The mirror task can then terminate; however, the underlying UOW cannot be discarded at this point. CICS Recovery Manager has to be sure that the committed response sent back across the session was received successfully on the AOR. It does this by means of the 'implicit forget' mechanism, in which a new inbound flow being received across the session indicates that the previous outbound flow has been successfully received.

For systems with large numbers of connected sessions, it may be a considerable time before a session is reused and an implicit forget flow received on the DOR. For example, all the possible sessions available may be used concurrently only at times of peak workflow. Once the peak has passed, the high-water mark session may not be reused until the same level of intersystem activity recurs. This means that a mirror task's UOW listening on this session for proof that its committed response was received back on the AOR will have to be retained for this length of time.

Every activity keypoint operation within CICS requires information to be logged about the state of the CICS system. Because the mirror task's UOW is still on the system while awaiting a forget flow, subsequent activity keypoints on the DOR will log this information. After two successive keypoints, when a UOW has not explicitly logged any data to the system log, its log records are moved from the DFHLOG to DFHSHUNT logstreams. Therefore, for those mirror task UOWs awaiting implicit forget flows to be received on the DOR, their log data would be transferred to DFHSHUNT. Additional keypoint information would then be written to their log chains on each successive activity keypoint until the session associated with them was eventually reused. This additional keypoint data would then in turn be moved on subsequent keypoints, and so on.

APAR PQ14796/PTF UQ18652 was shipped against CICS Transaction Server Release 2 to resolve this problem. It enhanced the Log Manager Domain to reclassify certain log record types as not requiring chain movement to DFHSHUNT during a keypoint operation. This prevented the moved log chains for the mirror task UOWs from growing unnecessarily large on the secondary CICS system logstream. This fix was later applied to CICS Transaction Server Release 1 as APAR PQ21018/PTF UQ23997.

APAR PQ04998/PTF UQ07483

With the introduction of logical chains of log records interspersed along the CICS system logstreams, there was a requirement on DFHJUP to help interpret the log data more helpfully when processing a CICS logstream to print out the records contained there. APAR PQ04998/PTF UQ07483 was raised against CICS Transaction Server Release 1 to provide this additional information.

The APAR modified DFHJUP so that each log block is now preceded by additional information – the MVS System Logger block identifier, the length of the log block, and the GMT and local timestamp for when it was written. The block following this information is then broken down into the individual records, and a new column precedes each record, giving the offset (in hexadecimal) of the start of that record from the start of its block.

This enhancement is present in the base level of CICS Transaction Server Release 2.

APAR PQ09028/PTF UQ13627 AND UQ13628

The JCL for submitting batch jobs to manipulate logstream data provides support for the COMPAT41 option on the SUBSYS parameter. This specifies that when the job is run against a user journal (ie not a CICS system logstream), the output is to be in as similar a format as possible to a CICS/ESA Release 4.1.0 journal.

Users with existing batch COBOL applications that opened user journals in Variable Blocked (VB) format, as specified on the DCB, reported that the output from the underlying logstream was incorrect when COMPAT41 was specified. An extra four-byte LLBB field was being appended at the start of the records. This meant that existing applications expecting certain data to be at specific offsets within a log record were failing because of these additional four bytes at the start.

In fact, the logstream emulation of the BSAM OPEN macro call modifies the DCB of the journal to Undefined (U) format. This means that when a record is returned from a BSAM GET request, COBOL compiler-generated code will not adjust the pointer to the start of the record data by four bytes (to skip over the LLBB) as it would do for a VB format record.

To resolve this problem, APAR PQ09028 was raised against CICS Transaction Server Releases 1 and 2. It introduced a new SUBSYS option of COMPAT41V for batch COBOL jobs run against CICS user journal logstreams. If this is specified, records are returned to the applications in undefined format as per COMPAT41, but with the record data adjusted so that the four-byte LLBB is removed from the beginning. This then removes the inconsistency for batch COBOL programs.

COMPAT41 has been left unchanged, so that (eg Assembler) applications expecting an LLBB at the start of a record still work as expected.

APAR PQ09028 also introduced a new parameter called NEWDCB for the OPTION COPY command of DFHJUP. This is used to prevent DFHJUP from using the DCB of the input dataset as the DCB for the

output dataset (that is, the destination for the COPY operation). It is required because the input dataset (as specified on SYSUT1 for DFHJUP) is set to Undefined format at open time if it relates to a logstream. For traditional BSAM log datasets, as used with CICS/ESA Release 4.1.0, the input dataset format would be Variable Blocked. The result of this inconsistency was that the output dataset would be incorrectly blocked as a result of the COPY operation, with one record per block. This led to space inefficiency on the output dataset.

To avoid this, NEWDCB can be specified, and the DCB information to be used be supplied via JCL for the output dataset. This allows the output dataset to be in VB format, and hence the blocking of records to occur.

Note there is no guarantee that the blocking emulation will match that of copied records in CICS/ESA Release 4.1.0. In particular, label records may not be placed at the start of each block. This is because the CICS Subsystem Interface exit module DFHLGCNV (as specified on the SUBSYS card on the JCL DD statement) returns log data record by record and not block by block. The COPY output dataset will block these records as optimally as possible, based on the output dataset buffer size, and the existence of a label record will not affect the position of the record within a block.

PQ17925/PTF UQ22595 AND UQ22596

When CICS Transaction Server Release 1 was developed, various performance models were reviewed to determine the best way to provide a comparable internal transaction rate and CPU cost between the same workload on both CICS Transaction Server and CICS/ESA Release 4.1.0.

Since log management was completely rewritten between these releases, with DFHJCP and BSAM I/O being replaced by the Log Manager Domain and MVS System Logger services, the requirement for comparable throughput and CPU usage had to take into account the changes in this area of CICS. As the pathlength (and CPU cost) of executing an IXGWRITE macro call to write data to the MVS System Logger was greater than the equivalent BSAM WRITE call, there was the need to provide a delay within the CICS Log Manager to defer an

I/O operation for some period of time and allow other tasks to store their own log data in the same log buffer before invoking IXGWRITE to harden it. If such a delay did not occur, IXGWRITE calls would be made at the same rate as BSAM WRITEs, all things being equal. Such a situation would therefore increase the pathlength and CPU costs per transaction.

Performance evaluations of typical CICS transaction workloads indicated that a delay value of 30ms gave comparable transaction rates and CPU costs between CICS Transaction Server and CICS/ESA Release 4.1.0. This value was used as the default delay period. It could be tuned (under strict supervision by IBM support staff) by means of the LGDFINT SIT parameter, where LGDFINT stands for Log Defer Interval.

Certain user environments gained little benefit from such a built-in delay within CICS log management. In the case of a task updating many records on a physically recoverable transient data queue, with a syncpoint operation after each update, each log write would need to be forced to the system log and the task synchronized on this journal I/O before it could proceed. Without concurrent task activity, no other log records would be added to the log buffers during each defer interval period, and the task would spend periods of its elapsed time waiting with no benefit to the overall CICS transaction throughput or CPU costs.

To address this situation, APAR PQ17925/PTFs UQ22595 and UQ22596 were raised against CICS Transaction Server Releases 1 and 2. This APAR fully documented the log defer interval function, to help with tuning requirements, and also externalized the function via the CICS SPI and CEMT. The INQUIRE and SET SYSTEM commands now support the LOGDEFER option, which can be changed dynamically to vary the log defer interval without the need for a restart of CICS.

The range of allowable settings for LOGDEFER are from 0 through to 65,535ms, with the default remaining at 30ms. Users need to be aware that CICS performance can be adversely affected by a change to the log defer interval value. Too high a setting will delay CICS transaction throughput because of the additional wait before invoking the MVS System Logger to perform each IXGWRITE call. Although the range of possible values is from 0 to 65,535ms, in most cases the

default of 30ms should be considered the correct order of magnitude when setting the parameter.

A log delay interval of less than 30ms will reduce the delay in the CICS Log Manager before invoking the MVS System Logger to perform the IXGWRITE call. This will improve the transaction response time, but increase the CPU cost for the system because CICS will buffer fewer journal requests into a given call to the MVS System Logger and so have to invoke the IXGWRITE macro more often.

Conversely, increasing the log defer interval value above 30ms will impact the transaction response time because CICS will increase the delay period before invoking the IXGWRITE macro. However, more transactions will be able to write their own log data into the same log buffer before it is written to the MVS System Logger and hence the total CPU cost of driving IXGWRITE calls will be reduced.

It is not recommended that the log defer interval value be modified in a production CICS environment without a prior system evaluation and performance analysis of any changed value. For most users, the default setting of 30ms should prove adequate for their system's needs.

APAR PQ17993/PTF UQ22255

CICS Transaction Server supplies a Journalmodel RDO Object for use in defining journals to CICS. This allows the mapping of journal names to MVS System Logger logstreams. The definition capability for this type of RDO resource includes support for symbolic name substitution of certain variable components within a logstream name. As supplied with CICS Transaction Server initially, these were &USERID, &APPLID, and &JNAME. When the Journalmodel was used by CICS, these symbolic variable names were resolved to the values of the user-id, application-id, and journal name respectively.

There was a user requirement that the Journalmodel object also supported symbolic substitution of a value to resolve to the system-id of the CICS system in question. This was addressed by APAR PQ17993/PTF UQ22255 at CICS Transaction Server Release 2. The new symbolic parameter &SYSID was introduced to allow dynamic setting of the sysid value into logstream names when using the Journalmodel.

The MVS System Logger maximum limit of 26 characters for a logstream name means that all four symbolic fields cannot be included in the same entry. However, users can elect to use any combination of up to three of the four possible values when defining the logstream component of a Journalmodel. As before the enhancement, it is still possible to choose not to use any of the possible symbolic fields.

SUMMARY AND CONCLUSIONS

I hope that this article has helped explain the background to these enhancements to the CICS Logger Domain and associated utilities, why they were provided, and the considerations needed when using them and interpreting the output they produce.

Readers wishing to discuss the material in this article further are welcome to contact me via e-mail at andy_wright@uk.ibm.com.

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CICS system generator – part 2

This month we continue the article to develop a tool that generates CICS regions on different LPARs.

CICSDEFI

```
/* REXX */
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.JCL.library')"
DO
"DISPLAY PANEL (CICSDEFI)"
SYS='CIC'||SYSID
NODE=SUBSTR(LPAR,3,2)
ENV=SUBSTR(SYS,4,1)
'FTOPEN'
'FTINCL CICSDEFI'
'FTCLOSE NAME(CICSDEFI)'
```

```
"EDIT DATASET('your.JCL.library(CICSDEFI)')  PANEL(SUBMIT)"
END
/* "DISPLAY PANEL (CICSBUIL)" */
```

CICSDEFJ

```
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.library')"
DO
"DISPLAY PANEL (CICSDEFJ)"
SYS='CIC'||SYSID
'FTOPEN'
'FTINCL CICSDEFJ'
'FTCLOSE NAME(CICSDEFJ)'
"EDIT DATASET('your.JCL.library(CICSDEFJ)')  PANEL(SUBMIT)"
END
/* "DISPLAY PANEL (CICSBUIL)" */
```

CICSDEFP

```
/* REXX */
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.library')"
DO
"DISPLAY PANEL (CICSDEFP)"
SYS='CIC'||SYSID
EMP="&"
'FTOPEN'
'FTINCL CICSDEFP'
'FTCLOSE NAME(CICSDEFP)'
"EDIT DATASET('your.JCL.library(CICSDEFP)')  PANEL(SUBMIT)"
END
/*  "DISPLAY PANEL (CICSBUIL)"  */
```

CICSDEFR

```
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.libray')"
DO
"DISPLAY PANEL (CICSDEFR)"
```

```
SYS='CIC'||SYSID
'FTOPEN'
'FTINCL CICSDEFR'
'FTCLOSE NAME(CICSDEFR)'
"EDIT DATASET('your.JCL.library(CICSDEFR)')  PANEL(SUBMIT)"
END
/*  "DISPLAY PANEL (CICSBUIL)" */
```

CICSDEFS

```
/* REXX */
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.library')"
DO
"DISPLAY PANEL (CICSDEFS)"
SYS='CIC'||SYSID
'FTOPEN'
'FTINCL CICSDEFS'
'FTCLOSE NAME(CICSDEFS)'
"EDIT DATASET('your.JCL.library(CICSDEFS)')  PANEL(SUBMIT)"
END
/*  "DISPLAY PANEL (CICSBUIL)" */
```

CICSDEFW

```
/* REXX */
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.library')"
DO
"DISPLAY PANEL (CICSDEFW)"
SYS='CIC'||SYSID
'FTOPEN'
'FTINCL CICSDEFW'
'FTCLOSE NAME(CICSDEFW)'
"EDIT DATASET('your.JCL.library(CICSDEFW)')  PANEL(SUBMIT)"
END
/*  "DISPLAY PANEL (CICSBUIL)"  */
```

CICSIVPB

```
/* REXX */
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.JCL.library') SHR REUSE"
```

```
USERID=USERID()
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.library')"
DO
"DISPLAY PANEL (CICSIVPB)"
SYS='CIC'||SYSID
'FTOPEN'
'FTINCL CICSIVPB'
'FTCLOSE NAME(CICSIVPB)'
"EDIT DATASET('your.JCL.library(CICSIVPB)')  PANEL(SUBMIT)"
END
/*  "DISPLAY PANEL (CICSBUIL)"  */
```

CICSRACF

```
/* REXX */
ADDRESS TSO
"ALLOC F(ISPFILE) DA('your.RACF.control.dataset') SHR REUSE"
USERID=USERID()
CALL PWGEN
PW=RESULT
PW1=WORD(PW,1)
PW2=WORD(PW,2)
APPL='A'||SUBSTR(LPAR,3,2)||'CIC'||SYS
ADDRESS ISPEXEC
"LIBDEF ISPSLIB DATASET ID('your.skel.library')"
DO
"DISPLAY PANEL (CICSRACF)"
SYS='CIC'||SYSID
APPL='A'||SUBSTR(LPAR,3,2)||SYS
'FTOPEN'
'FTINCL CICSRACF'
'FTCLOSE NAME(CICSRACF)'
"EDIT DATASET('your.RACF.control,.dataset(CICSRACF)')"
'FTOPEN'
'FTINCL RACFTPCI'
'FTCLOSE NAME(RACFTPCI)'
"EDIT DATASET('your.RACF.control.dataset(RACFTPCI)')"
END
"DISPLAY PANEL (CICSBUIL)"
```

CICS GENERATOR MESSAGE DEFINITIONS

The following message is invoked:

CICST00

```
CICST001 'Enter required field' .ALARM=YES
'value not valid !'
```

CICS GENERATOR SKELETON DEFINITIONS

The following skeleton JCL jobstreams are invoked:

CICSDEFA

```
//&USERID.P JOB    (ACCT#),'INSTALL',CLASS=A,MSGCLASS=X,
//           NOTIFY=&USERID
//****************************************************************/
/*ROUTE  XEQ &LPAR
//****************************************************************/
//DELETE    EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DELETE &SYS..JCLLIB NONVSAM
 DELETE &SYS..TABSRC NONVSAM
 DELETE &SYS..TABLOAD NONVSAM
 DELETE &SYS..DFHJPDS NONVSAM
 SET MAXCC=Ø
/*
//DEFLIBS  EXEC PGM=IEFBR14
//DD1      DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..JCLLIB,
// SPACE=(CYL,(1,1,2Ø)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=616Ø,RECFM=FB,LRECL=8Ø,DSORG=PO)
//DD2      DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..TABSRC,
// SPACE=(CYL,(1,1,2Ø)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=616Ø,RECFM=FB,LRECL=8Ø,DSORG=PO)
//DD3      DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..TABLOAD,
// SPACE=(CYL,(2,1,2Ø)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=18432,RECFM=U,DSORG=PO)
//DD4      DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..DFHJPDS,
// SPACE=(TRK,(2,1,2)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=4ØØ,RECFM=FB,LRECL=8Ø,DSORG=PO)
//***********************************************
//*    ADD SITOVER TO TABSRC                    *
//***********************************************
//CICSSIT EXEC PGM=IEBUPDTE,PARM=NEW,COND=(4,LT)
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSUT2   DD DISP=SHR,DSN=&SYS..TABSRC
//SYSIN    DD DATA
./ ADD NAME=SITOVER
INITPARM=(DSN2STRT='&SYSID,&DB2SYS'&MQHAAK
&MQSERIE1.&MQSERIE2.&MQSERIE3.&MQSYS.&MQSERIE4
PRVMOD=(DFHDMRM,
DFHPLT&SYSID,
```

```
            DFHEICRE,
            IBMBPSLA,
            IBMBPSMA),
            .END
         ./  ENDUP
         /*
         //************************************************
         //*     ADD DFH$ARCH TO DFHJPDS                   *
         //************************************************
         //CICSJPDS EXEC PGM=IEBUPDTE,PARM=NEW,COND=(4,LT)
         //SYSPRINT DD SYSOUT=*
         //SYSUDUMP DD SYSOUT=*
         //SYSUT2   DD DISP=SHR,DSN=&SYS..DFHJPDS
         //SYSIN    DD DATA
         ./  ADD NAME=DFH$ARCH
         //S&SYS       JOB (,EXP),'&SYS',
         // CLASS=A,MSGCLASS=Z,MSGLEVEL=(1,1),
         // TIME=3
         //*
         //CHECK    EXEC PGM=DFHJACDU,
         //     PARM='CHECK JOURNAL=%JJ,DATASET=%D,DATE=%ODATE,TIME=%OTIME'
         //STEPLIB  DD DSN=CICS&VRM..SDFHLOAD,DISP=SHR
         //DFHJACD  DD DSN=%JACDDSN,DISP=SHR
         //SYSPRINT DD SYSOUT=*
         //DFHJAPRT DD SYSOUT=*
         //*
         //************************************************************
         //*                                                          *
         //*   TO EXECUTE THIS STEP CHANGE IEFBR14 TO A SUITABLE COPY  *
         //*   PROGRAM EG IEBGENER, AND UNCOMMENT THE JCL CARDS        *
         //*                                                          *
         //************************************************************
         //*ARCH     EXEC PGM=IEFBR14,COND=(Ø,NE)
         //*SYSPRINT DD SYSOUT=*
         //*SYSIN    DD DUMMY
         //*SYSUT1   DD DSN=%JOURDSN,DISP=SHR,
         //*            DCB=RECFM=VB
         //*SYSUT2   DD DSN=CICST.ARCHIVE.J%JJ.D%CDATE.T%CTIME,
         //*            DISP=(NEW,CATLG,DELETE),
         //*            DCB=*.SYSUT1,VOL=SER=WRK7ØØ,UNIT=SYSDA,
         //*            SPACE=(CYL,(15,15),RLSE)
         //UPDATE   EXEC PGM=DFHJACDU,COND=(Ø,NE),
         //     PARM='UPDATE JOURNAL=%JJ,DATASET=%D,DATE=%ODATE,TIME=%OTIME'
         //STEPLIB  DD DSN=CICS&VRM..SDFHLOAD,DISP=SHR
         //DFHJACD  DD DSN=%JACDDSN,DISP=SHR
         //SYSPRINT DD SYSOUT=*
         //DFHJAPRT DD SYSOUT=*
         //*
         //
         ./  ENDUP
```

CICSDEFC

```
//&USERID.D JOB (,EXP),'INSTALL',
// NOTIFY=&USERID,
// CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
// TIME=3
//*
/*ROUTE  XEQ &LPAR
//*
//* THIS JOB DELETES AND (RE)CREATES
//* CICS SYSTEM CATALOG DATA SETS AND THE INITIAL CSD FILE
//* AND CREATES A LIST WITH NAME &SYSID
//*
//*
//*
//DELETE    EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DELETE &SYS..DFHGCD
 DELETE &SYS..DFHLCD
 DELETE &SYS..DFHCSD
 SET MAXCC=Ø
/*
//DEFINE    EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 /*                            */
 /* DEFINE A CICS GLOBAL CATALOG */
 /*                            */
 DEFINE CLUSTER(NAME(&SYS..DFHGCD)-
        INDEXED -
        CYL(1 1)-
        SHR(2)-
        FREESPACE(1Ø 1Ø)-
        REUSE -
        VOLUMES(&VOL)) -
       DATA(NAME(&SYS..DFHGCD.DATA)-
        CISZ(8192)-
        KEYS(28 Ø)) -
      INDEX(NAME(&SYS..DFHGCD.INDEX)-
        IMBED -
        REPLICATE)
 /*                            */
 /* DEFINE A CICS LOCAL CATALOG */
 /*                            */
 DEFINE CLUSTER(NAME(&SYS..DFHLCD)-
        INDEXED -
        TRK(5 1)-
        SHR(2)-
        FREESPACE(1Ø 1Ø)-
        REUSE -
        VOLUMES(&VOL)) -
```

```
            DATA(NAME(&SYS..DFHLCD.DATA)-
              KEYS(28 Ø)-
              RECORDSIZE(45 124)-
              CISZ(2Ø48)) -
          INDEX(NAME(&SYS..DFHLCD.INDEX)-
              IMBED -
              REPLICATE)
 /*                               */
 /* DEFINE AN INITIAL CSDFILE    */
 /*                               */
 DEFINE CLUSTER(NAME(&SYS..DFHCSD) -
             IXD -
             REC(4ØØØ)-
             RECORDSIZE(1ØØ 5ØØ)-
             FREESPACE(5 5)-
             SHR(2)-
             VOLUMES(&VOL)) -
     DATA(NAME(&SYS..DFHCSD.DATA) -
             UNIQUE -
             KEYS(22 Ø))-
      INDEX(NAME(&SYS..DFHCSD.INDEX) -
             UNIQUE)
/*
//*
//INITGCD    EXEC PGM=IDCAMS,REGION=1M
//*
//*             INITIALIZE THE GLOBAL CATALOG DATASET
//*
//SYSPRINT  DD SYSOUT=*
//GCDREC    DD DSN=CICS&VRM..SDFHINST(DFHINSTØ),DISP=SHR
//GCD DD DSN=&SYS..DFHGCD,DISP=SHR
//SYSIN     DD *
 REPRO INFILE(GCDREC) OUTFILE(GCD)
/*
//*
//INITLCD    EXEC PGM=DFHCCUTL
//*
//*             INITIALIZE THE LOCAL CATALOG DATASET
//*
//STEPLIB   DD DSN=CICS&VRM..SDFHLOAD,DISP=SHR
//SYSPRINT  DD SYSOUT=*
//SYSUDUMP  DD SYSOUT=*
//DFHLCD    DD DSN=&SYS..DFHLCD,DISP=SHR
//*
//INITCSD   EXEC PGM=DFHCSDUP,REGION=1M
//*
//*             INITIALIZE THE CSD
//*
//STEPLIB   DD DSN=CICS&VRM..SDFHLOAD,DISP=SHR
//DFHCSD    DD DSN=&SYS..DFHCSD,DISP=SHR
//SYSUT1    DD UNIT=SYSDA,SPACE=(1Ø24,(1ØØ,1ØØ))
//SYSPRINT DD SYSOUT=*
```

```
//SYSIN    DD *
  INITIALIZE
//*
//* ADDS THE LIST TO THE CSD FILE
//*
//LIST     EXEC PGM=DFHCSDUP
//STEPLIB  DD DSN=CICS&VRM..SDFHLOAD,DISP=SHR
//         DD DSN=SYS1.COB2LIB,DISP=SHR
//DFHCSD   DD DSN=&SYS..DFHCSD,DISP=SHR
//SYSABOUT DD SYSOUT=X
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 ADD GR(DFHAKP  ) LIST(CIC&ENV)
 ADD GR(DFHMISC3) LIST(CIC&ENV)
 ADD GR(DFHBACK ) LIST(CIC&ENV)
 ADD GR(DFHBMS  ) LIST(CIC&ENV)
 ADD GR(DFHCONS ) LIST(CIC&ENV)
 ADD GR(DFHDLI  ) LIST(CIC&ENV)
 ADD GR(DFHEDF  ) LIST(CIC&ENV)
 ADD GR(DFHFE   ) LIST(CIC&ENV)
 ADD GR(DFHHARDC) LIST(CIC&ENV)
 ADD GR(DFHINQUI) LIST(CIC&ENV)
 ADD GR(DFHINTER) LIST(CIC&ENV)
 ADD GR(DFHISC  ) LIST(CIC&ENV)
 ADD GR(DFHJRNL ) LIST(CIC&ENV)
 ADD GR(DFHMISC ) LIST(CIC&ENV)
 ADD GR(DFHMSWIT) LIST(CIC&ENV)
 ADD GR(DFHOPCLS) LIST(CIC&ENV)
 ADD GR(DFHOPER ) LIST(CIC&ENV)
 ADD GR(DFHRMI  ) LIST(CIC&ENV)
 ADD GR(DFHRSEND) LIST(CIC&ENV)
 ADD GR(DFHRSPLG) LIST(CIC&ENV)
 ADD GR(DFHSIGN ) LIST(CIC&ENV)
 ADD GR(DFHSPI  ) LIST(CIC&ENV)
 ADD GR(DFHSTAND) LIST(CIC&ENV)
 ADD GR(DFHVTAM ) LIST(CIC&ENV)
 ADD GR(DFHVTAMP) LIST(CIC&ENV)
 ADD GR(DFHTYPE ) LIST(CIC&ENV)
 ADD GR(DFHTERM ) LIST(CIC&ENV)
 ADD GR(DFH$UTIL) LIST(CIC&ENV)
 ADD GR(DFHEDP  ) LIST(CIC&ENV)
 ADD GR(DFHDB2  ) LIST(CIC&ENV)
```

CICSDEFD

```
//&USERID.T  JOB (,EXP),'&USERID',
// NOTIFY=&USERID,
// CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),
// TIME=3
//*
/*ROUTE  XEQ &LPAR
//*
```

```
//* THIS JOB DELETES AND RECREATES
//* CICS TRACE AND DUMP DATASETS
//*
//*
//DELETE    EXEC PGM=IDCAMS,REGION=1M
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DELETE &SYS..DFHAUXT NONVSAM
 DELETE &SYS..DFHBUXT NONVSAM
 DELETE &SYS..DFHDMPA NONVSAM
 DELETE &SYS..DFHDMPB NONVSAM
 SET MAXCC=Ø
/*
//DEFTRACE EXEC PGM=IEFBR14
//DD1      DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..DFHAUXT,
// SPACE=(CYL,(1)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=4Ø96,RECFM=F,LRECL=4Ø96)
//DD2      DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..DFHBUXT,
// SPACE=(CYL,(1)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=4Ø96,RECFM=F,LRECL=4Ø96)
//*
//DEFDUMP  EXEC PGM=IEFBR14
//DD1   DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..DFHDMPA,
// SPACE=(CYL,(5)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=3276Ø,RECFM=VB,LRECL=32756,DSORG=PS)
//DD2   DD DISP=(NEW,CATLG,DELETE),
// DSN=&SYS..DFHDMPB,
// SPACE=(CYL,(5)),UNIT=SYSDA,VOL=SER=&VOL,
// DCB=(BLKSIZE=3276Ø,RECFM=VB,LRECL=32756,DSORG=PS)
//*
```

CICSDEFI

```
//&USERID.P JOB    (ACCT#),'INSTALL',CLASS=A,MSGCLASS=X,
//         NOTIFY=&USERID
//****************************************************************/
//* JOB NAME = CICSPROC                                       */
//*                                                           */
//* DESCRIPTIVE NAME = INSTALLATION JOB STREAM                */
//*                                                           */
//*                                                           */
//* FUNCTION = MVS MODIFICATIONS                              */
//*                                                           */
//* PSEUDOCODE =                                              */
//*   CICSIPM  STEP     FOR UPDATING THE MVS PROCLIB WITH CICS: */
//*                     1) STARTUP PROCEDURES                 */
//*                                                           */
//* NOTES =                                                   */
//*   PLEASE CHECK THIS JOB CAREFULLY TO ENSURE THAT THE SYSTEM */
```

```
//*    LIBRARY NAMES ARE THE CORRECT LIBRARY NAMES FOR YOUR SITE.    */
//*************************************************
//*     ADD CATALOGED PROCEDURES TO PROCLIB       *
//*************************************************
/*ROUTE  XEQ &LPAR
//*************************************************
//CICSIPM EXEC PGM=IEBUPDTE,PARM=NEW,COND=(4,LT)
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSUT2   DD DISP=SHR,DSN=&SYS..TABSRC
//SYSIN    DD DATA
./  ADD NAME=DFH$DCTD
         TITLE 'DFH$DCTD - COPYBOOK OF ALL DCT SDSCI ENTRIES'
*
LOGUSR    DFHDCT TYPE=SDSCI,        FOR CICS SAMPLE APPLICATIONS       X
               BLKSIZE=136,                                           X
               BUFNO=1,                                               X
               DSCNAME=LOGUSR,                                        X
               RECFORM=VARUNB,                                        X
               RECSIZE=132,                                           X
               TYPEFLE=OUTPUT
*
MSGUSR    DFHDCT TYPE=SDSCI,        FOR CICS MESSAGES AND SHUTDOWN     X
               BLKSIZE=136,         STATISTICS                        X
               BUFNO=1,                                               X
               DSCNAME=MSGUSR,                                        X
               RECFORM=VARUNB,                                        X
               RECSIZE=132,                                           X
               TYPEFLE=OUTPUT
*
PLIMSG    DFHDCT TYPE=SDSCI,        PL/I OPTIMIZER MESSAGES AND DUMPS  X
               BLKSIZE=137,                                           X
               BUFNO=1,                                               X
               DSCNAME=PLIMSG,                                        X
               RECSIZE=133,                                           X
               RECFORM=VARUNBA,                                       X
               TYPEFLE=OUTPUT
*
COUT      DFHDCT TYPE=SDSCI,        C/370 output                      X
               BLKSIZE=137,                                           X
               BUFNO=1,                                               X
               DSCNAME=COUT,                                          X
               RECSIZE=133,                                           X
               RECFORM=VARUNBA,                                       X
               TYPEFLE=OUTPUT
*
CEEMSG  DFHDCT TYPE=SDSCI,          LE/370 ERROR QUEUE                 X
               DSCNAME=CEEMSG,                                        X
               BLKSIZE=165,                                           X
               RECSIZE=161,                                           X
               RECFORM=VARUNB,                                        X
               TYPEFLE=OUTPUT,                                        X
               BUFNO=1
```

```
CEEOUT DFHDCT  TYPE=SDSCI,          LE/37Ø OUTPUT QUEUE               X
               DSCNAME=CEEOUT,                                        X
               BLKSIZE=137,                                           X
               RECSIZE=133,                                           X
               RECFORM=VARUNB,                                        X
               TYPEFLE=OUTPUT,                                        X
               BUFNO=1
./  ADD NAME=DFH$DCTR
        TITLE 'DFH$DCTR - COPYBOOK OF DCT ENTRIES FOR BASIC CICS FACILX
               ITIES'
*
CPLI     DFHDCT TYPE=EXTRA,         PL/I SYSPRINT OUTPUT             X
               DESTID=CPLI,                                          X
               DSCNAME=PLIMSG
*
CSSL     DFHDCT TYPE=EXTRA,         USED FOR MESSAGES - SEE         X
               DESTID=CSSL,         INDDEST=CSSL BELOW             X
               DSCNAME=MSGUSR
*
CESO     DFHDCT TYPE=EXTRA,         LE/37Ø OUTPUT QUEUE             X
               DESTID=CESO,                                         X
               DSCNAME=CEEOUT
*
CESE     DFHDCT TYPE=EXTRA,         LE/37Ø ERROR QUEUE             X
               DESTID=CESE,                                         X
               DSCNAME=CEEMSG
*
CPLD     DFHDCT TYPE=INDIRECT,      PL/I DUMPS                      X
               DESTID=CPLD,                                         X
               INDDEST=CPLI
*
CSCS     DFHDCT TYPE=INDIRECT,      SIGN ON/OFF SECURITY LOG       X
               DESTID=CSCS,                                         X
               INDDEST=CSSL
*
CADL     DFHDCT TYPE=INDIRECT,      CEDA VTAM RESOURCE LOGGING     X
               DESTID=CADL,                                         X
               INDDEST=CSSL
*
CSDL     DFHDCT TYPE=INDIRECT,      CEDA COMMAND LOGGING           X
               DESTID=CSDL,                                         X
               INDDEST=CSSL
*
CSFL     DFHDCT TYPE=INDIRECT,      FILE ALLOCATION MESSAGES       X
               DESTID=CSFL,                                         X
               INDDEST=CSSL
*
CSKL     DFHDCT TYPE=INDIRECT,      TRANSACTION MGR MESSAGES       X
               DESTID=CSKL,                                         X
               INDDEST=CSSL
*
CSPL     DFHDCT TYPE=INDIRECT,      PROGRAM MANAGER MESSAGES       X
```

```
                        DESTID=CSPL,                                            X
                        INDDEST=CSSL
*
CCPI      DFHDCT TYPE=INDIRECT,     CPIC MESSAGES                              X
                        DESTID=CCPI,                                           X
                        INDDEST=CSSL
*
CAIL      DFHDCT TYPE=INDIRECT,     AITM MESSAGES                             X
                        DESTID=CAIL,                                          X
                        INDDEST=CSSL
*
CSML      DFHDCT TYPE=INDIRECT,     SIGN ON/OFF MESSAGES                      X
                        DESTID=CSML,                                          X
                        INDDEST=CSSL
*
CSCC      DFHDCT TYPE=INDIRECT,     CICS CLIENT ERROR MESSAGES AND            X
                        DESTID=CSCC,     TRANSACTION ABEND MESSAGES ETC       X
                        INDDEST=CSSL
*
CSMT      DFHDCT TYPE=INDIRECT,     TERMINAL ERROR MESSAGES AND               X
                        DESTID=CSMT,     TRANSACTION ABEND MESSAGES ETC       X
                        INDDEST=CSSL
*
CSNE      DFHDCT TYPE=INDIRECT,     LOG OF ALLZNAC-PRODUCEDMESSAGES           X
                        DESTID=CSNE,                                          X
                        INDDEST=CSSL
*
CSTL      DFHDCT TYPE=INDIRECT,     LOG OF TERMINAL I/O ERRORS                X
                        DESTID=CSTL,                                          X
                        INDDEST=CSSL
*
CDBC      DFHDCT TYPE=INDIRECT,     DATABASE LOG                              X
                        DESTID=CDBC,                                          X
                        INDDEST=CSSL
*
CDUL      DFHDCT TYPE=INDIRECT,     DUMP MESSAGES                             X
                        DESTID=CDUL,                                          X
                        INDDEST=CSSL
*
CRDI      DFHDCT TYPE=INDIRECT,     RDO INSTALL LOG                           X
                        DESTID=CRDI,                                          X
                        INDDEST=CSSL
*
CSRL      DFHDCT TYPE=INDIRECT,     Partner Resource Manager                  X
                        DESTID=CSRL,                                          X
                        INDDEST=CSSL
*
CMIG      DFHDCT TYPE=INDIRECT,     LOG OF MIGRATION ERRORS                   X
                        DESTID=CMIG,                                          X
                        INDDEST=CSSL
*
CCSO      DFHDCT TYPE=EXTRA,        C/37Ø output queue                        X
```

```
                         DESTID=CCSO,                                              X
                         DSCNAME=COUT
*
CCSE     DFHDCT TYPE=INDIRECT,      C/37Ø error queue                      X
                         DESTID=CCSE,                                              X
                         INDDEST=CCSO
*
***
./  ADD NAME=DFH$DCTS
         TITLE 'DFH$DCTS - COPYBOOK OF DCT ENTRIES FOR SAMPLE APPLICATIX
                ONS'
*
LOGA     DFHDCT TYPE=EXTRA,         DESTINATION LOGA-USED BY SAMPLE        X
                         DESTID=LOGA,          APPLICATIONS WHICH USE FILEA        X
                         DSCNAME=LOGUSR
*
L86Ø     DFHDCT TYPE=INTRA,         DESTINATIONL86Ø-USEDBYORDER ENTRY      X
                         DESTFAC=TERMINAL,     QUEUE PRINT SAMPLE PROGRAMS         X
                         DESTID=L86Ø,                                             X
                         DESTRCV=NO,                                              X
                         TRANSID=AORQ,             CHANGE IF WANT  PORQ  OR  OREQ  X
                         TRIGLEV=3Ø            TRANSID IS AUTO INIT'D WHEN QUEUE=3Ø
*
L86P     DFHDCT TYPE=INTRA,         DESTINATION L86P-USED BY 'TRANSIENT X
                         DESTFAC=TERMINAL,     DATA WRITE TO TERMINAL' PGM-DFH$TDWTX
                         DESTID=L86P,                                             X
                         DESTRCV=NO,                                              X
                         TRANSID=TDWT,                                            X
                         TRIGLEV=1
./  ADD NAME=DFHØIZRQ
*===============================================================================*
*=       Queues for samples                                                    =*
*===============================================================================*
*
CSZL     DFHDCT TYPE=INDIRECT,      FEPI message queue                     X
                         DESTID=CSZL,                                             X
                         INDDEST=CSSL
*
CSZX     DFHDCT TYPE=INTRA,         FEPI event queue                       X
                         DESTID=CSZX,                                             X
                         DESTFAC=FILE,                                            X
                         DESTRCV=NO,                                              X
                         TRANSID=CZUX,                                            X
                         TRIGLEV=1
*
*
**********************************************************************
*        End of DFHØIZRQ                                             *
**********************************************************************
./  ADD NAME=DFHDCT&SYSID
DCT&SYSID TITLE 'DFHDCT&SYSID -    CICS DESTINATION TABLE FOR SAMPLE AX
                PLICATIONS'
```

```
         ****************************************************************
         DFHDCT TYPE=INITIAL,                                          X
                SUFFIX=&SYSID,                                         X
                STARTER=YES          ALLOWS $ IN SUFFIX
*
*                                     TABLE ENTRIES FOR:-
         COPY   DFH$DCTD              - ALL SDSCI ENTRIES MUST BE IN HERE
         COPY   DFH$DCTR              - BASIC CICS FACILITIES
         COPY   DFH$DCTS              - SAMPLE APPLICATIONS
         COPY   DFHØIZRQ              - FEPI DESTINATIONS
         DFHDCT TYPE=FINAL
         END    ,
./  ADD NAME=JCTCICS
         TITLE 'DFHJCT&SYSID - JCT ENTRY FOR XRF CICS SYSTEM LOG'
****************************************************************************
* CICS SYSTEM LOG, JOURNAL Ø1, ON DUAL DISK EXTENT - DFHJØ1A + DFHJØ1B*
****************************************************************************
*
         DFHJCT TYPE=ENTRY,                                            X
                JFILEID=SYSTEM,     CICS SYSTEM LOG                    X
                BUFSIZE=6ØØØ,                                          X
                JOUROPT=(CRUCIAL,RETRY,AUTOARCH),                     X
                ARCHJCL=DFH$ARCH,                                     X
                JTYPE=DISK2
./  ADD NAME=DFHJCT&SYSID
JCT&SYSID TITLE 'DFHJCT&SYSID - CICS JOURNAL CONT TABLE - SYSTEM LOG'
****************************************************************************
*                                                                        *
* THIS TABLE CONTAINS ENTRIES FOR THE CICS SYSTEM LOG                     *
****************************************************************************
*
         DFHJCT TYPE=INITIAL,                                          X
                SUFFIX=&SYSID
*
*                                     TABLE ENTRIES FOR:-
         COPY   JCTCICS               - CICS SYSTEM LOG (Ø2)
         DFHJCT TYPE=FINAL
         END    ,
./  ADD NAME=DFHMCT&SYSID
         DFHMCT TYPE=INITIAL,SUFFIX=&SYSID
         DFHMCT TYPE=EMP,                                              X
                CLASS=PERFORM,                                         X
                ID=(OMEGBSC.1),                                        X
                FIELD=(1,OMEGBSC),                                     X
                PERFORM=(MOVE(Ø,132))
         DFHMCT TYPE=EMP,                                              X
                CLASS=PERFORM,                                         X
                ID=(OMEGDB2.1),                                        X
                FIELD=(1,OMEGDB2),                                     X
                PERFORM=(MOVE(Ø,1ØØ))
         DFHMCT TYPE=RECORD,                                           X
                CLASS=PERFORM,                                         X
```

```
                 EXCLUDE=(DFHFILE,9,111,13Ø)
          DFHMCT TYPE=FINAL
          END
./  ADD NAME=DFHPLTPI
          DFHPLT TYPE=INITIAL,SUFFIX=&SYSID
*  FIRST  STAGE PLTPI
          DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*  SECOND STAGE PLTPI
          DFHPLT TYPE=ENTRY,PROGRAM=DSN2COMØ     DB2
          DFHPLT TYPE=FINAL
          END
./  ADD NAME=DFHPLTSD
          DFHPLT TYPE=INITIAL,SUFFIX=SD
*  FIRST STAGE PLTSD
          DFHPLT TYPE=ENTRY,PROGRAM=DSN2COM2
          DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*  SECOND STAGE PLTSD
          DFHPLT TYPE=FINAL
          END
./  ADD NAME=DFHSIT&SYSID
SIT       TITLE 'DFHSIT&SYSID CICS DEFAULT SYSTEM INITIALIZATION TABLE'
          DFHSIT TYPE=CSECT,                                        X
          ADI=3Ø,                       XRF(B) - Alternate delay interval
*
                  AIEXIT=DFHZATDX,  Auto-install user program name     X
                  AILDELAY=Ø,       Delete delay period for AI TCTTEs  X
                  AIQMAX=1ØØ,       Maximum no of terminals queued for AI X
                  AIRDELAY=7ØØ,     Restart delay period for AI TCTTEs X
                  AKPFREQ=2ØØ,      Activity keypoint frequency        X
                  APPLID=(A&NODE.CIC&SYSID,A&NODE.CIC&SYSID),         X
                  AUTCONN=Ø,        Autoconnect delay                  X
                  AUXTR=OFF,        Auxiliary trace option             X
                  AUXTRSW=NO,       Auxiliary trace autoswitch facility X
                  BMS=(FULL,COLD,UNALIGN,DDS),    CHANGED             X
                  CICSSVC=216,      The CICS SVC number                X
                  CLSDSTP=NOTIFY,   Notification for ISSUE PASS command X
                  CLT=,             The command list table option/suffix X
                  CMDPROT=YES,      EXEC storage command checking      X
                  CMDSEC=ASIS,      API command security checking      X
                  CSDACC=READWRITE, CSD access                         X
                  CSDBKUP=STATIC,   Backuptype of CSD (STATIC or DYNAMIC) X
                  CSDBUFND=,        Number of data buffers for the CSD X
                  CSDBUFNI=,        Number of index buffers for the CSD X
                  CSDDISP=SHR,      CHANGED                            X
                  CSDDSN=&SYS..DFHCSD,          CHANGED               X
                  CSDFRLOG=1,                   CHANGED               X
                  CSDJID=1,                     CHANGED               X
                  CSDLSRNO=2,       The VSAM LSR pool number for the CSD X
                  CSDRECOV=ALL,                 CHANGED               X
                  CSDSTRNO=2,       CSD Number of strings              X
                  CWAKEY=USER,      CWA storage key                    X
                  DAE=NO,           NODAE for new dump table entry     X
```

```
              DATFORM=DDMMYY,                       CHANGED           X
              DBP=1$,             Required version of DBP with DLI=NO X
              DBUFSZ=5ØØ,         Dynamic backout buffer size        X
              DCT=&SYSID,                           CHANGED           X
              DDIR=YES,           DL/I DMB directory option/suffix    X
              DFLTUSER=SCIC&SYSID,                  CHANGED           X
              DIP=NO,             Batch data interchange program      X
              DISMACP=YES,        Disable macro programs              X
              DLDBRC=NO,          DL/I DBRC support - CICS local DL/I X
              DLI=NO,             DL/1 option                         X
              DLIOLIM=1ØØ,        Number of errors per DL/I database  X
              DLIRLM=NO,          DL/I IRLM option/name               X
              DLLPA=NO,           Use IMS/VS modules from LPA option  X
              DLMON=NO,           DL/I Data Base Monitor option       X
              DLTHRED=1,          DL/I number of threads (CICS-DLI)   X
              DLXCPVR=NO,         Page-fix ISAM/OSAM buffers for DL/I X
              DMBPL=4,            DMB pool size in 1Ø24-byte blocks   X
              DSALIM=4M,                            CHANGED           X
              DSHIPIDL=Ø2ØØØØ,    Delete shipped idle time            X
              DSHIPINT=12ØØØØ,    Delete shipped interval             X
              DTRPGM=DFHDYP,      Dynamic transaction routing program X
              DTRTRAN=CRTX,       Default dynamic tran routing transid X
              DUMP=YES,           Dump option                         X
              DUMPDS=AUTO,        CICS dump data set opening option   X
              DUMPSW=NO,          Dump data set autoswitch option     X
              DURETRY=3Ø,         SDUMP total retry time (in seconds) X
              EDSALIM=16M,                          CHANGED           X
              ENQPL=2,            Max.control.blk.space (in 1K blocks) X
              EODI=EØ,            End-of-data indicator for seq. devicesX
              ESMEXITS=INSTLN,                      CHANGED           X
              FCT=NO,                               CHANGED           X
              FEPI=NO,                              CHANGED           X
              FLDSEP='    ',      End-of-field separator characters   X
              FLDSTRT=' ',        Field start character for builtin fn X
              GMTEXT='WELCOME TO CICS/ESA           INTERPAY',        X
              GMTRAN=CESN,                          CHANGED           X
              GNTRAN=CESF,        Signoff transaction                 X
              GRNAME=,            Generic resource name for CICS TORs X
              GRPLIST=CIC&ENV,                      CHANGED           X
              GTFTR=OFF,          GTF trace option                    X
              HPO=NO,             VTAM High Performance Option (HPO)   X
              ICP=COLD,           Interval control pgm. start option  X
              ICV=1ØØØ,           Region exit interval (milliseconds) X
              ICVR=2ØØØØ,                            CHANGED           X
              ICVTSD=5ØØ,         Terminal scan delay interval (  "  ) X
              INITPARM=,          SITOVER                             X
              INTTR=ON,           CICS internal trace option          X
              IRCSTRT=NO,         Interregion communication start     X
              ISC=YES,                              CHANGED           X
              JCT=&SYSID,                           CHANGED           X
              JESDI=3Ø,           JES delay interval for XRF alternate X
```

```
      LGNMSG=NO,              Extract VTAM logon data            X
      LLACOPY=YES,            Use MVS LLACOPY support            X
      LPA=YES,                          CHANGED                 X
      MCT=&SYSID,             CHANGED T.B.V. OMEGAMON CT13Ø      X
      MN=ON,                            CHANGED                 X
      MNCONV=NO,              Monitoring converse recording option X
      MNEVE=ON,               Monitoring event class option     X
      MNEXC=ON,               Monitoring exception class option X
      MNFREQ=Ø1ØØØØ,          Monitoring frequency period       X
      MNPER=ON,                         CHANGED                 X
      MNSUBSYS=,              Monitoring subsystem identification X
      MNSYNC=NO,              Monitoring syncpoint recording option X
      MNTIME=GMT,             Monitoring timestamp (GMT/LOCAL)  X
      MROBTCH=1,              Number of MRO requests to batch   X
      MROLRM=NO,              Long-running mirror task option   X
      MSGCASE=MIXED,          CICS messages in mixed case       X
      MSGLVL=1,               System console MSG level option   X
      MXT=32,                 Maximum number of tasks in CICS   X
      NATLANG=E,              List of national languages        X
      OPERTIM=12Ø,            Write to operator timeout (seconds) X
      OPNDLIM=1Ø,             OPNDST/CLSDST request limit        X
      PARMERR=INTERACT,       System init. parameter errors option X
      PDI=3Ø,                 Primary delay interval - XRF active X
      PDIR=YES,               DL/I PSB directory option/suffix  X
      PGAICTLG=NONE,                    CHANGED  27/Ø2/96       X
      PGAIEXIT=DBUPGADX,      PG AUTOINSTALL EXIT PROGRAM        X
      PGAIPGM=ACTIVE,                   CHANGED                 X
      PGCHAIN=X/,                       CHANGED                 X
      PGCOPY=C/,                        CHANGED                 X
      PGPURGE=T/,                       CHANGED                 X
      PGRET=P/,                         CHANGED                 X
      PISCHD=YES,             Program isolation scheduling option X
      PLTPI=&SYSID,                     CHANGED                 X
      PLTPISEC=ALL,             PLT SECURITY CHECKS ON PI PROGRAMS X
      PLTPIUSR=S&SYS.P,       PLT PI USERID = CICS REGION USERID X
      PLTSD=SD,                         CHANGED                 X
      PRGDLAY=Ø,              BMS purge delay interval          X
      PRINT=PA1,                        CHANGED                 X
      PRTYAGE=1ØØ,                      CHANGED                 X
      PSBCHK=NO,              PSB resource checking required     X
      PSBPL=4,                PSB pool size in 1Ø24-byte blocks  X
      PSDINT=Ø,               Persistent Session Delay Interval  X
      PVDELAY=3Ø,             Timeout value for LUIT Table       X
      RAMAX=256,              Max. I/O area for RECEIVE ANY      X
      RAPOOL=2,               Max. RECEIVE ANY Request Parm.Lists X
      RENTPGM=NOPROTECT,                CHANGED                 X
      RESP=FME,               Logical unit response type        X
      RESSEC=ASIS,            Resource security check            X
      RMTRAN=CSGM,            XRF alternate recovery transaction X
      RST=NO,                 Recovery service table (XRF-DBCTL) X
      SEC=YES,                External security manager option   X
```

```
                  SECPRFX=YES,                      CHANGED                X
                  SKRPA1=,        SKR PA1 PAGE RETRIEVAL CMD                X
                  SKRPA2=,        SKR PA2 PAGE RETRIEVAL CMD                X
                  SKRPA3=,        SKR PA3 PAGE RETRIEVAL CMD                X
                  SKRPF1='1',                       CHANGED                X
                  SKRPF2='-1',                      CHANGED                X
                  SKRPF3='N',                       CHANGED                X
                  SKRPF4='L',                       CHANGED                X
                  SKRPF5=,        SKR PF5 PAGE RETRIEVAL CMD                X
                  SKRPF6=,        SKR PF6 PAGE RETRIEVAL CMD                X
                  SKRPF7=,        SKR PF7 PAGE RETRIEVAL CMD                X
                  SKRPF8=,        SKR PF8 PAGE RETRIEVAL CMD                X
                  SKRPF9=,        SKR PF9 PAGE RETRIEVAL CMD                X
                  SKRPF10=,       SKR PF1Ø PAGE RETRIEVAL CMD               X
                  SKRPF11=,       SKR PF11 PAGE RETRIEVAL CMD               X
                  SKRPF12=,       SKR PF12 PAGE RETRIEVAL CMD               X
                  SKRPF13=,       SKR PF13 PAGE RETRIEVAL CMD               X
                  SKRPF14=,       SKR PF14 PAGE RETRIEVAL CMD               X
                  SKRPF15=,       SKR PF15 PAGE RETRIEVAL CMD               X
                  SKRPF16=,       SKR PF16 PAGE RETRIEVAL CMD               X
                  SKRPF17=,       SKR PF17 PAGE RETRIEVAL CMD               X
                  SKRPF18=,       SKR PF18 PAGE RETRIEVAL CMD               X
                  SKRPF19=,       SKR PF19 PAGE RETRIEVAL CMD               X
                  SKRPF20=,       SKR PF2Ø PAGE RETRIEVAL CMD               X
                  SKRPF21=,       SKR PF21 PAGE RETRIEVAL CMD               X
                  SKRPF22=,       SKR PF22 PAGE RETRIEVAL CMD               X
                  SKRPF23=,       SKR PF23 PAGE RETRIEVAL CMD               X
                  SKRPF24=,       SKR PF24 PAGE RETRIEVAL CMD               X
                  SKRPF25=,       SKR PF25 PAGE RETRIEVAL CMD               X
                  SKRPF26=,       SKR PF26 PAGE RETRIEVAL CMD               X
                  SKRPF27=,       SKR PF27 PAGE RETRIEVAL CMD               X
                  SKRPF28=,       SKR PF28 PAGE RETRIEVAL CMD               X
                  SKRPF29=,       SKR PF29 PAGE RETRIEVAL CMD               X
                  SKRPF30=,       SKR PF3Ø PAGE RETRIEVAL CMD               X
                  SKRPF31=,       SKR PF31 PAGE RETRIEVAL CMD               X
                  SKRPF32=,       SKR PF32 PAGE RETRIEVAL CMD               X
                  SKRPF33=,       SKR PF33 PAGE RETRIEVAL CMD               X
                  SKRPF34=,       SKR PF34 PAGE RETRIEVAL CMD               X
                  SKRPF35=,       SKR PF35 PAGE RETRIEVAL CMD               X
                  SKRPF36=,       SKR PF36 PAGE RETRIEVAL CMD               X
                  SNSCOPE=NONE,   Multiple CICS sessions per user-id        X
                  SPCTR=(1,2),    Level(s) of special tracing required      X
                  SPOOL=YES,                        CHANGED                X
                  SRBSVC=215,     HPO Type 6 SVC number                     X
                  SRT=NO,                           CHANGED                X
                  START=AUTO,     CICS system initialization option         X
                  STARTER=YES,    Starter ($ and #) suffixes option         X
                  STATRCD=OFF,    statistics recording status               X
                  STGPROT=YES,    CHANGED 27/Ø2/96 na hardware change        X
                  STGRCVY=NO,     Storage recovery option                   X
                  STNTR=1,        Level of standard tracing required        X
```

```
              SUBTSKS=1,           CHANGED 25/Ø3/97    test              X
              SUFFIX=&SYSID,                    CHANGED                  X
              SYDUMAX=999,         No of SYSDUMPS to be taken            X
              SYSIDNT=CICS,        Local system identifier               X
              SYSTR=ON,            Master system trace flag              X
              TAKEOVR=MANUAL,      XRF alternate takeover option         X
              TBEXITS=,            Transaction backout exit programs     X
              TCAM=NO,             TCAM option                           X
              TCP=YES,             Terminal control program option/suffixX
              TCSACTN=UNBIND,      CHANGED                               X
              TCSWAIT=2,           CHANGED                               X
              TCT=NO,              CHANGED                               X
              TCTUAKEY=USER,       TCT user area storage key             X
              TCTUALOC=BELOW,      TCT user area below 16MB              X
              TD=(3,3),            Transient data buffers and strings    X
              TRAP=OFF,            F.E. global trap exit option          X
              TRANISO=NO,                   CHANGED back to default      X
              TRDUMAX=999,         No of TRANDUMPS to be taken
              TRTABSZ=1Ø24,        CHANGED                               X
              TRTRANSZ=4Ø,         Transaction Dump Trace size           X
              TRTRANTY=TRAN,       Transaction Dump Trace type           X
              TS=(,3,3),           Temporary storage buffers and strings X
              TSMGSET=4,           # of entries for pointers to TS MSGsetX
              TST=NO,              TEMPORARY STORAGE TABLE OPTION/SUFFIX X
              USERTR=ON,           Master user trace flag                X
              USRDELAY=3Ø,         Timeout value for User Dir. Entries   X
              VTAM=YES,            VTAM access method option             X
              WRKAREA=2048,        CHANGED                               X
              XAPPC=NO,            RACF class APPCLU required            X
              XCMD=YES,                        CHANGED                   X
              XDCT=NO,                         CHANGED                   X
              XFCT=NO,                         CHANGED                   X
              XJCT=NO,                         CHANGED                   X
              XLT=NO,                          CHANGED                   X
              XPCT=NO,                         CHANGED                   X
              XPPT=NO,                         CHANGED                   X
              XPSB=NO,                         CHANGED                   X
              XRF=NO,              Extended recovery feature (XRF) optionX
              XRFSOFF=NOFORCE,     XRF -  Re-sign on after takeover      X
              XRFSTME=5,           XRF -  sign off timeout value         X
              XTRAN=YES,           Transid use default name, RACF check  X
              XTST=YES,            TST use default name for RACF check   X
              XUSER=YES            Surrogate user checking to be done
        END   DFHSITBA
./  ENDUP
```

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

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PL/I OPTIONS(REENTRANT) on called procedures

We often use separately compiled PL/I procedures in CICS PL/I programs. The object modules containing the procedures bind to the CICS program at link time. These procedures perform transformation operations on passed parameters. They do not require CICS services and can also be called from batch programs.

Until recently, using CICS 3.3 without Language Environment, we had no problems with these programs. However, as we moved to CICS 4.1 and Language Environment, we began to experience the problems shown in Figure 1.

The program was linked RENT, REUS, AMODE(31), RMODE(ANY) and so it was loaded by CICS in ERDSA.

The following report is the object listing of TSTPRGB without OPTIONS(REENTRANT):

```
* STATEMENT NUMBER  9  CALL HVPC2X(PARM1,PARM1X,BINARY(16,31));
000090  58 E0 3 064           L    14,100(0,3)
000094  50 E0 D 128           ST   14,296(0,13)
000098  41 A0 9 000           LA   10,PARM1
00009C  50 A0 3 074           ST   10,116(0,3)
0000A0  41 40 D 0C8           LA   4,PARM1X
0000A4  50 40 3 078           ST   4,120(0,3)
```

The abend was produced when TSTPRGB was filling in the parameter list for the calling Assembler program. The parameter list was pointed to by register 3, which contains the address of the static DSECT – so it was obvious that the program would abend here. After recompiling TSTPRGB with OPTIONS(REENTRANT) the problem disappeared. The object listing shows that the parameter list is now moved to working storage and everything works as well as before.

The following report is the object listing of TSTPRGB with OPTIONS(REENTRANT):

```
* STATEMENT NUMBER  9
000090  D2 0B D 128 3 074     MVC  296(12,13),116(3)
000096  58 80 3 064           L    8,100(0,3)
00009A  50 80 D 134           ST   8,308(0,13)
00009E  41 A0 9 000           LA   10,PARM1
```

```
DFHAC2206 13:52:12 A06SYTM Transaction TEST has failed with abend ASRA. Resource backout was successful
DFHSR0622 A06SYTM An attempt to overwrite the ERDSA has caused the abend which follows
DFHSR0001 A06SYTM An abend (code 0C4/AKEA) has occurred at offset X'0000EB8' in program TSTPRGA
IBM0534S ONCODE=8094  Protection exception
From compile unit TSTPRGB at entry point TSTPRGB at compile unit
offset +0000009C at address 05A7BEB4.
PSW..... 079D0E00 85A7BEB8
storage at location: 05A7BEA4
05A7BEA4  90003090 58E03064 50E0D128 41A09000  50A03074 4140D0C8 50403078 41F0D128
   offending instruction ———>
                          ———>    ST 10,116(0,3)

Analysis:
  structure of TEST:
  trans TEST
  prog TSTPRGA                    prog TSTPRGB
  PROC(DFHEIPTR)                  PROC(PARM1) RETURNS(BIN FIXED(31));
  OPTIONS (MAIN REENTRANT);       Note!!! no options(reentrant)
  rc=TSTPRGB(parm1);
                                    call assembler_program(parms);
```

Figure 1: Problems encountered with CICS 4.1

```
ØØØØA2  5Ø AØ D 128              ST    1Ø,296(Ø,13)
ØØØØA6  41 4Ø D ØC8              LA    4,PARM1X
ØØØØAA  5Ø 4Ø D 12C              ST    4,3ØØ(Ø,13)
```

CONCLUSION

Obviously I should have compiled with the right options from the beginning, but better late than never. I hope that others may benefit from my experience!

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Systems Programmer (Belgium) © Xephon 1999

Further CICS V3.3 shutdown statistics – part 2

This month we continue the programs to accumulate statistics for DTB, dumps, ISC/IRC, Task Class, VTAM, and Transient Data Queues.

ISC/IRC STATISTICS PROGRAM

```
        TITLE ' STATISCS - ISC/IRC STATISTICS COLLECTION PROGRAM'
DFHEISTG DSECT
*
        DS    ØF
RESP     DS    F
CVRTAREA DS    D
ZAPTAREA DS    PL3
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R1Ø      EQU   1Ø
R11      EQU   11
*
COMMFLDS DSECT
APPLID   DS    CL8
SYSID    DS    CL4
JOBNAME  DS    CL8
DATE     DS    CL8
```

```
TIME     DS    CL8
STOKEN   DS    CL8
*
*                  **  ISC AND MODENAME DSECTS  **
         COPY  DFHA14DS
         COPY  DFHA2ØDS
*
STATISCS DFHEIENT CODEREG=(3),DATAREG=(13),EIBREG=11
*
         L     R2,DFHEICAP
         USING COMMFLDS,R2
*
         BAL   R4,HDNG          PAGE HEADINGS
         BAL   R4,FRSTHEAD      ISC STATISTICS HEADINGS
         BAL   R7,ISCDS         ISC STATISTICS DETAIL
         BAL   R4,ISCHEAD2      ISC STATISTICS HEADINGS (#2)
         BAL   R7,ISCDS2        ISC STATISTICS DETAIL (#2)
         B     EXIT
*
HDNG     EQU   *
         MVC   HJOBNM(8),JOBNAME
         MVC   HAPPLID(8),APPLID
         MVC   HSYSID(4),SYSID
         MVC   HDATE(8),DATE
         MVC   HTIME(8),TIME
         MVC   PRINTLN(133),HEADING
         BAL   R1Ø,WRITESPL
         MVC   PRINTLN(133),UNDRSCOR
         BAL   R1Ø,WRITESPL
         MVC   PRINTLN(133),BLANKS
         BAL   R1Ø,WRITESPL
         ZAP   LNECNT,=P'3'
         BR    R4
*
****>>>>>>>> **** START PROCESS ISC STATISTICS ****** <<<<<<<<*******
FRSTHEAD EQU    *
         MVC   PRINTLN(133),ISCHDT
         BAL   R1Ø,WRITESPL
         MVC   PRINTLN(133),BLANKS
         BAL   R1Ø,WRITESPL
         AP    LNECNT,=P'2'
*
ISCHEAD  MVC   PRINTLN(133),ISCHD1
         BAL   R1Ø,WRITESPL
         MVC   PRINTLN(133),ISCHD2
         BAL   R1Ø,WRITESPL
         MVC   PRINTLN(133),ISCHD3
         BAL   R1Ø,WRITESPL
         MVC   PRINTLN(133),UNDRSCOR
         BAL   R1Ø,WRITESPL
         AP    LNECNT,=P'4'
```

```
         BR    R4
*
ISCDS    EQU   *                   GET ISC INFO
         USING DFHA14DS,R9
         EXEC CICS INQUIRE CONNECTION START
         EXEC CICS INQUIRE CONNECTION (CONNID) NEXT RESP (RESP)
         CLC   RESP,DFHRESP(END)
         BE    NOCONNS
         CLC   CONNID(4),BATCH    IF BATCH CONNECTION (@BCH)
         BE    NXTCONN                  IGNORE.
         MVC   ISCLNE1(133),BLANKS
         MVC   ISCID(8),BLANKS
         MVC   ISCID(4),CONNID
         MVC   SAVECONN(4),CONNID
         BAL   R8,ISCSTAT
*
NXTCONN  EQU   *
         USING DFHA14DS,R9
         EXEC CICS INQUIRE CONNECTION (CONNID) NEXT RESP(RESP)
         CLC   RESP,DFHRESP(END)
         BE    ISCEND
         CLC   CONNID(4),BATCH    IF BATCH CONNECTION (@BCH)
         BE    NXTCONN                  IGNORE.
         MVC   ISCLNE1(133),BLANKS
         MVC   SAVECONN(4),CONNID
         MVC   ISCID(8),BLANKS
         MVC   ISCID(4),CONNID
         BAL   R8,ISCSTAT
         B     NXTCONN
*
ISCSTAT  EQU   *              COLLECT STATISTICS AND PROCESS
         EXEC CICS COLLECT STATISTICS CONNECTION (CONNID) SET (R9)
*
*   AIDS IN CHAIN
         LH    R6,A14EALL
         CVD   R6,CVRTAREA
         ZAP   ZAPTAREA(3),CVRTAREA+5(3)
         OI    ZAPTAREA+2,X'ØF'
         MVC   AIC(6),PTRN
         ED    AIC(6),ZAPTAREA
*
*   GENERIC AIDS IN CHAIN (NON-SPECIFIC AIDS)
         LH    R6,A14ESALL
         CVD   R6,CVRTAREA
         ZAP   ZAPTAREA(3),CVRTAREA+5(3)
         OI    ZAPTAREA+2,X'ØF'
         MVC   NSA(6),PTRN
         ED    NSA(6),ZAPTAREA
*
*   CURRENT BIDS
         LH    R6,A14EBID
```

```
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
        MVC     CBIDS(6),PTRN
        ED      CBIDS(6),ZAPTAREA
*
*    MAX OUTSTANDING ALLOCATES
        LH      R6,A14ESTAM
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
        MVC     MAXO(6),PTRN
        ED      MAXO(6),ZAPTAREA
*
*    MAX SECONDARIES
        LH      R6,A14E2HWM
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
        MVC     MAXS(6),PTRN
        ED      MAXS(6),ZAPTAREA
*
*    MAX BIDS
        LH      R6,A14EBHWM
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
        MVC     MAXB(6),PTRN
        ED      MAXB(6),ZAPTAREA
*
*    ATIS SATISFIED BY PRIMARIES
        L       R6,A14ES1
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
        MVC     ATIP(6),PTRN
        ED      ATIP(6),ZAPTAREA
*
*    ATIS SATISFIED BY SECONDARIES
        L       R6,A14ES2
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
        MVC     ATIS(6),PTRN
        ED      ATIS(6),ZAPTAREA
*
*    BIDS SENT
        L       R6,A14ESBID
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'ØF'
```

```
        MVC    BIDSSNT(6),PTRN
        ED     BIDSSNT(6),ZAPTAREA
*
        MVC    PRINTLN(133),BLANKS
        MVC    PRINTLN(133),ISCLNE1
        AP     LNECNT,=P'1'
        BAL    R1Ø,WRITESPL
*
        AP     LNECNT,=P'1'
        CP     LNECNT,MAXLNE       END OF PAGE?
        BL     MODDS
        BAL    R4,HDNG             PAGE HEADING
        BAL    R4,ISCHEAD          ISC HEADINGS
*
*
MODDS    EQU    *                  GET ISC INFO
        USING  DFHA2ØDS,R9
        EXEC CICS INQUIRE MODENAME START
        EXEC CICS INQUIRE MODENAME (MODEID) CONNECTION (CONNID)       X
               NEXT RESP (RESP)
        CLC    RESP,DFHRESP(END)
        BE     MODEEND
        CLC    CONNID(4),BATCH     IF BATCH CONNECTION (@BCH)
        BE     NXTMODE                      IGNORE.
        BAL    R5,MODESTAT
*
NXTMODE  EQU    *
        EXEC CICS INQUIRE MODENAME (MODEID) CONNECTION (CONNID)       X
               NEXT RESP (RESP)
        CLC    RESP,DFHRESP(END)
        BE     MODEEND
        CLC    CONNID(4),BATCH     IF BATCH CONNECTION (@BCH)
        BE     NXTMODE                      IGNORE.
        CLC    CONNID(4),SAVECONN
        BNE    MODEEND
        BAL    R5,MODESTAT
        B      NXTMODE
*
MODESTAT EQU    *            COLLECT STATISTICS AND PROCESS
        MVC    ISCLNE1(133),BLANKS
        MVC    PRINTLN(133),BLANKS
        MVC    ISCID(8),MODEID
*
*   MAX SECONDARIES
        LH     R6,A2ØE2HWM
        CVD    R6,CVRTAREA
        ZAP    ZAPTAREA(3),CVRTAREA+5(3)
        OI     ZAPTAREA+2,X'ØF'
        MVC    MAXS(6),PTRN
        ED     MAXS(6),ZAPTAREA
*
```

```
*     MAX BIDS
        LH      R6,A20EBHWM
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'0F'
        MVC     MAXB(6),PTRN
        ED      MAXB(6),ZAPTAREA
*
*     ATIS SATISFIED BY PRIMARIES
        L       R6,A20ES1
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'0F'
        MVC     ATIP(6),PTRN
        ED      ATIP(6),ZAPTAREA
*
*     ATIS SATISFIED BY SECONDARIES
        L       R6,A20ES2
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'0F'
        MVC     ATIS(6),PTRN
        ED      ATIS(6),ZAPTAREA
*
*     BIDS SENT
        L       R6,A20ESBID
        CVD     R6,CVRTAREA
        ZAP     ZAPTAREA(3),CVRTAREA+5(3)
        OI      ZAPTAREA+2,X'0F'
        MVC     BIDSSNT(6),PTRN
        ED      BIDSSNT(6),ZAPTAREA
*
        MVC     PRINTLN(133),BLANKS
        MVC     PRINTLN(133),ISCLNE1
*
        BAL     R10,WRITESPL
*
        AP      LNECNT,=P'1'
        CP      LNECNT,MAXLNE           END OF PAGE?
        BL      MODEBACK
        BAL     R4,HDNG                 PAGE HEADING
        BAL     R4,ISCHEAD              ISC  HEADINGS
*
*
MODEBACK BR     R5
*
MODEEND  EQU     *
        EXEC CICS INQUIRE MODENAME END
        BR      R8
*
NOCONNS  EQU     *
```

```
        MVC    ISCLNE1(133),BLANKS         PUT OUT MESSAGE IF
        MVC    NOCONNM+13(8),JOBNAME         REGION HAS NO
        MVC    ISCLNE1+35(38),NOCONNM         CONNECTIONS TO
        MVC    PRINTLN(133),ISCLNE1             OTHER REGIONS
        BAL    R1Ø,WRITESPL
ISCEND  EQU    *
        EXEC CICS INQUIRE CONNECTION END
        BR     R7
*
ISCHEAD2 EQU   *
*
        MVC    PRINTLN(133),BLANKS
        MVI    PRINTLN,C'1'
        BAL    R1Ø,WRITESPL
*       MVC    PRINTLN(133),BLANKS
*       BAL    R1Ø,WRITESPL
*       AP     LNECNT,=P'2'
*
ISCHEADX EQU   *
        MVC    PRINTLN(133),ISCHD4
        BAL    R1Ø,WRITESPL
        MVC    PRINTLN(133),ISCHD5
        BAL    R1Ø,WRITESPL
        MVC    PRINTLN(133),ISCHD6
        BAL    R1Ø,WRITESPL
        MVC    PRINTLN(133),UNDRSCOR
        BAL    R1Ø,WRITESPL
        AP     LNECNT,=P'4'
        BR     R4
*
ISCDS2  EQU    *                    GET ISC INFO
*
        USING DFHA14DS,R9
        EXEC CICS INQUIRE CONNECTION START
        EXEC CICS INQUIRE CONNECTION (CONNID) NEXT RESP (RESP)
        CLC    RESP,DFHRESP(END)
        BE     NOCONNS
        CLC    CONNID(4),BATCH     IF BATCH CONNECTION (@BCH)
        BE     NXTCONN2                IGNORE.
        MVC    ISCLNE2(133),BLANKS
        MVC    ISCID2(8),BLANKS
        MVC    ISCID2(4),CONNID
        MVC    SAVECONN(4),CONNID
        BAL    R8,ISCSTAT2
*
NXTCONN2 EQU   *
        USING DFHA14DS,R9
        EXEC CICS INQUIRE CONNECTION (CONNID) NEXT RESP(RESP)
        CLC    RESP,DFHRESP(END)
        BE     ISCEND
```

```
        CLC   CONNID(4),BATCH     IF BATCH CONNECTION (@BCH)
        BE    NXTCONN2                    IGNORE.
        MVC   ISCLNE2(133),BLANKS
        MVC   SAVECONN(4),CONNID
        MVC   ISCID2(8),BLANKS
        MVC   ISCID2(4),CONNID
        BAL   R8,ISCSTAT2
        B     NXTCONN2
*
ISCSTAT2 EQU   *              COLLECT STATISTICS AND PROCESS
        EXEC CICS COLLECT STATISTICS CONNECTION (CONNID) SET (R9)
*   ALLOCATES: TOTAL
        L     R6,A14ESTAS
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCTO(6),PTRN
        ED    ALLOCTO(6),ZAPTAREA
*
*   ALLOCATES: QUEUED
        L     R6,A14ESTAQ
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCQ(6),PTRN
        ED    ALLOCQ(6),ZAPTAREA
*
*   ALLOCATES: FAILED LINK
        L     R6,A14ESTAF
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCF(6),PTRN
        ED    ALLOCF(6),ZAPTAREA
*
*   ALLOCATES: FAILED OTHER
        L     R6,A14ESTAO
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCFO(6),PTRN
        ED    ALLOCFO(6),ZAPTAREA
*
*   REQUESTS: FILE
        L     R6,A14ESTFC
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   RQSTF(6),PTRN
        ED    RQSTF(6),ZAPTAREA
*
```

```
*    REQUESTS: INTERVAL
         L      R6,A14ESTIC
         CVD    R6,CVRTAREA
         ZAP    ZAPTAREA(3),CVRTAREA+5(3)
         OI     ZAPTAREA+2,X'ØF'
         MVC    RQSTI(6),PTRN
         ED     RQSTI(6),ZAPTAREA
*
*    REQUESTS: TRANSIENT DATA
         L      R6,A14ESTTD
         CVD    R6,CVRTAREA
         ZAP    ZAPTAREA(3),CVRTAREA+5(3)
         OI     ZAPTAREA+2,X'ØF'
         MVC    RQSTTD(6),PTRN
         ED     RQSTTD(6),ZAPTAREA
*
*    REQUESTS: TEMPORARY STORAGE
         L      R6,A14ESTTS
         CVD    R6,CVRTAREA
         ZAP    ZAPTAREA(3),CVRTAREA+5(3)
         OI     ZAPTAREA+2,X'ØF'
         MVC    RQSTTS(6),PTRN
         ED     RQSTTS(6),ZAPTAREA
*
*    REQUESTS: DL/I
         L      R6,A14ESTDL
         CVD    R6,CVRTAREA
         ZAP    ZAPTAREA(3),CVRTAREA+5(3)
         OI     ZAPTAREA+2,X'ØF'
         MVC    RQSTDLI(6),PTRN
         ED     RQSTDLI(6),ZAPTAREA
*
         MVC    PRINTLN(133),BLANKS
         MVC    PRINTLN(133),ISCLNE2
         AP     LNECNT,=P'1'
         BAL    R1Ø,WRITESPL
*
         AP     LNECNT,=P'1'
         CP     LNECNT,MAXLNE        END OF PAGE?
         BL     MODDS2
         BAL    R4,HDNG              PAGE HEADING
         BAL    R4,ISCHEADX          ISC HEADINGS
*
*
MODDS2   EQU    *                    GET ISC INFO
         USING  DFHA2ØDS,R9
         EXEC CICS INQUIRE MODENAME START
         EXEC CICS INQUIRE MODENAME (MODEID) CONNECTION (CONNID)      X
               NEXT RESP (RESP)
         CLC    RESP,DFHRESP(END)
```

```
        BE    MODEEND
        BAL   R5,MODESTA2
*
NXTMODE2 EQU   *
        EXEC CICS INQUIRE MODENAME (MODEID) CONNECTION (CONNID)       X
             NEXT RESP (RESP)
        CLC   RESP,DFHRESP(END)
        BE    MODEEND
        CLC   CONNID(4),SAVECONN
        BNE   MODEEND
        BAL   R5,MODESTA2
        B     NXTMODE2
*
MODESTA2 EQU   *              COLLECT STATISTICS AND PROCESS
        MVC   ISCLNE2(133),BLANKS
        MVC   PRINTLN(133),BLANKS
        MVC   ISCID2(8),MODEID
*
*    ALLOCATES: TOTAL
        L     R6,A20ESTAS
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCTO(6),PTRN
        ED    ALLOCTO(6),ZAPTAREA
*
*    ALLOCATES: QUEUED
        L     R6,A20ESTAQ
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCQ(6),PTRN
        ED    ALLOCQ(6),ZAPTAREA
*
*    ALLOCATES: FAILED LINK
        L     R6,A20ESTAF
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCF(6),PTRN
        ED    ALLOCF(6),ZAPTAREA
*
*    ALLOCATES: FAILED OTHER
        L     R6,A20ESTAO
        CVD   R6,CVRTAREA
        ZAP   ZAPTAREA(3),CVRTAREA+5(3)
        OI    ZAPTAREA+2,X'ØF'
        MVC   ALLOCFO(6),PTRN
        ED    ALLOCFO(6),ZAPTAREA
*
*
```

```
        MVC    PRINTLN(133),BLANKS
        MVC    PRINTLN(133),ISCLNE2
*
        BAL    R1Ø,WRITESPL
*
        AP     LNECNT,=P'1'
        CP     LNECNT,MAXLNE         END OF PAGE?
        BL     MODEBACK
        BAL    R4,HDNG               PAGE HEADING
        BAL    R4,ISCHEADX           ISC  HEADINGS
*
CONNBAC2 BR     R8
*
****>>>>>>>>>***** END PROCESS ISC STATISTICS  *******<<<<<<<<*******
*                      ** WRITE THE SPOOL RECORD  **
WRITESPL EQU    *
        EXEC CICS SPOOLWRITE TOKEN(STOKEN) FROM(PRINTLN)            X
             FLENGTH(LINELEN) NOHANDLE
*
        BR     R1Ø
*
EXIT    EQU    *
*                         ** RETURN  **
        EXEC  CICS RETURN
****************************************************************
*
CONNID   DS    CL4
SAVECONN DS    CL4
MODEID   DS    CL8
LNECNT   DC    PL2'Ø'
MAXLNE   DC    P'6Ø'
PTRN     DC    X'4Ø2Ø2Ø2Ø2Ø212Ø'
OUTCLAS  DC    CL1'Q'
LINELEN  DC    F'133'
PRINTLN  DS    CL133
BATCH    DC    CL4'@BCH'
*
NOCONNM  DC    CL41'THIS REGION (        ) HAS NO CONNECTIONS'
*
BLANKS   DS    ØCL133     ** BLANK LINE  **
        DC    CL1'Ø'
        DC    CL132' '
UNDRSCOR DS    ØCL133     ** UNDERSCORE LINE  **
        DC    CL1'Ø'
        DC    132C'_'
*                        ** HEADING LINE DEFINITION **
HEADING  DS    ØCL133
        DC    CL1'1'
        DC    CL8'JOBNAME:'
HJOBNM   DC    CL8' '
```

```
          DC    CL1Ø'    APPLID:'
HAPPLID   DC    CL8' '
          DC    CL9'    SYSID:'
HSYSID    DC    CL4' '
          DC    CL8'    DATE:'
HDATE     DC    CL8' '
          DC    CL8'    TIME:'
HTIME     DC    CL8' '
          DC    CL53' '
** **
*
* ***************** START ISC STATISTICS DEFINITIONS  ************ **
*                    ** ISC HEADING LINES **
ISCHDT    DS    ØCL133
ISHCNTLA  DC    CL1'Ø'
          DC    CL132'***   ISC/IRC STATISTICS   ***'
ISCHD1    DS    ØCL133
SCHCNTL1  DC    CL1'Ø'
          DC    CL132'SYST/MODE   AIDS     NON    CURRENT   MAX    MX
               AX     MAX    ATIS-SATISFIED   BIDS'
ISCHD2    DS    ØCL133
SCHCNTL2  DC    CL1'Ø'
          DC    CL132'  ID       IN    SPECIFIC    BIDS  OUTSTNG   SECX
               N-    BIDS   .....BY.....     SENT'
ISCHD3    DS    ØCL133
SCHCNTL3  DC    CL1'Ø'
          DC    CL132'          CHAIN    AIDS             ALLOCS   -DRX
               IES       PRIMRIES 2NDRIES        '
*
ISCHD4    DS    ØCL133
SCHCNTL4  DC    CL1'Ø'
          DC    CL132'SYST/MODE   **—NUMBER OF ALLOCATES—**   **——
               ——NUMBER OF REQUESTS——**'
ISCHD5    DS    ØCL133
SCHCNTL5  DC    CL1'Ø'
          DC    CL132'  ID    TOTAL   QUEUED   FAILED FAILED      FIX
               LE  INTERVAL TRANS    TEMP    DL/I '
ISCHD6    DS    ØCL133
SCHCNTL7  DC    CL1'Ø'
          DC    CL132'                            LINK   OTHER       X
                          DATA   STORAGE       '
*
*                    ** ISC DETAIL LINE #1 **
ISCLNE1   DS    ØCL133
ISCDCNTL  DC    CL1'Ø'
ISCID     DS    CL4
          DC    CL4' '
AIC       DS    CL6
          DC    CL4' '
NSA       DS    CL6
          DC    CL4' '
```

```
CBIDS    DS    CL6
         DC    CL4' '
MAXO     DS    CL6
         DC    CL3' '
MAXS     DS    CL6
         DC    CL1' '
MAXB     DS    CL6
         DC    CL2' '
ATIP     DS    CL6
         DC    CL2' '
ATIS     DS    CL6
         DC    CL1' '
BIDSSNT  DS    CL6
         DC    CL49' '
*                        ** ISC DETAIL LINE #2 **
         ORG   ISCLNE1
ISCLNE2  DS    ØCL133
ISCDCNT2 DC    CL1'Ø'
ISCID2   DC    CL4' '
         DC    CL4' '
ALLOCTO  DS    CL6
         DC    CL4' '
ALLOCQ   DS    CL6
         DC    CL2' '
ALLOCF   DS    CL6
         DC    CL2' '
ALLOCFO  DS    CL6
         DC    CL5' '
RQSTF    DS    CL6
         DC    CL1' '
RQSTI    DS    CL6
         DC    CL2' '
RQSTTD   DS    CL6
         DC    CL2' '
RQSTTS   DS    CL6
         DC    CL1' '
RQSTDLI  DS    CL6
         DC    CL51' '
*
* ****************** END ISC STATISTICS DEFINITIONS  *********** **
*
         LTORG
         DFHEISTG
         DFHEIEND
         END
```

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

Jim Smith
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Onondaga County Data Processing (USA)

CICS news

Compuware and Lincoln Software have announced support for CICS Transaction Server 1.3.

Compuware's support applies to its QAHiperstation, CICS Abend-AID/FX, and XPEDITER/CICS testing products.

Lincoln's Engineer for CICS now utilizes the TS 1.3 interfaces to Web-enable existing Lincoln systems without large-scale re-writes. Through the screen builder, Engineer generates a working application, including all of the HTML, Java applets, and COBOL code that interfaces into ClCS. It now supports five ClCS interfaces, covering two- or three-tier designs with a choice of Java and HTML for the browser.

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

Lincoln Software Ltd, Marlborough Court, Pickford Street, Macclesfield, Cheshire, SK11 6JD, UK.
Tel: (01625) 616722.
URL: http://www.ipsys.com.

* * *

CICS users can benefit from Technologic Software's RT-Validate, an MVS and OS/390 stand-alone tool that examines application program code as it's executing in real time, then corrects, verifies compliance, and generates audit reports. It can be run as a batch or (on-line) CICS program.

Rather than searching for date variables based on programmer-defined pattern matching methods, the software traces every instruction and mathematical operation actually executing in the mainframe code when a date moves from 1999 to 2000 and beyond.

For further information contact:
Technologic Software Concepts, 4199 Campus Drive, Irvine, CA 92612, USA.
Tel: (949) 509 5000.
Technologic Software Concepts (UK), Airport House, Purley Way, Croydon, Surrey, CR0 0XZ, UK.
Tel: (0181) 2883500.

* * *

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