

C98

Migrating from CICS/ESA V4.1 to CICS TS

V1.3

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Transaction & Messaging Technical Conference

Las Vegas, NV

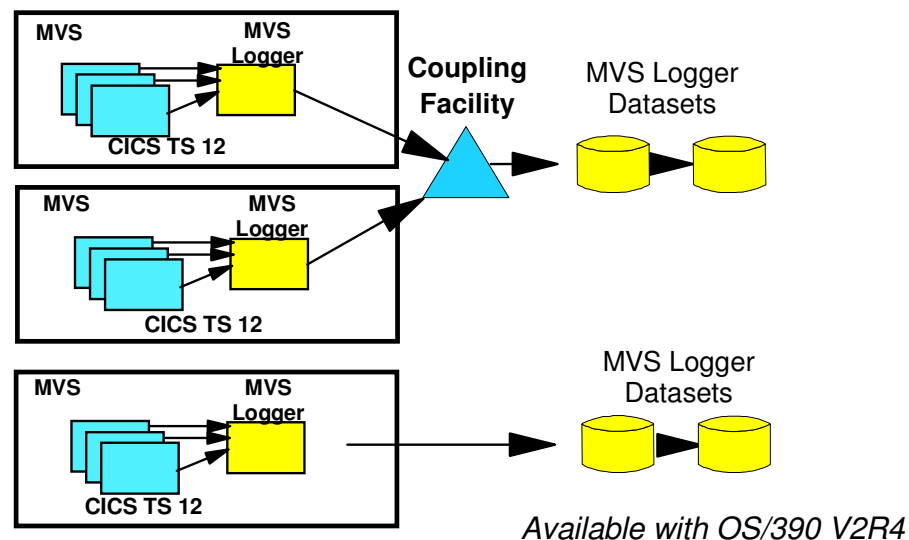
Feb. 10 - Feb. 14, 2003

Session Agenda

- **The New Logging Environment**
- **Recovery Manager**
- **Resource Definition Changes**
- **Application Programming Interface**
- **System Programming Interface**
- **Exits and User Replaceable Modules**
- **Database**
- **Web Changes**
- **Prerequisites**
- **Reference Material**

CICS Logging and Journaling

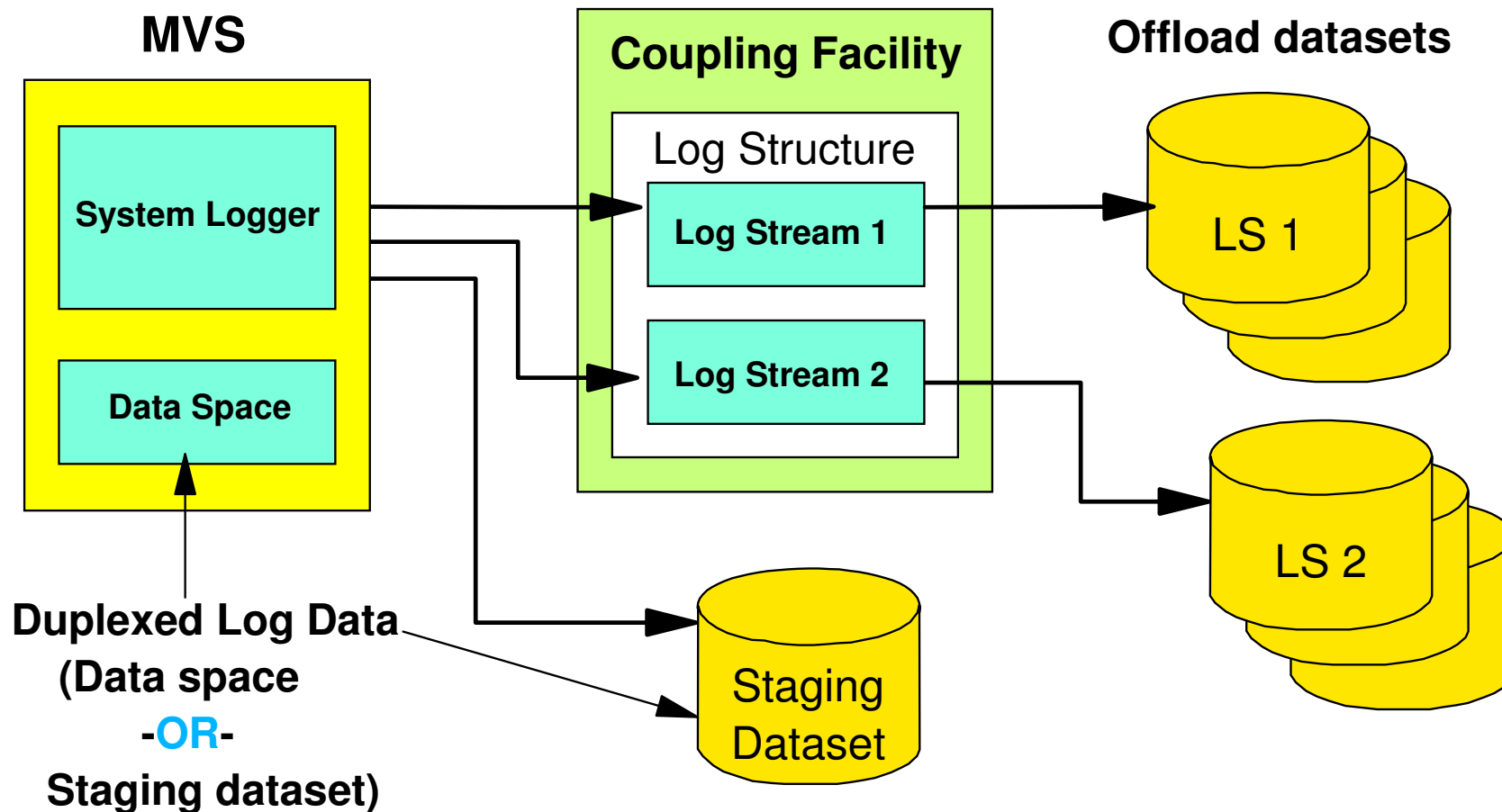
- **CICS Log Manager**
 - ▶ Replaces Journal Control
 - ▶ System log, forward recovery logs and user journals managed by Log Manager
- **Uses MVS system logger services**
 - ▶ Provides focal point in a sysplex for all log output
 - ▶ CF or DASD logstreams



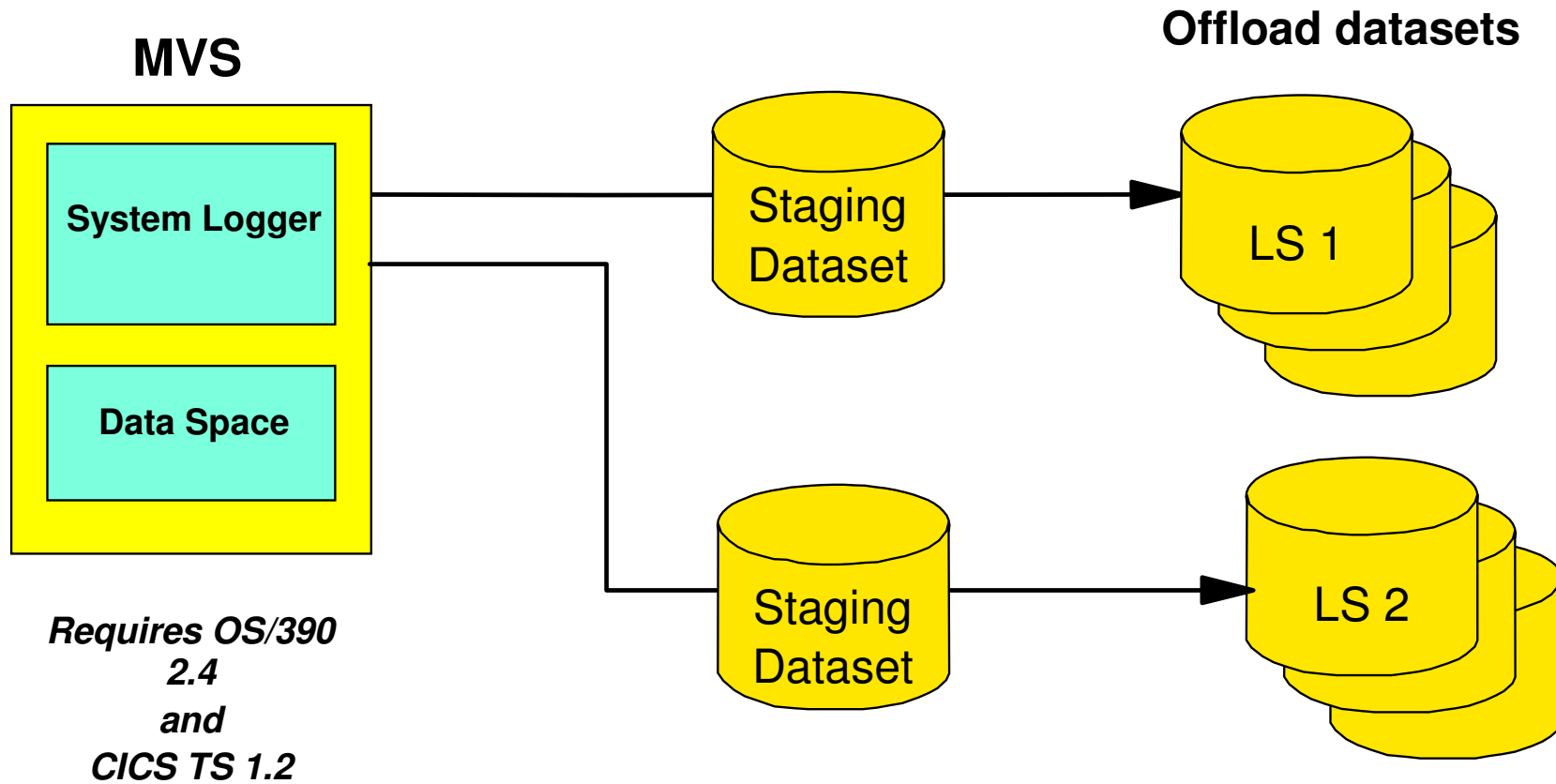
MVS System Logger

- **The MVS Logger is a set of services which manages log streams**
 - ▶ Write, browse, and delete log data
- **Each stream may be accessed from any address space within a sysplex**
 - ▶ When the log stream is in a coupling facility
 - ▶ Multiple concurrent users
- **Streams are logically independent objects**
- **Log streams can have different characteristics**
- **Data is duplexed**
 - ▶ Copy of log data is kept until data is offloaded
 - **Logger data space or staging dataset**
 - ▶ Users are unaware of data location

Coupling Facility Log Streams



DASD Log Streams



How the Pieces Fit Together

CFRM
Policy

LOGR
Policy

CICS
Journal Model

CF		<ul style="list-style-type: none"> • Specifies the type of CICS log (SMF, MVS, Dummy) • Specifies the log stream to be used by the journal
<ul style="list-style-type: none"> • Defines the space allocation and placement of a structure 	<ul style="list-style-type: none"> • Attributes of a structure used for log streams • Defines individual log streams and their attributes 	
DASD only		
Not applicable	<ul style="list-style-type: none"> • Defines data set and log stream attributes 	

CFRM Definitions

CFRM Policy

CF
<ul style="list-style-type: none">• Defines the space allocation and placement of a structure
DASD only
Not applicable

CFRM Definitions ...

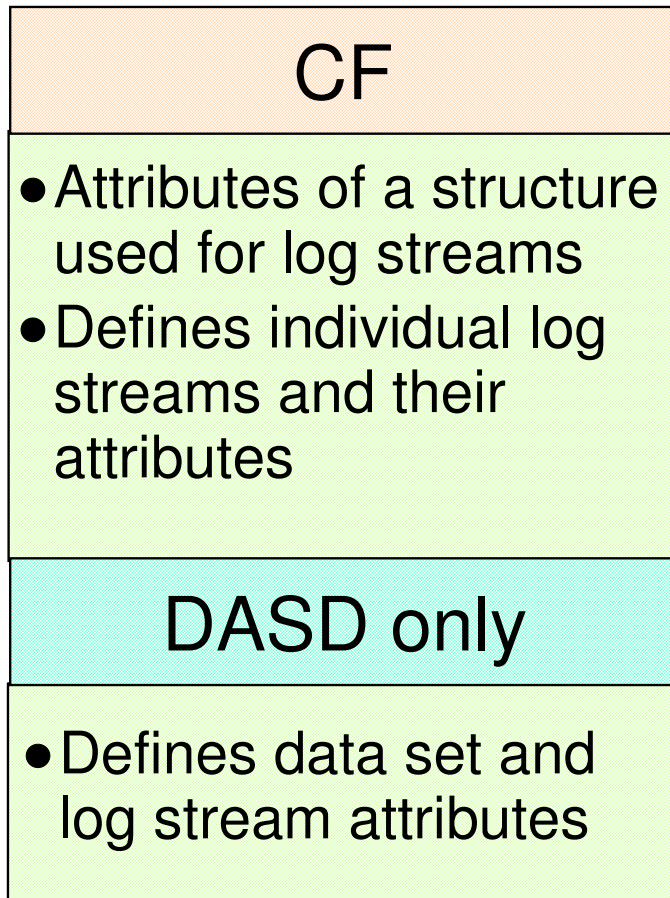
- **Define CF LOGR structures**

**STRUCTURE NAME(structure name) PREFLIST(cfname)
INITSIZE(1k blocks) SIZE(1k blocks)
REBUILDPERCENT(1) MINSIZE(1k blocks)**

- ▶ **Structure names** should identify the logstream usage and the type of CICS journal using it e.g. PLOG_DFHLOG_T01
- ▶ **Rebuildpercent** should be low to force rebuild if there is a connectivity failure
- ▶ **MINSIZE** should be set to stop 'stealing' of structure space (OS/390 2.10)

Logger Definitions

LOGR
Policy



Logger Definitions ...

```
DEFINE STRUCTURE NAME(bb)  
  LOGSNUM(n) MAXBUFSIZE(64000) AVGBUFSIZE(400)
```

```
DEFINE LOGSTREAM NAME(aa) STRUCTURE NAME(bb)  
  LOWOFFLOAD(percent) HIGHOFFLOAD(percent)  
  STGDUPLEX(YES) DUPLEXMODE(COND)  
  LS_SIZE(4k blocks) AUTODELETE(YES|NO) RETPD(nn)  
  OFFLOADRECALL(NO)
```

```
DEFINE LOGSTREAM NAME(aaa) DASDONLY(YES)  
  LOWOFFLOAD(percent) HIGHOFFLOAD(percent)  
  MAXBUFSIZE(65532) STG_STORCLAS(xxxxxxxxx)  
  STG_DATACLAS(xxxxxxxxx) STG_MGMTCLAS(xxxxxxxxx)  
  STG_SIZE(4k blocks) LS_SIZE(4k blocks)  
  AUTODELETE(YES|NO) RETPD(nn) OFFLOADRECALL(NO)
```

Notes - Logger Definition

If not using SMS classes to manage the allocations of your logger datasets, it's a good idea to specify a size value for STG_SIZE and LS_SIZE (the staging dataset size and offload dataset size, respectively). Without some specification, you may take defaults that will cause problems later: many customers find that their log stream datasets are defaulting to a size of 2 tracks, which can be taken from the ALLOCxx member of SYS1.PARMLIB if no other size is specified.

Also, if not using SMS managed datasets, be aware of **SMS APAR OW48382**, which concerns problems during log dataset allocation. Basically, if not using SMS, the ACS routines attempt to allocate datasets usually on work volumes which often don't have enough space. Since they are not SMS managed, there is no attempt to retry the allocation on another volume and the allocation fails with **MSGIGD17103I IGD17103I RC68 RSN20 MSGIGD17219I IGD17219I WHEN ATTEMPTING TO DEFINE A NON-SMS MANAGED VSAM DATA SET**. This APAR also requires **catalog APAR OW48424** which propagates the DADSM failure for a non-managed VSAM dataset back to SMS.

The **OFFLOADRECALL(YES|NO)** parameter was added with **OW48404**. **OFFLOADRECALL(NO)** tells the Logger not to recall the current logstream offload data set when performing offload processing for a given logstream. If the current logstream offload dataset is migrated, the Logger will move to a new offload dataset by allocating a new one, and continue the offload by writing to the new data set.

With **OFFLOADRECALL(YES)**, the Logger will not be able to offload until the current offload data set can be recalled. Thus, if HSM is down or the recall takes a long time, browse delays may result.

CICS JOURNALMODEL Definitions

CICS Journal Model

- Specifies the type of CICS log (SMF, MVS, Dummy)
- Specifies the log stream to be used by the journal

CICS JOURNALMODEL Definitions ...

- Replaces Journal Control Table for journal definitions
- Provides connection between CICS journal name and associated MVS log stream or SMF log

```
DEFINE JOURNALMODEL(name) GROUP(name)  
JOURNALNAME(name) TYPE(MVS|DUMMY)  
STREAMNAME(name)
```

Journal name

- ▶ Specifies the journal names to which this definition applies
 - *DFHLOG, DFHSHUNT, DFHJ10, DFHJ1*, **

Streamname

- ▶ Specifies an explicit MVS stream name or a template
 - *STREAMNAME(&USERID..&APPLID..&JNAME)*

Logger Planning Activities

- **CF vs. DASD logstreams**
 - ▶ MVS level
 - ▶ Coupling facility storage available
 - ▶ Multiple MVS access to logstreams
 - ▶ Performance considerations
- **Placement**
 - ▶ Structures within CFs
 - ▶ Logstreams within structures
 - ▶ CICS journals within logstreams
 - ▶ Staging datasets for DASD only log streams
- **Space allocations**
 - ▶ Structures
 - ▶ Staging datasets
 - ▶ Secondary logstreams
 - ▶ Sizing

Logger Planning Activities

- **Naming conventions**

- ▶ Structures
- ▶ Logstreams
- ▶ CICS journals

- **Logstream model usage**

- ▶ XLGSTRM selection
 - &sysname.DFHLOG.MODEL
 - Sample XLGSTRM exit provided
 - ▶ <http://www-4.ibm.com/software/ts/cics/txppacs/cs1e.html>
 - ▶ *In SDFHSAMP (CICS TS 2.2)*

- **Logstream tail management**

- ▶ Activity keypoint frequency
- ▶ Type of logstream
 - System log vs. user journal
 - DFHJUP can be used to process CICS TS user journals
 - ▶ *Must use **SUBSYS=(LOGR,DFHLGCNV,...)** keyword on DD statement for log stream dataset being processed*

Logstream Sizing

- **Logstream sizing utility (DFHLSCU)**

- ▶ Assist in definition of policies necessary for the MVS logger

- CF logstreams

- ▶ *AVGBUFSIZE, INITSIZE, SIZE, STG_SIZE*

- ▶ *HIGHOFFLOAD, LOWOFFLOAD*

- DASD logstreams

- ▶ *MAXBUFSIZE, STG_SIZE, HIGHOFFLOAD, LOWOFFLOAD*

- ▶ Analyzes CICS/ESA 330 or 410 logs and journals

- ▶ Input parameters

- Journal type

- LOGSNUM for CF logstreams

- AKPFREQ for system log calculations

- ▶ Maintenance

- Make sure that PQ34671 is applied to provide correct HIGH/LOWOFFLOAD values

- **Coupling Facility Structure Sizer Tool**

- ▶ <http://www.s390.ibm.com/pso>

CICS Recovery Manager

- **Provides integrity and consistency of resources**
 - ▶ In a single system
 - ▶ Distributed over interconnected systems
 - ▶ Two phase commit protocol is used
 - ▶ Wait for failure resolution
- **Responsible for coordination and synchronization of Units of Work (UOWs) with multiple resource managers**
 - ▶ Coordinates updates to recoverable local resources
 - ▶ Coordinates recoverable remote conversations
- **Provides unit of work (UOW) locking services**

CICS Recovery Manager

- **Tracks UOW state and progress of execution**
 - ▶ Suspend (shunt) UOWs that cannot complete immediately
 - Wait for resolution
 - Hold locks for recoverable resources
 - ▶ Resume (unshunt) UOWs when failure is resolved
- **Reconstructs UOWs at system restart**
- **Resolves 'in-doubt' problem**
- **Controls keypointing**
- **Improves shutdown and restart**

Recovery Manager Planning

- **Considerations for shunted UOWs**
 - ▶ Locked/Recordbusy response
 - ▶ New transaction definition options replace INDOUBT parm
 - *WAIT*
 - *WAITTIME*
 - *ACTION*
- **Use CIND transaction to test indoubt conditions**
 - ▶ Produce shunted units of work
 - ▶ Test effect of LOCKED response on your application
- **Enhanced master terminal (CEMT)**
 - ▶ Browse current enqueues
 - ▶ Identify enqueue owner
 - ▶ Ability to force UOW action

Recovery Manager Planning

- **CICS STARTs**

- ▶ INITIAL

- ▶ COLD

- ▶ AUTO

- ▶ EMERGENCY

- DFHRSD obsolete

- ▶ Global catalog changes

- Use DFHRMUTL to initialize and to override automatic startup options

- **CICS shutdown assistance program**

- ▶ Prevent shutdown "hangs"

- ▶ CEMT PERFORM SHUTDOWN SDTRAN(tranid)

- ▶ Allows timed shutdown

- ▶ Shunted UOWs held across restart

- ▶ Prevents retained locks on RLS datasets

New SIT Parameters

- AICONS - {NO|YES|AUTO}
- ★ AUTODST - {NO|YES}
- CSDINTEG - {UNCOMMITTED|CONSISTENT|REPEATABLE}
- CSDRLS - {NO|YES}
- DB2CONN - {NO|YES}
- DBCTLCON - {NO|YES}
- DOCCODEPAGE - {037|codepage}
- DSRTPGM - {NONE|DFHDSRP|program-name|EYU9XLOP}
- ENCRYPTION - {NORMAL|WEAK|STRONG}
- FORCEQR - {NO|YES}
- ★ LGDFINT - {5|number}
- MAXOPENTCBS - {5|number}
- NCPLDFT - {DFHNC001|name}
- OFFSITE - {NO|YES}
- RLS - {NO|YES}
- RRMS - {NO|YES}
- ★ Can affect performance

New SIT Parameters ...

- ★ RUWAPPOOL - {NO|YES}
- SDTRAN - {CESD|name_of_shutdown_tran|NO}
- SSLDELAY - {600|number}
- SYDUMAX - {999|number}
- TCPIP - {NO|YES}
- TDINTRA - {NOEMPTY|EMPTY}
- TRDUMAX - {999|number}
- WEBDELAY - {5|time_out,60|keep_time}
 - ★ Can affect performance

Notes: New SIT Parameters

DSRTPGM specifies the name of the distributed routing program to be used for dynamically routing:

- Eligible CICS Business Transaction Services (BTS) processes and activities
- Eligible non-terminal related EXEC CICS START requests

ENCRYPTION specifies cipher suites that CICS uses for secure TCP/IP connections.

FORCEQR specifies whether CICS will force all user application programs that are specified as threadsafe to run under the QR TCB, as if they were specified as quasi-reentrant programs. It does not apply to Java programs that are run in a JVM.

NCPLDFT specifies the name of the default named counter pool to be used by the CICS region on calls it makes to a named counter server. If CICS cannot determine, from the named counter server options table, the pool name required by an EXEC CICS named counter command, CICS uses the default name specified on the NCPLDFT parameter.

OFFSITE specifies whether CICS is to restart in off-site recovery mode; that is a restart is taking place at a remote site.

RRMS specifies whether CICS is to register as a resource manager with recoverable resource management services (RRMS).

Notes: New SIT Parameters ...

TDINTRA specifies whether CICS is to initialize with empty intrapartition queues when OFFSITE=YES is specified.

WEBDELAY specifies the Web delay periods:

1. A time-out period. The maximum time, in minutes, in the range 1-60, that a transaction started through the Web 3270 bridge interface, is allowed to remain in terminal wait state before it is automatically purged by CICS.
2. The terminal keep time. The time, in minutes, in the range 1-6000, during which state data is kept for a CICS Web 3270 bridge transaction, before CICS performs cleanup.

AUTODST enables automatic dynamic storage tuning for AMODE(31) LE enabled programs which are the initial programs of a transaction. CICS will keep track of the amount of storage used by the first iteration of a transaction and pre-allocate that amount in a single piece of storage on subsequent invocations of the transaction. If a transaction does many dynamic calls, it can often use much more than the original initial storage allocation, and AUTODST can help performance by reducing GETMAINS for the additional storage (after the first invocation of the transaction).

RUWAPOOL allocates a pool of RUWAs so that a new one is not allocated on each new enclave initialization. It can be a big performance improvement in systems with applications that do many LINKs.

LGDFINT specifies the logger defer interval which causes a delay in writing log data. The default is 30 ms before CICS TS 2.2, where the default has been dropped to 5.

Changed SIT Parameters

- **AILDELAY** - {0|hhmmss}
- **DCT** - {YES|xx|NO}
- **AIRDELAY** - {0|hhmmss}
- **SSLDELAY** - {600|number}
- **START** - ({AUTO|INITIAL|COLD|STANDBY},[ALL])

Notes: Changed Sit Parameters

AILDELAY specifies the delay period that elapses after all sessions between CICS and an autoinstalled terminal, APPC device, or APPC system are ended, before the terminal or connection entry is deleted. All sessions are ended when the terminal or system logs off, or when a transaction disconnects it from CICS.

Note: The AILDELAY parameter does not apply to the following types of autoinstalled APPC connection, which are not deleted:

- Sync level 2-capable connections (for example, CICS-to-CICS connections)
- Sync level 1-only, limited resource connections installed on a CICS that is a member of a generic resource group

AIRDELAY specifies the delay period that elapses after an emergency restart before autoinstalled terminals and APPC connection entries that are not in session are deleted. The AIRDELAY parameter also applies when CEMT SET VTAM OPEN is issued after a VTAM abend and PSTYPE=MNPS is coded. This causes autoinstalled resources to be deleted, if the session was not restored and has not been used since the ACB was opened.

Note: The AIRDELAY parameter does not apply to the following types of autoinstalled APPC connection, which are always written to the CICS global catalog and recovered during a warm or emergency start:

- Sync level 2-capable connections (for example, CICS-to-CICS connections)
- Sync level 1-capable, limited resource connections installed on a CICS that is a member of a generic resource group

Notes: Changed Sit Parameters ...

DCT - the COLD option is removed.

SSLDELAY specifies the length of time in seconds for which CICS retains session ids for secure socket connections. Session ids are tokens that represent a secure connection between a client and an SSL server.

Resource Definition

- **Resource Control Table**

- ▶ CICS TS 1.2 was the last release to support macro RCT
- ▶ No direct access to the internal RCT
- ▶ New CICS resources:
 - DB2CONN, DB2ENTRY, and DB2TRAN

- **DCT**

- ▶ CICS TS 1.3 is the last release to support macro definition
- ▶ New DFHDCTG group contains all IBM-supplied TD queues

- **TST**

- ▶ Use of TSAGE and SHARED options still require macro TST definition in TS 1.3
- ▶ RDO is recommended

- **FILEs**

- ▶ Recovery attributes taken from ICF catalog, if present
 - RECOVERY, FWDRECOVLOG, and BACKUPTYPE
- ▶ If RLSACCESS(YES) some file attributes ignored
 - LSRPOOLID, DSNSHARING, STRINGS, DATABUFFERS, INDEXBUFFERS

Resource Definition

- **CEDA Install**

- ▶ Now operates on LISTS
- ▶ Terminal control resources
 - Committed at "installable set" level
 - ▶ *CONNECTIONs and SESSIONs*
 - ▶ *Pipeline terminals in the same POOL*
 - ▶ *Individual TERMINALs and TYPETERMs*

- **CEDA DELETE**

- ▶ Can now optionally remove a GROUP from a LIST

- **DFHCSDUP**

- ▶ SCAN command
 - Allows scanning for user modified versions of IBM supplied definitions
- ▶ MIGRATE command apply to DCT and TST
- ▶ UPGRADE command applies to DFHDCTG

Resource Definition

- **New Resource Definitions**

- ▶ **ENQMODEL**

- Needed for Sysplex Enqueue

- ▶ **TSMODEL**

- Replacement for macro TST

- ▶ **PROCESSTYPE**

- Required for Business Transaction Services

- ▶ **REQUESTMODEL**

- Maps inbound IIOP request to a CICS transaction

- ▶ **TCPIPSERVICE**

- Defines TCP/IP for IIOP and CICS Web Interface
- New parameters for Secure Sockets support

Resource Definition

- **Changed Resource Definitions**

- ▶ **PROGRAM**

- **DYNAMIC** keyword added for dynamic routing of link requests
- **CONCURRENCY** keyword identifies the program as threadsafe
- **JVM** attributes added

- ▶ **TRANSACTION**

- **ROUTABLE** keyword added for dynamic routing of start requests
- **INDOUBT** option replaced by:
 - ▶ ***WAIT(YES;NO)***
 - ▶ ***WAITTIME(00:00:00;dd, hh, mmm)***
 - ▶ ***ACTION(BACKOUT;COMMIT)***
- **BREXIT** option is added for 3270 Bridge

Application Programming Interface

Applications may be affected by changes to:

- **Log manager**

- ▶ JOURNAL(01) and FWDRECOVLOG(01) refer to journal name DFHJ01 **NOT** the system log

- **Recovery manager**

- ▶ New LOCKED response

- Transient data

- ▶ *DELETEQ, READQ, WRITEQ*

- Temporary storage

- ▶ *DELETEQ, WRITEQ*

- File control

- ▶ *DELETE, READ, READNEXT, READPREV, REWRITE, STARTBR, WRITE*

- ▶ Unhandled LOCKED response can result in AEX8 abend

Application Programming Interface

Applications may be affected by changes to:

- **File control**

- ▶ EIBRCODE contains new values after an ILLOGIC response
- ▶ RESP2 values now returned for ALL file control exception conditions for local and remote files (CICS TS 2.1)

- **RLS**

- ▶ RECORDBUSY response returned when file control command is issued
- ▶ NOSUSPEND option and RLS holds active lock

- **Terminal control**

- ▶ EXEC CICS ASSIGN NETNAME supported for remote terminals

- **DELETEQ TS**

- ▶ Deleting a TS queue with a QID of binary zeros now returns INVREQ
 - R410 returned QIDERR

Application Programming Interface - Notes

EIBRCODE following an ILLOGIC response before CICS TS

Byte 0: 02 (meaning ILLOGIC)

Byte 1: VSAM return code

Byte 2: VSAM reason code

Byte 3-5: Unused and set to '00'

EIBRCODE following an ILLOGIC response in CICS TS

Byte 0: 02 (meaning ILLOGIC)

Byte 1: VSAM return code

Byte 2: VSAM reason code

Byte 3: VSAM problem determination code

Byte 4: VSAM component code

Byte 5: Unused and set to '00'

Application Programming Interface

- **Basic Mapping Support**

- ▶ Maps for use with the 3270 Bridge must be reassembled
 - Includes ADS descriptor in physical map
 - Load module size increases
- ▶ DFHBMSUP utility can recreate BMS source from load module
 - Cannot use maps created on CICS/VS 1.7 and earlier

- **Commands supported for compatibility**

- ▶ WAIT JOURNALNUM
- ▶ WRITE JOURNALNUM
- ▶ QUERY SECURITY JOURNALNUM

Application Programming Interface - Notes

BMS Application Data Structure (ADS) descriptor allows a bridge exit to interpret the BMS application data structure that is passed to the bridge exit on SEND MAP or RECEIVE MAP requests, without needing to include the copybook for the symbolic map (generated by TYPE=DSECT) in the source for the bridge exit or end-user application.

Application Programming Interface ...

- **TSMODEL**

- ▶ CICS will honor the MAIN or AUXILIARY specification from a matched model and ignore the EXEC CICS TS command option

- **Function shipping of long queue names to a pre-1.3 CICS**

- ▶ MRO

- CICS will return an INVREQ

- ▶ ISC

- CICS will use the first 8 characters

- **3270 Bridge**

- ▶ Use EXEC CICS START BREXIT command
 - BRDATA can be used to pass data to the bridge exit

System Programming Interface

New SPI Commands

DISCARD

CONNECTION
JOURNALMODEL
JOURNALNAME
TDQUEUE
TERMINAL

INQUIRE

JOURNALMODEL
JOURNALNAME
STREAMNAME
UOW
UOWDSNFAIL
UOWENQ
UOWLINK

PERFORM

ENDAFFINITY

SET

JOURNALNAME
UOW
UOWLINK

CREATE

DOCTEMPLATE
ENQMODEL
PROCESSTPE
REQUESTMODEL
TCPIPSERVICE
TSMODEL
DB2CONN
DB2ENTRY
DB2TRAN

System Programming Interface ...

- **Changed commands**

- ▶ **INQUIRE SYSTEM**

- DB2CONN name
- LOGDEFER value
- returns CICS TS and OS/390 release level
 - *CICSTSLEVEL(010300) OSLEVEL(021000)*
 - *Recommendation is to use this instead of RELEASE*

- ▶ **COLLECT STATISTICS**

- Many new resource types

- ▶ **INQUIRE TDQUEUE**

- returns MEMBER name when DDNAME refers to a partitioned dataset
- New options and new conditions returned

System Programming Interface ...

- **New or changed options for**
 - DISABLE/ENABLE PROGRAM
 - INQUIRE/SET CONNECTION
 - INQUIRE/SET DSNAME
 - INQUIRE EXITPROGRAM
 - INQUIRE/SET FILE
 - INQUIRE NETNAME
 - INQUIRE TASK
 - INQUIRE TERMINAL
 - INQUIRE TSQUEUE
 - PERFORM SHUTDOWN
 - PERFORM STATISTICS RECORD
 - RESYNC ENTRYNAME

System Programming Interface ...

New RESID Values

CFDTPOOL

DB2CONN

DB2ENTRY

DB2TRAN

DOCTEMPLATE

ENQUEUE

JOURNALMODEL

JOURNALNAME

PROCESS

REQUEST

RRMS

TCPIP

TCPIPSERVICE

TSMODEL

TSPOOL

UOW

UOWDSNFAIL

UOWENQ

UOWLINK

WEB

System Programming Interface ...

- **Obsolete commands**

- ▶ INQ/SET JOURNALNUM
- ▶ INQ/SET VOLUME
- ▶ INQ/SET DSNNAME BKOUTSTATUS
- ▶ COLLECT/PERFORM STATISTICS for
 - DTB, IRCBATCH, JOURNALNUM

New Global User Exits

- **XBMIN/XBMOUT** called after completion of a **RECEIVE/SEND MAP** command
- **XDUREQC** called immediately after a system or transaction dump has been taken
- **XFAINTU** (Facility Initialization and Tidy Up) called when bridge facility is created or freed
- **XEISPIN/XEISPOUT** called before/after **SPI** commands
 - Except: **ENABLE/DISABLE**, **EXTRACT EXIT**, **PERFORM DUMP**, **RESYNC ENTRYNAME**
- **XFCAREQ/XFCAREQC** called before/after **FC SPI** request
- **XFCBFAIL** called when an error occurs during **UOW** backout
- **XFCBOUT** called when **CICS** is about to backout a file update

New Global User Exits ...

- **XFCBOVER** called when CICS is about to decide not to back out an uncommitted update because the record could have been updated by a non-RLS batch program
- **XFCLDEL** called when backing out updates to VSAM ESDS or a BDAM data set
- **XFCQUIS** FC quiesce send program called on completion of a SET DSNAME QUIESCESTATE command
- **XFCVSDS** FC quiesce receive program called after notification from RLS that processing is required because of a data set-related action occurring in the sysplex
- **XLDLOAD/XLDELETE** called after a program is loaded/before it is deleted

New Global User Exits ...

- **XLGSTRM** called to modify a request to create a new log stream
- **XNQEREQ/XNQEREQC** called before and after API enqueue request
- **XTSPTIN** and **XTSPTOUT** for internal TS queues
- **XTSQRIN** and **XTSQROUT** for user TS queues

Notes: New Global User Exits

A WRITE to an ESDS file can fail with a LOCKED response, causing an AEX8 abend. A likely reason for the LOCKED condition is due to a BACKOUT FAILURE. This can occur if a region is canceled and CICS then tries to BACKOUT the file updates during restart. A subsequent WRITE will receive the LOCKED condition. This is because CICS cannot BACKOUT records written to an ESDS during recovery. This is discussed in the CICS Recovery and Restart Guide. The user should have an XFCLDEL exit coded to mark the records as logically deleted. If there is no XFCLDEL exit enabled, CICS will retain a LOCK on the file when the attempt to BACKOUT fails. The SET DSNAME RESETLOCKS command can be used to remove the lock. See the CICS System Programming Reference for the details.

Changed Global User Exits

- **XDTAD, XDTLC, XDTRD**
 - Indicator added for CFDT support
- **XFCNREQ**
 - Parm list name changes
- **XFCSREQ/XFCSREQC**
 - Parm list changes
- **XMNOUT**
 - Address of performance record added to parm list
- **XNQEREQ and XNQEREQC**
 - Scope added to parameter lists
 - New sample exit provided to change scope of enqueue request
- **XRCINIT**
 - Now driven from the user log record recovery program.
 - Parm list changes

Changed Global User Exits ...

- **XRCINPT**

- Now driven from the user log record recovery program.
- Parm list changes

- **XRSINDI**

- New resource types added for journalmodels, logstreams and TD queues

- **XSTOUT**

- New parm added for statistics collection date

- **XTSEREQ, XTSEREQC, XTSPTIN, XTSQROUT**

- Changes to support long Temporary Storage queue names

Obsolete Global User Exits

- **XDBERR** local DL/I is obsolete
- **XDBIN** dynamic log is obsolete. Replaced by **XFCBOUT** for files
- **XDBINIT** DTB program is obsolete
- **XDBFERR** replaced by **XFCBFAIL** and **XFCLDEL**
- **XJCWR**, **XJCWB** JCP is obsolete
- **XKCREQ** replaced by **XNQERREQ** and **XNQEREQC**
- **XRCFCER** replaced by **XFCBFAIL** and **XFCLDEL**
- **XRCOPER** replaced by **XFCBFAIL**
- **XTSIN**, **XTSOUT**, **XTSREQ** TSP program is obsolete

User Replaceable Modules

New URMs

- **DFHDSRP**
 - ▶ Distributed routing program for
 - Non-terminal related start requests
 - BTS activities

Changed URMs

- **DFHREST**
 - ▶ Restart transactions abended for new deadlock codes
 - ADCD DBCTL deadlock
 - AFCF Deadlock detected by CICS file control (non-RLS)
 - AFCW Deadlock detected by VSAM (RLS files)
- **DFHDYP**
 - ▶ Changes to support routing of link and terminal related start requests
- **DFH0CBRE**
 - ▶ No longer called to handle bridge terminal API requests

User Replaceable Modules ...

Changed URMs ...

- **Terminal autoinstall**

- ▶ New COMMAREA fields passed for APPC single/parallel session install
- ▶ NETID set when using generic resources
- ▶ New invocations:
 - DELETE of APPC single/parallel sessions
 - Shipped terminals and connections in an AOR
 - INSTALL/DELETE of virtual terminals using CICS CLIENT EPI
- ▶ Support for console autoinstall added

Supplied Transactions

New transactions

★ CEDX

- ▶ Allows monitoring and debugging of non-terminal transactions

● CBAM

- ▶ Browse the CICS business transaction services (BTS) objects

Changed transactions

● CDBM

- ▶ Allows storing and replay of commands

● CEMT

- ▶ Changes to support new resources
 - Similar to SPI changes

Utilities

New Utilities

- **DFHLSCU (Logstream sizing utility)**
- **DFHRMUTL (Recovery manager utility)**
 - ▶ Can override `START=AUTO` options
- **DFHBMSUP (BMS macro generation utility program)**
- **DFHCESD (Shutdown assist program)**
 - ▶ Replacement for `DFH$SDAP`
- **DFHSMUTL (Local catalog storage program)**
 - ▶ Adds or removes storage manager domain subpool records to or from the CICS local catalog

Utilities ...

Changed Utilities

- **DFHSTUP (Statistics utility program)**
 - ▶ Adds information about new resources (logstreams, DB2, etc.)
- **DFHCSDUP (CSD utility program)**
 - ▶ Supports new resources
 - ▶ SCAN command
- **DFHJUP (Journal utility program)**
 - ▶ Changed to process CICS journal data in log streams with the addition of the SUBSYS keyword
 - Review new parameters

IMS

- **Local DL/I is no longer supported after CICS R4.1**
 - ▶ Migrate to DBCTL
 - ▶ Function ship DL/I requests to older CICS
- **Shared database applications must be converted to BMPs**
- **New SIT parameter DBCTLCON**
 - ▶ Automatically start connection to DBCTL

DB2

- **CICS-DB2 adapter and DSNCRCT are owned and incorporated into CICS**
 - ▶ Module name changes (DSNxxxxx to DFHD2xxx)
 - Review SIT(INITPARM), PLTPI, PLTSD, programs that link to DSNxxxx modules to START/STOP the connection
 - PARM=(DSNCRCTx) is obsolete
 - Consider using SIT parameter DB2CONN=YES
- **RDO support now provided for RCT**
 - ▶ Reassemble RCT with CICS TS R3 macros
 - ▶ Review changes to DSNCRCT macro
 - ▶ CICS TS 1.2 is last release to support RCT
- **Using EXTRACT EXIT to get the GWA address and find the RCT will no longer work**

CICS Web Changes

- **Multiple TCP/IP ports as listeners**
 - ▶ Invoke multiple web attach transactions
 - Single CWBM transaction is gone
 - Single threading the analyzer removed
 - ▶ *Now needs to be reentrant*
 - ▶ New TCPIPSERVICE resource definition
 - CWBC and DFHWBCD are obsolete
 - ▶ TCPIP={NO|YES} SIT parm
- **Default action changed for escaped characters**
 - ▶ 'Escaped' data is now passed to the application
- **Analyzer and converter parameter lists are changed**
 - ▶ Recompile needed

CICS Web Changes...

- **HTML support changed**
 - ▶ New DOCTEMPLATE resource
 - Templates can reside in
 - ▶ *MVS PDS*
 - ▶ *Temporary storage*
 - ▶ *Transient data*
 - ▶ *Files and data tables*
 - ▶ *Load modules*
 - ▶ DFHWBTL still supported for compatibility
- **New DOCUMENT and WEB API commands**

Bridge Changes

- **Bridge monitor invokes the user transaction directly via START BREXIT TRANSID**
 - ▶ Bridge transaction is obsolete
 - ▶ Performance data now accrued under user transaction
 - No longer under the Alias transaction
- **Bridge exit now only handles message input and output**
 - ▶ API commands now handled by FORMATTER
 - ▶ Data is now passed via BRXA interface
 - EXEC CICS RETRIEVE no longer issued
 - ▶ EXEC CICS VERIFY can check a user password
 - ▶ TRANID/USERID no longer specified
 - Bridge exit no longer starts the user transaction
- **Bridge transaction definitions (CWB1-8) are obsolete**

CICS TS 1.3 Installation Considerations

- **UNIX System Services for OS/390 2.6 and later (or OpenEdition on OS/390 2.5) must be running in full-function mode on the MVS image being used to install CICS TS 1.3**
- **Some components of CICS TS 1.3 must be installed in PDSE datasets**
 - ▶ Must be SMS managed without correcting maintenance
 - ▶ Refer to info APAR II12221 and WSC Flash 10007
 - Flashes can be found at: www.ibm.com/support/techdocs
- **These PTFs MUST be installed prior to installation of CICS TS 1.3:**
 - ▶ OS/390 Binder PTFs for APARs OW36582 and OW36049
 - ▶ IEBCOPY PDS/E PTFs UW49740 and UW54887
 - ▶ SMP/E PTF UR50598 (for OS/390 R5 or R6)

Prerequisites for CICS TS 1.3

- **Operating System**

- ▶ OS/390 2.5

- Base CICS support

- ▶ OS/390 2.6

- Enhanced EXCI support (RRS)

- ▶ OS/390 2.7

- Secure Sockets Layer support

- ▶ OpenEdition (OS/290 2.5) or UNIX System Services (OS/390 2.6 and up) must be running in full-function mode

- ▶ PDSE datasets are required for base (and Java) RELFILEs

- ▶ **Review Program Directory and PSP Buckets for Critical APARs (Binder, LE, IEBCOPY, SMP/E, etc.)**

Prerequisites for CICS TS 1.3 ...

- **Communication Server (VTAM and TCP/IP)**
- **Database**
 - ▶ IMS 5.1
 - ▶ DB2 4.1
- **CICSplex SM 1.4**
 - ▶ Included in CICS Transaction Server 1.3
- **CICS VSAM Recovery 2.3**
- **Security**
 - ▶ OS/390 2.5
 - Base CICS support
 - ▶ OS/390 2.6
 - Long Temporary Storage names

Languages "Heads Up"

- Translator support for the earlier (Pre-Language Environment) compilers is withdrawn in CICS TS 2.2:
 - ▶ OS/VS COBOL (5740-CB1, 5740-LM1, and 5734-CB4)
 - ▶ VS COBOL II (5668-958, and 5688-023)
 - ▶ OS PL/I Version 1 (5734-PL1)
 - ▶ OS PL/I Version 2 (5668-910 and 5668-909)
 - ▶ SAA AD/CYCLE C/370 (5688-216)
- *It is planned that run-time support for OS/VS COBOL programs (regardless of run-time library used) and for any other programs running under pre-Language Environment run-time libraries will be withdrawn in the next release.*

Notes: Language Support

Tom Ross, from COBOL Development, offers these comments:

"What this means (speaking as the IBM COBOL developer who worked with CICS on this) is that all load modules running on CICS TS 2.2 must be using SCEERUN. They do NOT have to be link-edited with LE, but COBLIB, COB2LIB, and other old language run-time library datasets must not be used by transactions running under CICS TS 2.2

What the CICS TS announcement DOES imply is that IBM customers should migrate to newer COBOL compilers pretty soon. This does NOT mean that they should recompile all of their programs, it just means that the new compilers should be the ones used for compiling any program changes that are made after CICS 2.2 is installed and in production, since you won't be able to use the CICS translator for OS/VS COBOL or VS COBOL II programs starting with CICS TS 2.2.

IBM license trends show that IBM COBOL customers have been moving aggressively to the new compilers since about 1997, and if trends continue, there will be less than 20% of IBM COBOL customers affected by this change announced by CICS."

References

- **CICS Publications - RTFM!!**
 - ▶ **CICS TS Program Directory - READ IT CAREFULLY!!**
 - ▶ CICS TS Release Guides
 - ▶ CICS TS Migration Guides
 - ▶ CICS TS Planning for Installation
 - ▶ CICS TS Installation Guide
 - ▶ DB2 Guide
 - ▶ Internet and External Interfaces Guide
- **MVS Publications**
 - ▶ Setting up a Sysplex
- **Redbooks**
 - ▶ CICS TS R2 Implementation Guide SG24-2234
 - ▶ CICS TS R3 Implementation Guide SG24-5274
- **PSP Buckets**

Release Status

- **CICS Transaction Server for OS/390 V1R2**
 - ▶ Announced September 9, 1997 (297-353)
 - ▶ Withdrawn from marketing September 8, 1998 (298-318)
 - ▶ EOC **December 31, 2002** (900-220)
- **CICS Transaction Server for OS/390 V1R3**
 - ▶ Announced September 11, 1998 (298-318)
 - ▶ GA March 26, 1999
 - ▶ Will be **withdrawn from marketing December 31, 2002** (902-023)
- **CICS Transaction Server for OS/390 V2R1**
 - ▶ Announced March 14, 2001 (201-060)
 - ▶ GA March 30, 2001
 - ▶ EOC **June 30, 2002**
- **CICS Transaction server for OS/390 V2R2**
 - ▶ Announced March 14, 2001 (201-060)
 - ▶ GA January 25, 2002
- **CICS/ESA R410**
 - ▶ Withdrawn from marketing September 12, 2000 (900-225)
 - ▶ EOC **December 31, 2002**
 - Announced December 12, 2000 (900-305)

Summary

- **CICS logger changes**

- ★ Establish naming conventions
- ★ Spend time with your MVS system programmer
- ★ Education on logger/sysplex planning helps
 - C06 - CICS TS and the MVS Logger - Introduction
 - C32 - CICS TS and the MVS Logger - Overcoming Common Problems
 - C46 - Evaluating Performance of the MVS Logger in a CICS Environment

- **Recovery manager**

- ★ Watch the defaults
- ★ Use CIND to test indoubt conditions

- **API**

- ★ Review Migration Guide

- **SPI**

- ★ Review exit, URM, SPI and utility changes

- **DB2**

- ★ Watch for the name changes