WAVV 2002 Conference

IBM

Making the most of
CICS Transaction Server for VSE/ESA

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Agenda

- **What's new in CICS Transaction Server for VSE/ESA?**

- **Introducing some of the new features**
  - ► External CICS Interface
  - ► Shared Data Tables
  - ► Autoinstall for Programs/Mapsets/Partitionsets
  - ► Resource Definition enhancements
  - ► Automatic Journal Archive
  - ► Data Management Facility for Monitoring and Statistics

- **Further Information and Summary**

What's new in CICS Transaction Server for VSE/ESA?

e-business and Network Computing

- ► CICS Transaction Gateway
- ► CICS Web Support
- ► CICS Universal Clients

Application Support

- ► Shared Data Tables
- ► External CICS Interface (EXCI)
- ► 3270 Bridge
- ► REXX for CICS
- ► Front End programming Interface (FEPI)
- ► Global User Exit enhancements
- ► Exit Programming Interface (XPI)
- ► Comms Programming Interface (CPI-C)
- ► API enhancements
- ► SPI enhancements
- ► Report Controller enhancements

System Management/Administration

- ► RDO extensions, including Files
- ► Autoinstall extensions, including Programs
- ► Automatic journal archiving
- ► Data Management Facility
- ► Monitoring and Statistics enhancements
- ► Dump and Trace enhancements
- ► External Security Manager support
- ► In-Doubt Window Resolution Utility Program
- ► Dynamic Transaction Routing enhancements
- ► Sysgen step removal

Availability

- ► Storage Protection
- ► VTAM Persistent Sessions
- ► Intersystem Session Queue Management
- ► DTB Failure Recovery

Restructured CICS Code Base from CICS for MVS/ESA V4.1

- ► Improved code quality, reliability, serviceability
- ► Extensive Virtual Storage Constraint Relief
- ► 31-bit support
- ► Dynamic DSA Management

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Agenda

- ■ What's new in CICS Transaction Server for VSE/ESA?

- ■ **Introducing some of the new features....**

    - ► **External CICS Interface**

    - ► Shared Data Tables

    - ► Autoinstall for Programs/Mapsets/Partitionsets

    - ► Resource Definition enhancements

    - ► Automatic Journal Archive

    - ► Monitoring and Statistics

- ■ Further Information and Summary

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External CICS Interface

- Enables access to a CICS application from a batch program

- CICS application invoked via Distributed Program Link (DPL)

- Communication is via pipes

  ► Pipes allocated on MRO sessions

- One client program can establish multiple connections

  ► Can be to different CICS systems

  ► May be on behalf of different users

- Offers two programming interfaces

  ► EXCI CALL interface
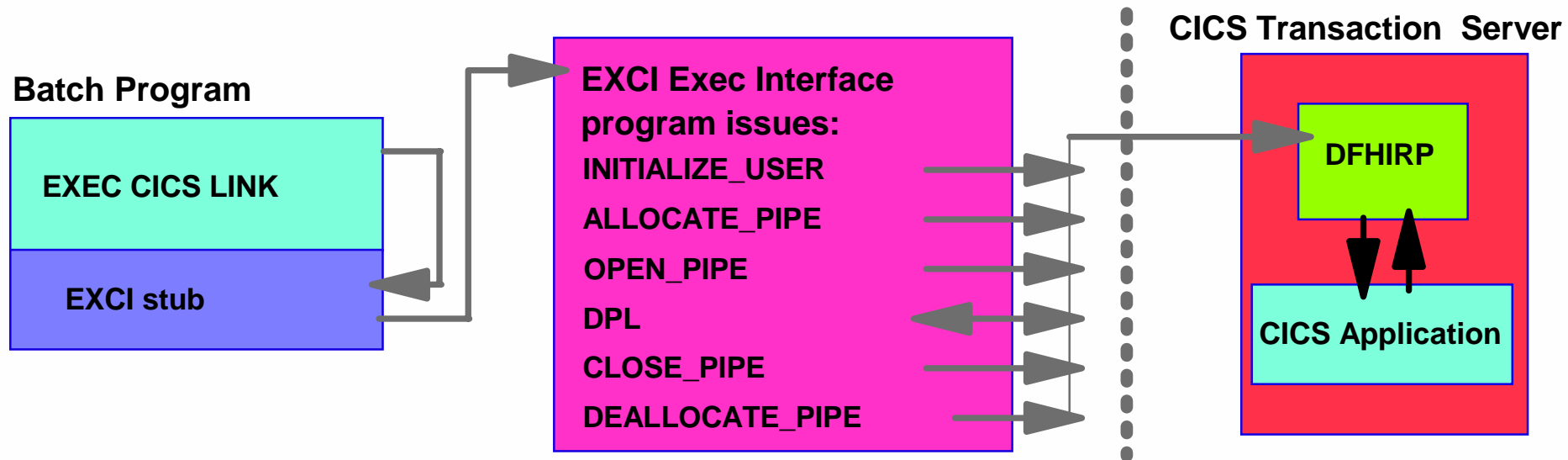
  ► EXEC CICS LINK interface

External CICS Interface - EXCI CALL

- Comprises six calls to enable invocation of CICS programs

- Recommended for use when many requests to be executed

- More efficient than EXEC CICS LINK for multiple requests
  - ► Issue initialisation calls
  - ► Issue multiple calls for program link requests
  - ► Issue termination calls

- Examples of use....
  - ► Produce batch reports based on a file open to CICS
  - ► Update a file that is open to CICS from a batch program

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External CICS Interface – EXEC CICS LINK

- Single command to invoke a single CICS program

- Recommended for low frequency or single DPL requests

- Easier to code than EXCI call

- Under the covers EXEC CICS LINK expanded into EXCI calls

- Examples of use....

  ► Close/open a file before/after running a backup job

  ► Disable/enable a transaction before/after an update job

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External CICS Interface - EXEC CICS LINK

CICS Transaction Server

Batch Program

EXEC CICS LINK
EXCI stub

EXCI Exec Interface program issues:

INITIALIZE_USER

ALLOCATE_PIPE

OPEN_PIPE

DPL

CLOSE_PIPE

DEALLOCATE_PIPE

DFHIRP

CICS Application

External CICS Interface – Getting Started

- **CICS supplied sample programs**
  - ► Server program
    - – DFH$AXCS (Assembler only)
  - ► Client programs
    - – DFH$AXCC (Assembler)
    - – DFH0CXCC (COBOL)
    - – DFH$PXCC (PL/I)
    - – DFH$DXCC (C)
- Samples illustrate both EXEC CICS LINK and EXCI CALL
- Client programs must be....
  - ► translated using EXCI option if using EXEC CICS LINK
  - ► link-edited with DFHXCSTB
  - ► written to AMODE(31) standards

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External CICS Interface – Enabling

- Ensure required MRO modules installed in the SVA
  - ► DFHIRP
  - ► DFHSCTE
  - ► DFHCSEOT
- Assemble and link-edit the EXCI options table, DFHXCOPT
- Specify ISC=YES in SIT
- Install CICS resource definitions
  - ► CONNECTION
  - ► SESSIONS
- Open MRO in CICS
  - ► IRCSTRT=YES in SIT, or CEMT SET IRC OPEN

Agenda

- **What's new in CICS Transaction Server for VSE/ESA**

- **Introducing some of the new features....**

  - ► External CICS Interface

  - ► **Shared Data Tables**

  - ► Autoinstall for Programs/Mapsets/Partitionsets

  - ► Resource Definition enhancements

  - ► Automatic Journal Archive

  - ► Monitoring and Statistics

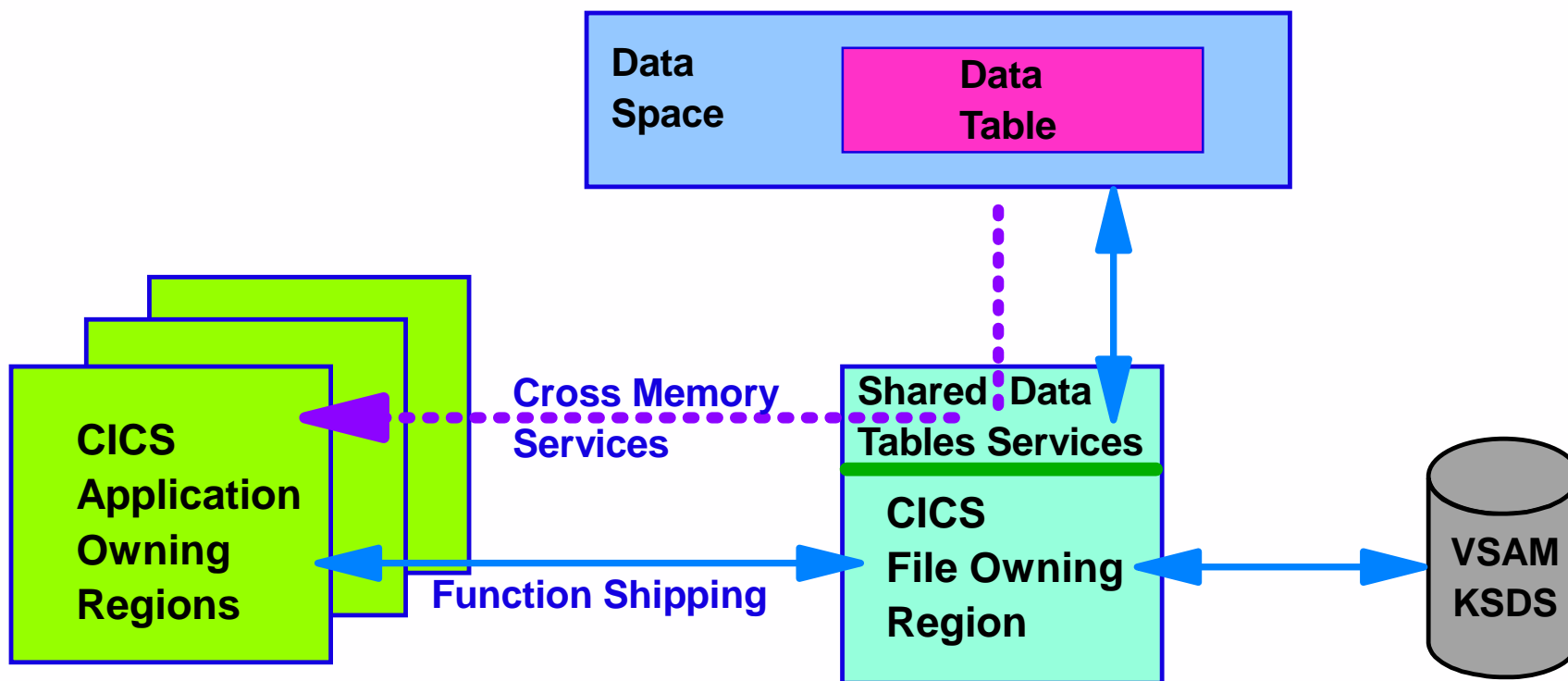- **Further Information and Summary**

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Shared Data Tables

- Replaces and enhances previous Data Tables support

- But what's a Data Table?
  - ► In-memory representation of a CICS file
  - ► Supports VSAM KSDS files
  - ► Two types of Data Table supported....
    - CICS Maintained (CMT)
    - User Maintained (UMT)

- Shared Data Tables provides major performance benefits for read-only access to CICS files that are VSAM KSDS
  - ► In a single CICS system
  - ► For files that are shared between CICS systems

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Shared Data Tables....

- Uses cross-memory services when sharing files
  - ► Avoids function shipping for most read and browse requests
  - ► Requests are processed by AOR
    - – Frees FOR to process other requests
- Additional file operations now supported
  - ► Generic read requests and browse requests
- Other benefits....
  - ► Can result in smaller dumps and improved security
    - – File data held in separate address space
  - ► Improved availability
    - – Several AORs can access the same file concurrently

Shared Data Tables....

Data Space

Data Table

CICS Application Owning Regions

Cross Memory Services

Shared Data Tables Services

CICS File Owning Region

Function Shipping

VSAM KSDS

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Shared Data Tables – Enabling

- Ensure required modules installed in the SVA
  - ► DFHDTSVC, DFHDTSAN and DFHCSEOT

- Optionally implement user exits
  - ► XDTRD, XDTAD and XDTLC

- Review VSE IPL parameters VSIZE and DSIZE to ensure there is enough virtual and data space storage available
  - ► Storage is allocated in the data space initially as 2M
    - – and 2M increments therafter

- Change file definitions to use Shared Data Tables
  - ► Specify table as User or CICS
  - ► Define maximum number of records

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Agenda

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- **Introducing some of the new features....**
  - ► External CICS Interface
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  - ► **Autoinstall for Programs/Mapsets/Partitionsets**
  - ► Resource Definition enhancements
  - ► Automatic Journal Archive
  - ► Monitoring and Statistics

- **Further Information and Summary**

Autoinstall for Programs/Mapsets/Partitionsets

■ Easier management

► Programs, mapsets and partitionsets don't have to be defined to CICS before being used

■ Less systems resource usage

► Resource definitions are only created when needed

■ Faster restarts

► Cold starts don't have to install so many definitions

► Warm and emergency starts may be quicker

■ CICS provided autoinstall control program ready for use

► Uses CICS supplied model definitions

► Is a User Replaceable Module

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Enabling Autoinstall for Programs/Mapsets/Partitionsets

- Define the CSPL Transient Data Queue

- Add Group DFHPGAIP to CICS startup group list

- Decide if autoinstalled resources to be catalogued
  - ► PGAICTLG=YES or NO in the SIT

- Specify name of autoinstall control program
  - ► SIT parameter PGAIEXIT
  - ► CICS supplied control program is DFHPGADX

- Specify PGAIPGM=ACTIVE in the SIT

- Programs beginning DFH excluded from autoinstall

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The Autoinstall Control Program

- Supplied URM is the Assembler version
  - ► Source provided in....
    - Assembler - DFHPGADX
    - COBOL - DFHPGAOX
    - PL/I - DFHPGALX
    - C - DFHPGAHX
- COMMAREA passed to the program is mapped by DFHPGACD
- For an LE based URM, ensure all LE requirements are met
  - ► Documented in the System Definition Guide

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  - ► Automatic Journal Archive
  - ► Monitoring and Statistics

- **Further Information and Summary**

Resource Definition enhancements

- RDO for FILES

- RDO for Consoles

- CREATE command

- DISCARD command

- Other RDO items

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Resource Definition – RDO for Files

■ Dynamic addition of file resources to running CICS system

▶ VSAM files

– *CEDA DEFINE FILE() DSNAME() CATNAME()*

▶ Remote VSAM or DAM files

– *CEDA DEFINE FILE() REMOTESYSTEM() REMOTENAME()*

▶ VSAM Local Shared Resource Pools

– *CEDA DEFINE LSRPOOL() LSRPOOLID() MAXKEYLENGTH()*

▶ Shared Data Tables

– *CEDA DEFINE FILE() TABLE(CICS|USER)*

■ DLBLs no longer required for VSAM files if all VSAM files are defined using Resource Definition Online

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Resource Definition – RDO for Consoles

- Console defininitions needed for….
  - ► system operator and IUI users of console displays
  - ► use of the VSECMD from CMS

- System console example:
  - ► *DEFINE TERMINAL(xxxx) CONSNAME(SYS) TYPETERM(DFHCONS)*

- IUI Console example:
  - ► *DEFINE TERMINAL(xxxx) CONSNAME(USRA) TYPETERM(DFHCONS)*

- Pooled consoles allows a number of IUI users to access CICS without the need to define each console individually, e.g.
  - ► *DEFINE TERMINAL(CO01) CONSNAME(DFHCON01) TYPETERM(DFHCONS)*
  - ► *DEFINE TERMINAL(CO02) CONSNAME(DFHCON02) TYPETERM(DFHCONS)*

- Definitions supplied for system console and pooled consoles

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Resource Definition – CREATE command

■ Directly create and install resources in a running system

■ Supported via EXEC CICS CREATE

■ Definition not installed in CSD

■ CREATE preserved across warm and emergency restarts

■ Can be used for the following resources:

► CONNECTION, FILE, LSRPOOL, MAPSET, PARTITIONSET

► PARTNER, PROFILE, PROGRAM, SESSIONS

► TERMINAL, TRANCLASS, TRANSACTION, TYPETERM

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Resource Definition – DISCARD command

■ Remove installed resources from a running system

■ Supported via CEMT DISCARD and EXEC CICS DISCARD

■ Definition not deleted from CSD

■ DISCARD preserved across warm and emergency restarts

■ Can be used for the following resources:

► AUTINSTMODEL, FILE, PARTNER, PROFILE,

► PROGRAM, TRANCLASS, TRANSACTION

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Resource Definition – Other Items

- CEDA EXPAND GROUP allows single resource INSTALL

  - ► Not CONNECTIONS (unless method is INDIRECT), or SESSIONS

- Most RDO resources now committed immediately

  - ► The following are still committed at group level:

    - – CONNECTION, SESSIONS, TERMINAL, TYPETERM

- Descriptive comments may be added to definitions in the CSD

- DFHCSDUP may now be called from user programs

- DFHCSDUP supports additional commands

  - ► ALTER - change attributes of existing definition

  - ► USERDEFINE - allows specification of own defaults

- The Programmable Interface to CEDA is now documented

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  ► Resource Definition enhancements

  ► **Automatic Journal Archive**

  ► Monitoring and Statistics

- Further Information and Summary

Automatic Journal Archive

- **Enables prompt submission of Archive Jobs**
  - ► Removes need for CICS tasks waiting for Journal Archive
  - ► Removes need for JOUROPT=PAUSE in DFHJCT

- **Removes need for operator intervention....**
  - ► Unless the archive is to tape, or the archive job fails

- **Provides greater security**
  - ► CICS will not overwrite the journal until it is archived

- **Eliminates need for customer-written automatic procedures**
  - ► DFHXJCO and DFHXJCC user-replaceable modules may still be used if automatic journal archive not used

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Automatic Journal Archive – Enabling

■ Define the journal archive control data set - DFHJACD

  ► VSAM RRDS file

    – Share Option 4, maximum 198 records,

    – Record size 505, CI size 512

■ Add DLBL for DFHJACD to the CICS startup job stream

■ Tailor skeleton job supplied as DFH$ARCH.J in PRD1.BASE

  ► Copy to a user sub-library (name as xxxx.DFHJASP)

  ► Include LIBDEF SOURCE,SEARCH statement for the user sub-library in the CICS start-up JCL

■ Add support to DFHJCT

  ► Add AUTOARCH to JOUROPT for each journal to be archived automatically (ensure JTYPE=DISK2 specified)

  ► Add ARCHJCL=xxxx for each journal

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Automatic Journal Archive - Job Submission
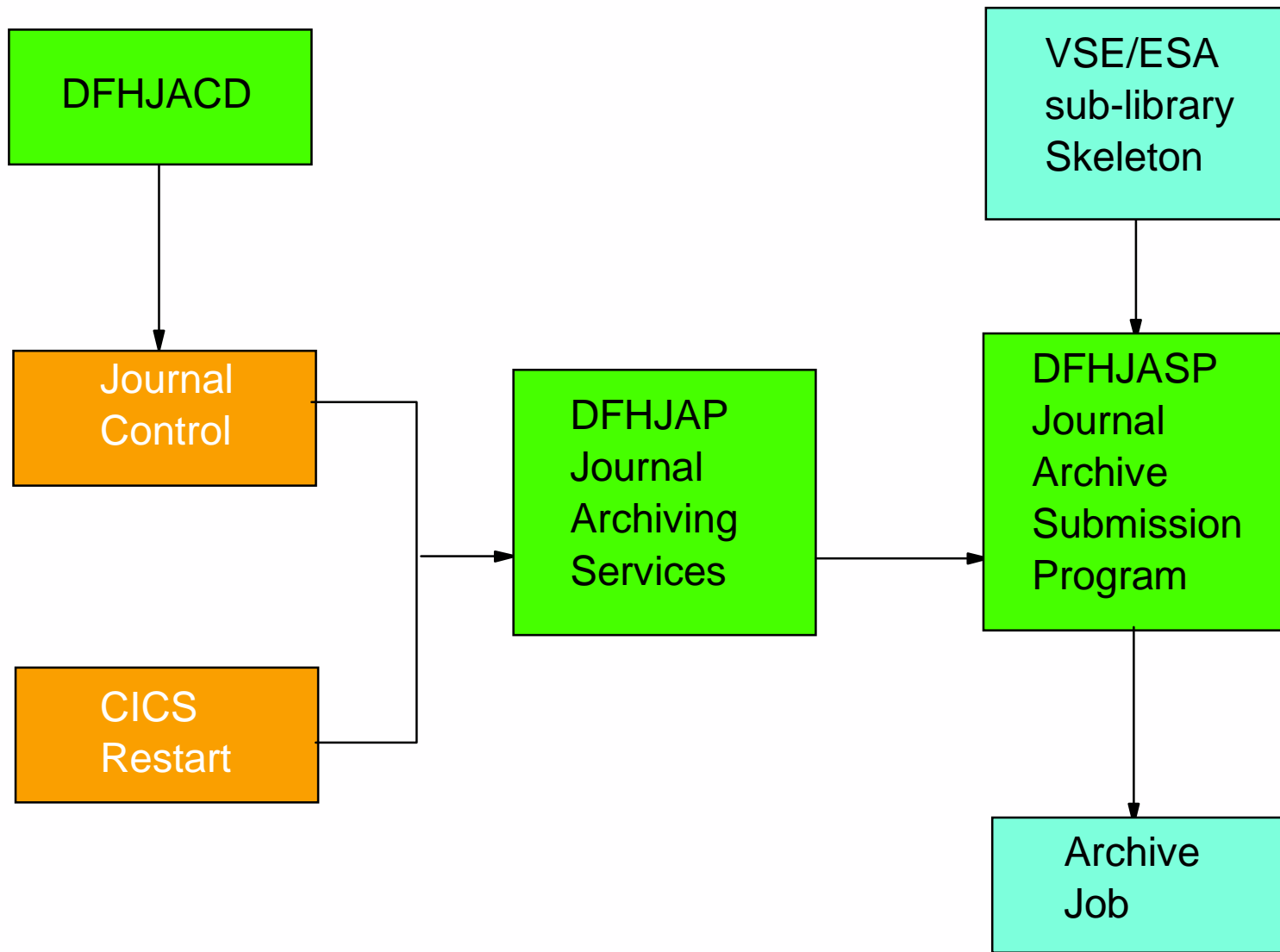
```
┌─────────────┐                                        ┌─────────────┐
│  DFHJACD    │                                        │ VSE/ESA     │
│             │                                        │ sub-library │
│             │                                        │ Skeleton    │
└──────┬──────┘                                        └──────┬──────┘
       │                                                      │
       ▼                                                      ▼
┌─────────────┐          ┌─────────────┐          ┌─────────────┐
│  Journal    │          │  DFHJAP     │          │  DFHJASP    │
│  Control    ├──────┐   │  Journal    ├─────────▶│  Journal    │
│             │      ├──▶│  Archiving  │          │  Archive    │
└─────────────┘      │   │  Services   │          │  Submission │
                     │   └─────────────┘          │  Program    │
                     │                            └──────┬──────┘
┌─────────────┐      │                                   │
│  CICS       │      │                                   ▼
│  Restart    ├──────┘                            ┌─────────────┐
│             │                                   │  Archive    │
└─────────────┘                                   │  Job        │
                                                  └─────────────┘
```

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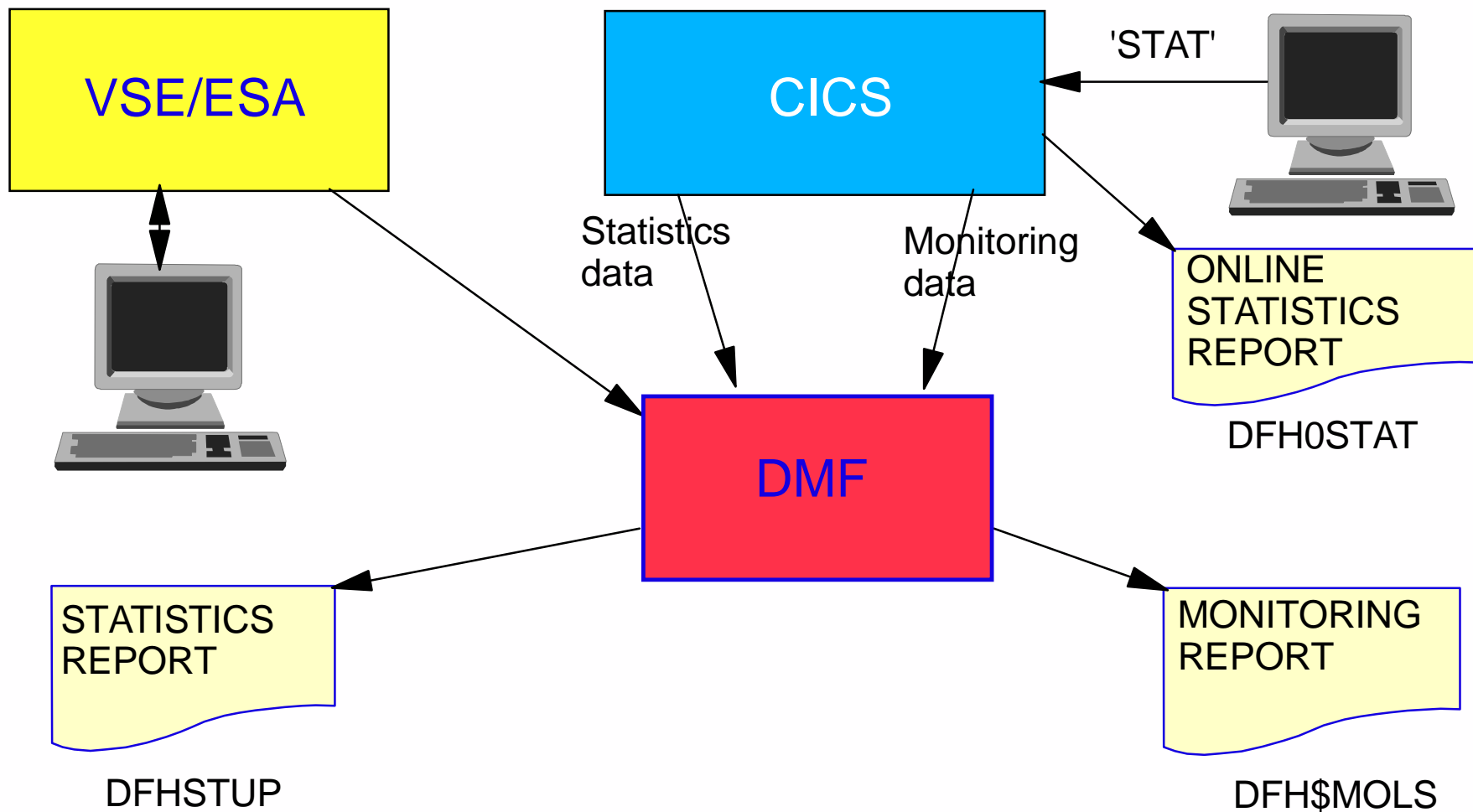
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  - ► Automatic Journal Archive

  - ► **Monitoring and Statistics**

- Further Information and Summary

Monitoring and Statistics

Significant changes to Monitoring and Statistics

- All monitoring and statistics data collected by a new method
  - ► Data Management Facility (DMF)
- New SIT parameters
- New INQUIRE and SET commands
- Journals no longer used for monitoring
- Monitoring no longer produces Accounting class records
- Changes to MCT macro, and MCT now optional
- Transient Data queues no longer used for statistics
- CSTT obsolete
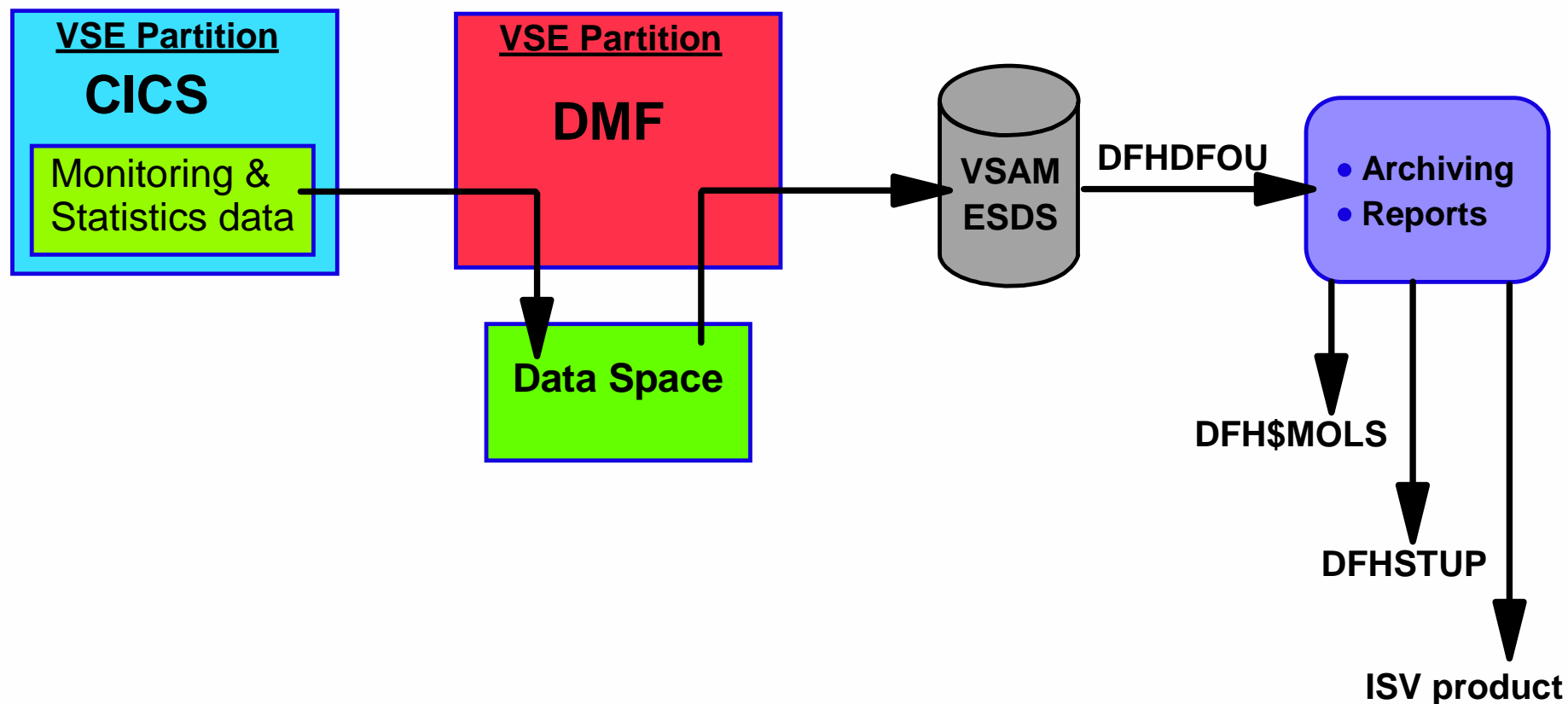- New online sample statistics program

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Monitoring and Statistics – Overview

VSE/ESA

CICS

'STAT'

Statistics data

Monitoring data

ONLINE STATISTICS REPORT

DFH0STAT

DMF

STATISTICS REPORT

DFHSTUP

MONITORING REPORT

DFH$MOLS

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Monitoring and Statistics – DMF Overview

■ DMF provides a similar facility to SMF on MVS

■ DMF uses some OS/390 simulation functions

► Must code OS390 on the EXEC statement for DFHDFSIP

■ DMF provides support to....

► collect data passed to it

► offload the data to a VSAM ESDS file

► copy the ESDS data to sequential files

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Monitoring and Statistics - DMF Overview

VSE Partition

CICS

Monitoring & Statistics data

VSE Partition

DMF

Data Space

VSAM ESDS

DFHDFOU

● **Archiving**
● **Reports**

DFH$MOLS

DFHSTUP

ISV product

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Monitoring and Statistics – Getting Started

- **Generate startup table DFHDMFMxx (if defaults unsuitable)**
  - ► Use the DFHDMFM macro

- **Identify start up table by SYSIPT parameter SUFFIX=xx**
  - ► Defaults are supplied in a table with suffix SU

- **Define VSAM ESDS files to be used by DMF**
  - ► Maximum of 36 files

- **Initialize the VSAM files**
  - ► Use DFHDFOU utility

- **Tailor the DMF start up JCL**

- **Submit the job to start DMF**

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Monitoring and Statistics – Processing the Data

- Data must be offloaded to a sequential file for processing
  - ► DFHDFOU utility
- For statistics data, use DFHSTUP
  - ► Can get many types of report, e.g.
    - – SUMMARY - equivalent to old SHUTDOWN statistics
    - – INTERVAL - select based on APPLID, TIME, and type
- For monitoring data, use DFH$MOLS
  - ► Also may need to use DFHMNDUP (if CICS run fills more than one DMF dataset, or if DMF started after CICS)
- DFHSTUP requires a SORT package
- DFH$MOLS can run without SORT, but not if two or more CICS APPLIDs are to be reported together

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Statistics – Online Display

- **New sample statistics online program - DFH0STAT**
    - ► Command level COBOL and Assembler

- **Can produce reports on many items, including....**
    - ► storage utilisation, transaction manager and dispatcher
    - ► resources such as programs, transactions, files, etc

- **Illustrates use of the EXEC CICS API commands**
    - ► INQUIRE, COLLECT STATISTICS

- **Output via Report Controller or to Temporary Storage Queue**

- **DFH0STAT can be invoked....**
    - ► from a terminal or console
    - ► via the PLT
    - ► as a STARTed transaction

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Statistics – Online Display

Sample display from DFH0STAT - looking at TS queue using CEBR

```
 Partition size established from ALLOC parameter . . :     26,111K
Storage BELOW 16MB


 Partition GETVIS area size under 16 Mb  . . . . . . :      8,704K
   Partition GETVIS used area below 16 Mb  . . . . . :      6,680K
   Partition GETVIS free area below 16 Mb  . . . . . :      2,024K
   Partition GETVIS maximum used below 16 Mb . . . . :      8,704K
   Partition GETVIS largest free area  below 16 Mb . :      2,012K

Storage ABOVE 16MB
 Partition GETVIS area size above 16 Mb  . . . . . . :     16,384K
   Partition GETVIS used area above 16 Mb  . . . . . :     13,636K
   Partition GETVIS free area above 16Mb . . . . . . :      2,748K
   Partition GETVIS maximum used above 16 Mb . . . . :     13,888K
   Partition GETVIS largest free area above 16 Mb  . :      4,696K
```

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Further Information and Summary

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  - ► Autoinstall for Programs/Mapsets/Partitionsets

  - ► Resource Definition enhancements

  - ► Automatic Journal Archive

  - ► Monitoring and Statistics

- **Further Information and Summary**

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Further Information

- Websites
  - ► CICS
    - – http://www.software.ibm.com/cics/
  - ► CICS Transaction Server for VSE/ESA
    - – http://www.software.ibm.com/cics/platforms/cicsvse/vse.html
  - ► VSE/ESA
    - – http://www.s390.ibm.com/vse/
  - ► ITSO
    - – http://www.redbooks.ibm.com

- Announcement Letters
  - ► CICS Transaction Server for VSE/ESA: 298-373, 299-156
  - ► CICS Transaction Server for VSE/ESA V1.1.1: 200-293
  - ► VSE/ESA V2.6: 201-325
  - ► VSE/ESA V2.7 Preview: 202-038

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Further Information....

■ Publications

Title	Number
IBM CICS Transaction Server for VSE/ESA product publications	
Release Guide	GC33-1645
Migration Guide	GC33-1646
Resource Definition Guide	SC33-1653
Shared Data Tables Guide	SC33-1668
Operations and Utilities Guide	SC33-1654
Performance Guide	SC33-1667
External Interfaces Guide (Provided with V1.1.1)	SC33-1669
IBM Redbooks	
Migration to VSE/ESA V2.4 & CICS TS for VSE/ESA V1.1	SG24-5595
Implementation of VSE/ESA V2.4 & CICS TS for VSE/ESA V1.1	SG24-5624

► Downloadable from the CICS and Redbooks Websites

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Further Information

■ **Related Conference Sessions**

► CICS Co-existeence

► VSE V2.6 Users' Experience

► CICS Web Experience

► CICS TS System Problem Determination

► CICS TS Security User Experience

► CICS Transaction Gateway: Web and Java access to CICS

► CICS Transaction Server for VSE/ESA: Web Support

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Summary

■ This presentation has covered some of the new features introduced with CICS Transaction Server for VSE/ESA that provide significant benefits.......

➤ External CICS Interface

➤ Shared Data Tables

➤ Autoinstall for Programs/Mapsets/Partitionsets

➤ Resource Definition enhancements

➤ Automatic Journal Archive

➤ Monitoring and Statistics

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Making the most of
CICS Transaction Server for VSE/ESA

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Fort Mitchell, 12 - 16 April 2002

Appendix

Appendix

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Automatic Journal Archive – skeleton JCL

■ **The skeleton JCL is passed the following symbolic parameters:**

```
–&SYST        A 4-byte identifier of the CICS region issuing the journal
              archive job, derived from the SYSIDNT system initialization
              parameter.

–&JJ          A 2-digit journal identification (JFILEID), in the range 01
              through 99.

–&D           A 1-character dataset identification: A or B.

–&JOURDSN     A 1- to 44-byte journal dataset name.

–&ODATE       A 7-byte journal dataset open date (yyyyddd).

–&OTIME       A 7-byte journal dataset open time (hhmmsst).

–&CDATE       A 7-byte journal dataset close date (yyyyddd).

–&CTIME       A 7-byte journal dataset close time (hhmmsst).

–&JACDDSN     A 1- to 44-byte JACD dataset name.

–&APPLID      A 1- to 8-byte CICS APPLID.  Note that for an XRF system
                      this is the generic, not the specific, APPLID.
```

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Automatic Journal Archive – Parameter handling

- Parameter substitution by DFHJASP
  - You code the skeleton JCL with substitutable characters as follows

```
$$$$ JOB JNM=ARCHTEST,CLASS=0
// JOB ARCHTEST Archive CICSTEST Journal Dataset
$$/* Step 1 : Check journal status
// DLBL DFHJACD,'&JACDDSN',,VSAM,CAT=VSESPUC
etc.
$$/&
$$$$ EOJ
```

  - which are changed by DFHJASP on submission to look something like

```
* $$ JOB JNM=ARCHTEST,CLASS=0
// JOB ARCHTEST Archive CICSTEST Journal Dataset
// SETPARM SYST=CICT
// SETPARM JJ=01
// SETPARM D=A
// SETPARM JOURDSN='CICSTEST.JOURNAL.A'
// SETPARM ODATE=1998001
// SETPARM OTIME=0600013
// SETPARM CDATE=1998001
// SETPARM CTIME=1825142
// SETPARM JACDDSN='CICSTEST.DFHJACD'
// SETPARM APPLID=CICSTEST
/* Step 1 : Check journal status
// DLBL DFHJACD,'&JACDDSN',,VSAM,CAT=VSESPUC
etc.
/&
* $$ EOJ
```

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External CICS Interface - Sample JCL

```
// JOB ASSEMBLE EXCI PROGRAM
// DLBL IJSYSPH,'TRANSLATION.WORKFILE',0
// EXTENT SYSPCH,,1,0,nnn,mm
ASSGN SYSPCH,SYS001
// LIBDEF *,SEARCH=PRD1.BASE
// LIBDEF PHASE,CATALOG=user.sublibrary
// OPTION CATAL
// EXEC DFHEAP1£,PARM='EXCI'
*ASM XOPTS(EXCI)
<<<< SOURCE STATEMENTS HERE >>>>
/*
*   TESTWB COMPILER STEP
CLOSE SYSPCH,00D
// DLBL IJSYSIN,'TRANSLATION.WORKFILE',0
// EXTENT SYSIPT
ASSGN SYSIPT,SYS001
// OPTION CATAL
 PHASE phase_name,*
// LIBDEF *,SEARCH=(PRD1.BASE,user.sublibraries)
// EXEC ASMA90,SIZE=(ASMA90,50K)
CLOSE SYSIPT,SYSRDR
  INCLUDE DFHXCSTB
// EXEC LNKEDT,SIZE=128K,PARM='AMODE=31,RMODE=24'
/*
/&
```

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Monitoring and Statistics – DMF start up

- CATALOG=,   Use IJSYSUC
  FILELIST=(CICS410.SYS1.MANY,CICS410.SYS1.MANZ),
  INTERVAL=3000,   30 minutes 0 seconds
  LISTDSN=YES,   Show datasets when DMF starts
  SID=3090,   System identifier
  SIZE=4,   Use a 4M data space
  STATUS=ACTIVE,   DMF is active at start
  SUFFIX=SU,   This table is called DFHDMFSU
  TRACE=NO,   No trace activity
  TRTABSZ=1024,   Trace table size is 1M
  TYPE=0:255,   Record all DMF data record types
  USAGE=50   Reduce space when 50% full

Alternative to FILELIST:
    GENFILES=nn will generate nn files (up to 36)
       with default prefix CICS410.SYS.MAN
   and optionally GENPREFIX=prefix
      can over-ride default prefix

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Monitoring and Statistics – Define DMF files

- Use IDCAMS - e.g.

  - DEFINE CLUSTER (NAME(CICS410.SYS1.MANY)
    NONINDEXED -
    VOLUME(vvvvvvvv) -
    CYLINDERS(10) -
    REUSE -
    RECORDSIZE(125 32767) -
    SPANNED -
    CONTROLINTERVALSIZE(8192) -
    SHAREOPTIONS(2)) -
    CATALOG(user VSAM catalog)
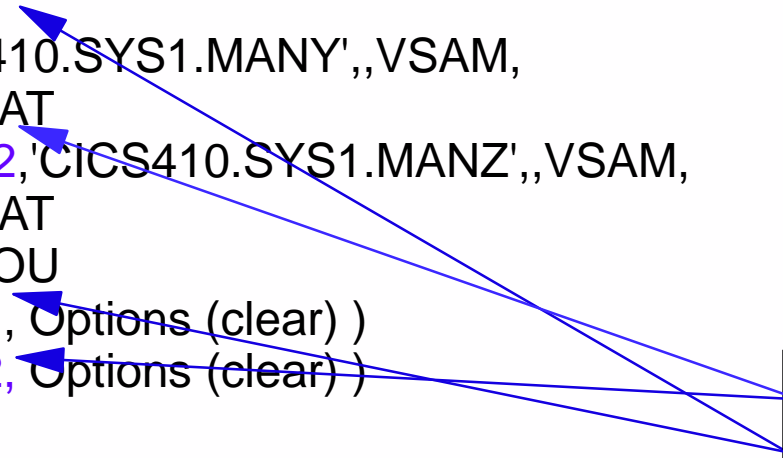
  Essential

  This catalog must contain
  all the DMF data sets

- Repeat for each data set

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Monitoring and Statistics - Initialize DMF files

- Use DFHDFOU
  // DLBL DFHDCAT,'CICS410.USERCAT',,VSAM
  // DLBL
  ddname1,'CICS410.SYS1.MANY',,VSAM,
      CAT=DFHDCAT
  // DLBL ddname2,'CICS410.SYS1.MANZ',,VSAM,
      CAT=DFHDCAT
  // EXEC DFHDFOU
  INDD (ddname1, Options (clear))
  INDD (ddname2, Options (clear))
  /*

These names must match (max 7 chars)

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Monitoring and Statistics – DMF startup JCL

- Use the following as a sample

```
// JOB DFHDFSIP
// OPTION NOSYSDUMP
// DLBL IJSYSUC,'user VSAM catalog',,VSAM
// LIBDEF *,SEARCH=PRD1.BASE
// EXEC DFHDFSIP,SIZE=600K,OS390
SUFFIX = SU
/*
// EXEC LISTLOG
/&
```

Use OPTION SYSDUMP to get an SDUMP in the event of a failure

Specify the VSAM catalog that contains the DMF data sets

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Monitoring and Statistics - DMF commands

- You request communication with DMF by entering MSG pn where pn is the partition in which DMF is running. DMF will respond with DFHDF0000 Enter command, to which you may enter one of the following.....

- Valid commands for DMF are:
  - DISPLAY - display file status
  - DISPLAY O - display operating status
  - SETDMF ACTIVE - start recording data
  - SETDMF FLUSH - write data out to data set
  - SETDMF INTERVAL(mmss) - change wakeup interval
  - SETDMF NOACTIVE - stop recording data
  - SETDMF NOTRACE - stop recording trace
  - SETDMF SHUTDOWN - terminate DMF in a controlled manner
  - SETDMF SHUTDOWN,I - terminate DMF in a less controlled manner
  - SETDMF SWITCH - switch to another data set
  - SETDMF TRACE - start recording trace
  - SETDMF DEBUG,[ON|OFF] - enables|disables debug facility

- Alternatively, enter MSG pn,DATA=command

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Monitoring & Statistics – Offload DMF data sets

■ Offloading the CICS SMF 110 records from DMF

– DMF utility - DFHDFOU

```
// JOB DFHDFOU
// OPTION PARTDUMP
// DLBL PACC0F,'PACC07.UCAT',,VSAM
// DLBL INDD1,'CICS410.SYS1.MANY',,VSAM,CAT=PACC0F
// DLBL INDD2,'CICS410.SYS1.MANZ',,VSAM,CAT=PACC0F
// DLBL OUTDD1,'TEST.DMF.OUTPUT',0
// LIBDEF *,SEARCH=(PRD1.BASE)
// EXEC DFHDFOU,SIZE=DFHDFOU
  INDD ( indd1, Options (dump))
  INDD ( indd2, Options (dump))
  OUTDD ( outdd1, type( 110 ))
/*
```

Note:
JCL is
incomplete

■ Documented in CICS Operations and Utilities Guide

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Monitoring & statistics – DFH$MOLS sample JCL

<u>Monitoring sample program - DFH$MOLS</u>

How do I print the performance class data from multiple systems using DFH$MOLS?

```
// JOB DFHDFOU
// OPTION PARTDUMP
// DLBL PACC0F,'PACC07.UCAT',,VSAM
// DLBL INDD1,'CICS410.SYS1.MANY',,VSAM,CAT=PACC0F
// DLBL OUTDD1,'TEST.DMF.OUTPUT',0
// LIBDEF *,SEARCH=(PRD1.BASE,PRD3.PROD)
// EXEC DFHDFOU,SIZE=DFHDFOU
INDD ( indd1, Options (dump))
OUTDD ( outdd1, type( 110 ))
/*
// DLBL PACC0F,'PACC07.UCAT',,VSAM
// DLBL INPUT01,'TEST.DMF.OUTPUT',0
// DLBL SORTWK1,'SORT.WORK.FILE.1',0,SD
// EXEC DFH$MOLS,SIZE=2M
PRINT PER          <-- Print performance class
...
Control statements for data selection
...
SORT               <-- Must be specified for multiple systems
/*
```

Monitoring and statistics – DFHSTUP sample JCL

- DFHSTUP - Summary report

  - Reconstructs the shutdown view of statistics using

    - ► *Unsolicited, interval, end-of-day and requested reset data*

  - Reconstructs ALL the data for all statistics reports for each applid for a given date/time selection regardless of the collection type

  - Reports can be subset by selecting specific resource types or applids

```
// JOB DFHSTUP
// DLBL SORTWK1,'TEST.SORT.WORK,0,SD
// DLBL DFHSTAT,'TEST.DMF.OUTPUT',0,SD
// DLBL DFHSTWK,'TEST.STAT.WORK',0,SD
// EXEC DFHSTUP,SIZE=2M,OS390
 SORT WORK=1
 SELECT APPLID=(applid1,applid2)
 SELECT TYPE=(DISPATCHER,PROGRAM,STORAGE,TRANSACTION,TSQUEUE)
 SUMMARY
 /*
```

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