



e-business

Part III - IMS Version 8 Installation and Migration Supplement



Abstract

This section is not presented.

It is included for reference purposes only.

ALWAYS check with the IBM Support Center before installing as requirements may change.

- ▶ Preventive Service Planning (PSP) for IMS

Installation

IMS V8

★ Packaging and Installation

- OS/390 Standards
- SMP/E Installation
- New IMS libraries
- User Exits

★ Installation Verification Program (IVP)

★ Product Number and FMIDs



IMS V8 Packaging and Installation

Changes have been made to IMS packaging and installation procedures

- ▶ So that IMS conforms to OS/390 packaging and installation standards
 - Makes IMS have the same look and feel as other products
- ▶ Reduces need for customers to have IMS-specific installation-skilled staff

Benefits

IMS V8 packaging and installation

- ▶ Conform to OS/390 standards
 - Makes IMS have the same look and feel as other products
 - Minimizes the need for customers to have IMS-specific installation skilled staff

New sample jobs are provided

- ▶ DFSALA and DFSALB to install IMS in its own SMP/E environment
- ▶ Additional IVP sample jobs show how to
 - Define an IMSplex
 - Issue IMSplex commands using the Single Point of Control (SPOC)
 - Use the Syntax Checker

Other

- ▶ Line update maintenance for user exit routines
- ▶ Option to eliminate Fast Path IVP samples

Packaging - INSTALL/IVP

INSTALL/IVP process has changed

- ▶ IMS V8 **INSTALL/IVP** dialog process has been eliminated
 - Is replaced by two things, **INSTALL** and **IVP**
 - 'B' series jobs and tasks removed from IVP dialog
 - See '**Attachment A**' for list of jobs and tasks
- ▶ IMS V8 **IVP** is only used to verify the installation

INSTALL process

- ▶ IMS V8 is installed using the SMP/E installation process
- ▶ INSTALL process is documented in the '**Program Directory**'

IVP process

- ▶ Verifies the installation using a sample IMS system

Packaging - SMP/E INSTALL

SMP/E jobs are separate/removed from the IVP

- ▶ Jobs are now documented in the Program Directory
 - Sample installation jobs function as replacements for INSTALL/IVP 'B' series jobs of previous IMS releases
- ▶ **INSTALL** jobs are in a new IMS V8 library - **SDFSBASE**
 - See '[Attachment B](#)' for list of installation jobs

Installation - Two New Install Jobs

Optional, sample jobs are provided

- ▶ Samples on how to install IMS in its own SMP/E environment

JOB	DESCRIPTION
DFSALA	Allocate and initialize new CSI
DFSALB	Initialize CSI zones Allocate SMP/E data sets Build DDDEF entries for SMP/E

Note: **Recommend** using these jobs to install IMS in its own SMP/E zone.

- ▶ If IMS is installed without using the sample jobs
 - Make sure **ACCJCLIN** parameter is set in the IMS distribution zone **BEFORE** IMS is installed
 - This is one of the items accomplished by running DFSALB

Installation - Installing the FMIDs

Install FMIDs using SMP/E RECEIVE, APPLY, ACCEPT

- ▶ Changes made to conform to packaging standards

Run jobs DFSRECV1 - DFSRECV8 (SMP/E **RECEIVE**)

- ▶ Run one job per FMID (See Attachment 'B')

Run DFSAPPLY job (SMP/E **APPLY**)

- ▶ Performs SMP/E APPLY CHECK, then APPLY
- ▶ Expect return code '04'
 - Conditions are resolved during SYSGEN
- ▶ Expect new warning messages GIM43401W and GIM44402W
 - Messages issued for return code '04'

Run DFSACCEP job (SMP/E **ACCEPT**)

- ▶ Performs SMP/E ACCEPT CHECK, then ACCEPT
- ▶ Expect return code '04' if HIPERs or '00' if no HIPERs

Installation - DFSJCLIN

DFSJCLIN

- ▶ Was used to build non-SYSGEN elements/parts
 - IV_B340 and IV_B350J
- ▶ No longer provided as an IVP job
 - IVP 'B' series job eliminated

SMP/E GENERATE command

- ▶ Used to create JCL necessary to build non-SYSGEN parts
 - Dependent on ACCJCLIN being set up in distribution zone BEFORE processing FMIDs

Non-SYSGEN parts are created during SMP/E APPLY processing

- ▶ Inline (++JCLIN) provided with FMIDs used by SMP/E to accomplish this

New Sample Libraries

IMS V7

- ▶ IMS.ADFSSRC distribution library contains
 - IMS source code and samples (e.g. [user exit routines](#))
- ▶ A corresponding target library is **not** defined
 - By default, SMP/E used SMPSTS as the target library

IMS V8

- ▶ No longer uses the SMP/E default SMPSTS target library
 - A new [IMS.SDFSSRC](#) target library is used instead of SMPSTS
- ▶ Some samples have been moved from IMS.ADFSSRC distribution library to new IMS V8 libraries
 - [IMS.ADFSSMPL](#) distribution library
 - [IMS.SDFSSMPL](#) target library
 - See '[Attachment C](#)' for list of samples moved to new libraries

User Exits

User exits created as ++SRC (ASSEMBLER source) type elements/parts

- ▶ Allows line update during SMP/E service processing
 - As opposed to complete module replacement

Corresponding ++MOD parts (object code) are **NOT** shipped

- ▶ When IBM provides service, SMP/E is not automatically told to assemble and link the maintenance
 - If the customer creates MOD to LMOD relationships
 - SMP/E APPLY processing automatically assembles and binds user exits

New samples provided to support V8 enhancements

- ▶ **OM, RM, SCI, SPOC sample**
 - Define IMSplex
 - Start / Stop IMSplex
 - Single Point of Control (SPOC) demo
 - General use
 - New IMS commands sample
 - Classic (or current) IMS commands sample
- ▶ **Syntax Checker sample**
 - Converts IMS.PROCLIB(**DFSPBxxx**) startup parms from IMS V7 to IMS V8

Changes

- ▶ Panels updated (i.e. removed panels on installing FMIDs)
- ▶ Variables removed
- ▶ IVP provides option to have (or not have) Fast Path included in samples

Program Number 5655-C56



- FMID HMK8800 - System Services
 - IVP
 - Database Recovery Control (DBRC)
 - Logger
- FMID JMK8801 - Database Manager
- FMID JMK8802 - Transaction Manager
 - APPC/LU Manager
- FMID JMK8803 - Extended Terminal Option
- FMID JMK8804 - Remote Site Recovery / Recovery-Level Tracking
- FMID JMK8805 - Remote Site Recovery / Database Level Tracking
- FMID JMK8806 - IMS Java Application Support
- FMID HIR2101 - IRLM V2 R1 (product number 5695-164)
- Orderable Optional Source
 - Database
 - System Services

Summary

IMS V8 packaging, installation, and IVP changes

▶ Packaging

- Installation and IVP are separate processes

▶ Installation

- ADFSBASE | SDFSBASE contain sample jobs to install IMS
 - DFSALA and DFSALB sample jobs provided to install IMS in its own SMP/E environment
- Non SYSGEN elements built during SMP/E APPLY processing
- SMP/E processing done using RECEIVE, APPLY, and ACCEPT

▶ Samples and some user exits

- Are located in new IMS V8 libraries - ADFSSMPL | SDFSSMPL
- Line update maintenance provided for user exits

▶ Installation Verification Program (IVP)

- New name, install jobs removed, panels updated, variables removed
- Includes IMS V8 samples
 - OM, RM, SCI, SPOC sample, Syntax Checker sample
- Provides option to include/exclude Fast Path samples

Attachment A - 'B' Series Jobs

JOB	DESCRIPTION
IV_B001T	NOTE - STEP INTRODUCTION - DLIB BUILD - IMS
IV_B003T	NOTE - STEP INTRODUCTION - DLIB BUILD - RSR/RLT
IV_B004T	NOTE - STEP INTRODUCTION - DLIB BUILD - RSR/DLT
IV_B005T	NOTE - STEP INTRODUCTION - DLIB BUILD - SURVEYOR
IV_B006T	NOTE - STEP INTRODUCTION - DLIB BUILD - IRLM S
IV_B007T	NOTE - STEP INTRODUCTION - DLIB BUILD - PRE-GEN
IV_B008T	NOTE - STEP INTRODUCTION - DLIB BUILD - FUNCTION DELETE
IV_B009T	NOTE - STEP INTRODUCTION - DLIB BUILD - ETO
IV_B010T	NOTE - STEP INTRODUCTION - DLIB BUILD - ORS
IV_B101J	JOB - ALLOCATE SMP/E DATA SETS
IV_B102J	JOB - ALLOCATE IMS DLIB DATA SETS
IV_B103J	JOB -ALLOCATE IMS SYSLIB DATA SETS
IV_B202J	JOB - INITIALIZE SMP/E ZONES >>> SEE DESC.
IV_B203T	XMPL - DELETE AND RE-DEFINE TZONE, MTS, STS, SCDS
IV_B204J	JOB - ZONEMERGE PRIOR DLIBZONE INTO CURRENT
IV_B205J	JOB - DELETE PRIOR RELEASE/FUNCTION
IV_B207J	JOB - PGEN SERVICE - RECEIVE >>> SEE DESC.
IV_B208J	JOB - CBPDO - RECEIVE
IV_B209T	TASK - CBPDO - PRINT PDIRS
IV_B210J	JOB - PRINT SMP/E HOLDDATA
IV_B211T	TASK - RESEARCH EXCEPTION SYSMODS

Attachment A - 'B' Series Jobs ...

JOB	DESCRIPTION
IV_B303J	JOB - SMP/E PROCESSING - SYSTEM SERVICES
IV_B305J	JOB - SMP/E PROCESSING - DATA BASE MANAGEMENT
IV_B307J	JOB - SMP/E PROCESSING - TRANSACTION MANAGEMENT
IV_B310J	JOB - SMP/E PROCESSING - ETO FEATURE
IV_B330J	JOB - PGEN SERVICE - ACCEPT GROUPEXTEND
IV_B331J	JOB - ZONEMERGE DLIB TO TARGET
IV_B332J	JOB - SMP/E PROCESSING - IRLM INSTALL AND SERVICES
IV_B333J	JOB - SMP/E PROCESSING - RSR/RLT FEATURE
IV_B334J	JOB - SMP/E PROCESSING - RSR/DLT FEATURE
IV_B335J	JOB - SMP/E PROCESSING - ONLINE RECOVERY SERVICE
IV_B337J	JOB - SMP/E PROCESSING - NON SYSGEN SERVICE - APP/ACC GROUPEXTEND
IV_B340J	JOB - JCLIN FOR IMS NON-SYSGEN FUNCTIONS
IV_B350J	JOB - FINISH INSTALL OF IMS NON-SYSDEF FUNCTION
IV_B360T	TASK - JCLIN/UCLIN/LKED/ETC. FOR OTHER PRODUCTS
IV_B401J	JOB - SMP/E PROCESSING - IRLM
IV_B501J	JOB - COPY OPTIONAL SOURCE TAPES
IV_B503T	TASK - INSTALL/IVP SERVICE >>> SEE DESC.

Attachment B - Installation Jobs

JOB	FUNCTION
DFSALA	OPTIONAL, SAMPLE JOB TO ALLOCATE/INITIALIZE A NEW SMP/E CSI DATA SET
DFSALB	OPTIONAL, SAMPLE JOB TO ALLOCATE SMP/E DATA SETS
DFSRECV1	SAMPLE JOB TO RECEIVE IMS SYSTEM SERVICES
DFSRECV2	SAMPLE JOB TO RECEIVE IRLM
DFSRECV3	SAMPLE JOB TO RECEIVE IMS DB
DFSRECV4	SAMPLE JOB TO RECEIVE IMS TM
DFSRECV5	SAMPLE JOB TO RECEIVE IMS ETO FEATURE
DFSRECV6	SAMPLE JOB TO RECEIVE RECOVERY LEVEL TRACKING FEATURE
DFSRECV7	SAMPLE JOB TO RECEIVE DATABASE LEVEL TRACKING FEATURE
DFSRECV8	SAMPLE JOB TO RECEIVE JAVA
DFSALLOC	SAMPLE JOB TO ALLOCATE TARGET AND DISTRIBUTION LIBRARIES
DFSJSMKD	SAMPLE JOB TO INVOKE SUPPLIED DFSJMKDR EXEC TO ALLOCATE HFS PATHS
DFSDDDEF1	SAMPLE JOB TO DEFINE SMP/E DDDEFs FOR IMS
DFSDDDEF2	SAMPLE JOB TO DEFINE SMP/E DDDEFs FOR IMSJAVA
DFSAPPLY	SAMPLE APPLY JOB
DFSACCEP	SAMPLE ACCEPT JOB

ADFSSMPL/SDFSSMPL

MEMBER	DESCRIPTION
DBFMLBX0	FAST PATH MADS I/O TIMING USER HASH ROUTINE
DFSADSCT	IMS CONTROL BLOCK DSECTS
DFSABOE00	TYPE 2 AUTOMATED OPERATOR EXIT ROUTINE
DFSABOPGM	AUTOMATED OPERATOR SAMPLE APPLICATION PROGRAM
DFSABOUE0	TYPE 1 AUTOMATED OPERATOR EXIT ROUTINE
DFSABXITA	CEEBXITA ASSEMBLER USER EXIT FOR IMS
DFSCCMD0	COMMAND AUTHORIZATION EXIT ROUTINE
DFSCMLR0	MSC LINK RECEIVE ROUTING EXIT ROUTINE
DFSCMPR0	MSC PROGRAM ROUTING EXIT ROUTINE
DFSCMPX0	SEGMENT EDIT/COMPRESSION EXIT ROUTINE
DFSCMTR0	TERMINAL ROUTING EXIT ROUTINE
DFSCNTE0	MESSAGE SWITCHING (INPUT) EDIT ROUTINE
DFSCSGN0	SIGN ON/OFF SECURITY EXIT ROUTINE
DFSCSMB0	TRANSACTION CODE (INPUT) EDIT ROUTINE
DFSCTRN0	TRANSACTION AUTHORIZATION EXIT ROUTINE
DFSCCTO0	PHYSICAL TERMINAL (OUTPUT) EDIT ROUTINE
DFSFDOT0	DUMP OVERRIDE TABLE
DFSFEJ0	FRONT-END SWITHCH EXIT ROUTINE
DFSGMSG0	GREETING MESSAGES EXIT ROUTINE
DFSINSX0	OUTPUT CREATION EXIT ROUTINE
DFSINTX0	INITIALIZATION EXIT ROUTINE
DFSISC00	IMS-CICS ISC SAMPLE PROGRAM
...	

Attachment C - Elements/Parts ...

ELEMENT/PART	DESCRIPTION
DFSJVMAP	MAPPING EXAMPLE FOR AN IMS JAVA PSB
DFSJVMEV	SAMPLE JAVA ENVIRON= MEMBER
DFSJVMMS	SAMPLE JAVA JVMOPMAS= MEMBER
DFSJVMWK	SAMPLE JAVA JVMOPWKR= MEMBER
DFSKMPX0	SEGMENT EDIT/COMPRESSION EXIT ROUTINE
DFSLGFX0	LOGOFF EXIT ROUTINE
DFSLGNX0	LOGON EXIT ROUTINE
DFSMSCE0	TM and MSC MESSAGE ROUTINE and CONTROL USER EXIT ROUTINE
DFSNDMX0	NON-DISCARDABLE MESSAGES EXIT ROUTINE
DFSNPRT0	INPUT MESSAGE ROUTING EXIT ROUTINE
DFSPIXT0	PHYSICAL TERMINAL (INPUT) EDIT ROUTINE
DFSPRE60	SYSTEM DEFINITION PREPROCESSOR EXIT ROUTINE (INPUT PHASE)
DFSPRE70	SYSTEM DEFINITION PREPROCESSOR EXIT ROUTINE (NAME CHECK COMPLETE)
DFSPSE00	HALDB Partition Selection Exit Routine
DFSREXXU	IMS ADAPTER FOR REXX EXIT ROUTINE
DFSSGFX0	SIGNOFF EXIT ROUTINE
DFSSGNX0	SIGN-ON EXIT ROUTINE
DFSSIML0	SHARED PRINTER EXIT ROUTINE
DFSUTL	SAMPLE MVS IEFUTL TIMEOUT EXIT
DFSYCCMP	JOB TO COMPILE and LINK C PROGRAM DFSYCSMP
DFSYCRUN	JOB TO INVOKE THE C SAMPLE PROGRAM DFSYCSMP
DFSYCSMP	EXAMPLE FOR USING THE OTMA CLIENT API FOR THE C LANGUAGE
DFSYCWAT	PROCEDURE USED TO SUSPEND THE CURRENTLY EXECUTING TASK
...	

Attachment C - Elements/Parts ...

ELEMENT/PART	DESCRIPTION
DFSYDRU0	OTMA DESTINATION RESOLUTION EXIT ROUTINE
DFSYINIT	JOB TO EXECUTE PROGRAM DFSYSVIO
DFSYIOE0	OTMA INPUT/OUTPUT EDIT EXIT ROUTINE
DFSYPRX0	OTMA PREROUTING EXIT ROUTINE
DFSZLDSF	PL/I SOURCE PROGRAM THAT GETS VARIABLE LENGTH FAST PATH SEGMENTS and PUTS THEM INTO A QSAM DATA SET
DFSZLDSG	PL/I SOURCE PROGRAM THAT GETS ALL FAST PATH SEGMENTS & PUTS THEM INTO A QSAM DATA SET
DFSZLDSP	PL/I SOURCE PROGRAM THAT GETS FIXED LENGTH SEGMENTS OF 1 SEGMENT TYPE and PUTS THEM TO A QSAM DATA SET
DFSZLDSQ	PL/I SOURCE PROGRAM THAT GETS ALL FIXED LENGTH SEGMENTS FROM A DATABASE and PUTS THEM IN QSAM DATA SET
DFSZLDSV	PL/I SOURCE PROGRAM THAT GETS VARIABLE LENGTH SEGMENTS OF 1 SEGMENT TYPE and PUTS THEM INTO A QSAM DATA SET
DFSZLDSW	PL/I SOURCE PROGRAM THAT GETS ALL VARIABLE LENGTH SEGMENTS FROM A DATABASE and PUTS THEM INTO A QSAM DATA SET
DFS36010	4701 TRANSACTION INPUT EDIT ROUTINE
DSPCEXT1	RECON I/O EXIT ROUTINE
DSPDCAX0	DBRC COMMAND AUTHORIZATION EXIT ROUTINE
DSPSCIX0	DBRC SCI REGISTRATION EXIT ROUTINE
UETRANS	SAMPLE AUTOMATED OPERATOR (AO) APPLICATION PROGRAM

Migration

Software requirements

Supported connections

Coexistence

Requirements

Migration

IMS Tools support



Software Requirements

IMS Base Product

- ▶ OS/390 V2 R10 or later
- ▶ IBM High Level Assembler Release 2 (5696-234)
 - High Level Assembler Toolkit feature

Transaction Trace

- ▶ OS/390 V2 R10 with APAR OW50696

MSC FICON CTC support

- ▶ z/OS V1 R2

Synchronous APPC/OTMA SMQ Enablement

- ▶ z/OS V1 R2 with Resource Recovery Services (RRS) enabled
 - On all systems where members of the shared queues group execute

Software Requirements ...

IMS Java Applications require

- ▶ The IBM Developer Kit for OS/390, Java 2 Technology Edition (5655-D35), with the Persistent Reusable Java Virtual Machine (JVM)
 - This is required for the new IMS V8 Java Dependent Region support

Java Application Program access to IMS DB

- ▶ From DB2 Stored Procedures
 - Requires DB2 V7 with APAR PQ46673
- ▶ From CICS applications
 - Requires CICS TS V2
- ▶ From WebSphere applications
 - Requires WebSphere Application Server z/OS V4.0.1
 - and -
 - WebSphere Application Server z/OS Connection Management support

Software Requirements ...

All IMS V8 CF Structures require a minimum of

- ▶ CF Level 9

System-Managed Duplexing of VSO, CQS, and IRLM structures require

- ▶ z/OS V1 R2
- ▶ CF level 11
- ▶ Bidirectional CF to CF links

Sysplex Terminal Management session-level affinity support requires

- ▶ z/OS 1.2

Software Requirements ...

IMS/DB2 Coordinated Disaster Recovery Support requires

- ▶ XRC (Extended Remote Copy) for DB2
- ▶ Remote Site Recovery
 - Recovery Level (or Database Level) Tracking for IMS

Supported Connections

IMS is supported with

- ▶ All supported IMS releases: IMS V8, V7, and V6
- ▶ All supported CICS releases: CICS TS V1 and V2, CICS/ESA V4
- ▶ User written software

DB2 connections are supported to

- ▶ All supported DB2 releases: DB2 V6 and V7

DBCTL connections are supported with

- ▶ All supported CICS releases: CICS TS V1 and V2, CICS/ESA V4

MSC is supported with

- ▶ All supported IMS releases: IMS V8, V7, and V6 with PQ27555

Coexistence Requirements

IMS V8 has some requirements to coexist with prior IMS versions in the areas of

- ▶ Database Recovery Control (DBRC)

- ▶ Data Sharing
 - Common Queue Server (CQS)
 - Fast Path Data Sharing Restrictions
 - VSO structure allocation on systems with system-managed duplexing
 - Different sizes for primary and secondary NON-PRELOADED VSO structures
 - Non-recoverable DEDBs
 - DEDBs with more than 240 areas
 - APPC/OTMA synchronous shared queues support

- ▶ Utility Inputs

Coexistence Requirements ...

- ▶ Exit Routines
 - RECON I/O Exit Routine
 - Multiple Systems Coupling (MSC) Exit Routines

- ▶ IMS Commands
 - Not Supported
 - Not Recoverable
 - Issued by Automated Operator (AO) programs

- ▶ Remote Site Recovery (RSR) Coordinated Disaster Recovery for IMS and DB2

- ▶ High Performance Java (HPJ) compiler

- ▶ Sysplex Terminal Management

- ▶ Message Requeuer and Queue Control Facility (QCF)

Coexistence Requirements ...

- ▶ Extended Checkpoint
- ▶ Coordinated Online Change
- ▶ Installation Verification Program (IVP)
- ▶ Automated Operator (AO) programs

Coexistence requirements are covered in the
'Migration' section

Migration

Initial Migration Assumption

- ▶ This section assumes you will initially migrate to IMS V8 without implementing optional new functions
 - Implementation of new functions was covered in previous class materials

Migration Overview:

- ▶ Similar tasks as previous IMS release-to-release migrations
- ▶ Application programs continue to work without any change or recompile
- ▶ Databases do not have to be changed, upgraded, reorged, image copied, etc.

Migration ...

Migration tasks

- ▶ Apply coexistence maintenance to other IMS systems
 - DBRC, MSC, RSR

- ▶ Install IMS V8
 - See IVP Enhancements section of this class

- ▶ Upgrade RECONs

- ▶ System definition

- ▶ ACBGEN

- ▶ Possible upgrade to IMS tools and related products

- ▶ Possible modifications to procedures or jobs

PSP Buckets

See IMS PSP buckets

- ▶ Upgrade name: IMS810

- ▶ Subset entries:
 - CHG/INDEX
 - Used to reference changes in entire upgrade
 - HMK8800 - System Services
 - JMK8801 - Database Manager
 - JMK8802 - Transaction Manager
 - JMK8803 - ETO
 - JMK8804 - Recovery Level Tracking
 - JMK8805 - DB Level Tracking
 - JMK8806 - IMS Java Application Support
 - HIR2101/0036 - IRLM V2.1

Release Coexistence and Fallback

Coexistence with previous releases

- ▶ Data Sharing
 - IMS databases may be shared between IMS V8, V7, and V6
- ▶ IMS V8 database recovery utilities accept inputs generated by previous releases
 - Image Copies
 - Change Accumulations
 - Logs
- ▶ IMS V8 RECONs may be used by IMS V7 and V6

Fallback support

- ▶ A system may fallback to a previous release after upgrade to IMS V8
 - IMS V8 RECONs are used
 - Database recoveries use IMS V8 utilities

Utilities Coexistence

Utility inputs

- ▶ Batch Backout, Log Archive, and Log Recovery
 - Use utility from IMS release which produced the log

- ▶ IMS V8 Database Recovery utility and Online Recovery Service (ORS)
 - Accept Image Copies from IMS V8, V7, and V6
 - Accept HISAM Unloads from IMS V8, V7, and V6
 - Accept logs from IMS V8, V7, and V6
 - Accept Change Accums from IMS V8, V7, and V6*
 - *ORS will not accept a CA from IMS V6

- ▶ IMS V8 Change Accumulation utility
 - Accepts logs from IMS V8, V7, and V6
 - Accepts Change Accums from IMS V8, V7, and V6

Migration - Logs

Log records have been modified and added

- ▶ Products which read logs may need to be updated
- ▶ User written programs may need to be modified
 - ILOGREC macro may be assembled for guidance

```
ILOGREC RECID=ALL
```

- For guidance on macros for Fast Path log records see Log Records section of SYS-System Service Aids chapter in IMS V8 Diagnosis Guide and Ref.

RECON Migration

RECONs must be upgraded to V8

- ▶ RECON compatibility SPE should be applied to IMS V6 and/or V7
 - Required if IMS V6 or V7 will access RECONs after upgrade
- ▶ RECONs are upgraded with DBRC Utility (DSPURX00)
 - May upgrade from IMS V6 or V7
 - RECON Upgrade utility (DFSURU00) is not available

Coexistence

- ▶ V8 RECONs may be used by IMS V7 or V6
 - V7 compatibility SPE: PQ54585 (UQ99327)
 - V6 compatibility SPE: PQ54584 (UQ99326)

IMS V6 DBRC systems can not access or display some information in an IMS V8 RECON.

RECON Migration ...

Sharing RECONs with previous releases

- ▶ IMS V7 and V6 can read and write segmented records
 - Requires compatibility SPE
 - Maximum record size still limited by RECORDSIZE for IMS V7 and V6
- ▶ Previous releases required the same record and CI sizes in all RECONs
 - Equal sizes recommended, but not required, in IMS V8

RECON Migration ...

Large RECON Record Warning Messages

- ▶ Adjust LOGALERT and SIZALERT specifications
 - Based on space left in 16MB record
 - Do not do this while still using the RECONs with IMS V7
 - IMS V7 limits record to the VSAM maximum record size specification

Migration - Exit Routines

RECON I/O Exit routine (DSPCEXT0)

- ▶ Receives V8 format records after upgrade
 - IMS V7 or V6 exit routine receives V8 format
 - During concurrent upgrade, exit routine receives old format before upgrade and V8 format after upgrade
- ▶ Receives unsegmented records
 - Up to 16 megabytes
- ▶ Exit [interface](#) has not changed
 - If exit routine sensitive to RECON [record formats](#)
 - Exit will have to be modified

MSC Exit Routines Removed

IMS V8 removes support for DFSCMPRO, DFSCMTR0, DFSCMLR0, DFSCMLR1, and DFSNPRT0

- ▶ TM and MSC Message Routing and Control User exit routine (DFSMSCE0) replaces them
 - Introduced in IMS V7
 - Consolidates functions of other message exit routines
 - New routing capabilities
- ▶ IMS V7 users should migrate to new exit routine while on IMS V7
- ▶ IMS V6 users must migrate to new routine when migrating to IMS V8

Commands Not Supported

IMS commands not supported in IMS V8:

- ▶ /TEST LINE
 - ▶ /TEST NODE
 - ▶ /TEST USER
- These commands put the line, node, or user in test (echo) mode
 - Test mode caused input to be sent back to the terminal

Commands Not Recoverable

IMS commands not recoverable in IMS V8:

- ▶ /LOCK LTERM, /LOCK NODE, /LOCK PTERM
 - ▶ /PSTOP LTERM
 - ▶ /PURGE LTERM
 - ▶ /SET LTERM, /SET TRAN
 - ▶ /RESET
 - ▶ /UNLOCK LTERM, /UNLOCK NODE, /UNLOCK PTERM
- The effects of these commands will not be recovered when IMS is terminated and restarted

Automated Operator (AO) Applications

User-written AO programs on pre-IMS V8 systems may coexist with an IMS V8 IMSplex Single Point of Control (SPOC) application

- ▶ But the behavior of some IMS commands may be different when the commands are issued by an IMS V8 SPOC application
 - For example, to stop a node on 15 IMSs in an IMSplex using the
 - **OS/390 ROUTE * ALL** command would result in **15** updates to the Resource Structure in the CF
 - **SPOC application** to access the Operation Manager (OM) API would result in only **1** update to the Resource Structure in the CF

IC2 Automation Migration

IMS V8 changes the logical copy complete message

▶ IMS V7:

DFS3121A LOGICAL COPY SUCCESSFUL FOR DB/AREA
dbname DDN ddname DSN dsname

▶ IMS V8:

DFS3121A LOGICAL COPY COMPLETE FOR DB/AREA
dbname; n OF m DATA SETS FAILED

followed by:

DFS3121I COPIED DB/AREA dbname DDN ddname DSN
dsname

Automation based on this message may require
modification

DB Authorization and Open During Restart

Database authorization and open changes for IMS restart

- ▶ Previous releases only authorized and opened databases requiring backout
 - Authorizations were released and data sets closed at the end of restart

- ▶ IMS V8 authorizes and opens all databases which were open at termination
 - Could eliminate the need to run jobs which open and authorize databases
 - Some installations use such jobs to eliminate overhead from first transactions to access databases
 - Could affect batch and utility jobs started after online restart
 - Batch or utility job could fail authorization

Database Allocation Message

DFS2500I message is not issued:

- ▶ During restart processing
- ▶ In response to /START DB ALL or /DBR DB ALL command
- ▶ In response to /START DATAGROUP datagroupname or /DBR DATAGROUP datagroupname command

```
DFS2500I DATABASE|DATASET xxxxxxxxx SUCCESSFULLY  
ALLOCATED|UNALLOCATED
```

Automation based on this message may require
modification

Shared Queues Migration

CQS V8 supports only IMS V8

- ▶ A CQS and its IMS clients must be migrated to V8 together

Queues may be shared between V8, V7, and V6

- ▶ Different CQS/IMS pairs may be migrated at different times
 - IMS V6 requires PQ27555
 - IMS V6 as back-end with asynchronous APPC/OTMA support requires PQ29879

APPC/OTMA Sync. Shared Queues

In order to exploit the APPC/OTMA synchronous shared queues support, all IMS systems in the SQ group

- ▶ Must be **IMS V8** and the DBRC RECON must specify **MINVERS(81)**
- ▶ Run on an operating system of at least z/OS V1R2 with Resource Recovery Services (RRS) enabled
 - APAR OW50627 must be applied to RRS
- ▶ NOTE: The following are not supported
 - Synchronous input for a **remote** transaction
 - Program-to-program message switches for conversational transactions

Fast Path Data Sharing Restrictions

VSO Structures

- ▶ May be allocated by an IMS system that
 - Supports system-managed duplexing (e.g. IMS V8 and IMS V7 with APAR PQ50661)
 - IMS V7 without the APAR and IMS V6 systems do ***not*** supported system-managed duplexing
 - Does ***not*** support system-managed duplexing
 - In this case IMS V8, V7, and V6 systems can connect to the VSO structure but the system-managed duplexing function is ***not*** available

- ▶ When different primary and secondary VSO structures sizes are used for ***NON-PRELOADED*** VSO structures
 - Only IMS V8 and IMS V7 with APAR PQ50661 can access a NON-PRELOADED VSO structure

FP Data Sharing Restrictions ...

Non-recoverable DEDB

- ▶ Can only be accessed by IMS V8 systems
- ▶ In ***mixed-version data sharing environments***, DEDBs must be defined to DBRC as recoverable

DEDB with more than 240 areas

- ▶ Can only be shared if all the sharing IMSs are at IMS V8
 - DEDBs with ***less than 240 areas*** may be shared by IMS V8, IMS V7, and/or IMS V6 systems

RSR Migration

RSR Migration:

- ▶ Upgrade the remote site RECON data set to IMS V8
 - Use standard RECON upgrade facility

- ▶ Migrate the tracking IMS to IMS V8
 - Migrate the tracking site Transport Manager Subsystem (TMS) to IMS V8 at the same time

- ▶ Upgrade the active site RECON data set to IMS V8

- ▶ Migrate the active site Transport Manager Subsystem running the Isolated Log Transport facility to IMS V8
 - This step must be done before migrating any active site IMS participating in RSR to IMS V8

- ▶ Migrate the active site IMS subsystems to IMS V8

Java Application Migration

IMS V8 does not support Java applications in MPPs and BMPs

- ▶ High Performance Java compiler cannot be used

IMS V8 Java Applications must run in JMP and JBP regions

- ▶ Requires use of Persistent Reusable Java Virtual Machine (JVM)
- ▶ Migration to JVM and new Java regions may be done under IMS V7

Sysplex Terminal Mgmt Migration

Different versions of IMS can coexist in an IMSplex and use VTAM Generic Resources (VGR)

- ▶ The recoverable status of resources may be kept locally, in the CF, or both - depending on the version of IMS
 - IMS V8 provides the options of keeping the status
 - In the **Resource Structure** in the CF
 - **Locally** and in the **Resource Structure** in the CF
 - Non-IMS V8 systems keep the status locally
- ▶ Recommendation
 - Do not mix versions of IMS in VGR groups

MRQ and QCF Migration

Queue Control Facility (QCF) is the replacement product for the Message Requeuer (MRQ)

- ▶ MRQ is supported in IMS V7 and IMS V6 environments only
- ▶ QCF support is provided for IMS V8, IMS V7, and IMS V6

In environments where both MRQ and QCF are used

- ▶ *Do not intermix messages*
 - Messages processed by MRQ may not be used as input to QCF and vice versa

Other Coexistence Considerations

Extended Checkpoints

- ▶ Can ***not*** be used to restart applications across different versions of IMS

IVP for IMS V8 has different requirements than prior IMS versions

- ▶ Different data set names must be used so that IVP components of different versions are not intermixed
- ▶ IMS V8 IVP can coexist with IVPs of other versions of IMS

Coordinated online change

- ▶ An IMS V8 system must specify CSLG= in startup parms to participate in coordinated online change
- ▶ The OLCSTAT data set used for coordinated online change is not compatible with IMS V7 and IMS V6 systems

Other IMS V6 Considerations

IMS V7 changed many system data set names:

- ▶ Adherence of IMS data sets to the z/OS and OS/390 naming standards
 - Distribution Libraries: ADFS prefix
 - Target Libraries: SDFS prefix

- ▶ Single set of MACRO libraries
 - Macros from all features moved into System Services base feature
 - Distribution library: ADFS MAC
 - Target library: SDFS MAC

- ▶ Migration
 - Impact lessened through the use of Install/IVP
 - User jobs may need to be updated with new data set names

Other IMS V6 Considerations ...

IMS V7 changed PSBGEN output

- ▶ IMS V6 ACBGEN requires PQ37363 to read PSB generated by IMS V7 or V8 PSBGEN

IMS V7 and V8 set IC Needed when a database is initially loaded

- ▶ May require changes to jobs which update DB before IC done

IMS V7 increased I/O area size for INQY ENVIRON call

- ▶ May require application program changes

IMS V7 and V8 Batch Backout honor CHECK17 in RECON

- ▶ IMS V6 verified the entire data set name

IMS V8 Functions for IMS V7

Some IMS V8 functions will be made available for IMS V7

- ▶ Batch Remote Recovery Service support
- ▶ System-managed duplexing of VSO structures
- ▶ MSC FICON CTC support
 - APAR PQ51769 is required
- ▶ XML enhancements
 - IMS COBOL and PL/I programs can receive/send XML directly
 - Metadata and XML support
- ▶ JDBC Access to IMS DB Data
- ▶ SLDS read support
 - APAR PQ50657 is required

Compatibility SPEs

IMS V7

- ▶ DBRC - PQ54585

IMS V6

- ▶ DBRC - PQ54584
- ▶ MSC - PQ27555
- ▶ Shared Queues - PQ27555
- ▶ Shared Queues Asynch.
APPC/OTMA - PQ29879
- ▶ PSBs - PQ37363

Installation and Migration Summary

Similar tasks as previous IMS release-to-release migrations

- ▶ Preparation
 - Prerequisite software and maintenance
 - Coexistence and compatibility maintenance
 - New releases or maintenance for related products

- ▶ Installation
 - Upgrade of RECONs
 - System definition
 - ACBGEN

- ▶ Migration
 - Possible modifications to procedures, automation, etc.
 - Implementation

Migration

IMS Tools support



Tools Agenda

Tools/products support

- ▶ Supported
- ▶ To be determined
- ▶ Replacement products required

Table summarizing tools/products table

Tools/Products Supported with IMS V8

Product Name	Number	Comments
IMS Advanced ACB Generator V1	5655-E05	Support available 2/28/2002 via APAR/PTF
IMS Application Development Facility V2.1.1	5665-348	No change needed Available now
IMS Batch Terminal Simulator V2.1	5655-A14	Requires APAR PQ57111 PTF UQ62630 APAR/PTF available
IMS Command Control Facility V1.1	5655-F40	Support date to be determined
IMS Connect V1.1 and V1.2	5655-E51	No change needed Available now
IMS Database Control Suite V2.1	5655-F76	Support available on 3/4/2002 APAR PQ57072
IMS Database Repair Facility V1	5655-E03	Support available on 3/4/2002
IMS DataPropagator V3	5655-E52	Required for IMS V8 Support available on 3/4/2002
IMS DEDB Fast Recover V2.2	5655-E32	V2.2 needed for IMS V8 V2.2 also supports IMS versions 6 and 7 QPP support provided via load library without SMP Support available on 9/27/2002
IMS Extended Terminal Option Support V2.2	5655-E12	Support date to be determined
IMS Fast Path Basic Tools V1.2	5655-E30	Support available on 3/15/2002
IMS Fast Path Online Tools V2.1	5655-F78	Support available on 2/15/2002 Requires APAR PQ53579
IMS Hardware Data Compression Extended V2.2	5655-E02	Requires APAR PQ53759 PTF UQ59607
IMS High Performance Change Accumulation V1.1	5655-F59	Support available on 3/29/2002 APAR PQ57540
IMS High Performance Load V1.1	5655-E07	Support available on 2/28/2002
IMS High Performance Pointer Checker V1.1	5655-E09	Support available on 2/28/2002



Tools/Products Supported with IMS V8 ...

Product Name	Number	Comments
IMS High Performance Prefix Resolution V1.1	5655-E08	Support available on 3/8/2002
IMS High Performance Sysgen Tools for z/OS	5655-F43	Support date to be determined
IMS High Performance Unload V2.1	5655-E06	Support available on 2/28/2002
IMS Image Copy Extensions V1.1	5655-E10	Support available on 5/31/2002
IMS Index Builder V2.1	5655-E24	Support available on 3/29/2002 APAR PQ57541
IMS Library Management Utilities V1.1	5655-E04	Requires APAR PQ55864 PTF UQ61449
IMS MFS Reversal Utilities	5655-F45	No change needed Available now
IMS Network Compression Facility V1.1	5697-E41	Support date to be determined
IMS Online Recovery Service V1.1	5655-E50	Requires APAR PQ55888 APAR availability approximately 2/15/2002
IMS Parallel Reorganization V2.1	5655-F74	IMS V8 requires V2.1. Support available 9/30/2002.
IMS Performance Analyzer V3.1	5655-E15	Requires APAR PQ55317 PTF UQ62098 APAR/PTF available now
IMS Program Restart Facility V2.1	5655-E14	Support date to be determined
IMS Queue Control Facility	5697-E99	Requires APAR PQ54538 PTF UQ60536 APAR/PTF available now
IMS Recovery Saver V1.1	5655-A68	Withdrawn from marketing. Supported with IMS V8. Requires APAR PQ56549. Service discontinued 3/31/2002.
IMS Sequential Randomizer Generator V1	5655-E11	Support available on 5/31/2002.
OS/VS DB/DC Data Dictionary V1R6	5740-XXF	Requires APAR PQ56902 APAR availability approximately 3/4/2002
System Automation for OS/390 IMS Automation Feature	5645-005	Requires APAR OW53189 APAR availability approximately 3/4/2002



Tools/Products - Support To Be Determined

Product Name	Number	Comments
IMS Workload Router V2.2	5697-B87	Support to be determined
Data Refresher V1	5696-703	Withdrawn from marketing
Tivoli Decision Support for OS/390	5698-TD9	Support to be determined

Replacement Products Required For IMS V8

Product Name	Number	Comments
IMS ADF Tool Pak	5655-A21	Withdrawn from marketing Support discontinued 9/30/2002 (AL 901-202)
IMS Database Control Suite V1	5697-D15	Service to be withdrawn 9/30/2002 IMS DB Control Suite V2.1 is replacement
IMS Database Integrity Control Facility V7	5697-F61	Withdrawn from marketing IMS DB Control Suite V2.1 is replacement
IMS DataPropagator V2R2	5696-705	Withdrawn from marketing IMS DPROP V3 is replacement
IMS Dynamic Resource Control Facility V1	5697-D14	To be withdrawn from marketing 3/ 4/2002
IMS Extended Terminal Option Support V1	5697-D68	Service discontinued 12/31/2001 IMS ETO Support V2.2 is replacement
IMS Hardware Data Compression Extended V2.1	5655-085	Service withdrawn 12/31/2001 IMS HDCE V2.2 is replacement
IMS Index Builder V1	5697-C33	Withdrawn from marketing Support discontinued 3/31/2002 Index Builder V2.1 is replacement
IMS Partition DB V2.1 and V2.2	5697-D85	V2.1 withdrawn from marketing Marketing discontinued on 3/4/2002 for V2.2 HALDB is the replacement
IMS Performance Analyzer V2	5697-F02	Service discontinued 3/31/2002 IMS Performance Analyzer V3.1 is replacement
IMS Program Restart Facility V1	5697-F18	Withdrawn from marketing Service discontinued on 3/31/2002 IMS Program Restart Facility V2.1 is replacement
IMS Recovery Saver V2.1	5655-E16	ORS (5655-E50) may be used instead
IMS Workload Router V1	5697-074	Service discontinued 1/31/2001 IMS Workload Router V2.2 is replacement

Migration Planning

CSL Migration Planning

- ★ Decisions
- ★ Tasks



Decisions

What is target environment?

▶ No CSL

- Still have some changes to IMS command processing
 - Some no longer supported
 - Some no longer recoverable

Review Command
Reference manual

▶ SCI only

- Automatic RECON Loss Notification

▶ SCI + OM + RM without RM Structure

- Coordinated global online change
- OM API
 - SPOC
 - User/vendor written AOPs

▶ SCI + OM + RM + RM Structure + Shared Queues

- Sysplex terminal management

Tasks

Setting up the environment

- ▶ Hardware/Software currency
 - OS/390 V2 R10 (base IMS V8 requirement)
 - z/OS 1.2 (SM duplexing and VGR session level affinity)
 - CF Level 9 (SM rebuild)
 - CF Level 11 or 12 (SM duplexing)
 - CF-to-CF links (SM duplexing)
- ▶ Program properties table
 - Add BPEINI00
- ▶ SCI, OM, and RM address spaces
 - PROCedure JCL
 - Proclib members (BPECFG, CSLSIxxx, CSLOIxxx, CSLRIxxx)
- ▶ CQS address space
 - Single or dual function (SQ and/or RM)
 - RM CQS
 - Proclib members (CQSIPxxx, CQSSGxxx) have CSL parameters

Tasks ...

Setting up the environment ...

- ▶ IMS control region
 - Add CSLG= to procedure, or include in DFSPBxxx
 - Update proclib members (DFSPBxxx, DFSDCxxx, DFSVSMxx)
 - SGN= should be consistent across all IMSs
 - Create new proclib member (DFSCGxxx)
 - If OLC=GLOBAL in DFSCGxxx
 - Add and initialize OLCSTAT dataset
 - All control regions must use same OLC data sets
 - Update ETO descriptors
 - Add SRM and RCVYxxxx overrides -or- use system defaults
 - Verify APPC descriptors do not conflict with trancodes, lterm names, or msnames

Tasks ...

Setting up the environment ...

- ▶ DBRC address spaces
 - To use ARLN, address spaces using DBRC must have IMSPLEX= parameter coded in executed PROCedure, or can set IMSPLEX name with DSPSCIX0 exit
 - Online DBRC
 - FDBR
 - DBRC batch utility (DSPURX00)
 - Batch job with DBRC=Y
 - Database utility with DBRC=Y
 - IMSPLEX name must match IMSPLEX name in RECONs

Tasks ...

Setting up the environment ...

- ▶ CF structures
 - Update CFRM CDS
 - Allow system managed rebuild and duplexing
 - Define RM structure in CFRM policy
 - DUPLEX(ENABLED) or DUPLEX(ALLOWED)
 - ALLOWAUTOALT(YES)
 - FULLTHRESHOLD(value) - defaults to 80%
 - MINSIZE(size) - defaults to 75% of INITSIZE
 - Update CFRM policy for other structures as desired
 - Shared Queues, Shared VSO, IRLM, OSAM/VSAM

Tasks ...

IMS exits

- ▶ Review and modify IMS exits as required
 - Logon exit (DFSLGNX0)
 - Override system defaults for SRM, RCVYxxxx
 - Allow stealing of SRM=LOCAL node
 - Signon exit (DFSSGNX0)
 - Override system defaults for SRM, RCVYxxxx
 - Allow stealing of SRM=LOCAL ETO user
 - Output creation exit (DFSINSX0)
 - Dynamic transactions and lterms
 - Command security exit (DFSCCMD0)
 - Some classic commands may come from OM
 - Any other exits that use "callable services"
 - Default is GLOBAL

- ▶ DBRC SCI exit (DSPSCIX0)
 - Can set/modify/reject IMSPLEX name for DBRC registration to SCI

Tasks ...

Security environment

- ▶ SCI security
 - Authorize (RACF) connection to IMSplex for all SCI connectors
 - IMS, DBRC, CSL, DBRC utility, batch and utilities w/DBRC, AOPs
- ▶ RM Structure security
 - Authorize (RACF) RMs to access RM structure
- ▶ OM command security
 - If CMDSEC=A|E in CSLOIxxx
 - Define and create security exit (BPE User Exit)
 - If CMDSEC=A|R in CSLOIxxx
 - Update RACF for IMSplex and Classic command security for commands entered through OM
- ▶ IMS command security
 - If CMDSEC=A|E in DFSCGxxx
 - Update DFSCCMD0 to recognize OM-entered command
 - If CMDSEC=A|R
 - Update RACF for classic commands

Tasks ...

Operations

- ▶ Is SPOC or other AOP going to be used?
 - Define SPOC to TSO
 - Establish preferences and operating procedures
 - Write AOP using OM API
- ▶ Operations Manager
 - How many? User exits?
- ▶ Review all IMS commands
 - Some are no longer supported
 - Some are no longer recoverable
 - Some have global scope if using RM structure
 - Some depend on being "command master" or "owner"
 - Some cannot be submitted through OM API
 - Some have new parameters
- ▶ Automated operations
 - Exits cannot invoke OM API
 - NetView (etc) execs can

Tasks ...

Resource management

- ▶ If not using RM structure, benefits are limited to
 - Global online change
 - ARLN
 - Dynamic LE runtime options

- ▶ Determine system defaults for SRM and RCVYxxx
 - May update Logon and Signon exits to override system defaults

- ▶ Need an Output Creation Exit (DFSINSX0)?
 - If resource exists in RM but not locally defined, IMS assigns default attributes unless overridden by DFSINSX0

- ▶ Resource Manager
 - How many? User exits?

Tasks ...

End-users

- ▶ Affected mostly by Sysplex Terminal Management
 - Procedures following session or IMS failure
 - Procedure for logging back on after a session failure
 - Procedure for logging back on after an IMS failure
 - Procedure for recovering end-user significant status
 - Logons may be rejected if RM affinity (ownership) exists
 - May want to implement logon userdata to tell Logon Exit to "steal"
- ▶ May be affected by command changes
 - Local vs global scope
 - Owned vs not owned resource

Mixed Environments

May have mixed environment sharing data and queues

- ▶ RECONs can be shared
 - V6 and V7 do not participate in ARLN
- ▶ Shared Queues
 - Can share message queues, but ...
 - V6 & V7 do not participate in STM
 - V6 & V7 cannot process synchronous APPC/OTMA messages
- ▶ Shared VSO
 - V6 does not support any of the SM functions
 - SM-rebuild, SM-duplexing, Autoalter
 - First connector decides if feature active
- ▶ Network
 - If sharing queues between V8 and previous IMS
 - Try to have all network resources connected to V8 system
 - Could be confusing to end-users switching from V8 to V6/V7
 - Or, do not use SRM=GLOBAL when users may switch between V8 and V6/V7

Other

XRF

- ▶ Requires SCI address space
- ▶ Class 1 terminals always use local status
- ▶ Class 2 and 3 terminals status depends on SRM

RSR

- ▶ Does not require CSL while tracking
 - May take advantage of OM and ARLN if available
- ▶ If using shared queues, takeover site must cold start
 - No message or status recovery

ARM

- ▶ Supported for all IMS V8 address spaces (default=yes)

Other ...

RNR

- ▶ Shouldn't use ARNR or NRNR with STM
 - Prevents logging on to surviving IMS until failing IMS restarts

Lots of new and changed messages and abends (and some deleted ones too)

- ▶ See Release Planning Guide, Chapter 6

Log record format changes

- ▶ See Release Planning Guide, Chapter 29

Other ...

Many features not affected by CSL or STM

- ▶ Application programs
 - Except CMD and ICMD entered commands may have local or global scope (same as terminal entered commands)
- ▶ Databases
- ▶ MSC, SPOOL API, FES, Associated Printers, TCO
- ▶ APPC (except for APPC descriptor name consistency)
- ▶ OTMA, BTAM
- ▶ Definitional consistency of attributes across IMSs in IMSplex not verified for ...
 - IMS system defined resources
 - APPC descriptors, ETO descriptors