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# Migration Considerations

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## Agenda

**IMS Migration Considerations**

- ★ Key dates
- ★ Packaging, Installation, IVP
- ★ Software requirements
- ★ Migration
- ★ Connectivity
- ★ Miscellaneous

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# Key Dates

| Product | Date | Announcement Letters |
|---|---|---|
| **IMS V8** (5655-C56) | October 16, 2001<br>October 25, 2002 | **201-296** IMS V8 announced<br>***202-229 IMS V8 GA*** |
| **IMS V7** (5655-B01) | October 27, 2000 | 200-290 IMS V7 GA<br>***No announced withdrawal from marketing***<br>***No announced withdrawal from service*** |
| **IMS V6** (5655-158) | December 26, 1997<br>September 4, 2002<br>***September 30, 2003*** | 297-443 IMS V6 GA<br>902-118 IMS V6 withdrawn from marketing<br>**902-160** ***IMS V6 withdrawn from service*** |
| **IMS V5** (5695-176) | December 5, 2000<br>***September 30, 2001*** | 900-222 IMS V5 withdrawn from marketing<br>**900-220** ***IMS V5 withdrawn from service*** |

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# Packaging and Installation

## 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

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# 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
- 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*'
- INSTALL jobs are in a new IMS V8 library - SDFSBASE

## IVP process

- Verifies the installation using a sample IMS system

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# 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

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# 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
    - Run JCLIN after SMP/E APPLY processing to automatically assemble and bind user exits

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# IVP

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

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# 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

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# Migration

**Software requirements**

**Supported connections**

**Coexistence**

**Migration**

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# 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
  - Requires OW 50627

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# 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

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## 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

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## 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

For complete, up-to-date list of software requirements, check with IBM Service

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# Supported Connections

## ISC 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

## OTMA compatibility in shared queues or MSC

- Requires PQ58632 (V8), PQ58631 (V7), PQ58630 (V6)
  - Makes message prefix compatible in mixed environment

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# Migration

## Initial Migration Assumption

- This section assumes you will initially migrate to IMS V8 without implementing optional new functions

## 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.

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# Migration ...

## Migration tasks

- Apply coexistence maintenance to other IMS systems
  - DBRC, MSC, RSR
- Install IMS V8
- Upgrade RECONs
- System definition
- ACBGEN
- Possible upgrade to IMS tools and related products
- Possible modifications to procedures or jobs

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# 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

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# 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

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# 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.

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# 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.

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# 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

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# 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

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# RECON Migration ...

## Migrating from IMS V5 to IMS V8

- Biggest problem is RECON migration
  - No upgrade from V5 to V8
  - No coexistence between V5 IMS and V8 RECONs
- RECONs have to be manually upgraded
  - INIT.RECON on IMS V8
  - Re-register all databases, groups, etc.
  - Image copy all databases
- Don't want to image copy all databases?
  - Be sure image copy needed flag is off
  - Update databases using IMS V8
- If recovery is needed before an image copy is taken
  - Recover databases to end of V5 logs using V5 utilities
  - Continue recovery with V8 logs; specify USEDBDS

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# 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

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# MSC Exit Routines Removed

## **IMS V8 removes** support for DFSCMPR0, 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

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# 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

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# Fast Path Data Sharing Restrictions

## Shared 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-PRELOAD***ed VSO structures
  - Only IMS V8 and IMS V7 with APAR PQ50661 can access a NON-PRELOADed VSO structure

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# 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

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# Java Application Migration

## IMS V8 does not support Java applications in MPPs and BMPs

- High Performance Java compiler cannot be used in IMS V8
  - Still supported for IMS V7

## IMS V8 Java Applications must run in JMP and JBP dependent regions

- Requires use of Persistent Reusable Java Virtual Machine (JVM)
- Migration to JVM and new Java regions may be done under IMS V7
  - No application code changes required

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# IMS V8 Functions for IMS V7

Some IMS V8 functions will be made available for IMS V7

- JMP and JBP dependent regions
- Batch Remote Recovery Service support
- System-managed processes for CF structures
- MSC FICON CTC support
- JDBC Access to IMS DB Data
- SLDS read support

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# Miscellaneous

IMS V8 is the last release to support

- Security Maintenance Utility (SMU)
- SMU users should migrate to RACF or an equivalent product

Basic Telecommunications Access Method (BTAM)

- BTAM users should migrate to VTAM or TCP/IP
- User code or tools that are dependent on BTAM should migrate to VTAM or TCP/IP

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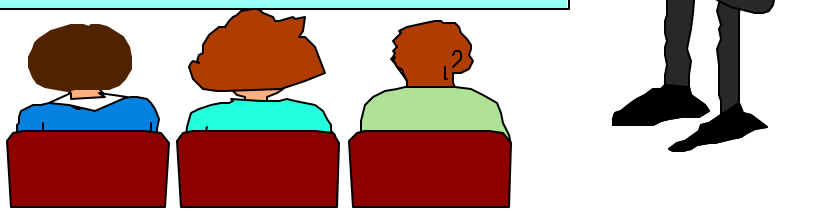
# Summary

IMS Migration Considerations

- Key dates
- Packaging, Installation, IVP
- Software requirements
- Migration
- Connectivity
- Miscellaneous



Additional information is available

- http://www-3.ibm.com/software/data/ims/
  - IMS product information, IMS tools information, events, publications, presentations, news, technical papers, etc.
- *"IMS Version 8 Release Planning Guide"* (GC27-1305)
- *"IMS Version 8 Implementation Guide: A Technical Overview of the New Features"* (SG24-6594)

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# IMS V8 Installation Class

U3729: IMS V8 Installation Workshop

- Next scheduled date: April 1, 2003
- Duration: 3 days
- Objective:

Learn how to successfully install and successfully maintain an Information Management System (IMS) Version 8 system, with insights on common problems, how to avoid them and how to correct them should they occur. In the *hands-on lab*, actually run the IMS Installation Verification Program (IVP) process in the environment of your choice:

Database Control (DBCTL)
Database Coordinator Controller (DCCTL)
Database/Data Communications (DB/DC)
DB/DC with Extended Recovery Facility (XRF)

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