



Session: J14

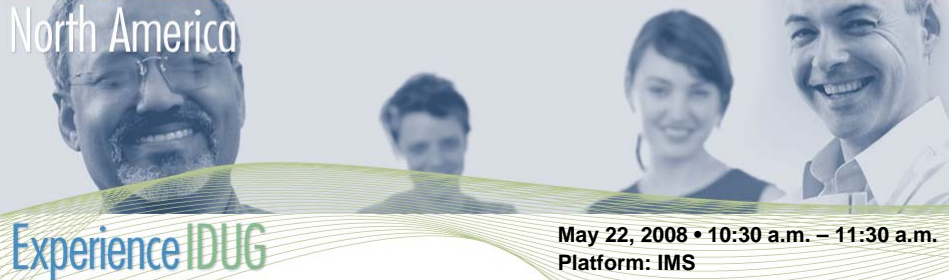
Migrating to IMS V10

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Platform: IMS

IMS Version 10 adds many enhancements to this premier database and transaction manager. In this session you will learn how to migrate your IMS V8 and V9 systems to IMS V10. You will learn the things you can do even before you order V10 to facilitate the migration from V8 or V9. The prerequisite software for V10 will be identified. The migration process will be described. This will include an explanation of the new facilities that have been added to IMS V10 to make the migration even easier. The session will point out the changes in operational procedures that may be advisable after migrating to IMS V10. Finally, the IMS V10 library including changes from previous releases will be described.

Migrating to IMS V10



- Prerequisite hardware, software, and maintenance
- New capabilities which have been added to simplify the migration process.
- Positioning IMS V8 and V9 systems for an easy transition to IMS V10.
- Operational differences with IMS V10.
- Sources of additional information about the capabilities delivered in IMS V10.

IMS 10 Migration

Prerequisites and Coexistence

Installation and Migration Tasks

Migration Considerations

IMS Library

Agenda



- IMS 10 Migration
 - Prerequisites and Coexistence
 - Installation and Migration Tasks
 - Migration Considerations
 - IMS Library

This is the list of topics that will be covered in this presentation.

Prerequisites and Coexistence

Software Prerequisites



- Minimum software level prerequisites
 - z/OS® V1R7 (5694-A01)
 - RACF®, or equivalent, if security is used
 - High Level Assembler Toolkit (5696-234)
 - IRLM 2.2, if IRLM is used
- Minimum software levels for optional functions:
 - IMS 10 Image Copy 2 and Database Recovery fast replication
 - z/OS V1R8
 - DBRC Parallel RECON Access
 - z/OS DFSMSStvs, a separately orderable feature of z/OS
 - Enterprise Workload Manager™
 - z/OS 1.8 or z/OS 1.7 with PTF OA12935
 - See the IMS 10 Release Planning Guide for specific requirements with IMS 10 functions including Java use

The minimum level of z/OS for IMS 10 is z/OS V1R7. In addition to z/OS the user must install RACF, or an equivalent security product, in order to use security with IMS 10. As with previous IMS releases, the High Level Assembler Toolkit is required to provide assembler macros that IMS uses. If the IRLM is used, IRLM 2.2 is required. Program Isolation (PI) is also supported with IMS 10. IRLM is required for block level data sharing.

z/OS V1.7 runs on the following IBM System z9 and zSeries servers or equivalents: z9-109, z900, z990, z800, and z890.

z/OS V1R8 is required if the fast replication function of Image Copy 2 and the Database Recovery utility are used.

DBRC Parallel RECON Access requires z/OS DFSMSStvs which is a separately orderable feature of z/OS V1R7 or z/OS V1R8. Special bids will be considered for IMS customers using the Parallel RECON Access function, who do not already have DFSMSStvs, to acquire DFSMSStvs for use restricted to IMS.

DFSMS APAR OA11468/PTF UA18949 is a prerequisite for Fast Path customers running at z/OS 1.7 or above.

PTF OA12935 must be applied to z/OS 1.7 systems for the exploitation of EWLM.

The IMS 10 Release Planning Guide has additional information about requirements when using particular functions in IMS 10. There are various requirements for the different uses of Java programming with IMS. For example, IMS Java dependent regions, that is JMP and JBP regions, require SDK V5.

Supported Connections



- **ISC is supported with**
 - Any supported release of IMS
 - IMS 10, IMS 9, and IMS 8
 - Any supported release of CICS® Transaction Server
 - CICS V3.2, V3.1, V2.3, and V2.2
 - User-written software
- **MSC is supported with**
 - Any supported release of IMS
 - IMS 10, IMS 9, and IMS 8
- **Shared Queues is supported with**
 - Any supported release of IMS
 - IMS 10, IMS 9, and IMS 8

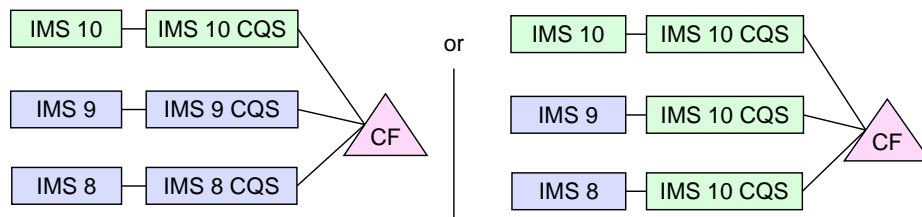
All currently supported releases of IMS and CICS are supported for ISC connectivity to IMS 10.

All currently supported releases of IMS are supported for MSC connectivity to IMS 10.

All currently supported releases of IMS are supported for shared queues with IMS 10 Transaction Manager.

Supported Connections

- IMS 8, IMS 9, and IMS 10 can register with IMS 10 CQS
- IMS 10 cannot register with IMS 8 CQS or IMS 9 CQS
- IMS 10 CQS, IMS 9 CQS, and IMS 8 CQS can connect to the same coupling facility structure



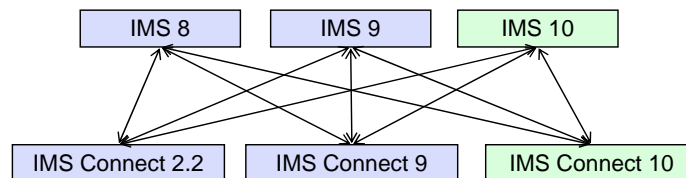
When using shared queues, the IMS control region connects to an IMS CQS address space. IMS 8 and IMS 9 control regions can connect to an IMS 10 CQS address space, but an IMS 10 control region cannot connect to an IMS 8 or IMS 9 CQS address space. All support releases of IMS can connect to the same structure in the coupling facility.

You have a choice in migrating a shared queues environment to IMS 10 from a previous IMS release. As the diagram on the left shows, you can move your IMS control region and the CQS address space it is using to IMS 10 at the same time. As the diagram on the right shows, you can move your CQS address spaces to IMS 10 before you move the IMS control regions using them to IMS 10.

Supported Connections



- **IMS Connect 10 is supported with**
 - Any supported release of IMS
 - IMS 10, IMS 9, and IMS 8
- **IMS 10 is supported with**
 - Any release of IMS Connect
 - IMS Connect 10, IMS Connect 9, IMS Connect 2.2
- **IMS Connect 10 may coexist with IMS Connect 9 and IMS Connect 2.2**



The IMS Connect which is delivered with IMS 10 is supported with any supported release of IMS. This IMS Connect may coexist with the IMS Connect which is delivered with IMS 9 and the IMS Connect 2.2 product. IMS 10 can connect with all of these IMS Connects.

For communication between IMS 8 and the IMS Connect delivered with IMS 10, APARs PQ87087, PQ59431, and PQ63231 are required for IMS 8.

Supported Connections



- DB2® connections are supported with
 - Any supported release of DB2
 - DB2 9, DB2 8, and DB2 7
- DBCTL connections are supported with
 - Any supported release of CICS Transaction Server
 - CICS V3.2, V3.1, V2.3, and V2.2
- IRLM 2.2 connections to IRLM 2.1 are supported
 - IRLM 2.1 and IRLM 2.2 are supported with IMS 8 and IMS 9
 - IRLM 2.1 is not supported with IMS 10
 - IRLM 2.2 with IMS 10 may connect to IRLM 2.1 with IMS 9 or IMS 8

All currently supported releases of DB2 on z/OS are supported for connections from IMS 10.

All currently supported releases of CICS are supported for DBCTL connectivity to IMS 10.

IMS 10 using IRLM 2.2 may be in a data sharing group with IMS 8 and IMS 9 systems. These IMS 8 and IMS 9 systems may use either IRLM 2.1 or IRLM 2.2.

Supported Migrations and Coexistence - DBRC

- **IMS 9 to IMS 10**
 - Upgrade RECONs from IMS 9 to IMS 10
 - IMS 9 SPE PK06147 allows IMS 9 to use IMS 10 RECONs
- **IMS 8 to IMS 10**
 - Upgrade RECONs from IMS 8 to 10
 - IMS 8 SPE PK06145 allows IMS 8 to use IMS 10 RECONs
 - Also provides compatibility for IMS 10 using HALDB Online Reorganization

IMS 8 and IMS 9 RECONs may be upgraded to IMS 10 by executing the DBRC utility (DSPURX00) and using the CHANGE.RECON UPGRADE command with an IMS 10 SDFSRESL library. Before doing the upgrade you should apply the Small Programming Enhancement to your IMS 8 or 9 system. This allows the IMS 8 or 9 systems to use the RECONs after they have been upgraded to IMS 10.

SPE PK06145 for IMS 8 also supplies compatibility support that allows IMS 10 to invoke HALDB Online Reorganizations (OLR) for partitions that are accessed by IMS 8. IMS 8 cannot invoke HALDB OLR, but when this maintenance is applied it may access partitions for which OLR is used.

Other Coexistence Maintenance

- Operations Management Coexistence SPEs
 - IMS 8 - PK27279; IMS 9 - PK27280
 - Allows OM address spaces and IMSs at lower levels of IMS to coexist in a CSL environment with IMS 10 OM
- System Management Enhancement Coexistence SPEs
 - IMS 8 - PK30188; IMS 9 - PK30189
 - Allows lower level IMS systems to coexist with IMS 10 using OM. Lower level IMS systems which process transaction submitted from the OM API will receive an AD status code if they reply to the IOPCB

This chart shows some of the coexistence maintenance required on earlier releases when they coexist with IMS 10.

The Operations Management coexistence SPEs allow OM address spaces and IMSs at lower levels of IMS to coexist in a CSL environment with IMS 10 OM.

The System Management Enhancement coexistence SPEs allow lower level IMS systems to coexist with IMS 10. Lower level IMS systems which process transactions submitted from the OM API will receive an AD status code if they reply to the IOPCB. IMS 10 systems can reply to these messages. If IMS 10 systems reply, the reply is treated as an unsolicited output message. This is not allowed for IMS 8 and IMS 9 systems.

Other Coexistence Maintenance

- Global Online Change SPEs
 - IMS 8 - PK23401; IMS 9 - PK23402; IMS 10 - PK37127
 - Allows lower level IMS systems to share an OLCSTAT data set with IMS 10
- Resource Consistency Checking Coexistence SPEs
 - IMS 8 - PK32969; IMS 9 - PK32970
 - Resource Consistency Checking is not done in IMS 10
 - Allows lower level IMS systems to use this function among themselves while in an IMSplex with IMS 10 systems

This chart shows additional coexistence maintenance required on earlier releases when they coexist with IMS 10.

The Global Online Change coexistence SPEs allow IMS at different release levels to share an OLCSTAT data set.

IMS 10 does not support the resource consistency checking function of the Resource Manager. The Resource Consistency Checking SPEs allow lower level IMS systems to use this function among themselves while in an IMSplex with IMS 10 systems. The elimination of resource consistency checking is explained later in this presentation.

Coexistence - IMS Utilities

- Batch Backout, Log Archive, and Log Recovery
 - Use the utility from the IMS release that created the log
- IMS 10 Database Recovery utility
 - Accepts Image Copies produced by IMS 10, 9, and 8
 - Accepts HISAM Unloads produced by IMS 10, 9, and 8
 - Accepts Change Accum data sets produced by IMS 10, 9, and 8
 - Accepts logs produced by IMS 10, 9, and 8
 - *IMS 9 & 8 Database Recovery utilities do not support the use of IMS 10 inputs*
- IMS 10 Change Accumulation utility
 - Accepts logs produced by IMS 10, 9, and 8
 - Accepts Change Accum data sets produced by IMS 10, 9, and 8
 - *IMS 9 and 8 Change Accum utilities do not support the use of IMS 10 inputs*

The Batch Backout, Log Archive, and Log Recovery utilities access one log. The release level of the utility must match the IMS release that was used to create the log.

The IMS 10 Database Recovery utility (DFSURDB0) accepts Image Copies, HISAM Unload data sets, Change Accumulation data sets, and IMS logs as inputs. These inputs may be created by any currently supported release of IMS. The IMS 8 and IMS 9 Database Recovery utilities do not support the use of IMS 10 data sets as inputs.

The IMS 10 Change Accumulation utility accepts IMS logs and Change Accumulation data sets as inputs. These inputs may be created by any currently supported release of IMS. The IMS 8 and IMS 9 Change Accumulation utilities do not support the use of IMS 10 data sets as inputs.

Coexistence - Programs and Databases



- Application Programs are compatible with previous releases
 - They do not have to be recompiled, reassembled, relink-edited, or rebound
- Databases are compatible with previous releases
 - There is no conversion process

As in previous versions of IMS, application programs do not have to be recompiled, reassembled, relink-edited, or rebound for use with IMS 10. Programs which were used with previous versions of IMS continue to work in IMS 10.

Databases from previous versions of IMS are compatible with IMS 10. They do not have to be converted to a new format when you migrate to IMS 10.

Log Records



- Some log records have changed
- New log records have been added
- User application programs which process IMS log records may be affected.
- DSECTS for IMS log records may be generated by assembling:
 - ILOGREC RECID=ALL

Among the log records which have been changed for IMS 10 are the following types:

07, 08, 22, 4001, 4004, 4006, 4007, 4012, 4083, 45, 56FA, 5950, 5951, 5953, 5954, 5955, 5956, 5957, 5958, 56FA, and 7205.

This is NOT an exhaustive list of changed log records.

If you have application programs which process IMS log records, you should examine them to see if they are affected by the changes to the log records. You can assemble DSECTS for IMS log records by using the ILOGREC macro.

IMS Tools Migration/Coexistence



- Some products may require updates
 - Contact your vendor for information on requirements
 - IBM has a web site with consolidated information about requirements for IBM IMS tools with IMS 10
 - Navigate:
 1. www.ibm.com/software/data/db2imstools/
 2. Click on "Support"
 3. Click on "IMS Tools and IMS Compatibility"
 4. Click on "IMS Version 10"
- URL: <http://www-1.ibm.com/support/docview.wss?rs=688&uid=swg21249278>
or <http://tinyurl.com/3852cs>



Tools that you use with IMS might need to be upgraded to support IMS 10. You should contact the vendors for your tools to determine their requirements for supporting IMS 10.

IBM has a web site with consolidated information on requirements for IMS tools support with IMS 10. You can navigate to this site starting at the IMS and DB2 tools home page as shown on the slide. Alternatively, you may go directly to the site using one of the urls shown. The "tiny url" has been established to limit the number of characters that you must enter.

BTAM Support Removal



- IBM BTAM products were withdrawn from service several years ago
 - IMS continued to support BTAM through IMS 9

- IMS 10 removes BTAM support
 - Ignores all macro statements associated with the unsupported BTAM terminals during IMS system definition
 - Issues warning message if BTAM terminal is included

 - Devices such as Spool, Reader, Printer, Punch, Tape and Disk are not affected.

Although IBM withdrew marketing and service of BTAM products several years ago, IMS continued to support the BTAM macros through IMS 9. IMS 10 removes this support. Devices defined in IMS system definitions as SPOOL, READER, PRINTER, PUNCH, TAPE, and DISK are not BTAM devices. They are not affected by the removal of BTAM support. The following list shows the device types affected:

BTAM Device Type	Comments or Other Specifications
1050	Switched Terminal
2740	Non-Station-Control
2740	Non-switched, model 1
2740	Non-switched, model 2
2740	Switched Terminal, model 1
2741	Non-switched
2741	Switched Terminal
2260	Local
2780	
3270	Remote, Non-switched
3270	Local
3270	Switched Terminal
3275	Switched Terminal
3741	Switched Terminal
SYSTEM/3	
SYSTEM/7	BSC, BSC and Contention
SYSTEM/7	Start/Stop, Start/Stop and Contention

Warning message G411 will be issued if the macro statement operand has an unsupported BTAM terminal specification during the IMS STAGE 1 system definition process. In addition, a severity code of 2 will be issued to allow system definition to continue. This warning message and severity code are documented in the *IMS 10 Messages and Codes Reference, Volume 2* manual.

SMU Support Removed



- IMS 10 removes SMU and SMU components
 - IMS-provided security
 - The Security Maintenance Utility
 - Application Group Name Exit Routine (DFSISIS0)
 - IMS.MATRIXx data sets

IMS 10 no longer supports the Security Maintenance Utility (SMU) capability. As a result, SMU components have been removed including the SMU Utility, the AGN Exit Routine (DFSISIS0) and the MATRIX data sets. Note that the IMS.MATRIXx data sets have been deleted and removed from all IMS procedures and logic.

IMS systems that use SMU must migrate to the SAF interface either before they migrate to IMS 10 or at the time that the migration to IMS 10 occurs.

SMU to SAF/RACF Migration



- Migration to SAF (RACF or equivalent) can begin in IMS 8 or IMS 9
 - IMS 9 includes RACF enhancements for SMU functions which previously had no SAF alternatives
 - Enhancements include areas of AGN, AOI, TCO, MSC link receive, sign on verification, and /LOCK and /UNLOCK
 - IMS 9 is a transition release where SMU is still available
 - Migration from SMU to SAF and from IMS 8 to IMS 10 is a valid option
 - Begin SMU to SAF migration in IMS 8
 - Migration using IMS 9 enhancements will have to occur during the IMS 10 migration
- IMS 9 APARs/PTFs PK35433/UK21894 and PK38522/UK28607
 - Provide utility to read SMU input and produce RACF control statements

Both IMS 8 and IMS 9 provide migration paths to the use of SAF/RACF security. IMS 9 provides migration capabilities that are not available with IMS 8. This includes the enhancements to the IMS SAF interface for support of AGN, AOI, TCO, MSC link receive, sign on verification, /LOCK command, and /UNLOCK command security. This makes the migration off of SMU easier while on IMS 9 than it would be while on IMS 8.

IMS 9 provides utilities to read SMU input and produce RACF control statements for corresponding security under RACF. This eases the conversion of security from SMU to RACF.

SMU to SAF/RACF Migration



- Migration references

- Chapter 6, *IMS Version 9 Implementation Guide Redbook* (SG24-6398)
- Chapter 4, *IMS Version 9 Administration Guide: System* (SC18-7807)
- Chapter 3 and 4, *IMS Version 9 Release Planning Guide* (GC17-7831)

This is a list of SMU to RACF migration references. The first item is an IMS Redbook. The second and third items are standard product publications for IMS 9.

User Exit Routines Removed



- The following user exit routines are not invoked by IMS 10
 - Terminal Routing - DFSCMTR0
 - Input Message Routing - DFSNPRT0
 - Link Receive - DFSCMLR0
 - Program Routing - DFSCMPR0
- These exit routines are replaced by the MSC Message Routing and Control user exit - DFSMSCE0
 - DFSMSCE0 was introduced in IMS 7
 - Migration should be done in IMS 7, 8, or 9

The four exit routines shown here are not supported in IMS 10. The functions provided by the exit routines may be provided by using DFSMSCE0. DFSMSCE0 was introduced in IMS 7 and includes additional capabilities. IBM had announced that DFSCMTR0, DFSNPRT0, DFSCMLR0, and DFSCMPR0 would not be supported in IMS 8 and IMS 9, but support for them continued through these releases. Support is not included in IMS 10. You must migrate to DFSMSCE0 before implementing IMS 10.

System Def. FPCTRL Macro Ignored

- The system definition FPCTRL macro is ignored
 - Previous releases:
 - Macro was required to enable Fast Path capability
 - Set defaults for Fast Path parameters
- Execution parameters for IMS and DBC procedures
 - New FP= parameter
 - FP=Y used to enable Fast Path
 - Default is FP=N
 - DBBF=, DBFX=, BSIZ=, and OTHR= used to specify Fast Path parameters
- Migration consideration
 - Fast Path users must include execution parameters
 - Recommendation: Remove FPCTRL macro from stage 1 input

The FPCTRL system definition macro is ignored by IMS Version 10. In previous releases it was required to enable Fast Path capabilities. It also was used to specify the default values for some Fast Path parameters. IMS Version 10 always generates Fast Path capabilities for DB/DC and DBCTL systems. They are enabled by the FP=Y parameter at execution time.

If you are a Fast Path user, you must specify FP=Y at execution time for an online system. The default for the parameter is FP=N. Since defaults for Fast Path parameters cannot be specified at system definition time, these parameters should be specified at execution time. The parameters are DBBF=, DBFX=, BSIZ=, and OTHR=. The default values for these parameters are the same as the default values for the FPCTRL macro in previous releases. These are:

DBBF=10, DBFX=4, BSIZ=2048, and OTHR=2

These values are highly unlikely to be appropriate for most Fast Path users. If you specified these execution parameters for previous releases, you may also use them with IMS Version 10. If did not specify these execution parameters, you should specify them in IMS Version 10. You may use the values that were on the FPCTRL macro in the previous release.

We recommend that you remove the FPCTRL macro for your system definition stage 1 input. Its presence in the input might confuse someone who is looking at this input. System definition ignores the macro and issues warning message G1010 when it is present.

Installation and Migration Tasks

Installation and Migration Tasks



• Migration Tasks

- Eliminate BTAM and SMU use
 - They are not supported with IMS 10
- Migrate from exit routines not supported by IMS 10
 - Migrate DFSCMTR0, DFSNPRT0, DFSCMLR0, and DFSCMPR0 to DFSMSCE0
- Migrate IMS Java dependent regions (JMPs and JBPs) to SDK V5
- Check PSP bucket
- Review the Program Directory
- Review the *IMS 10 Release Planning Guide, GC18-9717*
- Review the *IMS 10 Installation Guide*
- Review the *IMS 10 System Definition Guide*

This is an overview of the tasks for migration to IMS 10.

Remember that IMS 10 is the first release of IMS not to support BTAM or the Security Management Utility (SMU). Their use should be discontinued before migrating to IMS 10.

As mentioned on previous pages, the Terminal Routing, Input Message Routing, Link Receive, and Program Routing exit routines are no longer supported. but the MSC Message Routing and Control user exit routine provides the same and extended capabilities.

IMS 10 Java dependent regions must use SDK V5. IMS 9 also supports SDK V5 with APAR PK37843, so migration should be done under IMS 9 before migrating to IMS 10.

As for all installations of new products the Preventive Service Planning (PSP) bucket and the Program Directory for the product should be reviewed before beginning the migration.

The IMS 10 *Installation Guide* has content similar to the *Installation Volume 1: Installation Verification* manual for IMS 9. You should read this Guide before beginning the migration process. You should also review the *IMS 10 System Definition Guide*. Its contents are similar to the *Installation Volume 2: System Definition and Tailoring* manual for IMS 9, although some of the information from the IMS 9 manual is in the *IMS 10 System Definition Reference*.

Installation and Migration Tasks

- Migration Tasks (continued)
 - Install prerequisite software and maintenance
 - Check your IMS tools and related products
 - Apply coexistence maintenance to current IMS systems
 - DBRC coexistence SPEs
 - System Management Enhancements coexistence SPEs
 - Resource Consistency Checking coexistence SPEs
 - Global Online Change coexistence SPEs
 - Operations Management coexistence SPEs
 - Evaluate and update IMS exit routines
 - RECON I/O Exit Routine (DSPCEXT0)
 - Install IMS 10 using SMP/E installation process
 - CBPDO or ServerPac may be used

Other products may need to be upgraded for use with IMS 10. They could require maintenance or new releases.

You should apply DBRC coexistence SPEs to your IMS 8 or IMS 9 systems before upgrading your RECONs to IMS 10. This is required for the IMS 8 or IMS 9 systems to be able to use the RECONs after the upgrade.

Similarly, you should apply the other coexistence SPEs to your lower level IMS systems.

The only user exit routine that must be updated for use with IMS 10 is the RECON I/O Exit Routine (DSPCEXT0). If you use this routine, you should examine it for required changes due to the change in RECON records.

CBPDO is Custom-Built Product Delivery Offering. The CBPDO product package consists of one logical tape (multiple volumes). A CBPDO package that includes IMS can also include other products in the same System Release (SREL). CBPDO also provides service for the products included with the product order. The service includes all PTFs available within one week of order fulfillment. All PTFs are identified by one or more SOURCEIDs, including PUTyymm, RSUyymm, SMCREC, and SMCCOR.

ServerPac is an entitled software delivery package. It consists of products and service for which IBM has performed the SMP/E installation steps and some of the post-SMP/E installation steps. To install the package on your system and complete the installation of the software it includes, use the CustomPac Installation Dialog, which is the same dialog used for all CustomPac offerings, including SystemPac® (dump-by-data-set format), ProductPac®, and RefreshPac. For IMS, ServerPac allocates, catalogs, and loads all the data sets; sets up the SMP/E environment; supplies a job to update PARMLIB (IEFSSNxx, PROGxx, IEASVCxx, and SCHEDxx); and directs you to start the IVP.

Installation and Migration Tasks



- Migration Tasks (continued)
 - Run the IVP (optional)
 - Install the Type 2 and Type 4 SVCs
 - DFSUSVC0 may be used to install these SVCs dynamically
 - Upgrade RECONS
 - IMS 8 and IMS 9 systems may be active during the upgrade
 - System definition
 - Review IMS Resource Cleanup Module considerations
 - IMS 10 uses dynamic resource cleanup module
 - Do not delete the IMS 8 module until IMS 8 use is discontinued
 - ACBGEN
 - Update PROCLIB members
 - Using Syntax Checker

Running the IVP is optional, but recommended. All required installations tasks are done outside of the IVP. The IVP verifies that the installation is correct.

The IMS 10 Type 2 and Type 4 SVC modules must be installed in the z/OS system. A z/OS IPL is not required. The SVCs may be installed by running DFSUSVC0 and specifying SVCTYPE=(2,4).

Upgrade the RECONS by using the CHANGE.RECON UPGRADE command using the IMS 10 release of the DBRC utility. This may be done while IMS subsystems are active and using the RECONS. The DBRC Type 4 SVC must be installed prior to the upgrade.

System definition is required as with previous IMS releases. Most system definition statements from previous IMS releases are compatible with IMS 10. BTAM definitions are no longer allowed.

IMS 9 and IMS 10 use a dynamic resource cleanup module (DFSMRC20). No user setup is required; you do not need to install the static resource cleanup module (DFSMRCL0) on the host z/OS system for IMS 9 or IMS 10. IMS 8 uses the static resource cleanup module (DFSMRCL0). Do not delete it from your z/OS system while there is still a possibility that you will need to run IMS 8.

An ACBGEN is required for use with the online system or any batch DBB jobs.

IMS PROCLIB members should be updated for IMS 10. The Syntax Checker for IMS 10 may be used to do these updates. More information on using the Syntax Checker is included later in this presentation.

Packaging



- IMS 10 product number: 5635-A01

FMID	Feature Description
HMK1010	System Services
JMK1011	Database Manager
JMK1012	Transaction Manager
JMK1013	Extended Terminal Option (ETO)
JMK1014	Recovery Level Tracking (RSR)
JMK1015	Database Level Tracking (RSR)
JMK1016	IMS Java™
HIR2220	IRLM 2.2

IMS 10 packaging is the same as that for IMS 9. Transaction Manager is a prerequisite for ETO. Recovery Level Tracking RSR is a prerequisite for Database Level Tracking RSR.

IRLM 2.2 is the only IRLM shipped and supported with IMS 10.

Resource Cleanup Module



- IMS 9 introduced DFSMRC20
 - No user setup required
 - Eliminated need to ZAP z/OS CSECT IEAVTRML in IGC0001C to contain the name DFSMRCL0
 - Eliminated need to have DFSMRCL0 in LPA
- If you are running with IMS 8 you still need DFSMRCL0

IMS 9 introduced DFSMRC20 to replace DFSMRCL0 as the IMS Resource Cleanup module. IMS 10 also uses DFSMRC20. There is no user setup required for the use of DFSMRC20.

IVP Enhancements



- IVP Enhancements for existing functions
 - Support for RACF implementation and SMU removal
 - IMS Java sample application
 - IMS Connect sample application
- IVP support for new functions
 - Operations Manager (OM) subscribe/unsubscribe sample
 - Manage Resources
 - ISPF application which provides an interface for using Dynamic Resource Definition (DRD)
- IVP is invoked as in previous releases
 - ISPF Option 6
 - IMS Application Menu

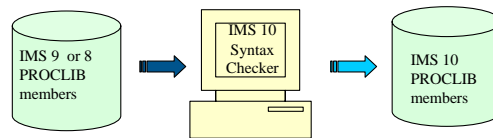
The Installation Verification Program (IVP) has been enhanced. Some new support for existing IMS functions has been added. This includes support for RACF functions and removal of IVP support for the Security Management Utility which has been removed in IMS 10. Sample applications have been added for IMS Java and IMS Connect.

The IVP includes support of the subscribing and unsubscribing to unsolicited system messages through the OM interface. The Manage Resources application, which provides an ISPF interface to DRD, is included in the IVP.

The IVP may be invoked either directly through Option 6 in ISPF or through the IMS Application Menu.

Syntax Checker

- IMS 10 Syntax Checker
 - Coexists on the same z/OS along with previous releases of IMS
 - Can be used to check parameters in IMS 10 and previous IMS releases
 - Can be used migrate members to IMS 10



The invocation of the Syntax Checker in IMS 10 is no different than in previous releases. It is a stand alone, offline product that can coexist on the same z/OS environment as previous releases of IMS. When used to check parameters of previous releases, make sure that the release number shown is correct.

New Syntax Checker Support



- **IMS 10 Syntax Checker**
 - Supports the 3 IMS.PROCLIB members as in previous releases:
 - DFSPBxxx, DFSDCxxx, DFSSQxxx
 - Adds support for 10 additional members:
 - DFSDFxxx, DFSCGxxx, CSLOIxxx, CSLRIxxx, CSLSIxxx, CQSIPxxx, CQSSLxxx, CQSSGxxx, IMS Connect configuration member, BPE User exit list member
- To facilitate migration to IMS 10, the Syntax Checker adds support for parameters in IMS 8 and IMS 9 added since their GA

In IMS 10, the Syntax Checker continues to support the following members: DFSPBxxx, DFSDCxxx and the DFSSQxxx. In addition, support for 10 other members of IMS.PROCLIB has been added. They are:

DFSDFxxx - Dynamic Resource Definition, Common Service Layer, Shared Queues, and Diagnostics and Statistics parameters. (Support for IMS 10 only)

DFSCGxxx - Common Service Layer Parameters

CSLOIxxx - OM Initialization Parameters

CSLRIxxx - RM Initialization Parameters

CSLSIxxx - SCI Initialization Parameters

CQSIPxxx - CQS Initialization Parameters

CQSSLxxx - CQS Local Structure Definition Proclib Member

CQSSGxxx - CQS Global Structure Definition Proclib Member

IMS Connect Configuration Member. (Note: These members do not have a specific member name prefix. The user can select any name. There is support for IMS 9 and IMS 10 only).

BPE User Exit List member (Note: These members do not have a specific member name prefix. The user can select any name).

To facilitate migration to IMS 10, the Syntax Checker's support for the currently processed members, DFSPBxxx, DFSDCxxx and the DFSSQxxx includes any new parameters in IMS 8 and IMS 9 that have been added since GA of those releases. Support of IMS 7 PROCLIB members is dropped. Syntax Checker only supports the three latest releases of IMS.

Migration Considerations

This section covers changes that might occur in an IMS system due to the migration from a previous release. It does not discuss new functions which are optional in IMS 10. It is intended to provide advice on handling changes which may occur due to the migration from a previous version to IMS 10.

KBLA Migration



- When KBLA is first invoked under IMS 10, a migration panel will appear
 - Enter correct SDFSRESL and KBLA Test Loadlib data set names
- KBLA supports concurrent use of both IMS 9 and IMS 10
 - Provides support for both IMS 9 and IMS 10 logs

Knowledge Based Log Analysis (KBLA) was introduced in IMS 9. When you first invoked it in IMS 10, a migration panel will be presented. It will ask for the data set names of the resource library (SDFSRESL) and the KBLA Test Loadlib. These data set names are used by KBLA when creating JCL for jobs.

You may use the IMS 10 KBLA for analysis of both IMS 9 and IMS 10 logs.

IMS Application Menu



- Two options have been added to the IMS Application Menu
 - 2 Manage resources (for DRD)
 - 9 Abend Search and Notification
- Some options have moved in the list

```
                                IMS Application Menu
Command ====>
Select the desired Sub-Options and press ENTER

      1  Single Point of Control (SPOC)
      2  Manage resources
      3  Knowledge-Based Log Analysis (KBLA)
      4  HALDB Partition Definition Utility (PDU)
      5  Syntax Checker for IMS parameters (SC)
      6  Installation Verification Program (IVP)
      7  IVP Export Utility (IVPEX)
      8  IPCS with IMS Dump Formatter (IPCS)
      9  Abend Search and Notification (ASN)
```

The IMS Application Menu has been modified to accommodate two new options. "Manage Resources" is option 2. This is the ISPF interface to Dynamic Resource Definition (DRD). The addition of Manage Resources to the menu changed the option numbers for the items that follow it. "Abend Search and Notification" has been added as option 9.

PSB Size Increase



- IMS 10 PCB sizes are 16 bytes larger than IMS 9 and IMS 8 PCBs
 - PSB size increases depend on the number of PCBs in the PSB
- PSB pool sizes may need to be increased
- Resident PSBs will require more space
 - Resident PSB modules will be larger
- Examine the DFS0942I message from ACBGEN with PSB=ALL
 - Gives average size of PSBs

The size of PCBs increases by 16 bytes when migrating to IMS 10. The increase in the size of PSBs depends on the number of PCBs per PSB. You may want to increase the size of your PSB pools to accommodate the larger PSBs. This may or may not be necessary. If you have very large PSB pools, the increase may not significantly affect the reuse of PSBs from the pool. Of course, resident PSBs will require more space. To get an indication of the average change in PSB sizes you could compare the output listing for ACBGENs from IMS 10 and your previous IMS version. The DFS0942I message lists the average PSB sizes. A comparison of two ACBGENs specifying PSB=ALL would indicate the average difference in sizes for all PSBs in ACBLIB.

ACBGEN Execution



- ACBGEN for DBDs by default does more processing in IMS 10
 - BUILD DBD=name
 - Rebuilds DBD and rebuilds PSBs which reference the DBD
 - Previous IMS versions did not rebuild PSBs unless the database structure changed
 - Required for support of member online change
 - Elongates execution of ACBGEN
 - New BLDPSB=NO parameter on BUILD DBD=name statement
 - Does not rebuild PSBs unless the database structure is changed
 - Executes like previous IMS versions

There is a change in the execution of ACBGEN when a BUILD DBD= control statement is used. In previous releases this did not rebuild PSBs unless the database structure of the DBD changed. In IMS 10 PSBs referencing the DBD are rebuilt even when the database structure is not changed. This could elongate the execution time of ACBGEN. This will be noticeable when there are many PSBs referencing the rebuilt DBD. The change in ACBGEN was implemented in support of member online change.

If you are not using member online change, the rebuild of PSBs is not required when the structure of the DBD is not changed. You may use the BLDPSB=NO parameter on the BUILD DBD= control statement to eliminate the rebuild of PSBs.

Transaction Scheduling



- **SCHD=** parameter on system definition TRANSACT macro is ignored
 - Change made to eliminate potential scheduling failures
- **Only one scheduling option is used in IMS V10**
 - SCHD=3 option is always used
 - Allows scheduling of lower priority classes when a transaction cannot be scheduled due to database intent or lack of pool space
 - SCHD=1 was the default in previous releases
 - Did not allow scheduling of lower priority classes

In previous release of IMS, the SCHD= parameter on the system definition TRANSACT macro specified the scheduling option used when the transaction defined on the TRANSACT macro could not be scheduled for internal reasons (database intent or no more space in PSB pool or DMB pool to bring in needed blocks). IMS 10 always uses the SCHD=3 option. The default in previous releases was SCHD=1.

SCHD=1 specified that only transactions of equal or higher priority in the selected class would be scheduled. Five consecutive intent conflicts are allowed within a class before IMS starts scheduling the next eligible class.

SCHD=3 specified that any transaction in the selected class could be scheduled. IMS starts scheduling the next eligible class after attempting to schedule all the transactions in the current class

Two other options were available in previous releases.

SCHD=2 specified that only higher-priority transactions in the selected class could be scheduled.

SCHD=4 specified that IMS should skip to the next class and attempt to schedule the highest-priority transaction in that class.

Scheduling failures for the "internal reasons" should be rare. Intent conflicts only occur when PROCOPTs with the E (exclusive) option are used. The PSB and DMB pools should always be large enough to hold the currently required PSBs and DMBs.

Sysplex Serial Program Mgmt.



- SSPM is invoked for all users with CSL and resource structure
 - Applies to all programs with SCHDTYP=SERIAL specified
 - No program or definition changes
- SSPM enforces serial program management across the IMSplex
 - Only one copy of programs (PSBs) with SCHDTYP=SERIAL is scheduled at any time
 - Applies to MPRs, JMPs, and message-driven BMPs
- Migration
 - If you currently have CSL and a resource structure
 - You will get SSPM
 - You may want to eliminate operational procedures, definitions, etc. that were used to enforce serialization across the sysplex

If you have an IMSplex with the common service layer (SCI, OM, and RM address spaces) and a resource structure, serial program management will automatically be enforced across the IMSplex with IMS 10. There are no program or definitions changes required for this. Only one copy of a program with SCHDTYP=SERIAL will be scheduled in the IMSplex at any time. This applies to MPRs, JMPs, and message-driven BMPs. It does not apply to non-message driven BMPs, JBPs, CCTL (CICS), or ODBA applications such as DB2 Stored Procedures.

If you have implemented the Common Service Layer and defined a resource structure with previous releases of IMS, you will automatically get the SSPM function when you migrate your IMS systems to IMS 10. You probably created some operational procedures and/or definitions to enforce serialization in your previous release. For example, you may have started a dependent region with the class for the transaction on only one IMS system. This is OK with IMS 10, but it is not required for the enforcement of serialization. You may want to eliminate your special operational procedures and/or definitions since they are no longer required to enforce serialization across the IMSplex.

MSC Migration Considerations

- DFMSMCE0
 - Ensure migration from the older routing exit routines DFSCMTR0, DFSNPRT0, DFSCMLR0, DFSCMPR0
- Buffer size
 - MSPLINK buffer size ranges have changed
 - Minimum is 1024, maximum is 65,536
 - Increase over IMS 8 / IMS 9 definitions where range is 208 to 30,720
 - VTAM sizes for IMS 10 can be any size and no longer follow an algorithm
 - Validate that partner IMS systems have matching buffer specifications
 - If the IMS 8 or IMS 9 systems have link buffer sizes less than 1024, they must be modified to a minimum of 1024

When migrating to IMS 10, ensure that the older routing exit routines, if any, have been converted to DFMSMCE0. This migration can be accomplished in any release that supported DFMSMCE0 (IMS 7, IMS 8, or IMS 9) prior to the actual IMS 10 migration. If the exit routines still exist while the IMS 10 migration is in progress then the IMS 10 migration tasks need to include the change to the use of DFMSMCE0.

A like-for-like migration from a previous release to IMS 10 allows MSC to be initialized in non-bandwidth mode. This mode is compatible with MSC operations in previous releases. The allowable MSC buffer sizes have changed in IMS 10. Previously, they could range from 208 to 30,720 bytes and had to follow an algorithm. In IMS 10 they may range from 1024 to 65,536 bytes. Since buffer sizes for MSC partners must match, a MSC link between an IMS 10 and an IMS 8 or IMS 9 system must abide by the restrictions of both releases. This means that the buffer sizes must be in the range of 1024 to 30,720 bytes and must be allowed by the algorithm used by IMS 8 and IMS 9.

MSC Migration Considerations

- **Bandwidth Mode**
 - Migrate using the default of non-bandwidth mode in IMS 10
 - Compatible with previous releases
 - After migration, bandwidth mode can be enabled using the UPD command
 - Requires both partners of the link to be IMS 10 systems
 - Adjust buffer sizes
 - Minimum of 4096
 - To be effective, the buffers should be large enough to accommodate multiple messages

The ability to turn on bandwidth mode is provided via the UPD command and requires both partners of the link to be at an IMS 10 level. In this mode, the minimum size of the buffers should be 4096. To be more effective, the buffer sizes should be defined to accommodate multiple messages.

Log Transaction Analysis, Statistical Analysis, and Log Merge utilities



- Migration

- Old Log Transaction Analysis utility JCL continues to work
 - Specification of NOLOG or NOREPORT on EXEC statement ignored
 - These actions are now controlled by the presence or absence of DD statements
- Old Statistical Analysis utility JCL must be modified
 - Move SYSIN from step 6 to the first step
 - Delete the LOGOUT DD statement from first step
 - Delete the last five steps
- Log Merge utility continues to work but is not required
 - Multiple logs may be specified as input to the other utilities
- KBLA may be used create the correct IMS 10 JCL
- Logs from previous releases are not valid input to these IMS 10 utilities

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The JCL used in previous releases for the Log Transaction Utility can be used with IMS 10. There is one slight incompatibility. Previously you could specify an OUT= parameter on the EXEC statement. OUT=NOLOG specified that an output report should not be written to the LOGOUT DD data set. OUT=NOREPORT specified that an output report should not be written to the PRINTER DD data set. In IMS 10 if you do not want either of these data sets do not include the DD statements for them. These are the LOGOUT and PRINTER DD statements. IMS 10 ignores the OUT= parameter on the EXEC statement.

The JCL used for the Statistical Analysis utilities in previous releases must be changed for IMS 10. The actions needed to change the JCL are listed on the slide. The control statements were specified in the SYSIN data set of the sixth step. The SYSIN data set is now part of the first (and only) step. The LOGOUT DD in the old first step was used to pass data to the following steps. Since only one step is used in IMS 10, the LOGOUT DD is no longer used. The last five steps are no longer used, so their JCL should be eliminated.

The Log Merge utility was used in previous releases to merge logs from different systems. The output of Log Merge was used as input to the Log Transaction Analysis or Statistical Analysis utilities. The Log Merge utility can be used with IMS 10, but it is not required. Both analysis utilities can merge multiple logs as part of their processing.

Knowledge Based Log Analysis (KBLA) may be used to invoke these utilities. Of course, it produces the correct JCL for them.

Logs produced by IMS 8 and IMS 9 are not valid input to the IMS 10 Log Transaction Analysis utility and the IMS 10 Statistical Analysis utility.

Sort for Change Accum and Prefix Resolution



- Default sort size changed from 200K to MAX
 - CORE= parameter in JCL for Change Accumulation and Database Prefix Resolution
 - CORE= specifies the storage used by sort
 - MAX allows the installation default value for sort to be used
 - CORE limits the number of sort work data sets used by OEM sort programs
 - UCBs for these data sets are below 16M line for some OEM sort programs
 - CORE=MAX (default) may shorten the elapsed time of these programs
- Migration
 - If an installation wants to limit the sort space to less than the system default, it should code the CORE= parameter for the desired value.

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The default for the CORE= parameter on the Database Change Accumulation and Database Prefix Resolution utilities is changed in IMS 10 from 200K to MAX. When MAX is used, the IMS utility does not limit the amount of space used by sort. It is limited by the default value specified for the sort product. The sort space is particularly important for some non-IBM sort programs which create UCBs for sort work data sets below the 16M line. The sort space may limit the number of these data sets that may be used. By increasing the default space, the number of sort work data sets may be increased. This may shorten the elapsed execution time for these utilities.

A new message has been added to the Database Change Accumulation and Database Prefix Resolution utilities. It is issued when the CORE= parameter is not specified. The message is:

```
DFS3007I SORT CORE SIZE WILL DEFAULT TO CORE=MAX
```

If an installation wants to limit the sort space to less than the system default, it should code the CORE= parameter for the desired value.

DBRC Timestamp Precision



- Migration Considerations

- Full precision used after MINVERS('10.1') specified
- Utility control statement changes are unlikely to affect users
 - Required for all values of MINVERS, but
 - GENJCL.CA and GENJCL.RECOV create correct statements
 - Used by almost all users
- RECON listings and message outputs include full precision timestamps when MINVERS('10.1')
- Abbreviated timestamps supported for most uses
- No changes for DBRC API
 - Timestamps continue to be 12 byte internal timestamp format
- Timestamp precision of GENJCL.USER output could change
 - Default changes when MINVERS('10.1') is set unless overridden in skeletal JCL

IMS 10 has increased the precision of timestamps stored in the RECONs. Previous versions have a precision of a tenth of a second. IMS 10 timestamps have a precision of a microsecond. This is called "full precision".

Full precision timestamps are not implemented unless the RECONs have MINVERS('10.1') specified. Even when MINVERS is set to a lower value, the IMS 10 Change Accumulation and Database Recovery utility control statements require new formats which accommodate full precision timestamps. Nevertheless, this is unlikely to be a concern to users since GENJCL.CA and GENJCL.RECOV in IMS 10 always produce control statements with the IMS 10 formats.

If you wish, you may specify abbreviated timestamps for most uses. DBRC will interpret the time by using zeros for the unspecified positions in the time. For many uses, this is adequate. Full precision timestamps are required in CHANGE and DELETE commands when a full precision timestamp is part of the RECON record key.

The timestamp precision value may be coded on the TIMEFMT parameter of the %SET statement in skeletal JCL. It is a value from 1 to 6. The default in previous releases was 1. In IMS 10 the default depends on the MINVERS value. MINVERS('10.1') sets the default to 6. MINVERS values less than '10.1' sets the default to 1. This could affect the output of GENJCL.USER. If you have specifically coded the TIMEFMT parameter, timestamp precision in the output will not change. If you have not coded TIMEFMT, the output may change when the MINVERS value is set to '10.1'.

Database Change Accumulation

- DBO and DB1 control statements
 - Purge time is expanded
 - Number of DD names allowed reduced from 4 to 3
 - Position on control statement moved

IMS 8 or 9 example:

```

-----1-----2-----3-----4-----5-----6-----7-----
//SYSIN DD *
DB0DI32DB012007.175 12:00:00.1 -08:00DI320101 DI320102 DI320103 DI320104
DB0AB77DB012007.175 12:00:00.1 -08:00AB770101 AB770102
/*
  
```

IMS 10 example:

```

-----1-----2-----3-----4-----5-----6-----7-----
//SYSIN DD *
DB0DI32DB012007.175 12:00:00.123456 -08:00DI320101 DI320102 DI320103
DB0DI32DB012007.175 12:00:00.123456 -08:00DI320104
DB0AB77DB012007.175 12:00:00.1 -08:00 AB770101 AB770102
/*
  
```

- ◆ GENJCL.CA has been updated to create IMS 10 control statements

The Database Change Accumulation utility DBO and DB1 control statements have been modified to support timestamps with greater precision. The new expanded timestamp format may be used in IMS 10 but it is not required. DBO control statements are used to specify the database data sets that are accumulated to the new change accumulation data set. DB1 control statements are used to specify the database data sets that are written to the new output log data set. Since the timestamps now may occupy more columns in the control statements, the position of the database data set DDNAMEs have moved and only three may be specified on one control statement. In previous versions the timestamp was specified in columns 12-37 and DDNAMEs were in columns 38-45, 47-54, 56-63, and 65-72. In IMS 10 the timestamp uses columns 12-42 and DDNAMEs are in columns 43-50, 52-59, and 61-68. If a database has more than three data sets that are in the same Change Accum group, multiple control statements are required in IMS 10. The IMS 10 example shows two control statements to replace the first control statement in the IMS 9 example. Two control statements are required because four DDNAMEs are specified. The IMS 10 example shows the greater precision timestamp. The last control statement in the IMS 10 example uses an abbreviated timestamp.

GENJCL.CA has been updated to create the new format of the control statements. These changes to the control statements will have no effects on users who create Change Accumulation JCL and control statements with GENJCL.CA. This is the vast majority of IMS installations.

Database Recovery Utility



- S control statement

- Timestamp recovery time is expanded
- Specification of "no image copy input" has been moved to column 63
- Specification of time zone offset changed - space added before offset

IMS 8 or 9 example:

```
-----1-----2-----3-----4-----5-----6-----7-----  
//SYSIN      DD *  
S  DI32DB01  DI320101          2006.175 12:00:00.1-08:00 C  
/*
```

IMS 10 examples:

```
-----1-----2-----3-----4-----5-----6-----7-----  
//SYSIN      DD *  
S  DI32DB01  DI320101          2006.175 12:00:00.123456 -08:00 C  
/*
```

```
//SYSIN      DD *  
S  DI32DB01  DI320101          2006.175 12:00:00.1 -08:00    C  
/*
```

- ◆ GENJCL.RECOV has been updated to create IMS 10 control statements

The format of the S control statement of the Database Recovery utility (DFSURDB0) has changed in IMS 10. The S control statement is used to specify the database and DDNAME for the database data set that is to be recovered. If the recovery is a timestamp recovery, the timestamp is also specified. The new expanded timestamp format may be used in IMS 10 but it is not required. In previous releases column 57 was used for an indicator. The indicator could specify that a user image copy had been restored or that an RSR receive was done. Since the timestamp may use column 57, the indicator is now coded in column 63 when needed. The first example for IMS 10 shows the use of the expanded timestamp. The second shows the use of an abbreviated timestamp. Both examples have the 'C' which indicates that there is no image copy input.

There is another small change in the coding of the timestamp. In previous releases there was not a space between the time and the sign for the time zone offset. In the IMS 8 or IMS 9 example on this page the sign is in column 50. In IMS 10 there is a blank between the time and the sign for the offset. In the two examples on this page the blank is in column 55 for the first IMS 10 example and column 50 for the second example.

GENJCL.RECOV has been updated to create the new format of the control statement for timestamp recovery. The change in the control statement will have no effects on users who create Database Recovery JCL and control statements with GENJCL.RECOV. This is the vast majority of IMS installations.

DBRC API Security Authorization

- DBRC command authorization security is extended to include DBRC API requests
 - Requests are treated like commands for security checking
- Migration
 - Security was not checked in IMS 9
 - Security checking in IMS 10 might cause application which ran successfully in IMS 9 to fail in IMS 10

DBRC command security was introduced in IMS 8. It may be used to invoke authorization checking for DBRC commands. RACF, or any SAF security product, may be used. Alternatively, an exit routine may be invoked or both the security product and the exit routine may be invoked. Commands are authorized by defining a resource representing the command. In RACF this is done with an RDEFINE statement.

This authorization is extended to the DBRC API in IMS 10. API requests invoke command authorization checking. Command authorization checking uses resources which are defined to secure specific commands or API requests.

VERSION parm in DSPAPI macros

- IMS 10 macros default to VERSION=2.0
 - New functions and options require VERSION=2.0
- Reassembly is not required
 - Applications assembled with IMS 9 macros default to VERSION=1.0
- Applications can be reassembled with IMS 10 macro library (SDFSMA) (SDFSMA)
 - Will run unchanged if VERSION=1.0 is specified
 - May require changes if VERSION= is allowed to default
- Recommendation
 - Always specify VERSION= parameter
 - Allows reassembly in future releases without changes

Each DBRC API macro includes the VERSION= parameter. New functions, such as AUTH, and new options, such as READONLY=YES, require VERSION=2.0. In IMS 9 the only valid value for VERSION was 1.0. It was also the default. In IMS 10 VERSION= defaults to 2.0.

Applications written in IMS 9 will continue to run in IMS 10 without change. Reassembly is not required. In fact, reassembly could cause the program to change due to the change in the default for VERSION=. In some cases, the default of VERSION=2.0 may cause different results from the previous default of VERSION=1.0. This is not always the case. Some of the changes are only the use of previously reserved bytes in the control blocks that are produced. In any case, if you wrote a program for IMS 9 and reassemble it using an IMS 10 macro library but do not process any data introduced in IMS 10, it is safest to specify VERSION=1.0 on the DFSAPI macros before the reassembly.

Since the VERSION= parameter defaults to the latest level of the macros and later levels may produce different results, it is safest to specify the VERSION= parameter value explicitly. This will ensure that future assemblies of DBRC API programs will produce the same results.

IMSplex Name and DBRC Group ID

- IMSplex name is specified with 5 characters (xxxxx)
 - IMS 8 and IMS 9 store 'CSLxxxxx' in the RECON header extension record
 - IMS 10 stores 'xxxxxyyy' in the RECON header extension record
 - 'yyy' is the DBRC Group ID
 - DBRC Group ID defaults to '001'
 - Upgrade uses the default
- Example
 - IMS 9: IMSplex name is MYPLX
 - Contents in RECON Header Extension record: 'CSLMYPLX'
 - RECON Listing: `IMSPLEX=MYPLX`
 - IMS 10 after upgrade of RECONS with IMSplex name of MYPLX
 - Contents in RECON Header Extension record: 'MYPLX001'
 - RECON Listing: `IMSPLEX=MYPLX GROUP ID=001`

The IMSplex name is optional. It is used in a Common Service Layer environment. It is required for Automatic RECON Loss Notification and Parallel RECON Access. The IMSplex name is specified with up to 5 characters. It is specified either in the `IMSPLEX=` execution parameter or by the DBRC SCI Registration exit routine. When first specified, it is stored in the RECONS. IMS 8 and IMS 9 store the IMSplex name as 'CSLxxxxx' where 'xxxxx' is the value specified in the `IMSPLEX=` parameter or in the exit routine. When the RECONS are upgraded to IMS 10, the value stored is 'xxxxxyyy' where 'yyy' is the DBRC Group ID. The upgrade sets the DBRC Group ID to '001' which is the default value. The DBRC Group ID is used to distinguish between different sets of RECON data sets in the same IMSplex.

IMS 8, IMS 9, and IMS 10 list only the 5 characters of the IMSplex name in listings of the RECON header. These listings include a line with `IMSPLEX=xxxxx` when an IMSplex name has been stored in the RECONS. If there is no value stored, the line includes `IMSPLEX=**NONE**`. IMS 10 listings also include the DBRC Group ID on this line. If there is no IMSplex name the Group ID is listed as `GROUP=**NONE**`. If there is an IMSplex name, the Group ID is listed as `GROUP=yyy` where yyy is the Group ID.

IMSplex and DBRC Group ID Specification



- IMSplex users considerations
 - DBRC SCI Registration Exit routine (DSPSCIX0) can set the DBRC Group ID
 - Recommended
 - If DBRCGRP is specified in EXEC, it is passed to the exit routine
- Migration and coexistence considerations
 - DBRC Group ID in RECONS is tolerated by IMS 8 and 9 systems
 - Exit routine is not passed the Group ID
 - Exit routine does not specify the Group ID
 - IMS 8 and 9 systems will process all ARLN notifications from its IMSplex
 - ARLN notifications from IMS 8 and IMS 9 systems will be sent to all members of the IMSplex, without regard to IMS 10 DBRC Group IDs
 - Do not use multiple DBRC Group IDs or multiple sets of RECONS in an IMSplex while IMS 8 and 9 systems are used

The DBRC SCI Registration exit routine (DSPSCIX0) may be used to specify the IMSplex name, as in previous releases, and the new DBRC Group ID. The use of the exit routine is recommended for users of IMSplex. It removes the requirement to specify IMSPLEX= for the execution of all IMS jobs which use DBRC. This includes batch jobs and utilities. With IMS 10 the exit also may specify the DBRC Group ID. This removes the requirement to specify DBRCGRP= for IMS executions.

IMS 8 and IMS 9 systems can tolerate the specification of the DBRC Group ID in the RECONS. DBRCGRP= is not a valid parameter on the EXEC statement for IMS 8 and IMS 9. When the exit routine is invoked in an IMS 8 or IMS 9 environment, the DBRC Group ID is not passed to it and the exit routine cannot specify the DBRC Group ID. Even though an IMS 8 or IMS 9 instance cannot specify the DBRC Group ID, it can join an IMSplex where IMS 10 instances are using DBRC Group IDs. The IMS 8 or IMS 9 instance will be passed all Automatic RECON Loss Notification (ARLN) notifications from the IMSplex group. If an IMS 8 or IMS 9 system reconfigures its RECONS, its ARLN notification will be processed by all members of the IMSplex. This will include all IMS 10 systems. If there are multiple DBRC Groups, all members of all groups will process the notification. For these reasons, you should not use multiple DBRC Group IDs or multiple sets of RECONS in an IMSplex while you are still using IMS 8 or IMS 9 systems.

RECON Listings



- IMS 10 adds information to RECON status listing

```
RECON
RECOVERY CONTROL DATA SET, IMS V10R1
DMB#=231 INIT TOKEN=06082F0536577F
NOFORCER LOG DSN CHECK=CHECK44 STARTNEW=NO
TAPE UNIT=3480 DASD UNIT=SYSDA TRACEOFF SSID=**NULL**
LIST DLOG=NO CA/IC/LOG DATA SETS CATALOGED=NO
MINIMUM VERSION = 8.1 CROSS DBRC SERVICE LEVEL ID= 00001
REORG NUMBER VERIFICATION=NO
LOG RETENTION PERIOD=00.001 00:00:00.0
COMMAND AUTH=NONE HELP=**NULL**
ACCESS=SERIAL LIST=STATIC
SIZALERT DSNUM=15 VOLNUM=16 PERCENT= 95
LOGALERT DSNUM=3 VOLNUM=16

TIME STAMP INFORMATION:

TIMEZIN = %SYS

OUTPUT FORMAT: DEFAULT = LOCAL NONE PUNC YY
CURRENT = LOCAL NONE PUNC YY

IMSPLEX = ** NONE ** GROUP ID = ** NONE **

-DDNAME- -STATUS- -DATA SET NAME-
RECON1 COPY1 IMSTESTS.DSHR.RECON1
RECON2 COPY2 IMSTESTS.DSHR.RECON2
RECON3 SPARE IMSTESTS.DSHR.RECON3
```

The RECON status or header listing has some added and changed information.

Of course, the IMS version is listed as "V10R1". This means that the RECONs have been upgraded to IMS 10.

There is a new line which lists the type of RECON access, either SERIAL or PARALLEL. On the same line the default for the DBRC LIST command, either STATIC or CONCURR, is shown.

On the line where the IMSPLEX value is shown, the DBRC Group ID value is also shown. In this example, these parameters have no values so "** NONE **" is listed.

The sample listing shown here includes the "CROSS DBRC SERVICE LEVEL ID". This also appears on IMS 9 RECON listings when the maintenance for APARs PQ98655 and PK01097 is applied and on IMS 8 RECON listings when the maintenance for APARs PQ98654 and PK01096 is applied. The service level ID is used to invoke functions which require a consistent level of maintenance on all IMS systems using the RECONs.

Resource Consistency Checking Eliminated



- Resource consistency checking is optional with IMS 8 and 9
 - Ensures that all IMS systems in the IMSplex are using the same data sets for:
 - ACBLIBx, FORMATx, MODBLKSx, and MATRIXx DDs
 - Only applies to systems using global online change with an RM structure
 - Requires: CSL including RM address space(s), RM structure, and OLC=GLOBAL specified in DFSCGxxx member
 - Disabled with NORSCCC= in DFSCGxxx member
- Resource consistency checking is not done in IMS 10
 - Even with global online change and RM structure
- Coexistence
 - If IMS 8 and/or IMS 9 systems request resource consistency checking it will be done between the IMS 8 and IMS 9 systems, but not for the IMS 10 system

Resource consistency checking for global online change is not done by IMS 10. This function was available in IMS 8 and IMS 9. It checks to ensure that the data set names used for the active ACBLIB, FORMAT, MODBLKS, and MATRIX data sets are the same for all of the IMS systems. It is only done when global online change is used (OLC=GLOBAL is specified in the DFSCGxxx member) and an RM structure is used. It can be disabled in IMS 8 and IMS 9 by specifying values for the NORSCCC= parameter in the DFSCGxxx member. Some users disabled resource consistency checking since the use of resource consistency checking created a single point of failure. For example, the loss of the ACBLIB data set would effect all systems since all would be using the same data set.

IMS 10 does not do resource consistency checking. The NORSCCC= parameter in the DFSCGxxx member may be specified for compatibility, but it is ignored by IMS 10.

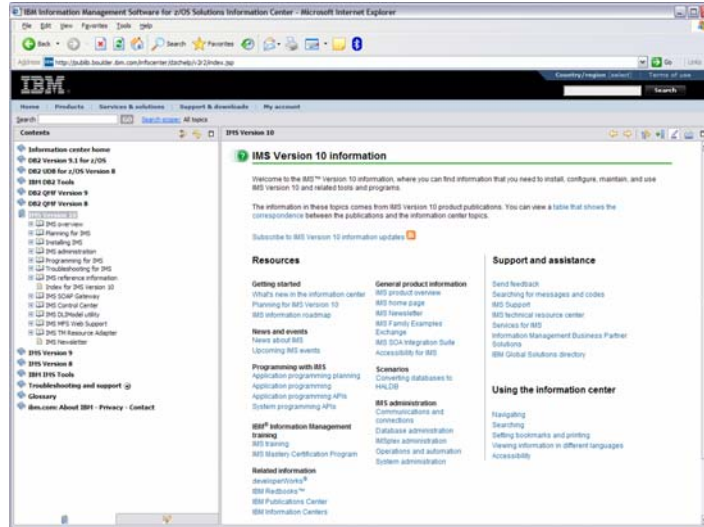
If your IMSplex has a mixture of IMS 10 and IMS 9 or IMS 8 systems, resource consistency checking will apply only to the IMS 8 and IMS 9 systems. When resource consistency checking is used, only the IMS 8 and IMS 9 systems must use the same data set(s). The Resource Consistency Checking SPEs, PK32969 for IMS 8 and PK32970 for IMS 9, must be applied for the IMS 8 or IMS 9 systems to use resource consistency checking when an IMS 10 system is part of the IMSplex.

IMS Library

Information Center



- Info Center has IMS 10 information
 - <http://publib.boulder.ibm.com/infocenter/dzichelp/>



The Information Center has been updated to include information on IMS 10. The topics on the left side of the screen map to the titles of the IMS 10 manuals.

IMS Library Reorganization



- IMS 9 licensed manuals are unlicensed in IMS 10
- Information moved between manuals
 - Chapter 5 of *Release Planning Guide*, GC18-9717, explains the reorganization
- New and discontinued manuals:
 - New manuals in IMS 10
 - *IMSpIex Administration Guide*
 - *System Programming API Reference*
 - IMS 9 Manuals that are discontinued in IMS 10
 - The content of these books was distributed throughout the IMS 10 library
 - *Base Primitive Environment Guide and Reference*
 - *Common Queue Server Guide and Reference*
 - *Common Service Layer Guide and Reference*
 - *Database Recovery Control*
 - *Open Transaction Manager Access*
 - *IMS Connect*
- All manuals are available at www.ibm.com/ims. Click on "Library"

Unlike previous versions of IMS, there are no licensed manuals for IMS 10. In previous versions, the *Diagnosis Guide and Reference* and the *Failure Analysis Structure Tables (FAST)* manual were licensed. This meant that they were only available to installations which had IMS licenses for the appropriate IMS version. An IMS 10 license is not required to access any IMS 10 product publication.

There have been changes to the organization of the IMS publications. This is explained in Chapter 5 of the *IMS 10 Release Planning Guide*. The changes include two new books and the elimination of some books.

Summary



- IMS 10 includes many attractive new capabilities
- IMS 10 Migration
 - There are software prerequisites and coexistence requirements
 - The installation and migration tasks are similar to those for previous versions of IMS
 - There will be some differences in the operation and use of IMS
 - The IMS library is available on the web

IMS 10 has many attractive new capabilities. This presentation has attempted to provide guidance to those planning a migration to IMS 10. As was explained, there are software prerequisites for the use of IMS 10. There are also coexistence requirements for IMS 10 to work with other versions of IMS and with various versions and releases of other products. The installation and migration tasks were explained and sources of further guidance were given. When you migrate to IMS 10 there will be some operational differences. These have been explained. Information on IMS 10 is available from the IMS library which is available on the Web. The changes in the library structure were explained.

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Migrating to IMS V10

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