



Migrating to IMS 10

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Other IMS Version 10 Teleconferences

- Previously presented Replays are available
 - IMS Integration Suite April 10
 - System Enhancements June 12
 - DRD and Online Change Enhancements Aug. 14
 - Database and DBRC Enhancements Sept. 11
- Future
 - Transaction Manager and Connectivity Enhancements Nov. 13





Agenda

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







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 DFSMStvs, 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





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





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





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

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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





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
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- 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

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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





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





Log Records

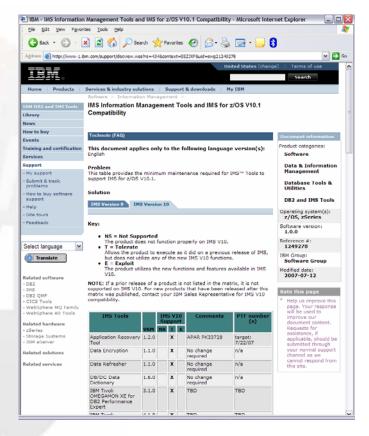
- Some log records have changed
- New log records have been added
- User application programs which process IMS log records may be affected.
- DSECTS for IMS log records may be generated by assembling:
 - **◆ ILOGREC RECID=ALL**





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"



http://www-1.ibm.com/support/docview.wss?rs=688&uid=swg21249278

or

http://tinyurl.com/3852cs





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.





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

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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, signon 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 APAR/PTF PK35433/UK21894
 - Provides utility to read SMU input and produce RACF control statements





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)
 - Migrating Your IMS Security from SMU to RACF Teleconference March 13, 2007
 - Available by replay

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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





User Exit Routines Removed

- The following IMS Connect user message exit routines are not invoked by IMS Connect 10
 - ◆ HWSIMSO0
 - HWSIMSO1
- Migrate to HWSSMPL1
 - Available with Integrated IMS Connect 9.1 and IMS Connect 2.2
 - This routine provides the same capabilities as HWSIMSO0 and HWSIMSO1
 - It also offers additional capabilities
 - ◆ See IMS Connect Guide and Reference for guidance









- 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 Connect HWSIMSO0 and HWSIMSO1 to HWSSMPL1
 - 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





- 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





- Migration Tasks (continued)
 - Run the IVP (optional)
 - Upgrade RECONs
 - IMS 10 DBRC Type 4 SVC must be installed prior to the upgrade
 - System definition
 - Install the Type 2 and Type 4 SVCs
 - 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





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





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





IVP Enhancements

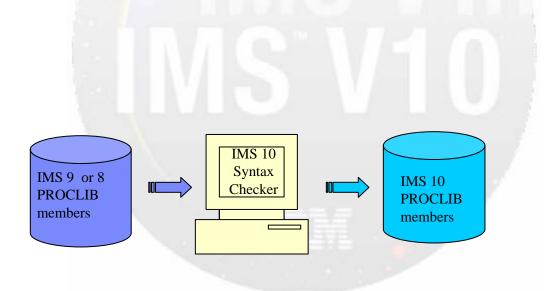
- IVP Enhancements for existing functions
 - Support for RACF implementation and SMU removal
 - IMS Java sample application
 - IMS Connect sample application
- IVP support for new functions
 - Operations Manager (OM) subscribe/unsubscribe sample
 - Manage Resources
 - ISPF application which provides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





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







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 many of the same members in IMS 8 and IMS 9

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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





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)
```





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





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





Sysplex Serial Program Management

- 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





MSC Migration Considerations

DFSMSCE0

 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
 - 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





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





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
- Logs from previous releases are not valid input to these IMS 10 utilities





Change Accum and Prefix Resolution Sort

- 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.





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





Database Change Accumulation Utility

- DB0 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:

```
---+---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





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:

```
----+----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





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





VERSION parameter 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 (SDFSMAC)
 - 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





IMSplex Name and DBRC Group ID

- IMSplex name is specified with 5 characters (xxxxx)
 - IMS 8 and IMS 9 store 'CSLxxxxxx' 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

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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 group
 - 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 in an IMSplex while IMS 8 and 9 systems are used





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
                            CROSS DBRC SERVICE LEVEL ID= 00001
MINIMUM VERSION = 8.1
REORG NUMBER VERIFICATION=NO
LOG RETENTION PERIOD=00.001 00:00:00.0
COMMAND AUTH-NONE HLQ=**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
                         GROUP ID = ** NONE **
 IMSPLEX = ** NONE **
-DDNAME-
              -STATUS-
                             -DATA SET NAME-
RECON1
              COPY1
                              IMSTESTS.DSHR.RECON1
RECON2
              COPY2
                              IMSTESTS.DSHR.RECON2
 RECON3
               SPARE
                              IMSTESTS.DSHR.RECON3
```





Resource Consistency Checking Eliminated

- Resource consistency checking is optional with IMS 8 and IMS 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





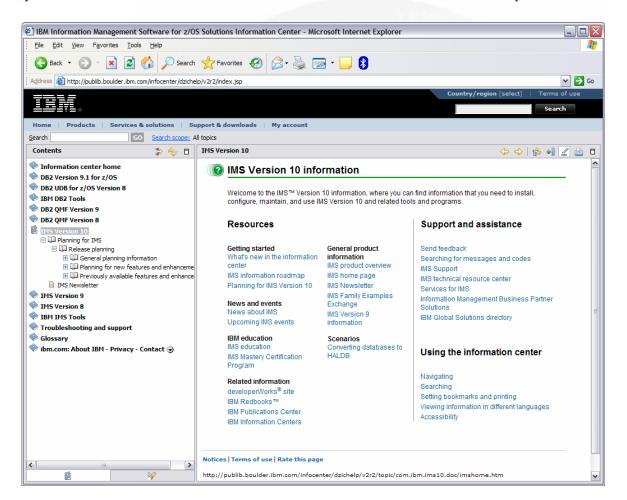






Information Center contains information on IMS 10

http://publib.boulder.ibm.com/infocenter/dzichelp/







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
 - IMSplex 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"





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