



A32: IMS Version 9 - What's New

*Barbara Klein
IBM Strategic Plan and Brand Manager
IBM Silicon valley Laboratory
San Jose, California
bk@us.ibm.com*



IMS Symposium

April 2007

Bonn

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The IBM Information Management System (IMS) is unsurpassed in database and transaction processing availability and speed. With the demands of the open business environment, and a marketplace working in Web time, IMS continues to deliver the integrity, capability, and performance customers have learned to expect from IMS. IMS can help you with the on demand business enablement, growth, availability, and systems management that the newer environments and cost measures require. IMS Version 9 contains over 50 enhancements, in all areas of the product, that address availability, scalability, capacity, usability, manageability, operations and application development requirements from it's huge customer base. The enhancements provided for this new version resulted from specific customer requirements. With a couple of dozen enhancements shipped each year since IMS V9 was first delivered, I will be covering some of these, particularly the most recent ones.

IMS Is Addressing a Continually Changing World

- **Providing Quality with On-Demand Service Oriented Architecture (SOA) Solutions**



- **Information Integration and Open Access with New Application Development and Connectivity**

- Ease/broaden user access
- Web, Java, XML and Linux access
- Ease application developer effort
- Auto-application-generation tools

- **Manageability Ease with Autonomic Computing**

- Ease installation and operations efforts
- High levels of security
- End-to-end transaction integrity
- Real time data currency
- Highest code quality

- **System Scalability for Virtualization in Performance/Capacity/Availability/Recovery**

- Handling increasing workload
- Handling unpredictable volumes
- More hours for workloads
- Continuous up time for applications and user access



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Key Message: IMS continues to provide quality solutions with new technology

IMS is continuing to address the challenges of a rapidly changing world. It is providing the utmost in quality through Information Integration with new Application Development/Connectivity solutions. These solutions ease and broaden user access, opening IMS applications and data up to the Web, Java, XML and Linux environments. New technology and automatic application generation tooling ease application developer efforts.

IMS along with the z/Series have been providing solutions to ease Manageability as well. These solutions ease installation and operations efforts, provide a high level of security, end-to-end transaction integrity, and real time data currency,

Systems Scalability is also provided to handle the increasing workload and unpredictable volumes, as well as more hours for workload and the continuous uptime demands for applications and user access.

All of this is provided with the highest quality and availability and for the lowest cost of computing. Customers are using this power to take on new on demand business related applications, greatly extending their investments.

IMS Version 9 Delivered



Integration/Openness in Application Development/Connectivity

- Integrated IMS Connect function
- Java/XML tooling enhancements, Distributed JDBC and XML DB
- OTMA/APPC security/serviceability enhancements
- RACF enhancements to replace SMU security
- VTAM Multi-node Persistent Sessions replace of Uservar/3745 for XRF
- >255 Trans Scheduling increased to 999 for enhanced usability

Manageability Ease for Autonomic Computing

- IMS Sysplex Database Commands added to Single Point of Control
- Enhanced Command Environment
- Enhanced Serviceability with new /Diagnose Command and Knowledge Based Log Analysis (KBLA)
- IMS install/system generation reduced time/effort enhancements

Scalability in Performance/Capacity/Availability/Recovery

- Integrated IMS Online Reorganization (OLR) by partition of HALDBs w/concurrent online update/availability
- Additional HALDB usability enhancements
- DBRC Vendor Tools interface, enhanced capacity/usability/integrity
- Fast Path performance/serviceability/usability enhancements
- Enhanced Recoverability with DB2



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Key Message: IMS Version 9 provides customer value in simplifying/expanding development and enablement with new technology and ensuring growth.

The enhancements in IMS Database Manager (IMS DB) and IMS Transaction Manager (IMS TM) with V9 help you:

- Transform the way you do business with integrated information
- Build applications that tolerate the rigors of doing business on the Internet
- Run a scalable, available, safe, and easily managed environment
- Leverage everything you learn in the process and mine all your information to make better decisions.

IMS V9 addresses integration/openness in Application Development Connectivity with Integrated IMS Connect function, Java/XML tooling enhancements and other connectivity security, serviceability and usability enhancements across the product.

IMS V9 addresses Manageability ease for Autonomic Computing with enhanced commands and the command environment, enhanced serviceability with Knowledge Based Log Analysis facilities, and reduced time/effort for IMS installation/system generation

IMS V9 also addresses scalability with Integrated Online Reorganization by partition of HALDBs with concurrent online updates for availability, Database Recovery Control (DBRC) application programming interface, enhanced recoverability with DB2, and additional HALDB, DBRC, and Fast Path enhancements

IMS Version 9 Enhancements In 2005 through the Service Process

Integration

- Java
 - GSAM database support in JBP regions
 - SQL enhancements - adds use of non-DBD-defined fields in WHERE clause
 - WAS V6 serviceability enhancement
 - XResettable option removal enhances Java performance
 - JDBC Deferred Program Switch support broadens IMS Java application design capabilities
- OTMA
 - IMS OTMA Tpipe Clean up purges unused Tpipes during checkpoint to save storage
 - Message Flood Control
 - For OTMA to monitor input message growth and reject input if flood condition
 - Reduces control region storage requirement reducing abends
- ESAF/DB2AF Access to same DB2
- Additional Connectivity Enhancements...

Manageability

- Log Edit User Exit to edit trans msg record in the IMS log data for additional security
- Operations Manager enhanced to pass FID for AOI conversion
- New Batch Exit allows exit routines entered immediately before IMS calls a DL/I application, minimizing JCL changes required to use LOAD API function
- Sysplex Unresolved CQSPUT during CQS Resynch new message
- Fast Path Shared VSO Dual Structure Diagnostic log records support

Scalability

- Syncplex Option - new FF/FP /ERE command keyword/parameter to synch restart of failed IMSs in Sysplex
- DBRC Retain position high key
- Recon I/O Reduction for Sign-off Database Unauthorization



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Key Message: IMS rolled out additional new enhancements for IMS V9 Integration, Manageability and Scalability.

A number of enhancements have also been rolling out for IMS V9 via the service process in 2005. They include:

IMS Java enhancements for Deferred Program Switch, GSAM database support in JBP regions, SQL enhancements - additionally use non-DBD-defined fields in a WHERE clause, and WAS V6 support.

ESAF/DB2AF access to same DB2 provides for simultaneous ESAF and DB2AF access to the same DB2 system, removing the earlier restriction.

Operations Manager was enhanced to pass FID. This adds a new option to two OM APIs for commands to allow user request of the FIDs on the command output returned from OM. This provides the customer programs access to the FID for an OM AOP in order to convert from existing AOI programs to IMS AOI programs.

Log Edit User Exit to allow editing of trans msg record in the IMS log data for additional security.

SMU Sysgen keyword toleration allows one set of gens between V8 and V9. Without this change customers need to make infrastructure/tool changes or wait for all systems to be at the IMS V9 level before using new SMU SYGEN parameters. This will reduce the number of stage 1 sysgen files needed to be maintained from 100+ to 50+.

Unresolved CQSPUT during CQS Resynch message - a new message during resynch processing if resynch could not determine the disposition of a message (to warn the customer that a message might be lost).

Fast Path Shared VSO Dual Structure diagnostic log records support

New Batch Exit allows exit routines entered immediately before IMS calls a DL/I application, minimizing JCL changes required to use LOAD API function

The Syncplex option which provided new Full Function and Fast Path keyword and parameter to the /ERE command to synchronize restart of failed IMSs in a Sysplex.

DBRC Retain position high key - Retain partition key value as string data when changing a HALDB to use a partition selection routine

Recon I/O Reduction for Sign-off Database Unauthorization changes DB unauth logic for signoff to use a composite audit trail record, adds new command to enable, and reduces I/O for signoff up to 60%, noticeable where there are many jobs running in parallel.

Additional IMS Connectivity Enhancements in 2005 through the Service Process

Integration (cont'd)

- Sysplex Distributor support
 - Connect Purge not deliverable extensions - provides user option to purge or reroute
 - Connect support to reroute persistent socket messages
 - Connector for Java support to reroute sharable persistent socket messages
 - Connector for Java reroute and purge not deliverable function
- Additional IMS TM Resource Adapter (aka IMS Connector for Java) enhancements
 - Connector for Java JCA 1.5 and WAS V6 support
 - Connector for Java RACF Key Ring support
 - Connector for Java WID/WBI V6 support
- RAS enhancements
 - Recorder trace support
 - Internal Trace serviceability enhancement
 - User ID for improved HWSP1500E message identification
- MFS Web Enablement from Windows and AIX environments (Web Downloadable)



Key Message: Enhancements are continuing to roll out for IMS Connectivity.

IMS Connectivity enhancements include Connect Purge not deliverable extensions, which provides the user the ability to decide which messages to purge for Commit Mode 0 transactions that start as Commit Mode 1 and transfer to Commit Mode 0. (Previously only Commit Mode 1 transactions were supported).

This includes Connect and Connector for Java function for Sysplex distributor, the first of these is Connect support to reroute persistent socket messages (if Connect has a problem delivering a message it goes back to OTMA to reroute, but if OTMA cannot IOPCB to connect, there will be no reroute) and Connector for Java support to reroute sharable persistent socket messages. Also included are new Connector for Java JCA 1.5 and WAS V6 environment support as well as RACF Key Ring support. There are some additional RAS enhancements.

MFS Web Enablement from a windows environment (provided through web download) - Tooling utility and runtime to web enable existing or new IMSMFS applications for WAS V5/6 and interactively render the display web pages in standard browsers such as Microsoft Internet Explorer and Mozilla firefox. This solution no longer requires 3270 emulator and VTAM as HATS does.

Enhancements for IMS V9 in 2006/2007 through the Service Process

Integration

- Start OTMA option for ERE = reduces outage due to message flood
- APPC/OTMA Synch SHQs system affinity removal for program-to-program switches to improve workload balancing and availability (2007)
- 64 bit JVM support for IMS DB Resource Adapter (2007)
- Java JDK 5.0 support (2007)
- Additional Connectivity enhancements

Manageability

- PI/Stop ABDUMP region allows stop command completion avoiding an abend U113
- LOCKTIME enhancement allows status code for timeouts rather than abend and allows different timeout value for different regions
- Eliminate STATUSBAs during command processing reduces partition unavailable responses
- Format ID in REXX SPOC API gives programmer ability to turn format ID on/off
- SMU to RACF Conversion Utilities (2007) to read/convert SMU source to comparable RACF input

Scalability

- HALDB Change status code GG to BA for PROCOPT GON/GOT for status clarification
- Allocation of DSAB and TIOT blocks above the 16M line for capacity constraint relief
- DBRC Intent to reorg flag for FF DBs (incl. HALDB) to prevent subsequent reorgs and batch access
- DBRC INIT.PART keyword for remote disaster recovery partner DBDs created in RECON
- XRF/GDPS Coexistence provides exit for synchronization between takeover and hyperswap
- HALDB Partition Range Processing
- HALDB OLR no automatic resume option, so job can resume OLR on its own
- Release call for FF/FP DL/I Calls releases the DB locks before synchpoint (2007)



Key Message: IMS Continues to roll out new enhancements for IMS V9 Integration, Manageability and Scalability.

A number of enhancements have also been rolling out for IMS V9 via the service process. They include:

Start OTMA option to monitor/manage Message Flood Control to prevent OTMA message queuing faster than they can be processed and reduce storage requirements in the control region private space, thus avoiding unnecessary abends. START OTMA enhancement for ERE gives customer the option to not recover the /START OTMA command during emergency restart. Customers can either specify a new OTMA=M (for manual) parameter in DFSPBxxx proclib member or to issue /START OTMA NOCHECK command to activate the new option. This reduces the potential system outage due to OTMA message flood.

APPC/OTMA Synch SHQs system affinity removal for program-to-program switches to improve workload balancing and availability.

Java support for 64 bit JVM and for JDK 5.0 support for the IMS DB Resource Adapter.

Additional IMS Connectivity enhancements to be discussed next.

PI/Stop Region ABDUMP allows a /STOP REGION ABDUMP command to recognize that an IMS region or thread is waiting for a PI lock. It will remove it from the lock wait chain and allow the /STOP command to complete. Today IMS regions or threads waiting for a PI lock cannot be stopped using the /STOP REGION ABDUMP command. The customer is forced to use the /STOP REGION CANCEL command which could result in an IMS abend U0113.

LOCKTIME enhancements allows status code for timeouts of the LOCKTIME parameter rather than abend U3310 and allows different timeout values for different region types (eg. BMP and Batch). If locktime is set too short, unpredictable Batch/BMP abend will occur. If locktime is set too long, system crash will occur. Locktime currently issues an abend for timeouts, which requires more application handling and system costs.

Eliminate STATUSBAs during command processing eliminates partition unavailable responses, STATUSBA or STATUSGG, by allowing the user to indicate whether or not PROCOPT=GOx transactions that access HALDB partitions should be terminated and automatically rescheduled when encountering a partition that is unavailable due to a database command in progress. This provides pseudo-abending with a response and allows transaction to be rescheduled.

Format ID in REXX SPOC API gives programmer ability to turn format ID on or off (V8 8/06, V9 9/15)

SMU to RACF Conversion Utilities to read/convert SMU source to comparable RACF input

HALDB Change status code GG to BA for PROCOPT GON/GOT clarifies status code for PROCOPT GON/GOT DL/I calls against an unavailable HALDB partition by changing the misleading GG status code (usually meaning logic errors) to BA (unavailable data) for these situations

Allocation of DSAB and TIOT blocks above the 16 M line

DBRC Intent to reorg flag for FF DBs (incl. HALDB) to prevent subsequent reorgs and batch access

DBRC INIT.PART enhancement for remote disaster recovery

XRF-GDPS Coexistence provides an exit for synchronization between XRF takeover and GDPS hyperswap functions. The exit is driven when IMS reserves devices and when it releases them. This could prevent log problems where I/O comes in from both new and old IMS systems simultaneously.

HALDB Partition Range Processing - Enhancement to single partitioning restriction to support a range of partitions in addition to a single partition

HALDB OLR no automatic resume option, so job can resume OLR on its own

RLSE call provides a Full Function or Fast Path DL/I call to release the database locks before synchpoint

Additional IMS Connectivity Enhancements 2006/2007 through Service Process

Integration (cont'd)

- Connect enhancements
 - Connect reroute and purge not deliverable
 - Connect Client application NAK with output purge or reroute option
 - Connect Sysplex Distributor enhanced
 - Connect Super member support provides for shared asynch messages
 - Connect Send-only
 - Reroute option (V9 only)
 - With acknowledgement (2007)
 - With Serial delivery (2007)
 - PORTAFF = Y|N
 - Resume TPIPE with alternate client ID (2007, V9 only)
- Additional IMS TM Resource Adapter (aka IMS Connector for Java) enhancements
 - Sysplex distributor reroute and purge
 - WID/WBI V6 support (IMS V9 only)
 - RAD V7 (IMS V9 only)
 - SSL Null cypher encryption (2007, V9 only)
 - 64-bit local option support for WAS z/OS (2007, V9 only)
- MFS Web enhancements
 - WSADIE Attributes/extended attributes support (IMS V9 only)
 - Web Enablement V9.3 display enh, WAS V6 support (Web Download for IMS V9)
- XML Adapter and Task Manager (IMS V9) for IMS SOAP Gateway V9.2



Key Message: Enhancements are continuing to roll out for IMS Connectivity.

IMS Connectivity enhancements include Connect Purge not deliverable extensions, which provides the user the ability to decide which messages to purge for Commit Mode 0 transactions that start as Commit Mode 1 and transfer to Commit Mode 0. (Previously only Commit Mode 1 transactions were supported).

IMS Super Member support for IMS Connect enhancement allows IMS asynchronous messages to be shared by multiple IMS Connect for data availability. This enhancement provides the asynchronous message support for IMS Connect customers using WebSphere Load Balancer or z/OS Sysplex Distributor.

IMS Connect client application NAK with output purge or reroute option offers an extended CM0 message output purge or reroute support based on an NAK message from the IMS Connect client application. Nak on IMS CM0 I/O PCB output message can be either purged or rerouted to a different TPIPE queue than the inputting TPIPE queue. Additionally, when OTMA cannot deliver an CM0 I/O PCB output message to IMS Connect, the output message can be rerouted using the reroute TPIPE name specified in the OTMA input message prefix. This support is provided for IMS Connect/Connector for Java V2R2 and above and can be used to support z/OS sysplex distributor for higher availability.

Connect and Connector for Java function enhancements for Sysplex distributor -- the first of these is Connect support to reroute persistent socket messages (if Connect has a problem delivering a message it goes back to OTMA to reroute, but if OTMA cannot IOPCB to connect, there will be no reroute) and Connector for Java support to reroute sharable persistent socket messages. Also included are new Connector for Java JCA 1.5 and WAS V6 environment support as well as RACF Key Ring support. There are some additional RAS enhancements.

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INTEGRATION TO EASE APPLICATION DEVELOPMENT AND CONNECTIVITY



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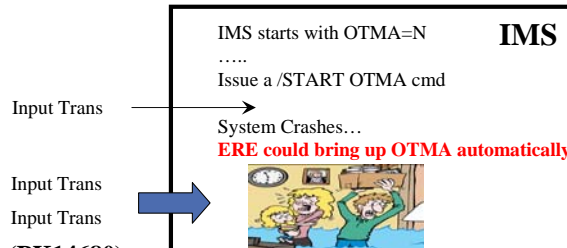
First we'll cover more on recent integration enhancements for Version 9 to ease application development and connectivity.

START OTMA Enhancement for ERE

Challenge

UK21565(V9)

- ▶ The /START OTMA is an IMS command recovered during emergency restart. However, it is not feasible for some customers, who want to enable the OTMA on demand even with the case of emergency restart to prevent the TCP/IP message flood.



Solution (PK14680)

- ▶ A new option M to the OTMA= parameter is introduced in the IMS control region JCL or DFSPBxxx PROCLIB member. This new option allows OTMA to be started later by the /START OTMA command, and the command is not recovered during emergency restart.
- ▶ The /START OTMA command can be issued with NOCHECK parameter so that the command is not recovered during emergency restart. This command enhancement allows customers to get the feature without changing the IMS control region JCL or DFSPBxxx PROCLIB member.



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START OTMA enhancement for ERE gives customer the option to not recover the /START OTMA command during emergency restart. Customers can either specify a new OTMA=M (for manual) parameter in DFSPBxxx proclib member or to issue /START OTMA NOCHECK command to activate the new option. This reduces the potential system outage due to OTMA message flood.

APPC/OTMA Affinity Removal of using P2P switch

PK26095 (V8), PK40748 (V9), UQ84096 (V9)

■ Challenge:

- With the APPC/OTMA synchronous shared queues enablement (AOS=Y or AOS=F), the APPC synchronous or OTMA CM1 message can be processed on any IMS system in the shared queues environment. However, the program-to-program message switch transactions can only be run on the same IMS system as the CM1 transaction that initiated the switch.

■ Solution:

- IMS V8 APAR PK26095 plans to remove the system affinity for shared queues P2P message switch so that the switch-to transaction can be run on a different back-end IMS.



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APPC/OTMA Program Switches in an IMSPLEX environment without affinity provides improved flexibility with load balancing and reduced complexity. This provides APPC/OTMA Synch SHQs system affinity removal for program-to-program switches to improve workload balancing and availability. In Beta test now.

GSAM Database Support in Java Batch Processing Regions

UQ93241 (V9)

- IMS V9 SPE support
 - To access (open and close) GSAM databases, write to GSAM databases, read from GSAM databases (both sequential and random)
 - Vanilla API with no data type conversion or database metadata support
 - Application required to know the complete details of the GSAM database
- Enhanced support requirements (addressed in V10)
 - Allows all of the supported data types to be stored into and read from a GSAM database record
 - Adds functionality to make use of the GSAM metadata generated by the DLI Model utility
 - Offers GSAM database support in the same manner that the IMS Java class libraries support all other IMS database types



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The Java libraries are also enhanced to support GSAM databases consistent with other IMS database types. This allows all of the supported data types to be stored into and read from a GSAM database record and fully leverages the existing Java library built-in data conversion routines.

Java SQL WHERE Clause on non-DBD Field

PQ97361 (V9)

- **Java may use a WHERE clause on a field not defined in the DBD**
 - Previously, only fields defined in a DBD were allowed for WHERE clauses
 - SSA is created from the WHERE clause
 - Field may be defined in DLIModel utility or COBOL copybook
 - Field must be a subset of a DBD defined field
- **Benefits**
 - More flexibility for Java programmers
 - Reduced work for DBAs
 - They do not have to define these fields in the DBD



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IMS Java SQL enhancements are provided to take advantage of the latest SQL standards improvements. This enhancements provides use of non-DBD-defined fields defined in a WHERE clause, instead of requiring they be defined in the DBD.

Java Deferred Program Switch Support

PK01881 (V9), PQ97861 (V8)

- **Deferred Program Switch**
 - Program changes trancode in SPA before replying to terminal
 - When terminal replies, the new trancode is invoked
- **Java Support for Deferred Program Switch**
 - Call the setTransactionID(String) method
 - Sets the name of the transaction code
 - Call the insertMessage(IMSFieldMessage) method
 - Sends output message to the terminal
- **Benefits**
 - Broadens application design capabilities for IMS Java applications



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JDBC Deferred program switch support

- Provides deferred program switch support of a Java application operating in a Java Message Processing (JMP) region (previously it only supported immediate program switch)
- Enables conversational Java transaction applications to accomplish deferred program switch to other conversational transaction applications (both Java and Non-Java)
- Adds a new method, the setTrasaction ID (string) method in the com.ibm.ims.application.IMSField Message class

Access to DB2 from JMP/JBP and MPP/BMP

PK04807 (V9), PQ88832 (V8)

- **Allows simultaneous access to a DB2 from Java dependent regions and MPP/BMP regions**
 - Java dependent regions use DB2 Attach Facility (DB2AF)
 - Uses RRS for syncpoint processing
 - MPP and BMP regions use IMS External Subsystem Attach Facility (ESAF)
 - Uses IMS for syncpoint processing
 - SSM= proclib member example:

```
SST=DB2 , SSN=DB2A , LIT=SYS1 , ESMT=DSNMIN10 , REO=R , CRC=+  
SST=DB2 , SSN=DB2A , COORD=RRS
```



This provides for simultaneous External Subsystem Attach Facility (ESAF) and DB2 Attach Facility (DB2AF) access to the same DB2 system, removing the earlier restriction on this

64-bit JVM Support for IMS DB Resource Adapter (JDBC Connector)

PK30868 (V9)

- Provide the capability in the Java/C++ libraries to operate in a 64-bit addressability mode and invoke 31-bit assembler modules
- Results in higher performance of the IMS DB Resource Adapter (JDBC Connector)



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IMS Java 64-bit JVM support in our IMS DB Resource Adapter (JDBC Connector) for WAS V6.1 deliverable provides the capability in the Java/C++ libraries to operate in a 64-bit addressability mode and invoke 31-bit assembler modules. This results in higher performance of the connectors for zWAS.

JDK 5.0 Support for Java Dependent Regions

PK37843 (V9)

- Remove the master/worker JVM model that was supported by JDK 1.4.2 and instead support a standalone JVM model in JMP/JBP regions.
- Restore the standard IMS model GU/CHKP processing for JDRs thus allowing for JDR and COBOL interoperability. This change will be transparent to existing user applications.




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IMS Java JDK 5.0 support in Java Dependent Regions supports the latest JDK levels with enhanced value. In order to support JDK 5.0, this removes the master/worker Java Virtual Machine (JVM) model that was supported by JDK 1.4.2 and instead supports a standalone JVM model in JMP/JBP regions. This SPE will also restore the standard IMS model GU/CHKP processing for JDRs thus allowing for JDR and COBOL interoperability. This change is transparent to existing user applications.

GUI DLIModel Utility Preview



- **DLIModel Utility is used with IMS Java**
 - Creates IMS Java Metadata Classes, XML files, and XML Schemas
 - Reads PSB/DBD source, COBOL copylibs, and [control statements](#)
 - Runs
 - As a z/OS batch job
 - From UNIX System Services
 - GUI workstation plug-in (**New!**)
- **GUI DLIModel Utility**
 - Introduced as a technology preview
 - Downloadable at <http://www.ibm.com/ims>
 - An Eclipse 2.x plug-in
 - Requires any of Eclipse 2.1.x, WSAD Version 5.1 or WSADIE Version 5.1
- **Provides a user-friendly interface**
 - Eliminates need to write [control statements](#)
- **Two components**
 - Wizards that guide you through the tasks which create metadata
 - Editor allows you to:
 - Import COBOL XML files
 - Modify segment and field information
 - For example, add fields that are not in DBD or COBOL XML files
 - Create XML schemas for XML DB





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Java Tooling introduced a new IMS utility called DLIModel, which automatically constructs the required IMS Java metadata class from PSB and DBD source (earlier users were responsible for creating this class manually). This utility allows information on additional fields, long Java-style names and data types to be supplied from user-coded control statements and/or from XML descriptions of COBOL copybook members. If desired, it will produce XML descriptions of databases that conform to the OMG's Common warehouse Metamodel 1.1. This greatly eases development of Java applications and JDBC access to IMS DB.

IMS V8 introduced a way to view your IMS data with the DLIModel Utility for IMS Java tooling support. This was subsequently enhanced further with V9 and then with the DLIModel Utility GUI, which provides a graphical version of the DLIModel Utility, built as an Eclipse plug-in. This GUI simplifies IMS metadata generation, eases IMS Java and XML Database application development, and offers a visual representation of IMS databases. Initial support was provided as a Technology Preview on the IMS website. We are currently enhancing this Technology Preview with even more capability. This is being made available from the IMS website at ibm.com/ims.

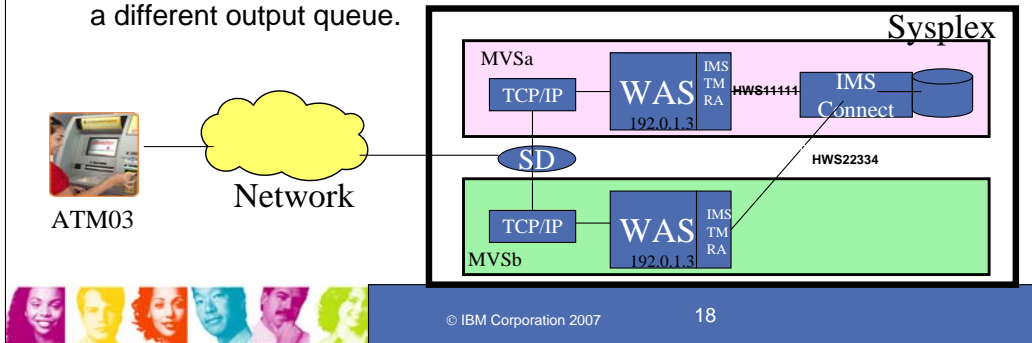
DLIModel utility tooling creates the metadata for the IMS data. This tooling won the Sys-Con readers choice award first runner up for best Java component in the industry.

The latest enhancements include

- generate PSB and DBD XML separately,
- enhance XML schema generation to support XQuery,
- allow import of newly generated XMLs,
- allow direct Cobol copybooks import, and
- an improved GUI which provides a UML view of the PSB metadata

Sysplex Distributor support

- Sysplex Distributor is a function of z/OS Communications server that lets the clients in the network receive the benefits of workload distribution and high availability within the sysplex cluster.
- IMS TM Resource Adapter in WebSphere introduced the “sharable persistent socket” feature to communicate with IMS Connect with a generated client-id name.
- IMS introduced the “super member” feature so that IMS asynchronous messages can be shared and retrieved by a set of IMS Connects.
- IMS offers extended reroute features so that output can be stored on a different output queue.

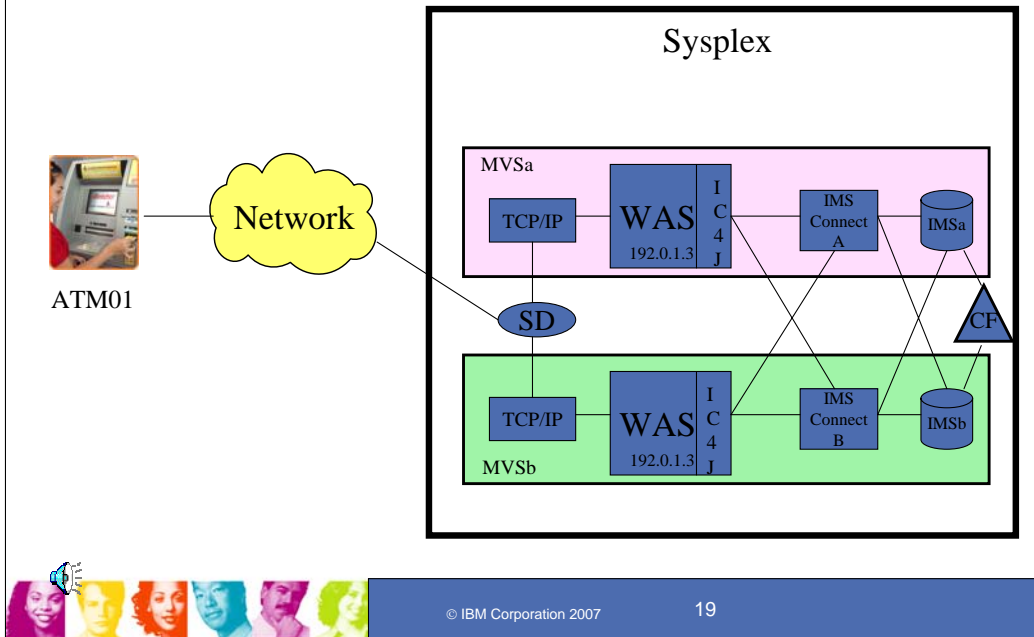


Sysplex Distributor is a function of z/OS to enhance workload distribution and extend availability in a Sysplex. Enhancements were provided with IMS and the IMS TM Resource Adapter (IMS Connector for Java). Support was provided to reroute sharable persistent socket messages. The IMS **Sharable Persistent Socket** concept provides client application the ability to use generated client-id to talk to IMS Connect.

Options for undelivered CM0 I/O PCB Output were provided for Purge Not Deliverable and Reroute Not Deliverable.

- Connect Purge not deliverable extensions provide user ability to decide which messages to purge for Commit Mode 0 transactions that start as Commit Mode 1 and transfer to Commit Mode 0. (Previously only Commit Mode 1 transactions were supported)
- Connect support to reroute persistent socket messages (if Connect has a problem delivering a message it goes back to OTMA to reroute. But if OTMA cannot IOPCB to connect, there will be no reroute.)

Super Member support provides for Multiple WAS, IMS and IMS Connects in Parallel Sysplex

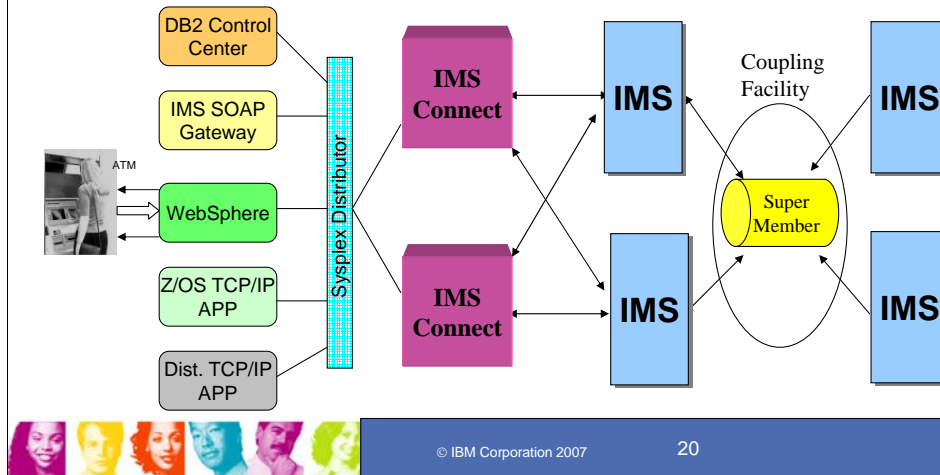


Super Member support provides for Multiple WAS, IMS and IMS Connects in Parallel Sysplex

IMS Connect/OTMA Super Member Support

PK10911/PK09946/UK15129/UK14915 (V9)

- Enhances Sysplex Distributor support
- Provides for Shared Asynchronous Messages
 - Any IMS Connect using super member function in a sysplex cluster can retrieve IMS asynchronous messages from any IMS in the shared queues environment

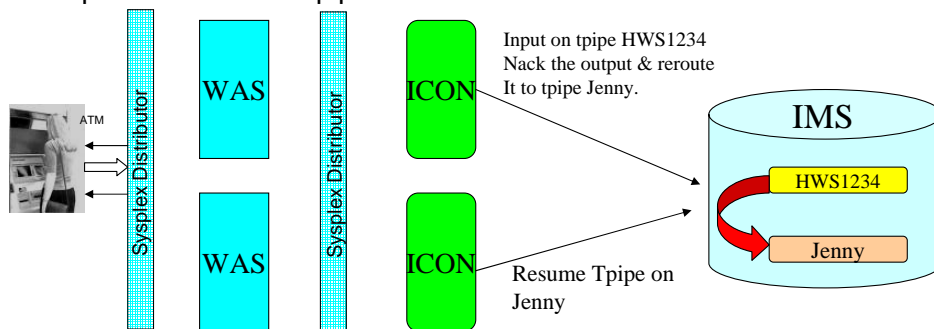


IMS Super Member support for IMS Connect/OTMA allows IMS asynchronous messages to be shared by multiple IMS Connect for data availability. This enhancement provides the asynchronous message support for IMS Connect customers using WebSphere Load Balancer or z/OS Sysplex Distributor.

Reroute on Nack

UK04964/UK11719 (V9)

- If a CM0 I/O PCB output is Nack'd by IMS Connect or the client of IMS Connect, the Nack'd output can be rerouted to an specified OTMA tpipe queue. (See appendix D for APAR info)
- When OTMA receives the Nack message that includes a reroute tpipe name, OTMA moves that output to the hold queue of the reroute tpipe. OTMA also moves any other queued CM0 I/O PCB output to the reroute tpipe.



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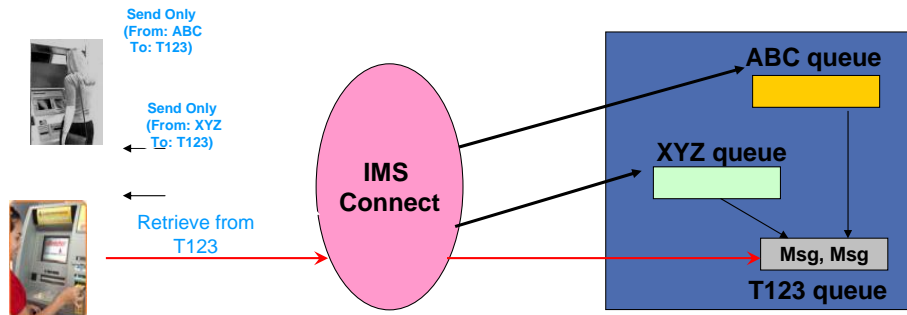
21

IMS Connect client application NAK with output purge or reroute option offers an extended CM0 message output purge or reroute support based on an NAK message from the IMS Connect client application. Nak on IMS CM0 I/O PCB output message can be either purged or rerouted to a different TPIPE queue than the inputting TPIPE queue. Additionally, when OTMA cannot deliver an CM0 I/O PCB output message to IMS Connect, the output message can be rerouted using the reroute TPIPE name specified in the OTMA input message prefix. This support is provided for IMS Connect/Connector for Java and can be used to support z/OS Sysplex Distributor for higher availability.

IMS Connect Send-Only Reroute

PK17421 & PK18555

- IMS Connect client application can initiate an output reroute request for a Send-Only transaction. The transaction output can be stored into a user specified IMS queue instead of an inputting TPIPE queue.



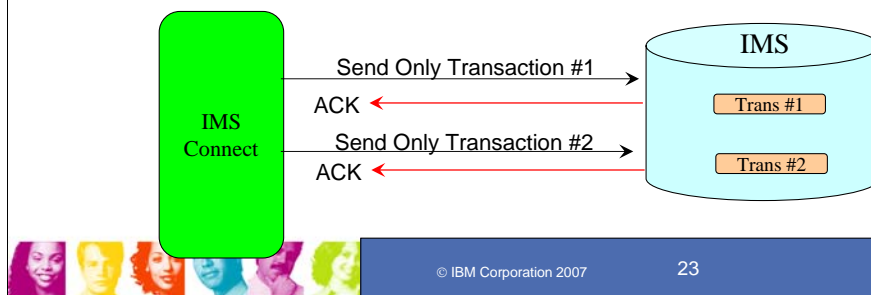
IMS Connect send only enhancements provide additional options to ensure that messages get enqueued to the transaction in the order sent in and that the client application can then read the acknowledge before sending the subsequent send-only transaction, provides consistency with SNA.

IMS Connect introduces a new SendOnly reroute option. With the new option, IMS Connect can request that OTMA reroutes the I/O PCB output message from the inputting Clientid from the TPIPE queue to the user requested reroute TPIPE queue. This feature could be used to support z/OS sysplex distributor for higher availability.

IMS Connect Send-Only with ACK

PK23757 (V9)

- Send-Only with Acknowledgement (ACK) protocol:
an acknowledgement will be sent to the client application for each Send-Only interaction
- Ensures that the transactions to the same TPIPE that are issued from the same OTMA Client are enqueued in the order in which they were received.



IMS Connect introduces a new protocol of Send-Only with Acknowledge which ensures that the Send-Only input messages will be enqueued onto the IMS message queues in the same order they were entered. The client application that wants to exploit this protocol has to be modified to handle the ACK/NACK sent back from IMS Connect.

Send-only with acknowledgement provides an acknowledgement be sent to the client application for each Send-Only interaction. This will ensure that the transactions to the same TPIPE that are issued from the same OTMA Client are enqueued in the order in which they were received.

Send-Only with XCF Send Order

PK19252 (V9)

- **IMS Connect introduces a new function for the Send-Only message by sending the message using the XCF order feature. The default of sending the messages to IMS is “no XCF order”. With this new function, IMS Connect can ensure that the first XCF send message will be received first by IMS OTMA.**
- **Send Only can be used in one of the following method:**
 - **Send-Only or**
 - **Send-Only with XCF order, or**
 - **Send-Only with ACK**



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Send-Only with XCF Send order provides Serial Delivery via the DELIVERMSG=ORDERED option of the XCF's IXCMSGO macro. This allows the Send-Only transactions to the same TPIPE that are issued from the same OTMA client be delivered to the IMS system in the same order they are entered.

PORTAFF=Y|N

PK23660/UK14677 (V9)

- Specifies that commit-then-send (CM0) output messages sent by IMS to this IMS Connect have affinity to the port on which IMS Connect received the original input message.
- When PORTAFF=Y, IMS returns all CM0 output for this IMS Connect to the same port on which it received the original input message. IMS Connect identifies the port by the port ID number as specified in the PORTID parameter of the TCP/IP configuration file.
- When PORTAFF=N, IMS Connect attempts to return the CM0 output to the first port found on which the client ID of this IMS connect is present. PORTAFF=N is the default.



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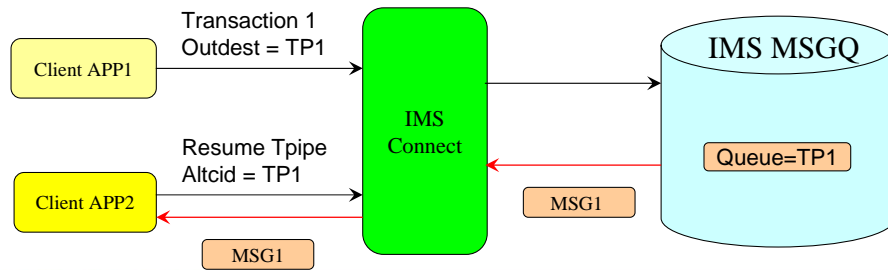
25

PORTAFF is an IMS Connect configuration parameter for IMS Connect asynchronous output to have the affinity to the port on which IMS Connect receives the original input message. It is related to Resume Tpipe because IMS Connect client application needs to issue Resume Tpipe to retrieve the asynchronous output message.

IMS Connect Resume Tpipe with Alternate Client ID

PK24907 (V9)

- “Resume Tpipe with Alternate Clientid” allows a TCP/IP client application to retrieve the asynchronous output messages from an output queue specified in the IRM ALTCID field.



IMS Connect Resume Tpipe with Alternate ClientID addresses Sysplex Distributor and callout requirements. This allows a TCP/IP client application to retrieve the asynchronous output messages from an output queue specified in the IRM ALTCID field. This provides customers the ability to do resume TPIPE on one client id to get a customer to get output sent to a different client id

IMS TM Resource adapter (IMS Connector for Java) enhancements

9.1.0.1.5/9.1.0.2.4

- Resume TPIPE with Alternate Client ID
- SSL Null Cipher support
 - Corporate policy dictates the use of SSL for all connections. When they use IMS TM Resource Adapter and IMS Connect inside their trusted zones, they would like to take advantage of the perceived performance gains that would come from eliminating SSL encryption while keeping the required SSL mutual authentication.
 - Allows mutual authentication without encryption
 - Provides the ability for anybody inside the environment with a valid certificate to connect to IMS without the overhead of encryption.
- zWAS 64-bit environment support provides the ability to run existing local option applications in 64-bit enabled zWAS



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A number of additional enhancements were provided for the IMS TM Resource adapter (also known as the IMS Connector for Java).

Similarly as for the IMS Connect function, the IMS TM Resource Adapter support for Resume Tpipe with Alternate ClientID addresses Sysplex Distributor and callout requirements. This allows a TCP/IP client application to retrieve the asynchronous output messages from an output queue specified in the IRM ALTCID field. This provides customers the ability to do resume TPIPE on one client id to get a customer to get output sent to a different client id

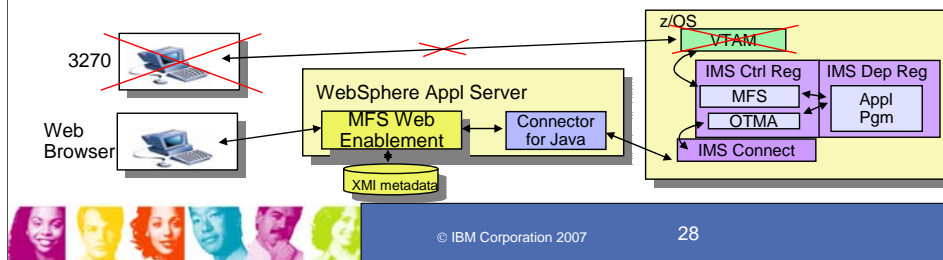
IMS TM Resource Adapter support for SSL Null encryption allows customers the ability to use SSL Authentication between the IMS TM Resource Adapter and Connect without incurring the overhead of encrypting all the data that flows over the connection. When communicating between IMS and SSL, provides SSL mutual authentication without SSL encryption of data inside their trusted zone in order to provide a performance gain. Connect already supports this.

IMS TM Resource Adapter support was provided for WAS 6.1 64-bit for local and TCP/IP environments .

MFS Web Enablement

9.3 (for V9)

- **Web enables MFS-based IMS applications**
 - IMS transactions may be invoked from a browser
 - Allows users to eliminate 3270s and VTAM without application changes
- **Downloadable from <http://www.ibm.com/ims>**
- **Moves MFS-like formatting out of IMS**
 - Uses XMI metadata tooling to create XMI metadata from MFS source
- **Stylesheets are provided**
 - 3270 simulated stylesheet
 - Customized stylesheet - font color, size, style, background color, and images
- **Display enhancements**
 - Infopops in samples extended, Dropdown lists
- **Benefits:**
 - Leverages existing MFS-based application programs without changes
 - Allows users to eliminate 3270s and VTAM



MFS Web support provides access to existing IMS applications from WebSphere Application Server environments, protecting your assets. [We offer two solutions to modernize and reuse your MFS-based IMS transactions.](#)

[The first solution converts your MFS-based IMS transactions to Web services in a B2B business scenario.](#) Your client application calls the generated proxy to invoke the Web service. The solution gives your application the power and flexibility to consolidate the results of one or more Web service calls across your enterprise applications. Additional MFS Web services enhancements have been provided to expose attributes and extended attributed fields for Web services applications.

[The second solution Web-enables your MFS-based IMS transactions in a B2C business scenario.](#) MFS Web Enablement from a windows environment provided a tooling utility and runtime to web enable existing or new IMS MFS applications for WAS and to interactively render the display web pages in standard browsers such as Microsoft Internet Explorer and Mozilla Firefox. This solution no longer required 3270 emulator and VTAM (which HATS does). MFS Web Enablement now also includes access from WebSphere Application Server for z/OS, in addition to Windows and AIX environments, and adds customizable display enhancements, allowing dropdown list boxes and infopops on familiar look-and-feel 3270 Web pages. [No coding is required to take advantage of this solution. It allows you to experience the same 3270 look, feel, and flow via Web browser. Furthermore, you have the flexibility to customize the generated HTML pages.](#)

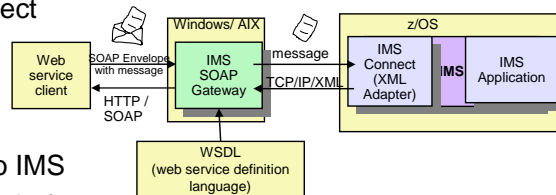
Both solutions just require valid MFS source files and run on WebSphere Application Server. And if you don't have the MFS Source files, we have an IMS MFS Reversal Utilities Tool that can help recreate them for you.

IMS SOAP Gateway

V9.2 (for V9)

■ IMS SOAP Gateway

- Downloadable for IMS V9 customers at <http://www.ibm.com/ims>
- Provides SOAP (Simple Object Access Protocol) interface to IMS TM
 - Makes IMS applications accessible as web services
 - Provides access to IMS transactions from Web service clients
 - » Clients may use Microsoft .NET, Java, or third-party application
- Works with IBM WebSphere Developer for zSeries tooling to easily generate Web services artifacts.
 - For example, generates WSDL file from IMS application COBOL copybooks
- XML adapter for IMS Connect
 - Converts XML



■ Benefits

- Provides SOAP interface to IMS
- Runs on any Java support platform
- IMS application programs don't need to convert XML



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The IMS SOAP Gateway is a separate downloadable product (5655-R04) that runs on Windows, XP, 2000, and AIX platforms. It prereqs IMS V9. The SOAP Gateway V9.2 provided XML Adapter support and security enhancements.

Inbound SOAP messages can be sent from a Web Service client to the IMS SOAP Gateway. The IMS SOAP Gateway strips the SOAP headers and sends the XML message to IMS Connect. IMS Connect calls the XML Adapter to convert the XML into application-specific format. The IMS application processes the message. It does not know the original message was in SOAP.

XML Adapter

PK24912/PK29786/UK17000 (V9)

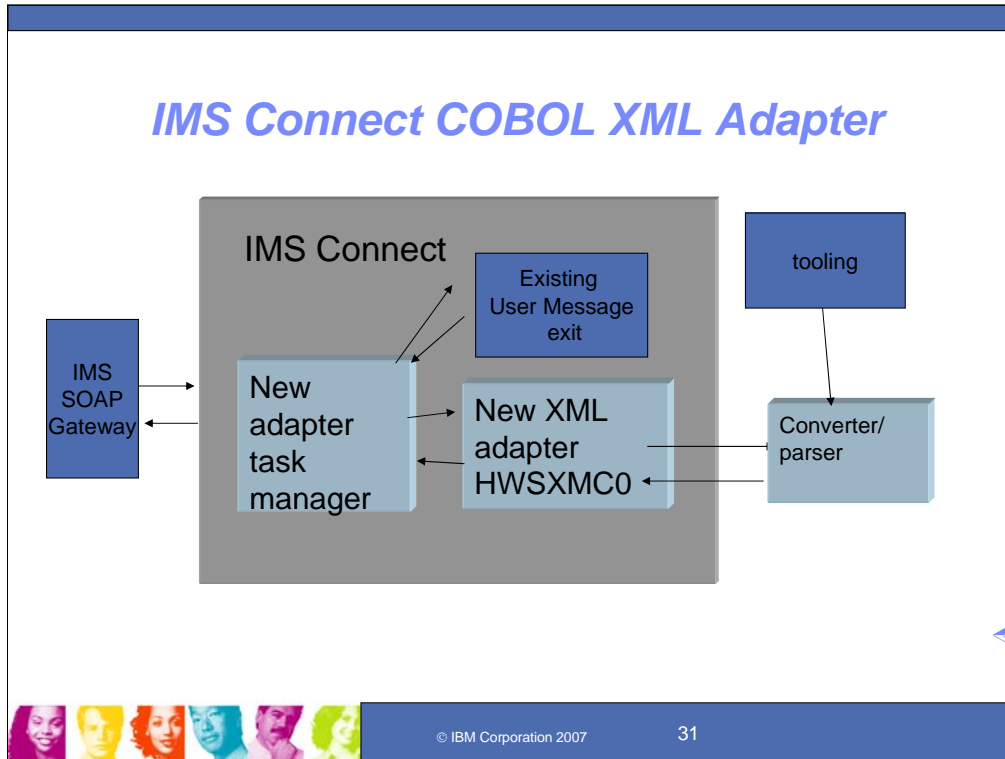
- **An Adapter invoked by IMS Connect on inbound and outbound messages**
- **Provides message conversion capabilities...**
 - from XML to application byte stream on inbound message
 - from application byte stream to XML on outbound message
- **Requires Websphere Developer for zSeries (WDz) XML Converters to perform the XML conversions**
- **Allows for IMS transactional requests to be in XML without needing to change the existing IMS COBOL applications**
- **Only supported by IMS SOAP Gateway V9.2**
- **Restrictions – CM1 with Synclevel None only, no multi-segment input/output support.**



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Integrated Connect XML Adapter support for COBOL, together with the IMS SOAP Gateway and WebSphere Developer for z (WDz), enables reuse of IMS applications as Web services, leveraging open standards, utilizing flexible tooling support, and providing IMS transaction interoperation with client applications independent of location, programming language, and platform. The IMS Connect Task Mgr and COBOL XML Adapter provide XML conversion support which allows you to send and receive XML data without modifying your existing IMS applications



This chart shows more detail for the IMS Connect XML Adapter.

This IMS V9 IMS Connect SPE provides an XML Adapter, a new, replaceable module named HWSXMC0, that can invoke one of more tooling-generated converter/parser(s) that can parse the XML data (input or output messages) for meaningful information and transform it to pass to existing host applications (for example, identify the LLZZtrancode part of the message and strip out the XML tags). This type of transformation would be done in the IMS Connect component to avoid the need for host application changes to understand XML formatted data. The input/output message would name the converters for the XML adapter to invoke, and the XML adapter would load these converter(s). The existing User Message Exit would supply the adapter name to call and receive the transformed input/output.

Some of the assumptions and basic message flows involved include the following:

- the input message structure for the SOAP Gateway contained the llzz trancode and data within XML tags....
- the output message structure for the SOAP Gateway contained the llzz and data within XML tags...
- the message flow for input and output messages included calls to the ADAPTER for parsing of the message...
- the initial support would only support a single ADAPTER, either the IMS Connect supplied ADAPTER or user provide ADAPTER...
- multiple ADAPTER support would follow in phase II...
- IMS Connect would initialize and terminate the LE environment if one required for the ADAPTER...
- the ADAPTER(s) would execute under their own TCB structure and not interfere with the other client activity...

EASING MANAGEABILITY



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Next we'll cover more on recent enhancements for Version 9 to ease manageability.

Log Data Editing Exit

PQ97109 (V9), PQ97107 (V8)

- **Allows users to replace sensitive data in log records**
 - Intended for user security purposes
- **Exit routine name must be DFSFLGE0**
- **DFSVSMxx control statement specifies record types sent to the exit routine**
 - LOGEXIT=(t1,t2,t3,...)
 - Record types allowed:
 - 01 – input message
 - 03 – output message
 - 4002 – message queue checkpoint
 - 5901 – Fast Path input message
 - 5903 – Fast Path output message
- **Benefit: Allows editing of transaction message records in the IMS log data for additional security**



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Log edit user exit allows the editing of transaction message records in the IMS log data for additional security

PI/Stop ABDUMP Region

PK13739/ UK14770/UK14771,
PK36164/UK23077 (V9)

- Allows a /STOP REGION ABDUMP command to recognize that an IMS region or thread is waiting for a PI lock.
- It will remove it from the lock wait chain and allow the /STOP command to complete.
- Previously required /STOP REGION CANCEL, which would result in U113 ABEND



PI/Stop Region ABDUMP allows a /STOP REGION ABDUMP command to recognize that an IMS region or thread is waiting for a PI lock. It will remove it from the lock wait chain and allow the /STOP command to complete. Previously IMS regions or threads waiting for a PI lock cannot be stopped using the /STOP REGION ABDUMP command. The customer was forced to use the /STOP REGION CANCEL command which could result in an IMS abend U0113.

Timeouts for Lock Waits

PQ82687 (V9), PQ73768 (V8)

- **Lock waits can time out when IRLM 2.1 or 2.2 is the lock manager**
- **Specified in DFSVSMxx member or DFSVSAMP DD**
 - LOCKTIME= control statement
 - Specified in seconds - Valid values: 1 - 32767
 - Applies to all lock waits in an online system or batch job step
 - Different systems/region types (eg. BMP and Batch) may now have different lock timeout values
 - Previously, LOCKTIME issued an abend for timeouts which required more application handling and system costs
- **If lock wait times out, application program receives U3310**
 - A dump is not produced
 - Transaction is not retried by IMS TM, It is discarded
 - TRAN and PROGRAM are not stopped
- **What are reasonable values for LOCKTIME? -- 30, 60, 120,...?**
- **Applies only to IRLM - Timeouts of lock requests not available with PI locking**
- **Benefits**
 - Prevents unlimited waits for locks which could cause system crash
 - Frees locks held by the waiter
 - Provides better service to other applications
 - This mechanism resolves undetected deadlocks
 - Even if IRLMs don't find a deadlock, timer will eventually resolve them



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LOCKTIME enhancements allow status code for timeouts of the LOCKTIME parameter rather than abend U3310 and allows different timeout values for different region types (eg. BMP and Batch). If locktime is set too short, unpredictable Batch/BMP abend will occur. If locktime is set too long, system crash will occur. Previously Locktime issued an abend for timeouts, which required more application handling and system costs.

Eliminate STATUSBAs during Command Processing

PK15659/UK11803 (V8), UK1935 (V9)

- Eliminates partition unavailable responses, STATUSBA or STATUSGG, by allowing the user to indicate whether or not PROCOPT=GOx transactions that access HALDB partitions should be terminated and automatically rescheduled when encountering a partition that is unavailable, due to a database command in progress.
- Provides pseudo-abending with a response and allows transactions to be rescheduled



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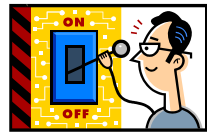
36

Eliminate STATUSBAs during command processing eliminates partition unavailable responses, STATUSBA or STATUSGG, by allowing the user to indicate whether or not PROCOPT=GOx transactions that access HALDB partitions should be terminated and automatically rescheduled when encountering a partition that is unavailable due to a database command in progress. This provides pseudo abending with a response and allows transaction to be rescheduled.

Format ID Control

PK30345 (V9)

- Format ID is a 3 character value to describe record for parsing
- Support is provided for Format ID in REXX SPOC API to give programmer ability to turn Format ID on or off
- This is used for automation purposes



Format ID in REXX SPOC API gives programmer ability to turn format ID on or off. Thi is used for automation purposes.

SMU to RACF Syntax Conversion

PK35433/PK38522 (V9)

For Assistance in Migration

- In 2005: SMU Sysgen Keyword toleration for one set of gens between V8 and V9
- Now: Creation of set of stand-alone utilities to read and convert Security Management Utility (SMU) source to comparable RACF input, including:
 - TERMINAL (COMMAND and TRANSACT options)
 - RACF CIMS Class conversion
 - AGN (with LTERM, PSB, TRAN options)
 - RACF TIMS, GIMS, IIMS, JIMS, LIMS, MIMS Class conversion
 - SIGN
 - IMS Stage 1 OPTIONS=SIGNON Conversion
 - AOI (CTRANS/TCOMMAND)
 - RACF CIMS Class conversion



Note: IMS V9 is the last release to support SMU



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In 2005, SMU Sysgen keyword toleration was provided for IMS V8 users to allow one set of gens between V8 and V9. Without this change customers need to make infrastructure/tool changes or wait for all systems to be at the IMS V9 level before using new SMU SYGEN parameters. This would reduce the number of stage 1 sysgen files needed to be maintained from 100+ to 50+.

The new IMS V9 SMU to RACF Conversion provides a set of stand alone utilities to read and convert SMU source to comparable RACF input. This facilitates conversion from Security Management Utility (SMU) to RACF. Specific SMU control statements are processed by new utilities to generate RACF control statements and to add the OPTIONS=SIGN parameter to specific TERMINAL macro specifications in Stage 1.

Note: IMS V9 is the last release to support SMU

ENHANCING SCALABILITY FOR AVAILABILITY/PERFORMANCE



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And we'll now cover more on recent scalability enhancements for Version 9 to further improve IMS availability and performance.

Syncplex Support

PQ89508 (V9), PQ95859 (V8)

- **Power Outage or Disaster Recovery Problem**
 - When all IMS systems and IRLMs in an IMSplex fail simultaneously
 - All locks from all IMSs are lost
 - New locks cannot be granted before all in-flight work is backed out
 - /ERE backs out work of an IMS and attempts to do new work
 - New work requires DBRC authorization of databases
 - These authorizations fail if other IMSs have not been emergency restarted
 - » Locks for failed systems are unknown
 - Databases, partitions, and areas are stopped
- **Solution**
 - Syncplex support
 - /ERE Command has new FF/FP keyword and parameter
 - Synchronizes restarts of multiple IMS systems
- **/ERE OPTION SYNCPLEX**
 - OPTION SYNCPLEX causes emergency restart to issue WTOR after back outs and before attempting new work
 - DFS3067A IMS XXXXXXXX WAITING FOR SYNCHRONIZATION WITH OTHER FAILED IMS SYSTEMS. REPLY "OK" TO CONTINUE.
 - This message indicates that this IMS system has released old DBRC authorizations and has not yet attempted to get new authorizations
 - When all IMSs have issued DFS3607A message, operator should reply 'OK'
 - New authorizations will succeed
- **Benefits: Simplifies restarts after disasters in a sysplex**



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Syncplex Option provides a new Full Function and Fast Path keyword and parameter to the /ERE command to synchronize restart of failed IMSs in a Sysplex.

RECON I/O Reduction for Signoff

PQ98655 and PK01097 (V9), PQ98654 and PK01096 (V8)

- **Fewer I/Os are used to unauthorize databases during DBRC Signoff**
 - Signoff occurs when an IMS subsystem (batch job, online system, or utility) terminates
 - Signoff includes unauthorizing databases, areas, and partitions which are authorized to the subsystem
 - Previously, each database/area/partition was unauthorized separately
 - Preceded by writing a RECON multiple-update (MUP) record
 - This is DBRC's "backout log"
 - Followed by the deletion of the MUP
 - The change: Composite Audit Trail record
 - One MUP record will be used for multiple databases/areas/partitions
 - This significantly reduces the number of RECON I/Os required
- **Implementation of the change**
 - Use of new MUP records is implemented by DBRC command
 - CHANGE.RECON CDSLID(value)
 - CDSLID: Cross DBRC Service Level ID
 - xxxx: value specified in ++HOLD card
- **Benefits**
 - IMS termination elapsed time could be significantly reduced
 - Depends on the number of databases, areas, and partitions authorized
 - Reduces impact on other subsystems which need to access the RECONS



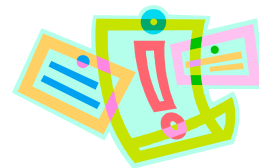
The Recon I/O Reduction for Sign-off Database Unauthorization enhancement

- Changes DB unauthorization logic for sign-off to use a composite audit trail record,
- Adds new command that will enable this, and
- Reduces I/O for signoff up to 60%, noticeable where there are many jobs running in parallel.

Change Status GG to BA PROCOPT GON/GOT

PK23390/UK1836 (V9)

- Applications today with PROCOPT GON/GOT that issue DL/I calls against an unavailable HALDB partition receive GG status code, which can be misleading, since it usually means invalid pointers.
- BA means invalid partitions and is a more appropriate designation
- This SPE changes the status code used for this from GG to BA.



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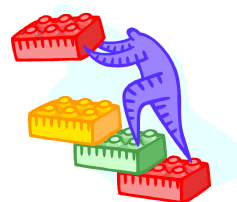
42

Change status code GG to BA for PROCOPT GON/GOT clarifies status code for PROCOPT GON/GOT DL/I calls against an unavailable HALDB partition by changing the misleading GG status code to BA for these situations. Where GG usually meant invalid pointers, BA meant invalid partitions and was a more appropriate designation.

DSAB and TIOT blocks above 16 M

PQ98773(V9)

- Allows for allocation of Data Set Association Block (DSAB) and Task I/O Table (TIOT) Blocks above the 16 M line
- Previously only online regions allocate TIOT's above the line
- Provides capacity constraint relief
 - VSCR
 - Allocation of more resources
- Batch execution parameter used to activate



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This provides for allocation of Data Set Application Blocks (DSAB) and Task I/O Table (TIOT) blocks about the 16 M line. In IMS dynamic allocation, this forces the placement of MVS-generated DSAB and TIOT blocks above the line. This provides some Virtual Storage Constraint Relief (VSCR) and allows the allocation of more resources. A batch execution parameter to activate these allocations gives IMS and vendor tools time to support this, independently of the IMS service stream. Online regions already allocate the TIOTs above the line.

DBRC Intent to Reorg

PK15946 (V9)

- Implement an 'Intent to Reorg' flag for full function databases (including HALDBs) that prevents subsequent reorganizations and batch access to the database. Online IMS subsystems are allowed access to the database when the 'Intent to Reorg' flag is set.
- Honors 'Intent to Reorg' flag setting & fails batch authorizations if on
- Lists 'Intent to Reorg' flag



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DBRC Intent to Reorg Command implements an "intent to Reorg" flag for full function databases (including HALDBs) that prevents subsequent reorganizations and batch access to the database when the "intent to reorg" flag is set. Online IMS subsystems are allowed access to the database, whereas Batch could be prevented DBRC control authorization by implementing this command.

HALDB OLR – DBRC INIT.PART

PK15943 (V9)

- Implement a new keyword for the INIT.PART command that allows the partner DBDSs (M-V, Y) to be created in RECON.
- The partner DBDSs currently are created when HALDB Online Reorganization is run the first time.
- This was requested by customers for disaster recovery when M-V DBDSs active and need to recover them at a remote site.



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DBRC INIT.PART enhancement implements a new keyword for the INIT.PART command that allows the partner DBDSs (M-V, Y) to be created in RECON. The partner DBDSs currently are created when HALDB Online Reorganization is run the first time. This is useful for disaster recovery when M-V DBDSs are active and need to recover at a remote site.

XRF/GDPS Coexistence

PK28199/UK21813 (V9)

- Provide synchronization exit between XRF takeover and GDPS hyperswap functions and GDPS provides a routine.
 - New XRF Hardware Reserve Notification exit is called when z/OS Reserves for IMS XRF should not be converted to global enqueues.
 - Exit disables Hyperswap while IMS XRF is holding a H/W Reserve against a GDPS PPRC primary device and re-enables it when all Reserved devices are released.
 - Requires PK21456/PK24286/UK16032
- Previously, if I/O error occurs, hyperswap transfers I/O from a device to a mirrored duplicate device, but this doesn't support hardware reserves. If hyperswap occurs during takeover on OLDS/WADS, it has same effect as losing hardware reserves. The logs could be damaged by I/O from both new and old IMS simultaneously.
- Benefit: Could prevent log problems where I/O comes from both new and old IMS systems simultaneously.



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XRF-GDPS Coexistence provides an exit for synchronization between XRF takeover and GDPS hyperswap functions. Hyperswap transfers I/O from one device to a mirrored duplicate device if an I/O error occurs. The mirroring does not support hardware reserves. If hyperswap occurred during takeover on the OLDS or WADS, it would have the same effect as losing the hardware reserves. The logs could be damaged by I/O from both new and old IMS simultaneously. This support introduces an exit, for which GDPS will provide a routine. The exit is driven when IMS reserves devices and when it releases them. A vendor or user would have the ability to make use of the exit. They would not have access to anything outside of a list of devices. This could prevent log problems where I/O comes in from both new and old IMS systems simultaneously.

HALDB Range of Partitions Processing

- HALDB Range of Partitions Processing

- Extends “single partition processing”

PK04880 (V9)

- Allows a PCB to be restricted to a range of consecutive partitions

- Specified with HALDB statement in DFSHALDB data set

- Example:

```
//DFSHALDB DD *  
HALDB PCB=(SAMPLEDB,PART001,NUM=4)  
HALDB PCB=(5,PART501,NUM=6)  
/*
```

- Limits database PCB with PCB name of SAMPLEDB to 4 partitions beginning with partition PART001.

- Limits the fifth database PCB to 6 partitions beginning with partition PART501.



HALDB Partition Range Processing is an enhancement to the previous single partitioning restriction. It provides support of a range of partitions in addition to a single partition.

HALDB OLR No Automatic Resume Option

PK27261 (V9)

- This option allows a user to specify whether or not a HALDB integrated online reorganization (OLR) can resume automatically at restart of IMS.
 - The DFSVSMxx PROCLIB member will now accept a statement `FFROLR=E|D`
- The existing message DFS2971W has been changed to provide a better description when the message was issued. This change is similar to the existing message DFS2970I.
- When an OLR was running previously, and had reached the "cursor-active" state then the message will indicate that "RESUMPTION FAILED".
- When an OLR had not yet reached the "cursor-active" state then the message will indicate that "INITIALIZATION FAILED".



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High Availability Large Database (HALDB) integrated Online Reorg (OLR) support is enhanced with an option for not resuming automatically. If OLR resumes automatically at restart of IMS any jobs controlling the OLR would get confused. By providing an option to prevent OLR from resuming at restart, the job can resume OLR on it's own.

DL/I RLSE Call

PQ92045 (V8), PK24342 (V9)

- **New DL/I call to release locks except those held for updates**
 - Provides easy way to release non-update locks without committing
 - Before this APAR there are two ways to release these locks
 - Use PCB to go to the end of the database and receive a 'GB' status code
 - Create sync point which also committed all work and released all locks
 - Not available with MPPs and JMPs
- **Benefits:**
 - Allows easy release of non-update locks without committing
 - Allows transactions access to previously locked data
- **RLSE call**
 - Uses DB PCB or AIB referencing DB PCB
 - If full function DB PCB
 - Releases locks for unmodified data for this PCB only. Database position lock(s)
 - Does not release locks protecting updates
 - If Fast Path DB PCB
 - Releases all FP locks for unmodified data, including those held for other FP DB PCBs
 - Does not release locks protecting updates
 - Database position is lost for affected PCB(s)
 - COBOL example:



```
CALL 'CBLTDLI' USING FUNC-RLSE DB-PCB-MAST.
```



DL/I RLSE call provides a Full Function or Fast Path DL/I call to release the database locks before synchpoint. This provides for easy release of non-update locks without committing, allowing transactions access to previously locked data.

Summary

ON DEMAND BUSINESS

- **IMS Version 9 continues to be enhanced for**
 - Integration to ease application development and connectivity
 - IMS SOAP Gateway, MFS Web Enablement, DLIModel Utility GUI, and IMS Connect
 - IMS TM Resource Adapter, IMS DB Resource Adapter, Java, and XML
 - Manageability ease
 - Command processing
 - Locking and security
 - Scalability in Availability/Performance
 - DBRC, HALDB parallelism
 - Constraint Relief



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IMS Version 9 has continued to be enhanced with new function for integration to ease application development and connectivity, to ease manageability and ensure scalability.

More Information on IMS Version 9



- **Redbook:**
 - IMS Version 9 Implementation Guide: A Technical Overview
 - Download from <http://www.ibm.com/redbooks>
- **White Paper:**
 - IMS Version 9 Implementation and Migration Tips
 - Download from <http://www.ibm.com/support/techdocs>
 - Search on 'IMS'
- **IMS Home Page**
 - <http://www.ibm.com/ims>



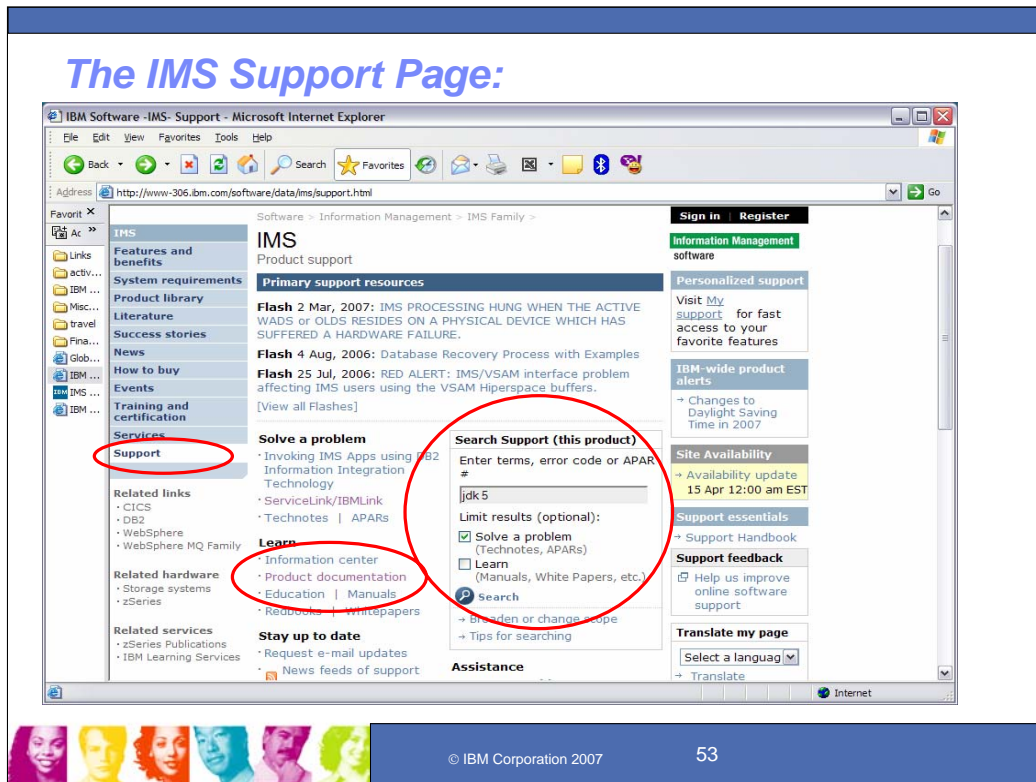
Key Message: More information is available for IMS V9

Additional information is provided in Redbooks, White papers and documentation on the IMS webpages.



Key Message: IMS information is provided through the IMS home page on the web

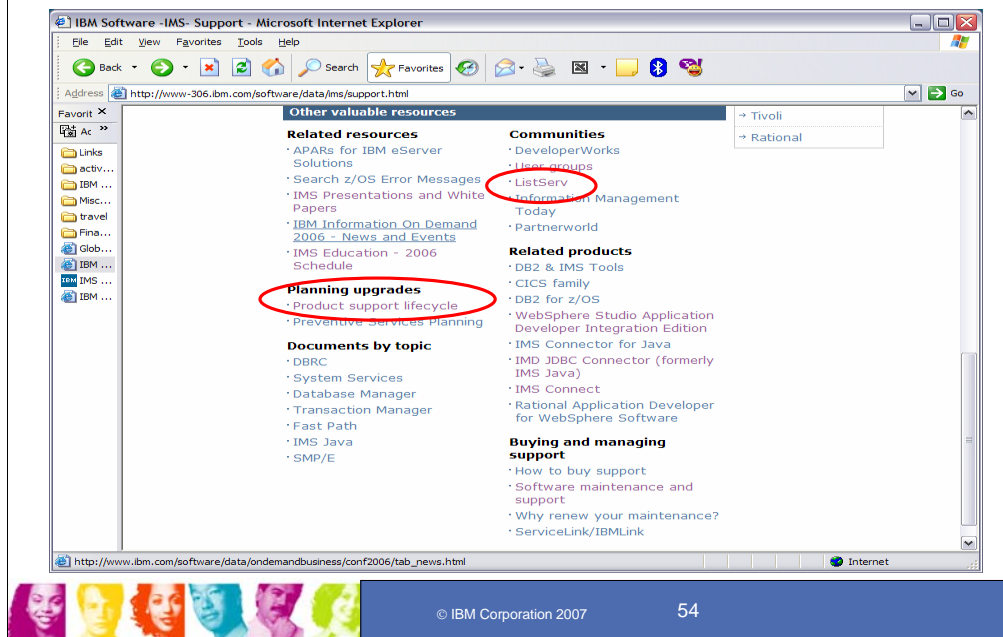
Links to these can all be found off <http://www.ibm.com/ims>. The IMS Web pages, however, are undergoing change to roll out shortly and provide a new look to simplify viewing. I hope that we can continue to help you find what you need as you move forward to the latest IMS function. The SPEs are defined in the service stream, you can find under Support. Those that went out prior to last October are in the external V9 “library”, which was refreshed along with the SUP tape. The rest you can find in the service stream under “support”. We’ll be doing another V9 refresh later this year. Some of the IMS Integration items can be found described through the “Integration suite” link.



Key Message: IMS enhancement information is provided through the IMS home page on the web

The IMS support page can help you find more information. These enhancements can be found either in the product documentation or in the service stream. You can search for terms and find the service documentation and other related information as well.

The IMS Support Page:



Key Message: Additional IMS links are provided through the IMS support page on the web

The IMS support page can help you find other useful information as well, for example, the ListServ where you can talk to other IMS users for exchanging questions.

IMS Version 9



- **Continuing to improve quality with enhanced, Information On Demand solutions**

Integration

Manageability

Scalability



Key Message: IMS Version 9 is continuing to be enhanced, ensuring high quality, information on demand solutions.

IMS is the cornerstone of your Information On demand business transformation and IMS Version 9, generally available since October 2004, is a key element for enabling this transformation.

IMS V9 continues to help in the evolution to on demand business through integration, openness, autonomic computing, and virtualization, providing:

- **INTEGRATION** with other IBM products and with other products and platforms within the industry, supporting IBM's commitment to open standards that benefit you, and developing supporting tools for application development and connectivity.
- **MANAGEABILITY** through staging users to Autonomic Computing, easing use, eliminating/reducing outages, and minimizing the education curve for users of IMS.
- **SCALABILITY** through virtualization in assuring flexibility for growth and expansion in a homogeneous environment while utilizing many heterogeneous data and application sources and new hardware and software facilities to optimize performance, capacity, availability, and recovery. This includes new levels of enhanced availability for IMS High Availability Large Databases (HALDB), introduced in V7, with fully integrated Online Reorganization support that provides concurrent online update and availability of data.