IMS Version 10

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Key Message: The IBM Information Management System (IMS) is unsurpassed in database and transaction processing availability and speed.

With the demands of the evolving on demand business environment, and a marketplace working in Web time, IMS delivers the integrity, capability, and performance customers have learned to expect from IBM.

IBM has been enhancing the IMS Database Manager (IMS DB) and the IMS Transaction Manager (IMS TM) with new enhancements, which enable you to shape how you:

•Transform the way you do business with integrated information

•Build on demand business applications that tolerate the rigors of doing business on the net

•Run a scalable, available, safe, and easily manageable environment

•Leverage your business decisions to make more informed decisions

IMS TM continues as IBM's premier transaction server for environments that employ relational and hierarchical data stores and require the utmost in integrity, capacity, availability, and performance for e-business and enterprise computing environments.

IMS DB continues as IBM's premier hierarchical database server to provide and enhance high performance/capacity, superior integrity, and continuously available database management solutions for IMS TM, CICS, and WebSphere application Server users.
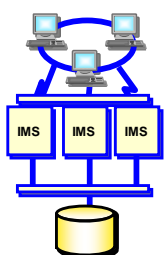
And now we are introducing IMS Version 10

IMS Version 10

Ideal for Driving On Demand Business

✓ Integration with Application Development and Connectivity
✓ Manageability toward autonomic computing
✓ Scalability in Performance, Capacity, Availability, Recovery

Enhancements

– **Integration**
  ► Enhanced Connectivity
  ► Enhanced access to IMS Databases
  ► Broadened Java/XML Tooling
– **Manageability**
  ► Simplified Install/Definition Process
  ► Eased Operations
  ► Eased Serviceability/Usability
  ► Enhanced Management Tooling
– **Scalability**
  ► Parallel Recon Access
  ► Enhanced Recovery/Control
  ► Increased Multiple Systems Bandwidth
  ► Fast Path System Growth

Benefits

✓ Enable Customer Growth
✓ Enhance Workload Balancing
✓ Increase Availability; Ease of Use
✓ Preserve Application Investment
✓ Enable New Applications

Strategic Open Access z/OS Enterprise Servers

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Key Message: IMS Version 10 provides customer benefits that make IMS ideal for driving on demand business

After IMS V9, IMS continues further strengthening its leadership role, helping customers in their on demand business enablement and the growth, availability, and systems management that evolving environments and cost measures require. IMS V10 focus thus continues in providing Information Integration with open access and supporting tools for the on demand business environment, continually improving, systems management/usability, and system scalability with increased availability, performance and capacity. The goal is to continue to deliver the next stages of this function.

Java and XML continue to be key areas for new application development. IMS Java and XML support and the IMS Connector for Java would be enhanced for the latest in standards and ease of use to allow customers to take advantage of the latest in tooling. IMS continues providing enhanced performance for this environment, and providing better integration with the WebSphere development tool set as it evolves. New Technology as it evolves with XML and Web Services is also continuing to be exploited to enable new Application Development tooling. IMS is forging a strong alliance with the AD community to provide an integrated tool solution for supporting IMS Java and connectivity to the Internet.

IMS has been providing Sysplex support to ensure the highest in availability/performance for Systems growth. IMS would continue to enhance support for this environment and provide support for new capabilities in it.

Systems Management through autonomic computing continues to be a key area with IMS customers in managing their systems. IMS would continue to enhance its single system image with expanded standard user-friendly commands and interfaces accessible across environments. IMS would also continue to ease the installation process, reducing/eliminating the gen requirement. Enhanced security and serviceability for application access and database usage would also be provided.

Additional IMS Tools are also being provided to better integrate and ease use of IMS as an on demand business server. As tooling evolves we will continue to take advantage of the latest technologies for our customers to enhance their ability to use our products with these tools.

IMS is also providing continued enhancements to eliminate bottlenecks and impediments to growth in the IMS systems and in connectivity to the IMS systems. IMS is improving availability, performance, and capacity in the Multiple Systems Coupling (MSC), Fast Path and Database Recovery Control (DBRC) areas of IMS.

In addition we continue to provide whatever we can for education and usability of our products. We also continue to enhance the ways our users can access and use our information.

IMS Version 10

Integration in Application Development/Connectivity
- •Enhanced Connectivity in APPC, OTMA, ODBA, and Connect
- •SOAP gateway enhancements for additional environment support
- •XQuery and additional standards support for IMS Database access
- •Broadened Java/XML/SOA Tooling to ease development
- •XML DB emerging standards and usability enhancements

Manageability
- •Simplified Definition with Dynamic Resource Definition
- •Enhanced ACBLIB Online Change (OLC)
- •Extended Commands and Systems Management Enhancements
- •Operations Manager and SPOC enhancements
- •Syntax Checker and IVP Enhancements
- •Serviceability enhancements
- •Enhanced accounting statistics

Scalability in Performance/Capacity/Availability/Recovery
- •HALDB and Fast Path performance and usability enhancements
- •MSC Bandwidth increased
- •Parallel Recon access
- •DBRC, Log, Utility Enhancements

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Key Message: IMS V10 enhancements address integration, manageability, and scalability

IMS Enhancements are being provided with new versions and service stream enhancements.

IMS V10 enhancements help you with Information On Demand business enablement, growth, availability, and systems management that today's and future environments and cost measures require. IMS V10 helps in addressing your On Demand business needs through integration/openness, manageability, and scalability, providing

Integration with other products and platforms across the internet, supporting open standards that benefit you, taking best advantage of the latest industry tooling for application development and connectivity.

Manageability in staging users to autonomic computing, easing installation and use, eliminating/reducing outages, and minimizing the education curve for users of IMS.

Scalability with virtualization in assuring flexibility for growth and expansion in a heterogeneous environment, utilizing the latest hardware/software facilities to optimize performance, capacity, availability and recovery.

Included for Integration in application development/Connectivity would be:

Additional Java/XML Tooling and connectivity enhancements in support of the latest technology with SOAP, XQuery, etc.

Included for Easing IMS Manageability are:

Simplified Installation and Definition using new Dynamic Resource Definition facilities and additional online change capabilities help to simplify the method to define IMS systems and resources. These allow dynamic additions, changes and deletions, reduce the number of required user decision points and use intelligence to determine system default values while allowing users to define and override definition choices.

Additional enhancements would also be provided to ease systems/operations management, installation, serviceability and usability.

Scalability enhancements for Performance/Capacity/Availability/Recovery would include:

Fast Path enhancements to continually improve performance and usability

The Multiple Systems Coupling (MSC) facility, connecting IMS systems across the network, would be enhanced to improve bandwidth performance across the network and to introduce new links for connectivity,

Parallel Recon Access would relieve contention for the Database Recovery Control (RECON) data sets in the IMS Sysplex. As the Sysplex grows, this could relieve bottlenecks to growth.

IMS Version 10 Database Manager Enhancements

- **Integration**
    - XQuery
    - Java library support Enhancements
    - GSAM DB Support in Java Batch Regions
    - DLI Model Utility GUI and XMI Enhancements
    - XML Database Mapping enhancements
- **Scalability**
    - Parallel RECON Access
    - DBRC API 2
    - READONLY RECON DS support
    - DBRC Timestamp Precision
    - Support Data Set FlashCopy
    - Sort Exit Enhancement
    - ILDS Rebuild Utility
    - Fast Path DEDB Enhancements
    - CSA/VSCR
    - Large Sequential DS >64k support
    - ACBGEN 31bit (V9 SPE)

- **Manageability**
    - Dynamic Resource Definition
    - Operations Manager Enhancements
    - System Management Enhancements
    - Syntax Checker/IVP Enhancements
    - OLC ACBLIB Enhancements
    - Selective Display System Parameters
    - BPE External Trace
    - KBLA migration/coexistence
    - Abend Search and Notification
    - Additional Serviceability Enhancements

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Key Message: IMS Database Management is being enhanced with IMS V10

IMS Database Manager enhancements provide:

Integrated, Open Access with enhanced IMS XML database support, XQuery access to IMS data, and broadened Java and XML tooling to ease development.

Manageability through staging users to autonomic computing with simplified, dynamic resource definition, eased operations and systems management, integrated operations across subsystems/platforms, and enhanced security and serviceability.

Scalability with more parallelism in Database Recovery Control (DBRC), and improved performance/capacity in Fast Path, HALDB, and Database utilities.

IMS Version 10 Transaction Manager Enhancements

- **Integration**
  - SOA Composite Business Application Support
  - Asynchronous Callout for IMS as client to WebSphere and SOAP
  - MSC VTAM Generic Resources support
  - APPC Local-LU and timeout granularity
  - OTMA Autonomic Enhancements
  - Security Enhancements

- **Scalability**
  - Fast Path EMH Enhancements
  - Statistics Utilities Shared Queues support
  - MSC Bandwidth

- **Manageability**
  - Dynamic Resource Definition
  - Operations Manager Enhancements
  - System Management Enhancements
  - Syntax Checker/IVP Enhancements
  - Management of Serialized Programs Across Sysplex
  - Enterprise Workload Manager (EWLM)
  - Transaction Level Statistics
  - Selective Display System Parameters
  - BPE External Trace
  - KBLA migration/coexistence
  - Abend Search and Notification
  - Additional Serviceability Enhancements

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Key Message: IMS Transaction Management is being enhanced with IMS V10

IMS Transaction Manager enhancements provide:

Integrated, Open Access with enhanced XML and Web Services Connectivity and broadened JAVA and XML tooling to ease development.

Manageability through staging users to autonomic computing with simplified dynamic resource definition, eased operations and systems management, integrated operations across subsystems/platforms, and enhanced security and serviceability.

Scalability with widened bandwidth for Multiple Systems Coupling, improved system availability, performance, and capacity in workload balancing

Integrated/Open Access with New Application Development/Connectivity

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Key Message: IMS Integration/Open enhancements can help with application development/connectivity

First we'll discuss the enhancements for Integration and Open Access provided for new application development and connectivity

XML and IMS for Transparent Application Integration

- **Processing XML Documents in New IMS Applications Today**
  - Users **c**an write IMS C, C++ applications using the XML Toolkit for z/OS
  - Users can write IMS Java applications using the SDK for z/OS, Java 2 Technology Edition
  - Users can write IMS Cobol/PL/I applications using parsers in Enterprise COBOL/PL/I z/OS compilers
  - Users can use WebSphere Developer for z XML Converters for COBOL to generate/parse XML inputs/outputs from COBOL applications
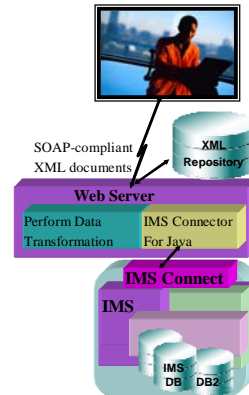- **Bridging XML and Existing IMS Applications Today**
  - Using MQSeries Integrator to support IMS COBOL and C applications
  - Supports publishing as Web Services existing IMS C, COBOL, MFS applications with connections thru SOAP and EJB bindings
- **IMS XML DB Support**
  - Support storing, retrieving, and querying XML in IMS databases (V9)
  - Generate XML schema for existing IMS databases (V9)
- **XML and IMS Requirements**
  - Transform XML for existing IMS applications within IMS Connect (Beta, V9)
  - XPATH/XQUERY support (Technology preview, V10)
  - XML DB mapping enhancements (V10)
  - Enhanced PL/I support
    - Enable IMS PL/I applications as Web Services
    - Generate XML output from PL/I applications
  - Create new IMS databases from users' XML Schema

- **IMS is Strategic in any Services Oriented Architecture (SOA)**

SOAP-compliant
XML documents

XML Repository

Web Server

Perform Data Transformation | IMS Connector For Java

IMS Connect

IMS

IMS DB   DB2

Key Message: IMS provides and continues to enhance and integrate XML support

IMS has also been taking advantage of XML which is critical for future transparent application integration. Today, IMS documents can be processed in new IMS Java applications using the XML toolkit for z/OS. We are also making available IMS COBOL and PL/I XML Application Capability, using the IBM Enterprise COBOL and PL/I compilers, which allows you to develop new or modify existing IMS applications using XML support for COBOL and PL/I. This can be used to enhance your existing high performance IMS transactions written in COBOL and PL/I in a Business-to-Business environment by receiving and sending XML documents. IMS supports the transmission of XML documents in the data portion of the IMS message. The messages can be placed and retrieved for the IMS messages queue for all messages regions for IMS Message Processing Programs, Fast Path Programs and Batch Message Processing Programs.

You can also enable existing IMS COBOL, C and MFS applications as Web Services by connecting SOAP and EJBs to IMS.

IMS V9 provided XML Database support, supporting the storing, retrieving and querying of XML in IMS databases and the generating of XML Schema for existing IMS databases.

Additional IMS enhancements support transformation and industry tooling and XML Database Mapping enhancements.

XML transformation processing could be contained within the integrated IMS Connect, using WebSphere Developer for z.

XML DB mapping enhancements allow for expanded mappings between new or existing IMS databases and visualized XML documents or collections. These enhancements widen the scope of supported XML documents for new IMS databases, and ease disparate data integration across the enterprise.

With the new WebSphere/RAD tooling you would be able to generate XML documents for outputs from PL/I applications. You would be able to web enable your MFS applications using XML.

Today IMS Databases can generate XML Schema. With new tooling you would be able to create new IMS Databases from a users' XML Schema

IMS XQuery

- **Audience**
  - IMS users looking to embrace SOA, XML
  - Those wanting enhanced Java application devt
  - Those wanting better IMS/ DB2 data integration
- **Objectives**
  - Further align IMS with industry direction
  - Enhance IMS integration with tooling support
- **Solution**
  - Standard XML query language jointly developed by industry leading companies as W3C Candidate Recommendation
  - SQL-like query, specifically designed for the more natural fit of hierarchical data
  - Full support for IMS DBs, using XML-DB with IMS/XML mapping
  - Full XQuery 1.0(+-) evaluation engine shipped with IMS
  - Supported though Java language
  - Tech Preview at http://www.ibm.com/ims on alphaWorks
  - Includes DBD, PSB, load job, sample applications and step by step instructions
- **Value**
  - Further aligns IMS with industry and IBM direction (SOA, XML)
  - Increases value of IMS XML-DB support
  - Provides IMS fully supported powerful standard query language shared with the rest of the database world
  - Leverage App Dev tools that build off XQuery

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          { $b/title }
       </book>
</bib>
```

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Key Message: IMS XQuery support extends and eases IMS Database access

IMS V9 introduced a way to view your IMS data as collections of XML documents -- aligning the stored IMS records with the valid XML documents for retrieval and automated conversion between these. The emerging XQuery standard is a powerful query language to search, aggregate, evaluate, pick and choose parts of the XML collection and then convert the resulting data into XML. IBM development and research have teamed up to build a fully functional, performance-oriented XQuery implementation for IMS V10. An IMS XQuery Technology Preview is now available through the IMS website at www.ibm.com, up on alphaworks, an early adopter website for emerging IBM technologies in early stages of R&D.

IMS XQuery support provides access using standard XQuery expressions to IMS full function data, including new IMS XML data. This opens up IMS to the emerging market of off-the-shelf third party tools (e.g. query generation tools for application development, business reporting, data sharing , etc.) and offers a standard shareable integration point between IMS and other industry databases. IMS XQuery is supported through the existing IMS JDBC interface. IMS XQuery support enhances IMS data integration, eases application development and increases programmer productivity.

IMS Callout Enhancements

- Enable IMS applications as clients
  - Asynchronous outbound support from IMS applications.
- IMS pull of information/data from distributed system
  - IMS application initiates request to outbound WAS or other applications, and receives response back
- Asynchronous Callout to EJB
  - Customer provides code in JCA EJB application
- Asynchronous Callout to Message Driven Bean (MDB)
  - Use JCA 1.5 inbound architecture support of Enterprise Information System (EIS, e.g., IMS) to initiate communications to the J2EE application server, eg. WebSphere Application Server (WAS)
  - End-to-end tooling available
- Outbound Web services support to external SOAP server for IMS SOAP clients
- Provides enhanced tracking using correlators, usabiity, security, and no longer requires an exit

IMS   z/OS

Initiating Client

IMS Application

Callout

Any platform

External Application

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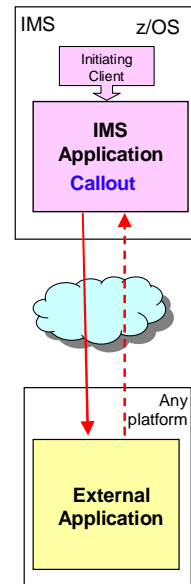
Key Message: IMS applications can call other applications

IMS applications can today access other environments and data. IMS applications can explicitly code communication interface calls such as TCP/IP or APPC calls. IMS Java applications can make calls out using standard Java classes. And Enterprise Cobol can provide interoperability with IMS Java applications. IMS applications can also access DB2 and other relational data.

Additional enhancements for IMS interaction with other environments includes Callout support, where an IMS application could call out to another application across the IMS Connector for Java to WebSphere server applications or to SOAP application environments. IMS Callout support enables IMS applications as clients, interoperating with business logic outside of the IMS environment. It provides for asynchronous callout to an external application (eg. a Web Service or a WebSphere Application) through the IMS SOAP Gateway or IMS Connector for Java. This support includes correlation mapping between the callout request and the external application, enhanced security, and assistance on destination routing. This support allows for better integration in an SOA environment.
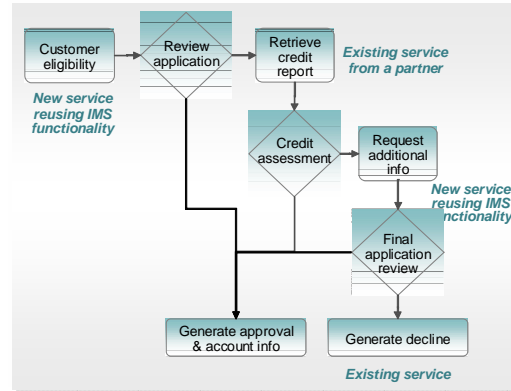
IMS SOA Composite Business Application Support

Provides Visual Composition tooling and runtime, leveraging WebSphere Integration Developer (WID) and WebSphere Process Server (WPS)

➢**Streamlines process design hand-off between business and IT**

- Enable existing IMS transactions as SOA-based composite business applications

- Enable IMS transactions for broad reuse and service development and assembly technologies

➢**Maximizes re-use and service development and assembly**

- Ability to leverage existing services & save components for future service reuse

- Build and run IMS sub-process flows that can be reused within multiple external processes

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Key Message: IBM is providing visual composition tooling and runtime support for IMS

IMS SOA Composite Business application support provides for the next generation business process tooling and servers that integrate J2EE resources, services and activities (like user interventions), based on Web Services with the Business Process Execution Language (BPEL). This extends existing transactions to include conversational transactions as SOA-based composite business applications using the IMS Connector for Java and WebSphere tooling and runtime, maximizing re-use of IMS assets in new applications for rapid business innovation and reduced costs.

Enhanced IMS Java library support for DB2 Java Stored Procedures

- Provides capability to return IMS data from a DB2 Java stored procedure encapsulated in a DB2 result set.
- Minimum requirements:
  - IBM SDK for z/OS, Java 2 Technologies Edition, V5
  - DB2 Universal Database for OS/390 and z/OS (Version 7) with APARs
    - PQ46673 (stored procedure support) and
    - PQ50443 (access to IMS from a stored procedure)
  - The DB2 Universal JDBC (or the "JCC") Driver
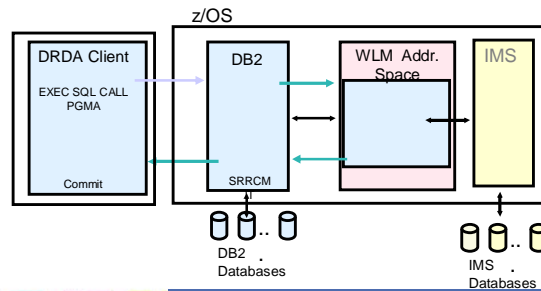
Key Message: IMS enhances IMS DB/DB2 interaction

IMS Java library support enhances DB2 result sets. This offers the ability to return IMS data to the stored procedure client encapsulated within a DB2 result set, with the conversion to the DB2 result set handled by the Java libraries. This provides for query of an IMS database and conversion of the IMS data into a DB2 result set. This support enhances the interaction between a DB2 stored procedure and IMS data.

GSAM Database Support in Java Batch Processing Regions

- **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**
  - 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

Key Message: GSAM support is further enhanced for Java

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.
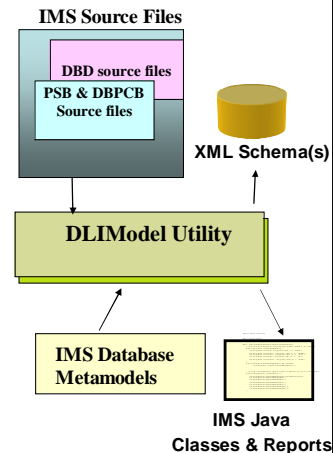
IMS Database AD Tool - DLIModel Utility

➤ DLIModel Utility first shipped with IMS V8
    Providing IMS Java tooling support
- SYS-CON Readers' Choice Award
  - First runner up for Best Java Component
  - **http://au.sys-con.com/read/171303_3.htm**

➤ DLIModel Utility XMI and GUI enhancements
- – Enhance IMS DB MetaModel
- – Separately generate PSB & DBD XMIs
- – Provide GSAM Database support
- – Enhance XML Schema Annotations for IMS XQuery
- – Technology preview GUI downloadable at ibm.com/ims
  - Provides user-friendly interface, eliminating need to write control statements
  - Simplifies application development and visual representation of IMS data
  - Provides ability to import COBOL copybooks directly
  - Includes printable Editor to modify PCB,segment and/or field information
  - Generates XML Schemas for XML DB
  - Installs as an Eclipse 3.0 plug-in

IMS Source Files

DBD source files

PSB & DBPCB Source files

XML Schema(s)

DLIModel Utility

IMS Database Metamodels

IMS Java Classes & Reports

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Key Message: IMS is also providing improved application development tooling with the DLIModel Utility DLIModel utility tooling creates metadata for the IMS data. This tooling has won the Sys-Con readers choice award first runner up for best Java component in the industry.

IMS V8 introduced a way to view your IMS data with the DLIModel Utility for IMS Java tooling support. This has subsequently been enhanced further with V9 and the DLIModel Utility GUI.

DLI Model Utility enhancements include: Re-architecting IMS Database MetaModel and separately generate PSB & DBD XMIs, providing GSAM Database support, and enhancing XML Schema Annotations for IMS XQuery

The DLI Model Utility GUI is 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 GUI support was provided as a Technology Preview on the IMS website. This Technology Preview GUI was enhanced with even more capability -- providing the ability to import Cobol Copybooks directly into the DLIModel Utility and providing a user-friendly graphical user interface to the z/OS DLIModel Utility. The value is to eliminate the need of converting Cobol Copybooks to Cobol XMIs, eliminate the need of writing control statements, and providing printable UML editor of your metadata

The DL/I Model utility GUI fully supports the parsing of Program Specifications Blocks (PSBs) and Database Definitions (DBDs), now including GSAM, and the importing of COBOL Copybook while eliminating any need to program control statements. It generates IMS Java metadata classes, IMS XML Schemas (with new annotations for XQuery support), and/or DBD and PSB XMIs. These enhancements simplify IMS metadata generation, ease IMS Java and XML Database application development and offer a visual representation of IMS databases with printing support. This can help achieve rapid application development and reduced cost of development and ownership.

IMS APPC Local-LU Enhancements

- Using incoming LU for outbound responses to IOPCB
  - If an asynchronous APPC conversation comes into IMS using a non-base LU, allow LU Response on same LU that it came in on.
- Add OUTBND keyword to LU 62 descriptors
  - Gives the user the possibility to specify a local-LU name.
- Allow DFSLUEE0 exit to override local-LU.

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Key Message: APPC Enhancements offer more flexibility in connectivity

APPC enhancements provide support for timeout granularity in seconds, and Local Logical Unit (LU)s. For LU 6.2 descriptors, this allows a customer to specify a Local-LU on the descriptor level, thus providing for better customer flexibility.
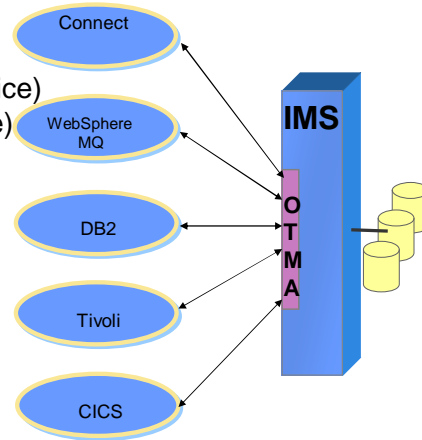
Open Transaction Manager Access (OTMA) Enhancements

► **Solution**
  – Tpipe storage clean-up (V9 service)
  – Extended asynchronous reroute (V9 service)
  – Automatic flood control (partial V9 service)
  – Time-out control
  – Member level security
  – Enhanced OTMA display information
  – Callout Descriptors
  – Resume TPIPE security

► **Value**
  – Enhances OTMA for high availability and usability

Connect

WebSphere MQ

DB2

Tivoli

CICS

IMS

OTMA

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Key Message: OTMA enhancements increase automation and availability for IMS TM access

Open Transaction Manager Access (OTMA) autonomic enhancements includes the ability to activate message flood detection by suppression of the input messages if needed, the detection of wait synchpoint hangs and taking the time-out action if needed, member start/stop to suppress new input transactions and to resume the stopped member to accept new input transactions, member level security with each member having its own security level, additional information on the DISPLAY commands. OTMA Callout Descriptors identify alternate destinations and allow customers to define routing information, thus eliminating the need for customers to code OTMA routing exits to perform these tasks. These enhancements improve programmer productivity, and connectivity in performance, capacity, availability, recovery, security and manageability

Security/Usability Enhancements for Connectivity

IMS benefits from transaction security through RACF

- **Client Password Change Request**
  - Allow user to change security password by submitting a password change request message to the IMS Connect message exit routine
- **ACEE Aging Value**
  - Allow user to set aging value of the cached ACEE for the OTMA security checking for better performance throughput.
- **RACF Mixed Case Password**
  - Allow user to specify the mixed case password for RACF or the equivalent product
- **CM1 Timeout**
  - Allow user to specify timeout value for dependent region wait-syncpoint condition when acknowledgement message is not received for an OTMA CM1 output response
- **Message Flood Control (partial support provided as V9 SPE)**
  - Allow user to specify a threshold value to detect the OTMA message flood condition
- **Alternate Client ID (also provided as V9 SPE)**
  - Allow user to retrieve IMS asynchronous output using an alternate Tpipe name or client ID
- **Command enhancements**
  - /SIGN ON enforcing conversations be held or user authorized to use transaction for active conversations
  - /DISPLAY SHUTDOWN STATUS showing active or indoubt ODBA threads that could prevent IMS from shutting down completely if IMS not shutting down as expected
  - /LOCL, /OPNDST, /SET,/SIGN, /UNLOCK enhanced to support mixed-case passwords

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Key Message: IMS Continues to enhance serviceability and usability for connectivity

Security enhancements include RACF error message reduction, support for z/OS mixed case passwords, Faster RACF Auditing, and Conversational Security enrichment items. A mechanism on client input to the integrated IMS Connect function to change the password associated with the client ID is provided. Customer-written applications will have the ability to change the client RACF password. The user will be able to define to Connect the aging value used by OTMA within IMS for the aging value of the ACEE's used by RACF, where the current default value is 'forever.' RACF Mixed Case Passwords are supported with Connect preserving the original password value rather than attempting to translate the password to upper case. A new Startup parameter is added to the DBC, DCC and IMS procedures and commands are enhanced to support mixed case passwords.

These items enhance security and reduce unnecessary error messages.

Message Flood Control was partially support earlier with IMS V9 SPE

Manageability Ease with Autonomic Computing

Key Message: IMS also provides for manageability Ease toward Autonomic Computing

Manageability enhancements are being provided to ease installation and operations efforts

IMS Dynamic Resource Definition (DRD)

- Increases Availability with continued focus on 24x7 operations
  - ➢ Less disruptive change than with existing online change process
  - ➢ Allows system to change dynamically for MODBLKS resources via a command
  - ➢ No need to cold start system to introduce new MODBLKS resources
  - ➢ Allows granular change with minimum impact to availability
  - ➢ System is quiesced for only those resources to be changed
  - ➢ Allows transactions to be defined dynamically via a user exit

- Increases Productivity
  - ➢ New User Interfaces
  - ➢ Simplifies the IMS definition process for IMS systems and resources
  - ➢ Reduces IMS and z/OS skill set required to define and customize IMS
  - ➢ Simplifies environment setup for application development

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Key Message: IMS is providing for improved availability/productivity with Dynamic Resource Definition

IMS resource definition currently is a two stage, batch, assembler system generation process. This originally requiring cold start, has provided online change for some resources. These resources are the Databases, Trans route codes, and Applications. But this online change requires a quiesce of the entire system. Requirements in this area are to reduce system generation time/effort and to improve availability during change.

Dynamic Resource Definition (DRD) is a simplified method of defining IMS resources. Enhanced support continues to be rolled out over subsequent IMS deliverables. The next step is for dynamic change of the MODBLKS resources and providing new user interfaces. Additional transactions would be able to be defined dynamically, On Demand, via a user exit.

Dynamic Resource Definition (DRD) provides for increased productivity by introducing a new, easier to use, user interface. DRD for MODBLKS reduces the need for system definition and online change. It reduces the number of required user decision points and the need for Assembler skills to define an IMS system. The rollout of DRD is scheduled to occur over multiple releases. The TSO SPOC and the IMS Control Center would be enhanced to provide a DRD user interface and the IMS Control Center could provide command wizards.

This next stage would focus on MODBLKS resources (databases, programs, routing codes and transactions). It would allow an IMS user to dynamically create/update/delete MODBLKS resources via a command Can modify one, some or all resources at once. Transactions and programs could also be created dynamically, on demand, via a user exit. Definitional attributes and resource status can be displayed using the QUERY command. An EXPORT command would be provided to export resource definitions to a resource definition data set or to a repository, and an IMPORT command is provided to import those definitions back into IMS. One or more resources could be created, updated or deleted at a time. Only those resources affected by the change would be quiesced. Adding a new resource does not require all resources to be quiesced. Changing or deleting an existing resource would result in the specified resource being quiesced, but it does not affect other resources unless necessary. Adding a new application does not require all applications to quiesce. Changing or deleting an existing application causes the specified application to quiesce in the system but does not affect any others It provides greater availability for business applications during change windows and reduces required decision points for resource definition and customization, supporting user-defined system defaults for creating resources, supporting descriptors for creating resources, and automatically stopping resources affected by update to prevent new work during update.

This can improve availability and productivity.

Dynamic Resource Definition…

- Simplifies Resource Definition
  - New commands to dynamically define and manage MODBLKS resources without a system generation or online change
    - Create, delete, import, export, query, update
    - Database, program, transaction and routing code
  - New commands to dynamically update Multiple Systems Coupling (MSC) resources
  - Enhances user exit (DFSINSX0) to dynamically create program and transaction resources
  - Decreases need for the system generation process
    - Reduces number of resources that must be defined through the system generation process -- FPCTRL, APPLCTN, DATABASE, RTCODE, TRANSACT macros no longer required

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Key Message: DRD simplifies resource definition

New commands are provided to dynamically define and manage certain resources without a system generation or online change.

New commands are also provided to dynamically update MSC resources. This implements new type-2 commands for displaying and updating MSC resources that enhance the functionality of existing type-1 commands. This supports modifications to resources without requiring system definition changes or an IMS restart, allows for cloned Sysgen definitions for multiple systems, because the definitions can be tailored dynamically for each unique system, and allows for spare "dummy" resources to be defined during Sysgen, and then activated dynamically as needed with an update command. This includes for cloning Sysgens.

These simplify resource definition and decrease the need for the system generation, reducing the number of resources that must be defined through the system generation process. There are for example Startup parameters for Fast path so you will no longer need the Fast Path control (FPCTRL) Macro.

Syntax Checker and Installation Verification Program (IVP) Enhancements

- Syntax Checker
  - ► Supports 10 new members and updates previously-supported members
  - ► Provides new display formats, new save format, new keyword "Sel" Options, new insert panel, new member selection panel, and new selections in View menu
- IVP
  - ► Provides step-by-step and menu-driven jobs and tasks that guide users to use and explore useful sample applications for new functions.
  - ► Users can see how new functions work and use IVP as a working model for future reference and testing.

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Key Message: IMS Syntax Checker and IVP enhancements ease installability and use of new function and improve availability

Syntax Checker enhancements add new support and update existing support for currently supported members, add additional proclib, and field options, new panels, and new keyword display options. These enhancements ease the installation effort.

Installation Verification Program (IVP) enhancements are provided to support new IMS functions with step-by-step and menu driven jobs and tasks that guide users to use and explore useful sample applications. For example, Java panels are added to the standard IMS IVP panels so as to contain the necessary steps to configure, deploy and run the applications. This greatly simplifies the necessary upfront work to verify that Java workload can be scheduled in an IMS dependent region. These enhancements assist in reducing the installation efforts.

Operations Management (OM) Enhancements

► **Audience**
- Users requiring improved operations using the IMS Common Service Layer (CSL) to enter commands to IMS or wanting to view audit trail
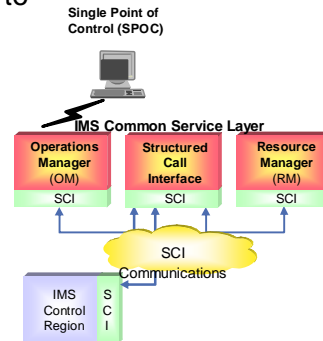
► **Objectives**
- Allow IMSplex members to send unsolicited messages to OM
- Provide OM audit trail

► **Solution**
- Define a new API for unsolicited messages
- System Logger used for Audit trail
- Provide SPOC panel to view audit trail

► **Value**
- Improved output and auditability for commands entered through the Single Point of Control (SPOC)
- Users can determine which commands were issued, by whom, and can see unsolicited messages
- Enhances Integration of operations

Single Point of Control (SPOC)

IMS Common Service Layer

| Operations Manager (OM) | Structured Call Interface | Resource Manager (RM) |
| SCI | SCI | SCI |

SCI Communications

IMS Control Region | S C I

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Key Message: IMS operations management enhancements are provided for the IMS Common Service Layer
The Operations Manager initially delivered in IMS V8 provided an OM API to allow IMS commands to be issued from OM, a Single Point of Control (SPOC) from TSO or from a distributed Control Center with command wizards, and a new command syntax to make it easier to operate IMS in a Sysplex with command responses returned in XML that can be parsed by automation and for monitoring resources and altering workload parameters.
In V9 commands for database and area resources were added to provide the user the ability to better manage the IMSplex and provide a single system image. IMS V10 Operations Management enhancements use the Common Service Layer and provide the ability to define a new API for unsolicited messages and creates new log records for commands entered through the Operations Manager Application Programming Interface. This can improve output and auditability for commands entered through the single point of control and provides improved integration with other products.
IMS V10 Operations Manager and Commands enhancements simplify management of IMS systems in a parallel sysplex. Additional enhancements include:

A new audit trail that can be used by all IMS systems.   The user can configure this so each OM uses its own log or all OMs, use the same merged log. When all OMs write to the same log, there is a single, merged log for all SPOC activity. The audit trail is written to the MVS system logger.
Operations Manager (OM) enhancements make use of the MVS logger to provide an input/output audit trail for IMS commands entered from a Single point of control (SPOC). The user can configure this so each OM uses it own log or all OMs use the same merged log for all SPOC activity. These enhancements also use the Single point of Control (SPOC) to display unsolicited messages, and use the OM to track commands/responses. These enhancements can ease operations management, improve output and auditability for commands entered trough the single point of control.

Operations Manager Single Point Of Control (SPOC) enhancements would also provide for IMS event messages to be displayed on the SPOC or accessible via an Automation program using the OM API; an Audit Trail for all work going through OM (e.g. commands entered from SPOC and command responses); Transactions initiated and messages Iterms sent through the OM API; and a TSO user interface and an IMS Control Center interface for DRD.

Systems Management Enhancements (SME)

- **Solution**
  - ► Use Resource Manager to save global command status for Databases, Areas and Transactions, made available to IMS systems at startup
  - ► Type-2 QUEUE TRAN | QUEUE LTERM commands from OM API
    - Allow transaction and lterm messages to be Initiated through OM API
    - Allow transaction and lterm messages to be Dequeued in Shared Queues (SQ) and non-SQ environments
  - ► UPD DB and UPD AREA commands enhanced to set/reset Prevent Further Authorization (PFA) in the RECON
  - ► /SMCOPY MSG ON | OFF support allows you to skip logging of messages to the secondary master
  - ► Type-2 AOI Exit DFSAOE00 enhanced to allow you to skip logging of messages to the secondary master
  - ► All Type-2 commands enhanced with completion code text on error completion codes
- **Value**
  - ►Single System Image, simplified Systems Management with Single Point of control
  - ►Granular control of logging secondary master messages

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Key Message: IMS continues to enhance Systems Management

IMS continues to enhance Systems Management for IMS Sysplex and those using Type 2 commands or secondary master logging. Systems Management enhancements provide the ability for IMS to maintain global command status for databases, areas and transactions in the IMS Resource Manager Resource Structure to be applied to new or restarting IMS's in Sysplex that were down when the command was issued. This improves the resource sharing between the IMS systems. For example, if a database is taken offline for batch processing, other IMS systems that are started after the database is taken offline, recognize the offline state and will not try to access the data until it is brought back online. This also provides an autonomic provision of single system image among IMS's in a Sysplex. Other enhancements allow users to control when messages get logged to the secondary master, allow users to queue messages and enter transactions from OM Application Program Interface (API). These enhancements extend single point of operations support, simplify systems management, and provide more granular control of logging of secondary master messages.

This allows the Single Point of Control consoles to initiate an IMS transaction. Users can initiate a transaction to all IMS systems in a parallel sysplex. This is especially useful for transactions that run on each system for audit or diagnostic purposes, or, for example, Automated Operator Interface BMPs.

Continued commands enhancements allow installations to enqueue/dequeue messages to start/remove work for a transaction or LTERM from OM, similar to a message switch from the terminal to a transaction or LTERM; commands could turn ON or turn OFF logging of all system messages to the secondary master; Type-2 AOI exit could indicate if the message should not be written to the secondary master.

Enterprise Workload Manager (EWLM) Support

- **Objectives**
  - Integrate IMS with EWLM's end-to-end workload management
- **Solution**
  - Flow EWLM correlators with an IMS transaction. Use enhanced versions of existing WLM services to pass correlators back to EWLM.
- **Value**
  - EWLM's view of the workload on the z/OS system will include IMS transactions

Key Message: IMS EWLM support integrates IMS Transactions into an overall workload view

Enterprise Workload Manager (EWLM) support provides for workload management tracking across environments, integrating IMS with EWLMs end-to-end workload management. This enhancements flows EWLM Correlators with an IMS transaction, using an enhanced version of the existing workload manager services to pass correlators back to the EWLM, thus enhancing workload balancing and easing operations.

Selectively Display System Parameters

- **Objective**
  - Show actual values for system parameters in DFS1929I message
- **Solution**
  - Display DFS1929I message for actual system parameters values after reading the log in restart
- **Value**
  - Improved system parameters visibility, thus can help an IMS site to determine actual parameters values for optimal configurations and optimal user response times

Key Message: IMS Selectively Display of System Parameters helps optimize configurations and response times
Selectively Display System Parameters provides improved visibility of the startup parameters values, shows only the active feature's systems parameters, and shows the actual value of each parameter after reading the log. This improves system parameter visibility and can help determine actual values for optimal configurations and user response times These enhancements ease operations, reduce customer/vendor usermods, and offer them more granular information.
Parameters are still displayed during initialization as well. Parameters displayed after restart reflect the restart updates -- all parameters are displayed.

Sysplex Serialized Program Management

- **Objectives**
  - SCHDTYPE=SERIAL programs are serial on a single IMS but may be scheduled in parallel on another IMS in the IMSPlex
- **Solution**
  - Use IMS Resource Manager (RM) to serialize these programs throughout the IMSPlex
  - Expands serial program usage to all IMS systems
  - Requires CSL and IMS Resource Structure
- **Value**
  - True serialization of these programs across the IMSPlex
  - Eliminate need for users to create their own solution

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Key Message: IMS Sysplex Serialized program management helps ensure serialization across systems

Serialized programs has been a requirement since Shared Queues was implemented. This uses the resource structure to keep track of serialized programs so only one program is running at a time in the IMSplex.

Sysplex Serialized Program Management (SSPM) will utilize the Resource Manager (RM) to manage serial program scheduling across the IMS Sysplex in a shared queues environment so that only one program is running at a time in the IMS Sysplex. This eases operations application flow management.

Earlier, some users had created their own solutions by stopping transactions/programs on certain systems to get around this issue.

Online Change Application Control Block Library (ACBLIB) Enhancements

- **Objectives**
  - ► Allow online change with work in progress for transactions that are not directly affected in order to improve the chances that a commit will succeed.
  - ► Allow add or change of one or more members of the ACBLIB without the need to perform an online change on the entire library

- **Solution**
  - ► Do not consider local queues with messages as work in progress when a transaction is not directly affected by an online change in a non-shared queues environment
  - ► Provide online change so that only affected resources by member level online change are quiesced allowing concurrent activity of unaffected resources
  - ► Coexist with existing library switch OLC

- **Value**
  - ► Improve the usability of online change by increasing the chances that commit will succeed, especially for an ACBLIB-only online change
  - ► Improve availability by minimizing impact of change

Key Message: IMS Online Change ACBLIB enhancements improve availability

Application Control Block Library (ACBLIB) online change (OLC) commit and /DISPLAY MODIFY ALL are changed to no longer treat messages on the local queues in a non-shared queue environment as work in progress for transactions indirectly affected by online change. This improves the usability of online change by increasing the chances that commit will succeed, especially for an ACBLIB-only online change.

ACBLIB Member Online Change (OLC) provides for individual ACBLIB members to be added or changed (though not deleted) without a library switch, which earlier was required for a full OLC. Only the resources associated with the change will be quiesced. This function coexists with existing full library switch OLC capability. This ACBLIB function makes online change for ACBLIB more usable and enhances availability.

Transaction Level Statistics Enhancements

- **Objectives**
  - Capture, accumulate, and record transaction level statistics for an individual Unit of Recovery (ie. commit scope) for MODE=SNGL transactions and for every message processed for MODE=MULT transactions.
  - Allow user to control whether or not transaction level stats are recorded.
- **Solution**
  - Provides a new optional log record to reflect each transaction
  - Implemented with a specification in a PROCLIB member that turns on the statistics for ALL transactions and programs.
  - Optionally, individual transactions or programs can be turned on/off with a type-2 command, requiring the Common Service Layer (CSL).
- **Value**
  - Provides more granular transaction information

Key Message: IMS Transaction Level Statistics provides more granularity of information

Transaction Level Statistics would provide a more granular layer of information related to transactions that are processed. Currently a record is written at the start and end of a scheduling cycle. This would add additional log records to reflect the messages that are processed within a commit scope. This is an option and could be used in a mode=sngl environment to write statistics for every transaction that is processed.

Transaction Level Statistics provide the user with the capability of logging application accounting information at the conclusion of each unit of work (commit) with logging done on a transaction by transaction basis at the discretion of the user. This provides a new option for obtaining application statistics for each unit of recovery. IMS will log the new records to reflect the messages processed within a commit scope. This eases operations and reduces customer/vendor usermods offering more granular information.

A new log record (X'56FA' record) is written to the IMS OLDS that records the stats for an individual transaction. Statistics logged will be those found primarily in the current X'07' record, but will contain counts for only events occurring within the scope of the unit of recovery.

User will be able to set a global system parameter, **TRANSTAT=Y|N**, which will turn on|off tran level stats for ALL transactions/programs.

User will control/display tran level stats using the following type 2 commands:

> **QUERY TRAN|TRANDESC|PGM|PGMDESC SHOW(TRANSTAT)** (will display the current setting of the TRANSTAT value for a specific transaction or program)
>
> **UPDATE TRAN|TRANDESC|PGM|PGMDESC SET(TRANSTAT(Y|N))**
>
> **CREATE TRAN|TRANDESC|PGM|PGMDESC SET(TRANSTAT(Y|N**

These commands may be used but they are not required. There is an execution time parameter that sets transaction statistics on or off. It applies to all transactions and programs. If you want to turn these statistics on or off for an individual transaction or program you must use a type-2 command. This requires CSL. If you wants statistics for all transactions and programs, you do not need to issue any commands and you do not need CSL.

Serviceability Enhancements
- Base Primitive Environment (BPE) External Trace

- **Audience**
  - ► IMS Common Service Layer/Shared Queues users
  - ► IMS Connect users
- **Objectives**
  - ► Currently customers have to take a console dump in order to look at the BPE traces for problem diagnosis
- **Solution**
  - ► Externalizing of BPE internal traces to external Generation Data Groups (GDG) data set thus providing ability to trace system over longer time periods
  - ► Logs existing BPE traces to external GDG data set
- **Value**
  - ► Customers are more likely to get diagnostic data the first time with fewer recreates

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Key Message: Among many enhancements to ease IMS serviceability is the BPE External Trace support

Base Primitive Environment (BPE) Trace Table enhancements provide for the contents of the BPE trace table to be written to external media to preserve them for improved serviceability and problem determination. The user will be able ro define the use of the external trace in the BPE configuration PROCLIB member. When BPE External Trace is used, trace records are written to a Generation Data Group (GDG). This provides the ability to trace events over longer periods of time and customers are more likely to get diagnostic data the first time with fewer recreates. You can now get all traces at once. This eases operations and serviceability.

IMS Abend Search and Notification

- Improve users self-sufficiency when an IMS failure occurs
- Quickly identify known problems (vast majority of failures have been previously reported)
- Automatic mechanism to notify system programmers of a system failure
- Direct and real time access to ABEND information and description
- Eliminate "know-how" in order to find a solution of a problem

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Key Message: Additionally to ease IMS serviceability is the IMS Abend search and notification facility

Abend Search and Notification support can reduce problem determination time by providing "real-time" automatic email notification that an event such as abnormal termination user/system abends has occurred. The email notification contains hyperlinks (URLs) to IBM-supplied Internet resources for understanding, analyzing and resolving problems. This function will not only automatically notify system programmers of a system failure, but also provide them direct, up to date, real time access to abend information and descriptions reducing the skill level necessary in identifying and finding solutions to problems, thus easing problem resolution and improving availability. A system programmer can e set up to get notification of problems (ie. It notifies you and helps you know where to get information).

Knowledge Based Log Analysis (KBLA) Migration/Coexistence Enhancements

- **Audience**
  - ► IMS Users of data contained in log records to diagnose and analyse problems, monitor the status of their systems, and to supply such information to the IBM service center.
- **Objectives**
  - ► Provide concurrent KBLA accessiblility for multiple IMS levels
- **Solution**
  - ► Provide migration panel for release compatibility
  - ► Provide multiple system support
- **Value**
  - ► Allows concurrent KBLA accessiblility for multiple IMS levels without any setup reconfiguration

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Key Message: The Knowledge-Based Log Analysis facility enhancements ease migration with diagnostics across multiple IMS levels.

KBLA lets you more easily look at logs and do dump formatting around it. It provides support for V10 changes and also supports multiple systems to ease set up and manageability. KBLA enhancements provide for the KBLA utility support of log record changes and the KBLA ISPF-environment to generate JCL to accommodate all levels of IMS and support multiple concurrent releases of IMS. This allows concurrent KBLA access for multiple IMS levels without any setup reconfiguration, easing operations.

KBLA support enhances the KBLA ISPF infrastructure to allow the user to select the IMS.SDFSRESL which contains the KBLA version appropriate for processing the selected log data set. This support ensures KBLA use of the correct log record DSECTS to process logs created with IMS V10 or V9, that the KBLA ISPF environment concurrently supports IMS V10 and V9 logs, and that concatenating a data set other than the

IMS.SDFSRESL associated with the selected release is made optional.

Additional Serviceability Enhancements

To ease problem determination and increase awareness of problems and their fixes:
- Dump address space selection enhanced to insure that all needed address spaces are dumped
- Shutdown trace to assist in analyzing hang-ups in the shutdown process
- Message Upgrade for DFS064 and DFS065 to include destination name
- QSCD Dump Formatting improvements
- LSMB Dump Formatting improvements
- Improved DFSERA30 formatting of split records

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Key Message: IMS provides even more serviceability enhancements

Additional Version 10 serviceability enhancements include dump address space selection enhanced to insure that all needed address spaces are dumped, Shutdown trace to assist in analyzing hang-ups in the shutdown process, Message Upgrade for DFS064 and DFS065 to include destination name, QSCD Dump Formatting improvements, LSMB Dump Formatting improvements, and Improved DFSERA30 formatting of split records. These items ease problem determination and increase awareness of problems and their fixes.

Scalability with Virtualization in Performance/Capacity/Availability/Recovery

Key Message: Scalability enhancements with Virtualization improve performance, capacity, availability and recovery. Scalability enhancements are also being provided to increase performance, capacity, availability and recovery,

IMS Parallel Recovery Control (RECON) Access Enhancements

- **Audience:** IMS Data Sharing users and Single IMS system users with batch jobs sharing the RECON data set

- **Objectives:** Reduce contention for the shared RECON data set

- **Solution:** Exploit DFSMS Transactional VSAM (TVS) to provide record level locking and logging for the RECON data set

- **Value:** Reduces RECON contention, transaction response time issues, unplanned IMS system quiesces for OLDS switches, and growth constraints

Key Message: IMS provides and continues to improve availability of the RECON data set

Today the RECON is serialized at the data set so one request is backed up behind another even if they want different records. TVS can help by providing for record level locking, IMS V10 provides Parallel Recon Access for jobs sharing the RECON dataset. Parallel Recovery Control (RECON) Access provides an option to use Record Level Sharing for the RECON via use of the Transactional VSAM (DFSMStvs). Serialization of access to the RECON at the data set level is replaced by concurrent processing of DBRC requests from multiple IMS systems, thereby reducing contention to the RECON data set. This provides the ability to improve transaction throughput and response time that will result from reducing or eliminating RECON contention. This could result in reduced or eliminated transaction response time issues, unplanned system quiesces for OLDS switches, and growth constraints. This enhances availability and recoverability in a Sysplex environment.

IMS would provide parallel access to the RECON, addressing RECON contention issues. DBRC requests from multiple IMS systems are processed concurrently. Record level sharing is implemented for the RECON. Data set level (or volume level) serialization is eliminated.

Transactional VSAM requires a coupling facility for locking and buffer caching and requires the MVS System Logger which uses a coupling facility for logging. 'Undo' logging provides backout capability for transactional processing. RRS (Resource Recovery Services) is used for commit processing/

Parallel RECON access requires new MVS operational procedures -- presents new failure scenarios

The objective is to eliminate performance bottlenecks caused by contention for the RECON. It exploits DFSMS Transactional VSAM (TVS) to provide record level locking and logging for the RECON data set. This eliminates or reduces transaction response time issues, unplanned IMS system quiesces for OLDS switches.

IMS Parallel Recon Access requires z/OS DFSMStvs, a separately orderable feature of z/OS V1.7 or later. Special bids will be considered for IMS customers using the Parallel Recon function, who do not already have DFSMStvs, to acquire DFSMStvs for use restricted to IMS.

IMS Database Recovery Control (DBRC) Application Program Interface (API) Enhancements

- **Audience**
  - Vendors and users who access data in the RECON data set
- **Objectives**
  - Provide users with a single release-independent interface to Recon
  - Provide a Recon Update function for users and programs
  - Enhance RECON security by limiting the level of access to individual users
- **Solution**
  - Add RECON update capability to the DBRC API by enabling applications to submit DBRC commands
  - Add READONLY access to the RECONs for DBRC applications and users of the DBRC utility
- **Value**
  - Architected interface to the DBRC Recon data set eases tool workload and V2V migration resulting from individually provided access to Recon information

IMS

IMS Control Region (DL/I Dep Regions, DBRC)

Program

DBRC API

RECON
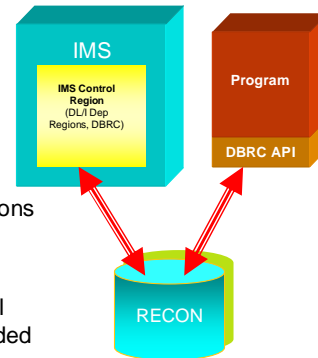
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Key Message: IMS provides and continues to enhance the DBRC Application Program Interface to ease Tools usage and migration with IMS

The IMS DBRC API, provided since V9, is being enhanced with V10 to address additional vendor and customer requirements to access the Recovery Control dataset with a single, standard, release-independent interface, providing the Recon Update function for users and programs.   This would ease access by vendor tools and ease version to version migration for customers using tools that interface the Recon. IMS Version 9 provided Query capability through the DBRC API. IMS V10 DBRC Application Programming Interface (API) enhancements allow the Recovery Control (RECON) data set to be updated as well as read, and to secure the RECON by limiting the level of access to individual users. This further enhances the API, which was first introduced in IMS V9 to provide users with a single release-independent interface to the RECON. These enhancements provide enhanced architected access to simplify vendor tooling and customer programming efforts, offering release independence, additional functionality, and eased usability and migration.

READONLY RECON data set access support removes the requirement that all users have CONTROL access to the RECONs. Users can now be assigned one of three levels of access - READ, UPDATE, or ALTER. READONLY access is supported by the DBRC Utility (DSPURX00 or DSPURXRT) as well as the DBRC API.

DBRC Time-stamp Precision

- **Objectives**
  - Because of the speed of today's processors, DBRC is recording more duplicate timestamps (log open, log close, allocation)
- **Solution**
  - Increase the precision of timestamps from tenths of a second to microseconds
    - Full migration to V10 (MINVERS=10.1)
- **Value**
  - Enhanced IMS reliability and availability

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Key Message: IMS enhancements provides for more DBRC Time-stamp precision

DBRC Timestamp Precision enhancements provides full DBRC support of timestamps with microsecond precision, reducing timestamp collisions, thus increasing reliability and availability. When comparing timestamps, uses the full timestamp at the micro second level, and not just only up to the .1 sec level of precision. This avoids collisions caused by having the same time due to lack of being at that level of precision. This provides for faster, less duplication in timestamp.

Utilities Enhancements

- Re-write Log Transaction Analysis and Statistical Analysis utilities to support Shared queues
- Improve the performance of HD Reorganization in the creation of the ILDS by avoiding CA and CI splits and observing VSAM free space specifications..
  - ► Exploit the use of Data Spaces to store the ILEs and sort them internally in ILK sequence.
  - ► Eliminate CA and CI splits by inserting the ILEs into the ILDS KSDS using sequential (load mode) processing
- Support Fast Replication copies and recoveries
  - ► Implement a DFSMSdss COPY interface to exploit fast replication
  - ► Implement a control statement-driven SET PATCH interface in Image Copy 2
- Enhance Sort in Change accumulation/Prefix resolution utilities
  - ► Allows more sort work datasets to be created and used by OEM sort programs that create UCBs below the 16MB line
  - ► The default sort core size of CORE=200K is now CORE=MAX

Key Message: IMS utilities are being enhanced

IMS Utilities support provides for including Shared Queues in the Log Transaction analysis and Statistical analysis utilities, thus providing additional information for managing these environments.

HALDB Indirect List Data Set (ILDS) Rebuild Utility enhancements improve the performance of the creation of the ILDS by avoiding Control Area (CA) and Control Interval (CI) splits and observing the VSAM free space requirements so that the ILDS can be provided for reorganization. by sorting Indirect List Entry (ILE) records in data spaces and inserting them into the ILDS sequentially, taking advantage of VSAM KSDS free space. Improves overall recovery time for recoveries requiring the ILDS to be rebuilt. Improves performance of subsequent off-line reorganization reloads using the ILDS with free space as input.

Image Copy 2 (IC2) enhancements includes support for the fast replication capability of Data Set FlashCopy on Enterprise Storage Servers (ESS) and SnapShot on RAMAC Virtual Array (RVA) DASD subsystems for database image copy/restore processing. Enhancements also includes an improved, statement-driven, interface of the SET Patch feature of DFSMSdss. And support is provided for recording alternative DB backup methods as concurrent/fuzzy user image copies. These items speed and improve recovery, by exploiting the latest storage technology and alternative/concurrent methods, and provide additional information to ease use.

Sort enhancements increase the core size available to OEM sort utilities called by IMS Change Accumulation and Prefix Resolution. The default is also changed. This allows more OEM Unit Control Blocks (UCBs) to be allocated below the 16M line, thus increasing the available number of sort work data sets, providing for efficiency in change accumulation and prefix resolution and improving performance.

Fast Path (FP) Expedited Message Handler (EMH) Enhancements

- **Objectives**
  - ► Fast Path response mode cannot be reset without an IMS restart or a complex sequence of commands
- **Solution**
  - ► Provide command support to reset Fast Path response mode
- **Value**
  - ► Ease of usability to free up hung terminals in Fast Path response mode

Key Message: IMS Fast Path EMH enhancements ease usability and enhance availability

Fast Path (FP) Enhancements include improved Expedited Message Handler (EMH) availability/usability items. FP EMH enhancements add command support to reset FP response mode for static nodes and dynamic users. This provides the capability to free up hung terminals in Fast Path Response mode without requiring an IMS restart.

Fast Path Data Entry DB (DEDB) Usability Enhancements

- **Objectives**
  - ► Start all areas of a DEDB after /DBR DB
  - ► UPD DB STOP (ACCESS) without unloading the randomizer
  - ► FP Shared VSO Private Pool during XRF tracking
- **Solution**
  - ► Start the DEDB and all of its areas using a single command
  - ► Provide an option not to unload the randomizer with new keyword on UPD DB
  - ► Automatically compress the Shared VSO Private Pool for XRF active systems, in addition to the earlier non-XRF and XRF Alternate systems
- **Value**
  - ► Eliminate the need to start the areas of a DEDB individually
  - ► Improve ECSA usage for XRF alternate systems

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Key Message: IMS Fast Path DEDB enhancements also ease usability

Fast Path (FP) Enhancements include increased buffers, and availability/usability items. The 64K DEDB buffer limit is removed. There is no longer a maximum for the number of buffers that can be defined for the DEDB buffer pool. Additional enhancements for the Data Entry Database (DEDB) users are the ability to start the DEDB and all of its areas with a single command and an option for not unloading the randomizer with UPD DB STOP access command. These eliminate the need to start the areas of a DEDB individually and improve ECSA usage. For the Virtual Storage Option (VSO) users, automatic compression of the Shared VSO private pool at XRF tracking is provided. Several smaller enhancements are provided -- QRY DB Enhancement to show the difference between /STO DB and /DBR DB. And OTHREADS increased to MAX PST. These items

enhance performance, capacity, usability, availability, and ease operations.

IMS Multiple Systems Coupling (MSC) Enhancements

- **Audience**
  - All MSC Users and those considering use of MSC
- **Objective**
  - Relieve bandwidth problems across the MSC network
  - Make 3 (Channel-to-Channel, Memory-to-Memory, VTAM) Link Protocols more efficient/dynamic
- **Solution**
  - Improve blocking technology for greater bandwidth across MSC links, exploiting DASD/Tape media concept blocking multiple records into single buffer
  - Dynamically display/query/change link buffer size from 160-32730 byte range to 1K-64K range
  - Support VTAM Generic Resources
- **Value**
  - Improve efficiency, availability, transaction performance and output message response times, easing use and reducing links required
  - Provide statistics to fine tune/analyze/improve link performance

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Key Message: IMS V10 provides MSC enhancements

The IMS Multiple Systems Coupling Facility (MSC) provides connectivity between IMSs. MSC would be enhanced for broader bandwidth. By using improved blocking technology, performance improvements and response times could result for transaction and output messages.

Multiple Systems Coupling (MSC) Bandwidth enhancements make use of an improved blocking technology to improve performance response times for transaction and output message throughput. Enhancements also allow for even larger link buffers with dynamic change of buffer sizes, inclusion of responses in the buffer, and sending it all with a single send/write. All partner systems need to be on V10 to make use of the increased buffers. Statistics are also provided to ascertain performance and make adjustments. These enhancements offer more efficiency, better hardware utilization, improve performance, require less links and make this environment easier to manage.

And support is being provided for MSC use with VTAM Generic Resources. This upgrades the existing terminal and ISC VGR to support MSC in a VGR local mode only, which has some restrictions. This provides a single view to remote IMS's, allows IMSplex MSC definitions to be cloned, and remote IMS can use a single link

definition to connect to any IMS in the IMSplex

Virtual Storage Constraint Relief (VSCR) Enhancements

- **Objectives**
  - Reduce CSA storage usage by IMS
  - DIRCA storage constraint relief
- **Solution**
  - Move DFSEPB to ECSA
  - New option to allow user to request DIRCA blocks allocated in 31 bit storage
  - Moved IMS modules from 31 bit common to private
- **Value**
  - Reduces 24-bit CSA Usage
  - Allow CCTL (CICS) users with AMODE 31 applications to use the larger PSBs without putting further pressure on below the line storage

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Key Message: IMS provides enhancements for Virtual Storage Constraint Relief in the CSA

IMS V10 continues to provide VSCR enhancements to reduce 24 bit CSA usage by moving control blocks and modules.

Virtual Storage Constraint Relief enhancements include providing a new option to move blocks from Below the line to above the line private, allowing CICS and Open Database Access (ODBA) applications to use the larger Program Specification Blocks (PSBs) without putting further pressure on below the line storage. This provides increased capacity. It relieves the limits on the number of CICS threads due to the number of PCBs in the PSB. This allows more threads on CICS systems. It is an option that needs to be requested.

As an example for using this, you could build PZPXX member and specify parameters on the DFSPRP macro, which builds connections on the DRA Connection table. On the DFSPRP macro, specify parameter PCBLOC =31/24 for DFSPZPAX (CCTL) or DFSxxxxO (ODBA). This allows an increase in the number of DBCTL threads that can be run..

Large Sequential Data sets >64K tracks

- **Audience**
  - ► IMS users with the need for sequential OSAM or GSAM/BSAM data sets that have the potential to be larger than 65535 tracks on a single volume
- **Objectives**
  - ► Support the changes made in z/OS 1.7 to remove the size limit of 65535 tracks (4369 cylinders) per volume for sequential data sets for BSAM, QSAM and EXCP
- **Solution**
  - ► Modify existing IMS code to support a new BLOCKTOKENSIZE=LARGE parameter of the DCBE
- **Value**
  - ► Reduce the need to use multiple volumes for single data sets

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Key Message: IMS Large Sequential Data Set support reduces the need for multiple volumes for single data sets Large sequential data set enhancements support z/OS changes to remove the size limit of 64K tracks per volume for sequential data sets for BSAM, QSAM, and EXCP. This reduces the need to use multiple volumes for single data sets and relieves capacity restrictions.

Application Control Block Generation (ACBGEN) in 31-Bit

- **Audience**
  - IMS installations with PSBs that contain more than 500 PCBs
- **Objective**
  - ACBGEN to build PSBs with more than 500 PCBs ABENDs with S80A-RC10 in an environment wherein private storage is 8MB below-the-line
- **Solution**
  - Majority of work storage to build the blocks for PSB/DBD is above-the line
- **Value**
  - This also satisfies, as documented, that PSBs can have 2500 PCBs

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Key Message: IMS ACBGEN can now be increased in size

Application Control Block generation (ACBGEN) 31-bit enhancements utilize storage above the line to address problems with insufficient storage "below the line" that might occur when building an ACB with a large number of PCBs. PSBs can now have 2500 PCBs. This increases capacity and availability. This item is also being provided through the IMS V9 service process.

IMS V10 Prerequisites

- **IMS V10 Minimum Release Levels**
  - ► z/OS V1R7 (5694-A01)
    - – RACF (included in separately orderable SecureWay Security Server), or equivalent, if security is used
    - – High Level Assembler Toolkit (5696-234)
- **Additional key prerequisites for optional line items:**
  - ► IMS Parallel Recon Access
    - – z/OS 1.7 DFSMStvs (separately orderable feature)
  - ► IMS Image Copy 2 DFSMS Fast Replication support
    - – z/OS 1.8
    - – Hardware: IBM ESS w/Flash copy or IBM RAMAC RVA w/Snap Shot
  - ► IMS XML Adapter and SOAP Gateway
    - – WDz (2 Limited use licenses included for this. Ts&Cs in WDz license)
  - ► Additional individual functions and connectivity requirements in the IMS V10 Release Planning Guide

> **IMS V10 Runs only on 64 bit Processors (z800,z900, z990)**

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Key Message: IMS has some prerequesites

IMS V10 operates under z/OS V1R7(5694-A01) configurations, or subsequent versions, releases and modification levels unless otherwise stated, and requires the following minimum version, or release or modification levels:

z/OS V1R7 (5694-A01) with DFSMS (a base element of z/OS V1R4).

RACF (included in a separately orderable SecureWay Security Server feature of z/OS V1R4), or equivalent, if security is used.

IBM High-level Assembler Toolkit (5696-234), a separately orderable feature of z/OS.

IMS also operates in a virtual machine (VM) under control of z/OS V1R7 and is intended for use in a customer program development, testing and non-XRF production environment with some restrictions.

IRLM 2.2 supports IMS V10.

IMS Parallel Recon Access requires z/OS DFSMStvs, a separately orderable feature of z/OS V1.7 or later. Special bids will be considered for IMS customers using the Parallel Recon function, who do not already have DFSMStvs, to acquire DFSMStvs for use restricted to IMS.

IMS Image Copy 2 DFSMS Fast Replication support requires z/OS 1.8 and either the IBM Enterprise Storage Server (ESS) and its flash copy function, or the IBM RAMAC Virtual Array (RVA) hardware and its Snap Shot function.

IMS V10 Integrated Connect XML Adapter support for COBOL, together with the IMS SOAP Gateway, requires WebSphere Developer for z (WDz). Two limited usage licenses of WDz are being provided with IMS V10 for this support of Web Services. Terms and conditions are outlined in the WDz licensing.

IMS V10 runs only on 64 bit IBM processors running in z/Architecture mode. ESA mode is not supported by V10. For a list of z machines see www.ibm.com/systems/z/hardware.

Additional line item requirement information is provided in the *IMS V10 Release Planning Guide* at *http://www.ibm.com/ims*

Compatibility and Migration

- Migration/Coexistence support provided from IMS V8 and IMS V9
- IMS V8 was the last release to support the IMS V5 SDEP CI Format
- IMS V9 is the last release to support
  - Security Maintenance Utility (SMU) - customers using SMU should migrate to RACF or an equivalent product
  - BTAM - customers using and user code/tools dependent on BTAM should migrate to VTAM or TCP/IP
  - MSC User routing exits (DFSCMTR0, DFSCMLR0, DFSCMPR0, and DFSCPRT0) could be used. DFSMSCE0 must now be used.

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Key Message: IMS V10 has these compatibility and migration considerations

IMS V10 is upwardly compatible from previous versions, allowing existing applications and data to be used without change. Migration and coexistence support is provided for IMS V8 and V9 with V10. Review the Preventative Service Planning (PSP) information for further, current details.

IMS V8 was the last release to support the IMS V5 SDEP CI Format.

And IMS V9 is the last release to support:

Security Maintenance Utility (SMU) - customers using SMU should migrate to RACF or an equivalent product.

BTAM - customers using and user code/tools dependent on BTAM should migrate to VTAM or TCP/IP

MSC User routing exits (DFSCMTR0, DFSCMLR0, DFSCMPR0, and DFSCPRT0) could be used.

DFSMSCE0 must now be used.

Packaging

IMS V10 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 *
HIR2102	IRLM 2.2 *

* Packaged with IMS Database Manager, IMS Transaction Manager, or both

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Key Message: IMS has one product number with a number of components.

IMS is a single product number with 5 separately orderable features:

IMS Transaction Manager (IMS TM)

IMS Database Manager (IMS DB)

IMS Extended Terminal Option (ETO) which prereqs IMS TM

IMS Remote Site Recovery Record Level Tracking (RSR RLT) which prereqs IMS TM or IMS DB

IMS RemoteSite Recovery Database Level Tracking (RSR DLT) which prereqs IMS DB and RSR RLT

IMS also contains these components, which are shipped as part of IMS TM or IMS DB

IMS System Services

IMS Java

IMS IRLM 2.2

IMS: Providing Leadership in the Marketplace

**Simplifying Information Integration
through Connectivity and New
Application Development**

**Easing Manageability
Reducing the Cost of
Computing**

**Enabling System Scalability
with Availability/Recoverability
Performance/Capacity**

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Key Message: IMS continues to provide leadership in the marketplace.
The on demand business cycle focuses on leveraging your existing knowledge and information and transforming your core business processes, managing technology in building new applications, and providing organizational efficiency. In all this you need to be running a high performance, available, scalable, secure environment. You use existing data to sharpen decision making and responsiveness. You prioritize which processes and applications need to be extended. You build new reusable applications integrated with existing ones. And you maximize deployment on secure platforms. And for each of these elements of the cycle, we are providing you the IMS solutions that you will need to help make all this work easily. Built on the power of the z, billions of dollars worth of IMS applications have been developed to run your mission-critical work in a safe environment with IMS. If you have money in a bank, feed, house, clothe your family, or protect them with health or insurance services, use educational or government information, etc., most of the information about this is kept securely in IMS databases, accessed through high performance IMS transactions and rapidly being processed across the Internet for wider use. IBM will continue to invest heavily in IMS to enhance IMS to meet the stringent requirements of its customers -- to help them transform their core business processes with emerging technologies using IMS. Exploiting the latest in technologically-advanced hardware and software, IMS will help customers achieve new levels of price-performance and, at the same time, leverage their exiting investment in skills and applications for information access across the Internet.