



IBM. **Information Management** software

Information Management System (IMS), Version 10

Highlights

- **Build robust on demand business applications with minimal time and effort**
- **Maintain a scalable, available and easily manageable environment**
- **Leverage open standards and industry-leading application development and connectivity capabilities to integrate across and beyond your enterprise**
- **Ease installation and minimize outages through robust autonomic capabilities**
- **Leverage virtualization capabilities to increase your flexibility and optimize performance, capacity, availability and recovery**

Faced with the fast-changing demands of an evolving on demand business environment, you want to ensure your database and transaction management system can support the challenges of high-volume, Web-based processing. IBM Information Management System (IMS™) is a robust transaction and hierarchical database management system with a long-standing reputation for superior availability, performance, capacity and integrity for critical online data and applications. IBM IMS includes two major components — the IMS Database Manager (DB) and the IMS Transaction Manager (TM).

With Version 10, IBM offers enhancements to both major components to help ensure you have the growth, availability and systems management newer environments and cost measures require.

IMS DB

- XQuery and broadened Java™ / XML tooling to ease development and integrate/open access
- Simplified, dynamic resource definition, eased operations, systems management, security and serviceability
- Parallel Database Recovery Control, Fast Path and utilities enhancements for improved scalability

IMS TM

- Callout, Web services and other connectivity enhancements to integrate/open access
- Simplified dynamic resource definition, eased operations, systems management, security and serviceability
- Systems coupling bandwidth, Fast Path and utilities enhancements for improved scalability

Integrates with open access through new application development and connectivity features

To help manage the challenges of cross-enterprise information exchange, many organizations are moving beyond traditional models of inflexible business processes to smaller, more accessible and reusable components known as services. In contrast to a rip-and-replace approach, a service-oriented architecture (SOA) makes maximum use of new and existing IT assets. Many of the newest enhancements in IMS Version 10 are designed to smooth your path to SOA through the ability to integrate data more easily. In addition, new user-friendly interfaces help speed application development and increase programmer productivity.

IMS Database Manager integration/open enhancements

- Full XQuery support.** Supported through the existing IMS JDBC interface, IMS Version 10 provides access to IMS Full Function data, including new IMS XML data through support for standard XQuery expressions. By doing so, you can open up IMS to the emerging market of off-the-shelf, third-party tools, using a standard shareable integration point between IMS and other industry databases.
- IMS Java library support.** Enhances the IBM DB2® result sets and GSAM usage, enabling you to return IMS data to the stored procedure client encapsulated within a DB2 result set. The conversion to the DB2 result set is handled by the Java libraries. The Java libraries also support GSAM databases consistent with other IMS database types — enabling virtually all 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.

- DLIModel utility enhancements.** To simplify IMS metadata generation, the DLIModel utility now provides metadata generation support for GSAM databases. The DLIModel graphical user interface (GUI), an Eclipse plugin, provides a user-friendly interface to view and generate IMS Java metadata classes, IMS XML Schemas (with new annotations for XQuery support) and DBD or PSB XMLs. It fully supports the parsing of Program Specifications Blocks (PSBs) and Database Definitions (DBDs), including GSAM, without having to write program control statements. It also supports the ability to import COBOL Copybook without first having to convert it to COBOL XMLs.
- XML database mapping enhancements.** Enables expanded mappings between new or existing IMS databases and visualized XML documents or collections to widen the scope of supported XML documents for new IMS databases, and to ease disparate data integration across the enterprise.

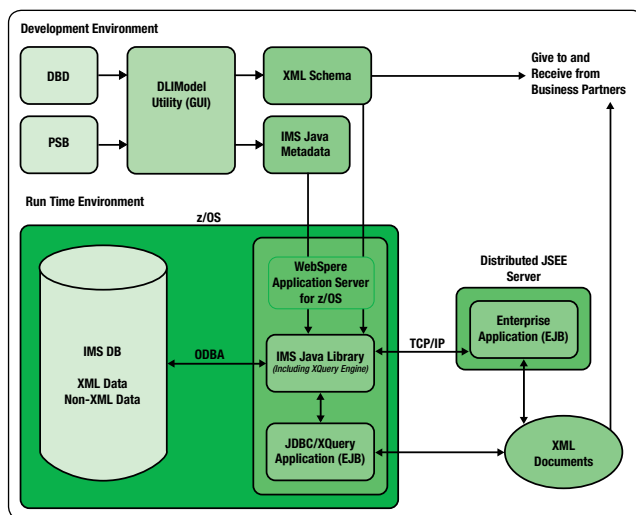


Figure 1: XQuery access to IMS.

IMS Transaction Manager integration/open enhancements

- *XML Adapter support for COBOL.* Together with the IMS SOAP Gateway and IBM WebSphere® Developer for z (WDz), the XML Adapter support for COBOL enables reuse of IMS applications as Web services, leveraging open standards and utilizing flexible tooling support. It also provides IMS transaction interoperability with client applications, independent of location, programming language and platform, as well as HTTPS/SSL security enhancements.
- *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 (e.g., a Web service or J2EE™ 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.
- *IMS SOA Composite Business application support.* IBM is providing next-generation business integration process to integrate together the J2EE resources, services and activities (like user interventions), based on Web Services with the Business Process Execution

Language (BPEL). This extends existing IMS 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.

- *MFS Web support.* Provides access to existing IMS applications from IBM WebSphere Application Server environments to help protect your existing investments. MFS Web services enhancements expose attributes and extended attributed fields for Web services applications. MFS Web enablement now includes access from IBM WebSphere Application Server for z/OS®, in addition to Microsoft® Windows® and IBM AIX®. Customizable display enhancements include drop-down list boxes and infopops on familiar look-and-feel 3270 Web pages.
- *IMS TM Resource Adapter (IMS Connector for Java) PL/I application support.* Allows IMS PL/I applications to be enabled as Web services without IMS application changes through IBM Rational® Application Developer tooling and WebSphere Application Servers.

- *Multiple Systems Coupling (MSC) VTAM Generic Resources (VGR) support.* Enables the remote IMS to use a generic resource node name to communicate to any IMS within an IMS Sysplex through the MSC facility, thereby simplifying connectivity.
- *APPC enhancements.* Provide support for timeout granularity in seconds, and Local Logical Unit (LU)s, enabling you to specify a Local-LU on the descriptor level.
- *Open Transaction Manager Access (OTMA) autonomic enhancements.* Enables you to activate message flood detection by suppressing input messages if needed, detecting wait synchpoint hangs, taking the time-out action if needed, to start/stop members for suppressing input, and resume acceptance of new input transactions. Member-level security gives each member their own security level, along with additional information on DISPLAY commands. OTMA Callout Descriptors identify alternate destinations and allow customers to define routing information, eliminating the need to code OTMA routing exits to perform these tasks.
- *Security improvements.* Includes RACF error message reduction, password changes, faster auditing and support for mixed-mode and mixed-case passwords.

Eases manageability through autonomic computing capabilities

With IMS Version 10, systems manageability continues to evolve. New autonomic computing enhancements for IMS TM and IMS DB enable you to manage operations more effectively, while reducing system generation time and effort. Agile installation options and administration features help you easily administer, deploy and manage operations from a single point of control to improve visibility and reduce costs. And through the ability to quickly pinpoint and resolve potential problems, IMS Version 10 helps keep your critical applications up and running — with minimal intervention on your part.

Dynamic resource definition and management enhancements

- New commands enable you to dynamically add, change and delete MODBLKS resources (databases, programs, routing codes, and transactions) without having to go through the IMS system definition or online change (OLC) process. QUERY commands display both the definitional attributes and the status of MODBLKS resources, while EXPORT and IMPORT commands save and restore resource definitions to and from an external data source.

- In addition to queueing, you can now use the Destination Creation user exit (DFSINSX0) to create transactions for scheduling. If the program associated with the transaction to be created does not exist, you can also use the Destination Creation exit to create the program.
- You can dynamically update and query Multiple Systems Coupling (MSC) resources.
- A new IMS TSO SPOC user interface simplifies management of IMS resources, enabling you to add, change and delete resources quickly and easily.

Systems and operations management enhancements

- New operations management functions leverage the MVS logger to provide an input/output audit trail for IMS commands entered from a single point of control (SPOC). You can configure it in one of two ways: where each OM uses its own log, or where all OMs use the same merged log for all SPOC activity. These enhancements also use the SPOC to display unsolicited messages and use the OM to track commands/responses.

- New systems management functions let IMS maintain global command status for databases, areas and transactions in the IMS Resource Manager Resource Structure that can be applied to new or restarting IMSs in Sysplex that were down when the command was issued. This provides an autonomic provision of single system image among IMSs in a Sysplex. Other enhancements enable users to control when messages are logged to the secondary master, queue messages and enter transactions from the OM Application Program Interface (API).
- Sysplex Serialized Program Management (SSPM) enhancements utilize the Resource Manager (RM) to manage serial program scheduling across the IMS Sysplex in a shared queues environment to ensure only one program runs at one time in the IMS Sysplex.
- Enterprise Workload Manager (EWLM) support provides workload management tracking across environments to integrate IMS with EWLMs end-to-end workload management. This enhancement flows EWLM Correlators with an IMS transaction, using an enhanced version of the existing workload manager services to pass correlators back to the EWLM.

- Transaction Level Statistics enable you to log application accounting information at the conclusion of each commit with logging done on a transaction-by-transaction basis to provide a new option for obtaining application statistics for each unit of recovery. IMS logs the new records to reflect the messages processed within a commit scope to ease operations, offering more granular information.
- Selectively Display System Parameters provide 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 to help determine actual values for optimal configurations and user response times.
- Support for new IMS functions with Installation Verification Program (IVP) capabilities provide 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 to contain the necessary steps to configure, deploy and run the applications. This greatly simplifies the necessary upfront work to verify that the Java workload can be scheduled in an IMS-dependent region.

- 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.

Serviceability enhancements

- BPE Trace Table enhancements enable the contents of the BPE trace table to be written to external media to preserve them for improved serviceability and problem determination. You can set trace parameters in the BPE configuration PROCLIB member, enabling you to trace your system over longer periods of time and to increase your likelihood of obtaining the right diagnostic data the first time.
- Abend search and notification support helps reduce problem determination time by providing "real-time" automatic e-mail notification that an event such as abnormal termination user/system abends has occurred. The e-mail notification contains hyperlinks to IBM-supplied Internet resources for understanding, analyzing and resolving problems. It not only automatically notifies system

programmers of a system failure, but provides direct, up-to-date, real-time access to abend information and descriptions.

- KBLA enhancements provide 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 the need to set up reconfigurations.
- Additional trace, dump and message upgrade and formatting improvements.

Delivers increased scalability while enhancing performance levels

You've long been accustomed to the high levels of dependability IBM IMS offers. The consistent, leading-edge performance and scalability of IMS can help you maintain high responsiveness to constantly changing environments and reach new levels of availability. Through expanded database support, you can help ensure continuous options of your critical applications. Version 10 delivers key enhancements to improve transaction throughput and response time, thereby enhancing availability and recoverability in a Sysplex environment. These enhancements provide improved architected access to simplify vendor tooling and customer programming efforts, while promoting release independence, greater ease of use and a smooth migration.

IMS Database Manager scalability enhancements

IMS Version 10 delivers *Database Recovery Control (DBRC) enhancements* including:

- Parallel Recovery Control (RECON) access provides an option to use Record Level Sharing for the RECON via use of the Transactional VSAM (DFSMSStvs). This option removes the serialization of access to the RECON at the data set level, which allows for concurrent processing of DBRC requests from multiple IMS systems.

This strategy helps reduce or eliminate transaction response time issues, unplanned system quiesces for OLDS switches and growth constraints.

- RECON Data Set includes READONLY access for the DBRC API and the DBRC Utility, DSPURX00.
- DBRC Application Programming Interface (API) enhancements provide applications with RECON update and database authorization capabilities, and extend DBRC security to DBRC API requests.
- DBRC Timestamp Precision enhancements provide full DBRC support of timestamps with micro-second precision to reduce timestamp collisions.

IMS Version 10 also includes a number of *database utilities and log improvements* to promote greater ease of use:

- Image Copy 2 (IC2) enhancements include 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 include 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.

- Sort enhancements increase the core size available to OEM sort utilities called by IMS Change Accumulation and Prefix Resolution. The default is also changed to allow more OEM Unit Control Blocks (UCBs) to be allocated below the 16M line, thus increasing the available number of sort work data sets, and enabling greater efficiency in change accumulation and prefix resolution.
- 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. It sorts Indirect List Entry (ILE) records in data spaces and sequentially inserts them into the ILDS, taking advantage of VSAM KSDS free space. These improvements increase overall recovery time when the ILDS has to be rebuilt and improves performance of subsequent off-line reorganization reloads using the ILDS with free space as input.

IMS Version 10 includes *additional Database Manager scalability enhancements*:

- Fast Path enhancements include the elimination of a maximum number of buffers that can be defined for the DEDB buffer pool. Additional enhancements for Data Entry Database (DEDB) users include the ability to start the DEDB and all of its areas with a single command. There is also an option for not unloading the randomizer when /DBR DB is used to eliminate the need to start the areas of a DEDB individually and improve ECSA usage. For Virtual Storage Option (VSO) users, automatic compression of the SVSO private pool at XRF tracking items helps enhance performance.
- Virtual Storage Constraint Relief enhancements provide a new option to move blocks from CSA to 31-bit storage, allowing applications to use the larger Program Specification Blocks (PSBs) without putting further pressure on below-the-line storage.
- 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 to reduce the need to use multiple volumes for single data sets and to relieve capacity restrictions.

- 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.
- Application Control Block Library (ACBLIB) online change (OLC) commit and /DISPLAY MODIFY ALL 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, increasing the chances that commit will succeed.
- ACBLIB Member Online Change (OLC) provides for individual ACBLIB members to be added or changed (though not deleted) without a library switch, which used to be 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.

IMS Transaction Manager scalability enhancements

- Statistics Utilities Shared Queues support includes Shared Queues in the Log Transaction analysis and Statistical analysis utilities, thereby providing additional information for managing these environments.
- Fast Path (FP) enhancements include improved Expedited Message Handler (EMH), increased buffers and additional availability/usability items. FP EMH enhancements add command support to reset FP response mode for static nodes and dynamic users to free up hung terminals in Fast Path Response mode without requiring an IMS restart.
- Multiple Systems Coupling (MSC) Bandwidth enhancements make use of an improved blocking technology to increase performance response times for transaction and output message throughput. Enhancements also allow for larger link buffers with dynamic change of buffer sizes, inclusion of responses in the buffer, and sending it all with a single send/write. Detailed statistics help you ascertain performance and make adjustments.

For more information

To learn more about how IBM IMS Version 10 can help you deliver Information on Demand with improved response time and increased availability, call your IBM representative or IBM Business Partner, or visit ibm.com/ims.



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09-06
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