



IBM IMS 12 Transaction and Database Servers deliver savings you can count on

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At a glance

IMS™ 12 Database Manager (IMS DB) enhancements

- Broadened Java™ and XML support and tools can ease IMS development and access to IMS data.
- IMS Fast Path Buffer Manager enhancements utilize 64-bit storage to improve availability and overall system performance.
- Full Function Dynamic Buffer Pool support, centralized repository support, and enhanced commands simplify operations and improve availability.
- Extended Address Volume (EAV) support, Database Recovery Control (DBRC), Fast Path, and Full Function DB enhancements relieve some capacity constraints.

IMS 12 Transaction Manager (IMS TM) enhancements

- IMS Connect, the TCP/IP gateway to IMS transactions, operations, and data, offers improved IMS flexibility, availability, resilience, and security.
- The Multiple Systems Coupling (MSC) TCP/IP link enhances bandwidth, improving performance.
- Broadened Java and XML tooling eases IMS application development and connectivity, and enhances IMS web services to assist developers with business transformation.
- Enhanced commands, Shared Queues Cross-Coupling Facility (XCF), and centralized repository support simplify operations and improve availability.

For ordering, contact your IBM® representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: LE001).

Overview

IMS is IBM's high-performance application and data server for IBM System z®. No other solution offers the combination of extremely high performance, scalability, rock-solid reliability, and runtime efficiency. When it comes to running core applications that are at the heart of business processing, most large corporations worldwide continue to depend on IMS.

Today's enterprise IT needs are more closely tied to the business than ever before. The business requires efficiency to meet the cost challenges and responsiveness demanded by the global economy. Enterprise IT must support growth, allowing the business to rapidly develop new products and services to remain competitive while at the same time increasing productivity and flexibility on demand. Business today

also requires IT systems to be resilient, helping reduce business risk and helping the business to comply with regulations and business processes.

IMS and IMS tools continue to evolve to provide value and meet these needs for enterprise customers. They have provided investment protection for four decades.

IMS provides unmatched capabilities to address your on demand business needs through enhanced integration, openness, manageability, and scalability.

IMS 12 benefits include:

- Integration and open access improvements provide you with flexibility and support your business growth requirements.
- Manageability enhancements help you optimize system staff productivity by improving ease of use and autonomic computing facilities, while also providing increased availability.
- Scalability improvements have been made to the well-known performance, efficiency, availability, and resilience of IMS by exploiting 64-bit storage.

IMS includes many additional features and improvements that along with the System z platform will help you meet your IT and enterprise data center cost challenges, as well as efficiency, resilience, and flexibility needs.

To learn more about IMS products and tools, visit

<http://www.ibm.com/ims>

Refer to the Software Announcement [210-315](#), dated October 05, 2010.

Key prerequisites

IMS 12 can be used with all IBM processors capable of running z/OS® (5694-A01) V1.11, or later, and supports the Long Displacement Facility of the z/Architecture®. Additional prerequisites exist for specific IMS 12 functions.

Planned availability date

October 28, 2011

Description

Integrated and open access for simplified application development and deployment

Enhanced IMS TCP/IP communication

IMS TCP/IP communication has been enhanced to enable IMS systems to communicate directly with other IMS systems across a TCP/IP connection, eliminating the maintenance cost, pathlength hops, and complexity associated with routing TCP/IP communications between IMS systems through a third-party TCP/IP gateway solution. IMS to IMS TCP/IP communication is supported by IMS Connect and can be used by both the Multiple Systems Coupling (MSC) and Open Transaction Manager Access (OTMA) functions of IMS.

IMS Connect, the integrated TCP/IP server for IMS, manages the TCP/IP connections and protocols for IMS to IMS TCP/IP communications and has been enhanced to support direct TCP/IP connections between IMS Connect instances. Each defined TCP/IP connection can be used either by MSC or OTMA. IMS Connect has been enhanced to support MSC links. Communications between IMS Connect and MSC is managed by the Structured Call Interface (SCI) of the Common Service Layer (CSL). IMS Connect support for OTMA TCP/IP communications leverages existing support

for OTMA and introduces a few changes to the configuration of IMS Connect support for OTMA.

MSC has been enhanced to support a new TCP/IP-type MSC link. The TCP/IP-type MSC links support the sending and receiving of transaction messages and their responses. Depending on installation variables, the TCP/IP-type MSC link can provide increased bandwidth over VTAM-type MSC links and therefore improved performance. The configuration and operation of MSC TCP/IP links are similar to that of MSC VTAM® links, and both link types can coexist and be used as backup to each other to help availability.

MSC TCP/IP also provides support for generic IMSIDs, similar to that for MSC VTAM Generic Resources (VGR) and USERVAR support. This simplifies communicating to an IMS Shared Queue IMSplex from IMSs outside the IMSplex. This also enables use of a common, generic IMSID by IMS eXtended Recovery Facility (XRF) active and alternate IMSs.

OTMA has been enhanced to support sending transaction messages from application programs running in a dependent region across a one-way TCP/IP connection to another IMS system for processing. To simplify the definition of remote IMS systems as the TCP/IP destinations for OTMA transaction messages, the OTMA destination descriptor has also been enhanced to enable the easy specification of the required parameters.

To ease operational support for IMS to IMS TCP/IP connections, new IMS type-2 commands, as well as enhanced IMS Connect WTOR and z/OS MODIFY commands, are provided.

IMS Connect type-2 Query and Update commands are also added, entered through the IMS Operations Manager (OM) in support of IMS Connect resources, to allow wildcards and filters to be issued through the OM API. Type-2 command support for IMS Connect resources includes alias, client, converter, datastore, IMSplex, Link, MSC, ODBM, Port, Racfid, RmtIMSCon, Sendclnt, and UOR. This command support improves IMS operations and eases use in a production environment.

Additional IMS Connect enhancements enable customers to use IMS Connect more easily while providing improved performance and diagnostics. These enhancements can help reduce costs of RACF® security, provide RACF-specific return codes for security errors, provide new trace points for the Recorder trace, refresh XML converters, identify clients hung in partial read status, eliminate the requirement for customer assemble and link of supplied exits, and expand CM0 ACK Nowait to roll-your-own (RYO) clients.

- Send only with ACK for Callout provides an outside server program confirmation that IMS has received their response message.
- RACF reason codes provide additional specific reason codes for various security errors. This provides for better problem analyses where previously userid authentication errors return RSM RC=04 RSN=28x/40 and needed specific error differentiation: invalid userid, invalid pswd, expired pswd, userid revoked, and so on.
- RACF Userid Caching enhances performance, reduces MIPs.
- XML Converter Refresh provides a command to refresh XML Converter without IMS Connect restart. SOAP Gateway XML Converters are loaded in the IMS Connect address space. Without this, once a converter is used, subsequent changes to the converter required IMS Connect be restarted. This provides ease of use and enhances availability.
- Load Modules for Exits provides load modules for HWSUINIT, HWSJAVA0, and HWSSMPL0/1. This eases use, where previously many customers using provided exits had to assemble and link-edit them before use.
- Commit Mode 0 (CM0) ACK NoWait for RYO clients extends the NoWait option to RYO clients by eliminating their need to receive a timeout after the ACK. This would increase throughput and enhance performance.
- Recorder Trace has been enhanced to capture message data at new trace points: immediately after receiving messages from either a TCP/IP connection or from OTMA through the Cross Coupling Facility (XCF), and immediately before sending

messages either on a TCP/IP connection or to OTMA by way of XCF. The new trace points make it easier to identify whether a problem with a message is occurring in IMS Connect or elsewhere, and can reduce the likelihood that a TCP/IP packet trace will be required. The additional trace records can be enabled by issuing an existing Base Primitive Environment (BPE) command enhanced to support this function.

- Partial Read Status enables IMS Connect, while reading or waiting for input messages from a client, to display the status of the client connection as READ. This provides for easy message length error detection, and corrective action, if required.

Additional OTMA and APPC enhancements

Open Transaction Manager Access (OTMA)/Application Program-to-Program Communication (APPC) Synchronous Shared Queues support using XCF provides an option to communicate between the front-end IMS and the back-end IMS for the shared queues transaction for improved performance, simplicity of the synchpoint process, and resiliency, without using Resource Recovery Service (RRS). This new IMS option supports OTMA Commit Mode 1 (send-then-commit) and APPC synchronous transactions with Synch level=None/Confirm transactions running in the shared queues environment. This capability removes the RRS dependency for Synch level NONE and CONFIRM transactions. This enables growth of IMS Sysplex workload for service-oriented architecture (SOA) applications. This provides a simplified solution, using IMS instead of RRS as the synchpoint coordinator for shared queues transactions.

OTMA Access Control Environment Element (ACEE) enhancements reduce the ACEE storage needed to run IMS and help provide an improved security environment for running OTMA transactions. The Common OTMA ACEE Reduction/Hash Table for Multiple clients creates one RACF ACEE for a user and shares it for all of the OTMA clients. Previously, multiple RACF ACEEs for the same user could be created and cached multiple times (one for each OTMA client) in an IMS Control region. Storage consumption for RACF ACEE for users would be decreased, and the new maximum ACEE aging value of 99,999 seconds has been introduced with this enhancement. This can reduce storage requirements, improve security, ease capacity constraints, and help maintain high availability.

OTMA provides a new option for the input commit-then-send (CM0) message to request an IMS DFS2082 message when the IMS transaction does not send back an IOPCB reply. This eases the OTMA send-then-commit (CM1) to CM0 application conversion and reduces the unnecessary timeout in the remote applications, thus removing a performance impact for a remote application waiting for a timeout before continuing to the next request.

IMS APPC support provides a new return code on the DFSLUEE0 user exit to inform IMS to discard an asynchronous output message if IMS cannot deliver it, rather than to have IMS put the message back on the queue, thus enhancing availability.

IMS TM Resource Adapter (RA) enhancements

IMS TM RA enhancements further expand environment usage ease deployment, management, availability, security, and use, with support for:

- IBM WebSphere® Application Server V8 and the WebSphere Application V8 Resource Workload Routing function, which enables applications to more easily recover from resource outages without requiring the application to embed alternate resource and configuration information
- Requesting DFS2082 messages for CM0 interactions
- IMSActivationSpec use with Multiple Datastores, such that a single Message Driven Bean (MDB) can be used to pull callout messages from one IMS datastore
- Enhanced Callout reconnect
- IBM WebSphere Application Server Community Edition (CE)
- Limited non-IBM Java Enterprise Edition (EE) Application server use
- RACROUTE VERIFY Return code for RACF security failures

WebSphere Application Server CE and non-Java EE server are being provided through the IMS 12 service process.

WebSphere Application Server V8, Callout reconnect, and non-IBM Java EE application server support are also being provided through the IMS 11 Service process.

IMS Universal Driver enhancements

The IMS Universal drivers are enhanced to support variable-length IMS database segments, two new datatypes (arrays and structs), and segment maps, which are different cases (sets of fields) within a segment where each case is only valid for a unique value of the map's control field. These enhancements provide further database simplification and flexibility with a more robust solution for all database segment types, an increased range of datatypes that the drivers can manage themselves, and richer support for field redefines.

Additional IMS 12 integration items also being provided through the IMS 11 service process

OTMA and Connect enhancements for Callout messages include Delayed ACK and TPIPE Cleanup support. Delayed ACK enables OTMA to respond to a late ACK so Connect can inform the client properly. TPIPE cleanup enables IMS to remove transaction pipes after they have been idle for three batch job consecutive system checkpoints.

Type-2 IMS Universal driver support provides for connectivity to IMS databases from local z/OS runtime environments. This is in addition to the Type-4 IMS Universal driver support initially provided with IMS 11 for distributed access to IMS databases from TCP/IP enabled platforms and run times.

Universal JDBC driver support for XML database enablement allows IMS databases to both store and retrieve XML content through Open Database, further simplifying and standardizing access to this data.

IMS integration with Data Source Explorer (DSE) and Cognos® enables IMS to be an integral part of the IBM portfolio of solutions for operational business intelligence and reporting support with Cognos, and for database exploration, edit, and SQL scripting with DSE.

Persistent Java Virtual Machine (JVM) support in IMS Message Processing Programs (MPP), Batch Message Processing (BMP), and Fast Path (IFP) regions provides for calling Java from Enterprise COBOL out of these non-Java dependent regions (JDR). This enables COBOL to recognize and retain the JVM. This improves performance for COBOL to Java interoperability when leveraging Java from legacy COBOL applications. With this support, IMS manages the JVM, which is taken down only when the MPP region terminates. Two new JCL parameters for non-JDRs (ENVIRON= and JVMOPMAS=) are provided to allow users to specify that IMS should create/manage the JVM in the non-JDR (for example, MPP region) with the same parms as those supported for IMS Java Message Processing (JMP) and Java Batch Processing (JBP) regions.

The following items are separate products that provide additional integration for IMS 11 and 12 users

IBM IMS Enterprise Suite enhancements are provided for its Connect API for C, SOAP Gateway, and Explorer components through the IMS Enterprise Suite 1.1 service process or the IMS website at

<http://www.ibm.com/ims>

- Connect API for C enhancements provide for enhanced memory management with fine-grain control over the API memory, thus enabling the API for long-running high-stress, high-volume environments.
- SOAP Gateway enhancements provide:

- Top-down support for IMS PL/I provider scenarios with the latest release of IBM Rational® Developer for System z
- Improved performance by storing web service information in a runtime cache instead of reading the information from a file system
- Improved management flexibility and support for automation of administrative tasks with the new command line-based SOAP Gateway management utility
- Extended web service security with support for client authentication, custom authentication modules, Security Assertion Markup Language (SAML) 1.1 sender-vouches token, and the Application Transparent Transport Layer Security (AT-TLS) feature in IBM z/OS Communications Server on the z/OS platform
- IMS Enterprise Suite Explorer support enables IMS application developers and database architects and developers to easily perform common and essential tasks in an end-to-end application development life cycle, through an Eclipse-based user interface that seamlessly integrates with other Eclipse-based solutions. Graphical editors simplify the development and visualization of Database Description (DBD) and Program Specification Block (PSB) resources definitions.

IMS Enterprise Suite Explorer also provides the ability to import Cobol and PL/I data structure metadata into an IMS database. The metadata can be used to generate PSB source and to import and export DBD and PSB source to or from a z/OS system. This capability can also be combined with IBM Rational Developer for System z to leverage additional tools to further develop COBOL and PL/I applications. By leveraging the IMS universal JDBC drivers, the IMS Explorer offers a relational view of IMS data and offers new function, such as graphical assistance to build SQL statements. This support could reduce IMS application development and deployment costs, and provide a foundation upon which additional internal and vendor-provided tools can extend and enrich the provided functionality. Initially, a Technology Preview demonstration of this capability is being provided on the IMS website at

<http://www.ibm.com/ims>

IBM WebSphere Message Broker V8.0, to easily and quickly connect external systems to IMS, provides new nodes that allow IMS customers to seamlessly integrate with .NET applications on Windows™, and also with Sterling Connect:Direct® for end-to-end file processing. IMS customers can also take advantage of a new feature to record, edit, and replay in-flight data for auditing, invoke web services using WS-RM, and use asynchronous HTTP.

IBM Business Process Manager V7.5 maximizes re-use of IMS assets with new applications for rapid business innovation and reduced costs. It provides Visual Composition tools (IBM Integration Designer) and runtime (IBM Process Server), which together streamline process design hand-off between business and IT. With IBM Integration Designer IMS TM Resource Adapter Message Format Services (MFS) support, you can transform existing conversational and nonconversational MFS-based IMS applications into reusable components (services) that can be used to create a business process using Visual tools to comply with the standard Business Process Execution Language (BPEL). These processes can be deployed to run on the IBM Process Server and be integrated with other components into larger business processes.

IBM WebSphere Transformation Extender V8.4 includes the IMS 12 TM Resource Adapter to connect WebSphere Transformation Extender with IMS 11 and 12. IMS solutions can use WebSphere Transformation Extender maps to transform data. Maps that run in WebSphere Transformation Extender can interact with transactions that run on a host IMS system.

Ease management and extend scalability for ultra-high performance, capacity, availability, and recovery

Dynamic Resource Definition (DRD) enhancements

IMS Repository support for selected DRD resources (transaction, routing codes, program directories, database directories, and descriptors for these) provides a single centralized store for resource definitions in an IMSplex. The IMS Repository simplifies the management of resource definitions, and eliminates the need for manual import and the multiple Resource Definition Data Sets (RDDS) for each IMS.

All IMS systems in the IMSplex share the same IMS repository for their resource definitions. These IMS systems may be cloned or noncloned. The IMS repository allows users to maintain different attributes for the same resource name for each IMS in the IMSplex. Usage of the IMS Repository is optional. A new Repository Server (RS) address space is provided to manage the IMS Repository, and new commands and batch interfaces are provided to manage this new address space.

New IMS and Resource Manager (RM) type-2 commands are added and enhanced to manage the resource definitions in the IMS repository and also to manage the usage of the repository. The IMS IMPORT, EXPORT, and QUERY commands are modified to support the IMS repository. A new IMS DELETE DEFN command is added to delete resource definitions from the IMS repository. The new RM commands UPDATE RM and QUERY RM are added to manage RM's usage of the repository. The IMS commands UPDATE IMS and QUERY IMS are enhanced to manage IMS usage of the repository. Batch Utilities are provided to access the IMS Repository through RM.

The IMS IMPORT command is enhanced to provide an update option for updating resources. Previously, the IMPORT command could only be used to add resources, and where the resource name might already be defined, the command would fail. The enhanced IMPORT command creates a runtime definition if one does not already exist and updates existing runtime definitions with new attributes. Database access must be stopped before the database definition is updated. This command imports resource and descriptor definitions from a Resource Definition Data Set (RDDS) or the IMS repository. This function enhances the usability of the IMS repository.

The TSO Single Point of Control (SPOC) Manage Resources application is enhanced to support the command changes added for the IMS Repository function and the UPDATE option of the IMPORT command.

Syntax Checker enhancements

Syntax Checker enhancements allow parameters to be displayed and saved in customer orders, and provide support for the IMS Repository Server. This simplifies the migration to IMS 12. The customer order support is being delivered through the IMS 12 Service process.

Member Online Change enhancement

Member Online Change (OLC) enhancement provides a new option that allows Member OLC to bring in only new or changed PSB members, and new DBD members specified in the INIT OLC command. This significantly improves performance where a large number of Application Control Block (ACB) members may exist in their ACB library.

Extended Address Volume (EAV) support

EAV support for non-VSAM data sets allows IMS customers to take advantage of the EAV for non-VSAM data set type on the DS8000®, and new SMS function supported in z/OS V1.12, providing disk storage constraint relief. EAV support enables customers with additional disk addressable storage by having the option to use larger EAVs. This support allows IMS Full Function OSAM databases, online reorganization (OLR) data sets, online log data sets (OLDS), log write-ahead data sets (WADS), and IMS spool data sets to reside on these large volumes. This helps provide relief to customers running out of z/OS addressable disk storage due to the

four-digit device number limit (65,280 devices) as these volumes contain more than 65,521 cylinders.

Logger enhancements

Logger enhancements allow the use of striped extended format online log data sets (OLDS) to increase logging bandwidth, add an option to move IMS log buffer storage above the 2 gigabyte boundary, and simplify write-ahead data set (WADS) size calculation.

- OLDS striping allows OLDS and system log data sets (SLDS) to be extended format, optionally striped/cpu usats. This could increase the maximum write bandwidth and would lessen the likelihood of logging bandwidth being a limiting factor during times of high-volume logging, such as during heavy BMP loads.
- The 64-bit buffer support utilizes 64-bit storage for log buffers. This provides additional Extended Common Storage Area (ECSA) relief, enabling IMS growth and the running of more products in a given system because of less contention for ECSA. The current buffer quantity used could be increased and spikes of high activity could be better handled. It would also improve performance for Fast Path 64-bit use.
- IMS is using large (1M) pages to back log buffers above the bar when such pages are available. Having your log buffers backed by large pages can improve performance due to more efficient dynamic address translation.
- WADS Channel Program enhancements further improve logging performance.

Log record enhancements

CPU usage statistics for workloads operating on System z Application Assist Processors (zAAP) and System z Integrated Information Processors (zIIP) capture usage time from IMS applications in the 56FA and 07 log records and separate the zAAP/zIIP time from the time on standard central processors (CP). This allows for more precise statistics regarding workloads that have been offloaded to a zAAP/zIIP.

DB Recovery Control (DBRC) enhancements

Improved DBRC capacity, reliability, availability, serviceability, and usability, including:

- For LIST commands issued through the Operations Manager API, the limit of 32 KB output is removed.
- The CLEANUP.RECON command added earlier to provide an option to force cleanup of old or expired RECON log data and database recovery data is extended to also clean up change accumulation (CA) record data.
- The timeline output for the LIST.HISTORY command, useful for diagnostics, is enhanced to support increased timestamp precision as well as adding support for HALDB online reorganization number display, and including concurrent events (such as log switch and deallocation).
- The output from a LIST.RECON or LIST.RECON STATUS command is enhanced to include the number of registered databases.
- User data fields have been added to the image copy, change accumulation, DBDS recovery, and DBDS reorganization records to ease use by IMS utility vendors.
- The CA group record is enhanced to add a retention period option to the GRPMAX option. This will allow the customer to specify the minimum amount of time that they want DBRC to keep track of CA data for a CA group. This will make the retention of CA data in the RECON consistent with image copy retention.
- The maximum number of USERKEYS for GENJCL commands has been increased from 32 to 64.
- The new keyword %DBTYPE is added to the GENJCL SELECT ALLOC group, indicating the type of database that the RECON allocation record is associated with.
- The VOLLIST parameter of the INIT.CA, INIT.IC, NOTIFY.CA, and NOTIFY.IC commands is optional if the RECON header indicates that these data sets are cataloged.

- The DELETE.LOG INACTIVE|TOTIME command will tolerate the situation where a LOGALL record does not exist for an inactive log that could be deleted. A warning return code will be set (RC=4) and a message will be issued instead of failing the command (RC=12) and skipping the execution of subsequent commands in the job.

Full Function (FF) DB enhancements

Full Function dynamic buffer pools are enhanced to provide a dynamic way for managing Full Function database buffer pools. As transaction volume grows, the number of I/Os would be increased. But if the buffer pool size is increased, less I/Os are needed. Without this, a system outage would be required to pick up the change of the modified buffer pools. This enhancement provides a way to dynamically add, change, and delete the OSAM and VSAM buffer pools without taking the system down. Online commands are provided for doing this. The VSAM shared resource pool id limit is also raised from 16 to 255 maximum VSAM shared buffer pools, providing constraint relief. This increases the VSAM buffer pool limit to improve the segregation of buffers across multiple databases. The increase in VSAM shared buffer pools makes it possible for more databases and applications to grow. This could eliminate systems downtime for buffer pool management and improves flexibility and system availability.

Storage for FF database pools is now obtained in 31-bit virtual, optionally backed by 64-bit real storage, for the DB work pool (DBWP), DMB pool (DLDP), PSB CSA pool (DLMP), DLI PSB pool (DPSB), and the PSB work pool (PSBW). Customers who page fix any of these pools and who have 64-bit real storage on their processor should see a reduction in 31-bit fixed real frames. Customers with large database pools who previously could not page fix them due to 31-bit real storage constraints may now be able to fix them, because the fixed pages will be backed in 64-bit real storage. This could improve the performance in the time it takes to manage PSBs in the pool under conditions such as casting out large PSBs that have not been referenced for a while and thus are paged out when the cast out occurs.

Additional FF DB enhancements:

- You can free up unused High Availability Large Database (HALDB) partitions after a structure change and allow unused HALDB partition names to be used as non-HALDB database names.
- Availability of HALDBs is enhanced with a new option that allows HALDB Online Reorg (OLR) Ownership to be released from a normally, or abnormally, terminated IMS so that the OLR process can be resumed on another IMS without restarting the terminated IMS.
- Serviceability is improved by displaying and logging information about lock resource holder and timeout victim for U3310 failure.
- System availability and diagnostic information are improved by eliminating the IMS U0080 abends for OSAM database Open, Close, and EOVS processing and replacing the abend with message DFS0703I.
- A new message DFS2291I can be issued to provide information about the application programs that are waiting for the lock in the case when IRLM times out a lock request and this action results in an abend 3310 or a status of BD. A new keyword is also provided to control whether or how the message is issued.
- DLI Batch jobs will wait rather than terminate in the event of a coupling facility switch, and a message DFS2404A is issued to display the error reason code that causes the coupling facility to switch to correct the coupling facility connection or structure failure. Serviceability is improved by no longer having U3303 failure caused by a coupling facility connection or structure failure.
- FF DB displays the status of randomizers and partition selection exit routines where previously, there was no displayed status for randomizer and partition selection exit routines when the FF databases were opened and closed as the result of a command. Serviceability is improved by displaying the status of randomizer and exit routines when FF database is opened or closed as the result of a command.

- Use of the local DMB number is improved to stay within the 32 KB DB limit by reusing the local DMB numbers so that a cold start is not required when these numbers reach 32,767.
- The RACF userid is saved automatically in log type 9904 for batch jobs.
- Serviceability could be improved as message DFS993I "CSA PSB|DLS PSB|PSBW pool too small" is now sent to the system console, and the message is readily available to all users. Prior to Version 12, some systems that did not have a master terminal (for example, DBCTL) did not receive message DFS993I.

Fast Path (FP) enhancements

FP Buffer Manager 64-bit enhancements are provided to improve performance and functionality. This frees up ECSA, self manages the subpools, and cleans up code clutter from cross-memory calls.

- Restructures the existing 64-bit code to minimize the number of address mode switches
- Adds logger support for 64-bit FP buffers to allow direct copy from the 64-bit FP buffer to log buffer
- Uses 64-bit common buffers exclusively
- Removes the cross-memory calls to support 64-bit private buffers
- Allows subpool compression so the buffer pool can adjust to the current FP load
- Pre-extends the subpools to reduce wait-for-buffer conditions
- Resizes the subpools if needed
- Resizes the subpool extents if an excessive number of extents are taken per subpool
- Updates the QUERY POOL TYPE(FPBP64) with the new SHOW(STATISTICS) option
- Updates the QUERY POOL TYPE(FPBP64) SHOW(ALL) to display subpool status, and make the output easier to read
- Uses 64-bit buffers for FLD call and SDEP calls during /ERE and XRF tracking

FP Secondary Index support provides the infrastructure to enable secondary indexing support for IMS FP data entry databases (DEDBs). This allows FP DEDBs to be accessed through secondary key sequence. IMS automatically performs index maintenance. Hierarchical indexed sequential access method (HISAM) and simple hierarchical indexed sequential access method (SHISAM) database structures are supported. When compared with an HDAM with the exact secondary indexing definitions, FP Secondary Index support requires significantly less CPU due to the efficient FP output thread process. Tools or utilities to build a secondary index database for DEDB databases exploiting this function could be separately offered by IBM or other vendors.

Additional FP enhancements ease usability and serviceability:

- Issues messages to help identify nonresponding IMS data sharing systems that are involved in resource synchronization requests.
- Identifies failing IMS name for FP type-3. allowing data sharing users to identify the IMS causing a wait.
- Provides an option to reduce type 99 logging, which minimizes the effect of type 99 logging by providing an option to allow omission of certain types of data. This would decrease logging overhead and would improve performance where logging is a constraint.
- Provides DEDB full segment logging, which eases extraction of segment updates for the transaction log database.

Process for eligible speciality engines

Request Response Processing for authorized Common Queue Server (CQS) clients in IMS 12 is executed under enclave service request blocks (SRBs). In IMS 12 and subsequent releases, IMS will request z/OS to process such work on an available System z Integrated Information Processor (zIIP). Request response processing is the processing of the return of data from the CQS address space to an authorized

CQS client address space in response to a request the client directed to the CQS. Authorized CQS clients are those clients that register to IMS 12 CQS while executing in supervisor state and with a "system" Program Status Word (PSW) key (keys 0 through 7). Examples of IMS V12 operations that involve such authorized CQS clients, are:

- When the IMS control region is running with IMS Shared Message Queues or Shared IMS Fast Path Message Queues enabled
- When the IMS Resource Manager address space is using a resource structure

Additional MIPS reduction enhancements

The IMS Database Resource Adapter (DRA) is enhanced to allow the Coordinated Controller (CCTL) to optionally run without DRA-attached Task Control Blocks (TCBs) and call IMS without switching off the application TCB. Threadsafe access between CICS® V4.2 and IMS is enabled to run on an open TCB. The CICS-DBCTL interface, used by CICS applications to access IMS databases, is enabled to run on L8 open TCBs. This provides benefits for applications that access IMS and which are already or can be made threadsafe. EXEC DLI and CALL DLI calls from CICS can now be made without any TCB switching overhead. This allows CPU savings and increased throughput.

CICS and ODBA users who perform security checking prior to calling IMS can now indicate through user exit DFSRAS00 that the user is trusted, allowing IMS to bypass unnecessary RACF or equivalent security checks, thus reducing MIPS usage.

Small internal changes also improve efficiency and potentially reduce instruction pathlength within the IMS system code. These changes include:

- Using newer, more efficient hardware instructions when available, including the Long Displacement Facility and the Store Clock Fast (STCKF) facility instructions
- Replacing GETMAIN storage allocation calls with more efficient IMS internal storage management calls in the APPC/OTMA scheduling path
- Supporting native 64-bit invocation of several highly used IMS internal macro services, reducing AMODE switching for 64-bit modules
- General efficiency and pathlength reduction changes in certain high-use paths of CQS inform exit processing and OTMA processing
- Improving IMS shutdown time by reducing OTMA and APPC shutdown quiesce waits

Additional serviceability enhancements

The /DIAGNOSE command enhancements provide a DISPLAY option for SNAP function output and a SHOW option to control the type and amount of data produced by the command. The introduction of an interactive method of diagnostic data capture will reduce the time and effort required to capture information for problem analysis, which in turn, will reduce the turnaround time for problem resolution.

IMS Dump Formatter now supports the Repository Server address space, any Repository Server client, and any OTMA Callable Interface client to allow for easier problem diagnosis and quicker problem resolution turnaround time.

EOM/EOT Tracing Facility now includes an End-of-Task (EOT) step trace function to trace and externally document the step-by-step flow through IMS EOT processing to provide diagnostic information needed to analyze and solve problems.

Module Alias Cross-Reference provides a complete module to alias cross-reference to help identify alias dependencies, providing an easy-to-use reference to help avoid potential errors caused by applying maintenance only to a module and not the module's alias.

Shared Queues Traceability enhancements help capture sufficient and valuable diagnostic data in order to help more quickly solve structure event problems. For this, a new structure event (STRE) trace table is created to maintain CQS structure

events such as connecting, rebuilding, overflow, structure checkpoint, link failures, and so on.

The following additional items are separate products that provide additional management and scalability for IMS 11 and 12 users

IMS Solution Packs (IMS Database Solution Pack for z/OS, IMS Fast Path Solution Pack for z/OS, IMS Performance Solution Pack for z/OS, and IMS Recovery Solution Pack for z/OS) allow customers to extend their IMS investment by providing:

- High-performance utilities to analyze, maintain, and tune IMS Fast Path and Full Function databases
- A complete portfolio of IMS database performance management tools for faster and easier analysis of IMS transactions is provided that uses advanced features to integrate utilities into a single job step for parallel operation, improving processing efficiency by reducing time and resource requirements
- A consolidated recovery solution that helps reduce the operational complexity and the impact of IMS database backup and recovery on system resources

InfoSphere® Classic Change Data Capture for z/OS and InfoSphere IMS Replication for z/OS help clients synchronize and increase the availability of IMS data. These products deliver a native IMS-to-IMS software replication solution that supports high-availability IMS data environments, and enable unidirectional movement of IMS data to local or remote relational database management systems, message queues, flat files, or transformation engines, such as InfoSphere DataStage®. The result is fast and consistent delivery of business-critical IMS data changes to drive dynamic data warehousing, SOA initiatives, live reporting, data consolidation and migration projects, and master data management initiatives.

This solution also synchronizes the contents of IMS databases on a single site, or across geographically dispersed locations, in near real time with full recovery. When used with IBM management solutions, it also supports an IMS hot standby environment that can dramatically reduce the time to recovery for today's 24x7 processing environments.

OMEGAMON® XE for IMS on z/OS Interim Feature 3 provides a system programmer with the ability to detect and quickly identify looping and poor performing transactions that impact CPU utilization and service level agreements of the users and business applications of those IMS systems. This capability includes an improved Application Trace Facility (ATF) with usability enhancements as well as additional application metrics to enable customers to analyze the performance and operational characteristics of their applications.

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Product positioning

IMS is IBM's premier transaction and hierarchical database management system. Exclusive to the z/OS platform, IMS 12 complements DB2®, CICS, and WebSphere servers for database and transaction management. Ongoing integration efforts mean that IMS can continue to add significant value to a multi-tier enterprise architecture.

IMS Database Manager (DB) is a hierarchical model; DB2, Oracle, and desktop systems use a relational model. Each database model continues to evolve with unique roles to play. Mission-critical processing that requires unparalleled performance is best served by a hierarchical model. Analytics and business intelligence are best served by a relational model. Most Fortune 100 companies use both.

Operational data is stored in hierarchical form and can be accessed easily by BI and analytics tools. IMS data can be accessed directly or propagated and replicated with relational data in support of BI. IBM provides standard application interfaces and drivers to access IMS as well as other data. Both relational data and hierarchical IMS data can be efficiently accessed, together or independently, using the IMS Transaction Manager and WebSphere servers.

IMS Transaction Manager (TM) is one of three strategic IBM application managers, with CICS and WebSphere Application Server. Each provides unique capabilities. IMS TM excels in application management, data storage, and data access and applies strict rules for this access. WebSphere applies simplified access rules, serving the web and integrating data that may be less defined. Enterprise clients use both application managers for specific purposes: IMS TM for mission-critical high-performance processing and WebSphere for web-based applications.

IMS, IBM Rational, and IBM WebSphere products continue to deliver new levels of tooling and integration. Enterprise clients can take advantage of Rational Developer for System z to maintain and enhance trusted IMS applications and develop web applications. Using the IMS DB Resource Adapter and IMS Open Database Access, WebSphere applications can also access IMS database data directly.

IBM continues to invest in new IMS features to help clients improve business efficiency and lower costs. Compared to previous IMS versions, some clients may achieve CPU savings for traditional and nontraditional workloads. Productivity improvements in IMS 12 for database and systems administrators can drive additional operational efficiencies and cost savings. Synergy with System z platform components can reduce CPU use by leveraging the latest processor improvements, larger amounts of memory, solid-state disk, and z/OS enhancements. IMS 12 delivers savings you can count on and is a great fit for your IT future.

Hardware and software support services

SmoothStart/Installation Services

IBM Installation Services are provided for IMS by IBM Global Services or your IBM Business Partner at an additional cost. For additional information, contact your IBM representative and ask for Installation Services for IMS.

Additional technical services (planning and migration assistance, performance tuning, and other services) can be obtained through the Worldwide IMS Product Affinity Services team. For more information, contact the team at

dmservices@us.ibm.com

Reference information

Refer to:

- Software Announcement [211-391](#), dated October 04, 2011, dated October 4, 2011, IBM WebSphere Message Broker V8.0
- Software Announcement [211-358](#), dated October 04, 2011, dated October 4, 2011, IBM Rational Developer for System z, V8.0.3
- Software Announcement [211-381](#), dated October 04, 2011, dated October 4, 2011, IBM WebSphere Transformation Extender Multiplatforms V8.4
- Software Announcement [211-390](#), dated October 04, 2011, dated October 4, 2011, IBM WebSphere Transformation Extender for z/OS, V8.4
- Software Announcement [211-324](#), dated August 30, 2011, IBM Business Process Manager Advanced for z/OS, V7.5
- Software Announcement [211-283](#), dated August 09, 2011, New and Enhanced IBM Tools to better manage DB2 and IMS environments
- Software Announcement [211-252](#), dated July 12, 2011, IBM z/OS Version 1 Release 13

- Software Announcement [211-151](#), dated May 24, 2011, IBM InfoSphere classic data replication and federation solutions for z/OS
- Software Announcement [211-080](#), dated April 05, 2011, IBM CICS Transaction Server for z/OS, V4.2
- Software Announcement [211-164](#), dated April 05, 2011, IBM Business Process Manager V7.5
- Software Announcement [211-139](#), dated April 05, 2011, dated April 5, 2011, IBM WebSphere Application Server V8.0
- Software Announcement [211-117](#), dated April 05, 2011, IBM WebSphere Application Server for z/OS, V8.0
- Software Announcement [211-069](#), dated February 22, 2011, IBM WebSphere DataPower® appliances
- Software Announcement [211-063](#), dated April 05, 2011, IBM Business Monitor for z/OS, V7.5
- Software Announcement [211-144](#), dated April 05, 2011, IBM WebSphere eXtended Transaction Runtime V1.0
- Software Announcement [211-025](#), dated February 15, 2011, dated February 15, 2011, IBM DB2 and IMS offer enhanced database, administration and performance management tools
- Software Announcement [210-321](#), dated October 05, 2010, IBM Transaction Analysis Workbench for z/OS, V1.1.0 helps analyze transactions and system problems
- Software Announcement [210-235](#), dated July 22, 2010, z/OS V1.12
- Software Announcement [209-242](#), dated August 18, 2009, z/OS V1.11

Program number

Program number	VRM	Program name
5635-A03	12.1.0	IMS Transaction and Database Servers

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=211-365>

Education support

The following IMS classes are available now:

Course title	Course number
IMS Fundamentals	CMW01
IMS System Programming: DBCTL	CMW12
IMS System Programming: Database and Transaction Management	CMW11
IMS Database Recovery and Sharing Control (DBRC)	CMW20
Operating your IMS environment	CMW35
Implementing IMS Security	CMW43
IMS Database Repair	CMW44
IMS Database Recovery	CMW45
IMS Parallel Sysplex® Workshop	CM621
IMS DB Application Programming	U3717
IMS DC Application Programming	U3718
IMS Physical Organization of	CMW22

Databases Workshop	
IMS Fast Path Implementation	CMW64
IMS DB Performance and Tuning	CMW30
IMS TM Performance and Tuning	CMW21
IMS Logical Relationships	CM241
IMS Installation Workshop	U3759
IMS V10 Product Enhancements	CMWAO
IMS V11 Product Enhancements	CMWB0
IMS V12 Product Enhancements (at GA)	CMWC0
IMS Transaction Manager Performance and Tuning	CMW21
IMS Diagnostic Approaches	CMW66
IMS High Availability Large Database (HALDB)	CMW46
IMS Data Sharing	CMW50
IMS Shared Queues	CMW61

Contact IBM Global Services for schedules and enrollments. For additional information, visit

<http://www.ibm.com/services/learning/us>

Technical information

Specified operating environment

Hardware requirements

Processors: IMS 12 operates on 64-bit IBM processors capable of running z/OS V1.11, or later, and supports the Long Displacement Facility of the z/Architecture.

Direct access devices: Both the binder work data set SYSUT1 (during the bind of the IMS VTAM control blocks load monitoring module) and IMS SDFSRESL must reside on a device that supports a record size of 18 KB, or higher.

IMS Database Image Copy 2 (IC2) utility (DFSMT0) concurrent copy support requires concurrent copy-capable DASD controllers. IC2 Fast Replication support requires either the concurrent copy feature of DFSMS, the FlashCopy® feature of the IBM Enterprise Storage Server® (ESS), or the Snapshot feature of the IBM RAMAC Virtual Array (RVA) storage system. For all other system libraries and working storage space, any device supported by the operating system is allowed.

Additional line item requirement information and a list of supported terminals is provided in the *IMS 12 Release Planning Information* at

<http://www.ibm.com/ims>

Software requirements

IMS 12 Transaction and Database Servers

IMS 12 operates under z/OS V1.11 configurations, or subsequent versions, releases, and modification levels, unless otherwise stated, and requires the following minimum version, release, or modification levels:

- z/OS V1.11 (5694-A01) with DFSMSdfp (a base element of z/OS V1.11)
- RACF (included in a separately orderable Security Server feature of z/OS V1.11), or equivalent, if security is used
- IBM High-Level Assembler Toolkit (5696-234), a separately orderable feature of z/OS

IMS 12 also operates in a virtual machine under control of z/OS V1.11 and is intended for use in a customer program development, testing, and non-XRF production environment, with some restrictions.

Additional line-item requirement information is provided in the *IMS 12 Release Planning Information* at

IMS 12 DB can be connected using the appropriate interface to IMS 12 TM (5635-A03), CICS Transaction Server for z/OS V3.1 (5655-M15), or later, WebSphere Application Server V6, or later, DB2 for z/OS V8 (5625-DB2), or later, and user-written software.

IMS 12 TM can be connected using the appropriate interface to IMS V10 TM (5635-A01), or later, IMS 12 DB (5635-A03), or later, CICS Transaction Server for z/OS V3.1 (5655-M15), or later, WebSphere Application Server V6, or later, DB2 for z/OS V8 (5625-DB2), or later, and user-written software.

The IMS ETO feature requires the IMS TM feature.

The IMS Remote Site Recovery (RSR) Record Level Tracking (RLT) feature requires either the IMS TM or the IMS DB feature.

The IMS RSR Database Level Tracking (DLT) feature requires the IMS RSR RLT and IMS DB features.

IMS 12 is written in High Level Assembler, PL/X, C, C++, and JDK Version 6.

Compatibility

- IMS 12 is upwardly compatible from previous versions, allowing existing applications and data to be used without change. Migration and coexistence support is provided for IMS V10 and V11. Review the Preventative Service Planning (PSP) information for the latest details.
- Prior to IMS V12, the STCK timestamp in each log record suffix (field LOGRC_STCK) was a unique value for each record in the IMS log. In Version 12, it is possible for consecutive log records from the same IMS to have the same value in this field. Customers using the LOGRC_STCK alone to establish a unique, time-ordered key for sorting log records, if needed, should now use the concatenation of LOGRC_STCK and the log suffix sequence number (field LOGRC_SEQUENCE_NUMBER).
- IMS 12 is the last release to support the SECURITY macro in system definition. Customers using the security macro should migrate to use the initialization parameters.
- IMS 9 was the last release to support the Security Maintenance Utility (SMU). Customers using SMU should migrate to RACF or an equivalent product.
- IMS 11 is the last release to support the SMU-to-RACF utilities. Customers need to migrate to RACF or an equivalent product with an earlier IMS version.
- IMS V11 is the last release to support the Knowledge Based Log Analysis (KBLA) facility. Customers using this function should migrate to use other IMS-provided analysis utilities and reports, such as Fast Path Log Analysis utility (DBFULTA0), File Select and Formatting Print utility (DFSERA10), IMS Monitor Report Print utility (DFSUTR20), Log Transaction Analysis utility (DFSILTA0), Offline Dump Formatter utility (DFSOFMD0), Statistical Analysis utility (DFSISTS0), or to other complementary products, such as IMS Problem Investigator, IMS Performance Analyzer, or similar products.
- IMS 9 was the last release in which the MSC user routing exits (DFSCMTR0, DFSCMLR0, DFSCMPR0, and DFSNPRT0) may be used. DFSMSCE0 must be used in Version 10, 11, or 12.
- IMS 9 was the last release to support the Basic Telecommunications Access Method (BTAM). Customers using BTAM should migrate to the Virtual Telecommunications Access Method (VTAM) or to TCP/IP. User code or tools dependent on BTAM should migrate to VTAM or TCP/IP.
- IMS V9 was the last release to support the HWSIMSO0 and HWSIMSO1 user message exits. Customers using these exits should migrate to HWSMPL1.
- IMS Enterprise Suite V1.1 is upwardly compatible from IMS SOAP Gateway V10.x and the IMS 10 DLIModel Utility plug-in, allowing existing applications and data to be used without change. Migration and coexistence support is provided for IMS 10 users. Review the Preventative Service Planning (PSP) information for the latest details.

- IMS SOAP Gateway V10 was the last release of that separate product. Customers using it should migrate to the IMS Enterprise Suite.
- IMS 10 is the last release to support the z/OS-based batch DLIModel utility. Customers using this function should migrate to the IMS Enterprise Suite.
- IMS 10 is the last release to support the DLIModel utility plug-in as part of IMS. Customers using this function should migrate to the IMS Enterprise Suite.
- IMS 10 is the last release of IMS in which IMS information is available in BookManager® format. IMS information continues to be available online (including the diagnosis information) as PDF files and in XHTML in the Information Management Software for z/OS Solutions Information Center at <http://publib.boulder.ibm.com/infocenter/imzic>
- Hardcopies of the IMS 12 documentation information can also be purchased from the IBM Publications Center at <http://www.ibm.com/shop/publications/order>

Performance considerations

IMS 12 continues to build on its tradition of high-performance, low-cost transaction processing by removing constraints and reducing pathlength while also taking advantage of new system functions.

IMS 12 Fast Path users can take advantage of additional 64-bit storage exploitation, thus reducing ECSA demand and allowing increased buffer growth to support additional workload.

When compared with a HDAM with the exact secondary indexing definitions, IMS 12 Fast Path Secondary Index support requires significantly less CPU due to the efficient Fast Path output thread process.

IMS 12 supports many more storage pools using 64-bit real storage, allowing the possibility of more pools being page fixed, reducing the overhead of short-term z/OS page fix and free.

Shared queues users should see increased benefit by the elimination of RRS overhead for many OTMA and APPC transactions processed on a backend IMS.

IMS 12 also provides the ability to dynamically change Full Function database buffer pool specifications without having to recycle IMS. This will provide the ability to tune the buffer pools to significant changes in workload, thus providing optimum performance.

IMS 12 provides several enhancements to reduce internal IMS pathlength, which may reduce overhead and thus cost per transaction. These enhancements are spread throughout the product where IMS was able to find improved methods to accomplish the same function more efficiently.

IMS 12 continues to demonstrate that it can provide the highest performance, lowest cost transaction performance with absolute integrity for both messages and database.

User group requirements

This announcement satisfies or partially satisfies requirements from one or more of the worldwide user group communities.

- MR0208076041 - CM1 shared queues support without RRS, if synclevel=syncpoint is not used
- MR0324085832 - Online command output > 32K
- MR011306439 - Increase number of DBRC User Variables for GENJCL from 32 to 64
- MR0103052840 - %DBDTYPE for ALLOC records
- MR0208011414 - INIT.CA VOLLIST/UNIT optional
- MR0525074029 - CA Retention Period (RECOVPD)
- MR0930043959 - Allow IMS buffer pool changes without taking the system down

MR0214064617 - DFSVSAMP dynamic VSAM and OSAM pool allocation.
 MR062107511 - Increase the VSAM buffer poolid limit.
 MR1114073843 - Enhance DLI Batch to continue to function in the event of a Coupling Facility (CF) Switch
 MR0915061035 - Transaction msg deleted after a U3310 (LOCKTIME functionality improvement)
 MR0505053431 - Messages for loading and unloading of HDAM randomizers
 MR1014024359 - Improve Error Reporting for OSAM Database Open causing abend U0080
 MR0328057223 - MSGDFS993 may not be visible
 MR0808062254 - New message to help in diagnosis of U3303
 MR0126094621 - EPCB pool ECSA relief
 MR0321063956 - HSRE to use 64 bit buffers
 MR0211093445 - SVSO into 64 bit
 MR1117061552 - Identify failing IMS name for FP type-3 notifies
 MR0919084327 - Option to reduce type 99 logging
 MR0225082435 - DEDB full segment logging
 MR00040063 - Fast Path Indexed File Structure
 MR061401240 - Provide utility/facility for Fast Path Secondary indexes
 MR0915052513 - Include reason codes in the RACF SECFAIL message
 MR0227036139 - Pass the SAF and RACF reason and return codes associated with security failures to the client
 MR0915001558 - Passing RACF Return code and Reason code
 MR0719026950 - Return to the application program the correct security failure return code and reason code
 MR0115023935 - Be able to determine between password wrong and userid revoked
 MR0529085825 - Modify Command to reread COBOL converter routines
 MR0612073629 - Provide for dynamic refresh of IMS SOAP COBOL drivers
 MR102908498 - IMS Connect CM0 AckNowait for RYO applications
 MR1219005228 - ACEE refresh capability in IMS Connect
 MR0729086038 - Provide load for most required exits
 MR0619074259 - IMS Connect Server to Server function
 MR0306077155 - IMS/Connect commands not standardized and so not enabled to OM/SPOC
 MR1121073318 - Only one RACF ACEE , valid for all OTMA tmember in an IMS control region
 MR1008093753 - IMS WebSphere Resource adapter able to set the IMS OTMA Transaction Expiration time
 MR0114086422 - IMS MPP/BMP Java Support - launch JVM in MPP
 MR1215063039 - IMS x"99" log field addition in DLIBATCH
 MR0309071620 - Diagnostic message for a U3310
 MR220065133 - LOCKTIME Discarding transactions
 MR0324114722 - Need Transaction statistics for CPU time spent on zIIP/zAAP workload
 MR0423103213 - IMS Security exit DFSRAS00 not called during CCTL connection
 MR0802054229 - Threadsafe IMS in CICS
 MR0310101530 - Automatic Reconnect between IMS TM RA and IMS Connect
 MR0818106253 - New IMS TM RA Informational message
 MR0818104559 - Remove WebSphere runtime dependency for IMS TM RA
 MR0716106916 - IMS TM RA should support JBOSS application server
 MR081810167 - SetRetryLimit in IMS ActivationSpec value 0 meaning
 MR0622114521 - Multiple datastore support for IMS Callout with MDB and IMS TM RA
 MR1106023829 - Display IMS PROClib member parameters in custom order
 MR1006085712 - RASRACF Specification Option for BMP Schedule
 MR0513082049 - Prevent Unauthorized Jobs or Started Tasks from starting as Dependent Regions
 MR0603112241 - Option to Print JAVAOUT and JAVAERR in the IMS regions joblog

Planning information

Direct customer support

Direct customer support is provided by IBM Operational Support Services - SoftwareXcel Enterprise Edition or SoftwareXcel Basic Edition. These fee services can enhance your productivity by providing voice and electronic access into the IBM support organization. IBM Operational Support Services - SoftwareXcel Enterprise

Edition or SoftwareXcel Basic Edition will help answer questions pertaining to usage, how-to, and suspected software defects for eligible products.

Installation and technical support is provided by IBM Global Services. For more information on services, call 888-426-4343.

Security, auditability, and control

The announced program uses the security and auditability features of the host hardware or operating system software. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

The following publications are available from the IBM Publications Center at

<http://www.ibm.com/shop/publications/order>

The following softcopy publications are also available in the IBM Information Management Software for z/OS Solutions Information Center at

<http://publib.boulder.ibm.com/infocenter/imzic>

Title	Order number
IMS Version 12 Application Programming	SC19-3007
IMS Version 12 Application Programming APIs	SC19-3008
IMS Version 12 Commands, volume 1: IMS Commands A-M	SC19-3009
IMS Version 12 Commands, volume 2: IMS Commands N-V	SC19-3010
IMS Version 12 Commands, Volume 3: IMS Component and z/OS Commands	SC19-3011
IMS Version 12 Communications and Connections	SC19-3012
IMS Version 12 Database Administration	SC19-3013
IMS Version 12 Database Utilities	SC19-3014
IMS Version 12 Diagnosis	GC19-3015
MS Version 12 Exit Routines	SC19-3016
IMS Version 12 Installation	GC19-3017
MS Version 12 License Programming Specifications	GC19-3024
IMS Version 12 Messages and Codes, volume 1: DFS Messages	GC18-9712
IMS Version 12 Messages and Codes, volume 2: Non-DFS Messages	GC18-9713
IMS Version 12 Messages and Codes, volume 3: IMS Abend Codes	GC19-9714
IMS Version 12 Messages and Codes, volume 4: IMS Component Codes	GC19-9715
IMS Version 12 Operations and Automation	SC19-3018
IMS Version 12 Program Directory	GI10-8843
IMS Version 12 Release Planning	GC19-3019
IMS Version 12 System Administration	SC19-3020
IMS Version 12 System Definitions	GC19-3021
IMS Version 12 System Programming APIs	SC19-3022
IMS Version 12 System Utilities	SC19-3023
IMS Version 12 Product Kit (CD)	SK5T-7394

The following IMS Redbooks® are available now from Mechanicsburg or at

<http://www.ibm.com/redbooks>

Title	Order number
IMS 12 Technical Overview	SG24-7972
IMS 11 Open Database	SG24-7856
IMS V11 Technical Overview	SG24-7807
Powering SOA Solutions with IMS	SG24-7662

IMS V10 Implementation Guide: A Technical Overview	SG24-7526
Powering SOA with IBM Data Servers	SG24-7259
IMS Performance and Tuning Guide	SG24-7324
Publishing IMS and DB2 Data Using WebSphere Information Integrator: Configuration and Monitoring Guide	SG24-7132
IMS Connectivity in an On Demand Environment: A Practical Guide to IMS Connectivity	SG24-6794
IMS V9 Implementation Guide: A Technical Overview	SG24-6398
IMS V8 Implementation Guide: A Technical Introduction of the New Features	SG24-6594
Reorganizing Databases Using IMS Tools: A Detailed Look at the IBM IMS High Performance Tools	SG24-6074
IMS Installation and Maintenance Processes	SG24-6574
Using IMS Data Management Tools for Fast Path Databases	SG24-6866
IMS in the Parallel Sysplex volume I: Reviewing the IMSplex Technology	SG24-6908
IMS in the Parallel Sysplex volume II: Planning the IMSplex	SG24-6928
IMS in the Parallel Sysplex volume III: IMSplex Implementation and Operations	SG24-6929
The Complete IMS HALDB Guide, All You Need to Know to Manage HALDBs	SG24-6945

The following materials are available in PDF or HTML format and may be obtained at the Library link through

<http://www.ibm.com/ims>

Title

IMS 12
IMS - Fit for the Future
IMS SOA Support and the IMS Enterprise Suite
IMS Presentations and White papers on SOA, XML, Performance,
Connectivity, and other IMS topics

The following book is available from IBM Press:

Title

An Introduction to IMS
For details, visit

<http://www.ibm.com/ims>

Ordering z/OS through the Internet

ShopzSeries provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the US, Canada, and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order via the traditional IBM ordering process. For more details and availability, visit the ShopzSeries website at

<http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp>

New licensees

Orders for new licenses can be placed now.

Registered customers can access IBMLink for ordering information and charges.

Shipment will not occur before the availability date.

Unless a later date is specified, orders entered before the planned availability date will be assigned a schedule date of one week following availability.

Unless a later date is specified, an order is scheduled for the week following order entry.

New users of IMS 12 should specify:

Type: 5635 Model: A03

CFSW configuration and order entry capability are available.

Advanced Entry Workload License Charges (AEWLC) basic license

Along with the announcement of the IBM zEnterprise™ 114 (z114) server, IBM introduces a new software pricing structure called Advanced Entry Workload License Charges (AEWLC). The AEWLC pricing metric leverages the reporting mechanisms and existing Millions of Service Units per hour (MSU) tiers of the Entry Workload License Charges (EWLC) pricing metric and the Midrange Workload License Charges (MWLC) pricing metric while extending the software price/performance provided by EWLC and MWLC. AEWLC applies only to eligible z/OS, z/TPF, and z/VSE® operating systems and their associated middleware programs when running on a z114 server. For details, refer to Software Announcement [211-250](#), dated July 12, 2011.

Advanced Entry Workload License Charges (AEWLC) basic license:

To order a basic license, specify the program number and quantity of MSU.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, AEWLC
S0166J5	IMS DB-Level Tracking	Basic MLC, AEWLC
S0166J1	IMS Extended Term Opt	Basic MLC, AEWLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, AEWLC
S0166J3	IMS Transaction Manager	Basic MLC, AEWLC

Advanced Workload License Charges (AWLC) basic license

Along with the announcement of the IBM zEnterprise 196 (z196) server, IBM introduced a new software pricing structure called Advanced Workload License Charges (AWLC). The AWLC pricing metric leverages the reporting mechanisms and existing Millions of Service Units (MSU) per hour tiers of the Variable Workload License Charges (VWLC) pricing model while extending the software price/performance provided by the VWLC tiers. AWLC applies only to eligible z/OS and z/TPF software programs and their associated middleware programs when running on a z196 server. For details, refer to Software Announcement [210-238](#), dated July 22, 2010.

Advanced Workload License Charges (AWLC) basic license:

To order a basic license, specify the program number and quantity of MSU.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, AWLC

S0166J5	IMS DB-Level Tracking	Basic MLC, AWLC
S0166J1	IMS Extended Term Opt	Basic MLC, AWLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, AWLC
S0166J3	IMS Transaction Manager	Basic MLC, AWLC

Parallel Sysplex license charge (PSLC) basic license

To order a basic license, specify the program number and quantity of MSU.

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable PSLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the System Usage Registration No-Charge (SYSUSGREG NC) Identifier on the licenses.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, PSLC(ABCD)
S0166J5	IMS DB-Level Tracking	Basic MLC, PSLC(ABCD)
S0166J1	IMS Extended Term Opt	Basic MLC, PSLC(ABCD)
S0166J2	IMS Recov Lvl Tracking	Basic MLC, PSLC(ABCD)
S0166J3	IMS Transaction Manager	Basic MLC, PSLC(ABCD)

Workload License Charge (WLC) Basic License

If there is more than one program copy in a Parallel Sysplex, the charge for all copies is associated to one license by specifying the applicable WLC license options and quantity represented by the sum of the Service Units in Millions (MSUs) in your Parallel Sysplex. For all other program copies, specify the Workload Registration Variable WLC Identifier on the licenses.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, V-WLC
S0166J5	IMS DB-Level Tracking	Basic MLC, V-WLC
S0166J1	IMS Extended Term Opt	Basic MLC, V-WLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, V-WLC
S0166J3	IMS Transaction Manager	Basic MLC, V-WLC

Entry Workload License Charge (EWLC) Basic License

To order a basic license, specify the program number and the quantity of MSUs.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, Entry WLC
S0166J5	IMS DB-Level Tracking	Basic MLC, Entry WLC
S0166J1	IMS Extended Term Opt	Basic MLC, Entry WLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, Entry WLC
S0166J3	IMS Transaction Manager	Basic MLC, Entry WLC

S/390® and System z Usage License Charge, basic license:

Specify the applicable S/390 and System z Usage License Charge option.

Charges will be based upon the Peak MSUs. Usage reported between thresholds of features 1, 2, or 3, will be rounded up to the next MSU level. Above 1.0 MSU, usage will be rounded to the nearest whole MSU. For example, 2.4 MSUs would round to 2.0 MSUs for pricing, and 2.5 MSUs would round to 3.0 MSUs for pricing.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, ULC(ABCD)
S0166J5	IMS DB-Level Tracking	Basic MLC, ULC(ABCD)
S0166J1	IMS Extended Term Opt	Basic MLC, ULC(ABCD)
S0166J2	IMS Recov Lvl Tracking	Basic MLC, ULC(ABCD)
S0166J3	IMS Transaction Manager	Basic MLC, ULC(ABCD)

Growth opportunity license charge (GOLC)

To order a basic license, specify the program number and the correct level.

Specify the GOLC monthly license option.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, GOLC
S0166J5	IMS DB-Level Tracking	Basic MLC, GOLC
S0166J1	IMS Extended Term Opt	Basic MLC, GOLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, GOLC
S0166J3	IMS Transaction Manager	Basic MLC, GOLC

System z entry license charge (zELC)

To order zELC software, specify the program number and z800 model.

Specify the zELC monthly license option.

Program name: Information Management System Version 12
Transaction and Database Servers

Program PID: 5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, zELC
S0166J5	IMS DB-Level Tracking	Basic MLC, zELC
S0166J1	IMS Extended Term Opt	Basic MLC, zELC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, zELC
S0166J3	IMS Transaction Manager	Basic MLC, zELC

Single version charging

To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the designated machine the programs are operating on.

Basic machine-readable material

Orderable supply ID	Language	Distribution medium	Description
S016T7S	English	3590 Tape Cartridge	IMS V12 Database Manager ENU
S016T82	English	3590 Tape Cartridge	IMS V12 Transaction Manager ENU
S016T7X	English	3590 Tape Cartridge	IMS V12 Recovery Level Tracking(RLT) - Remote Site Recovery ENU
S016T80	English	3590 Tape Cartridge	IMS V12 Extended Terminal Option (ETO), ENU
S016T7V	English	3590 Tape Cartridge	IMS V12 OPTSRC SV ENU
S016T83	English	3590 Tape Cartridge	IMS V12 DB-Level Tracking (DLT) - Remote Site Recovery ENU

Customization options

Select the appropriate feature numbers to customize your order and specify the delivery options desired. These features can be specified on the initial or MES orders.

Example

If publications are not desired for the initial order, specify feature number 3470 to ship media only. For future updates, specify feature number 3480 to ship media updates only. If in the future publication updates are required, order an MES to remove feature number 3480; then the publications will ship with the next release of the program.

Initial shipments

Feature number	Description
3444	Serial Number Only (suppresses shipment of media and documentation)
3470	Ship Media Only (suppresses initial shipment of documentation)
3471	Ship Documentation Only (suppresses initial shipment of media)

Update shipments

Feature number	Description
3480	Ship Media Updates Only (suppresses update shipment of documentation)
3481	Ship Documentation Only (suppresses update shipment of media)
3482	Suppress Updates (suppresses update shipment of media and documentation)

Expedite shipments

Feature number	Description
3445	Local IBM Office Expedite (for IBM use only)
3446	Customer Expedite Process Charge (\$30 charge for each product)

Expedite shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

A memo and one copy of the following publications are supplied automatically with the basic machine-readable material:

Hardcopy

- Licensed Programming Specifications (GA19-3024)
- IMS Version 12 Product Kit CD (SK5T-7394)

All the IMS product information is available in the Information Center at

<http://publib.boulder.ibm.com/infocenter/imzic>

Licensed documentation

The IMS product does not have any licensed publications.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Customized offerings

Product deliverables are shipped only via CBPDO, ServerPac, and SystemPac®.

CBPDO and ServerPac are offered for Internet delivery in countries where ShopzSeries product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on Internet delivery, refer to the ShopzSeries help information at

<http://www.software.ibm.com/ShopzSeries>

You choose the delivery method when you order the software. IBM recommends Internet delivery. In addition to Internet and DVD, the supported tape delivery options for CBPDO, ServerPac, and SystemPac include:

- 3590
- 3592

Most products can be ordered in ServerPac and SystemPac the month following their availability on CBPDO. z/OS can be ordered via all three offerings at general availability. Production of software product orders will begin on the planned general availability date.

- CBPDO shipments will begin one week after general availability.
- ServerPac shipments will begin two weeks after general availability
- SystemPac shipments will begin four weeks after general availability due to additional customization, and data input verification.

Terms and conditions

Agreement

IBM Customer Agreement

Variable charges apply

No

Indexed monthly license charge (IMLC) applies

No

Location license applies

No

Use limitation applies

No

Educational allowance available

Yes, 15% education allowance applies to qualified education institution customers.

Volume orders

Not applicable.

Replaced programs		Replacement programs	
Program number	Program name	Program number	Program name
5655-B01	IMS V7	5635-A03	IMS V12
5655-C56	IMS V8	5635-A03	IMS V12
5655-J38	IMS V9	5635-A03	IMS V12
5635-A01	IMS V10	5635-A03	IMS V12
5635-A02	IMS V11	5635-A03	IMS V12
5635-A03	IMS V12	Follow-on	if any

Warranty applies

Yes

Licensed program materials availability

Restricted Materials of IBM:	None
Non-Restricted Source Materials:	Some
Object Code Only (OCO):	Some

Program services

Support Center applies:	Yes Access is available through the IBM Support Center
Available until discontinued:	12 months' written notice
APAR Mailing Address:	IBM Corporation 555 Bailey Avenue San Jose, CA 95141

IBM Operational Support Services -- SupportLine

Yes

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

Prices

For additional information and current prices, contact your local IBM representative.

Program number MLC

5635-A03

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, GOLC
S0166J5	IMS DB-Level Tracking	Basic MLC, GOLC
S0166J1	IMS Extended Term Opt	Basic MLC, GOLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, GOLC
S0166J3	IMS Transaction Manager	Basic MLC, GOLC

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, ZELC
S0166J5	IMS DB-Level Tracking	Basic MLC, ZELC
S0166J1	IMS Extended Term Opt	Basic MLC, ZELC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, ZELC
S0166J3	IMS Transaction Manager	Basic MLC, ZELC

Entitlement identifier	Description	License option/ Pricing metric
S0166J4	IMS Database Manager	Basic MLC, AEWLC
S0166J5	IMS DB-Level Tracking	Basic MLC, AEWLC
S0166J1	IMS Extended Term Opt	Basic MLC, AEWLC

S0166J2	IMS Recov Lvl Tracking	Basic MLC, AEWLC
S0166J3	IMS Transaction Manager	Basic MLC, AEWLC

Entitlement identifier	Description	License option/ Pricing metric
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S0166J4	IMS Database Manager	Basic MLC, AWLC
S0166J5	IMS DB-Level Tracking	Basic MLC, AWLC
S0166J1	IMS Extended Term Opt	Basic MLC, AWLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, AWLC
S0166J3	IMS Transaction Manager	Basic MLC, AWLC

Entitlement identifier	Description	License option/ Pricing metric
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S0166J4	IMS Database Manager	Basic MLC, PSLC(ABCD)
S0166J5	IMS DB-Level Tracking	Basic MLC, PSLC(ABCD)
S0166J1	IMS Extended Term Opt	Basic MLC, PSLC(ABCD)
S0166J2	IMS Recov Lvl Tracking	Basic MLC, PSLC(ABCD)
S0166J3	IMS Transaction Manager	Basic MLC, PSLC(ABCD)

Variable Workload License Charges

Entitlement identifier	Description	License option/ Pricing metric
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S0166J4	IMS Database Manager	Basic MLC, V-WLC
S0166J5	IMS DB-Level Tracking	Basic MLC, V-WLC
S0166J1	IMS Extended Term Opt	Basic MLC, V-WLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, V-WLC
S0166J3	IMS Transaction Manager	Basic MLC, V-WLC

Entry Workload License Charge (EWLC):

Entitlement identifier	Description	License option/ Pricing metric
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S0166J4	IMS Database Manager	Basic MLC, Entry WLC
S0166J5	IMS DB-Level Tracking	Basic MLC, Entry WLC
S0166J1	IMS Extended Term Opt	Basic MLC, Entry WLC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, Entry WLC
S0166J3	IMS Transaction Manager	Basic MLC, Entry WLC

Entitlement identifier	Description	License option/ Pricing metric
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S0166J4	IMS Database Manager	Basic MLC, ULC
S0166J5	IMS DB-Level Tracking	Basic MLC, ULC
S0166J1	IMS Extended Term Opt	Basic MLC, ULC
S0166J2	IMS Recov Lvl Tracking	Basic MLC, ULC
S0166J3	IMS Transaction Manager	Basic MLC, ULC

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