


# IMS Modernization – Advantages of Keeping Current with IMS Versions

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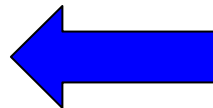
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## IMS Product General Focus Areas

- Support high transaction growth rates through performance, capacity and RAS enhancements
- Ease of administration and deployment, automation, reduce skill level
- Facilitate modernization of IMS applications, compliance, standards
- Base Enhancements 
- Connectivity Enhancements

# IMS Product Key New Function Focus

- Availability
- Reliability / serviceability
- Performance / capacity
- Ease of use / improved manageability
  
- SOA application integration, standards, compliance
  
- Base functions
- Connectivity functions



# IMS Roadmap

- New major version every 2-3 years
  - IMS 10 GA Oct 2007
  - IMS 11 GA Oct 2009
  - **IMS 12 QPP started Dec 10, 2010**
  - IMS 12 + 1 in Development
  - IMS 12 + 2 in Planning
- Support
  - At GA Migration supports N-2
  - Typically two current supported field releases
  - N-2 release out of service 1 year after current release GA



# Factors Driving IMS Modernization / Growth

- Global economy
  - Need for 7 X 24 X 365 availability
- Mergers and acquisitions
  - Flexibility to make changes
- Affordability of increasingly powerful technology
  - Cost-effectiveness
- Increased customer expectations for response times and availability
- Important that your IMS systems be ready to handle these new requirements

# IMS Software Support Information

- IBM Software Support Handbook
  - <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>
  - This guide contains important information on the procedures and practices followed in the service and support of your IBM products. It does not replace the contractual terms and conditions under which you acquired specific IBM Products or Services.
- IBM Software Lifecycle Support
  - [http://www.ibm.com/software/support/lifecycle/index\\_a\\_z.html](http://www.ibm.com/software/support/lifecycle/index_a_z.html)
  - The IBM Software Support Lifecycle policy specifies the length of time support will be available for IBM software from when the product is available for purchase to the time the product is no longer supported. IBM software customers can use this site to track how long their version and release of a particular IBM software product will be supported. Using the information on this site, customers will be able to effectively plan their software investment, without any gaps in support.

# IMS Software Support Information

- End of Support (EOS) ...
  - Last date on which IBM will deliver standard support services for a given version/release of a product
  - Discontinuance of program service for the last release in a version of a software product is an indication of IBM's expectation that customers will not experience a high level of trouble due to program defects.
  - When service is discontinued, corrections to known problems remain available, but the development team is redirected to other work, and no new, tested corrections will be generated for general use.
  - Known problems may be reviewed and ordered via electronic vehicles such as the internet (e.g, <http://www.ibm.com/software/support>) however support provided by the IBM Client Support representatives, will be discontinued. At discontinuance of program service, associated services terminate as well, e.g. IBM Support Line and SoftwareXcel.

# IMS Software Support Information

- End of Support (EOS)
  - Self-help Capabilities from the Internet
    - Basic search capability for the following:
      - *IBM software defects, that is, closed APARs (Authorized Program Analysis Report)*
      - *Software fixes*
      - *Technotes for resolved issues*
  - Provide notice of End of Support (EOS) at least twelve months before product support is withdrawn, giving you a reasonable period of time to use the software before migrating to a new version or release. Establish effective dates for withdrawal of product support in either April or September.
  - Support Extensions are accommodations for Customers who are unable to migrate to a supported software product release within the time provided.



# IMS Version Service Support Information

| IMS Version | Product Number | Available   | Support Withdrawn<br>(End of Support) |
|-------------|----------------|-------------|---------------------------------------|
| IMS 7       | 5655-B01       | 27 Oct 2000 | 08 Nov 2005                           |
| IMS 8       | 5655-C56       | 25 Oct 2002 | 05 Nov 2008                           |
| IMS 9       | 5655-J38       | 29 Oct 2004 | 07 Nov 2010                           |
| IMS 10      | 5635-A01       | 26 Oct 2007 |                                       |
| IMS 11      | 5635-A02       | 30 Oct 2009 |                                       |
| IMS 12      | 5635-A03       |             |                                       |

## Staying Current with IMS Versions

- Need for software support important in today's more dynamic high availability environments
- Each new version focuses on improving core functions of IMS (as well as connectivity)
- Core functions are key for flexibility to adapt to changes
- Many new functions are easy to implement
  - Minimal effort
  - Minimal ongoing costs
- Focus on mainframe qualities of service

# IBM System z<sup>®</sup>

Think you know what a mainframe is?

*An Old, Expensive platform for Legacy applications?*

**Think again! Today's IBM System z<sup>®</sup> is .....**

- *The world's most trusted transaction processing and data server for business critical applications*
- *The world's most cost-efficient platform for data center consolidation and virtualization*
- *The world's most dependable and scalable hardware and Middleware platform for new business applications*
- *A thoroughly modern application environment for traditional and Cloud delivery models*



# Enterprise Modernization Makes Good Economic Sense



**zEnterprise creates an agile, dynamic, and cost effective enterprise architecture and the modernization of existing assets helps to achieve Smarter Computing**

- *Modernization to leverage your existing investments*
- *Reduce risk and complexity*
- *Increase efficiency with multiple platform development tools*
- *Design your enterprise processes for automation*
- *Gain real-time insight of the business*
- *Enable dynamic management of the business process*



## High Priority Recommendation for Modernizing Base (and Connectivity) IMS functions

- Implement the IMS Common Service Layer (CSL)
  - Available since IMS 8
  - Few enhancements in IMS 9
  - Many enhancements in IMS 10
  - More enhancements in IMS 11
  - More enhancements in IMS 12
- IMS architectural direction for implementing new functions, particularly in an IMSplex environment but also for single IMS standalone systems

# IMS Common Service Layer Implementation

- Most new functions are based on CSL
  - Operations management (OM)
  - Resource management (RM)
  - Structured call interface (SCI)
  - Open database access (ODBM)
- Though available since IMS 8, IMS 10 / IMS 11 / IMS 12 provide many more interesting and useful functions
  - Will review these and others in this presentation
- Seriously consider implementing a minimal CSL (SCI/OM)
  - Called ‘enhanced command environment’
  - Most new functions require OM type-2 commands
  - Begin in test environment first

# IMS CSL Information

- IMS CSL presentations on IBM Techdocs website
  - <http://www.ibm.com/support/techdocs/atmastr.nsf/WebIndex/PRS3895>
  - IMS Common Service Layer Overview and Functions
  - Setting Up the IMS Common Service Layer

## ‘Base’ IMS Functions to Modernize IMS

- Availability
  - Reliability / serviceability
  - Performance / capacity
  - Ease of use / improved manageability
- 
- Benefits
  - Installation complexity
  - On-going processor resources needed



## Major Functions for Improving Availability ...

- Dynamic resource definition (DRD) (IMS 10)
  - Dynamic definition via type-2 commands for program/database/transaction/FP routing code resources
  - More quickly react to changes
- ACB library member online change (MOLC) (IMS 10)
  - Allows dynamic additions/changes of ACBLIB members while IMS is active via type-2 commands
  - Complements DRD for adding/changing ACBs for programs and databases

## Major Functions for Improving Availability ...

- Global Status (IMS 10)
  - Maintains global command status for database, area, or transaction resources
  - Provides consistent status for these resources across restarts in an IMSplex
- Database quiesce (IMS 11)
  - Creates a coordinated recovery point via type-2 commands across an IMSplex for an IMS database or set of IMS databases within an IMSplex without taking databases offline
  - Reduces outages required for creating recovery points

## Major Functions for Improving Availability ...

- Open Database (IMS 11)
  - Allows access to IMS DB from distributed and local environments for Java applications
  - DRDA protocols ease application development
- IMS repository (IMS 12)
  - Enables multiple IMS systems in an IMSplex to manage, store, share, and retrieve resource definitions in a centralized manner via type-2 commands
  - An alternative to using RDDs for DRD

# Major Functions for Improving Availability

- IMS to IMS Replication (IMS 11)
  - **InfoSphere IMS Replication for z/OS V10.1 (5655-W28)** delivers a native IMS-to-IMS software replication solution that supports high-availability IMS data environments.
  - This solution 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, InfoSphere IMS Replication for z/OS supports a hot standby environment that can dramatically reduce the time to recovery for today's 24x7 processing environments.

# Major Availability Improvements - some setup requirements



|        | Function  | Setup  | On-going resources |
|--------|---|--------|--------------------|
| IMS 10 | Dynamic resource definition (DRD)                           | Medium | Low                |
| IMS 10 | ACB member online change                                    | Medium | Low                |
| IMS 10 | Global status for database, area, and transaction resources | Medium | Low                |
| IMS 11 | Open database access to IMS DB                              | High   | Low-High           |
| IMS 11 | Database quiesce  | Low    | Medium             |
| IMS 12 | IMS repository for DRD                                      | Medium | Low                |
| IMS 11 | IMS-to-IMS Replication                                      | High   | Low-High           |

# Other Availability Improvements

## - minimal / no setup requirements



|           | Function                                | Setup | On-going resources |
|-----------|---|-------|--------------------|
| IMS 9     | HALDB Online Reorg                      | Low   | Medium-High        |
| IMS 10    | Image Copy 2 Enhancements               | Low   | Medium-High        |
| IMS 10    | IRLM Lock Timeout Enhancement           | Low   | Low                |
| IMS 10/11 | OTMA descriptor / dynamic support       | Low   | Low                |
| IMS 11    | Dynamic allocation of ACBLIB data sets  | Low   | Low                |
| IMS 11    | Dynamic allocation for OLCSTAT data set | Low   | Low                |

# Major Functions for Improving Reliability / Serviceability

- Transaction level statistics (IMS 10)
  - Improved log statistics for understanding transaction characteristics
- Timestamp precision for DBRC (IMS 10)
  - Microsecond precision to improve database integrity
- Operations Manager Audit Trail (IMS 10)
  - Improved auditability for OM environment
- BPE external trace to DASD (IMS 10)
  - Facilitates larger traces
- Dynamic abend dump formatting exit (IMS 11)
  - Installed during IMS startup

# Reliability / Serviceability Improvements - some setup requirements



|        | Function                        | Setup  | On-going resources |
|--------|---------------------------------|--------|--------------------|
| IMS 10 | Operations Manager<br>Audit Log | Medium | Low                |
| IMS 10 | Transaction level<br>statistics | Low    | Low-Medium         |



# Reliability / Serviceability Improvements - minimal / no setup requirements



|              | Function   | Setup  | On-going resources |
|--------------|--|--------|--------------------|
| IMS 10       | BPE external trace to DASD                               | Low    | Low                |
| IMS 10/11    | IMS and IMS Connect support of RACF mixed case passwords | Medium | Low                |
| IMS 11       | Dump formatter enhancements                              | Low    | Low                |
| IMS 11       | BPE-based DBRC   | Low    | Low                |
| IMS 10       | Analysis utilities rewrite                               | Low    | Low                |
| IMS 10       | Timestamp precision for DBRC                             | Medium | Low                |
| IMS 11       | Dynamic abend dump formatting exit                       | Low    | Low                |
| IMS 10/11/12 | New tracing capabilities                                 | Low    | Low-High           |

# Major Functions for Improving Performance / Capacity ...

- Parallel RECON access (IMS 10)
  - Improved technique for RECON serialization
- MSC Bandwidth (IMS 10)
  - Improved MSC buffer management
- FP 64-bit buffer manager (IMS 11)
  - Improved DEDB autonomic buffer management
- Dynamic full function database buffer pool enhancements (IMS 12)
  - Change OSAM/VSAM buffer pool specifications dynamically

# Major Functions for Improving Performance / Capacity

- MSC TCP/IP support (IMS 12)
  - New type of physical MSC link that uses TCP/IP
- Logger enhancements (IMS 12)
  - Improvements for OLDS and WADS processing

# Performance / Capacity Benefits - some setup requirements



|        | Function  | Setup       | On-going resources |
|--------|---|-------------|--------------------|
| IMS 10 | Parallel RECON Access                                   | High        | Low-High           |
| IMS 10 | MSC Bandwidth   | Medium      | Low                |
| IMS 11 | Fast Path 64-bit buffer manager for DEDBs               | Medium      | Low-Medium         |
| IMS 12 | Dynamic full-function database buffer pool enhancements | Low         | Low-Medium         |
| IMS 12 | MSC TCP/IP support                                      | Medium      | Low                |
| IMS 12 | Logger enhancements                                     | Medium-High | Low                |

# Performance / Capacity Benefits

## - minimal / no setup requirements



|        | Function                              | Setup | On-going resources |
|--------|---------------------------------------|-------|--------------------|
| IMS 10 | Large sequential data set support     | Low   | Low                |
| IMS 10 | EAV support for non-VSAM data sets    | Low   | Low                |
| IMS 10 | OTMA transaction timeout enhancement  | Low   | Low                |
| IMS 11 | ACB 64-bit buffer pool                | Low   | Low                |
| IMS 11 | IMS-managed JVM for dependent regions | Low   | Low                |
| IMS 12 | EAV support for VSAM data sets        | Low   | Low                |
| IMS 12 | OTMA ACEE reduction enhancement       | Low   | Low                |

# Performance / Capacity Benefits

## - minimal / no setup requirements



|              | Function   | Setup | On-going resources |
|--------------|--|-------|--------------------|
| IMS 10/11/12 | zAAP offload for IMS Java, SOAP Gateway, XML converter, IMS TM Resource Adapter<br>zAAP on zIIP with z/OS 1.11 | Low   | Low-High           |
| IMS 10/11/12 | HALDB improvements   | Low   | Low-Medium         |
| IMS 10/11/12 | VSCR relief  | Low   | Low-Medium         |

# Major Functions for Ease of Use / Improved Manageability

- IMS Common Service Layer (IMS 9 / 10 / 11 / 12)
  - Improving operational characteristics and manageability
- Common security through RACF (SAF) interface (IMS 10)
  - Single point of administration
- Fast Path Secondary Index support (IMS 12)
  - New database design option
- IMS Explorer Technology Preview (IMS 11)
  - Simplifying application development

# Ease of Use / Improved Manageability - some setup requirements



|                   | Function                                     | Setup  | On-going resources |
|-------------------|--|--------|--------------------|
| IMS<br>9/10/11/12 | Common Service Layer (CSL)                   | Low    | Low                |
|                   | CSL Operations Manager (OM)                  | Medium | Low                |
|                   | CSL Resource Manager (RM)                    | Medium | Low                |
|                   | CSL Open Database Manager (ODBM)             | High   | Low-High           |
| IMS<br>10/11/12   | Type-2 Command enhancements                  | Medium | Low-Medium         |
| IMS<br>10/11/12   | Common security through RACF (SAF) interface | Medium | Low                |
| IMS 12            | Fast Path Secondary Index Support            | Medium | Low                |
| IMS 11            | IMS Explorer Technology Preview              | Medium | New capability     |



# Ease of Use / Improved Manageability - minimal / no setup requirements



|        | Function  | Setup | On-going resources |
|--------|---|-------|--------------------|
| IMS 10 | DFSDFxxx PROCLIB member                                     | Low   | Low                |
| IMS 10 | Batch SPOC utility  | Low   | Low-Medium         |
| IMS 10 | TSO SPOC print enhancements                                 | Low   | Low                |
| IMS 10 | SSPM (Sysplex Serial Program Management) with shared queues | Low   | Low-Medium         |

# Ease of Use / Improved Manageability - various enhancements



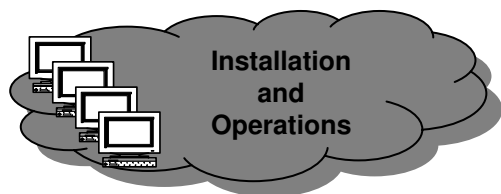
|                 | Function   | Setup      | On-going resources |
|-----------------|--|------------|--------------------|
| IMS<br>10/11/12 | DBRC Enhancements  | Low-Medium | Low                |
| IMS<br>10/11/12 | IMS Connect enhancements                                 | Low-Medium | Low                |
| IMS<br>10/11/12 | OTMA enhancements  | Low        | Low                |
| IMS<br>10/11/12 | IMS Callout enhancements<br>(synchronous / asynchronous) | Medium     | Low-Medium         |

# IMS Simplification Strategy

## New IMS interfaces and models

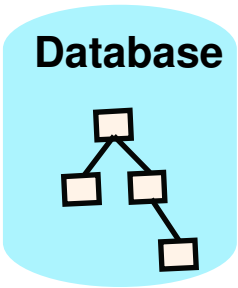
## IMS interfaces

## IMS



- SQL / JDBC
- IMS Tools
- Rational
- Optim
- Cognos
- InfoSphere
- J2EE
- pureQuery

- JCL
- ISPF
- SDSF
- JES
- User Mods
- User Exits
- DBDGEN
- PSBGEN
- ACBGEN
- OLC
- DRD
- DLI



*Reduce the need for special, in-depth IMS skills*

# IMS Explorer...Simplifying IMS application development !



Graphically-driven editors to display and update IMS program and database definitions

Graphical interface to easily access and manipulate IMS data using standard SQL

The screenshot displays the IMS Explorer interface. At the top, a SQL editor window shows the query: `SELECT HOSPNAME, HOSPCODE, HOSPLL FROM PCB01.HOSPITAL`. Below the editor is a graphical database schema diagram for 'DBD: DEALERDB' and 'DBD: EMP08'. The schema includes tables like DEALER, MODEL, SALES, STOCK, SALESINF, SALESERP, EMP, SALESEMP, and EMPLINFO, with their relationships and indexes visualized. A yellow arrow points from the 'HOSPITAL' table in the schema to the query result table below. The query result table shows the following data:

| Status | Operation                   | Date | HOSPLL | HOSPCODE      | HOSPNAME     |
|--------|-----------------------------|------|--------|---------------|--------------|
| ✓      | Succes select * from pcb... | 8/2: | 1      | R 1210010000A | ALEXANDRIA   |
| ✓      | Succes select * from pcb... | 8/2: | 2      | R 1210020000A | SANTA TERESA |
|        |                             |      | 3      | R 1210030000A | SANTA CLARA  |
|        |                             |      | 4      | R 1210040000A | NEW ENGLAND  |

Generate SQL to access IMS data

See database relationships  
Change DBD and PSB definitions



# Staying Current with IMS Versions is IMPORTANT!



- Need for software support important in today's more dynamic high availability environments
- Each new version focuses on improving base functions of IMS (as well as connectivity)
- Base functions are key for flexibility to adapt to changes
- Many new functions are easy to implement
  - Minimal effort
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- Focus on mainframe qualities of service