Agenda

About IMS 14

IMS 14 Enhancements
- Driving Transaction Workload into IMS
- IMS Data the Core of your Business
- Improving Availability
- Improving Usability for External Subsystem Connections
**IMS Technical Symposium**

7–10/3 2016  
Pallas Dorint Hotel in Wiesbaden, Germany

For information and enrollment see [http://ims-symposium.com](http://ims-symposium.com)  
Draft Agenda underway.

Discount for the Nordic customers if they register via the GSE User Group
IMS 14

Program number 5635-A05
   TM VUE 5655-TM3  DB VUE 5655-DSE
   Enterprice Suite 5655-TDA

Announced 5/10-2015
Announcement letter ZP15-0539
GA 30/10-2015
QPP program in 2015 – two Nordic customers participating

IMS 12 End of Support 7/11-2016
IMS 14

DBRC version : 14.1
Coexist with 12.1 and 13.1
Coexistence PTF’s needed, see Release Planning for IMS

"Skip release" migration from V12 to V14 possible

Look at www.ibm.com/ims

Documentation available in the IBM Knowledge Center
There are three important shifts fundamentally changing IT

<table>
<thead>
<tr>
<th>Data</th>
<th>Cloud</th>
<th>Engagement</th>
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<tr>
<td>Data is becoming the world’s new natural resource</td>
<td>The emergence of cloud is transforming IT and business processes into digital services</td>
<td>Social. Mobile. Security. Empowering people with knowledge, enriching them through networks and changing expectations.</td>
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IMS Product Strategy is aligned with these shifts

**Strategic Intent**
- Continue to deliver the IMS Value Proposition
  - Superior performance, reliability, availability and serviceability
  - Minimize cost per transaction
- Innovate and extend the value of your IMS investment
- Expand and empower the IMS talent population

**Investment**
- Core Capabilities
  - Reduce path length, contention, I/O...
  - Reduce planned outages
  - More dynamic capabilities
- Data & Analytics
  - Accelerate time to insight
- Cloud/Mobile
  - Rapidly enable/control cloud & mobile access to IMS resources
- Open interfaces & Java
- Modern tooling for administrators, developers and DBAs

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Driving Transaction Workload into IMS
IMS Connect - The TCP/IP gateway to IMS

- Enables access for
  - Messages into and out of IMS applications through IMS TM
    - IMS Mobile Feature Pack and z/OS Connect
    - IMS to IMS, WebSphere Application Server, IMS Soap Gateway, and IBM DataPower through Open Transaction Manager Access (OTMA)
    - IMS to IMS through Multiple Systems Coupling (MSC)
    - IMS TM to CICS through InterSystems Communications (ISC)
  - Direct IMS Database access through Open Database
  - System Management using IBM Management Console for IMS or IMS Operations Manager
- IMS Connect is a component of IMS
- Executes in a z/OS address space
Enabling Cascaded Transactions

• Distributed global transactions can combine IMS transactions with other workload requests (WAS, CICS, DB2 requests) into one unit of recovery
  ▪ Resource Recovery Services (RRS) coordinates the syncpoint processing for global transactions

• Allow a global transaction using the IMS TM Resource Adapter to flow across an IMS Connect and an IMS Control region that reside on different LPARs
  ▪ For those transactions that require 2-phase commit (SYNCLVL=SYNCPT)

Why this is important
• Increases flexibility and workload balancing of IMS across LPARs
• Increases availability by allowing IMS Connect to route to another LPAR
Enable connectivity using OTMA Descriptors

- Open Transaction Manager Access (OTMA) allows IMS to send/receive transaction messages to/from TCP/IP clients such as IMS Connect through transaction pipes.
- Client descriptors define properties for an OTMA client.
- Destination descriptors define message destinations that are routed through OTMA.

**Better storage management for OTMA descriptors**
- Eliminate fixed storage allocation at startup.
- Can increase limits using DFSOTMA member descriptor.

**Why this is important**
- Reduces ECSA storage usage if fewer descriptors are needed than current limits.
- Improved scalability for application connectivity growth.
Improved Scalability for OTMA Transaction Pipes

- Allow multiple active Resume TPIPEs for a single Transaction Pipe (TPIPE)
  - TPIPEs sending CM0 output require ACK before next message can be sent
  - Multiple IMS Applications issuing ICAL to a single TPIPE

**Why this is important**
- Synchronous callout to an external server - potential reduction in application wait time
- Asynchronous message delivery - Potential throughput improvement
- Failover; throughput or workload balancing

```
Client1
Resume TPIPE ALTCID=ICONTP1

Client2
Resume TPIPE ALTCID=ICONTP1

Client3
Resume TPIPE ALTCID=ICONTP1

TPIPE= ICONTP1
Message1
Message2
Message3
```
Improving OTMA Security and Usability

- Automatically refresh OTMA cached userids when they are changed in RACF
- Secure connections for OTMA clients using RACF without having to enable transaction and command security
- Improve dispatching during busy periods by allowing user specified limits for the save area prefix allocation for OTMA clients
- Allow conversations to be released easily via /EXIT CONV by showing the conversation identifier via QUERY OTMATI
- Enable callable service requests from OTMA routing exits DFSYPRX0 | OTMAYPRX and DFSYDRU0 | OTMAYDRU
- Allow OTMA Input/Output Edit Exit DFSYIOE0 | OTMAIOED to modify the message

Why this is important

- Improves security
- Removes performance bottleneck for peak loads
- Improves usability of user exits
Increase scalability for APPC conversations

- Automatic scaling for APPC conversations and flood prevention
  - IMS system defaults for maximum number of
    - active conversations
    - queued conversations in 64-bit storage
  - User can specify limits with APPCMAXC= parameter in DFSDCxxx
- When the number of APPC conversations exceeds the limit, new conversations are queued to 64-bit storage
- When the number of queued conversations is reached, new conversations are rejected

Why this is important
- Improves IMS resiliency and reduces unplanned outages due to APPC message flooding
Enable IMS Application callout request to specify control data

- Enhanced DL/I ICAL function allows user information to be passed to IMS Connect and its clients
  - XML string can have IBM and/or user defined tags
  - All tags are passed to each component to interrogate
  - Some usage scenarios
    - Pass security credential information to an external web service which can be used to authenticate the callout request
    - Override the XML converter name specified in the OTMA destination descriptor or the static endpoint

**Why this is important**
- Strengthens callout security with the security token included in control data
- Reduces the number of OTMA destination descriptors due to unique converter names
- Provides flexible and dynamic endpoint routing
IMS Data - The core of your business
Growing your Full Function Databases

- High Availability Large Database (HALDB) enables independent partitions for full function databases allowing growth greater than 40 terabytes
  - Supports OSAM and VSAM
- Use HALDB Online Reorganization to reorganize partitions without an application outage

- Allow OSAM database growth by supporting 8GB OSAM for HALDBs
  - You can choose either 8GB OSAM HALDB or the use of Online Reorganization for each database

Why this is important
- Increased scalability for OSAM databases
Growing your Fast Path Data Entry Databases

- Fast Path 64-bit buffer manager takes the guesswork out of defining Data Entry Database (DEDB) buffer pools
  - IMS manages the subpools automatically
  - Multiple subpool sizes are used based on the database
- **High Speed Reorganization (HSRE) and High Speed Sequential Processing (HSSP) buffers can now use 64-bit storage**

**Why this is important**
- Reduces need for 31-bit common storage (ECSA)
- Allows the HSSP and HSRE utilities to run against UOWs with a very large number of segments
Now is the time to enable the IMS Catalog

• **What is the Catalog used for?**
  - Comprehensive view of trusted IMS database metadata (including application metadata)
  - Managed by IMS with standard access patterns (JDBC/SQL)
  - Offers metadata discovery and exchange via IMS Open Database and the IMS Explorer for Development
  - Enables broad IMS integration into the IBM and non-IBM portfolio of tools

• **Use the IMS Catalog as the source for all program and database schemas (optional)**
  - IMS loads resource information from the catalog
  - ACBLIB is no longer used or needed by IMS

**Why this is important**
- Removes the external need for PSBGEN, DBDGEN, and ACBGEN
Defining IMS Databases with Agility

- Use a command to dynamically change an OSAM or VSAM buffer pool without recycling IMS systems
- Enable application programs to use different logical versions of the same database with database versioning without an application change
- Change the structure of an HALDB or DEDB using HALDB Alter or DEDB Alter without a DB outage
- **Use Data Definition Language (DDL)** to make database schema changes
  - No longer need to use system definition and generation to introduce new programs and databases

*Why this is important*
- DDL is the industry standard
- DDL-authoring tools are prevalent in the market
Change or add a DEDB Area without taking the Database offline

- Builds on IMS 13 DEDB Alter capability to change the physical attributes of a DEDB Area without a DB outage
  - Can be used with Sequential Dependents (SDEPs)
- Add Areas to a DEDB
- Add a Segment Edit/Compression exit
- Allow alter when using XRF/FDBR with ACBSHR=N

**Why this is important**
- Improves data availability by allowing selected changes to a DEDB without taking the database offline
Reduce unplanned outages due to insufficient space for Sequential Dependents

- IMS can automatically manage DEDB sequential dependent storage when processing of the SDEPs is asymmetric across the IMS systems
- Automatic SDEP buffer management reduces the need to perform manual steps to prevent an out of space condition in the SDEP that could cause a database outage.
- SDEP management accounts for asymmetric processing to ensure enough CIs are released
  - Enable and control through new parameters in DFSDFxxx
    - SDEPAUTO, SDEPFREQ, SDEPEXP, SDEPTIME

Why this is important
- Reduces unplanned outages for applications and/or databases due to insufficient space for SDEPs
View data with IMS Explorer for Development

• Visualize IMS database structure as defined to IMS
• Change IMS Database and Program Definitions source
• Graphically access IMS data using SQL
• View your mainframe datasets
• Submit JCL and inspect output in JES
• Explore the IMS Catalog
• Invoke transactions for unit test
• Enable services for the IMS Mobile Feature Pack
• **Issue DDL to manage IMS database schema**
Improving Availability
Sharing the IMS Message Queues

- Allows multiple IMS systems to share messages on a single set of queues in a Coupling Facility across a Parallel Sysplex
- Improves workload distribution, increases availability and can easily add capacity
- Indicates to the Queue Space Notification exit, DFSQSSP0, how much of the message queue structure is used
- Allows BMP-inserted transaction messages to be eligible for “local-first” processing

Why this is important
- Can improve availability and reduce cost
Dynamically defining resources without an IMS outage

- Improve the availability of the IMS online environment by dynamically defining certain types of resources
  - Database Directory, Program Directory, Transaction, Routing Code, Descriptors
  - OTMA Destination Descriptor
  - IMS Connect configuration
- Enabled through commands and/or user exit
- **Enhanced to fully manage MSC resources**
  - Create and Delete commands for MSC resources
  - IMSRSC Repository enabled for MSC

Why this is important
- Improved availability when changing definitions
- Elimination of need for system definition and system generation processes
Improving usability for the IMS Repository

- The IMS repository is a common store for managing resource definitions in an IMSplex
  - Provides consistent definitions across IMS systems
  - Allows resources to be removed from sysgen yet preserved for cold start
- Enable AUTOEXPORT to IMSRSC repository from IMS at end of IMS system checkpoint
- Provide the ability to show changes that have not yet been hardened to the IMS repository
  - QUERY .... SHOW(EXPORTNEEDED)

Why this is important

- Improves usability of the IMS Repository
- Reduces the chance of an IMS terminating without hardening changes to the IMS Repository
Enable faster rollout of application changes with less manual effort

- IMS optimizes the scheduling process allowing an application to remain scheduled waiting for the next input message
  - Eliminates unnecessary application program termination and rescheduling improving performance and reducing CPU usage
    - Pseudo Wait-for-Input (PWFI) option for MPP and JMP regions
    - BMP transactions defined WFI
  - Adds to operational processes to refresh application
- **New command to terminate these applications in order to refresh an application**
  - UPDATE PGM .... START(REFRESH)

**Why this is important**
- Enables faster rollout of application changes with less manual effort
- Reduces data integrity exposures due to missed application changes
Refresh user exits without an IMS outage

- Improved usability for user exits
  - Specify multiple exit routines for a single user exit type
  - Refresh User Exits dynamically using a command
- Additional exits with this capability
  - Type-2 AOI user exit (AOIE – DFSAOE00)
  - New IMS Monitor (IMSMON) user exit type

Why this is important
- Increases availability for IMS by allowing refreshing of user exits without an IMS outage
- Improves usability for tools that provide monitor functions by providing an API for extensions
Managing change in IMS Connect

- Commands allow dynamic change for IMS Connect configuration
- Allow additional commands to dynamically manage IMS Connect resources
  - Introduces DELETE PORT and DATASTORE commands
  - Enhances UPDATE PORT and DATASTORE commands to allow changes to selected attributes
  - Introduces CREATE and DELETE IMSPLEX commands
  - Provides synchronous command responses for selected IMS Connect

Why this is important
- Increases availability allowing dynamic creates, deletes and updates for selected resources
- Increases usability providing a synchronous command response
Improving Usability for External Subsystem Connections
Improving Usability for External Subsystems

• Provide SubSystem Type values to define IBM MQ and WebSphere Optimized Local Adapter subsystems in addition to DB2
  - SST = DB2 | MQ | WOLA
  - Positional SSM definitions assume SST=DB2

• Commands and log records changed to show SST value for subsystem
  - /DIS SUBSYS
  - /DIS OASN SUBSYS

Why this is important
  - Improves usability by allowing you to distinguish between DB2, MQ and WOLA when multiple external subsystems are connected to IMS
Simplifying the FDBR Resolve In-Doubt Notification Exit

- Simplify the resolution of in-doubt work for an external subsystem during Fast Database Recovery (FDBR)
  - Provides a sample Resolve In-Doubt Notification Exit, DFSFIDN0, that can trigger automation to resolve in-doubt work without having to write custom code
    - Issues a message for each in-doubt ESS UOR with the subsystem information
    - Automation can monitor the messages and act upon the in-doubt UOR

Why this is important
- Improves usability when using both FDBR and DB2 for z/OS
- Can reduce the time DB2 z/OS holds locks during recovery
Transaction Manager - Summary

- APPC flood control enhancement
- IMS Connect support for cascading global transactions
- Dynamic definition of MSC resources
- Dynamic storage for OTMA descriptors
- OTMA tpipe parallelism enhancement
- OTMA security enhancements
- Enable IMS Application callout to support control data
- Dynamic definition of MSC resources
- Shared queues overflow feedback enhancement
Data base manager - Summary

- 64-bit buffer enhancement for Fast Path high-speed processing
- Automatic management of Fast Path DEDB SDEP buffers enhancement
- Database Image Copy 2 utility (DFSUDMT0) Data Compression
- DEDB Alter function enhancements
- Data Definition Language (DDL) for IMS
- IMS management of ACBs enhancement
- FDBR in-doubt thread support for ESAF
- HALDB support for 8-GB OSAM data sets enhancement
- OSAM 24-bit storage constraint relief enhancement
- SQL support enhancements
IMS System - Summary

- Dynamic refresh enhancement for PWFI and WFI regions
- ESAF subsystem type enhancement
- IMS Connect command enhancements
- Automatic export to the IMSRSC repository at IMS checkpoints
- QUERY command enhancement for IMSRSC unexported resources
- Reduced total cost of ownership enhancements
- User exit enhancements

For complete list, refer to “Release Planning for IMS” in the IBM Knowledge Center.
Thank You
Going Mobile with IMS
z/OS Connect bridges Systems of Record with Systems of Engagement for optimized service delivery

MobileFirst Platforms run either on-prem (using Linux on z Systems) or in the cloud (via Bluemix)

Serving mobile data directly from z/OS is 40% less expensive than exporting to a system of engagement
Consistent enterprise connectivity for mobile and cloud

• **IBM WebSphere Liberty z/OS Connect** – Shipped with WAS, CICS, and IMS

• **Unifies z/OS connectors** – a common solution for mobile, cloud, and web

• **Simplified integration** – Hide complexity of connecting to z/OS using REST
IMS Cloud and Mobile Integration Available Today!

IMS Mobile Feature Pack

- Deliver IMS applications and data to mobile and cloud developers in a secure, governed, and optimized way via:
- An integrated platform that supports full discovery, modeling, enablement, and deployment of both IMS transactions and IMS data
  - Built on z/OS Connect: the singular approach for WebSphere, CICS, IMS, and DB2 for z/OS
  - Uses IMS Connect for connectivity to IMS Transactions
  - Uses IMS Explorer for Development to quickly and easily expose IMS transactions as RESTful services

27% increase in throughput w/ z13 at equivalent CPU as compared to zEC12

34,925 TPS!
How IMS Tools Extend Your Edge
IMS Tools for IMS Database Management System

Solutions for IMS Databases

- IMS Database Solution Pack
  - Autonomics
  - IBM Management Console
  - IMS Online Reorg Facility
  - DB Reorg Expert
    - Unlock
    - Load
    - Prefix Resolution/Update
    - Index Builder
    - HP Image Copy
    - HP Pointer Checker
      - IMS DB Repair Facility
      - IMS Library Integrity Utilities
      - IMS HALDB Toolkit

- IMS Fast Path Solution Pack
  - Autonomics
  - IBM Management Console
  - HP FP Utilities
    - FP Advanced Utilities
    - FP Online Utilities
  - IMS DB Repair Facility
  - IMS HP Image Copy
  - IMS Library Integrity Utilities

- IMS Recovery Solution Pack
  - DB Recovery Facility
  - HP Change Accumulation
  - HP Image Copy
  - DRF Extended Functions

- IMS Performance Solution Pack
  - IMS Connect Extensions
  - IMS Performance Analyzer
  - IMS Problem Investigator

Utilities/Tools for IMS Databases

- Backup and Recovery
  - IMS HP Image Copy
  - IMS DEDB Fast Recovery
  - IMS Recovery Expert V2

- Performance Management
  - IMS Buffer Pool Analyzer
  - IMS Performance Analyzer
  - IMS Problem Investigator
  - IBM Transaction Analysis Workbench

- Regulatory Compliance
  - IBM Infosphere Guardium Data Encryption for DB2 and IMS Databases

- Utilities/Utility Management
  - IMS DB Reorganization Expert
  - IMS HP Unlock
  - IMS HP Load
  - IMS Index Builder
  - IMS HP Prefix Resolution
  - IMS HP Pointer Checker
  - IMS Cloning Tool
  - IMS Database Control Suite
IMS Tools for IMS Transaction Management System

Solutions for IMS TM

- IMS Connect Extensions
- IMS Performance Analyzer
- IMS Problem Investigator

Utilities/Tools for IMS TM / Systems

Performance Management
- IMS Buffer Pool Analyzer
- IMS Connect Extensions
- IMS Performance Analyzer
- IMS Problem Investigator
- IBM Transaction Analysis Workbench
- IMS Network Compression Facility

System / TM Administration
- IMS Command Control Facility
- IMS ETO Support
- IMS HP Sysgen Tools
- IMS Queue Control Facility
- IMS Workload Router
- IMS Configuration Manager
- IMS Sysplex Manager

Application Management
- Batch Terminal Simulator
- Program Restart Facility
IMS Value Unit Edition can Save You Money
Providing new processing possibilities for the Digital Era

Yes, you can economically support new workloads!

Do you need to:
- Grow workload without impacting operational expense?
- Manage the cost of new applications that have to access IMS data for Java or SQL workloads?
- Develop and cost-effectively run mobile applications that need to access critical enterprise data stored in IMS?
IMS Value Unit Editions for IMS DB and TM

Economically support new workloads

- Introduces a new one-time-charge pricing metric specifically for new Java workloads
- IMS Data Sharing clients can grow workload without impacting operational expense
- Develop mobile applications using critical enterprise data stored in IMS
- Net new applications access IMS Open Database for Java or SQL workloads
- Opportunities for new customers to take advantage of this Industry-leading high performance DBMS

ibm.com/ims/imsdbvue/

- IMS clients can grow workload without impacting operational expense
- IMS DB VUE can share data with traditional IMS DB systems
- IMS TM VUE can share message queues with traditional IMS TM systems
- Develop new IMS Java applications with access to DB2 VUE or IMS DB VUE
- Additional zIIP offload cost savings for Java
- Run an IMS TM/DB VUE when you have both IMS TM VUE and IMS DB VUE

ibm.com/ims/imstmvue/
Deployment options for IMS TM VUE and IMS DB VUE

**Independent**
- Single zNALC LPAR
- VUE Products only

**Connected**
- zNALC & regular z/OS LPAR
- IMS TM VUE and IMS TM MLC connected to each other

**IMS DB VUE**
- Single zNALC LPAR
- VUE Products only
Tell me more!
What’s Next?

Discover
- 2 new **Point of View** RedGuides – your starting point for:
  - IMS and Mobile
  - IMS and Analytics

Adopt
- 2 follow-on RedBook ** Solution Guides**

Deploy
- IMS 14 Technical Roadshow from our Washington System Center team
Where can I learn more about IMS?

The IMS YouTube channel
https://www.youtube.com/user/ReThinkIMS

Look for IMS Playlists which groups specific videos on the following topics:

- Fundamentals
- Security
- Mobile
- Analytics
- Simplified Interfaces
- Tools
Who can answer my questions regarding how

**IBM IMS Solutions: Sharpen Your Competitive Edge?**

Please send questions to ibmims@us.ibm.com
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