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IBM

IMS Strategy and Directions

Disclaimer

Agenda

- **State of the IMS Business**

- IMS 11

- IMS Directions

- For Your Reference

IMS - State of the Business

- IMS usage continues to increase across all customers 20% per year
  - Smaller IMS customers: 150% growth over last 5 years
  - Medium IMS customers: 80% growth
  - Large IMS customers: 40% growth

- Increased version currency
  - 90%+ of IMS MIPS are on latest versions

- We see an acceleration in projects around mainframe modernization and server consolidation
  - Enhancements to IMS connectivity, IMS application modernization and integration, service enablement

- IBM investment in IMS remains strong (almost 30% growth in past 4 years)
  - Looking to expand in China, Russia and India

IMS Key Investment Areas

- Facilitate modernization of IMS applications, compliance, standards

- Dramatically simplify administration and deployment, automation, reduce skill level for application development

- Support high transaction growth rates through performance, capacity, availability and recovery enhancements

IMS Today - Full Integration of Data, Component & App Services

Software as a Service

Business Processes

Business Intelligence

Business Rules

Business Applications

Platform as a Service

Websphere

IMS Transaction Manager

| Web 2.0 Application | SOAP / WEB Services | App Development Tooling | SOAP / WEB Services | Callout Services |

| XML | JDBC** | Java Runtime | JCA adaptor | Java Runtime | JDBC | XML |

SQL Server   Oracle

IMS   DB2

Data as a Service

Networking   Storage

Shared, virtualized, dynamic resource change & provisioning

** IMS V11 type 4 driver

Examples of New IMS Capabilities & Tools

Rational Tooling Support
Web services design, generation, and testing
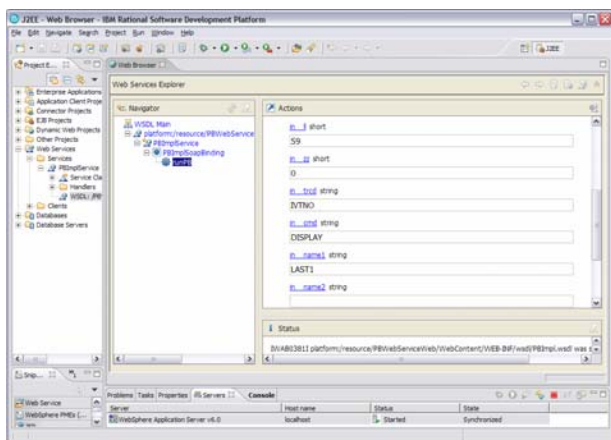
IMS Transaction / Data Access
Global distributed access for applications running on Linux, z/OS, AIX, Solaris, HP-UX
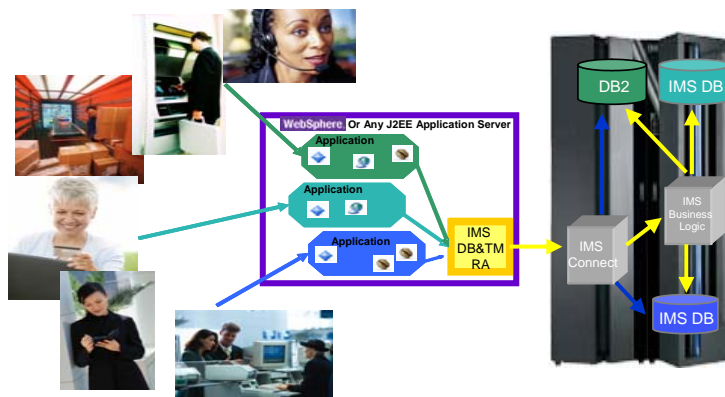
Web 2.0 IMS Mashups
Quickly transform IMS assets into RESTful Services

IMS as a Consumer and Provider of Services
IMS callout support*
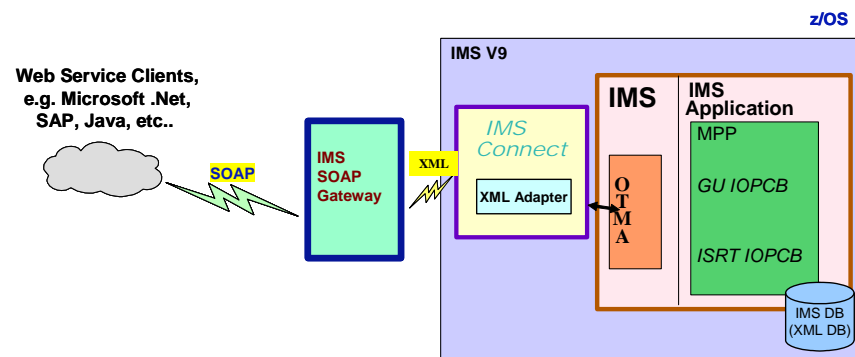
A Platform for Enterprise Data Services: *The Proven Power and Flexibility of IMS from IBM*

- ■ New IDC White Paper covering
  - – Mainframe compared to distributed Computing
  - – Hierarchical compared to relational DBMS model
  - – IMS as an application platform
  - – Customer examples & case study

- ■ **IDC Conclusion:**

  "For the vast majority of IMS users, the emphasis should not be on "How can I get off IMS" but rather, "How can I expand my use of IMS to take maximum advantage of its potential?"*

* IDC White Paper sponsored by IBM, A Platform for Enterprise Data Services: The Proven Power and Flexibility of IMS from IBM; Doc #219963, Oct 2009. Available on www.ibm.com/ims

New News - IMS 11

- IMS 11 QPP
  - 12 Customers, 2 IBM internal sites, 30 vendors
  - 6 customers in mission critical production prior to GA (range 10M – 98M trans/day)
  - 4 had entire enterprise in production on V11 prior to GA
  - 2 used Shared Queues to migrate to V11 without disruption
  - Customer satisfaction scores higher than V10, especially documentation

- IMS 11 – Record number of first day orders

"This was our first experience as part of IBM's IMS Quality Partnership Program. It has been very valuable for my team … we expect to be able to achieve the benefits of IMS V11 very quickly."

" Thus far we have been very pleased with IMS V11"

IBM

Customers Continue to Depend on IMS

GAD
IT für Banken

20 TB of IMS data and 50 Million IMS transactions per day supporting bank tellers, online banking and ATMs

Telcordia

"Our customers bet their business on the services we provide. And we bet our service performance and availability on IMS."

Paul Gandolfo, Senior Technical Specialist, Telcordia

Nationwide
On Your Side

Use IMS Sysplex for 24x7 availability via non-disruptive software and hardware maintenance, non-disruptive online database reorgs, workload balancing during peaks and enhanced failover and recovery

Analysts Agree!

IDC
Analyze the Future

"As IMS continues to evolve, it should be able to maintain a strong claim on the highly complex data management and high throughput workloads that it has historically served so well."

Carl Olofson, IDC

IMS Simplification Strategy

New IMS interfaces and models

IMS interfaces

IMS

Installation and Operations

Application Development

Reporting and Analysis

SQL / JDBC

IMS Tools

Rational

Optim

Cognos

InfoSphere

J2EE

pureQuery

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

IMS TM/DB

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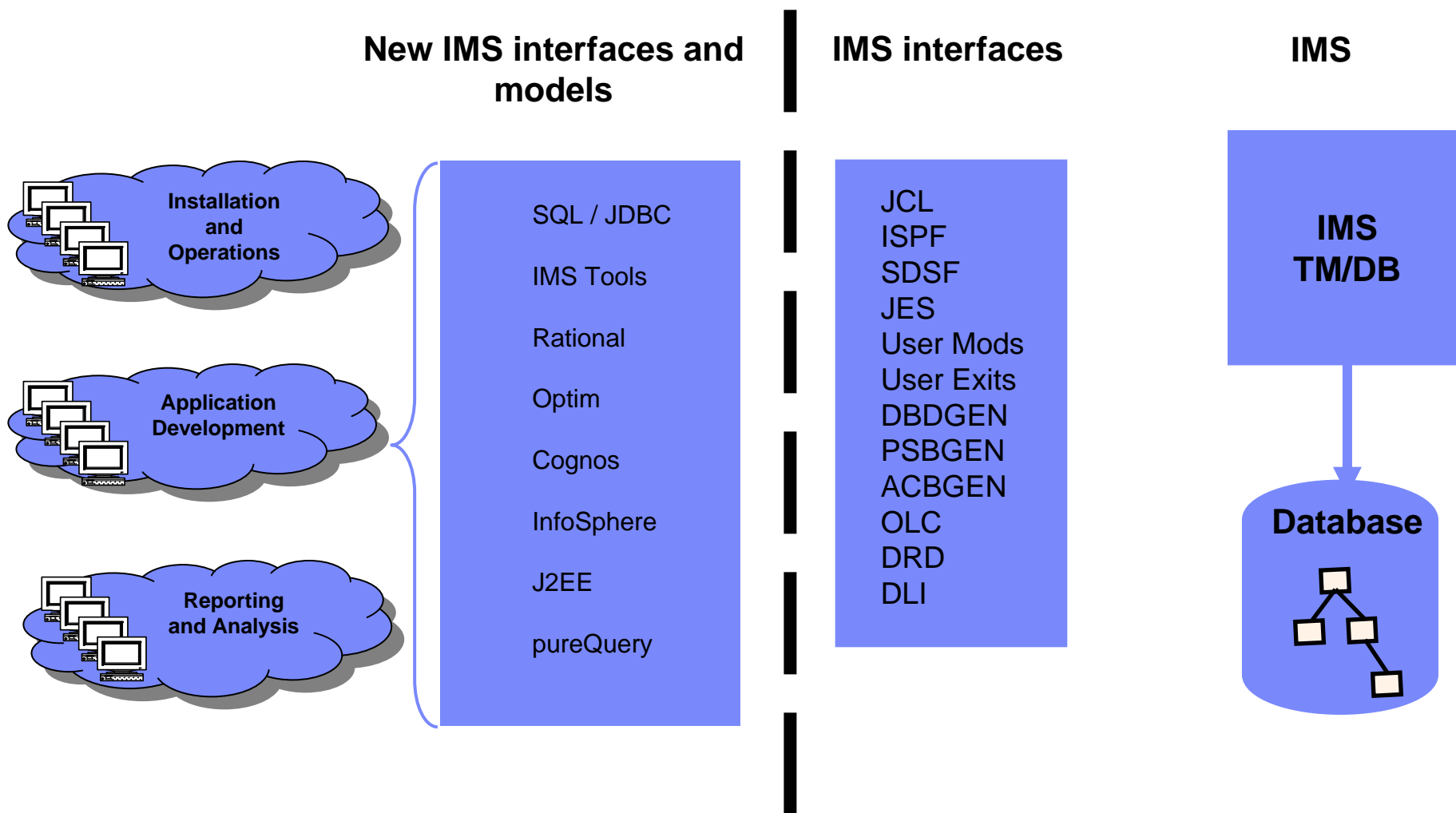
Reduce the need for special, in-depth IMS skills

IMS Application Development Simplification
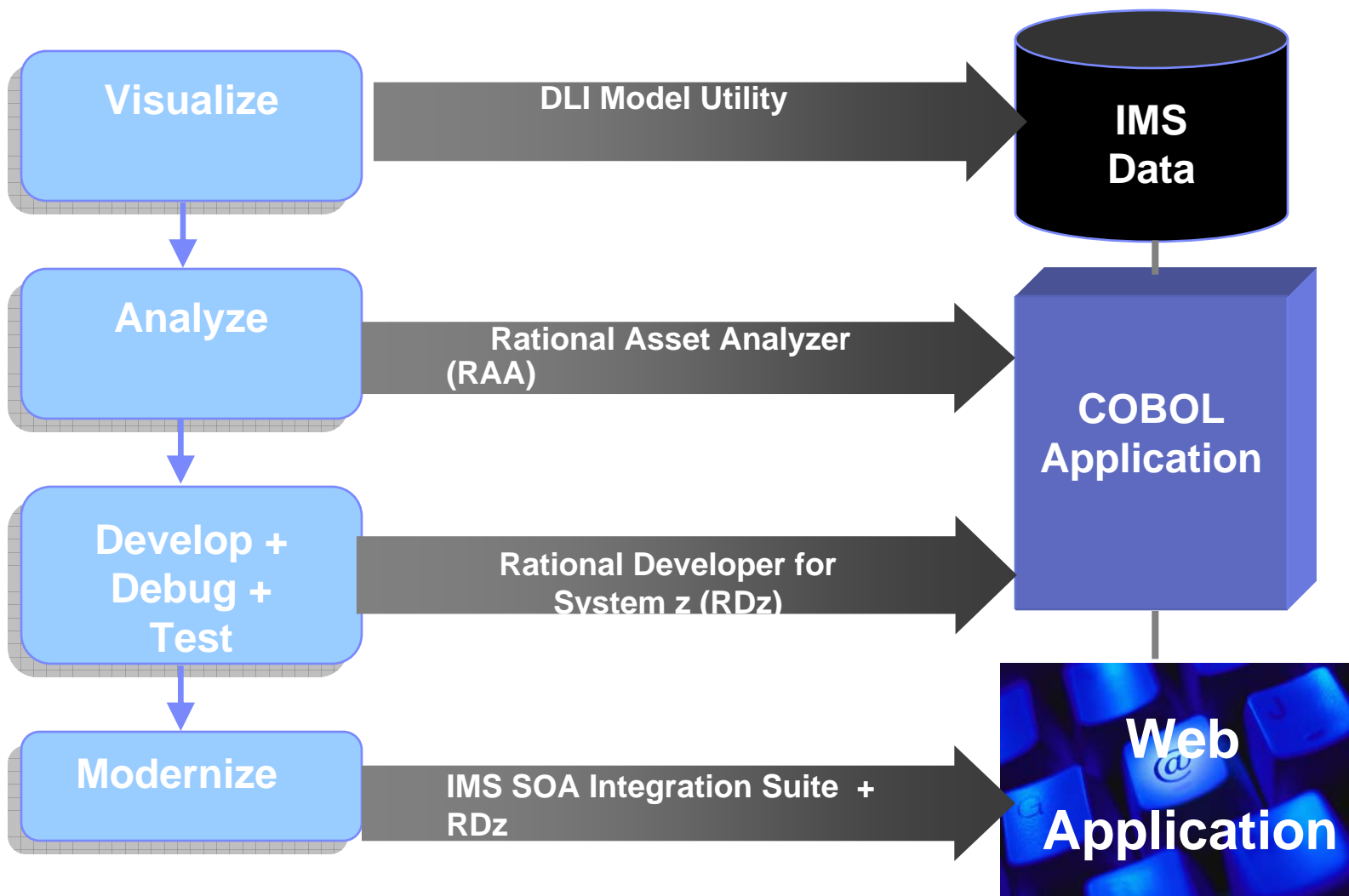
Easier to Develop, Debug and Test IMS Applications

- **Use modern Eclipse-based tooling**

  - Tools to help develop IMS Java (JMP and JBP) applications

  - Integrates with the DL/I modeling utility

  - Debug IMS applications as they execute on the host

- **Speed development with specialized editors and code generation wizards**
  - Code assist for IMS COBOL, PL/I and C/C++
  - Visual editors for MFS maps
  - Generate skeleton code for new IMS applications from code templates
  - Use IMS code snippets to speed code creation
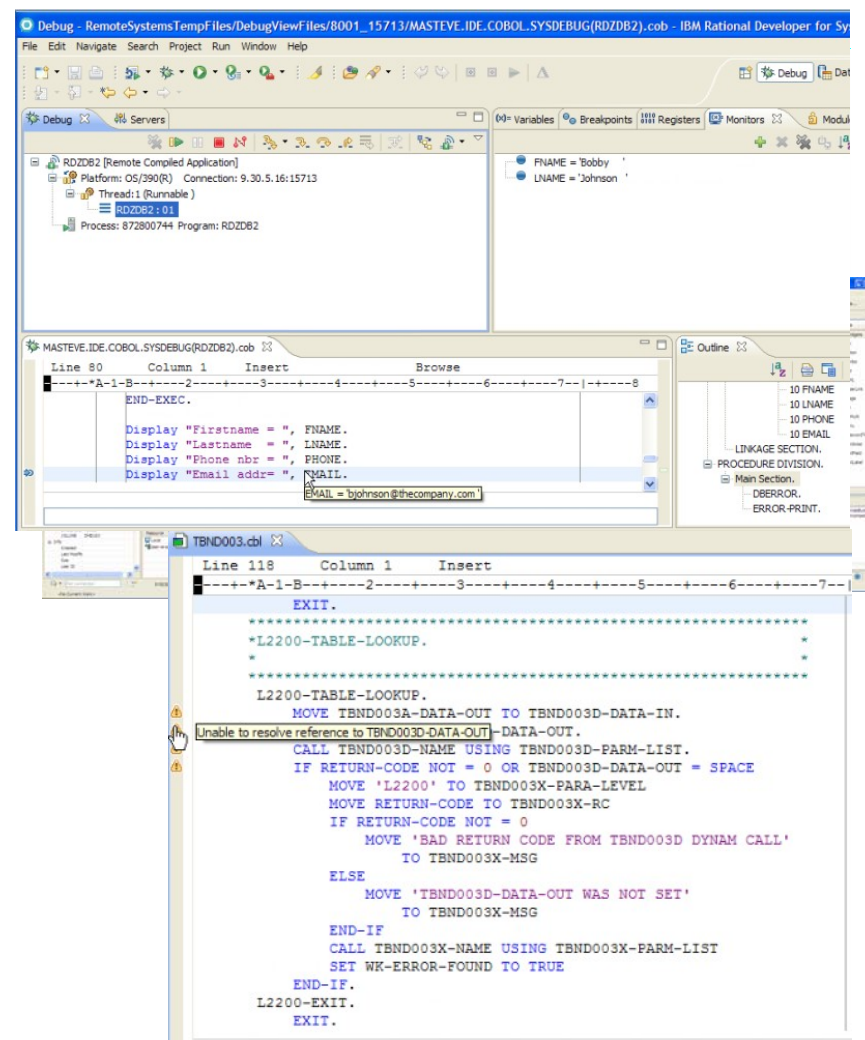
Requirement: IMS 11 + Cognos 8 = Enhanced Reporting and Operational Business Intelligence

The Three Levels of Business Intelligence

	Strategic BI	Tactical BI	Operational BI
Business focus	Achieve long-term business goals	Manage tactical initiatives to achieve strategic goals	Manage and optimize daily business operations
Primary users	Executives & business analysts	Executives, analysts & LOB managers	Analysts, LOB managers and users, and operational processes
Time-frame	Months to years	Days to weeks to months	Intra-day
Data	Historical data	Historical data	Real-time, low-latency & historical data

© Claudia Imhoff

Requirement: Using Cognos with IMS 11

✓ *Improved business insight*
  • Quick, flexible access and reporting from IMS data
  • Extend BI to employees involved in operational activities
  • More detailed and timely understanding of business operations

✓ *Reduced costs / Improved ROI*
  • Single, standard BI reporting tool used across enterprise
  • Eliminate need for special IMS tools / special   IMS skills
  • Reduce data proliferation – access data where it resides

Source If Applicable

IMS Roadmap

- New major version every 2-3 years
  - IMS 9 GA Oct 2004
  - IMS 10 GA Oct 2007
  - IMS 11 GA Oct 30, 2009
  - IMS Enterprise Suite 1.1 GA Nov 6, 2009
  - IMS 11 + 1 in Development & Test
  - IMS 11 + 2 in Planning Phase

- Support
  - Two current supported field releases
  - N-2 release out of service 1 year after current release GA
  - IMS 9 goes out of service Nov 7, 2010

Free IMS Lab-driven Customer Workshops

- **IMS Value Assessment**
  - Business and architectural review of IMS subsystem and applications with the goal of helping customers get more value out of their IMS investment

- **IMS V11 Migration Planning Seminar**
  - 2 day seminar reviewing the key features and functions of IMS with the goal of helping customers plan for IMS 11 migration

- **IMS SOA Workshop**
  - Technical education and discussion on IMS SOA capabilities allowing customers to service-enable and reuse their IMS assets (data and business logic)

- **IMS Application Development Workshops**
  - Technical education for application developers allowing them to test drive the latest tools to accelerate and simplify IMS application development; available for COBOL, PLI and JAVA developers

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IMS 11 Highlights

Database Manager	System	Transaction Manager	DBRC
IMS Open Database	IMS Connect Enhancements	Type-2 Query TM Commands	BPE-Based DBRC
JDBC Universal Drivers	User Exit Interface	OTMA Enhancements	Security Override for Non-Production RECON
Database Quiesce	Dump Formatter	OTMA Type-2 Commands	Unconditional deletion of PRILOG Information
ACBLIB Usability	Syntax Checker & IVP	Transaction Expiration	
Database RAS	LSQA Storage Reduction	Shared Queues Affinity Routing	DBRC Migration/ Coexistence from IMS 9 and 10
OLR Performance	KBLA	Shared Queues False Scheduling Reduction	
Fast Path 64 bit Buffer Mgr	/DIAGNOSE Command		
Fast Path Usability			

IMS Open Database

Innovative	Improved Usability	Open Standards

- **IMS Open Database offers access to IMS database resources anywhere in the IMSplex *directly* from z/OS and distributed environments**
  - Using *industry standard* Distributed Relational Database Architecture (DRDA) to communicate with IMS Connect
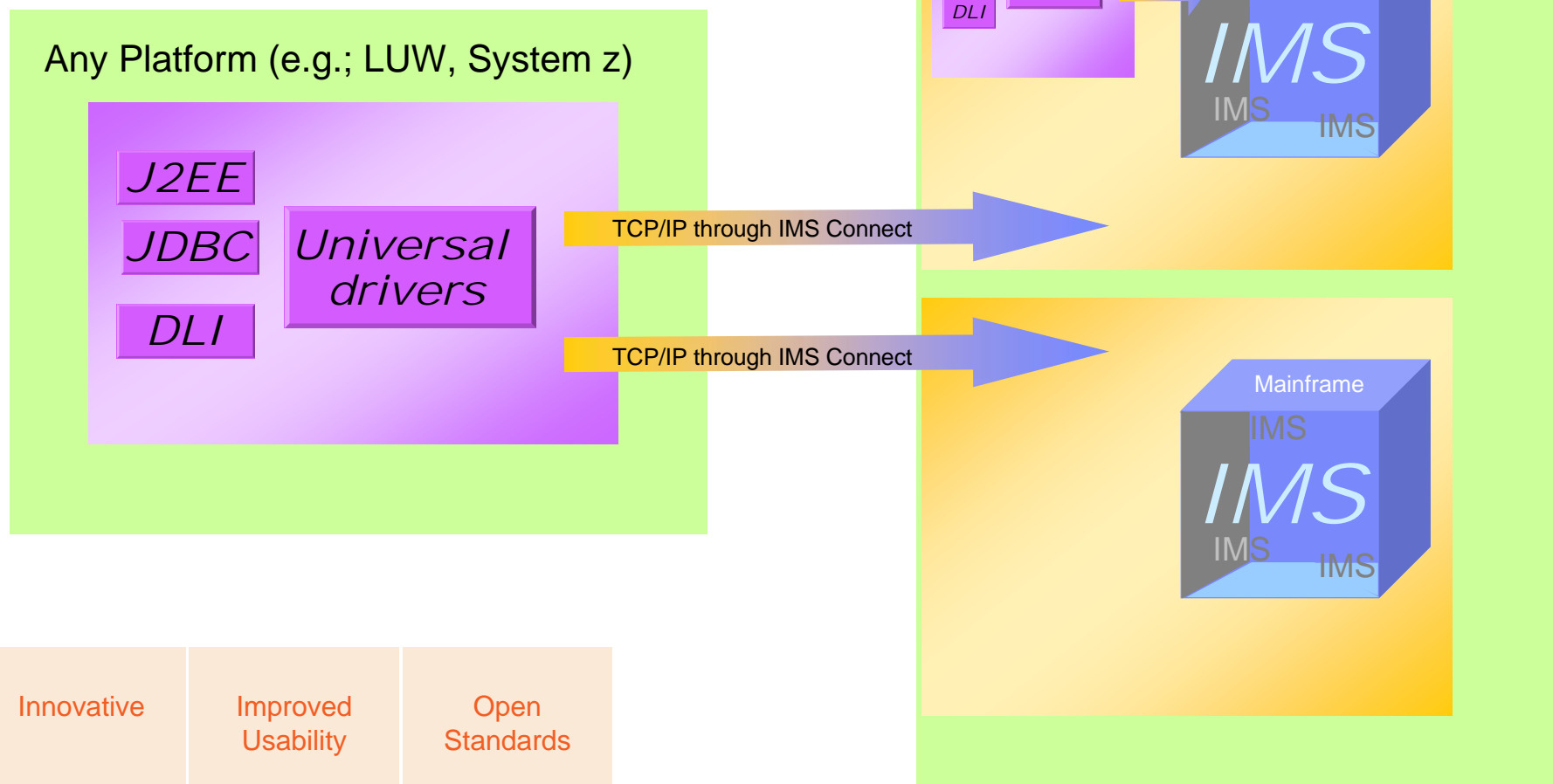 - Different API layers are provided to leverage the DRDA protocol
    - IMS Universal DB Resource Adapter - to take advantage of Java Platform, Enterprise Edition (J2EE) platform services, JCA 1.5
    - IMS Universal JDBC driver - to make SQL calls that directly access your IMS data
    - IMS Universal DL/I driver - to issue calls that are similar to DL/I directly to IMS from Java
    - RYO - Use a programming language of your choice to issue DRDA commands directly to IMS Connect
  - IMS Connect becomes the gateway to IMS Transactions *and* IMS Data
- *Makes Application development and Connectivity much simpler!*

IMS 11 Open Database – JDBC Universal Drivers

Direct Connection to IMS data
Makes Application Development Easier

z/OS platforms

J2EE

JDBC   Universal
       drivers   Direct →   Mainframe
DLI   IMS
                             IMS
                        IMS   IMS

Any Platform (e.g.; LUW, System z)

J2EE

JDBC   **Universal
           drivers**   TCP/IP through IMS Connect →

DLI

                        TCP/IP through IMS Connect →

                                            Mainframe
                                            IMS
                                            IMS
                                        IMS   IMS

Innovative	Improved Usability	Open Standards

Database Quiesce

Improved Usability	Improved Availability	Reduced Complexity

- Offers the ability to stop access to a Database, HALDB Partition, DEDB or Area, or Datagroup, allowing a single coordinated recovery point to be established

  – Without taking the resource offline

  – The recovery point is coordinated across the IMSplex to create one common recovery point

  – Allows an image copy to be taken while the database or area is online

- Reduces the complexity in establishing a recovery point for a database

ACBLIB Usability Enhancements

Improved Usability	Improved Availability

- ACBLIB data set contains database definitions and defines the database information each application can access

- Dynamic allocation of ACBLIB data sets
  - Eliminates IMS outages in order to perform maintenance on the data sets
  - Improves availability

- Optional 64-bit cache for ACB members
  - At application scheduling time, the ACB members are retrieved from 64-bit storage and not from the ACBLIB data set.
  - Can improve performance by reducing the amount of read I/O required to the ACBLIB data set

OLR Performance Enhancements

Reduced Elapsed Time	Improved Performance

- Online Reorganization (OLR) for HALDB Performa~~nce~~ Enhancements:
  - OLR VSAM KSDS Sequential Access

  - Skip GNP Call for Root-only DB

  - Reduce use of the data set busy (ZID) lock during OLR

  - Eliminating the block (BID) lock for ILDS updates

  - Reduce Log records generated during OLR

  - OLR Locking Lookaside

- These items should **reduce CPU** and **elapsed times** as well as **log volumes**

Fast Path 64-bit Buffer Manager

Improved Availability	Improved Usability

- Enhanced Fast Path buffer manager autonomically allocates and manages FP buffer pools
  - Simplifies IMS - no need for define FP buffer size parameters to IMS

- New 64-bit option for IMS Fast Path DEDB users
  - Exploits 64-bit storage for Data Entry Database buffers
  - Supports multiple buffer sizes and automatic expansion

- Improves availability
  - Provides ECSA relief when 64-bit option is used
  - No need to recycle IMS to alter FP buffer pool attributes

Fast Path Usability and Serviceability

Improved Serviceability	Improved Usability

- Allow the user to **Open DEDB Areas** with type-2 commands
  - **UPD DB NAME(DEDB001) START(ACCESS) OPTION(OPEN)**
    - Opens all areas for DEDB001
  - **UPD AREA NAME(AREA0102) START(ACCESS) OPTION(OPEN)**
    - Opens area AREA0102

- Improve problem determination of abend U1026 when the abend is triggered by use of PROCOPT=GOx
  - New subcode '5A' added to U1026

- Improve problem determination of CICS U0035 abend, by making the area name easily accessible in the x'6705' log record

- Remove unneeded MSDB related messages (DFS2555I, DFS2716I) when MSDBs are not defined in the system

- Reduce overhead due to GETMAIN/FREEMAIN calls of FP segment workareas when an MPP is rescheduled
  - Workarea storage is retained across a reschedule

OTMA Enhancements

- **Dynamic Change for OTMA Routing Descriptors**
  - Descriptors Introduced in IMS 10 were static
  - With IMS 11, descriptors can be changed dynamically to improve availability
  - Allows rollout of new applications using synchronous callout without an IMS outage

- **OTMA Resiliency Support**
  - Provides an interface for OTMA resource monitoring for early flood detection and failure notification
    - Sick but not Dead

  - Allows communication of OTMA status to IMS Connect to assist with routing decisions

  - Heart beat message used to communicate resource status
    - Available; Degraded; Unavailable

Transaction Expiration

- **Allows you to set transaction expiration values (in seconds)**
  - IMS can avoid processing transactions where the response is no longer needed

- **Expiration can be specified *by transaction*:**
  - In the message prefix (for OTMA messages)
  - By using the following type-2 commands
    - CREATE TRAN | TRANDESC
    - UPDATE TRAN | TRANDESC
  - By specifying EXPRTIME on the TRANSACT macro
  - By including an expiration time for the transaction it creates in the Destination Creation exit (DFSINSX0)

- **If an expiration value is set it is checked:**
  - By IMS when an application issues its first GU call
  - For OTMA, when the message is received from XCF and again before the message is enqueued to IMS
    - If the time specified in the expiration value has passed, IMS discards the transaction
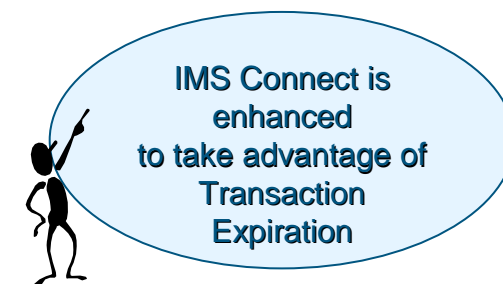
IMS Connect is enhanced to take advantage of Transaction Expiration

IMS Connect Enhancements

- IMS Connect is the strategic gateway into IMS through TCP/IP

- IMS 11 contains several enhancements for **usability**, **serviceability** and **resiliency**
    - DATASTORE level super member
    - Message HWSP1410W Enhancement
    - Single SSL Port Restriction
    - User Defined Message without socket disconnection
    - Improve reliability of Recorder Trace
    - TCP/IP Keep Alive specified for port
    - Port Input / Output Edit Exit to modify input & output messages
    - Display command enhancements
    - OTMA CM0 (Commit-Then-Send) ACK timeout support
    - IMS TM Resource Adapter Generated Clientid
    - MAXSOC warning messages before limit is reached
    - Cancel Client ID to cancel and re-establish a socket connection
    - TCP/IP Auto Reconnect when network failed and restarted

DBRC Enhancements

Simplified Administration	Improved Usability	Improved Availability

- An **online** DBRC address space can ***optionally*** run using the Base Primitive Environment (BPE)
  - Allows multiple exits of the *same type* and the ability to *refresh* exit routines
  - Improved DBRC trace support
  - Improved usability with new initialization member
- Ability to override security for non-production copies of RECON
  - Facilitates testing and problem diagnosis
- New CLEANUP.RECON command
  - To delete obsolete or expired recovery information
  - Normally not needed if all DB's are image copied
    - That is not always the case for some Databases
- Migration support
  - Allow n-2 versions to coexist. (V9 & V10)

Agenda

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IMS Directions

Operational

- Alleviate bottlenecks
  - 64 bit storage
  - Multi-threading
  - Improve buffer management
- Lower cost per transaction
  - Lower CPU consumption
- Ensure Resilience/Availability
  - Autonomic Response, Recovery, and Tuning
  - Reduce Planned Outages
  - Expand Reliability, Diagnostics, Performance

Applications

- Ease Usability
  - Dynamic Definition
  - Eliminate Gens
  - Simplify Interfaces
- Speed Deployment
  - Dramatically ease IMS development and test
  - Integration with ISV packaged apps
- Lowering Costs
  - Reuse of Applications/Data
- Enrich functionality
 - Extend access
  - Technological advancements

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IMS Information and Education

- "*An Introduction to IMS*" book available

    - Update coming for IMS 11

- IMS on the Web: www.ibm.com/ims

    - IMS education schedule

    - Presentations, papers, newsletters, fact sheets, announce letters, redbooks

    - Schedule of seminars, webcasts and teleconferences

- Information center - enables search across IMS, DB2 and Tools documentation

- Additional technical support info at *www.ibm.com/support/techdocs* (search on IMS)

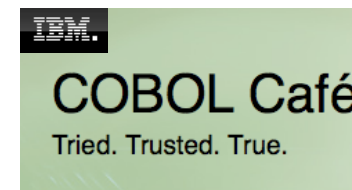- Migration, skills transfer, customized offerings at *ibmdds@us.ibm.com*
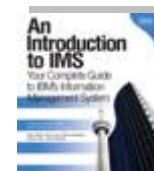
Data Management Communities

- Data Management Community – share and interact on all Data Management topics
  - www.ibm.com/software/data/management/community.html

- Information Champions – recognizes individuals who have made the most outstanding contributions to the Information Management community
  - www.ibm.com/software/data/champion

- Rational Cafes – for host application programming languages
  - www.ibm.com/software/rational/cafe/index.jspa

- IMS Community – share and interact with your IMS peers around the world
  - http://www-01.ibm.com/software/data/ims/community/

- IMS Application Development Forum
  - www.ibm.com/developerworks/forums/forum.jspa?forumID=1632

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