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IMS Transaction Manager

Your Enterprise Transaction Manager

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re-THINK

IMS

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Agenda

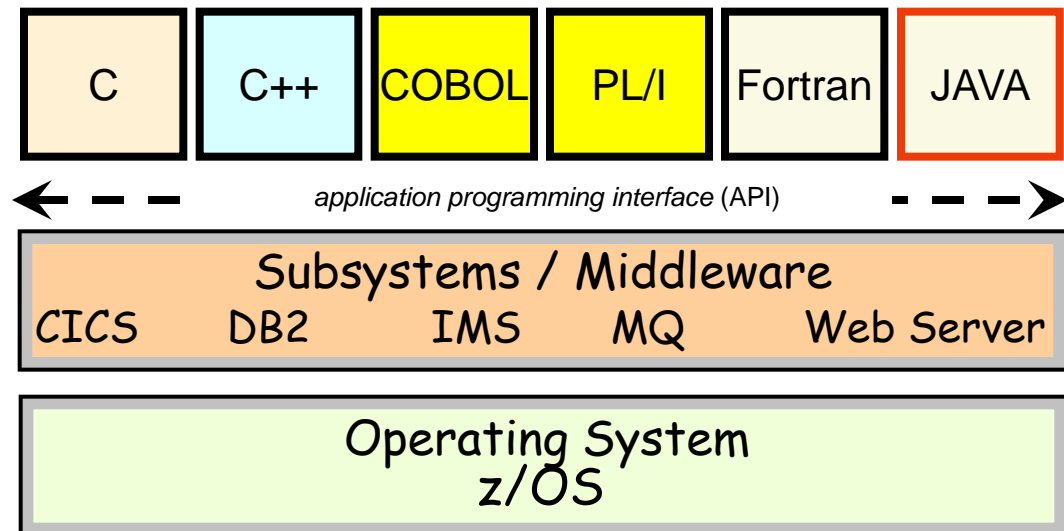
- **z/OS Transaction Management**
- **IMS Transaction Manager Positioning**
- **Robust and efficient product architecture**
- **Universal Interoperability with network and applications**
- **IMS Application Support**
- **External Resource Manager Access**
- **IMS Operation and System management**



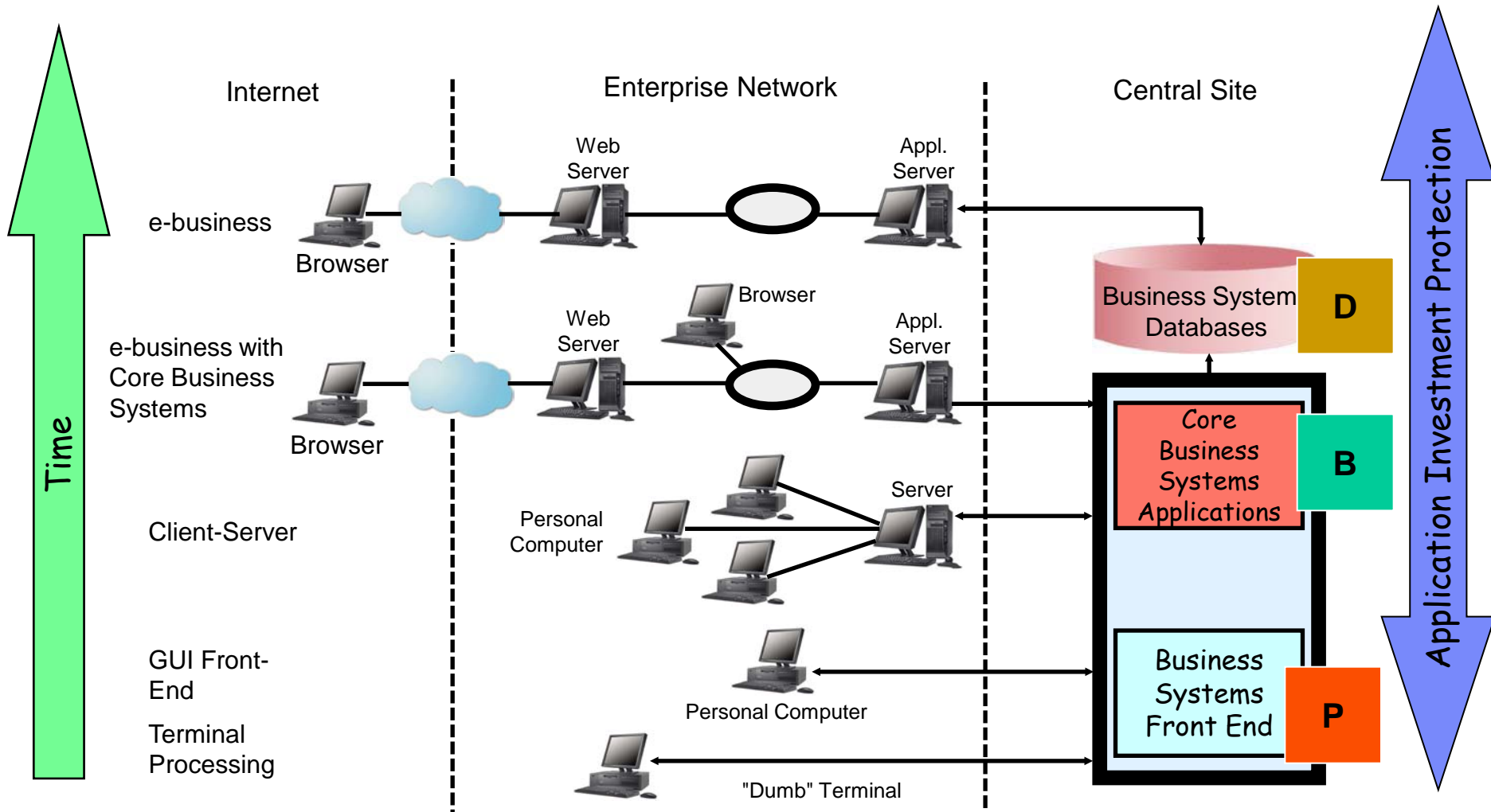
z/OS Middleware

- **Middleware, also called Subsystem in the z/OS environment**
 - A layer between the operating system and an end user or end-user applications
 - Often includes an *application programming interface* (API)

- **Typical z/OS middleware**
 - Database systems
 - Web servers
 - Message queuing and routing functions
 - Transaction managers
 - Java virtual machines
 - ...



z/OS Middleware – To Allow Evolution while Protecting Investment



Transaction Management - Definitions

▪ What's a Transaction?

- “an indivisible unit of work, comprised of several operations, all or none of which must be performed in order to preserve data integrity” (source: JavaWorld, July 2000)
- A request and execution of a set of programs, performing business functions and accessing and/or updating shared databases on behalf of a user.

▪ Properties of a transaction

- Atomicity: This implies indivisibility; any indivisible operation (one which will either complete fully or not at all) is said to be atomic.
- Consistency: A transaction must transition persistent data from one consistent state to another. If a failure occurs during processing, the data must be restored to the state it was in prior to the transaction.
- Isolation: Transactions should not affect each other. A transaction in progress, not yet committed or rolled back, must be isolated from other transactions. Although several transactions may run concurrently, it should appear to each that all the others completed before or after it; all such concurrent transactions must effectively end in sequential order.
- Durability: Once a transaction has successfully committed, state changes committed by that transaction must be durable and persistent, despite any failures that occur afterwards.

▪ What's a Transaction Monitor / Manager

- A program or subsystem that manages or oversees the sequence of events that are part of a transaction
- Makes sure the ACID properties of a transaction are maintained
- Includes functions such as interfacing to databases and networks and transaction commit/rollback coordination
- Provides an API so applications can exploit the services of the transaction monitor

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Transaction management – A key z/OS strength! ...

- **A key strength of the z/OS platform is support for high-volume, high-performance transaction management using transaction managers**
 - Scalable
 - Optimized for mixed workload
 - Highly available

- **IBM's z/OS-based transaction managers**
 - CICS - Customer Information Control System
 - IMS TM - Information Management System Transaction Manager
 - WebSphere Application Server for z/OS

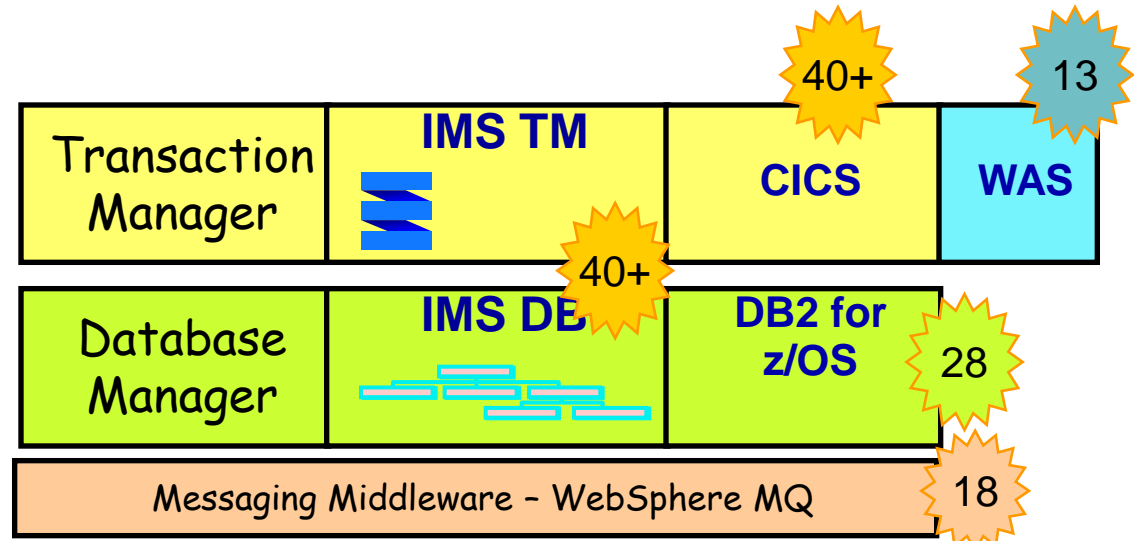
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GA 2011/6

IMS V12
GA 2011/10

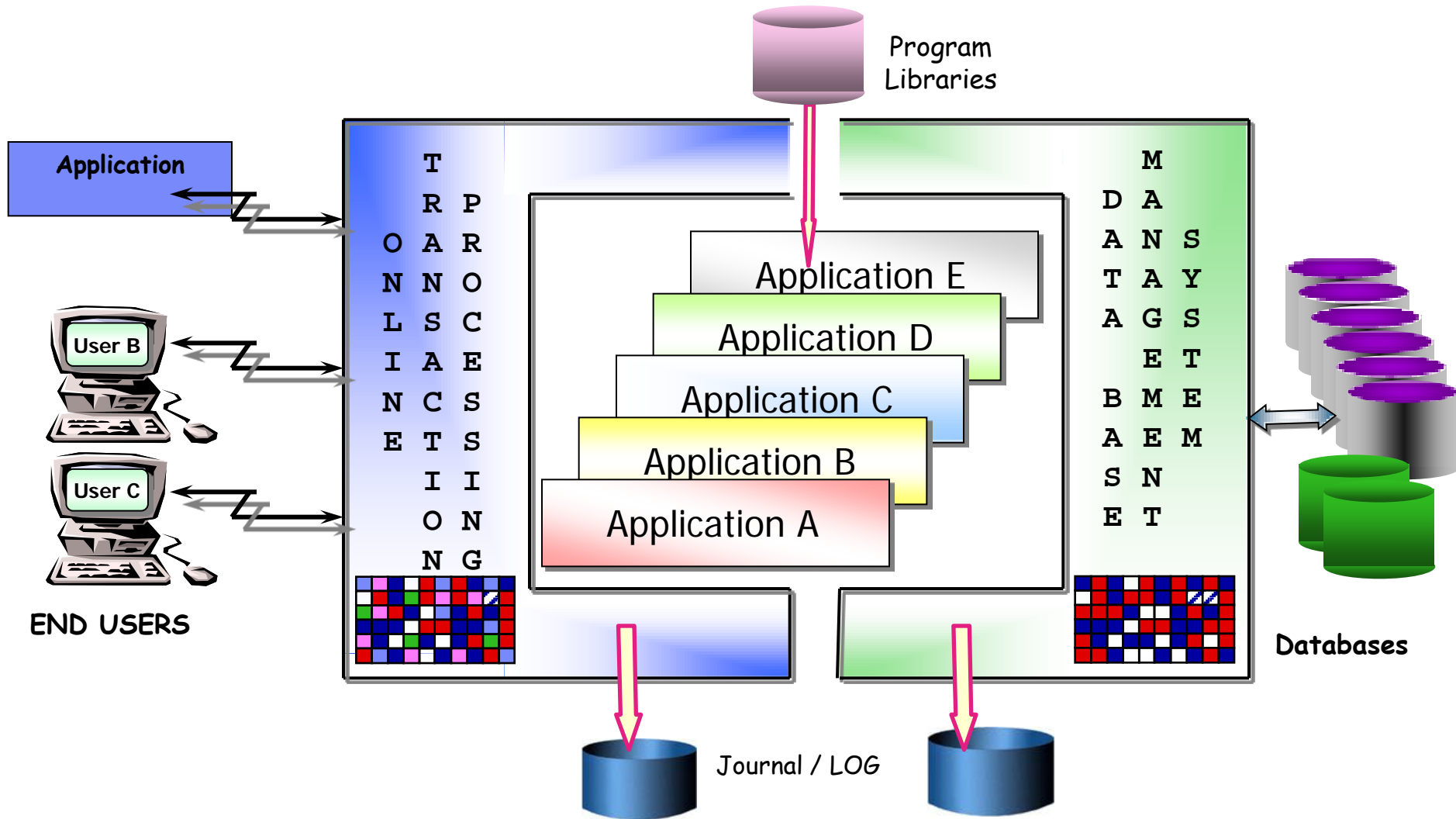
WAS V8
GA 2011/6



**z/OS and
Core Business
Applications**



Transaction management – A key z/OS strength! ...



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IMS Middleware – All You Need in One

- **A z/OS middleware that inherit all strength of zEnterprise**
- **A Messaging & Transaction Manager**
 - Based on a messaging and queuing paradigm
 - Asynchronous data flow
 - A real benefit in case of surge of traffic, or in case of unavailability of users to receive their transaction answers.
 - High-volume, rapid response transaction management for application programs accessing IMS and/or DB2 database, MQ queues
 - Managing the application programs — dispatching work, loading application programs, providing locking services
 - “Universal” Application Connectivity
 - Manages input and output messages from network (3270s, APPC, TCP/IP, WebSphere MQ, etc.)
- **A Batch Manager**
 - Standalone z/OS batch support
 - Batch processing region centrally managed by the IMS control region
 - Managing the batch-oriented programs — providing checkpoint/restart services
- **A Database Manager**
 - Central point of control and access for the IMS databases based on a hierarchical database model
 - Used by companies needing high transaction rates
 - Now provide a “Universal” Database Connectivity based on JDBC / DRDA
 - Lot of new features in that space! Stay tuned

IMS – High level View

IMS Transaction

- No presentation layer
- Very simple design
 - Get Input Message
 - RM calls
 - ISRT Output Message
- “execute” and “forget”

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IMS Batch

- BMPs Msg Driven or non Msg Driven
- Standalone (no picture here)

Access to Resource Managers (RM)

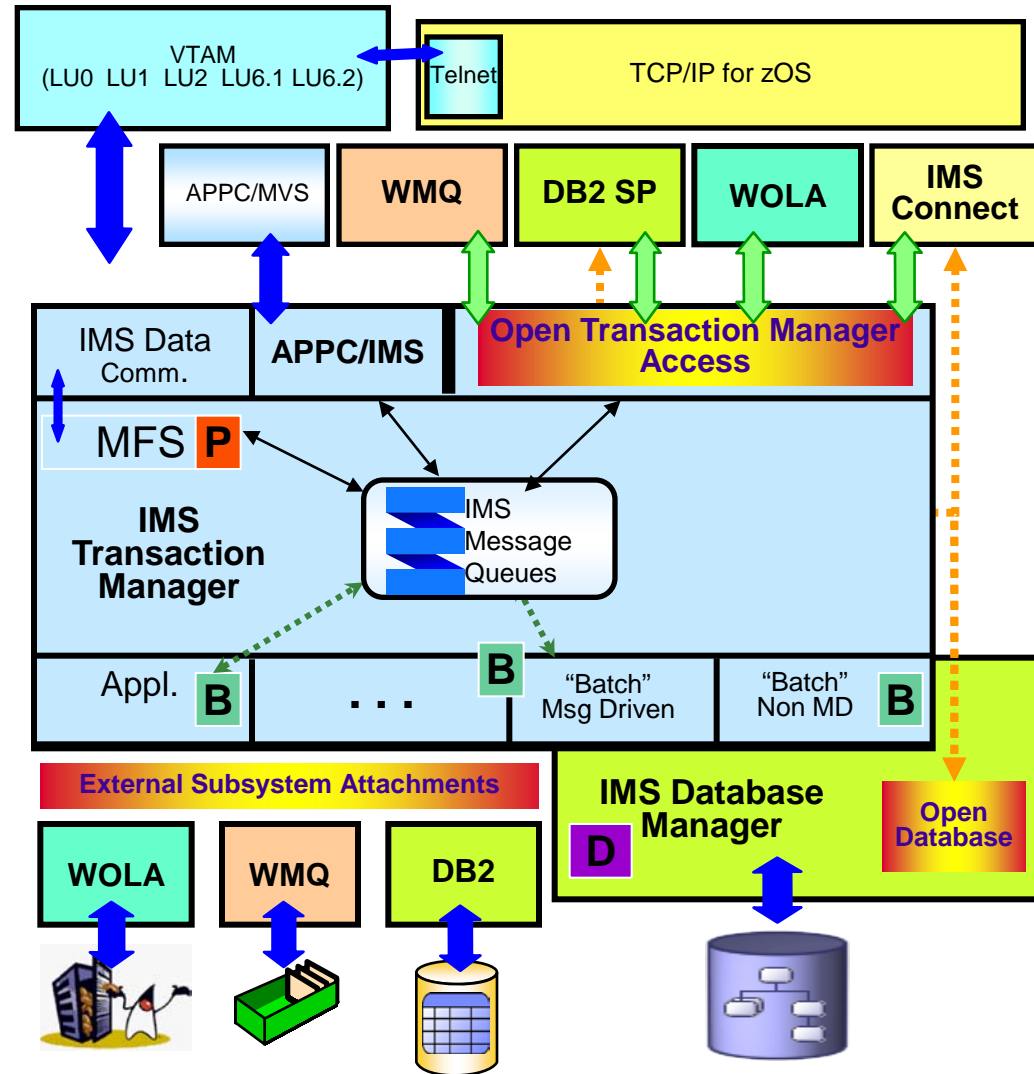
- IMS database – Hierarchical data model
- DB2 database – Relational data model
- MQ Queues
- Web Services using WOLA – WebSphere Optimized Local Adapter

D

IMS Presentation Layer (MFS)

- Description of input and output messages and device map
- Not used in client/server implementations

P



IMS Transaction Manager and Database Manager for z/OS

Long term product plans

- **Extend the lead in availability, scalability and performance**
 - Continue to ensure IMS capacity limits are well beyond customer needs
 - Continue to evolve IMS definition and configuration processes to be more dynamic and not require IMS system outages
 - Expand Active-Active Environment and IMS Replication capabilities
- **Reduce cost of ownership**
 - Reduce MIPS usage by IMS to help reduce cost
 - Simplify management of IMS systems as well as IMS application development to do more with less staff
 - Advance autonomics to make the system more self-managing and self-tuning
- **Application simplification and enablement**
 - Increase support for application and database access to IMS through standard APIs: SQL, Web Services, Java EE, .NET
 - Improve ease of use for application development with graphical assist and centralized IMS metadata support
 - Enhance and simplify integration of IMS assets with SOA, other Web solutions, decision support solutions and other IBM products
- **Enable high-volume transaction processing for next wave of applications**
 - Continue investment in IMS TM including: IMS Connect, Open Transaction Manager Access (OTMA), IMS TM RA and SOAP Gateway

State of the IMS Business 2011

■ **IMS TM/DB runs CORE business applications**

- Most companies already run IMS for these applications!
 - ATM networks, core banking, bill of materials applications, auto/airline maintenance, insurance policy/claims.
- Supporting millions of internet users
- Handling thousands of transactions per second
- Ensuring 24x7 service availability

■ **New Customers**

- Mergers and Acquisitions
- New applications built on IMS TM
 - eg. TARGET2Securities (T2S) project for EU
- Consolidation of Transaction Managers
- Strong potential in emerging GEOs
 - 2 POCs being driven now in Russia for IMS TM/DB

■ **Most growth is additional workload from existing customers**

- IMS MIPS have doubled over last 5 years.
- Over 50% of IMS customers grew transaction workload in 2010.
- New applications and workloads onto IMS

Overall IMS Customers

- 65% IMS TM/DB
- 32% IMS DB only
- 3% IMS TM only

Top 50 IMS Customers

- 43 run IMS TM/DB
- 3 are IMS TM only
- 3 are DBCTL
- Over 50% run with SMQ
- 27 are Fastpath



IMS Strengths

▪ Quality

- IMS has best customer satisfaction in IBM SWG
- PE (PTF in Error) rate halved over past 5 years.
- Field Apar Rate improved consistently Version to Version

▪ Reliability

- Many customers go years without an unplanned outage
- In cases of hard downs (power outages etc) IMS recovers gracefully
- Numerous features for high availability
 - Including Sysplex support, Shared Message Queues, Data Sharing
- Data integrity problems very rare

▪ Performance/Scalability

- Lab benchmark with single system IMS 12, z196
 - 46,000 trans/sec Fastpath application with database update and 30,000 simulated network clients!
- Customers running >7500 trans/sec, 200M+ trans/day
- DL/I database extremely efficient, uses less DASD space and faster access than relational.
- Continuous improvements in MIPS consumption, offload capabilities

▪ Modern

- IMS today is “open” as a server and as a client, through industry standard interfaces.
- Direct access to IMS transactions and data from distributed systems
- Integrated with standard tooling, BI solutions, Web 2.0
- Rich support for Java, SQL, .NET
- Sophisticated Web Services implementation with support for top down WSDL definition



QUALITY
IS OUR PASSION.
QUALITY
IS OUR BUSINESS.

IMS Strategy

- **Modernize Application Interoperation/Integration**
 - Standard Tools/Interfaces to Speed Deployment

- **Streamline Installation/Management**
 - Simplify Interfaces, Ease Operations
 - Heighten Availability, Increase Productivity

- **Enable Efficient Growth**
 - Alleviate Bottlenecks
 - Reduce costs
 - Optimize performance and resilience



Why customers use IMS TM today?

Business-Critical applications

Scalability

Parallel Computing

Option for low MIPS consumption

- **Hosting business-critical high-volume transactional or batch-oriented applications**
 - With 24/7 possible availability of application environment
 - With goal-oriented workload management
 - With security
- **Protecting investment in applications and ensuring upward compatibility for over 40 years**
 - Integrated message queuing, transaction processing and data base management
 - Business still relies on existing application constantly updated to adapt to new business needs
 - No need to recompile applications when changing middleware, z/OS or HW
- **Running on the most scalable and most robust IT infrastructure**
 - IMS component architecture in conjunction with z/OS features
- **Optimizing CPU and storage consumption when using IMS hierarchical data model**
 - 64 bit Data-In-Memory solution with asynchronous I/Os on physical data on disk (DEDB)
 - Partitioning solution to parallelize I/Os without application changes (DEDB, HALDB)
- **Integrated access to DB2 relational databases and MQ queues on z/OS**
 - Guaranteed integrity (Two Phase Commit)
 - Transactional and batch support (BMP) with dynamic backout capabilities
 - Easy to use batch checkpoint/restart mechanisms
 - Coordinated recovery solution to reduce impact of locked resources after an unplanned outage (FDBR)

The Modern « Application Container » Label

- **« Application Container » requirements ***
 - Simple programming model
 - Transactional management – ACID properties
 - Optimized management of data and network connection
 - Solution for in-memory data
 - Support application interoperability
 - Support for event-management

- **« System Infrastructure » Requirement ***
 - Elastic scalability
 - Optimized management of system resources (memory, processes, pools, ...)
 - Optimized workload management

** Summarized from Gartner documentation*

IMS as Modern « Application Container »

- **Running on z/OS and System z, the Optimized “System Infrastructure”**
- **Simple programming model**
 - Get message, send message
 - Multi-segment support allowing large messages
 - « Execute » and « forget »
- **Transactional management optimized for over 40 years**
- **Universal interoperability with network and applications**
- **Solution for in-memory data with DEDB 64 bit addressing**
 - Supported by IMS DL/I calls – simple API
 - Supported by JDBC today, COBOL SQL in the future
- **Support any language including Java (transactional and batch)**
- **Support application interoperability between IMS applications**
 - Prog-to-prog inside IMSplex environment
 - MSC between IMS environments
- **Support application interoperability outside of IMS environment**
 - SOA standard support
 - IMS as a server or as a client
 - Synchronous and asynchronous capabilities
- **Support for event-management**
 - Event could be sent by MQ message or by using IMS API (ISRT ALTPCB)
 - Changed data can be captured and sent using InfoSphere solutions

IMS TM in Perspective

<u>Native Quality of Services</u>	
Recognized Business Logic Container	IMS TM since 40+ years – Investment protection
Optimized integration with a database manager to optimize throughput with low resource consumption	IMS TM & IMS DB as single subsystem for transaction and database management
High transactional throughput	IMS TM since 40+ years
Batch support	Online batch with BMPs / Standalone IMS Batch
High Availability	IMS Shared Queue (full function and fast path)
<u>Application Development</u>	
Multi-language AD support	COBOL, PLI, C, ... JAVA
THE enhanced development platform	Rational Developer for zEnterprise
Asset analysis	Using Rational Asset Analyser
<u>Access to external resource managers (in addition to IMS Databases) on same z/OS platform</u>	
Access to DB2 data under Two-Phase Commit protocol	IMS transactions, BMPs – using SQL or Java JDBC IMS Batches – using SQL
Access to Master Data directly when hosted in DB2 for z/OS	MDM Server “Query” Connect
Access to WebSphere MQ under Two-Phase Commit protocol	IMS transactions and BMPs – using MQ API (explicit)
Access to Web Services	IMS transactions and BMPs – using WOLA API
<u>Business Integration</u>	
Universal access to IMS Queue	Open Transaction Manager Access / No change in IMS applications
Access from any MQ Server	MQ IMS Bridge – MQ Trigger Monitor
Access from any WAS server	IMS TM Resource Adapter for JCA, MQ IMS Bridge for JMS, IMS SOAP Gateway for web service
IBM Enterprise Service Bus & BPM Integration with IMS applications	IMS support in the 3 IBM ESBs: Datapower, WESB, WMB Support inbound or outbound integration
Fast integration in Web 2.0 applications	IMS Mashup solutions
Optimized WAS for z/OS & IMS Integration	WOLA – Inbound and outbound
<u>Decision Support</u>	
Access to Business Rules	IMS TM & WODM integration
Generation of Business Events	IMS TM & WODM integration

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IMS Architecture – Proven & Innovative Technology

- **Multi-address space architecture with one single point of control**
 - Control region controls up to 1000 « service » address space.
 - DBRC centralizes all backup and recovery information.
- **Tight integration of messaging, TM and DB activities**
 - Sharing IMS system components (logging, pool management, ...)
 - Transactional workload as well as batch workload
 - Optimized access to IMS DEDBs – high volume – high performance – low CPU
- **Optimized parallel processing inside an IMS environment**
 - Multi-threading and multi-tasking
 - Rich scheduling capabilities including Serial mode, Pseudo-WFI, WFI
 - Transaction / Processing Class / MPP
 - z/OS Resource allocation based on z/OS WLM definitions
- **Optimized workload balancing in an IMS Shared Queue environment**
 - « Pull » instead of « Push »
 - Routing at different level: network entry (see VGR or sysplex distributor), IMS connect, or IMS Shared Q
- **Transparent connectivity between IMS systems geographically dispersed**
 - MSC (Multiple Systems Coupling) using VTAM or TCP/IP networks
 - Asynchronous IMS-IMS TCP/IP support

IMS Architecture – Proven & Innovative Technology ...

▪ **Tight Integration with z/OS**

- Continuous application availability, thanks to a robust inter-system coupling solution, aka parallel sysplex
- Continuous IT operations for system or maintenance upgrades
- Elastic scalability thanks to adequate resource allocation of computing resources based on workload priority
- Mixed workload support (transactional & batch, from assembler to java, ...) and best of breed workload management
- “Bulletproof” system recoverability without data loss (except in case of bug)
- Focus on outage prevention
- Optimized parallel computing with efficient latch/lock management
- Exploitation of z/OS capabilities e.g., the use of extended format data sets and striping to improve logging bandwidth
- 64-bit support

▪ **Security**

- Based on z/OS Security Server
- User authentication
- User authorization at transaction / program / database level

IMS Architecture – Proven & Innovative Technology ...

- **System Updates - easy to skip releases of IMS**
 - Supported migration paths from 9 to 11, 10 to 12
 - Customer could also make more important jump without fallback capabilities
 - From 5 to 10, or 6 to 10, ...

- **System Updates – without impacting investment in business logic**
 - Application is not required to be modified or even re-compiled or re-bound
 - Even when the physical structure of a database is changed, e.g., from Full Function to HALDB
 - Or when new capabilities are leveraged, e.g. Shared Queues or Data Sharing
 - Or even when the communications interface changes

- **Numerous continuous availability features**
 - On one site, on 2 sites, on 3 sites geographically dispersed

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Universal Interoperability with network and applications

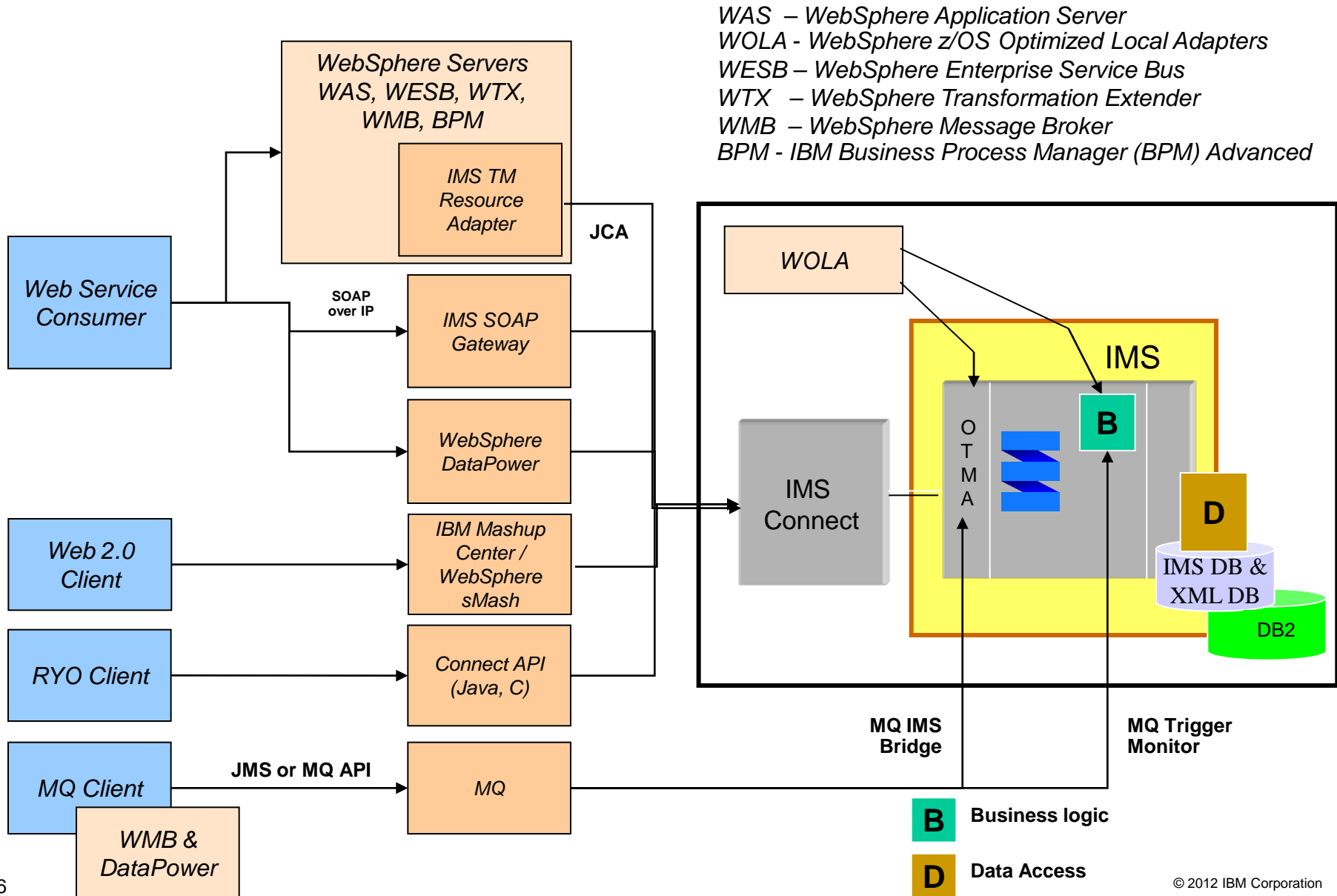
- **Support for routinely large number of concurrent accesses from terminals and/or applications**
- **Evolution from terminal to « client/server » to « browser / processes & services » without application change**
 - Presentation layer outside of IMS application
 - Application interface based on input and output message descriptions
 - OTMA as universal protocol to access IMS TM – many OTMA clients
 - IBM: IMS Connect, MQ bridge, DB2 Stored procedure
 - Non IBM: TIBCO, ...
 - High performance TCP/IP access thru IMS Connect
 - Enhanced by IMS Connect Extension functionalities
 - Parallel processing of incoming requests – multiple ICON Address space
 - Highly available configuration
 - The basis for many integration solutions
- **Integration between IMS applications**
 - “Prog to Prog” inside a single IMS, or inside an IMS Shared Queue environment, or across a TCP/IP link with IMS Connect
 - MSC between any IMS environment (locally or geographically dispersed)

Universal Interoperability with network and applications ...

- **Integration of IMS applications with other service providers**
 - SOA Integration
 - WOLA IMS Support
 - Support for lightweight web application with mashups

- **Flexible and high performance connectivity**
 - VTAM generic resource capability
 - Across the different LU types
 - TCP/IP IP spraying and load balancing support, e.g., with Sysplex Distributor
 - IMS Connect can be configured to access multiple IMS systems in the same or different LPARs or multiple IMS Connects can access a single IMS

SOA Connectivity with IMS TM - Inbound to IMS

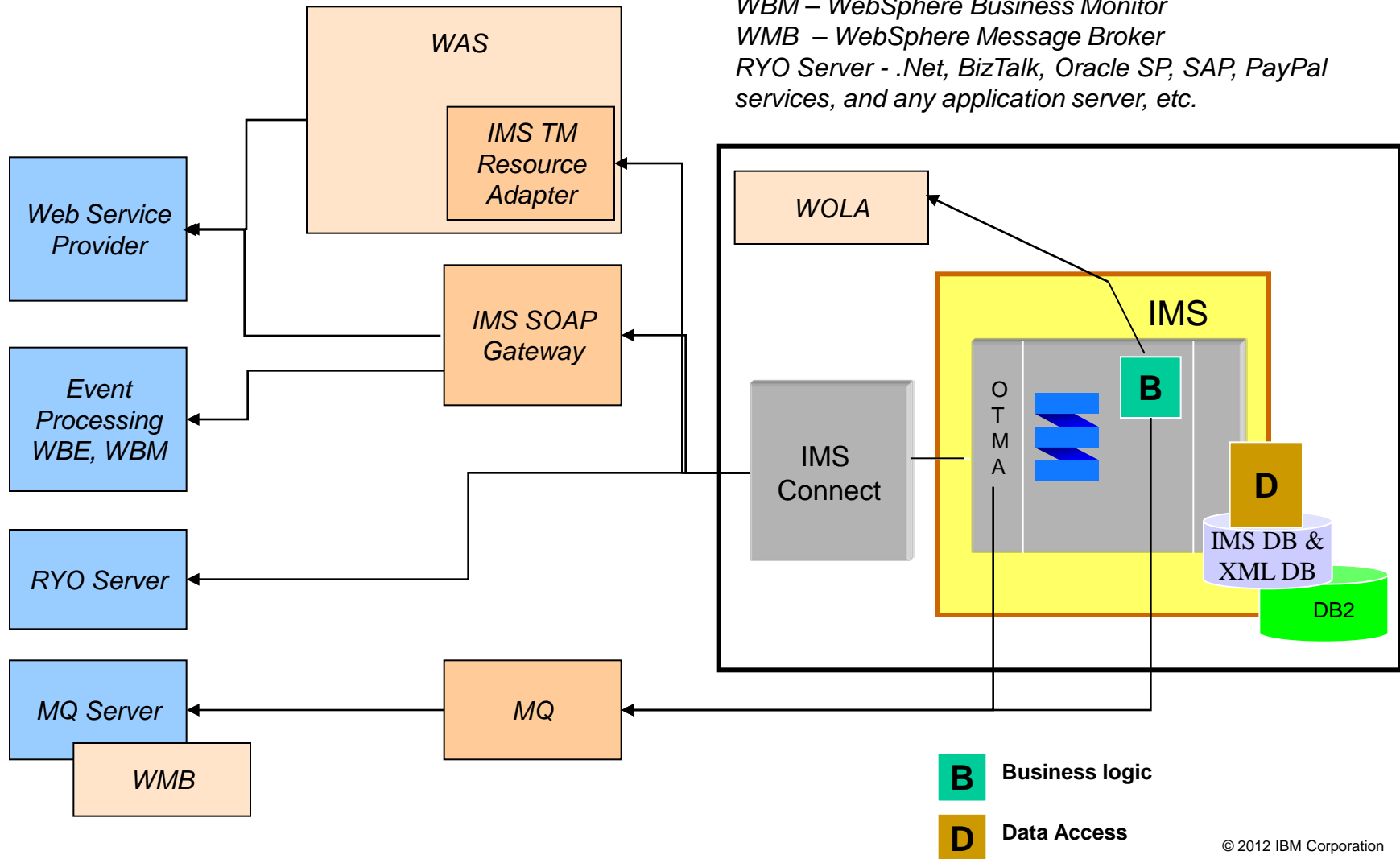


WAS – WebSphere Application Server
WOLA - WebSphere z/OS Optimized Local Adapters
WESB – WebSphere Enterprise Service Bus
WTX – WebSphere Transformation Extender
WMB – WebSphere Message Broker
BPM - IBM Business Process Manager (BPM) Advanced

SOA Connectivity with IMS TM - Outbound from IMS

- Asynchronous and synchronous capabilities

WAS – WebSphere Application Server
 WOLA - WebSphere z/OS Optimized Local Adapters
 WBE – WebSphere Business Events
 WBM – WebSphere Business Monitor
 WMB – WebSphere Message Broker
 RYO Server - .Net, BizTalk, Oracle SP, SAP, PayPal services, and any application server, etc.



Integration and Connectivity Features Summary

Integration and Connectivity Features	IMS
SNA support - LU0, LU1, LU2, LU6.1, LU6.2	All LU types including SLUP
TCP/IP native support	Y with IMS Connect (ICON) as high performance gateway IMS Connect API for easy TCP/IP client development
WebSphere MQ support	WMQ Bridge and Trigger Monitor
SOAP support	Y with IMS SOAP Gateway on z/OS or distributed
XML messages – transport level & data store level	Supported by IMS Connect Storage in IMS databases
Java Connector Architecture (JCA, J2C)	Y using IMS TM Resource Adapter & ICON
JMS	Y, based on MQ & IMS support
Web Services Provider (inbound)	Y
Web Services Consumer (outbound)	Y, synchronously or asynchronously
Restfull Services support on top of HTTP	Y
Web 2.0 (Atom) support	Y
Business Events Processing	Y, with IMS application modification
IBM ESB - WebSphere Message Broker support	Y, inbound to IMS with IMS Connect or MQ outbound with MQ
IBM ESB - Data Power appliance	Y, inbound to IMS with IMS Connect or MQ outbound with MQ
Service Flow	With BPM
IDE Tool	RDz + IMS Explorer for Dev

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IMS Application Support – Design & Development

- **Supports many languages including Java**
 - Assembler (yes, still used), Cobol, PL/I, C/C++, REXX and Java
 - Allows interoperability between Cobol or PL/I and Java in MPP/BMP/IFP regions
 - e.g., Cobol calling Java or Java calling Cobol
 - Specific processing regions for Java transaction (JMP) and Java Batch (JMP) based on z/OS optimized JVM

- **Support for a simple programming model for IMS application**
 - No presentation layer imbedded in IMS logic
 - Very simple design: Get Input Message, Access resource Managers, ISRT Output Message
 - “Execute” and “Forget” - No affinity with the middleware or OS (as best practice)
 - IMS call for application logging service inside the centralized IMS log

- **Based on a simple IMS API for IMS TM**
 - GU IOPCB call to get input message and ISRT IOPCB call to send output message
 - ISRT ALTPCB call to send a message to an alternate destination ie other IMS transaction, terminal, remote program, EJB, web service, ...
 - Additional API for IMS DB Access
 - GHU, GU, GHN, GN, GNP, ISRT, REPL, DLET calls
 - Other supported API
 - JDBC to access IMS databases
 - Exec SQL or JDBC to access DB2 databases
 - MQI to access MQ queues
 - WOLA API to access EJB or web service

IMS Application Support – Design & Development

- **Supported by enhanced IBM Enterprise Modernization tools**
 - Collaborative design and lifecycle management with Rational Team Concert (RTCz)
 - Development with Rational Developer for zEnterprise (RDz)
 - Tools provide code snippets to assist programmers in coding the IMS calls
 - Application asset understanding with Rational Asset Analyzer
- **Solutions for IMS Application Development Environment on z/OS**
 - Running development and unit test on x86 workstation with Rational Development and test for System z (RD&T) – new name in April 2012 – Was RDzUT before
 - Running z/OS on a x86 PC running Linux
 - Virtualization of multiple IMS environments into one IMS on z/OS
 - The Standardware COPE solution allows IMS development teams to virtualize their IMS test environments for potential savings in test resources, process time and set-up systems skills without associated application program changes

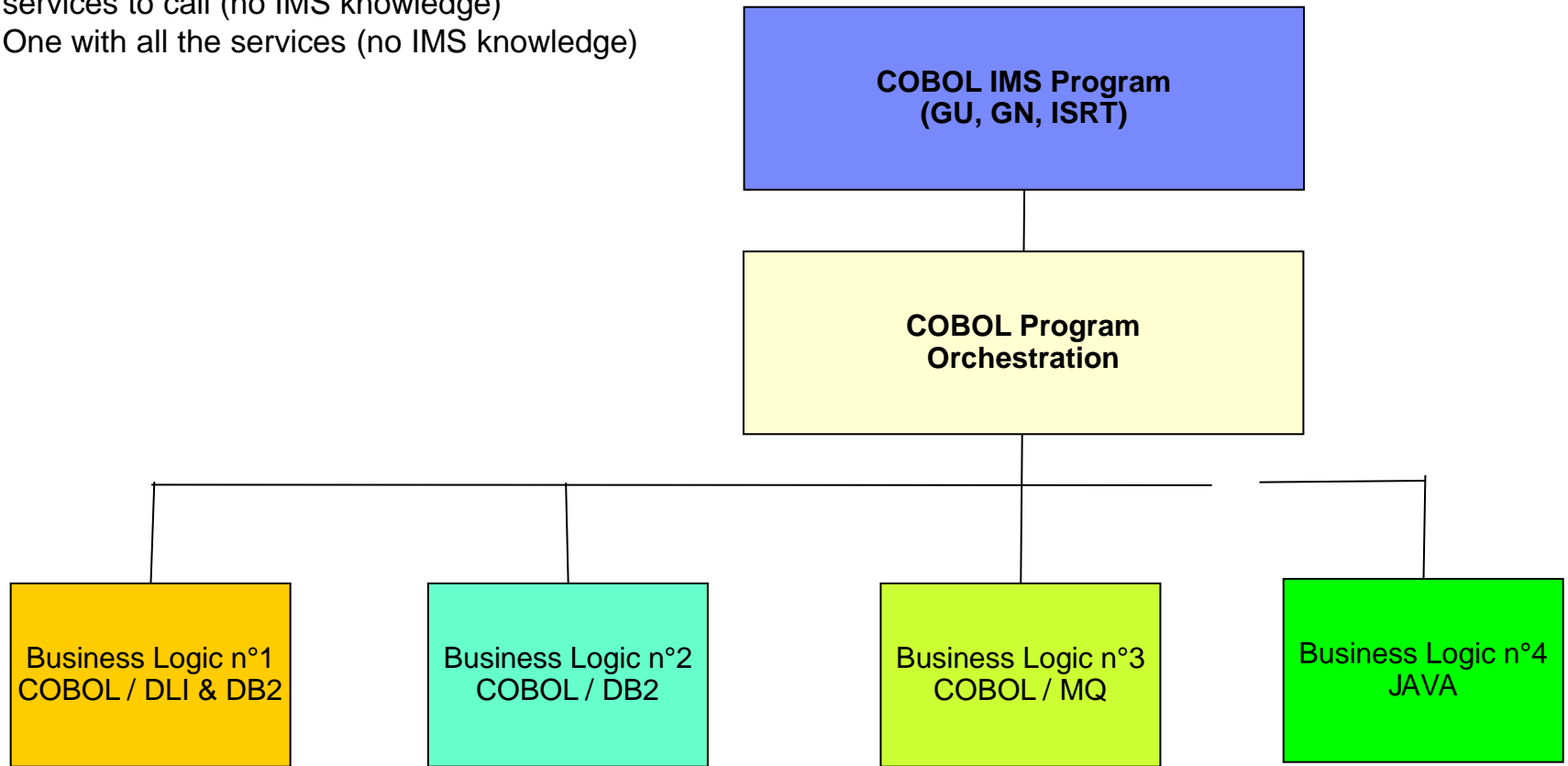
IMS Application Support – Design & Development ...

- **Support from testing and problem determination tools**
 - IMS based: BTS Tool – testing in batch or BMP mode instead of online
 - z/OS based: Debug tool, File Manager, Fault analyzer
 - Look at “IMS Explorer for Dev” extension for IMS TM in the future
- **Easily integrated into the Services and Processes Oriented world**
 - IMS as service provider – IMS Inbound solutions
 - IMS as service requestor - Able to call out to a service using native DLI calls – IMS Outbound solutions
 - Generation of business events
- **Supports integration into SOA development models**
 - Bottom up: reuse business logic already implemented in existing IT application systems
 - Meet-in-the-middle: create an integration layer to accommodate new business needs with existing services – support for all IBM ESBs: Datapower, WESB, WMB
 - Top-down: write new services based on IMS transactions – Tooling to be provided to facilitate IMS application development from WSDL definition

IMS Application Support – Best Practice for App. Structure

▪ 3 Layers

- One with IMS TM calls
- One to analyze input message and decide what services to call (no IMS knowledge)
- One with all the services (no IMS knowledge)



IMS Application Support - Deployment / Maintenance

- **Unchanged application when changing system infrastructure and middleware – application investment protection**
 - No need to recompile IMS application to move from one IMS Version to another
 - But recompiling may take better advantage of HW & z/OS enhancements
- **Online change for application components**
 - Dynamic resource definition
- **Easy implementation of new version or maintenance of application**
 - Could be isolated in some processing region
 - No need to stop IMS processing

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External Resource Manager Access – On same z/OS

- **Access to the 2 IBM z/OS DBMS, IMS DB and DB2**
 - Efficient data management capabilities
 - Support for “Data Sharing” in a z/OS sysplex environment
 - CF cache structure can be used to store data and reducing the need for read disk I/Os.
 - Support for “Data-In-Memory” - 64 bit support for IMS DEDB and DB2
- **Access to “Master Data” thru the MDM Server “Query” Connect**
 - InfoSphere MDM Server offers a high performance, high scalability foundation to access master data with several options (server and/or data can be distributed or z/OS).
 - When data is in DB2 for z/OS, a COBOL Adapter enables COBOL programs to access Master Data Management Server services thru the MDM Server Central Transaction server (for Update request) and thru the MDM Server “Query” Connect (for Read-only requests)
- **Access to Messaging Systems**
 - IMS has a imbedded queuing mechanism based on IMS API.
 - IMS applications can also use MQ API to access the MQ local manager. Queues can be defined local or remote inside this QM.
- **Access to services with WOLA - WebSphere z/OS Optimized Local Adapters**
 - IMS applications can use WOLA API to call WAS on z/OS-based applications using cross-memory
 - Available for transactional workload and batch workload
- **Access to local “Business Rules” with WebSphere Operational Decision Management (WODM)**
 - ILOG Rules for COBOL can be used to develop rules as COBOL subroutine to be included in the IMS transaction UOW
 - ILOG zRules will be able to call java-based rules from a COBOL IMS application without complicated development

IMS DB in Perspective

<u>Native Quality of Services</u>	
High Capacity	HALDB & DEDB
High Availability	IMS Data Sharing
Performance without CPU extra cost	1/2 the MIPS and 1/2 the DASD of relational
<u>Application Development</u>	
Multi-language AD support	COBOL, PLI, C, ... JAVA
XML Support	Decomposed or Intact
Java SQL support (JDBC)	IMS Java
Access from CICS and IMS applications, from Batch	IMS since early days
Open Access and Data Integration	DRDA Universal Driver with IMS 11 Open Database
<u>Data Management</u>	
Basic free utilities for reorganization and recovery	Included in IMS Core product
Advanced Space Management Capabilities	DFSMS family
Health Check	Pointer validation & repair
Backup and Recovery Advanced Solutions	IMS Tools
Reorganization for better performance	IMS Tools
<u>Enterprise Data Governance</u>	
Compression and Encryption	IMS Tools – Guardium Tools
Audit for every access	IMS Tools – Guardium Tools
Data Masking	OPTIM Family
Creation of Test databases	OPTIM Family
<u>Information Integration & Data Synchronization</u>	
Fast integration in Web 2.0 applications	IMS 11 Open database
Data Federation	InfoSphere <i>Classic</i> Federation
Replication to IMS – Towards Active / Active solution	InfoSphere IMS Replication
Replication to Relational	InfoSphere <i>Classic</i> Replication Server & <i>Classic</i> CDC
Publication of DB Changes	InfoSphere <i>Classic</i> Data Event Publisher
<u>Operational Business Analytics & Reporting</u>	
	COGNOS & SPSS

External Resource Manager Access – On a different environment (z/OS or distributed)

- **Access to DB2 LUW via DB2 z/OS as a gateway**
 - Transactionality preserved
- **Access to Services**
 - IMS provides numerous solutions for accessing services from IMS applications
 - Asynchronously or synchronously using SOAP, JCA or JMS, WOLA API
 - Asynch: IMS API (ISRT ALTPCB), MQ API and also APPC API or TCP/IP calls with IMS Connect
 - Synch (not in 2PC scope):IMS API (ICAL), MQ API and also APPC/IMS (2PC scope), WOLA API (2PC scope soon)
- **Access to remote “Business Rules”**
 - ILOG Rules Execution Server provides services that can be called by IMS application as described above.
- **Access to Messaging Systems**
 - IMS applications can use MQ API to access the MQ local manager that will then communicate with any MQ manager.
 - Remote queue managers can communicate with IMS TM using either the MQ OTMA bridge or the MQ Trigger Monitor mechanism.
- **Access to Event Manager**
 - Event message can be created by the IMS application based on data included in IOPCB, based on database content or based on application logic
 - Event message is sent based on IMS Callout solutions using IMS API & IMS SOAP Gateway Business Event Support or using MQ API

Agenda

- **z/OS Transaction Management**
- **IMS Transaction Manager Positioning**
- **Universal Interoperability with network and applications**
- **IMS Application Support**
- **External Resource Manager Access**
- **IMS Operation and System management**



IMS Operation and System Management

- **Centralization of messages for the whole IMS environment**
 - One log for IMS system, TM and DB activity
 - Tool to simplify log visualization for analysis and debugging purposes
- **Automated operator interface based on simple IMS calls to submit commands, receive command output and monitor messages**
 - AO application programs and exit routines
- **Capability to implement a SPOC (Single Point of Control) for several IMS environments**
 - Provides a simple front-end interface for an IMSplex
 - Allows commands to be routed to one or more IMS systems and retrieves results
 - Based on the IMS Common Service Layer (CSL)
 - Keeps track of resources and provides an efficient mechanism for inter-address space communications
- **Dynamic resource definition**
 - For VTAM terminals, applications and databases
- **Enhanced solutions from different vendors – IBM & ASG, BMC, CA**
 - IMS monitoring, IMS system management, ...

Agenda

- **z/OS Transaction Management**
- **IMS Transaction Manager Positioning**
- **Robust and efficient product architecture**
- **Universal Interoperability with network and applications**
- **IMS Application Support**
- **External Resource Manager Access**
- **IMS Operation and System management**

Conclusion

The Message

- **IMS continues to be a premier server with architected standard interfaces**
 - New products and tools from a variety of vendors provide access to IMS transactions and data
- **Our goal is to leverage IMS as an integral part of the enterprise in the evolving business world through**
 - Addition of support for complementary standards surrounding IMS connectivity, data representation, and application development
- **And to allow you to realize the promise of building the IT for the Future**
 - Simplify the business environment
 - Respond to market changes quicker and at less cost



As the world's largest business software company, IBM is helping organizations of all sizes tackle their most important business needs.

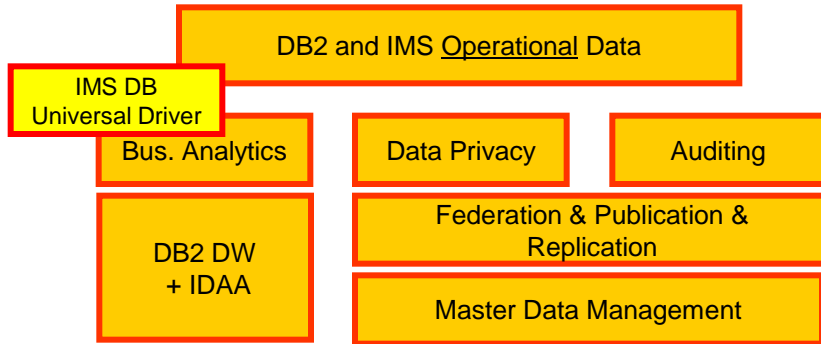
IBM solutions are built on a core set of software capabilities.

Need	Capabilities	Need	Capabilities
Turn information into insights	<ul style="list-style-type: none">▪ Business Analytics▪ Data Management▪ Big Data▪ Data Warehousing▪ Enterprise Content Management▪ Information Integration and Governance	Deliver enterprise mobility	<ul style="list-style-type: none">▪ Mobile Development and Connectivity▪ Mobile Management and Security
Deepen engagement with customers, partners and employees	<ul style="list-style-type: none">▪ Social Collaboration▪ Unified Communications▪ Web Experience▪ Commerce▪ Enterprise Marketing Management▪ Smarter City Operations	Accelerate product and service innovation	<ul style="list-style-type: none">▪ Application Lifecycle Management▪ Complex and Embedded Systems▪ Enterprise Modernization
Enable the agile business	<ul style="list-style-type: none">▪ Business Process Management▪ Connectivity, Integration and SOA▪ Application Infrastructure	Optimize IT and business infrastructure	<ul style="list-style-type: none">▪ Cloud and IT Optimization▪ Asset and Facilities Management▪ Enterprise Endpoint Management
		Manage risk, security and compliance	<ul style="list-style-type: none">▪ Identity and Access Management▪ Data Protection▪ Application Security▪ Infrastructure Protection▪ Security Intelligence and Compliance Analytics

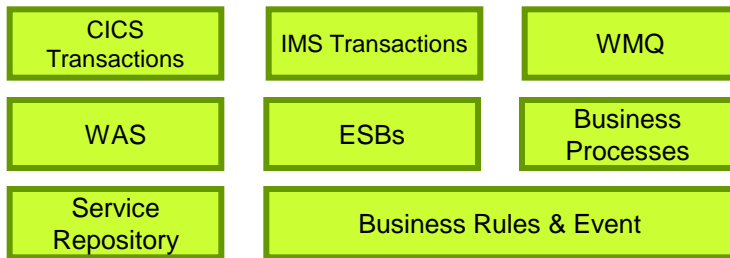
IMS Middleware Positioning with IBM software capabilities

+ IMS DB Recent Features

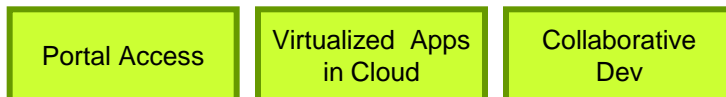
Turn Information into Insights



Enable the Agile Business



Deepen engagement with customers, partners and employees



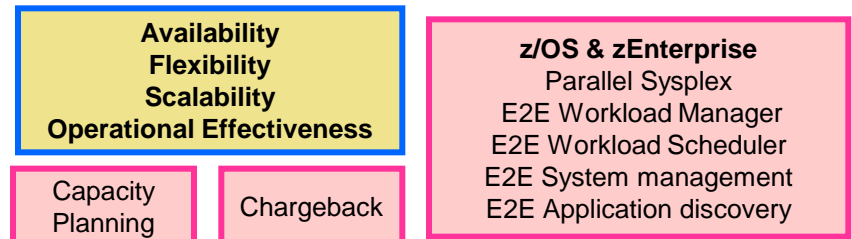
Deliver enterprise mobility



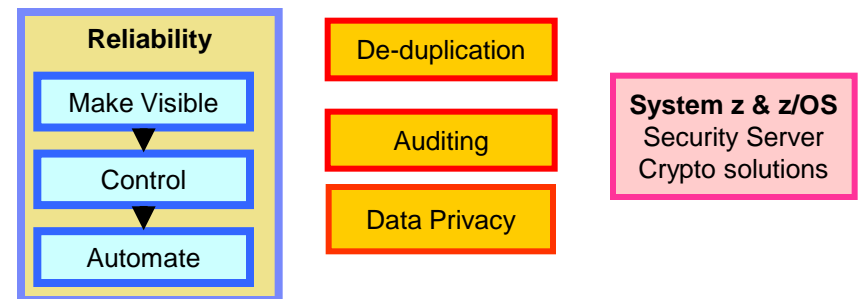
Accelerate Product and Service Innovation



Optimize IT and Business Infrastructure



Manage Risk, Security, and Compliance



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