IMS04

IMS What's New and What's Next

Barbara Klein

Senior IMS Strategic Plan and Brand Manager

IBM Santa Teresa Laboratory, San Jose, California

bk@us.ibm.com

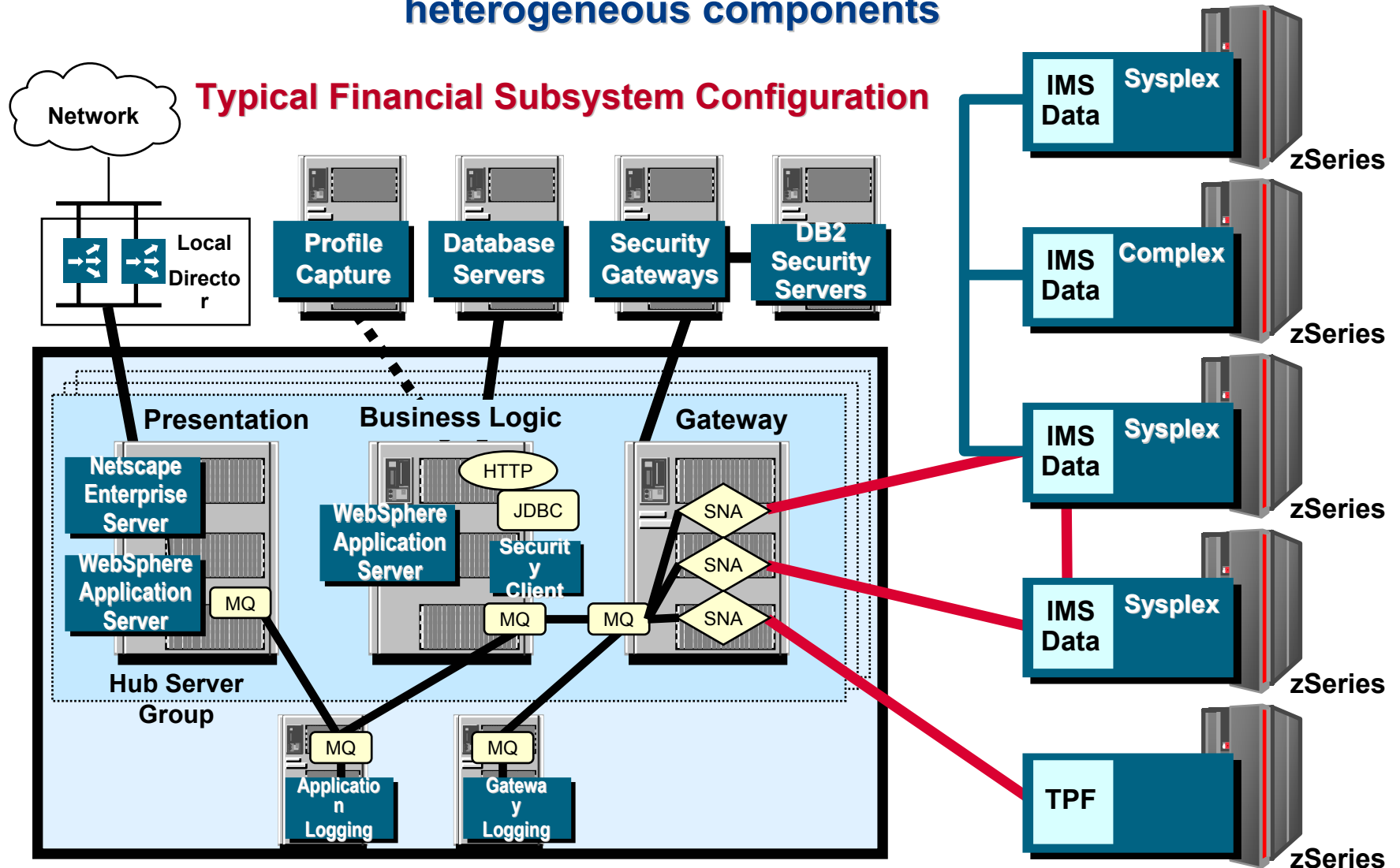Powering On Demand Solutions

ON | **DEMAND BUSINESS**™

the world depends on it

Infrastructure Trends: Complex System Topology

The increasing challenge of managing large systems is due to the inherent complexity of the solution and the sheer number of heterogeneous components
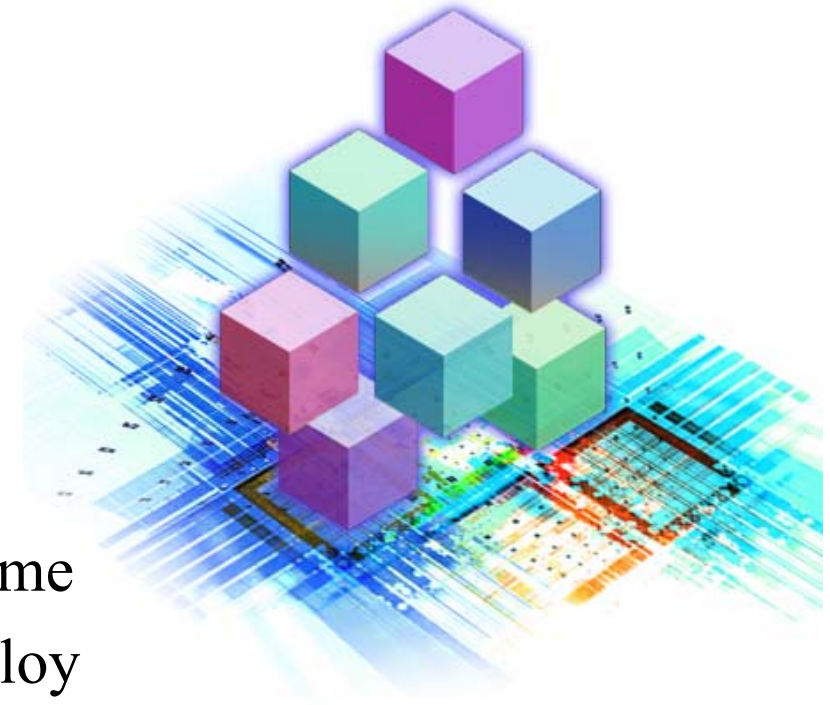

Typical Financial Subsystem Configuration

Front-end for Web presence for financial services

A Service Oriented Architecture (SOA) is Key to providing an Integrated Environment for On Demand Solutions
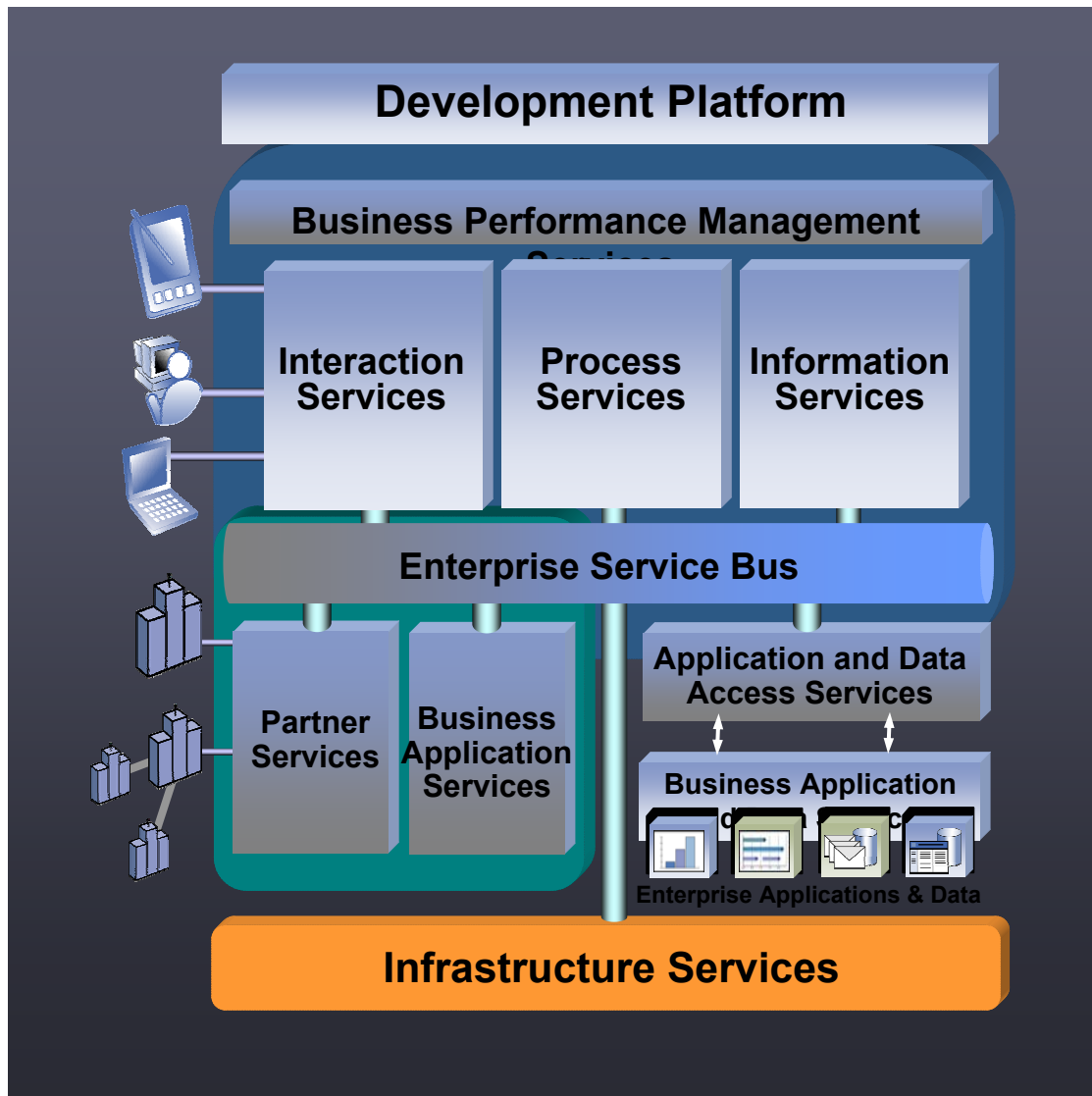
Services are the Building Blocks

- Packaging business functions from new and existing applications in a simple and standardized way creates services that are available for use

- Services are used to help get the right information to the right people at the right time

- Services can be reused and combined to deploy composite applications to address new opportunities

- Increasing use of "Web" services based on open standards complements existing services technology

Automating Business Processes

Integrating and Extending Existing and New Applications and Data

Development Platform

Business Performance Management Services

Interaction Services | **Process Services** | **Information Services**

Enterprise Service Bus

Partner Services | **Business Application Services** | **Application and Data Access Services**

Business Application

Enterprise Applications & Data

Infrastructure Services

Business Benefits

- Improved customer service
- Handle more business without increasing the workforce
- Enforce consistent process execution across many participants
- Quickly respond to new business opportunities

IT Benefits

- Deliver complex solutions in a short period of time
- Support changing business needs
- Swap out applications without changing the process
- Change processes without upgrading applications

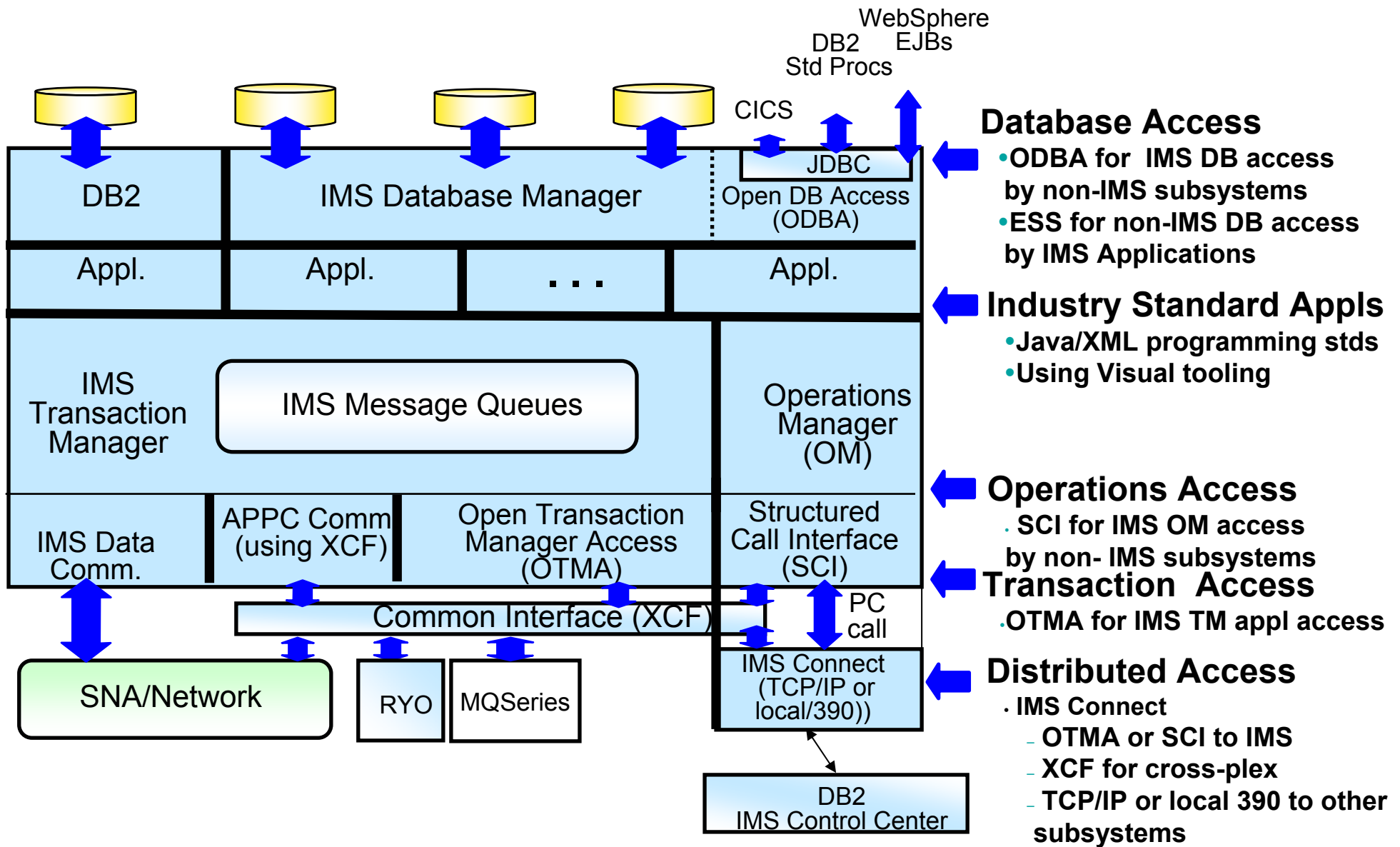# *IMS Continues to Address Challenges of a Rapidly Changing World*

Providing Quality with On-Demand Service Oriented Architecture Solutions

- **Information Integration and Open Access with New Application Development/Connectivity**
  - ✓ **Ease/broaden user access**
  - ✓ **Web, Java, XML and Linux access**
  - ✓ **Ease application developer effort**
  - ✓ **Auto-application-generation tools**
- **Manageability Ease with Autonomic Computing**
  - ✓ **Ease installation and operations efforts**
  - ✓ **High levels of security**
  - ✓ **End-to-end transaction integrity**
  - ✓ **Real time data currency**
  - ✓ **Highest code quality**
- **System Scalability for Virtualization in Performance/Capacity/Availability/Recovery**
  - ✓ **Handling increasing workload**
  - ✓ **Handling unpredictable volumes**
  - ✓ **More hours for workload**
  - ✓ **Continuous up time for applications and user access**
- **IMS extends the investment for your on demand business needs**

Middleware Subsystem Access
-- Providing Open Database and Transaction access

WebSphere
EJBs
DB2
Std Procs

CICS

Database Access
- ODBA for IMS DB access by non-IMS subsystems
- ESS for non-IMS DB access by IMS Applications

DB2	IMS Database Manager	JDBC
		Open DB Access (ODBA)
Appl.	Appl.	...	Appl.

Industry Standard Appls
- Java/XML programming stds
- Using Visual tooling

IMS Transaction Manager

IMS Message Queues

Operations Manager (OM)

Operations Access
- SCI for IMS OM access by non- IMS subsystems

| IMS Data Comm. | APPC Comm (using XCF) | Open Transaction Manager Access (OTMA) | Structured Call Interface (SCI) |

Transaction Access
- OTMA for IMS TM appl access

Common Interface (XCF)

PC call

IMS Connect (TCP/IP or local/390))

Distributed Access
- IMS Connect
  - OTMA or SCI to IMS
  - XCF for cross-plex
  - TCP/IP or local 390 to other subsystems

SNA/Network

RYO MQSeries

DB2
IMS Control Center

IMS V7 Database Manager Enhancements

Integration with Applic Devt/Connectivity

- ◆ IMS Java and XML support
- ◆ Open Database Access (ODBA)

Manageability

- **Installation enhancements**
  - ► Usability enhancements
  - ► HALDB samples
- **Logger enhancements**
  - ► Administration and Control
- **External Subsystem Attach Facility diagnostic enhancements**
- **IMS systems parameter display**
- **Fast Path Enhancements**
  - ► I/O error handling enhancements
  - ► Performance monitoring support
  - ► Multiple Area Data Set I/O Timing
  - ► Expansion of compressed data for Single dependent segment Scan
- **IMS Monitor enhancements for FP and FF**

Scalability in Performance/Capacity and Availability/Recovery

- **High Availability Large Database**
- **Application Control Block Generation (ACBGEN) enhancements**
  - ► increased number of program limits
  - ► time/version info added
- **DBRC Enhancements**
  - ► Recovery Control (RECON) online upgrade, online access, large record warning, loss notification, improved diagnostics
  - ► Image Copy Genmax and Recovery enhancement
  - ► DB administration enhancements
- **Forward Recovery enhancements**
  - ► Change accumulation spill record handling for smaller, faster change accums
- **Image Copy 2 Enhancements**
  - ► compression option added for space savings
- **I/O Performance enhancements**
  - ► FICON support
  - ► ESS support
- **CSA Constraint relief**

IMS V7 Transaction Manager Enhancements

Integration with Application Devt and Connectivity

- IMS Java and XML support
- OTMA Callable Interface
- **ETO Enhancements**
  - ► Associated Printer support
  - ► Autologon enhancements
  - ► LTERM assignment flexibility
 - ► ETO descriptor record limit removed
  - ► Command Compatibility

Manageability

- **Sysplex Queue Sharing Enhanced**
  - ► CQS enhancements for Shared Queues
  - ► Asynch APPC/OTMA for Shared Queues
- **Routing Exit enhancements**
- **RACF Pass Ticket Support**
- **Clarified USERID for applications**
- **External Subsystem Attach Facility (for DB2) Trace enhancements**
- **Installation enhancements**
  - ► Usability enhancements
  - ► Java samples
- **IMS systems parameter display**

Scalability in performance, capacity, and availability

- **Rapid Network Reconnect**
- **Deferred VTAM ACB Open to prevent time-outs**
- **Improved checkpoint frequency control**
- **SLUP Finance Session Coldstart capability**
- **VTAM Generic Resources enhancement for VTAM to manage the affinity**
- **Queue Space Notification Exit**
- **I/O SPOOL usability and performance enhancements**
- **SLU2 exception response enhancement**

What is Open Database Access?
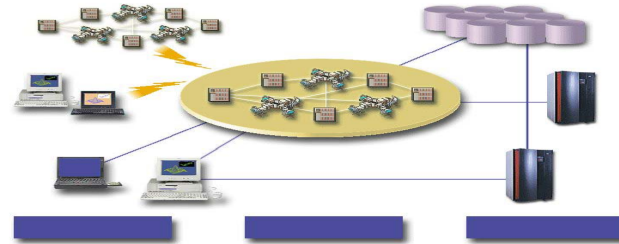
- Open Database Access (ODBA) is a callable interface for accessing data managed by IMS DB
  - Based on the DRA interface provided for CICS applications
  - Also provided through the IMS V6 service process
- ODBA allows IMS DB and OS/390 application programs to be developed, installed, and maintained independently of each other
- ODBA provides for failure isolation and independent resource recoverability
  - Requires OS/390 Resource Recovery Services (RRS)

IMS V7 Java for *Integrated On Demand Business and Application Development/Connectivity Ease*

✓Application Programmer Productivity
- **Provide a set of packages (groups of classes) for I/O message handling and access to IMS services and support APIs familiar to Java programmers**
- **Java access to IMS input/output message queues**
- **Provide JDBC access to IMS DB and DB2 data for IMS TM/Batch applications**
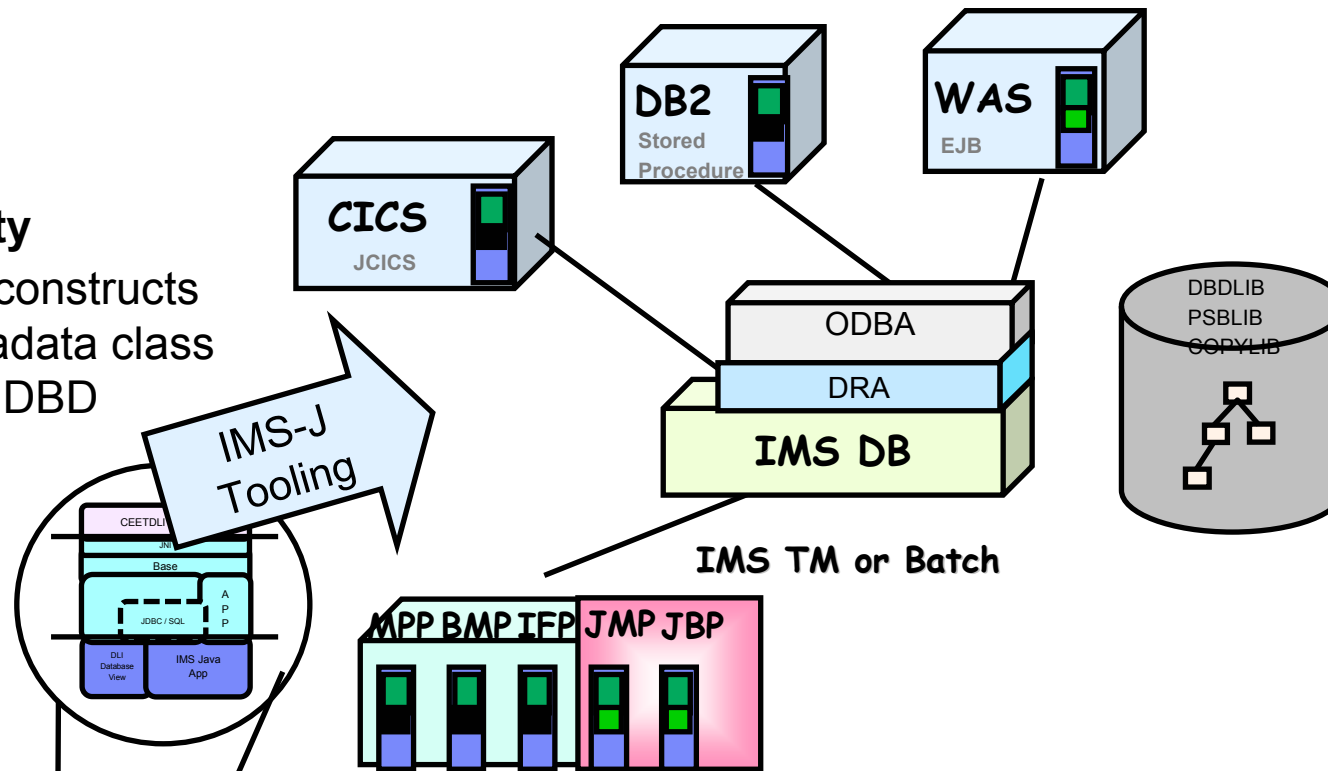- **Use Visual tools for development**

✓**Enhancements since IMS V7 GA**
- **New Java Dependent Regions (JMP and JBP) provided to support Persistent Reusable Java Virtual Machine replacing HPJ compiler**
- **JDBC access to IMS DB from CICS Java applications, DB2 Stored Procedures, or WebSphere ejbs in local OS/390 and z/OS environments**
- **New Java Tool support**
- **Java Installation and Usability Enhancements**
- **Java-Cobol Interoperability/Usability enhancement to improve productivity and simplify operations (2003)**
- **COBOL-XML support for parsing/transforming XML documents through WSED-generated XML converters (2003)**
- **zAAP support for Java applications (2004)**

JDBC Access to IMS Data with IMS Java

DLIModel Utility

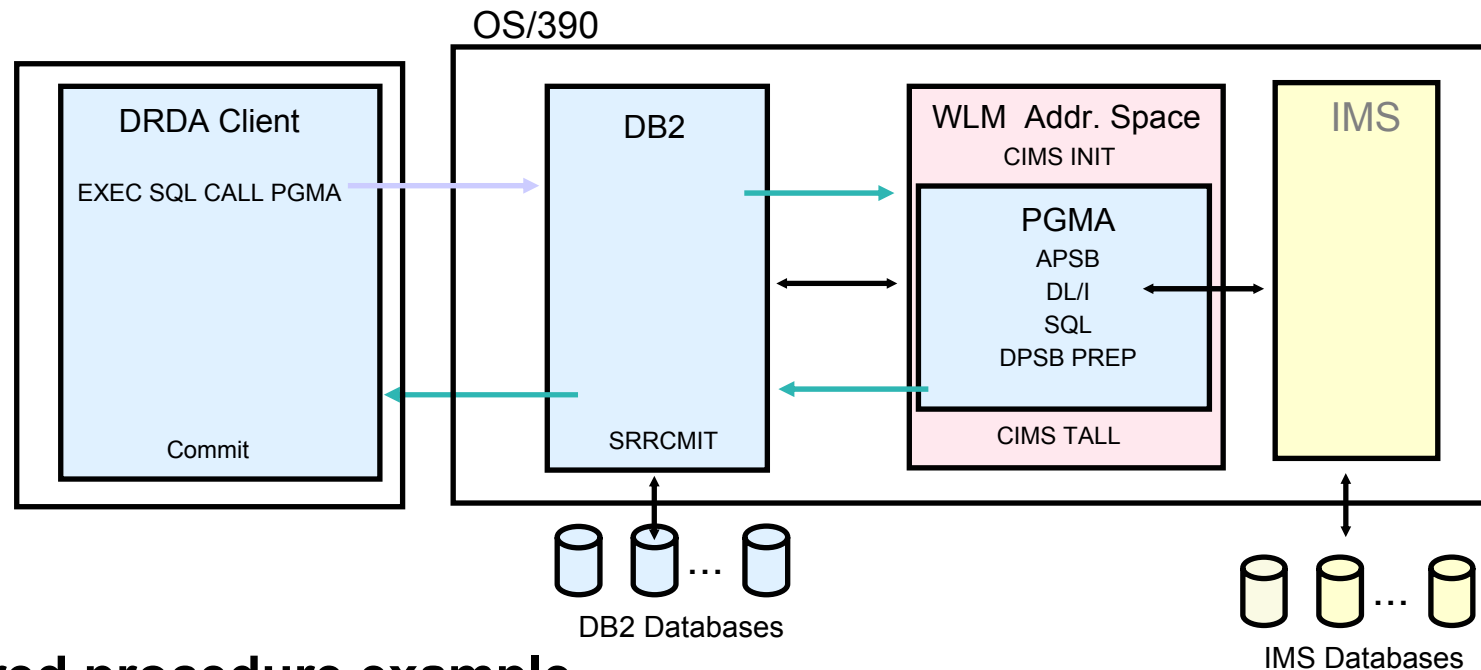- Automatically constructs IMS Java metadata class from PSB and DBD

DB2
Stored Procedure

WAS
EJB

CICS
JCICS

ODBA

DRA

IMS DB

DBDLIB
PSBLIB
COPYLIB

IMS-J Tooling

CEETDLI

JNI

Base

JDBC / SQL

A P P

DLI Database View

IMS Java App

IMS TM or Batch

MPP BMP IFP JMP JBP

"**SELECT** CheckingAcct.Balance, SavingAcct.Balance,CheckingAcct.Name" +
    "**FROM** MyBankPCB.Accounts " +
    "**WHERE** CheckingAcct.Balance > 10000" +
    "**AND** SavingAcct.Balance > 20000 "

Installation and Usability enhancements

- Expanded samples/examples
- IVP and install program improvements
- Expanded documentation
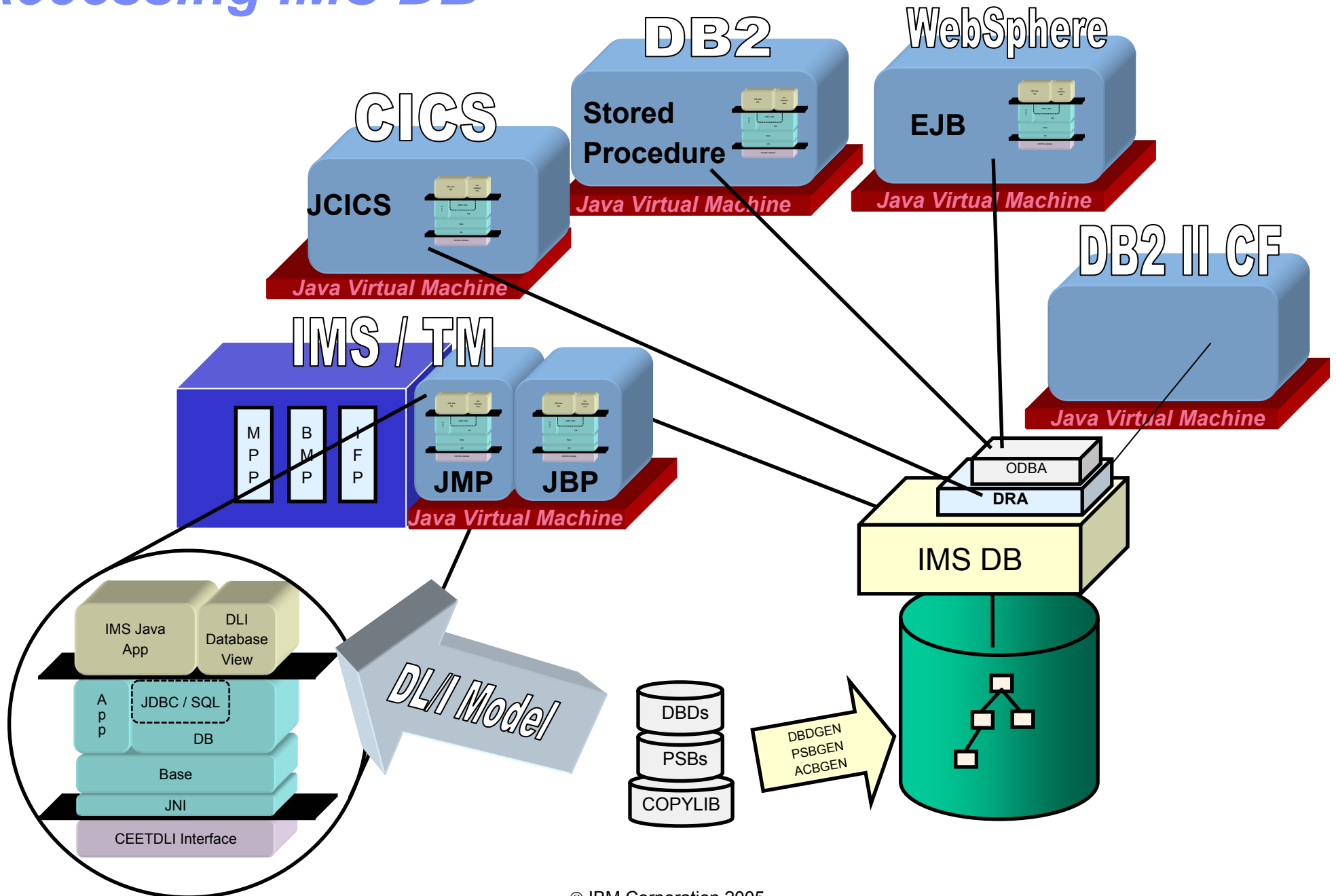
DB2 Stored Procedure Example

OS/390

DRDA Client	DB2	WLM Addr. Space	IMS
EXEC SQL CALL PGMA		CIMS INIT	
		PGMA APSB DL/I SQL DPSB PREP	
Commit	SRRCMIT	CIMS TALL	

DB2 Databases

IMS Databases

- ●**DB2 stored procedure example**

    – DL/I calls to IMS DB
    – Client program does commit when stored procedure returns or DB2 can issue SRRCMIT
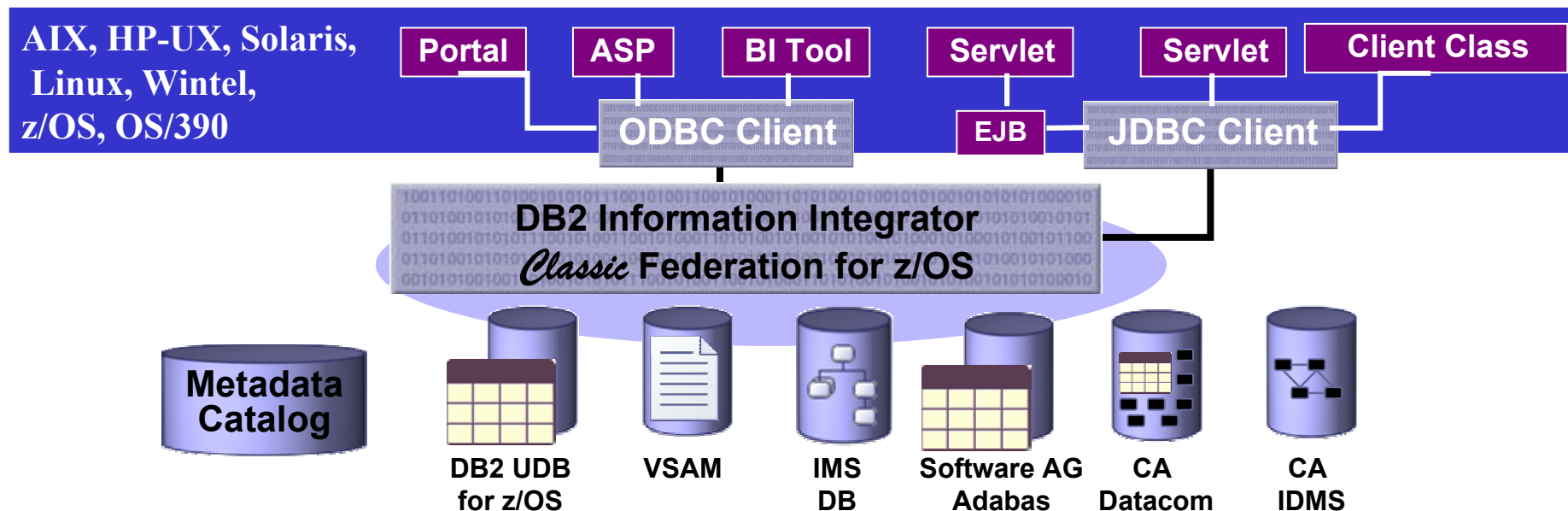
- ●**Enhancements since IMS V7 GA**

    – JDBC calls to IMS DB from DB2 Java Stored Procedures, IMS and CICS/390 Java applications, and WebSphere ejbs
    – Calls to IMS TM from DB2 Stored Procedures (2004)

Accessing IMS DB

DB2

WebSphere

CICS

Stored Procedure

EJB

JCICS

Java Virtual Machine

Java Virtual Machine

Java Virtual Machine

DB2 II CF

IMS / TM

JMP   JBP

M P P   B M P   I F P

Java Virtual Machine

Java Virtual Machine

ODBA

DRA

IMS DB

IMS Java App

DLI Database View

A p p   JDBC / SQL

DB

Base

JNI

CEETDLI Interface

DL/I Model

DBDs

PSBs

COPYLIB

DBDGEN PSBGEN ACBGEN

DB2 Information Integrator Classic Federation

- IMS access using SQL SELECT, INSERT, UPDATE, DELETE & stored procedure call
- ODBC, JDBC or Call-Level-Interface (CLI) clients
- No mainframe programming required
- Multi-threaded with native DBCTL/DRA IMS driver for scalable, multi-user performance
- Designed to work with existing mainframe tools & application infrastructure
- Enterprise ready: 2 phase commit, transactional throughputs, seamless integration

AIX, HP-UX, Solaris, Linux, Wintel, z/OS, OS/390

| Portal | ASP | BI Tool | Servlet | Servlet | Client Class |

ODBC Client **EJB** **JDBC Client**

DB2 Information Integrator
Classic **Federation for z/OS**

Metadata Catalog

DB2 UDB for z/OS **VSAM** **IMS DB** **Software AG Adabas** **CA Datacom** **CA IDMS**

IMS V7 HALDB for IMPROVED CAPACITY AND DATA AVAILABILITY

✓Scaling up the IMS Full Function database size
➡ <u>1001 Partitions x 10 data set groups x 4G = 40 Terabytes</u>

✓Providing data availability through partition independence

✓Providing easier manageability with smaller partitions of the database

✓**Enhancements since IMS V7 GA:**

- **Performance Improvements in**
  - ► **Secondary index migration**
  - ► **Indirect list data sets (ILDS) creation**
  - ► **DFSMAID0**
  - ► **Secondary index option during Load**

- **Management Improvements with**
  - ► **Recon Partition List Command support**
  - ► **Batch command initialization and change/delete of HALDB and associated partitions**
  - ► **Limit BMP/Batch/JBP Calls to one partition**
  - ► **Unload Reload status enhancement**
  - ► **PCB label Processing (2003)**
  - ► **Partition Definition Utility, DBRC/HALDB commands, and usability (2003)**
  - ► **DBRC Option, Processing Control Statement, and Partition Selection Exit Enhancements (2004)**
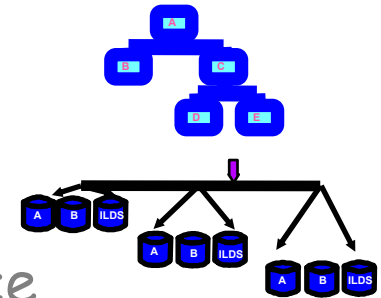
2003/2004 IMS V7 HALDB Enhancements through the Service Process

- **Label Processing, easing use of a label**

- **Partition Definition Utility, DBRC/HALDB Commands, and Usability enhancements**

- **DBRC Option for batch programs, where no DB calls refer to HALDB during execution, providing more flexibility and reducing efforts**

- **Increase of Processing Control Statements from 10 to 20, allowing up to 20 DB PCBs that can perform single partition processing in a HALDB**

- **Ease use of Partition Selection Exit DSECT by user-written partition selection exits.**

IMS V7 DBRC Enhancements to **Ease Recovery and Manageability**

- **DBRC Concurrent RECON Upgrade**
  - ► RECON can be upgraded without stopping pre-IMS V7 systems
- **RECON Loss Notification**
  - ► MVS console message for RECON loss, aiding automation
- **DBRC Support for PROCOPT=L/LS**
  - ► Image Copy required at initial database load, improving data integrity
- **DBRC Image Copy GENMAX**
  - ► GENMAX no longer automatically increased when number of image copies specified is exceeded, enhancing usability
- **Large RECON record warning**
  - ► Warning message, easing automation and increasing availability
- **RECON Access improvement**
  - ► Change to scheme to serialize accesses to RECON (online system favored over batch jobs), reducing I/O bottlenecks that impact online systems
- **DBRC serviceability**
  - ► LIST.DBDSGRP, LIST.HISTORY enhancements

✓ **Enhancements since IMS V7 GA:**
- ➔ **Support of HALDB performance/management enhancements**
- ➔ **List History timeline - can just point to the timeline only**
- ➔ **DD Cards - alt DD for SYSIN**
- ➔ **Genjcl user partition support**
- ➔ **HALDB Partition Init Utility enhancement (2004) - Providing parallel execution of multiple job tasks for the Partition Initialization Utility**
- ➔ **Recon I/O Reduction for Sign-off Database Unauthorization (2005)**
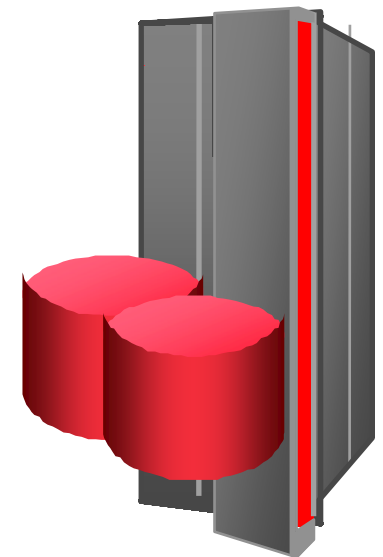
IMS V7 Enhancements in 2001/2002 via Service Process

Integration/Openness with application development/connectivity
- New Java Region Types, JDBC access, and Tooling
- APPC and OTMA Message enhancements
- OTMA Security and Management Enhancements
- External Subsystem Support enhanced for DB2 MVS group support
- Additional Sense Codes/Message Information for use with z/OS Communications Manager
- Optional use of VTAM Generic Resources (VGR) for InterSystems Coupling (ISC) support

Manageability
- Enhanced HALDB and DBRC enhancements to ease usability
- Batch Resource Recovery Service (RRS) enhancement
- System Log Data Set (SLDS) Read Support
- Remote Site Recovery (RSR) Enhanced Statistics

Scalability
- 64-bit real support
- 255 OSAM Database Buffer Subpools
- Fiber Channel support
- Fast Path (FP) Page Fix enhancement reduces MVS overhead in page fixing FP buffers

IMS V7 Enhancements in 2003/04/05 via Service process

Integration/Openness

- Java/XML enhancements for programmer productivity
- OTMA enhancements for security/manageability
  - Dynamic Refresh of Aging value for OTMA messages in a security environment
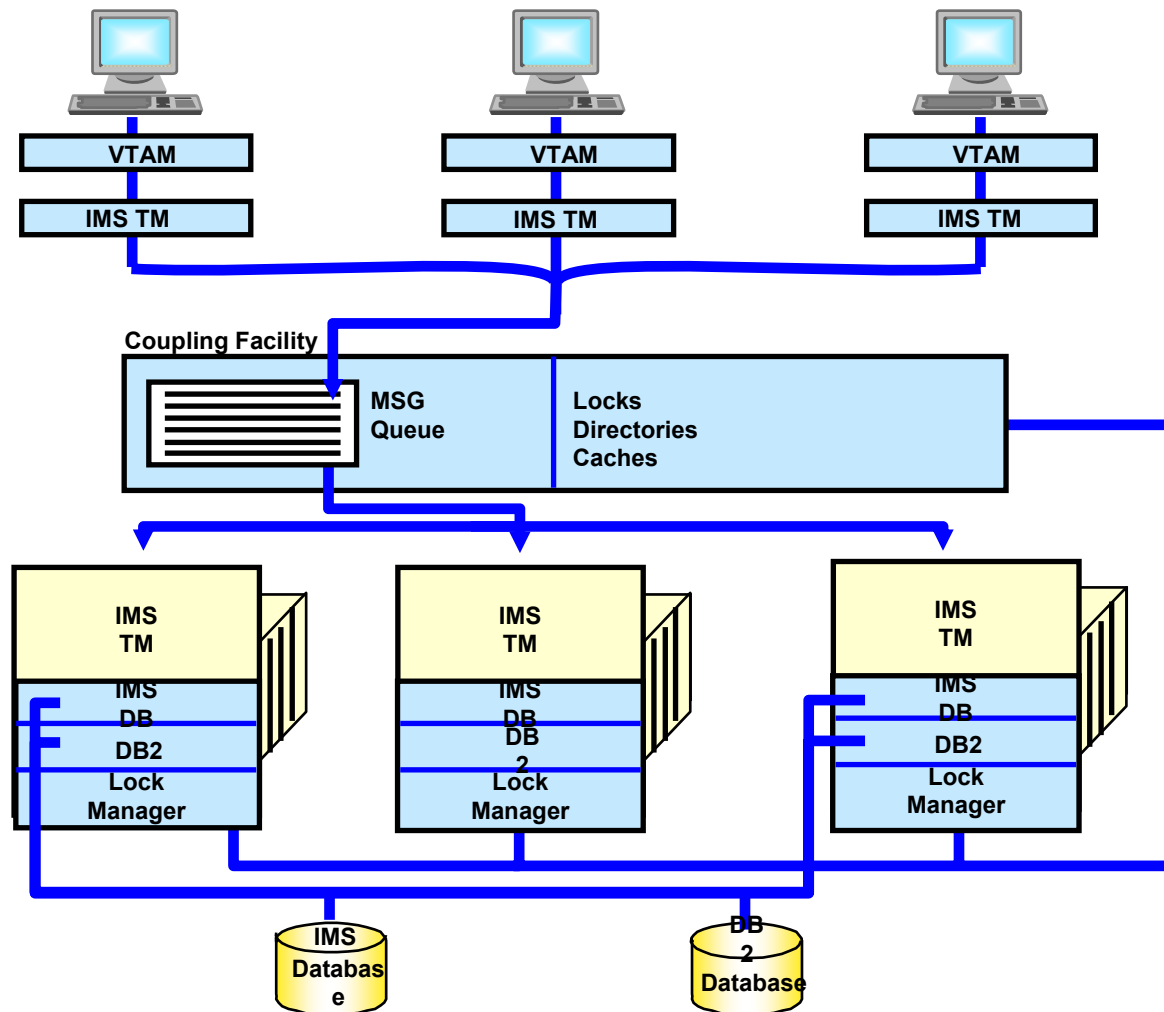 - OTMA Auto option for delivery of a single message (Mar 2004)

Manageability

- HALDB and DBRC enhancements to ease usability
- RLSE Call (Mar 2005) – provides a Full Function or Fast Path DL/I call to release the database locks before syncpoint.
- /Exit Conversation Enhancements
- Option to disable STM for static ISC
- Fast Path enhancements
  - VSO RSR/XRF enhancements
  - Availability/Serviceability/usability enhancements
  - High Speed Reorg – provides the ability to insert records in a DEDB in a specifiable order when it reorganizes
- Long Locks Module User Exit to support real time monitoring of lock data for the Performance Monitor tool support enhancements
- DEQ/DIS Commands support for Shared Queues

Scalability

- RRS = Y/N to avoid unnecessary overhead.
- Dynamic LTERM creation
- Enhanced Sysplex Coupling Facility support (duplexing, auto alter, rebuild, commands)

IMS in a Parallel Sysplex

VTAM

VTAM

VTAM

IMS TM

IMS TM

IMS TM

← **Allocation of workstations**

Coupling Facility

MSG Queue

Locks Directories Caches

← **Dynamic Workload Balancing**

← **Data Sharing**
➤IMS DB
➤DB2

IMS TM
IMS DB
DB2
Lock Manager

IMS TM
IMS DB
DB 2
Lock Manager

IMS TM
IMS DB
DB2
Lock Manager

IMS Database

DB 2 Database

Easier access and management of enterprise applications and data

IMS V8 Database Manager Enhancements

Integration/Open with Application Development and Connectivity

- **Dynamic LE Runtime Parameters**

Manageability

- **Single Image Operations Manager**
- **Syntax Checker**
- **Removed RSR RLT/DLT install checking**
- **Packaging/Install/IVP enhancements**

Scalability in Availability/Recovery/ Performance/Capacity

- **IMS/DB2 Coordinated disaster recovery support**
- **DBRC Enhancements**
  - **Automatic Recon Loss Notification** for quicker loss recovery
  - **Eliminate ABENDs** when authorizing database
  - **RECON Command Authorization** controls RECON access/update via DBRC batch commands
  - **16M RECON Record Size** helps users avoid problems caused by Recon Record size exceeding VSAM record size max
  - **Prilog Compression** reduces overhead, improves performance
- **Parallel Database Processing**
- **Fast Path DEDB Enhancements**
  - ►**Non Recoverable DEDBs**
  - ►**DEDBs increased to 2048 areas**
- **CSA/VSCR Enhancements**

IMS V8 Transaction Manager Enhancements

Information Integration with Application Development and Connectivity
- **Dynamic LE Runtime Parameters**

Manageability
- **Sysplex Wide Resource Manager**
- **Single Image Operations Management**
- **Sysplex Terminal Management**
- **Transaction Trace**
- **Syntax Checker**
- **Packaging/Install/IVP enhancements.**

Scalability in Availability/Recovery/ Performance/Capacity
- **APPC/OTMA enhancements**
- **CSA/VSCR enhancements**
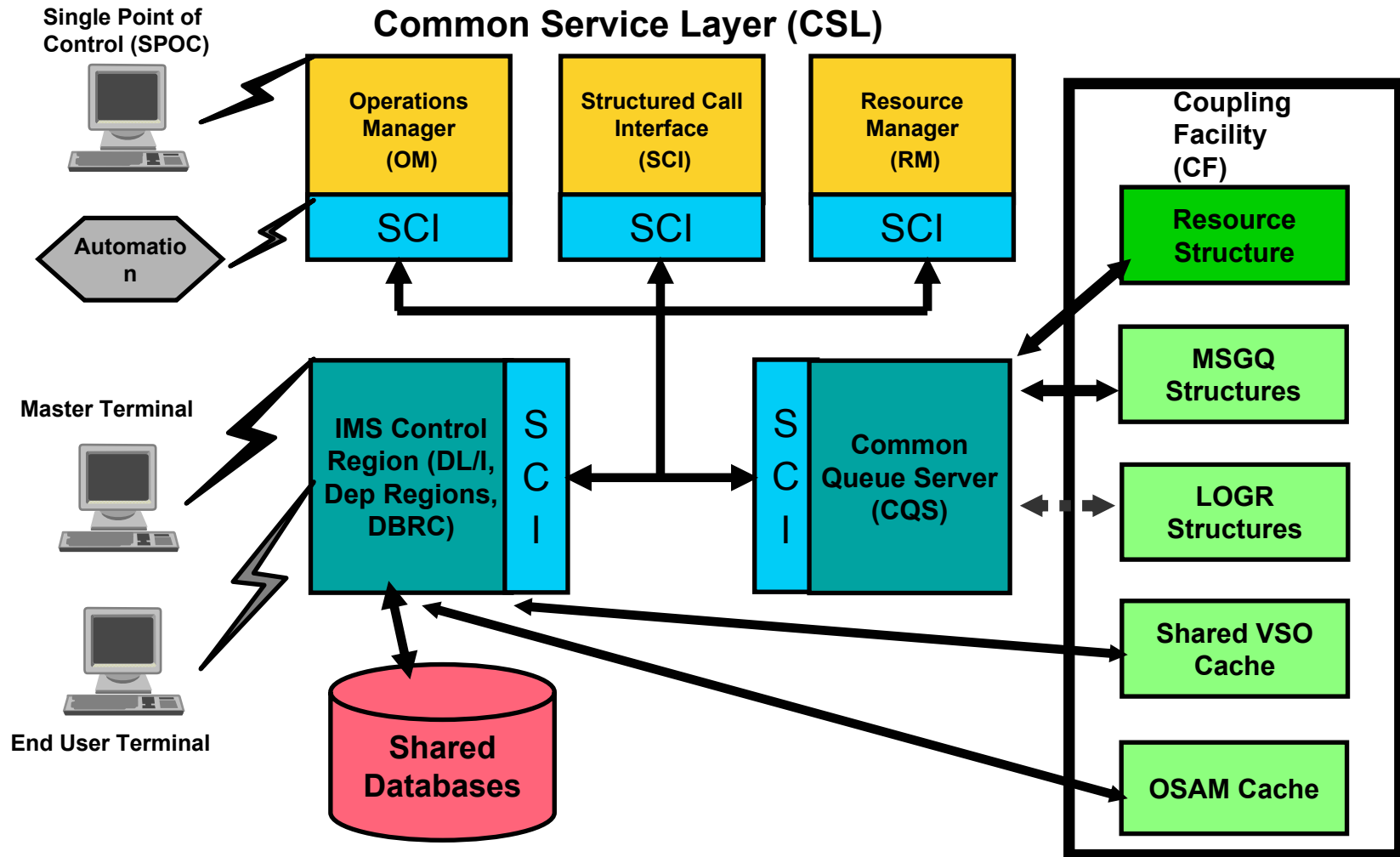- **Common Service Layer address spaces**

IMS Sysplex Manageability
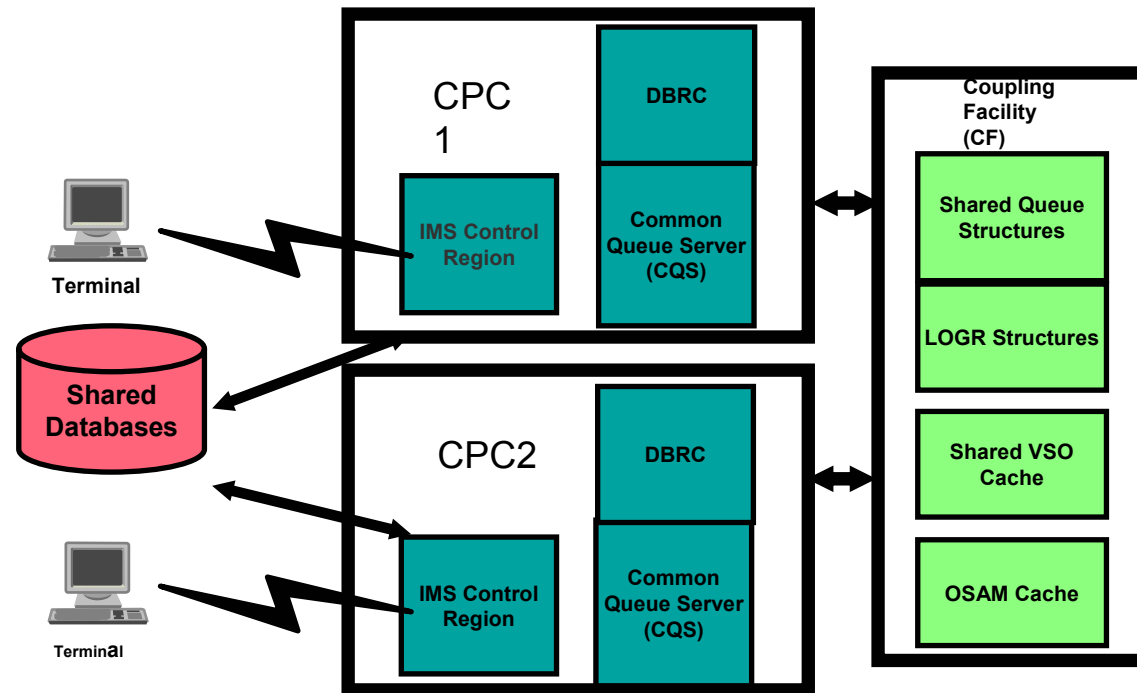
SYSTEMS MANAGEMENT REQUIREMENTS

- PRESENT A SINGLE SYSTEM IMAGE AND PROVIDE EASE OF USE THROUGH A SINGLE POINT OF CONTROL ACROSS THE SYSPLEX
- ENABLE USERS TO RESUME STATUS ON ANOTHER IMS IN IMSPLEX
- COORDINATE/MANAGE ONLINE CHANGE ACROSS THE IMSPLEX
- ADDITIONAL REQUIREMENTS

IMS V8 Sysplex Management Enhancements

Common Service Layer (CSL)

Single Point of Control (SPOC)

Automation

Master Terminal

End User Terminal

Operations Manager (OM)

Structured Call Interface (SCI)

Resource Manager (RM)

SCI   SCI   SCI

IMS Control Region (DL/I, Dep Regions, DBRC)   SCI

Common Queue Server (CQS)   SCI

Shared Databases

Coupling Facility (CF)

Resource Structure

MSGQ Structures

LOGR Structures

Shared VSO Cache

OSAM Cache

Structured Call Interface provides communication interface between IMS address spaces on same or across CPCs using XCF

IMS Resource Definition Manageability

- **Current System Generation Process:** 2-stage, batch, assembler, process requiring cold start; system quiesce required with online change (DBs, Trans route codes, Appls, Security)

- **Requirements:** Reduce system generation time/effort and Improve availability during change

Staging

- **IMS V4** stopped using sysgen to support new function
- **IMS V5/6** removed conditional assembly modules
- **IMS V7** put non-conditional link-edit modules under SMP control
- **IMS V8**
  - ►Removed RSR RLT/DLT feature install checking
  - ►Resource Manager/Coordinated Online Change
  - ►Syntax Checker
  - ►Packaging/Installation/IVP enhancements
- **IMS V9**
  - ►Conditional link-edit elimination
  - ►Online change modules moved from the Nucleus
  - ►Dynamic change/addition of Type 4 SVC and resource cleanup module
  - ►IVP and syntax Checker enhancements

IMS V8 Syntax Checker

Helps Reduce System Generation effort

- **New IMS ISPF application** which assists Systems Programmers in defining and maintaining the IMS parmlib members residing in the IMS PROCLIB

- **Parameter and value checking and detailed help text** at the parameter level tailored to the IMS version

- **Assists in moving from release to release** by identifying new parameters and obsolete parameters

- **Provide ability to ensure parameters are valid** prior to shutting down and restarting your IMS Control Regions.

IMS V8 Packaging, Installation and IVP Enhancements

New IMS Packaging and Installation Process

- SMP/E jobs removed from Install/IVP Dialog Process
- SMP/E Receive, Apply, Accept processing
- New Target and Distribution datasets
- No DFSJCLIN Job provided

Installation Verification Program Enhancements

- OM, RM, SCI, SPOC Sample Application
- Syntax Checker Sample Application

IMS V8 Enhancements in 2003/4/5 via Service process

Integration

• Java and XML enhancements

• APPC/OTMA Enhancements (2004)

• ESAF/DB2AF simultaneous access to same DB2 (2005)

Manageability

• Sysplex TM Y/N Option for Static ISC, and for all TM resources (1Q04)

• DB Image Copy 2 Enhancements eases image copy coordination/mgmt

• Coord Online Change eases/manages/automates change across Sysplex

• IMS Control Center (provided with DB2 Control Center via Fixpack)

• Operations Manager enhanced to pass FID (2005) for AOI conversion

• Log Edit User Exit to allow editing of trans msg record in the IMS log data for additional security (2005)

Scalability

• Syncplex Option (4Q04) – providing new FF/FP /ERE command keyword and parameter to synchronize restart of failed IMSs in a Sysplex

Plus items from V7 Enhancements in 2003/2004/2005

IMS V8 Java and XML enhancements to
Ease Application Integration

- WSADIE Service Definition creation for MFS-based applications to enable use as Web Services
- MFS Web Services support enabling customers to publish existing transactions as Web Services and connect to IMS via SOAP and EJB bindings.
- SQL enhancements for new SQL keywords and Aggregate functions enhancements
- JDBC 2.0 support, including the ability to obtain scroll insensitive result sets
- IMS DB-DB2 Interoperability from within a Java dependent region
- JDK 1.4 support
- JDBC Deferred Program Switch support (1Q05)
  - Provide deferred program switch support of a Java application operating in a JMP region (in addition to immediate program switch)
  - Enables conversational Java transaction applications to accomplish deferred program switch to other conversational transactions applications (both Java and non-Java)
  - Adds the new setTransactionID (string) method

IMS V8 APPC/OTMA Enhancements

- OTMA/MQSeries Performance enhancements
- OTMA enhancements
  - Purge CM0 IOPCB output notification easing recovery
  - /Display TPIPE command enhancement to show wait status easing usability
  - New Resume TPIPE option easing performance
- APPC/OTMA exit enhancements (1Q04)
  - ➢ Allow user exit DFSLUEE0 to change synclevel for APPC outbound conversations.
  - ➢ Pass DFS messages to user exit DFSCMUX0 if input from APPC/OTMA device.
- APPC/OTMA Shared Queues Support (2Q04) provides for sharing messages between Sysplex systems through IMS Queue Manager
  - ➢ MVS/APPC programs
  - ➢ OTMA programs (eg. MQ, Connect, etc.)
- APPC/OTMA Fld Call enhancement (4Q04)
  - ➢ Redesign of the transaction syncpoint flow so FLD Call verification is done before output message sent, reducing 819 abends when processing these transactions due to FLD Call verify failure in Syncpoint phase 1

IMS V8 Image Copy 2 Enhancements

Eases Image Copy coordination and management

- **Multiple utility control statements** can be copied per execution

- **Group name support** names the datasets in one execution so can start and/or stop as a group

- **Single output data set** can be created for multiple image copies

- **DFSMSdss Optimize option** supported

IMS V8 Coordinated Online Change

Eases, manages, and automates change across the IMS Sysplex.

- Commands can be entered on one IMS
- Requests can be handled for coordinating change across all the IMSs in the IMS Sysplex
- Improves change processing
- Commands now provide more meaningful information in cases of failure or to query state information
- Avoids impact of a partial commit
- Simplifies error handling
- Replaces manual coordination
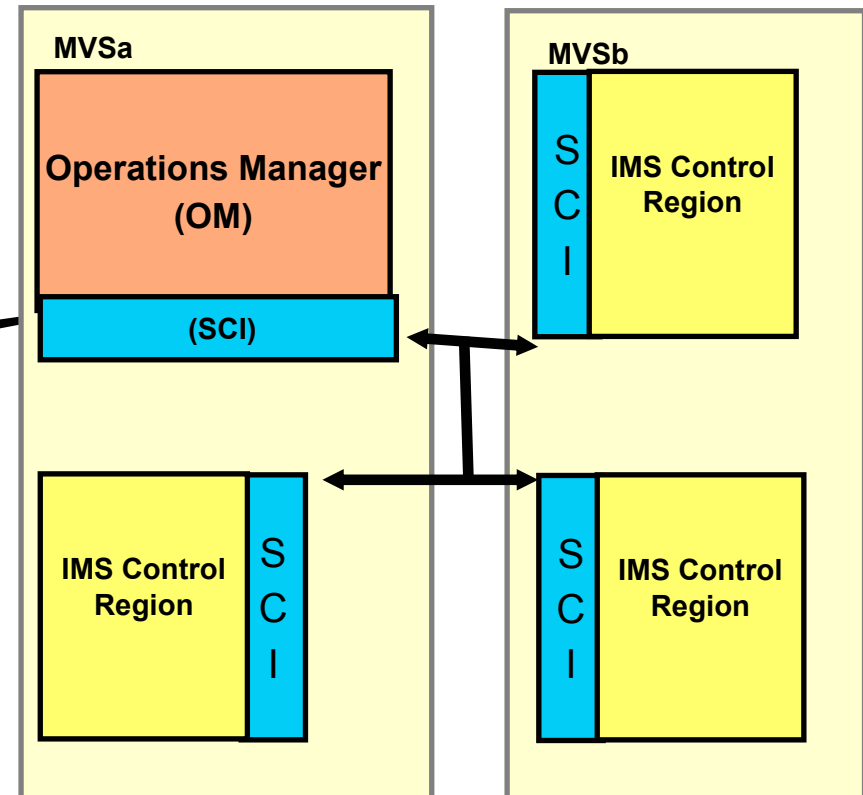
IMS V8 Easing Sysplex Operations Manageability

Operations Manager

- **Routes Commands**
- **Provides an API**
- **Provides Single Point of Control and supporting code for entering commands**
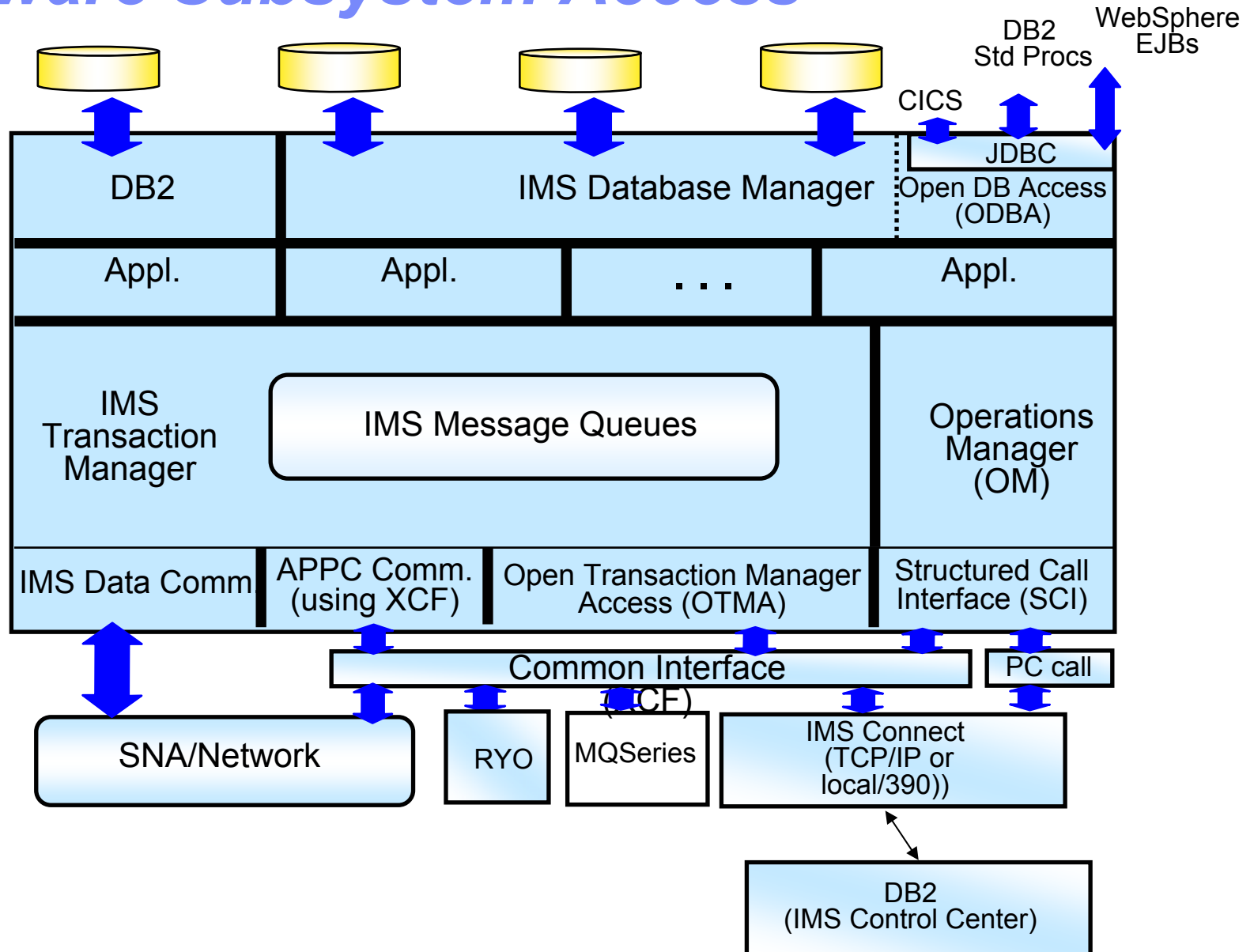
Single Point of Control (SPOC) can be used to control any IMS, with or without the presence of a Sysplex using
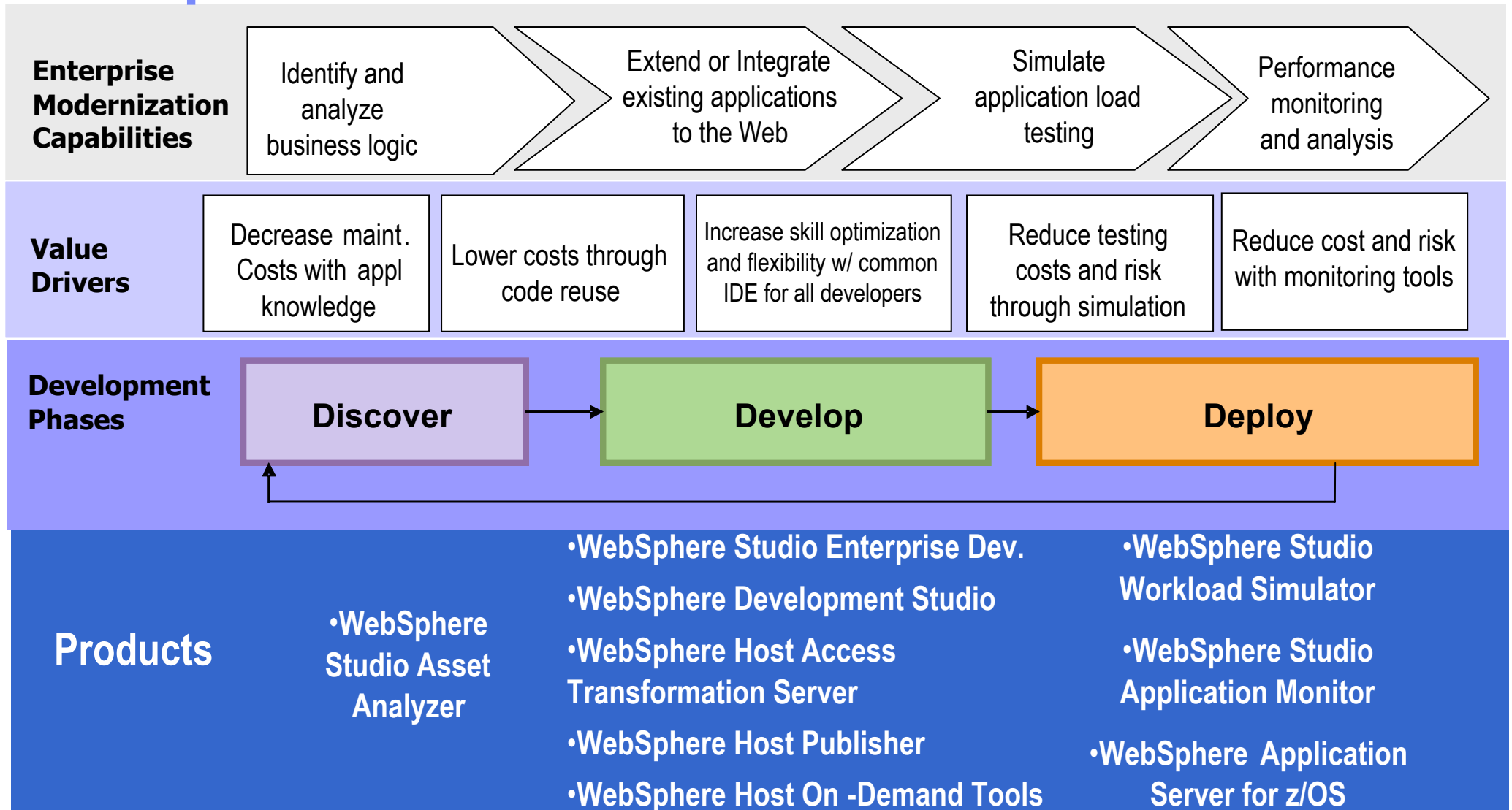
- **TSO/ISPF Application, or**
- **DB2 V8 Control Center through IMS Connect to IMS**

MVSa

Operations Manager (OM)

(SCI)

MVSb

SCI IMS Control Region

IMS Control Region SCI

SCI IMS Control Region

Middleware Subsystem Access

Enterprise Modernization: Value Chain

Enterprise Modernization Capabilities	Identify and analyze business logic	Extend or Integrate existing applications to the Web	Simulate application load testing	Performance monitoring and analysis

Value Drivers	Decrease maint. Costs with appl knowledge	Lower costs through code reuse	Increase skill optimization and flexibility w/ common IDE for all developers	Reduce testing costs and risk through simulation	Reduce cost and risk with monitoring tools

Development Phases

Discover → **Develop** → **Deploy**

Products

- WebSphere Studio Asset Analyzer

- WebSphere Studio Enterprise Dev.
- WebSphere Development Studio
- WebSphere Host Access Transformation Server
- WebSphere Host Publisher
- WebSphere Host On -Demand Tools

- WebSphere Studio Workload Simulator
- WebSphere Studio Application Monitor
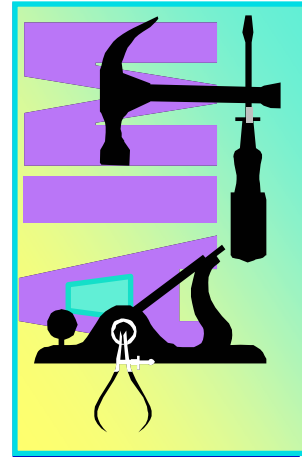- WebSphere Application Server for z/OS

Application Integration Management Tools for IMS Innovation

Discover

► *WebSphere Studio Asset Analyzer V3R1 5655-L21*

Develop

► *WebSphere Studio Enterprise Developer V5R0 5724-B67*
► *WebSphere Studio Enterprise Developer Server V5R0 5655-I57*
► *WebSphere Studio Host on Demand 5xxxx-xxx*
► *WebSphere Host Publisher V4R1 5655-I03*
► *WebSphere Host Access Transformation Services V5R1*
► *Debug Tool for z/OS and OS/390 V4R1 5655-L24 and Debug Utilities for z/OS V4R1 5655-L23*
  • Provides user controlled IMS debug sessions
► *Enterprise COBOL for z/OS and OS/390 V3R2 5655-G53*
► *Enterprise PL/I for z/OS and OS/390 V3R2 5655-H31*

Discover Develop Deploy Innovate !

Deploy

► *WebSphere Studio Workload Simulator V2R1 5655-I14*
► *WebSphere Studio Application Monitor V2R1 5655-L42*
► *WebSphere Application Server for z/OS V5R0*
► *Fault Analyzer for z/OS V4R1 5655-L25*
  • Includes support for IMS/TM fault analysis
► *FileManager for z/OS V4R1 5655-L26*
  • Ability to manage IMS/DB data
► *Application Monitor for z/OS V2R1 5655-L22*
  • Provides IMS/TM-DB application drill down
► *Workload Simulator for OS/390 and z/OS V1.1 5655I39*
  • Simulate IMS workloads for regression testing

IBM Problem Determination Tooling Suite

Fault Analyzer for z/OS (5655-M20) - Helps you rapidly pinpoint cause of failed application (abends)

File Manager for z/OS (5655-M21) - Data management tool supporting key file structures like VSAM, DB2, and IMS

Debug Tool Utilities & Advanced Functions for z/OS (5655-M19) - Source code debugging to improve development productivity and Utility to upgrade old OS/VS COBOL to supported levels of COBOL

Note that since OS/VS COBOL is no longer supported, customers can use the IBM Debug Tool to help convert old COBOL programs to supported levels of COBOL

Application Monitor for z/OS (5655-L22) - Helps IT (application programmers) isolate the cause of online and batch application performance bottlenecks with ability to drill down to source

Workload Simulator for OS/390 and z/OS (5655-I39) - Application stress and regression testing

For more information see www.ibm.com/software/awdtools/deployment

IMS Tools Easing Systems Manageability

Database Administration

- IBM Data Encryption for IMS and DB2 Databases, V1.1 5799-GWD
- IMS Database Repair Facility, V1.2 5655-E03
- IMS HALDB Conversion and Maintenance Aid, V2.1 5655-K47
- IMS HD Compression- Extended, V2.2 5655-E02
- IMS Library Integrity Utilities, V1.1 5655-I42
- IMS Parameter Manager, V1.1 5655-L69
- IMS Sequential Randomizer Generator, V1.1 5655-E11

Information Integration Management

- IMS DataPropagator, V3.1 5655-E52
- IBM WebSphere II Classic Event Publisher for IMS, V8.2 5655-M38
- IBM WebSphere II Classic Event Publisher for VSAM, V8.2 5655-M35
- IBM WebSphere II Classic Federation for z/OS, V8.2 5697-I82

Recovery Management

- IBM Application Recovery Tool for IMS and DB2 Databases, V1.2 5697-F56
- IMS Database Recovery Facility, V2.1 5655-I44
- IMS DEDB Fast Recovery, V2.2 5655-E32
- IMS High Perf Image Copy, V3.2 5655-J56
- IMS High Perf Change Accumulation, V1.2 5655-F59

Performance Management

- IMS Buffer Pool Analyzer, V1.1 5697-H77
- IMS Network Compression Facility, V1 5655-E41
- IMS Performance Analyzer, V3.3 5655-E15
- IMS Problem Investigator, V1 5655-K50
- IMS Performance Monitor, V1.1 5655-G50
- **IBM Tivoli OMEGAMON XE for IMS on z/OS**

Utilities Management

✓Fast Path
  - IMS Fast Path Basic Tools, V1.2 5655-E30
  - IMS Fast Path Online Tools, V2 5655-F78
  - IMS High Perf Fast Path Utilities, V2.1 5655-K94
✓Full Function
  - IMS High Performance Unload, V1.1 5655-E06
  - IMS High Performance Load, V2.1 5655-E07
  - IMS High Performance Prefix Resolution, V3.1 5655-M27
  - IMS Index Builder, V2.3 5655-E24
  - IMS Parallel Reorganization, V3.1 5655-M28
  - IMS High Performance Pointer Checker, V2.1 5655-K53
✓Administration
  - IMS Database Control Suite, V3.1 5655-L08

Application Management

- IMS Batch Terminal Simulator, V3.1 5655-J57
- IMS Batch Backout Manager, V1.1 5697-H75
- IMS Connect, V2.2 5655-K52
- IMS Connect Extensions V1.1 5655-K48
- IMS MFS Reversal Utilities, V1 5655-F45
- IMS Program Restart Facility, V2 5655-E14

Transaction Management

- IMS Command Control Facility, V1.1 5655-F40
- IMS ETO Support, V3.2 5655-L61
- IMS HP Sysgen Tool, V1.1 5655-F43
- IMS Queue Control Facility, V1.2 5697-E9
- IMS Workload Router, V2.4 5697-B87

June 2004, Sept 2004, Acq'd June 2004, Dec 2004, Ann'd Mar 2005

© IBM Corporation 2005

New/Enhanced IMS Tools - 1H2004

- **IMS Performance Analyzer** *Version 3 Release 3*
  - ►The standard for IMS Resource and Performance Management, supporting IMS TM, IMS DB or Batch
    - •Supporting IMS V9 Log and Monitor reports
    - •Comprehensive reporting for IMS Connect Extensions for z/OS Event Collection
    - •New Dashboard report, providing a quick overview of critical systems performance indicators
    - •BMP Checkpoint report, measuring batch checkpoint frequency that can impact online performance and system restartability
    - •Transaction History File, collecting detailed transaction performance data to export it into DB2, and used in long-term trend analysis and capacity planning
    - •Improved IMS Performance Analyzer for z/OS Report Analysis (SC27-0913), providing additional information to aid in the interpretation of reports
  - • New Transaction Substitution Exit, Message Queue Transit and Fast Path Buffer Usage reports
- **IMS Connect** *Version 2 Release 2*
  - ►Provide enhancements to Connect and Connector for Java for improved performance, availability, and usability
- **IMS Connect Extensions** *(new)*
  - ►Provides comprehensive event recording for IMS Connect internal events and users can monitor & display IMS Connect activity and utilization in real time
  - ►Enhances IMS Connect availability/ performance and system security
  - ►Provides the ability to measure and analyze the activities that take place within your IMS Connect system, providing a powerful performance and problem analysis tool
  - ►Combined with IMS Performance Analyzer, you can identify performance bottlenecks, over-utilized ports and many unexpected exception conditions

New/Enhanced IMS Tools - 2H2004

IMS Database Repair Facility *Version 1 Release 2*

- Teams with IMS HP Pointer Checker to quickly find, report, repair database pointers or data errors

IMS Parameter Manager *(new)*

- Controls the specification and maintenance of IMS parameter library members

IMS High Performance Image Copy *Version 3 Release 2*

- Runs an Image Copy function with hash checking of IMS HP Pointer Checker V2 under the control of IMS Parallel Reorg V3

IMS High Performance Fast Path Utilities *Version 2 Release 1*

- Combines features and functions of IMS FP Basic and IMS FP Online Tools and adds a new HP FP Reorganization tool component

IMS High Performance Load *Version 2 Release 1*

- Contains restructured code that reduces CPU, and I/O wait times.
- Supports reorganization reload of HALDB partitions and is required to create an image copy during database reorganization with IMS Parallel Reorganization V3

IMS High Performance Prefix Resolution *Version 3 Release 1*

- Supports IMS Parallel Reorganization, V3 single job step execution of database reorganization, prefix resolution, and prefix update tasks

IMS Parallel Reorganization *Version 3 Release 1*

- Runs utility jobs in parallel instead of sequentially and includes selected consecutive HALDB partitions

IMS Queue Control Facility *Version 2 Release 1*

- Greater flexibility for the configuration and support of sysplex environments
- Improved security by using SAF/RACF

New/Enhanced and Renamed IMS Tools - March 2005

- **IBM WebSphere Information Integrator Classic Event Publisher for IMS**
  Version 8 Release 2

- **IBM WebSphere Information Integrator Classic Event Publisher for VSAM**
  Version 8 Release 2
  - ► Makes it easy to link data events with business processes
  - ► Captures database changes in IMS and/or VSAM by reading the active or recovery log
  - ► Formats changes into XML messages
  - ► Publishes changes to WebSphere MQ

- **IBM WebSphere Information Integrator Classic Federation for z/OS** *Version 8 Release 2*
  - ► Standards-based access via ODBC, JDBC, or Call Level Interface
  - ► Multi-threaded with native drivers for scalable performance
  - ► Works with existing and new mainframe and application infrastructure and toolsets
  - ► Read from and write to mainframe data sources using SQL

IMS On Demand Business Application Development and Connectivity Environment
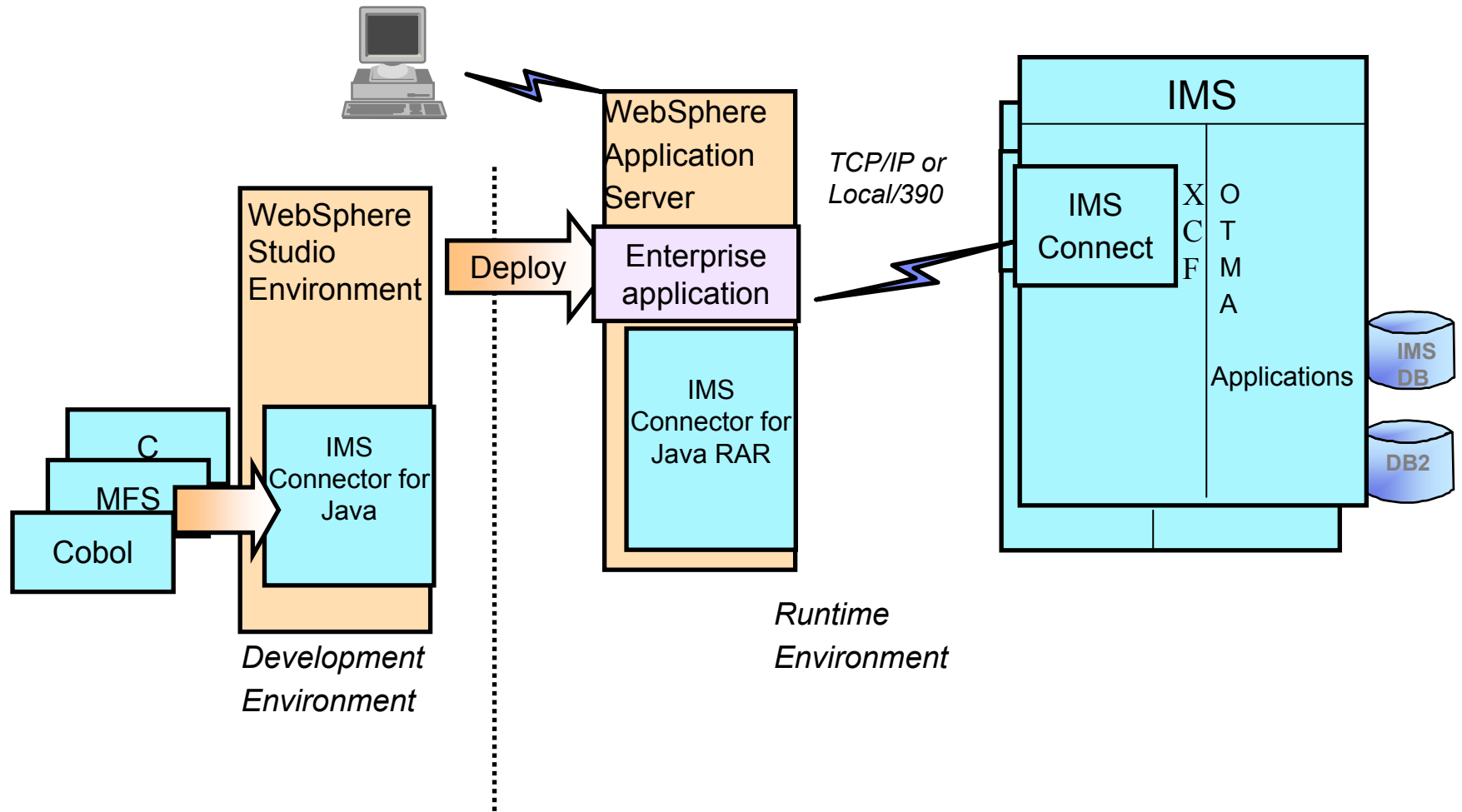
Integrated/Open Access with IMS for On Demand Business Application Enablement and Connectivity Solutions

HTML / Java
Server
Page

Web Browser

Linux, z/OS, OS/390, and other environments

HTTP (XML or
Soap Request)

Other Servers (eg. .NET)

WebSphere Application Server

Servlet

ejb

CICS
JCICS

DB2
Java Stored
Procedure

IMS Soap
Gateway

IMS Connector
for Java

IMS Java JDBC
Connector

DB2 Control Center
(IMS Control
Center)

TCP/ IP or Local
(XML or byte stream)

z/OS or OS/390

IMS Connect

IMS

SCI
IMS Operations (for IMS DB and/or TM)

OTMA
IMS Applications (Java, COBOL, PL/I)

IMS DB

IMS Connect enhancements for distributed Application and Operations access

V1.1/1.2 - GA 10/2000-2002

- Asynchronous output
- Unicode
- Sample clients
- IMS Connector for Java 1.2 J2EE support
- Two-phase Commit Support in Local 390 environments
- Security enhancements
- Passticket support
- SSL support
- Trusted User
- More Granular timeout (eg. by message)
- IPv6 support
- Auto Reconnect to OTMA
- 255 User Message Exit support
- Cancel Timer
- **IMS V8 Operations Manager distributed interface** (requires IMS V8)

V2.1 - GA 6/2003 – 2004

- IMS V8 required for enhancements
- Distributed two phase commit
- Secure Socket Layer (SSL)
- Commit Mode 0 and Persistent Sockets support
- IMS Connector for Java 2.1.0
  - WAS 5.0 and WAS z/OS 5.0
  - Commit- then-send (Commit Mode 0)
  - Asynchronous output message retrieval
  - Security - Container Managed SignOn
  - MFS Web Services Support
- IMS Connector for Java 2.2 **(4/04 eGA)**
  - Commit Mode 0 and Persistent Socket for improved performance
  - Socket timeout for enhanced usability
  - Retry for improved availability
- Purge Not Deliverable (**4/04 service stream)**

IMS Connect 2.2 and IMS V9 Connectivity

- **IMS Connect 2.2 GA June 25, 2004**
  - ➢ Command enhancements for ease of manageability
  - ➢ Improved performance and availability reporting
  - ➢ Connector for Java also adds
    - Commit Mode 0/persistent socket for improved performance
    - Socket timeout for enhanced usability
    - Retry for improved availability
- **IMS V9 GA Oct 29, 2004 provides** *Integrated Connect Function*

IMS Version 9

Ideal for Driving On Demand Business

✓**Integration with Application Development and Connectivity**

✓**Manageability**

✓**Scalability in Performance, Capacity, Availability, Recovery**
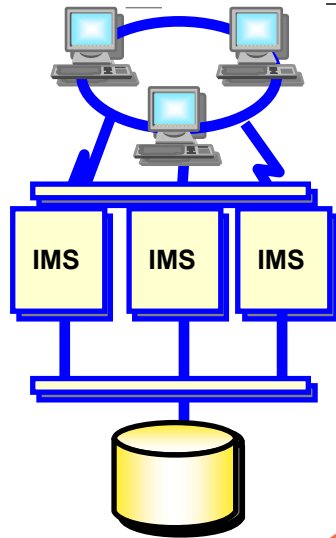
IMS   IMS   IMS

Strategic Open Access z/OS Enterprise Servers

Benefits
✓**Enable Customer Growth**
✓**Enhance Workload Balancing**
✓**Increase Availability; Ease of Use**
✓**Preserve Current Application Investment**
✓**Enable New Applications**

Enhancements

– **Integration**
  - ►**Integrated Connect Function**
  - ►**Enhanced Security**
  - ►**XML data in IMS Databases**
  - ►**Broadened Java/XML Tooling**

– **Manageability**
  - ►**Eased Sysplex Manageability**
  - ►**Eased Serviceability/Usability**
  - ►**Simplified Install/Definition Process**
  - ►**Enh Systems/Data Mgmt Tools**

– **Scalability**
  - ►**Integrated HALDB Online Reorganization**
  - ►**Enhanced Recovery/Control**
  - ►**System Growth**

IMS V9 Line Items

Integration/Openness in Application Development/Connectivity

- Integrated IMS Connect function
- Java/XML tooling enhancements, Distributed JDBC and XML DB
- OTMA/APPC security/serviceability enhancements
- RACF enhancements to replace SMU security
- VTAM Multi-node Persistent Sessions replace of Uservar/3745 for XRF
- >255 Trans Scheduling increased to 999 for enhanced usability

Manageability Ease for Autonomic Computing

- IMS Sysplex Database Commands added to Single Point of Control
- Enhanced Command Environment
- Enhanced Serviceability with new /Diagnose Command and Knowledge Based Log Analysis (KBLA)
- IMS install/system generation reduced time/effort enhancements

Scalability in Performance/Capacity/Availability/Recovery

- Integrated IMS Online Reorganization (OLR) by partition of HALDBs w/concurrent online update/availability
- Additional HALDB usability enhancements
- DBRC Vendor Tools interface, enhanced capacity/usability/integrity
- Fast Path performance/serviceability/usability enhancements
- Enhanced Recoverability with DB2

IMS V9 Integration/Openness

- **Integrated Connect Function**
- **OTMA/APPC Enhancements**
- **RACF Enhancements**
- **VTAM MNPS replacement of USERVAR/3745 for XRF**
- **Greater then 255 Transaction Classes, up to a value of 999**
- **IMS Java/XML Enhancements**
  - ► Symbolic Checkpoint/Restart for the Java Batch Region
  - ► COBOL XMI plug-in to parse COBOL copy libs as input to DL/I Model Utility
  - ► XML data in IMS Databases support
  - ► DL/I Model utility enhancements for XML DB and to provide a GUI front-end
  - ► Remote DB Services providing remote data access to IMS DB from a distributed client

IMS V9 Integrated Connect Function

Provides easy install/use, high volume/performance, secure transparent access to IMS applications and operations from other environments (incl. LINUX)

- ► Provides commands to manage the network and balance workload
    - ▪ Better resource utilization.
- ► Reduces design/coding effort for client applications
    - ▪ Ease access to IMS applications and operations
    - ▪ Improve programmer productivity
- ► Used with IBM WebSphere Application Server and Studio Tools to
    - ▪ Quickly transform static web sites into sources of dynamic Web Content to improve marketing effectiveness and enhance customer service
    - ▪ Transform IMS Transactions into Web services for Service-Oriented Architectures (SOAs), enabling quick response to new customer requirements, business opportunities and competitive threats.
- ► Used with DB2 and the IMS Control Center for Distributed Operations
    - ▪ Improve system availability and operator productivity
- ► Integrates function of separately orderable/installable IMS Connect Tool
    - ▪ Simplify administration and reduce costs

IMS Connectivity Enhancements and Requirements

IMS Connectivity enhancements since IMS V9 GA

➢ Connect Purge not deliverable extensions - provides user option to purge

➢ Sysplex Distributor support

  • Connect support to reroute persistent socket messages
  • Connector for Java support to reroute sharable persistent socket messages

➢ Additional Connector for Java enhancements

  • Connector for Java JCA 1.5 and WAS V6 support
  • Connector for Java RACF Key Ring support (IMS V9 only)

➢ RAS enhancements

  • Recorder support for journaling I/O
  • Internal Trace serviceability enhancement

IMS Connectivity requirements

➢ Enhanced Sysplex Distributor Support

➢ Enhanced RAS support

➢ WAS follow-on and 64 bit virtual support

➢ Direct XML SOAP for IMS

➢ XML Processor (MFS and COBOL Adapters)

➢ Security enhancements

➢ Support for IMS Multiple Systems Coupling (MSC)

➢ Support for New Technology

IMS V9 Integration with IMS Transactions, Web Services and Service-Oriented Architecture (SOA)

- Web services provides the next step in the evolution of the internet, allowing programmable elements to be placed on sites for distributed web access across platforms

- Enabled as Web services, the unchanged IMS Transactions, including those using MFS, can support a Service-Oriented Architecture (SOA)
  - Leveraging past investments
  - Reducing new programming efforts
  - Aiding business process transformation
  - Aiding application integration with partners, suppliers, and customers.

- IMS C, Cobol and MFS-based Transactions can be enabled as Web services via WebSphere Application Servers (WAS) and Studio Tooling

- Direction: IMS Transactions would also be enabled as Web services via IMS SOAP Gateway

IMS SOAP Gateway Requirements

- Maximize re-use of customer enterprise assets via standard interfaces
- Support collaboration among IMS, IBM and non-IBM components, both within and beyond enterprise boundaries
- Use SOAP messages to support end-to-end integration between IMS transactions and
  - Microsoft .Net & Java applications
  - Any third party applications, e.g. SAP XI
  - RYO applications
- Provide HTTP/SOAP transport and processing
  - SOAP envelope and headers handled by the gateway
- Utilize WebSphere Studio Enterprise Developer tooling to create converters for transforming XML messages to COBOL data and vice versa
  - No need to change existing IMS application code
- Run on any Java supported platform

Web Service Client

IMS Web Service

IMS SOAP Gateway

IMS
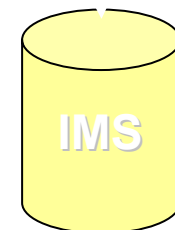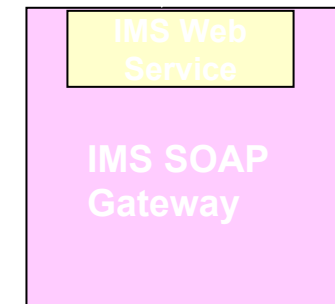
IMS SOAP Gateway & IMS Connect XML Processor

Sample/demo available at www.ibm.com/ims
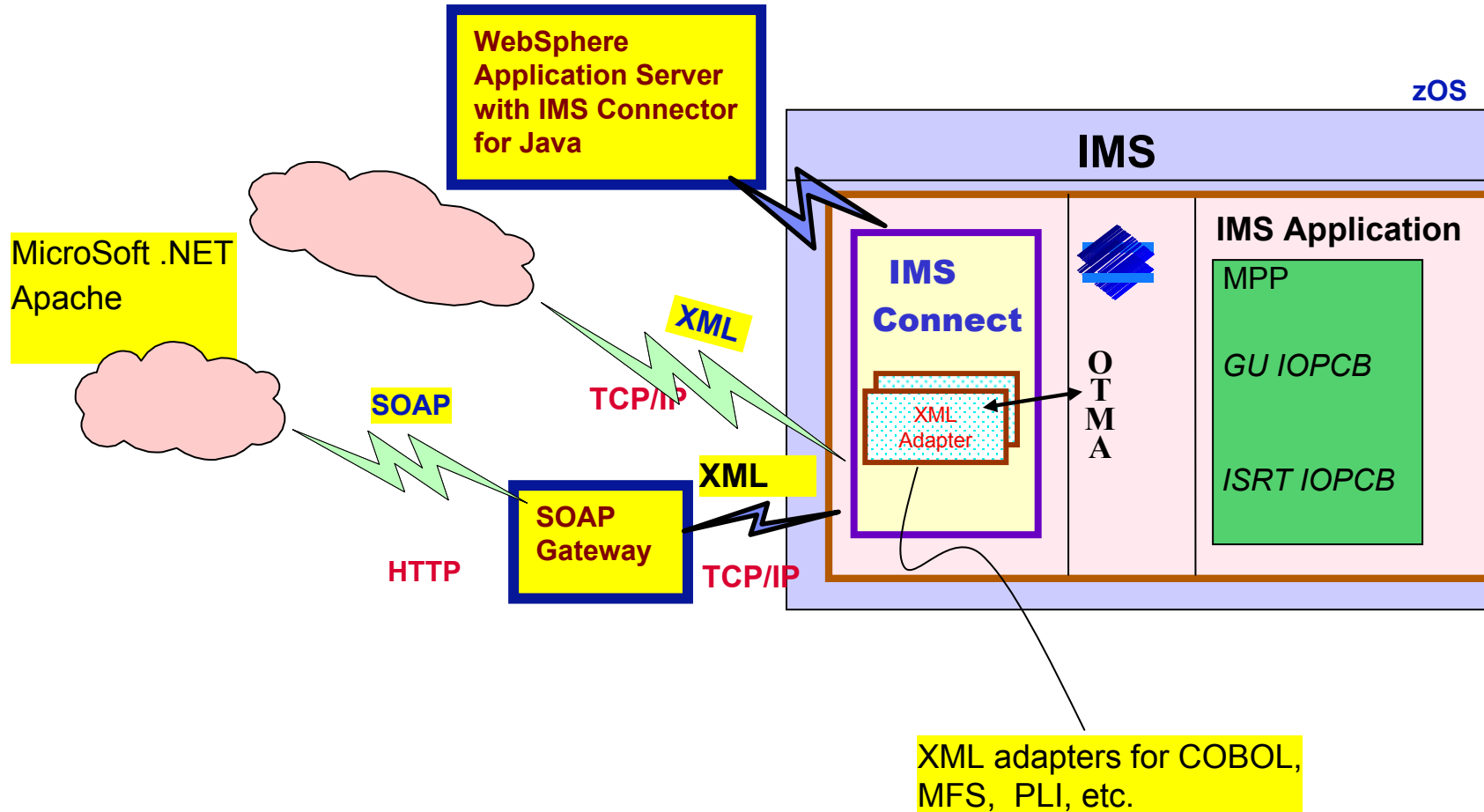
IMS V9 XML Database Support Storage and Retrieval

Enables the global standard for on demand solutions, providing universal transparent information interchange among internal business processes, suppliers, partners, customers

- ► Implementation is native IMS
  - – Provides efficient utilization of resources
  - – Top overall performance
- ► Convert legacy IMS data to XML
  - – Facilitates integration with business processes
  - – Improves programmer productivity
  - – Reduces development lead times
- ► Decomposed XML data for use by non-XML enabled applications
  - – Preserve and extend past investment
  - – Enhance programmer productivity
- ► Identical data descriptions for distributed and host environments
  - – To reduce overhead
  - – Improve data consistency and integrity
- ► DL/I Model Utility can generate XML schema at runtime
  - – Improves application development time
  - – Reduces errors
  - – Code in an industry standard interface

IMS V9 Manageability

- **New/Enhanced Commands/Environment**
  - ►Expanded Command Environment for simplifying operations
  - ►Sysplex-wide Database Commands to expand operations management
  - ►New command to ease serviceability
  - ►New messages for easing usability
  - ►Command Recognition Character Registration
- **Knowledge Based Log Analyzer (KBLA) eases serviceability**
- **Eased Resource Definition by further reducing IMS sysgen time/effort**
  - ►Conditional link-edit elimination
  - ►Online Change Modules moved from the Nucleus
  - ►Dynamic change/addition of Type 4 SVC and resource cleanup module
  - ►IVP and Syntax Checker enhancements

IMS V9 Scalability items

► *Integrated HALDB Online Reorganization for Improved Availability*

► *Additional HALDB easing Usability*

- Ease partition initialization without requiring DBRC Commands
- Provide Unload/Reload Statistics reports for each HALDB partition

► *DBRC, Log, and Utility Enhancements for Enhanced Recovery*

- DBRC Support for Online Reorganization
- DBRC Interface for Easy Tools access to RECON data
- Command Authorization for /RM
- Move DBRC Modules above the line
- Reuse DMB slots to register DBs to DBRC when last DMB number is reached
- Logger enhancements for OLDS and WADS
- Large Tape Block size support
- DB2 Indoubt notification

► **Fast Path Enhancements for Enhanced Availability/Perfomance**

- Multiple Areas Shared VSO structures
- Provide Parallel TCB Area Open/Close
- Optional EMHQ Structure
- Fast Database Recovery (FDBR) Extended CSA relief for DEDBs
- IRLM Reconnect option
- Enhance Serviceability/Usability enhancements

IMS V9 Integrated HALDB Online Reorganization

IMS Version 9 Integrated HALDB Online Reorganization delivers Continuous Availability of Business-critical Databases

► Fully integrated online reorganization by partition of IMS High Availability Large Databases (HALDBs)

- Simplifying administration
- Reducing Costs

► Concurrent online update and availability

► Totally non-disruptive

► No outage, minimal additional DASD required

► Adjustable pace to further minimize any online impact

- Multiple partitions can be reorganized in parallel
- Provides greatly enhanced database availability

IMS V9 Scalability in Performance/Capacity/Availability/Recovery

Increase in Bandwidth Availability

•2 Billion trans/day with IMS

IMS tight integration with IBM processors and storage systems

Achieved thru enhancements across the IBM product line.

Increase in Batch Window Availability
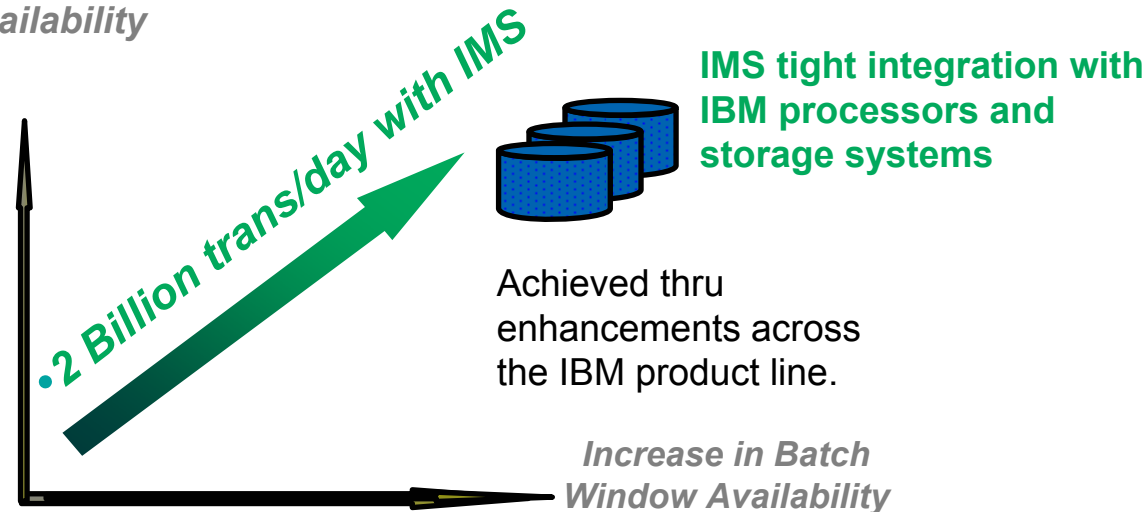
✓ **Local systems:**
- ►z/Architecture 64-bit mode
- ►FP Parallel Database Open
- ►Greater-than-255 transaction scheduling classes
- ►CSA reduction with OLC Mods removed from the nucleus

✓ **Parallel Sysplex:**
- ►IMSplex DB commands
- ►Shared VSO multi-area structure support

✓ **Increased performance with new IBM T-Rex Processors**
- ►Over 21,000 trans/sec doing database update on a single Processor
- ►28.5 MB/sec logging bandwidth on M800 .

IMS V9 Enhancements since GA

Integration

- IMS Connectivity enhancements
- IMS Java enhancements
  - ➢ GSAM database support in JBP regions
  - ➢ SQL enhancements – adds use of non-DBD-defined fields in WHERE clause
  - ➢ WAS V6 support

Manageability

- Sysplex Unresolved CQSPUT during CQS Resynch new message

Scalability

- Fast Path shared VSO Dual Structure diagnostic log records support
- DBRC Retain position high key

Plus items from V7/8/9 Enhancements in 2004/5

IMS Follow-on

Ideal for Driving On Demand Business

✓**Integration with Application Development and Connectivity**

✓**Manageability toward autonomic computing**

✓**Scalability in Performance, Capacity, Availability, Recovery**
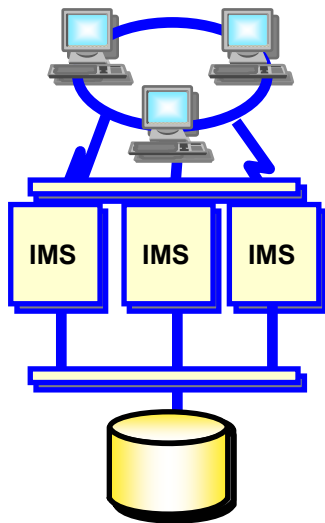
IMS **IMS** **IMS**

Strategic Open Access z/OS Enterprise Servers

Benefits
✓**Enable Customer Growth**
✓**Enhance Workload Balancing**
✓**Increase Availability; Ease of Use**
✓**Preserve Current Application Investment**
✓**Enable New Applications**

Enhancements

–**Integration**

►**Enhanced Connectivity**

►**Enh XML data in IMS DBs**

►**Broadened Java/XML Tooling**

–**Manageability**

►**Simplified Install/Definition Process**

►**Eased Operations**

►**Eased Serviceability/Usability**

►**Enh Systems/Data Mgmt Tools**

–**Scalability**

►**Parallel Recon**

►**Enhanced Recovery/Control**

►**MSC Bandwidth/TCP/IP**

►**Fast Path System Growth**

IMS Follow-on Requirements

Integration in Application Development/Connectivity

- **Enhanced Connectivity in OTMA, ODBA, ETO, and Connect**
- **SOAP gateway enhancements for additional environment support**
- **XQuery and additional standards support for IMS Database access**
- **Broadened Java/XML Tooling to ease development**
- **XML DB emerging standards and usability enhancements**

Manageability

- **Simplified Install/Definition with Dynamic Resource Definition**
- **Extended Commands and Systems Management Enhancements**
- **Configuration and Operational Manager and other enhancements**
- **Syntax Checker and IVP Enhancements**

Scalability in Performance/Capacity/Availability/Recovery

- **Fast Path performance and usability enhancements**
- **MSC enhancements for Bandwidth**
- **Parallel Recon access**
- **DBRC, Log, Utility Enhancements**

IMS Integration with IBM Software Providing a Service-Oriented Architecture

Standard XML interface for DB2, IMS, Content Mgmt

XQuery

zOS or Distributed

IMS

Java Integrated Connect

System Services

IBM Websphere

IBM Websphere Studio Tools

Transaction Management

Database Management

DB2 Stored Procedures

Lotus

CICS

MQ Series

zOS and Distributed

IBM Websphere

DB2 Stored Procedures

DB2

IMS DB (includes XML DB)

DB2 Information Integrator Classic Federation

IMS DB Utility

JDBC, ODBC, CLI Clients

Requirements

IMS Integration with non-IBM Software

TCP/IP Clients

Write-Your-Own Client

Apache TomCat

Non IBM Webserver
e.g. WebLogic

Websphere Application Server

Websphere Application Server

SOAP Gateway

(provides HTTP Connectivity)

SOAP HTTP Clients

SAP Server

Microsoft .NET

Apache

SOAP=Simple Object Access Protocol

IMS

Java Integrated Connect

System Services

Transaction Management

Database Management

DB2

IMS DB (includes XML DB)

Requirements

XML and IMS for Transparent Application Integration

■ **Processing XML Documents in New IMS Applications Today**
- **Customers can write IMS Java applications using the XML Toolkit for z/OS**
- **Customers can write IMS Cobol/PL/I applications using parsers in Enterprise COBOL/PL/I z/OS compilers**
  - Tran code still must be EBCDIC, rest of data can be XML
  - The IMS program can invoke XML parser to convert to non-tagged data
- **Customers can use WSED 5.0 XML Converters for COBOL to generate XML outputs from COBOL applications**

■ **Bridging XML and Existing IMS Applications Today**
- **Using MQSeries Integrator to support IMS COBOL and C applications**
  - Dictionary support for messages
  - Routing and processing based on message content
  - US Utility built cost-effective e-business infrastructure to IMS
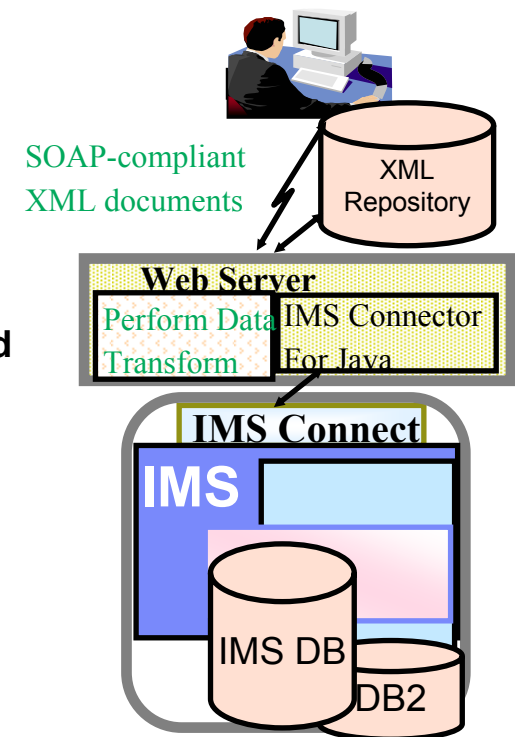- **Customers can enable IMS applications as Web Services via WAS 5.0 and WSAD-IE 5.0 to support IMS COBOL, C and MFS-based applications**

■ **XML and IMS Requirements**
- **IMS XML DB Support**
  - **Support storing, retrieving, and querying XML in IMS databases (V9)**
  - **Generate XML schema for existing IMS databases (V9)**
  - **Create new IMS XML databases**
  - **Dynamic definition of IMS applications and DB enabling rapid deployment of XML in IMS DB.**
- **Transform XML for existing IMS applications inside IMS Connect**
- **Enhanced PL/I support**
  - **Generate XML output from PL/I applications**
  - **Enable IMS PL/I applications as Web Services**

SOAP-compliant XML documents

XML Repository

Web Server
Perform Data Transform | IMS Connector For Java

IMS Connect

IMS

IMS DB

DB2

IMS Connect Internal Structure Provides Connectivity Base for Future

Samples

Soap (Gateway and Parsers)

IMS Connector for Java
J2EE Runtime Component

Environments

Command Component

TCP/IP Driver

Local PC Driver

Communication Components

Call Interface

Communication Components

SCI Driver

OTMA Driver
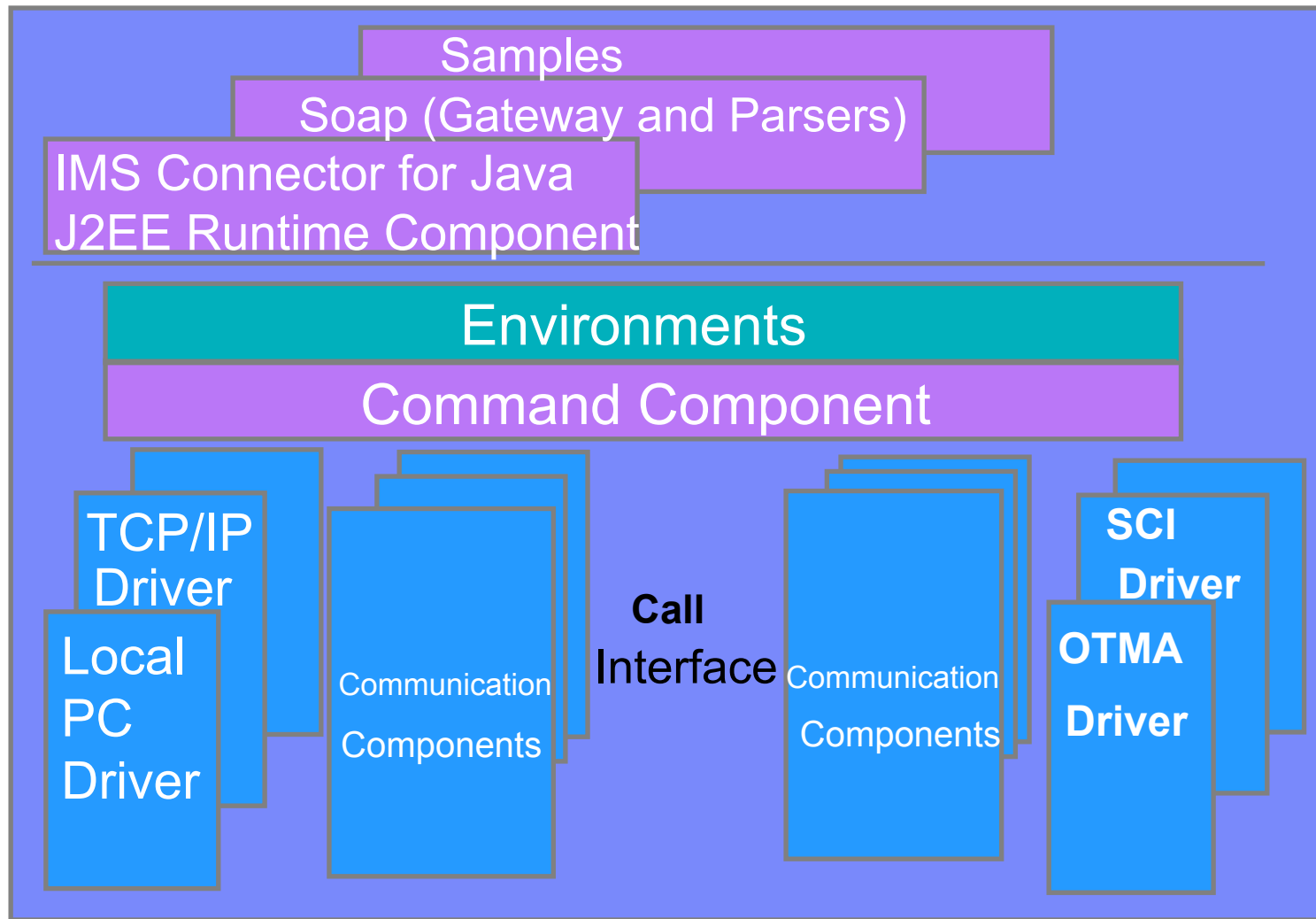
IMS Sysplex Operations Requirements

Single Point of Control for Commands and Automation

New Commands and Wizards

Sysplex Audit Trail

SPOC to Initiate IMS Transactions

Maintain Global Sysplex Status for Databases and Transactions

Commands routed to all IMS systems

Single Consolidated Command Response

Operations Management

Single Point of Control | Control Center

Mainframe | Workstation

IMS

IMS

System Services

Transaction Management

Database Management

Sysplex Configuration Manager

IMS Msgs

IMS DB

IMS V8 - Available

IMS Requirements

IMS Dynamic Resource Definition (DRD) Requirements

- **Audience:** All IMS customers with a need to define IMS transactions, programs, routing codes, and databases

- **Objective:** Eliminate system definition process and online change for databases, applications and transactions

- **Solution:** Provide dynamic definition of these resources without system definition and online change

- **Value:** Non-disruptive addition, change and deletion of databases, applications and transactions in IMS

IMS Dynamic Resource Definition Requirements

Simplifies definition of IMS resources

SPOC used to define IMS resources

Export definitions to other IMS systems

Operations Management

Single Point of Control

Control Center

Mainframe

Workstation

IMS

System Services

Transaction Management

Database Management

Define resources once for all IMS systems

Define transactions On Demand
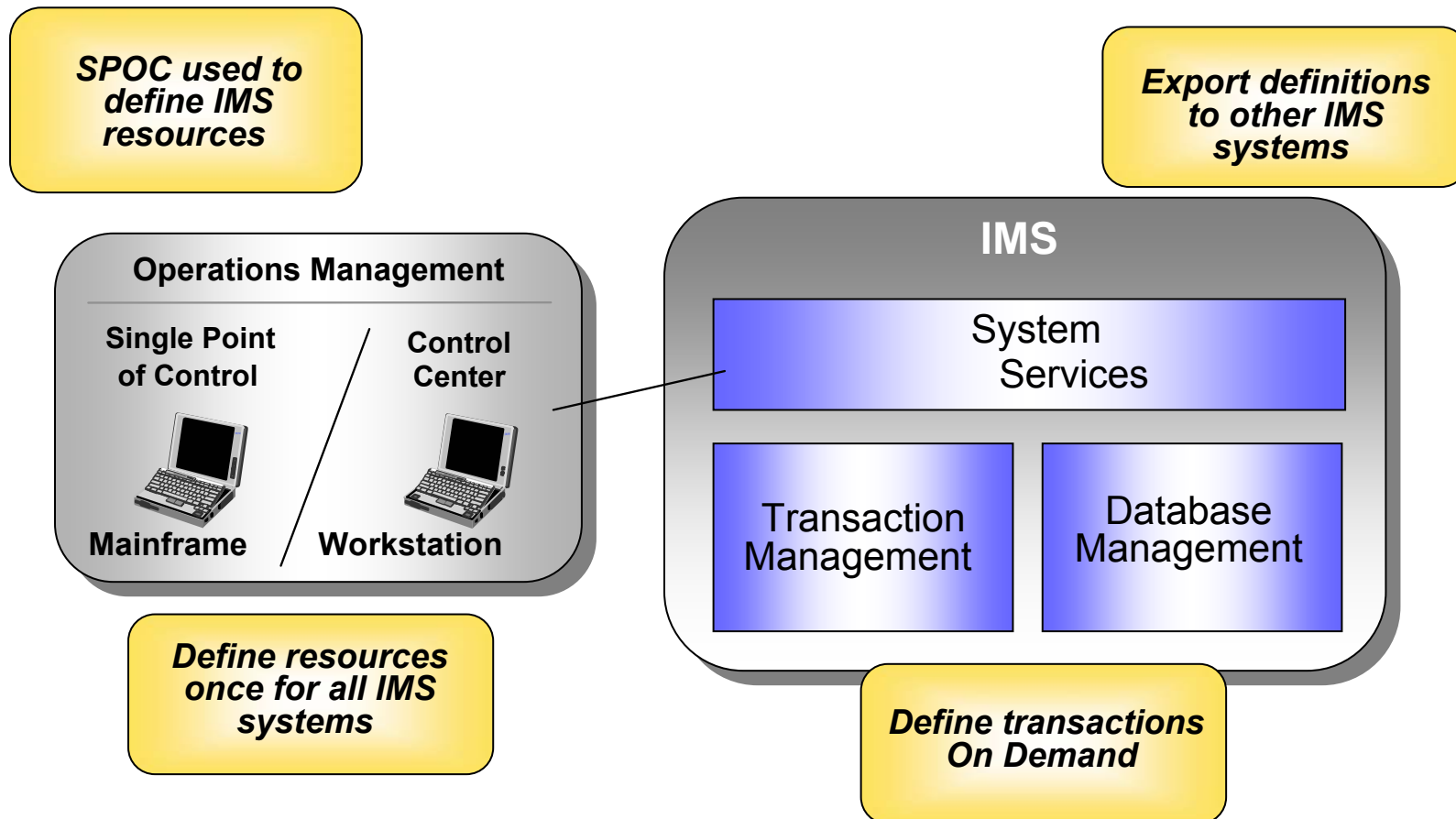
- Dynamic commands to query and change resources
- Quiescing of only affected resources

IMS Database Recovery Control (DBRC) Application Program Interface (API) Enhancement Requirements

- **Audience**
  - Vendors and customers who access the IMS Recovery Control (Recon) directly via VSAM or decode the LIST.RECON output
- **Objectives**
  - Provide users with a single release-independent interface to Recon
  - Provide a Recon Update function for users and programs
- **Solution**
  - Provide a standard DBRC API to the Recon data set
- **Value**
  - Architected interface to the DBRC Recon data set eases tool workload and V2V migration resulting from individually provided access to Recon information

IMS Parallel Recovery Control (RECON) Access Requirements

- **Audience:** IMS Data Sharing customers and Single IMS system customers with batch jobs sharing the RECON data set

- **Objectives:** Eliminate performance bottlenecks caused by contention for the RECON

- **Solution:** Exploit DFSMS Transactional VSAM (TVS) to provide record level locking and logging for the RECON data set

- **Value:** Eliminates ATM Timeouts, transaction response time issues, unplanned IMS system quiesces for OLDS switches

Parallel RECON Access Requirements

Improve <u>REcovery</u> <u>CON</u>trol performance by reducing contention

Backout capability by logging in MVS

New operational procedures

Operations Management

Single Point of Control	Control Center
Mainframe	Workstation

IMS

IMS

Systems Management

Systems Management

Transaction Management

Database Management

Database Management

Each request handled as transaction
- using commit processing

RECON

Requests handled concurrently

Requirements

IMS Multiple Systems Coupling (MSC) Bandwidth Requirements

- **Audience**
  - Customers with multiple Parallel MSC connections
  - Customers using the Workload Router product
  - Customers who need a non-SNA alternative to a VTAM link
- **Objective**
  - Remove long-standing bandwidth problems across the MSC network
- **Solution**
  - Improve blocking technology for greater bandwidth across MSC links
  - Add new MSC link type
- **Value**
  - Performance improvements in transaction and output message response times
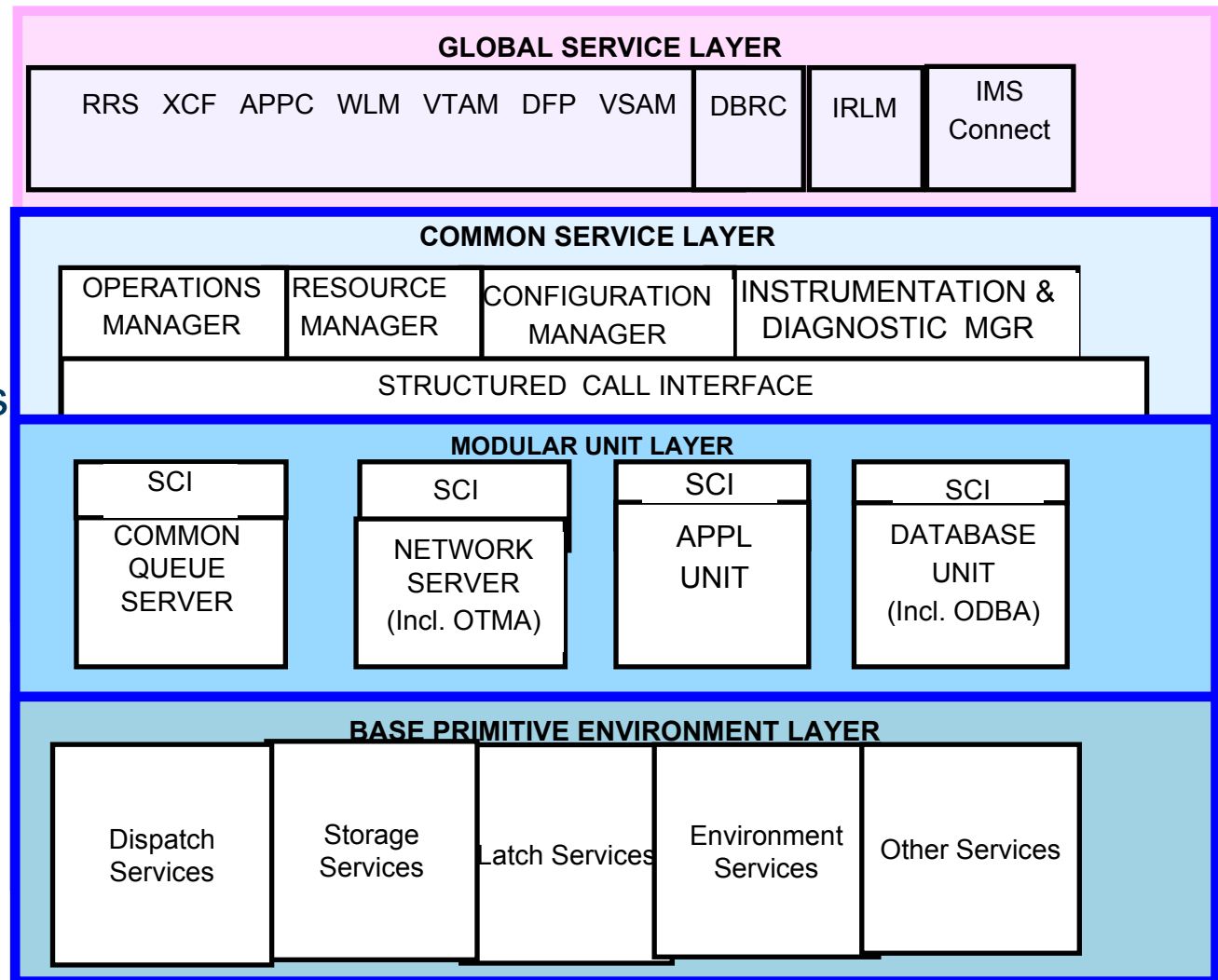
Program and Transaction Requirements

- Program Serialization across the Sysplex
  - Expands serial program usage to all IMS systems
  - Requires CSL and IMS Resource Structure

- Transaction Level Statistics
  - Provides a new optional log record to reflect each transaction
  - Requires CSL for commands

Strategic IMS Architecture

Goals:

- Integration with open interfaces from and between IMS parts
- Manageability with restructured IMS components into independent units
- Scalability through allowing multiples of units
- Mix and Match units to meet business needs
- Fully exploit parallel Sysplex environment

GLOBAL SERVICE LAYER

| RRS XCF APPC WLM VTAM DFP VSAM | DBRC | IRLM | IMS Connect |

COMMON SERVICE LAYER

| OPERATIONS MANAGER | RESOURCE MANAGER | CONFIGURATION MANAGER | INSTRUMENTATION & DIAGNOSTIC MGR |

STRUCTURED CALL INTERFACE

MODULAR UNIT LAYER

SCI	SCI	SCI	SCI
COMMON QUEUE SERVER	NETWORK SERVER (Incl. OTMA)	APPL UNIT	DATABASE UNIT (Incl. ODBA)

BASE PRIMITIVE ENVIRONMENT LAYER

| Dispatch Services | Storage Services | Latch Services | Environment Services | Other Services |

(BPE in V5, CQS in V6, OM, RM, SCI in V8, ...)

Leveraging IMS Applications and IMS Data for Integration

z/OS or OS/390

WebSphere and Other z/OS and OS/390 Appls

CICS

DB2
DB2 Stored Procedures

IMS DB

IMS TM

IMS Appls (Java COBOL etc.)

ODBA

OTMA

3270
APPC
IMS Connect
MQSeries
other
JDBC/SQL
DB2 II CF
DataPropagator

Web Server

CICS gateway
Host on Demand
APPC
IMS Connector for Java
MQSeries
Domino/Note
JDBC
DB2 Connect
Net.data
SQL
DB2
other

Java Servlet

HTML XML
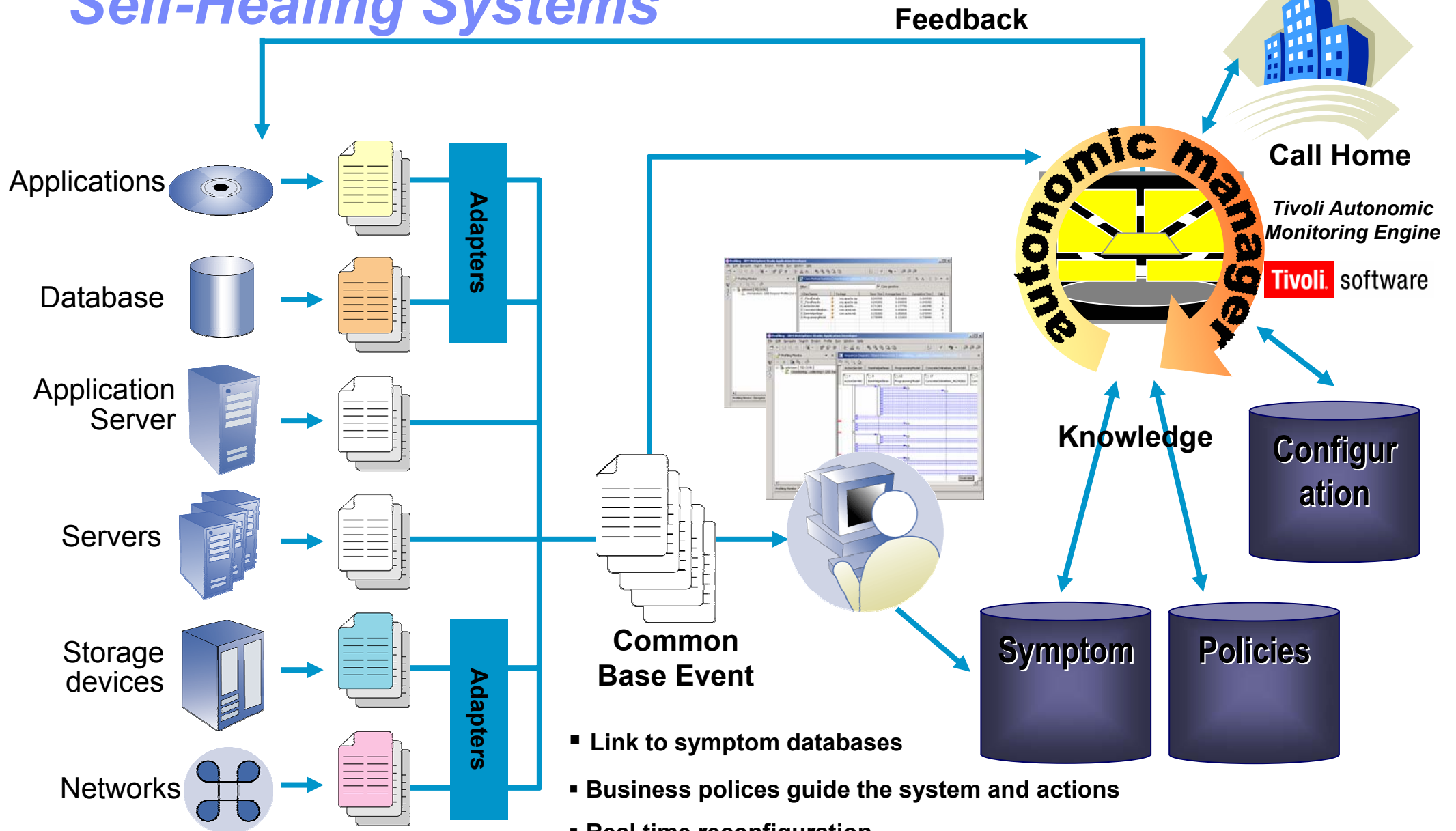
Web Browser

ID

NAME

ADDRESS

SUBMIT

© IBM Corporation 2005

Extra! Extra!

Installation and Problem Determination Time Reduced from Days to Minutes

Preliminary Test Results are Astounding!

March 30, 2004

Problem determination reduced

Self-Healing Systems

Feedback

Applications

Database

Application Server

Servers

Storage devices

Networks

Adapters

Common Base Event

autonomic manager

Call Home

Tivoli Autonomic Monitoring Engine

Tivoli software

Knowledge

Configuration

Symptom

Policies

- **Link to symptom databases**
- **Business polices guide the system and actions**
- **Real time reconfiguration**
- **Call Home integrated in the solution**

IMS Information

IMS Information is available at http://www.ibm.com/ims

– **Presentations/Papers, Newsletters, Redbooks, Fact Sheets, Announce Letters, additional documentation**

– **Technical Support Info (search on IMS)**

IMS Redbooks/Redpieces

– **Release Guides, Sysplex Guides, Java guides, etc.**

"An Introduction to IMS" book

IMS Education at http://ww.ibm.com/services/learning/us

IMS Conferences:

– **IMS Technical Symposium, Koenigswinter, Germany, October 2004**

– **WW IMS Technical Conference, Orlando, Florida, November 2004**

– **Seminars/Roadshows coming to a city near you**

IMS Consulting Services

– **Migration and skills transfer and customized offerings available at dmservices@us.ibm.com**

IMS04 IMS: What's new and What's next Providing Leadership in the Marketplace

Simplifying Information Integration through Connectivity and New Application Development

Easing Manageability Reducing the Cost of Computing

Enabling System Scalability with Availability/Recoverability Performance/Capacity

Barbara Klein