



# IMS 11: Moving Your Business Forward

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## Introducing IMS Version 11

- **IMS Version 11 Announced September 16, 2008**
  - January 19, 2009, is the IMS V11 (5635-A02) Quality Partnership Program (QPP) start date. IBM plans to ship IMS V11 to customers already selected as participants in the QPP process. Refer to Marketing Announcement 392-061, (RFA19394) dated March 17, 1992, for information regarding the QPP process.
  - General availability of IMS 11 will be announced at a later date.
  - IMS 11 announcement letter and data sheet can be found on [www.ibm.com/ims](http://www.ibm.com/ims)

## IMS Key Themes

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- ✦ **Facilitate modernization of IMS applications, compliance, standards**
  - ✦ **Dramatically simplify administration and deployment, automation, reduce skill level for application development**
  - ✦ **Support high transaction growth rates through performance, capacity, availability and recovery enhancements**

# IMS V11 Highlights

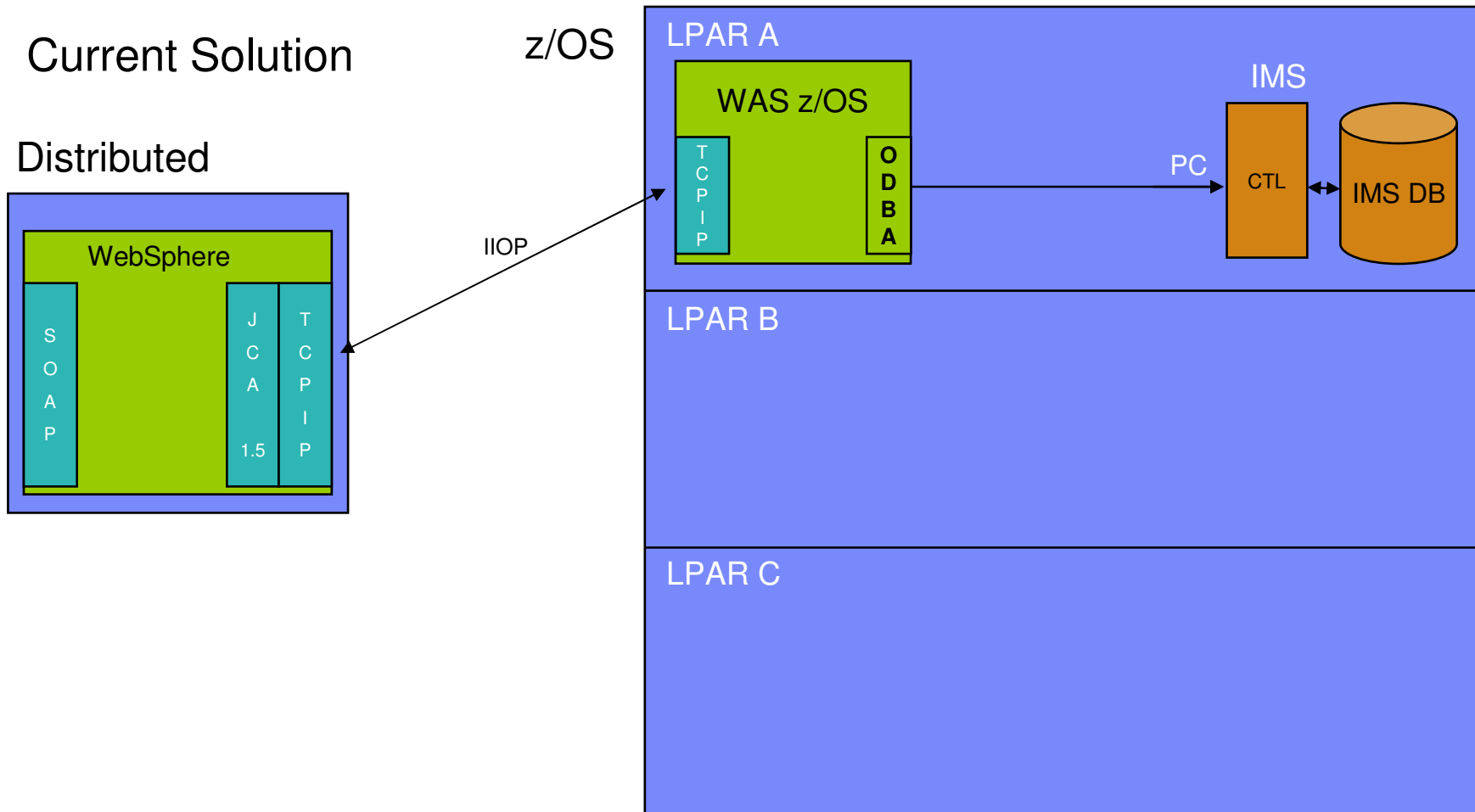
- DB
  - Open DB – Direct, Distributed Access to IMS DBs
  - Database Quiesce Command
  - ACBLIB usability enhancements
  - Database RAS enhancements
  - Database Level Trace
  - OLR Performance Enhancements
  - FP 64-bit Buffer Manager
  - FP Usability and Serviceability enhancements
- TM
  - Type-2 Query DC Commands
  - OTMA Type 2 commands
  - OTMA enhancements
  - Transaction Expiration
  - Shared Queues Affinity Routing Enhancement
- Systems
  - IMS Connect enhancements
  - User Exit Interface Enhancements
  - Dump Formatter enhancements
  - Syntax Checker enhancements
  - LSQA Storage Reduction
  - KBLA enhancements
  - DIAG command
- DBRC
  - BPE-based DBRC
  - Unconditional deletion of PRILOG information
  - Security Override for Non-production RECON
  - DBRC Migration/Coexistence from IMS V9 and IMS V10

# Database Manager Enhancements

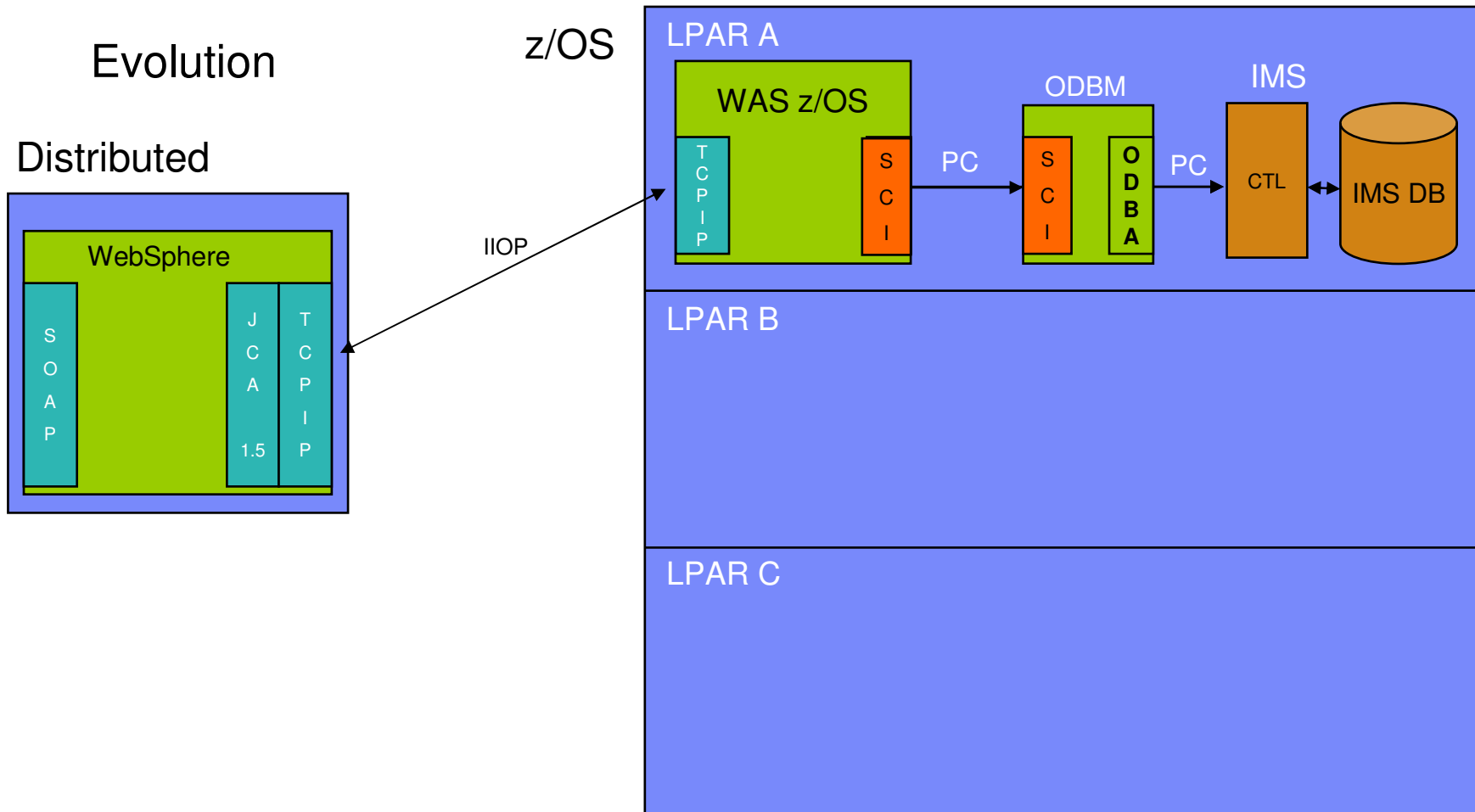
# IMS Open Database

- Offer scalable, distributed, and high-speed local access to IMS database resources
- Provides Value to your Business
  - Allow more flexibility in accessing IMS data to meet business growth challenges
  - Allows IMS databases to be processed as a standards-based data server
  - Standards-based approach (Java Connector Architecture, JDBC, SQL, DRDA)
  - Solution packaged with IMS
- Enables new application design frameworks and patterns
  - JCA 1.5 (Java EE)
  - JDBC

# Open Database Environment

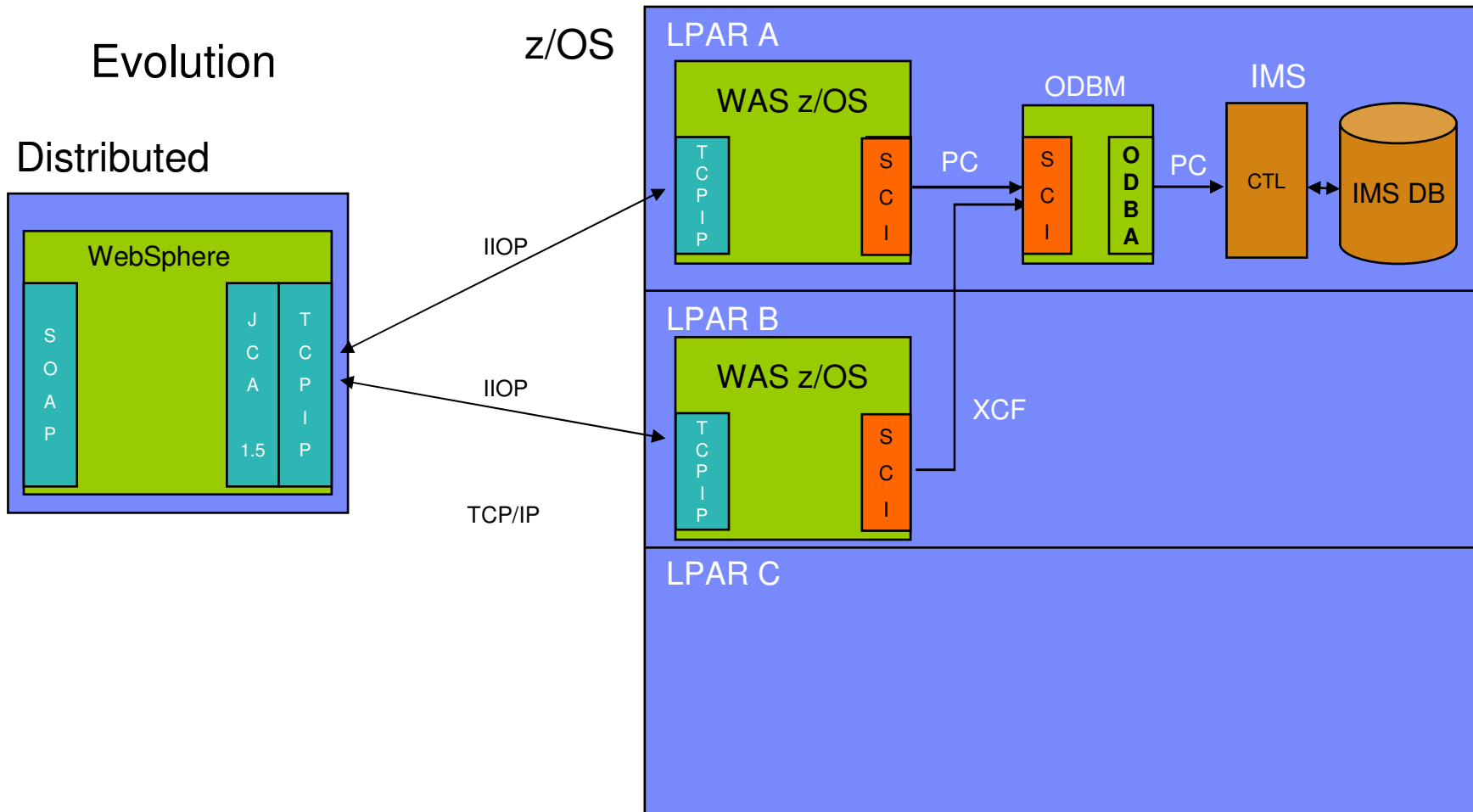


# Open Database Environment ...

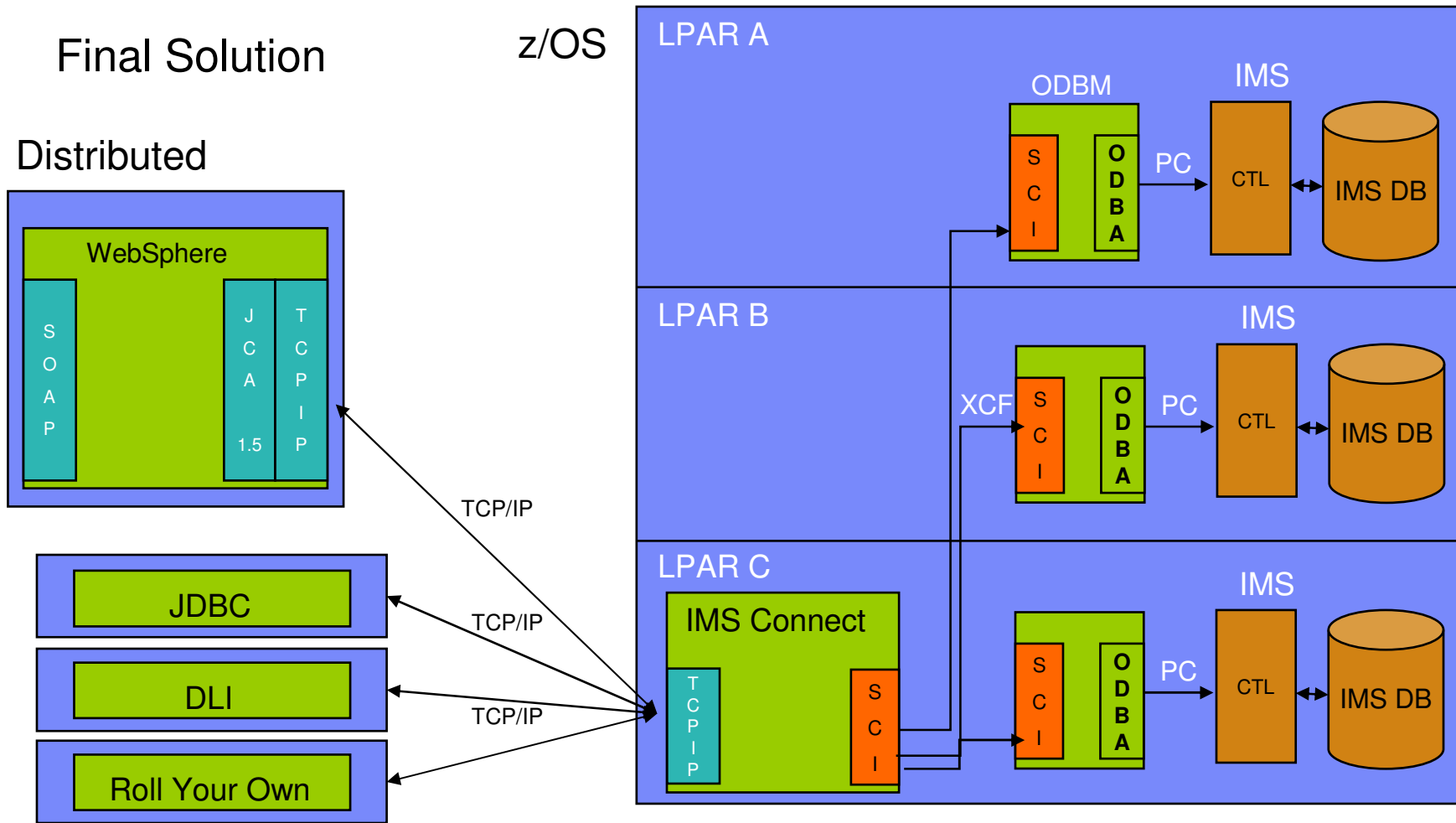




# Open Database Environment ...



# Open Database Environment ...



## Database Quiesce

- Enhanced UPDATE command to quiesce a database or area
  - UPDATE DB
  - UPDATE AREA
  - UPDATE DATAGRP
- Quiesced database or area remains open and allocated
- Allows image copy to be taken while the database or area is online
- Coordinates creation of a single common recovery point across an IMSplex
- A single IMS coordinates the quiesce when the command is routed to multiple IMS systems in an IMSplex

## ACBLIB Usability Enhancements

- Dynamic allocation of ACBLIB data sets
  - Allows the user to create DFSMDA members for the dynamic allocation of the ACBLIB data sets
  - Eliminates IMS outages in order to
    - Increase the size of the ACBLIB data sets
    - Correct errors with the inactive ACBLIB
    - Add data sets to the ACBLIB concatenation

## ACBLIB Usability Enhancements ...

- Caching of ACB members into 64-bit storage
  - Provides an option to load the ACB members into 64-bit storage
  - At application scheduling time, the ACB members are retrieved from 64-bit storage and not from the ACBLIB data set.
  - Provides a performance improvement by reducing the amount of read I/O required to the ACBLIB data set

## Database Level Trace

- Provides the ability to capture database related trace information for individual databases
  - IMS Full-function Databases
  
- Allows you to turn certain traces on for one or more databases
  - DL/I, LOCK and SCHED
  - New keywords on UPDATE DB command
  
- Captures information that is needed without incurring trace overhead for all databases

## Database Online Reorg Performance Enhancements

- VSAM KSDS Sequential Access for GET
- Skip GNP Call for Root-only DB
- Reduce use of the data set busy (ZID) lock for primary index updates
- Eliminating the block (BID) lock for ILDS updates
- Reduce log records generated during OLR
- OLR Locking Lookaside

## Fast Path 64-bit Buffer Manager

- New 64-bit option for IMS Fast Path DEDB users
  - Exploits 64-bit storage for DEDB buffers
  
- Enhanced Fast Path DEDB buffer manager
  - Buffer pool is broken into one or more subpools
  - IMS automatically allocates and manages the subpools
  - Each subpool is a different buffer size
  - Sizes are determined automatically
  - Subpools expand and compress automatically
  
- Improves availability by
  - Providing ECSA relief
  - No need to recycle IMS to alter FP buffer pool attributes
  - Reduces U1011 abends due to ECSA fragmentation



## Fast Path Usability and Serviceability Enhancements

- Allow the user to open an area anytime with a command
  - Users can trigger area open with commands
    - UPDATE DB ... START(ACCESS) OPTION(OPEN)
    - UPDATE AREA ... START(ACCESS) OPTION(OPEN)
- Reduce overhead due to GETMAIN/FREEMAINs of FP segment workareas when a MPP is rescheduled
- Remove MSDB related messages (DFS2555I, DFS2716I) when MSDBs not defined
- Improve problem determination of abend U1026 when the abend is triggered by use of PROCOPT=GOx
- Improve problem determination of CICS U0035 abend, by making the areaname easily accessible

# Transaction Manager Enhancements

## Data Communication Commands

- Type-2 Command support is extended for additional resources
  
- QUERY Commands to provide additional information, filters and wildcards
  - QUERY LTERM - static and ETO logical terminals
  - QUERY NODE - VTAM terminals/nodes
  - QUERY USER - ETO users, and ISC subpools
  - QUERY USERID - user ID information

## OTMA Commands

- OTMA Type-2 Commands
  - New QUERY command for OTMA transaction instance info
    - QUERY OTMATI
  
  - New commands to modify OTMA descriptors
    - CREATE OTMADESC
    - UPDATE OTMADESC
    - DELETE OTMADESC
    - QUERY OTMADESC

## OTMA Enhancements

- OTMA Resiliency Support
  - Provides an interface for OTMA resource monitoring for early flood detection and failure notification
    - Sick but not Dead
  - Allows communication of OTMA status to IMS Connect to assist with routing decisions
  - Heart beat message used to communicate resource status
    - Available
    - Degraded
    - Unavailable

## OTMA Enhancements ...

- Commit Mode 0 (Commit-Then-Send) Timeout
  - Allows timeout for a client application that issues:
    - Commit-then-send (CM0) request
    - Receives the output
    - Does not respond to IMS with an ACK
  - Failure to ACK causes the TPIPE to hang
    - No further output can be delivered on that TPIPE
  
- IMS now detects detect this hang condition and causes a timeout
  - CM0 output on the hung TPIPE is moved to a timeout message queue
  - TPIPE can be used for other message traffic

## Transaction Expiration

- Allows IMS to timeout a transaction that is no longer interesting to the client
  - Transaction is discarded after timeout
  
- Specified by transaction
  - TRANSACT macro definition
  - CREATE/UPDATE TRAN/TRANDESC commands
  - DFSINSX0 User Exit
  
- Specified by incoming OTMA message
  - Value specified in OTMA header

## Shared Queues Affinity Enhancement

- User exit DFSMSCE0 is extended to allow option to specify IMS system to process the message
  - Exit can specify an IMS identifier (IMSID)
- IMS appends the IMSID to the destination queue name when the message is put on the shared queues
- Affinity is established to the specified IMS
- Only the specified IMS will retrieve and process the message
- Command must be issued so IMS will register the transaction with CQS for local affinity



# Systems Enhancements

# IMS Connect Enhancements

- DATASTORE level super member
- Message HWSP1410W for release storage errors
- Single SSL port restriction enforced
- User defined message without socket disconnection
- Improve reliability of Recorder Trace
- TCP/IP keep alive specified for port to override stack value
- Port Input / Output Edit Exit to modify messages

## IMS Connect Enhancements ...

- Display command enhancements
- OTMA CM0 (Commit-Then-Send) ACK timeout support
- IMS TM Resource Adapter generated clientid for shareable persistent sockets
- Removal of Obsolete User Message Exits
  - HWSIMSO0 & HWSIMSO1
- MAXSOC warning messages before limit is reached
- Cancel Client ID to cancel and re-establish a socket connection
- TCP/IP auto reconnect when network failed and restarted

## User Exit Enhancements

- Enhancements for selected IMS Control Region user exits
  - Multiple instances of a user exit type can be defined
  - User exit modules can be refreshed while IMS is active
  
- New User Exit types
  - EINIT : Early Initialization
  - ICQSEVNT: IMS CQS Event
  - ICQSSTEV: IMS CQS Structure Event
  
- Introduces two new Type-2 commands
  - QUERY USEREXIT
  - REFRESH USEREXIT

## Syntax Checker Enhancements

- Updates previously supported members for new and changed keywords
- Enhancements to manage PROCLIB members new to IMS V11
  - CSLDIxxx - ODBM Initialization member
  - CSLDCxxx - ODBM Configuration member
  - DSPBIxxx - DBRC Initialization member
  - BPE User Exit List member
  - IMS Connect Configuration member

## LSQA Storage Usage Reduction

- IMS storage management enhancement to reduce 24-bit LSQA storage usage
  - Some users have seen exhaustion of 24-bit storage due to growth of certain types of IMS control blocks resulting in System ABEND 40D “end-of-memory” abends. This can lead to a required IPL required due to common storage not being cleaned up.
  
- Enhancement allows IMS to track allocations of certain types of control blocks using 64-bit tracking elements
  - z/OS Contents Directory Entries (CDEs) no longer created to track certain types of storage allocations
  
- Improves system availability by reducing occurrences of System 40D ABENDs due to run-away control block growth

## /DIAGNOSE Command Enhancements

- Serviceability enhancements for the /DIAG command
  - /DIAGNOSE SNAP BLOCK(CSCD)
    - Captures storage information for the APPC/OTMA Shared Message Queues SCD Extension control block.
  - /DIAGNOSE SNAP MODULE(modname)
    - Identifies the entry point address and capture prolog information for the specified IMS module.
  - /DIAGNOSE SNAP STRUCTURE(structurename)
    - Captures storage information for the DFSSQS control block storage for the specified Shared Queues structure.
- Allows additional types of output to be quickly transmitted to IBM avoiding the overhead of capturing and transferring a dump

# DBRC Enhancements



## BPE-Based DBRC Enhancement

- Provides the option to run DBRC on the Base Primitive Environment (BPE) base which enables:
  - Refreshable USER Exits and ability to specify a list of exits per type
    - Command Authorization and RECON I/O Exits
      - Replace standard Exits if defined (EXITDEF)
        - SECURITY type exit replaces DSPDCAX0
        - RECONIO type exit replaces DSPCEXT0
      - New interface (similar to CSL Exits)
    - Statistics Exit
      - New exit to provide various statistics on DBRC activities
  - Improved DBRC trace support

## Unconditional Deletion of PRILOG Information

- New CLEANUP.RECON command to aid in the cleanup of old RECON data
- `CLEANUP.RECON {RETPRD(time_interval) |  
TIME(time_stamp) }  
{DBRANGE(firstdb,lastdb) } {DBONLY}  
{LASTIC} {LISTDL|NOLISTDL}`
- Improves usability by providing a simple and safe method to cleanup obsolete RECON data
- Recommendations
  - Test the command first on a backup copy to verify results are as expected
  - Make a backup copy of the RECON prior to performing the actual cleanup

## Security Override for RECON Copies

- Allows processing of RECON copies without invoking DBRC command authorization security
  - Test copies of a production RECON
  - RECONS sent to IBM Service Rep for debugging purposes
- New optional sub parameter added to the CMDAUTH keyword on both INIT.RECON and CHANGE.RECON commands:

**CMDAUTH(SAF|EXIT|BOTH|NONE,safhlq{,rcnqual})**

*rcnqual* must be a substring of the COPY1 RECON DSN

- Security enforced if the current *rcnqual* value is a substring of the COPY1 RECON data set name being used.
- Warning message issued if **CMDAUTH** is in effect but *rcnqual* does not match.
- Improves usability by providing a method to disable DBRC Command Security for Test RECONS

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