



| IMS 13

IMS/Tools IMS v13 Migration Workshop

Nick Griffin

World Wide IMS Software Group Sales Advisor

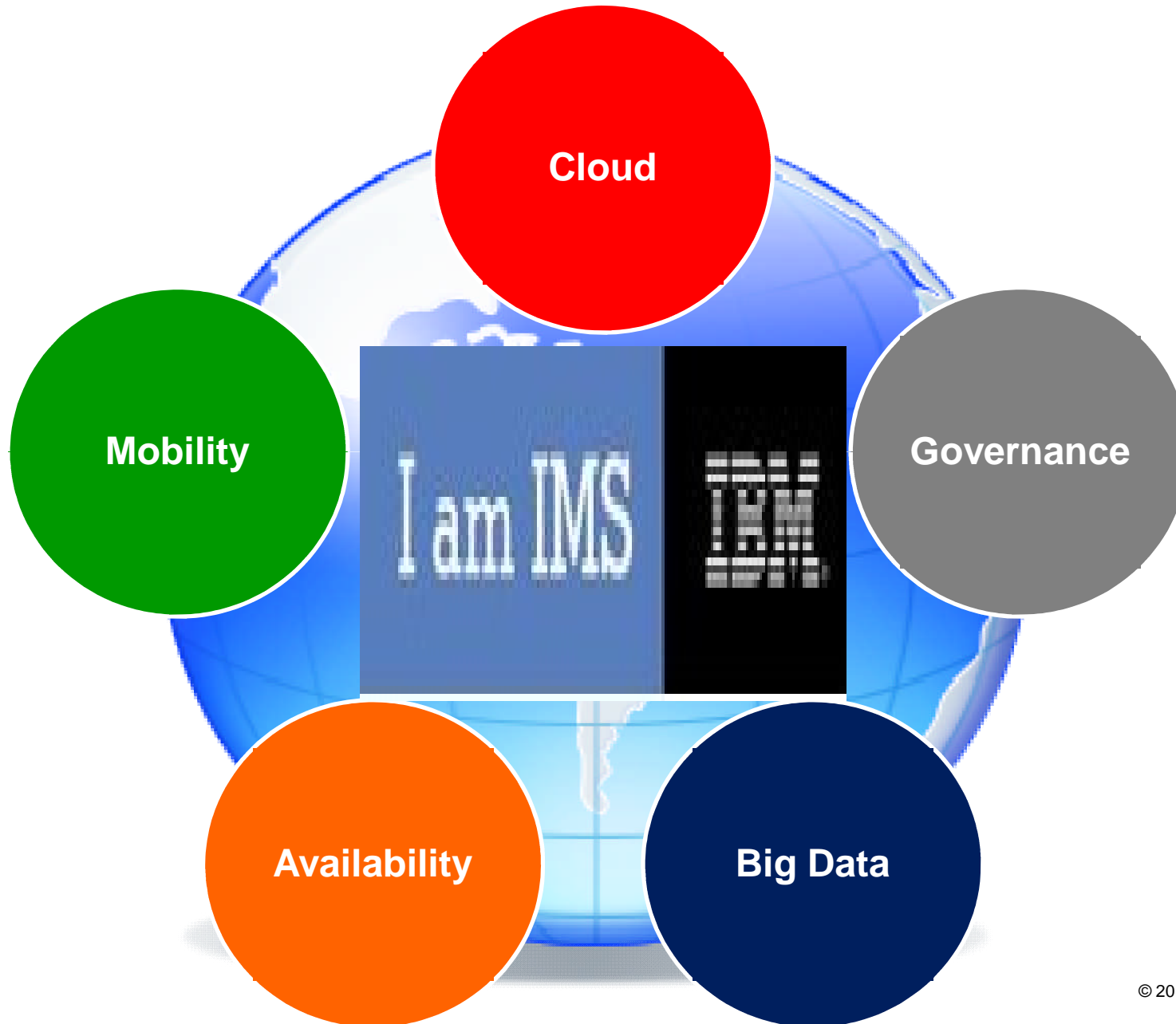
IBM Silicon Valley Lab

Information Management software

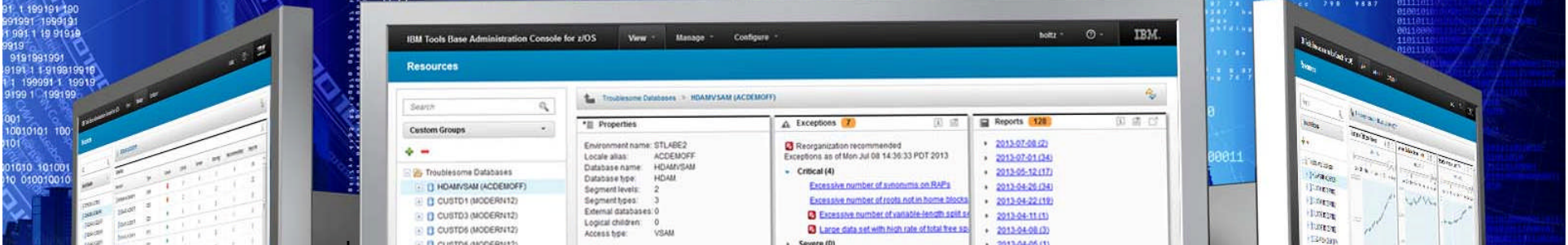
Acknowledgements and Disclaimers

- **Availability.** References in this presentation to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates.
- The workshops, sessions and materials have been prepared by IBM or the session speakers and reflect their own views. They are provided for informational purposes only, and are neither intended to, nor shall have the effect of being, legal or other guidance or advice to any participant. While efforts were made to verify the completeness and accuracy of the information contained in this presentation, it is provided AS-IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, this presentation or any other materials. Nothing contained in this presentation is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software.
- All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer. Nothing contained in these materials is intended to, nor shall have the effect of, stating or implying that any activities undertaken by you will result in any specific sales, revenue growth or other results.
- **© Copyright IBM Corporation 2014. All rights reserved.**
 - **U.S. Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.**
 - IBM, the IBM logo, ibm.com, **InfoSphere, IMS, DataPower, DB2, and Optim** are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at www.ibm.com/legal/copytrade.shtml
 - .NET is a trademark of Microsoft; SAP is a trademark of SAP.
 - Other company, product, or service names may be trademarks or service marks of others.

Business Forces Affecting IMS



IMS Tools modernization and autonomics



IMS Database Solution Pack for z/OS

Autonomics
 IMS Online Reorg Facility
 IMS DB Reorganization Expert
 - Unload, Load, Index Build, Prefix Resolution/Update
 IMS HP Image Copy
 IMS HP Pointer Checker
 IMS Library Integrity Utilities
 HALDB Toolkit

IMS Fast Path Solution Pack for z/OS

Autonomics
 IMS HP Fast Path Utilities
 IMS DB Repair Facility
 IMS HP Image Copy
 IMS Library Integrity Utilities

IMS Recovery Solution Pack for z/OS

IMS HP Image Copy
 IMS Database Recovery Facility
 IMS HP Change Accumulation
 IMS Index Builder
 IMS DRF Extended Functions

IMS Performance Solution Pack for z/OS

IMS Connect Extensions
 IMS Performance Analyzer
 IMS Problem Investigator

IMS Tools Base for z/OS

Data Base Administration

- IMS Sequential Randomizer Generator

Utility Management

- IMS Cloning Tool
- IMS Database Control Suite

Backup and Recovery

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

Performance Management

- IMS Buffer Pool Analyzer
- IBM Transaction Analysis Workbench
- IMS Network Compression Facility

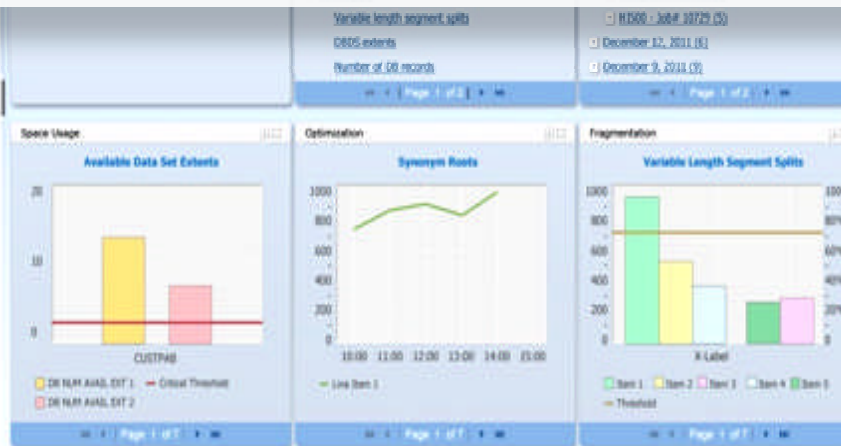
System

- IMS Command Control Facility
 - IMS ETO Support
 - IMS HP Sysgen Tools
 - IMS Queue Control Facility
 - IMS Workload Router
- TM
- IMS Configuration Manager
 - IMS Sysplex Manager
 - Batch Terminal Simulator
 - Program Restart Facility

- Guardium ITAP for IMS
- IBM Infosphere Guardium Data Encryption for DB2 and IMS Databases

Solution Packs

- **Autonomics Director**
- **Administration Console**

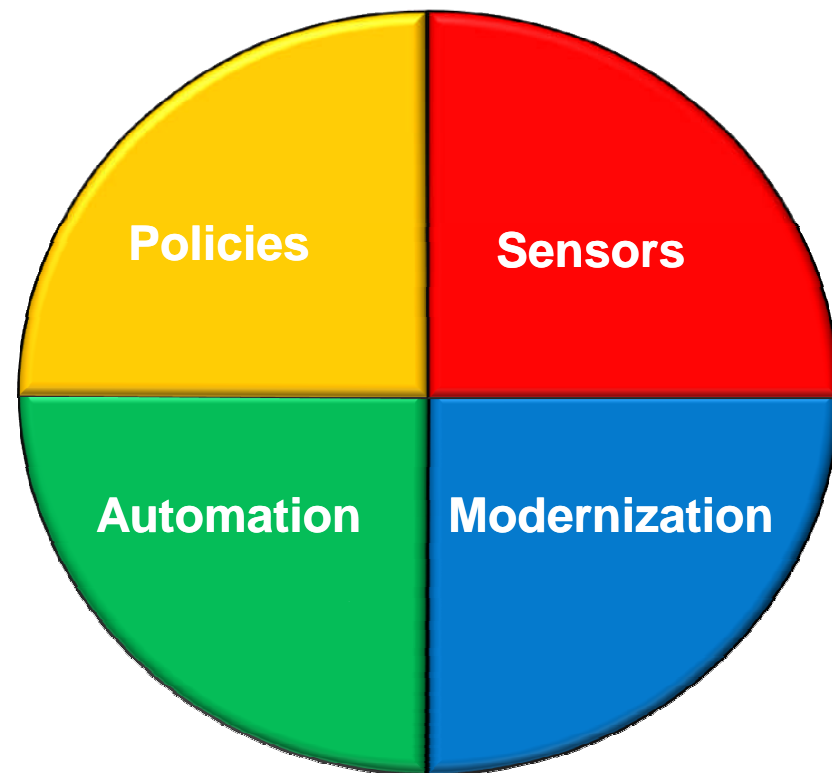


IMS Tools Autonomics Vision



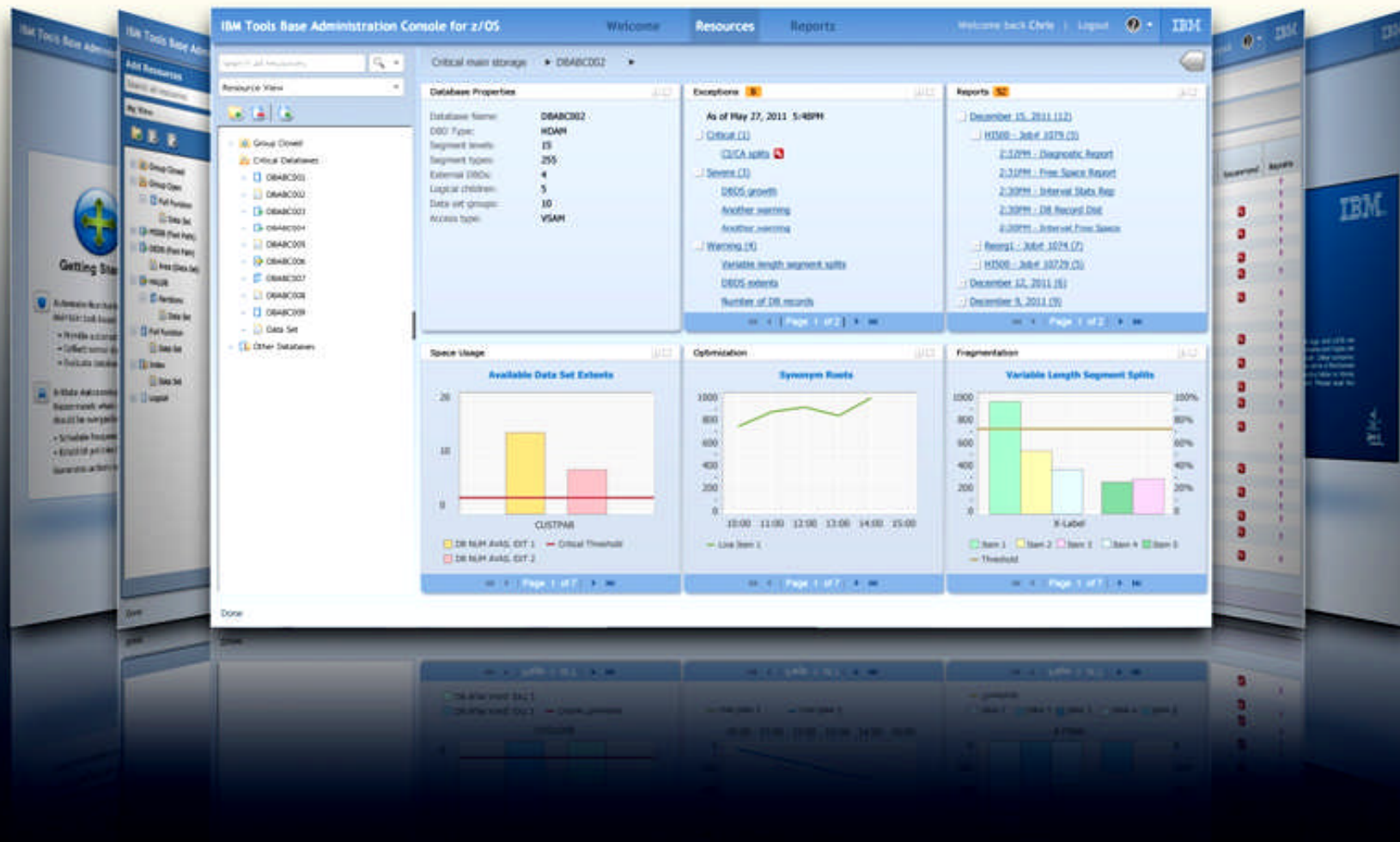
Putting information to work

- Sensors collect resource statistics
- Policies evaluate sensor data and identify potential problems
- Automation orchestrates the collection and evaluation of sensor data
- Modernization presents an interactive modern interface for managing the system



IMS Administration Console

Changing the face of the platform



IMS AD/AC Tools Supporting IMS V13

•IBM Tools Base

–Gen Exits:

- PM75246 / UK90548 - IMS Tools Generic Exits
- This APAR adds IMS V13 support to Tools Base- component Generic Exits.

–TOSI:

- PM75247 / UK90611 - IMS Tools Online System Interface
- The APAR adds IMS V13 support to TOSI.

–HWDCE:

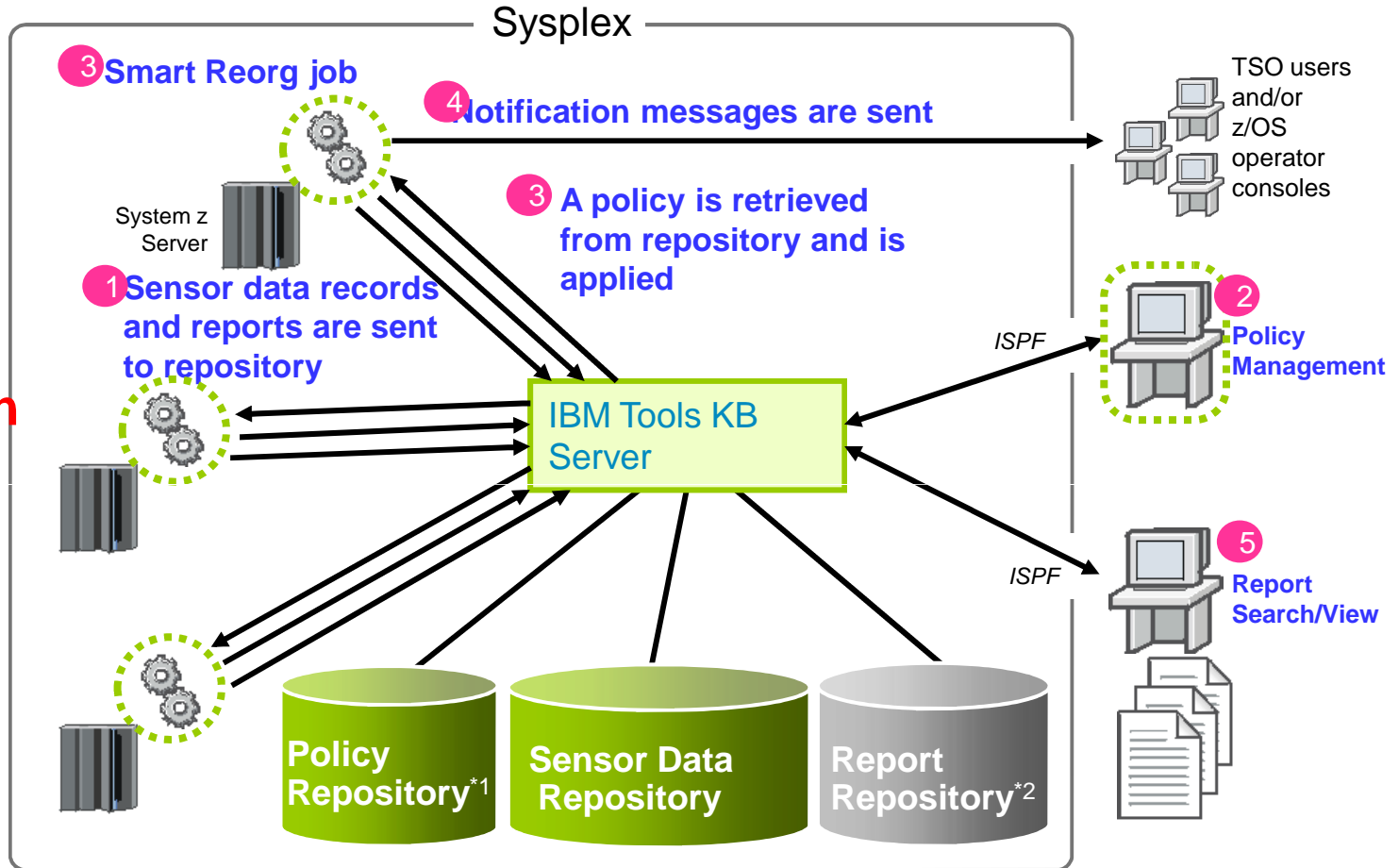
- PM75481 / UK90489 - IMS Hardware Data Compression
- IMS V13 support added for the Image Copy Extract function and ISPF JCL generation dialog

Database Solution Pack

- **Autonomics**
- **IBM Administration Console**
- Online Reorg Facility
- DB Reorg Expert
- HP Unload
- HP Load
- HP Prefix Resolution
- Index Builder
- HP Pointer Checker
- HP Image Copy
- IMS Library Integrity Utility
- HALDB Toolkit

IMS Database Reorganization Expert for z/OS

1. Sensor Data Collection
2. Reorg policy Definition
- 3. Conditional Reorganization**
4. Exception Notification and Reporting
5. Tracking exceptions and reorgs



- All information are stored in and managed by IMS Tools KB repositories
- Sysplex-wide access to these repositories is supported by IMS Tools KB Server

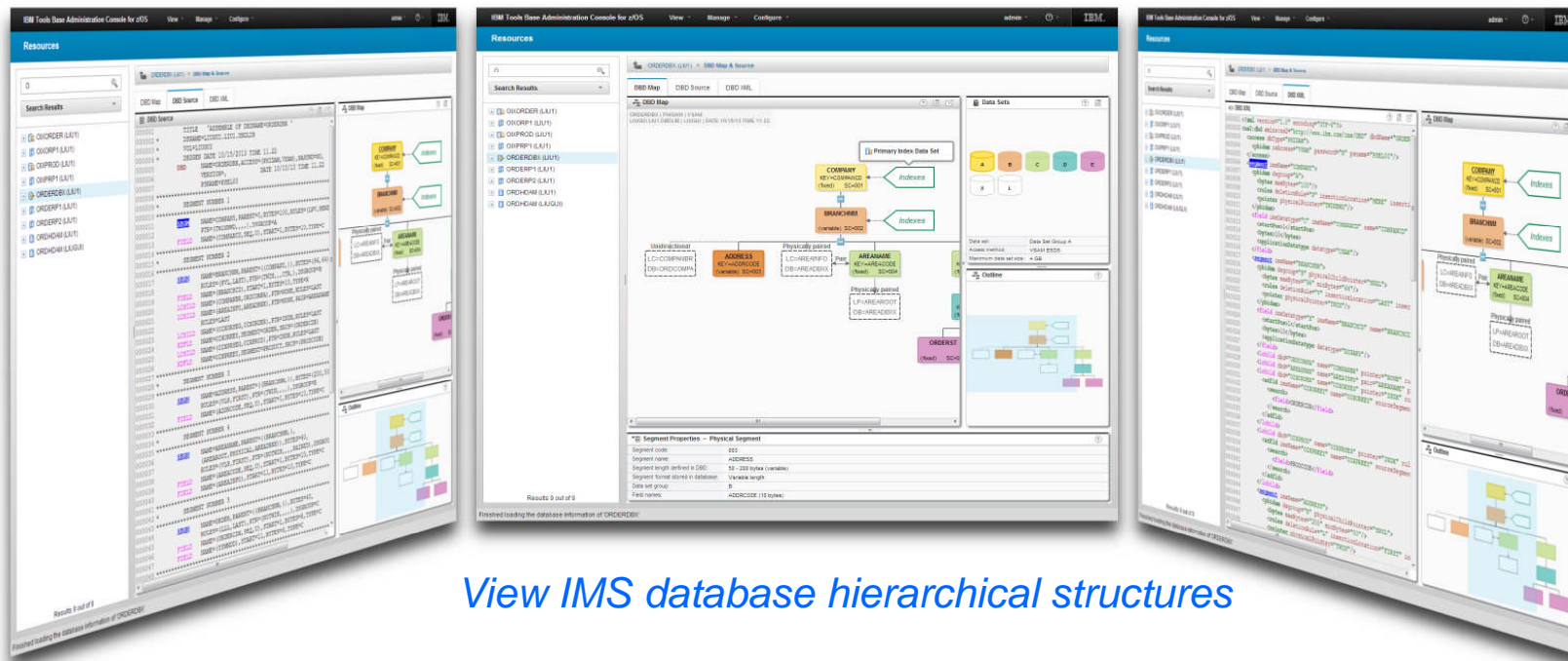
*1: ITKB Input Repository is used as the Policy Repository.

*2: ITKB Output Repository is used as the Report Repository.

IMS Library Integrity Utilities : DBD Map Viewer in Administration Console

New Utility

- DBD Map Viewer is an LIU extension for Administration Console
- It provides visualized IMS Database Structures in Web Browser
- New Functions
 - DBD Map Viewer
 - DBD/PSB/ACB Compare
 - ACBLIB Analyzer
 - Integrity Checker



View IMS database hierarchical structures

View DBD Macro sources

View Database XML document

IMS HALDB Toolkit for z/OS

...Support for Application Development, Conversion and Maintenance

- **Managing Test Environments:**
 - Cloning DBRC Definitions
 - Copy HALDB definitions to different RECONS
 - Backup DBRC definitions
 - **Testing without DBRC**
- **Conversion:**
 - Low skill requirement
 - Convert from:
 - Full Function, User Partitioned, PDB, Fast Path DEDB
- **HALDB Maintenance**
 - Consolidate or split partitions
 - Heal Index Pointer
 - Load a Single Partition
 - Delete a Single Partition
 - Merge HALDBs
 - Add empty partition to end of HALDB
- **HALDB Analyzer**
 - Analyze HALDB Constructs
 - Extract Root Keys
- **System Utilities**
 - Split Unload File
 - ILK Rebuild
 - ACBLIB report
 - Create DBD Source
- **Inside the application:**
 - Dynamic DFSHALDB Statement Build
 - Partition Selection API

```

-----      IMS HALDB Toolkit      -----
Command --->

                                USER Definition for CKOE1

User name .....: Test User

USER (for DSNPREFIX) creation rules:
  Use USR field
  Use TSO Userid ( CKOE1  )
  Y Create from TSO Userid using pattern
                                ****

Dataset name (DSNPREFIX) creation rules:
USR.....: CKOE
HLQ.....: DBSMS.CKIHC
Rule.....: HLQ SYS USER DBD PART (HLQ,SYS,USER,DBD,PART)
Result...: DBSMS.CKIHC.IMSP.CKOE.dbd.part.A00001
  
```

IMS Database Solution Tools Supporting IMS V13

▪IMS Database Reorganization Expert

–[PM75249 / UK90493](#) - To run each utility of IMS Database Reorganization Expert with IMS Version 13, the following APARs are also required for the related products: -

- [PM75257](#) IMS High Performance Unload V1R2 (FMID: H1IN120) =
- [PM75254](#) IMS High Performance Load V2R1 (FMID: H1IM210) =
- [PM75258](#) IMS Index Builder V3R1 (FMID: H22O310) =
- [PM75253](#) IMS High Performance Image Copy V4R2 (FMID: H1J0420) =
- [PM75256](#) IMS High Performance Prefix Resolution V3R1 (FMID: H1IP310) =
- [PM75255](#) IMS High Performance Pointer Checker V3R1 (FMID: HPC2310) =
- [PM75259](#) IMS Library Integrity Utilities V2R1 (FMID: H27P210) =
- [PM75247](#) Tools Base V1R3 (FMID: HAHN130) To run Database Sensor with IMS Version 13, this APAR is required. Database Sensor is a component of IBM IMS Database Solution Pack for z/OS (FMID: HAHP120).

▪IMS HP Load

–[PM75254 / UK90459](#) - This APAR enables HP Load to run under IMS Version 13

IMS Database Solution Tools Supporting IMS V13

•IMS HP Pointer Checker

–[PM75255 / UK90496](#) - IMS High Performance Pointer Checker for z/OS V3R1 has been modified to support IMS Version 13.

- When you use the Integrated DB Sensor function in HD Pointer Checker on IMS Version 13 environment, you need to apply APAR [PM75249](#) to IMS Database Reorganization Expert V4.1.

- When you use IMS Library Integrity Utilities' DBD map function or DBD reversal function in HD Pointer Checker on IMS Version 13 environment, you need to apply APAR [PM75259](#) to IMS Library Integrity Utilities V2.1.

- When you monitor IMS full-function database VSAM data sets by Space Monitor or the Integrated DB Sensor function on IMS Version 13 environment, you need to apply APAR [PM75247](#) to Tools Base V1.3.

•IMS HALDB Toolkit

–[PM73162 / UK83980](#) - With this service, HALDB Toolkit will run under IMS Version 13.

IMS Database Solution Tools Supporting IMS V13

▪IMS HP Prefix Resolution

–[PM75256 / UK90563](#) - IMS High Performance Prefix Resolution for z/OS has been modified so that it can run on IMS Version 13.

▪IMS HP Unload

–[PM75257 / UK90419](#) - This APAR enables HP Unload to run under IMS Version 13.

▪IMS Library Integrity Utilities

–[PM75259 / UK90553](#) - This APAR enables Library Integrity Utilities to run under IMS Version 13. IMS Version 13 provides Database versioning enhancements.

- Consistency Checker, DBD/PSB/ACB Compare, DBD/PSB/ACB Reversal and DBD/PSB/ACB Mapper are enhanced to support new DBD and PSB statement parameter DBVER and DBLEVEL for Database versioning in this APAR. This APAR also fixes an existing problem of DBD/PSB/ACB Compare utility: If offset of an internal table in FABLACB0 is not aligned to Full-word boundary after applying any PTFs, ABEND0C4 occurs in FABLCOMP when comparing ACBs.

▪IMS Online Reorganization Facility

–[PM75260 / UK90554](#) - This APAR enables ORF to run under IMS Version 13. APAR [PM75247](#) is also required for Tools Base V1R3.

IMS Fast Path Solution Pack

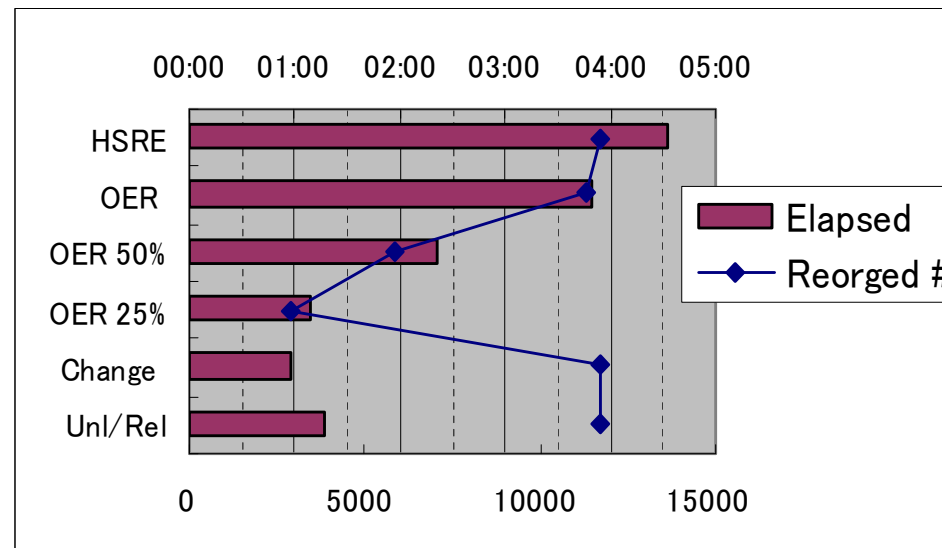
- **Autonomics Director**
- **IBM Administration Console**
- **IMS HP FP Utilities**
 - FP Advanced Utilities
 - FP Online Utilities
- **IMS DB Repair Facility**
- **HP Image Copy**
- **IMS Library Integrity Utility**

Fast Path Solution Pack – Reorganize



- Online Reorganization (OER)
 - Reorganizes only the UOWs based on the user-defined thresholds
 - Reduces the reorgs time to specify maximum number of UOWs
- Offline tools (FPA Change, Unload/Reload)
 - Reduces the reorgs time if you can take offline the DEDB areas

Fast Path Area Reorgs Elapsed Time



HSRE: IMS HS Reorg Utility (DBFUHDR0)

IMS FP Database Solution Tools Supporting IMS V13

▪IMS Fast Path Solution Pack

–[PM75252 / UK90549](#) - This APAR enables HPFPU in FP Solution Pack for z/OS Version 1 Release 2 to run on IMS Version 13.

- HPFPU in FP Solution Pack V1R2 is changed to support IMS Version 13.
- SYSLMOD DD of the provided sample JCLs are reserved when the JCLs are submitted.

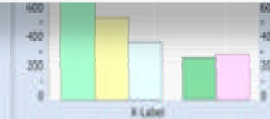
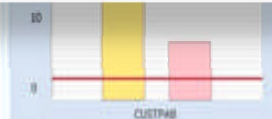
▪IMS DEDB Fast Recovery

–[PM75251 / UK90239](#) - DFR V2R2 supports IMS V13.

- Run under support of IMS V13 for the existing functions of DFR V2R2
- Type 47 Log Record Restructure - The type 47 record has been restructured to accommodate the larger changed database lists. Type 47 record spanning is also introduced in IMS V13.
- Limitations: DFR does not support the DEDB alter function, which is supported by IMS Version 13 Release 1.

IMS Database Products

- IMS Cloning Tool



IMS Cloning Tool

- Clones IMS systems (includes all databases)
 - Uses volume-based fast replication, including:
 - FlashCopy (IBM,EMC,HDS), TimeFinder/Snap(EMC), SnapShot (IBM,STK), Onsite Mirrors, Software Point-in-Time
 - Performs the necessary operations so that the data can be used by the cloned IMS system
 - IMS Cloning Tool takes an existing IMS system (complete installation and system generation process completed) and creates a new, or cloned, IMS system from it without having to repeat the entire installation and system generation processes
- Refreshes specific or sets of IMS databases
 - Uses data set based fast replication, including:
 - FlashCopy (IBM,EMC,HDS), TimeFinder/Snap(EMC), SnapShot (IBM,STK)
 - Performs the necessary operations to enable the cloned databases to be used on the same or another IMS system



IMS Tools Supporting IMS V13

- **IMS Cloning Tool**

- [PM73059 / UK91106](#) - IMS V13 RUN-UNDER SUPPORT FOR IMS CLONING TOOL.

IMS Recovery Solution Pack

- **Autonomics Director**
- **IBM Administration Console**
- IMS Database Recovery Facility
- IMS HP Change Accumulation
- HP Image Copy
- IMS DRF Extended Functions



Recovery Administration

- DRF Extended Functions provides six unique features which:
 - Create clean recovery points
 - Locate existing recovery points
 - Recovery Health Check
 - Verify needed recovery assets
 - Condition RECON data sets for disaster recovery
 - Issue IMS commands via batch

Health Checker Report

DBD	DDN/AREA	TYPE	FUNCTION	HEALTH CHECKER MESSAGE(S)
F2O1P1	F2O1P11	FF	CARUN	CA group has no valid CA run *
H1O1P31	H1O1P31A	HALD	ICNEED	Image Copy is Needed
H1O1P33	H1O1P33A	HALD I	CNEED	Image Copy is Needed

IMS Recovery Expert for z/OS, V2.1

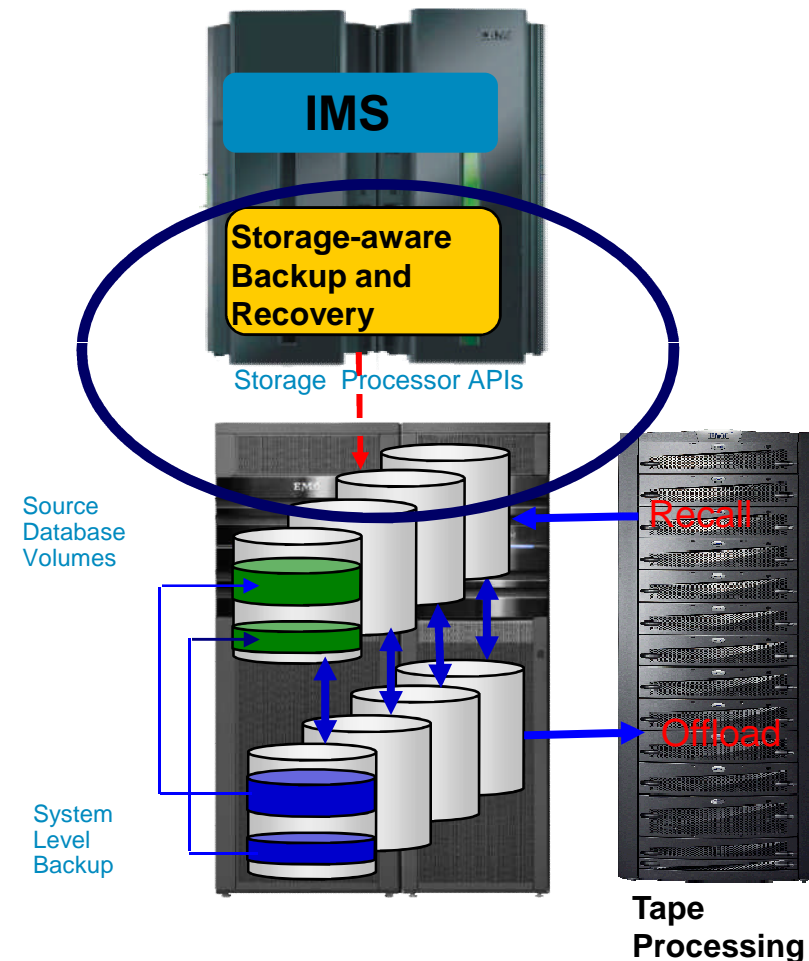
What is it?

- is a storage-aware backup and recovery solution that integrates storage processor fast-replication facilities with IMS backup and recovery operations to allow instantaneous backups with no application downtime, reduce recovery time, and simplify disaster recovery procedures while using less CPU, I/O, and storage resources.

What's its value to customers?

- Reduced cost of backup using less CPU, I/O and storage resources
- Simplification and standardization of Disaster Recovery processes
- Faster time-to-market for new IMS applications

System Level Backup



IMS Recovery Tools Supporting IMS V13

•IMS Recovery Solution Pack

- DRF: [PM73744 / UK90564](#) – IRP/DRF USES THE NEWEST IROLOGRC FROM IMS.
- DRF-XF: [PM75720 / UK90586](#) – With this service, DRF/XF will run under IMS Version 13.
- HPCA: [PM75717 / UK90565](#) – With this service, the HPCA component of IRSP V110 runs under IMS Version 13.
 - DRF/XF IMSV13 support does not include the RCU and RECONCOPY features (future APAR)

•IMS HP Image Copy

–[PM75253 / UK90552](#) – IMS High Performance Image Copy z/OS V4R2 has been modified to support IMS Version 13. *** Notes ***

- When you use the HASH check option for full-function database in HP Image Copy on IMS V13 environment, you need to apply APAR [PM75255](#) to IMS High Performance Pointer Checker V3.1 (FMID=HPC2310).
- When you use the Integrated DB Sensor function for full-function database in HP Image Copy on IMS V13 environment, you need to apply APAR [PM75249](#) to IMS Database Reorganization Expert V4.1 (FMID=H25N410).
- When you use the HASH check option or the Integrated DB Sensor function for Fast Path database in HP Image Copy on IMS V13 environment, you need to apply APAR [PM75252](#) to IMS Fast Path Solution Pack V1.2 (FMID=HAHQ120).
- When you use the IMS command interface option in HP Image Copy on IMS V13 environment, you need to apply APAR [PM75246](#) and [PM75247](#) to Tool Base V1.3 (FMID=HAHN130).

IMS Recovery Tools Supporting IMS V13

- **IMS Index Builder**

- [PM75258 / UK90494](#) – This APAR enables Index Builder to run under IMS Version 13

- **IMS Recovery Expert**

- [PM73060 / UK93129](#) – IMS V13 run-under support for IMS Recovery Expert V2.1

- **IMS HP Pointer Checker**

- [PM78910 / UK90495](#) - IMS Database Repair Facility for z/OS V3R1 has been modified to support IMS Version 13.

IMS Performance Solution Pack

- IMS Performance Solution Pack for z/OS
 - IMS Connect Extension
 - IMS Performance Analyzer
 - IMS Problem Investigator
- IBM Transaction Analysis Workbench

IMS Connect Extensions

Cancel sessions

The screenshot displays the IMS Connect Operations Console interface. The top menu includes File, Edit, Navigate, Project, Status Monitor, Sessions, Window, and Help. The main window is titled "IMS Connect - All systems/Group - IMS Connect Extensions for z/OS - Operations Console".

On the left, a tree view shows the system hierarchy under "All systems", including "Development Billing" and "Development Payroll". The "Sessions" view is active, showing a table of sessions for the system "ICOND00 (fts1:8900)/System".

System	Port	Wait Time	Predicted Session Status	Start Time	R/Exit Init. Client id.
ICOND00	8940	0-00.00.21.064498	P002 - Waiting for reply from datastore=ACCNT01	2009-08-04 09.37.40.169442	DEMCLI40
ICOND00	8940	0-00.00.18.735867	P003 - Waiting for ACK/NAK from remote client	2009-08-04 09.37.42.474117	ATM001
ICOND00	8940	0-00.00.16.684739	P014 - Reading remote client input	2009-08-04 09.37.44.552742	

Below the session table, the "Status Monitor" tab is active, showing a detailed view of a session. The "Event record trace" is expanded, showing the following properties and values:

Property	Value
Event record trace	49 READ socket 3C Prepare READ socket
IMS Connect	
Event key	C495DEC3A3926320
Last Trace Time	2009-08-04 09.37.44.554227
Port	8940
Session Wait time	0-00.00.16.684739
Socket	9
Start Time	2009-08-04 09.37.44.552742
System	ICOND00
Misc	
Predicted Session Status	P014 - Reading remote client input
Read Exit	
Read Exit Client ID	

Green callout boxes highlight key features: "Cancel sessions" points to a red button in the top right; "Single consolidated view of sessions running on all systems (or view activity for individual systems or user-defined groups)" points to the session table; "The system view shows the status of all systems" points to the left-hand tree view; and "Extensive details on individual sessions" points to the detailed session properties view.

IMS Performance Tools Supporting IMS V13

•IMS Performance Solution Pack

–PTFs required for standalone products

•IMS Performance Analyzer

–[PM74169 / UK90796](#) – Add support for IMS version 13.1

•IMS Problem Investigator

–V10 components: [PM74268 / UK90806](#) – Pre-conditioning for IMS compatibility

–V11 components: [PM74271 / UK90807](#) – Pre-conditioning for IMS compatibility

–V12 components: [PM74272 / UK90808](#) – Pre-conditioning for IMS V12 compatibility

–V13 components: [PM74172 / UK90802](#) – Pre-conditioning for IMS V13 compatibility

•IBM Transaction Analysis Workbench

–[PM75605 / UK91447](#) – This APAR is correcting APARS [PM75602](#), [PM75603](#), [PM75604](#) and [PM75605](#). This is addressing the following issues:

- Support for CICS Transaction Server version 5.1.
- Improved EXTRACT command in the ISPF dialog.
- Both the ISPF dialog and batch EXTRACT processes have been enhanced to support all types of log records (at the same time).
- Improved formatting of WebSphere Application Server for z/OS SMF type 120.9 records.
- Correct IMS log record type x'50' for database update.
- Type x'67FA' IMS trace records for ESAF are now formatted in the same way as all other trace types.
- Minor corrections in sessions and processing of log files.

IMS Performance Tools Supporting IMS V13

▪IMS Configuration Manager

–[PM75879 / UK95193](#) – This APAR is addressing the following issues:

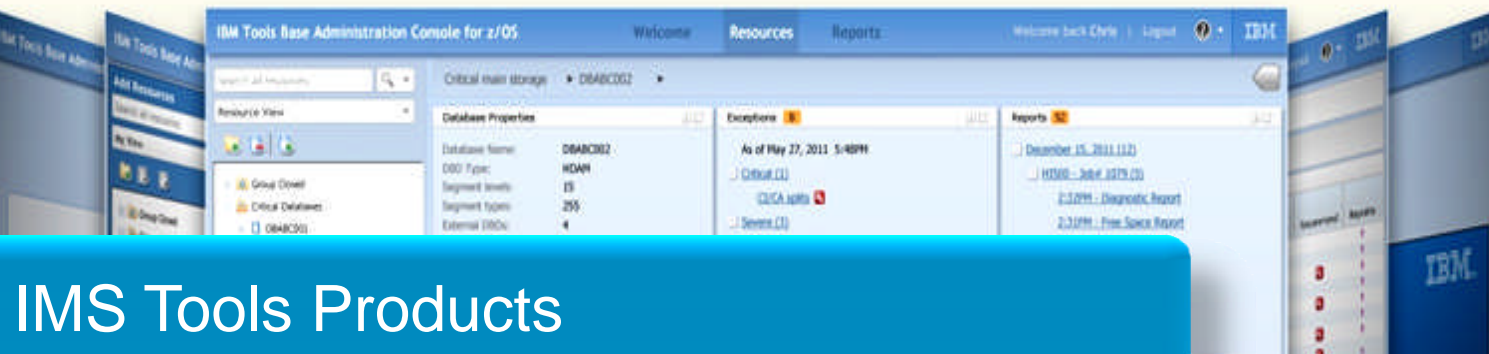
- PTF UK95193 (APAR [PM75879](#)) supersede PTF UK9100 (APAR [PM74550](#)) instead of having it as a prerequisite, due to incorrect product definition in SPA.
- JCLIN supplied in PTF UK9100 (APAR [PM74550](#)) was omitted in PTF UK95193 (APAR [PM75879](#))

▪IMS Connect Extensions

–[PM76242 / UK95969 \(CEX\)](#) – This APAR is addressing the following issues:

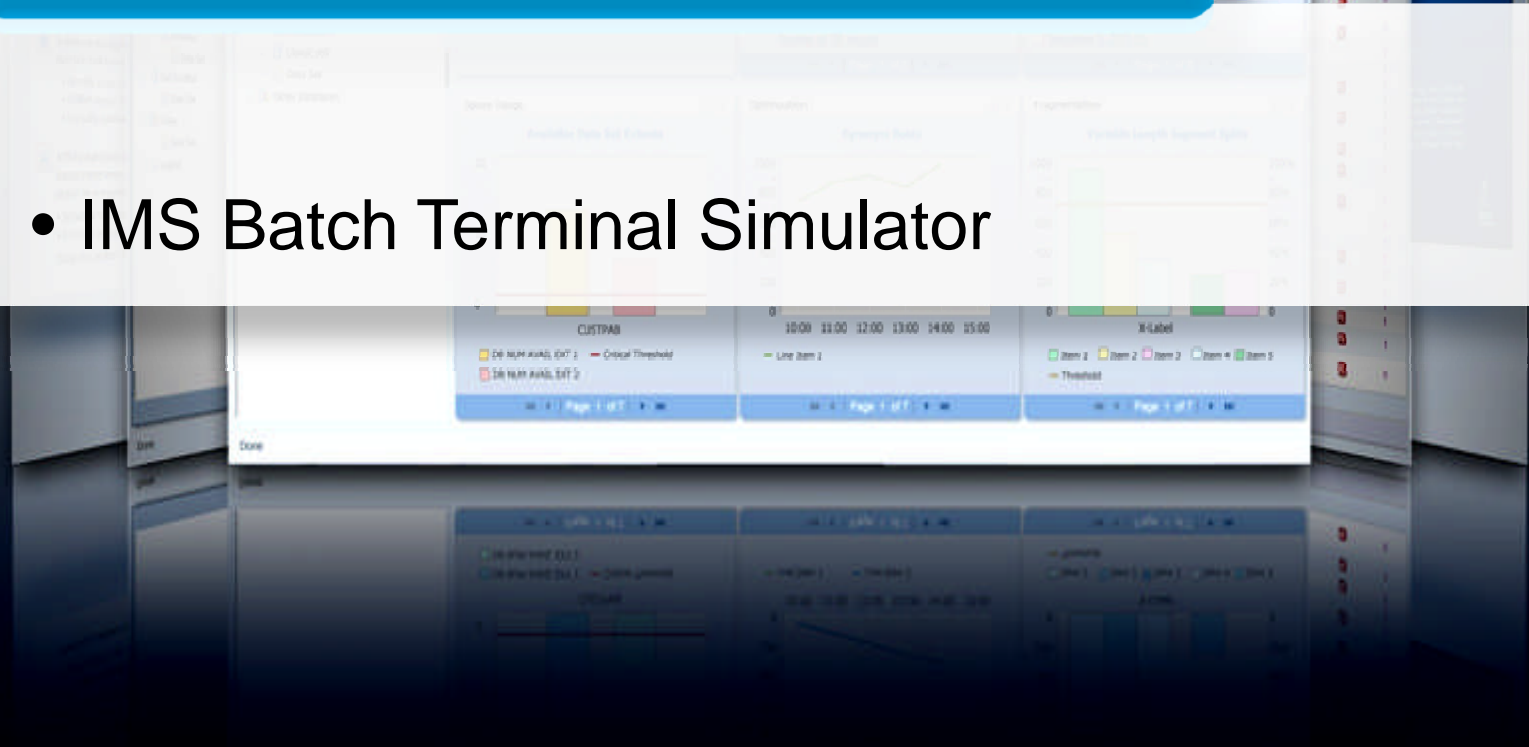
- IMS V13 added new event records, IMS Connect type 1 commands, and IMS Connect configuration member keywords.
- Message CEX2156E does not appear in joblog for use by automated operations.
- Security checking is being performed for a Sync Callout Response and it should not be.
- Support IMS V13 Automatic Datastore Add.
- Support IMS V13 Automatic Port Add.
- Batch command utility is missing refresh for SAF class profiles.
- CEXOREXX PASSAPPL only works with statically allocated libraries.
- Active session detail display "SMHWSID" was too long error.
- Refresh of TXN and APP causes them to be added when not defined to the system.
- Initial positioning for new IMS V13 events.

–[PM88073 / UK95968 \(FSL\)](#) – This APAR is addressing the same issues as above.



IMS Tools Products

- IMS Batch Terminal Simulator



IMS Batch Terminal Simulator

Integrated Eclipse Environment for IMS Development, Testing, and Debugging

The screenshot displays the IBM Rational Developer for System z Eclipse IDE interface. The central editor shows COBOL code for a program named 'PHONEBOOK'. The code includes data declarations for fields like 'LENGTH-FB-KEY', 'NUMB-SENS-SEGS', and 'KEY-FB-AREA', followed by a 'PROCEDURE DIVISION' and a 'MAIN-RTN' section with a 'DISPLAY' statement and 'MOVE' operations. The IDE includes several panels: a 'z/Os Projects' view on the left showing a project tree with files like 'SYSDEBUD', 'COBOL', and 'LOAD'; a 'Properties' view at the bottom left showing a 'LINKAGE SECTION' with sub-sections 'IOPCB', 'DBPCB', 'GIPCB', and 'GOPCB'; a 'Remote Systems' view on the right showing a tree structure for 'dallas' with sub-items like 'z/Os UNIX Files', 'MVS Files', and 'TSO Commands'; and a 'Remote Error List' at the bottom showing two error messages: 'IGYDS1168-E A right parenthesis was missing in the "PICTURE" string. A repetition factor of (1) was assumed.' and 'IGYDS1082-E A period was required. A period was assumed before "02".'

Annotations with callouts highlight key features:

- Debug** and **Test**: Callouts pointing to the respective icons in the top toolbar.
- Remote compile, link**: Callout pointing to the 'z/Os Projects' view.
- Remote editing, Syntax highlighting / checking**: Callout pointing to the code editor.
- Program outline**: Callout pointing to the 'Properties' view.
- Errors and warnings**: Callout pointing to the 'Remote Error List'.
- Remote z/Os JES MVS files TSO Emulator**: Callout pointing to the 'Remote Systems' view.

IMS Tools Supporting IMS V13

▪IMS Database Control Suite

–[PM75489 / UK90875](#) – This APAR provides support for IMS V13 and exploits the following new DBRC command parameters:

•Command	New Parm.
•CHANGE.DB	ALTER NOALTER
•CHANGE.PART	ALTERSIZE(nnnnn)
•NOTIFY.REORG	ALTER
•INIT.ADS	SHADOW
•INIT.ADS	IC

▪IMS Batch Terminal Simulator

–[PM70739 / UK90240](#) –

- BTS is changed to support IMS Version 13
- MQCONN call with KW=DLI.
- It is also changed to fix MQCONN outputs with KW=BMP.

▪SUPPORT FOR IMS VERSION 13. UPDATE COPYRIGHT INFORMATION IN EXTERNAL PARTS.

–**IMS Batch Backout Manager** [PM75612 / UK90905](#)

–**IMS Command Control Facility** [PM76073 / UK91079](#)

–**IMS Buffer Pool Analyzer** [PM75613 / UK90934](#)

–**IMS Program Restart Facility** [PM75617 / UK90879](#)

–**IMS HP Sysgen Tools** [PM75614 / UK90992](#)

IMS Tools Supporting IMS V13 (cont)

•IMS Queue Control Facility

–PM75713 / UK90617 –

- UNLOAD function is changed to preserve the full shared queue name (destination plus affinity) in TMR segment, LOAD function is changed to set the queue according to TMR segment info before inserting the message.

•IMS Sysplex Manager

–PM76076 / UK90640 –

- Install the APAR and restart all SM components to have the IMS V13
- Capability- control region, server, data collector, TSO client.

•IMS Network Compression Facility

–PM75616 / UK90350 –

- PROVIDE SUPPORT FOR IMS 13.1.
- UPDATE COPYRIGHT INFORMATION IN EXTERNAL PARTS.
- LIST OF ENABLED TRACES DISPLAYED FROM THE IMS OPTIONS SCREEN MAY BE INCORRECT.
- FIGURE 20 IN THE NCF USER'S GUIDE IS INCORRECT.

•IMS Workload Router

–PM72991 / UK90761 –

- Code is being added to support a future function of IMS Workload Router. QPP13

IMS Tools Supporting IMS V13 (cont)

•IMS ETO Support

–PM76074 / UK90989 –

- IMS APAR ([PM71035](#)) changed the length of one of it's OTMA table entries. If you use the ETO Support version of the IMS Partner Product User Exit (DFSPPE0) you will need to install this APAR prior to the IMS APAR ([PM71035](#)). Note: This APAR can be installed anytime prior to [PM71035](#), and is not a co-req.
- The wrong screen is being displayed when IMS is unable to open DBIZT1. Message IZT3163E and IZT3143E with status code=AI are displaying the wrong screen.
- After applying IMS APAR [PM69539](#) started receiving message "DFS3662W 10:31:43 COMMAND REJECTED BY DFSCCMD0" for commands entered from the z/OS system console.

IMS Tools Supporting IMS V13 (cont)

- **InfoSphere Guardium Data Encryption for DB2 and IMS Databases**
 - IMS release independent - does not require a PTF.
- **IBM DB/DC Data Dictionary**
 - IMS release independent - does not require a PTF.
- **IMS Application Development Facility II**
 - IMS release independent - does not require a PTF.
- **IMS Audit Management Expert**
 - Replaced by IBM InfoSphere Guardium S-TAP for IMS

IMS Tools Solution Packs



IMS Database Solution Pack

- ❖ Autonomics
 - ❖ IBM Administration Console
-
- ❖ IMS Online Reorg Facility
 - ❖ DB Reorg Expert
 - ❖ Unload
 - ❖ Load
 - ❖ Prefix Resolution / Update
 - ❖ Index Builder
 - ❖ HP Image Copy
 - ❖ HP Pointer Checker
 - IMS DB Repair Facility
 - ❖ IMS Library Integrity Utilities



IMS Fast Path Solution Pack

- ❖ Autonomics
 - ❖ IMS Administration Console
-
- ❖ HP FP Utilities
 - FP Advanced Utilities
 - FP Online Utilities
 - ❖ IMS DB Repair Facility
 - ❖ IMS HP Image Copy
 - ❖ IMS Library Integrity Utilities



IMS Recovery Solution Pack

- ❖ IMS Administration Console
-
- ❖ DB Recovery Facility
 - ❖ HP Change Accumulation
 - ❖ HP Image Copy
 - ❖ DRF Extended Functions



IMS Performance Solution Pack

- ❖ IMS Administration Console
-
- ❖ IMS Connect Extensions
 - ❖ IMS Performance Analyzer
 - ❖ IMS Problem Investigator



| IMS 13

Leveraging IMS Tools to Migrate to and Deploy IMS 13

Information Management software

Agenda

- Challenges for IMS migration
- Opportunities for IMS migration
- How IMS Tools can help
- Example use cases
- Measuring the results
- Resolving Issues

IMS Migration: overview

- Often done for reasons other than new release features
 - This can minimize the value of release migration
 - Might be seen as additional cost with little benefit
- Initial migration is with few (if any) changes to IMS configuration
 - Seen as lowest risk approach
 - Has worked many times in the past
- Results:
 - New release features are not used to their full advantage.
 - TCO improvements by IMS might not utilized

Inhibitors to Release Migration

- Some changes are disruptive to existing processes
 - For example, dynamic resource definition
- Reliance on 3rd party tools that do not support the new IMS release
- Lack of understanding of the customer's own IMS environment
- Education and/or experience with new features
 - Want to utilize the IMS CATALOG but have not implemented CSL for all their systems...

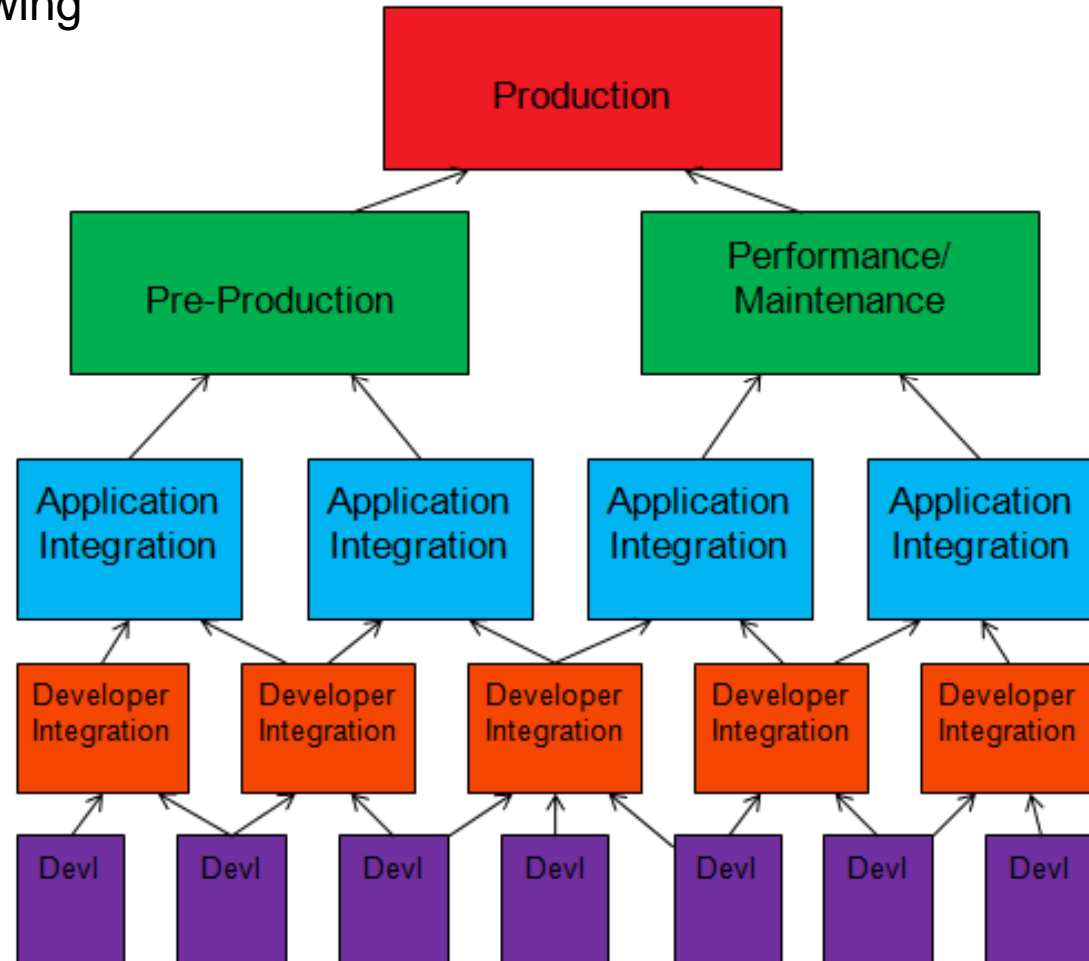
Release Migration Planning

- Early evaluation of new release features
 - May identify TCO opportunities in new release
- Use of tools to quickly create evaluation system
 - IMS Cloning tool can quickly create a 'cloned' system
 - Includes data sets and databases
 - IMS Configuration Manager eases 'cloned system configuration'
 - copy parameter members to 'cloned' IMS system and add new release keywords and/or members
 - Copy resources and create updated modblks for 'cloned' system.

Deployment is Always a Challenge

- Testing environments must support production stability while allowing for application changes
- Different testing levels need different environments
 - Environmental functionality/maintenance
 - Amount of data
 - Privacy
 - Other application dependencies

How do we keep test environments current?



IMS Configuration Manager can help

- A structured process for managing IMS systems, their resources, and parameters
- A version agnostic approach to introducing changes
- Near-instant discovery of all the IMS systems and their parameter configuration
- Intelligent reporting on IMS parameters and resources
- Graphical user interface for managing systems

Understanding your current environment

Auto discovery of IMS Systems



- IMS Configuration maps an entire IMS topology in seconds

Empty member

```

File Help
-----
System Member List
Command ==> _____ Scroll ==> PAGE
Enter NEW to create a new Member

Name      Type      IMSplex  VV.R      Description
/         *         *         *         *
***** Bottom of data *****
  
```

```

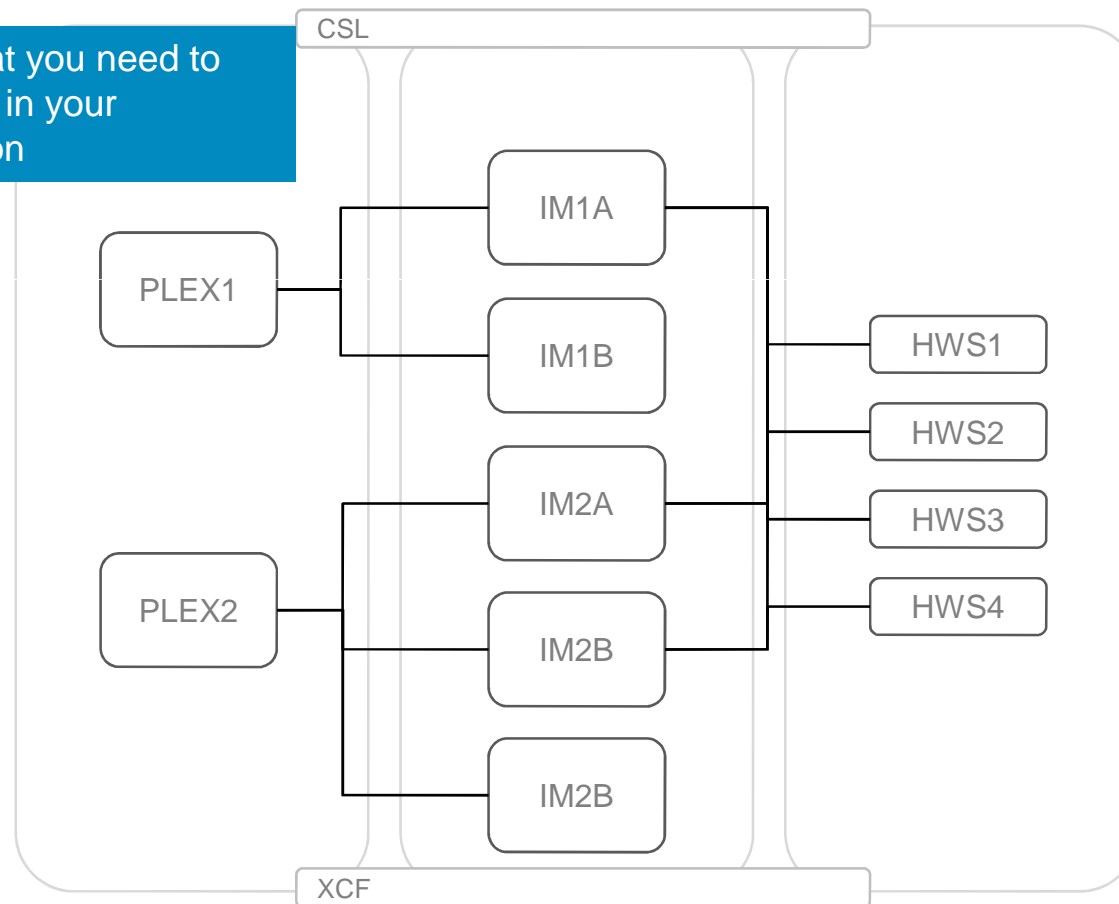
VIEW      GPL210.DEVT.SGPLSAMP(GPLDSCVR) - 01.25
Command ==> _____
***** Top of Data *****
000001 //GPLDSCVR JOB ,CLASS=A,NOTIFY=&SYSUID
000002 //GPLUTIL EXEC PGM=GPLUTIL
000003 //STEPLIB DD DISP=SHR,DSN=<HLQ.V2R1M0.SGPLLINK>
000004 // DD DISP=SHR,DSN=<HLQ.VnRnMn.SDFSRESL>
000005 //SYSIN DD *
000006 *
000007 DISCOVER TO(REPOSITORY,GPLREPOS)
000008 /*
000009 //GPLREPOS DD DISP=SHR,
000010 // DSN=<HLQ.V2R1M0.REPOSTRY>
000011 //SYSPRINT DD SYSOUT=*
000012 //
***** Bottom of Data *****
  
```

+ Discovery job

Review the results of IMS Systems Topology Mapping

- Identify IMSplexes, IMS systems, and IMS Connect across all LPARs

Find what you need to consider in your evaluation



```

File Help
-----
                                System Member List                                Row 1 of 103 More: <>
Command ==> _____ Scroll ==> PAGE

Enter NEW to create a new Member

Name      Type      IMSplex  VV.R      Description
/         *         *         *         *
-----
CACTHWS0  IMSCON
CDQ1SC    SCI       PLCDH    1.5
DCH10D    ODBM     PLCDH    1.2
DCJ10D    ODBM     PLCDJ    1.2
DCJ10M    OM       PLCDJ    1.5
DCJ20D    ODBM     PLCDJ    1.2
DDH10M    OM       PLDDH    1.6
DDJ10D    ODBM     PLDDJ    1.3
DDJ10M    OM       PLDDJ    1.6

IBDP      IMS       PLXDP    11.1
IBDR      IMS       PLBDP    11.1
ICDH      IMS       PLCDH    12.1
ICDJ      IMS       PLCDJ    12.1
ICDP      IMS       PLXDP    12.1
ICDQ      IMS       PLDDQ    12.1
ICDR      IMS       PLCDP    12.1
ICMIC00   IMSCON   +3       12.1
ICMIC01   IMSCON   12.1
ICMIC02   IMSCON   PLXDP    13.1
    
```


Command ==> _____ Scroll ==> CSR

IMSPlex . . . : PLXDP

Search . . _____

	System	Prompt	Description
-	IMS		
+	IBDP		
+	IDDP		
-	IMSCON		
+	ICMIC00		
-	ICMIC02		
	HWSCFG02		
	BPECFG11		
	HWSEXIT1		
-	ODBM		
-	S3XDPOD		
	CSLDIPS3		
	CSLDCPS3		
	BPECFPLP		
-	OM		
-	S1XDPOM		
	CSLOIPS1		
	BPECFPLP		
-	RM		
+	S1XDPRM		
+	S3XDPRM		
-	SCI		
+	S1XDpsc		
+	S3XDpsc		
-	REPO		
-	S1XDPRP		
	FRPCFGS1		
	BPECFPLP		

OCS0 [IMS] OCS5 [IMS] IPOCX [IMSplex] Compare PLXDP [IMSplex] All Sources IPOCX [IMSplex]

MBRLIST..ALL..ALL

Type: MBRLIST Show: ALL

IMSpIex	IMSID	MemberName	DataSetName	Libr..	Size	CreateDate	ChangeTimestamp	ChangeUserID	MemberType	Mes
IPOCX	OCS0	CQSIP0C0	GPL210.QADATA.MAY2013.CSLPROC.04PREZ	1	9	2013-03-07	2013-05-01-07.31.47	NXU2	CQSIP	
IPOCX	OCS0	CQSSG0C0	GPL210.QADATA.MAY2013.CSLPROC.04PREZ	1	14	2013-03-07	2013-05-01-08.07.23	NXU	CQSSG	
IPOCX	OCS0	DFSCG0C0	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	7	2013-03-07	2013-05-01-07.05.26	NXU	DFSCG	
IPOCX	OCS0	DFSDC00C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	10	2013-03-07	2013-03-07-12.45.03	AXW	DFSDC	
IPOCX	OCS0	DFSDSCMC	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	66	2013-03-07	2013-03-07-12.45.04	AXW	DFSDSCM	
IPOCX	OCS0	DFSDSCTC	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	40	2013-03-07	2013-03-07-12.45.04	AXW	DFSDSCT	
IPOCX	OCS0	DFSPB00C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	101	2013-03-07	2013-05-01-08.07.23	NXU	DFSPB	
IPOCX	OCS0	DFSSPM0C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	5	2013-03-07	2013-03-07-12.45.05	AXW	DFSSPM	
IPOCX	OCS0	DFSSQ00C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	1	2013-03-07	2013-05-01-08.07.23	NXU	DFSSQ	
IPOCX	OCS0	DFSVSMCT	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	15	2013-03-07	2013-03-07-12.45.06	AXW	DFSVSM	
IPOCX	OCS0	DFSYDTC	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	30	2013-03-07	2013-05-01-08.07.23	NXU	DFSYDT	
IPOCX	OCS0	OCS00CD0	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	2	2013-03-07	2013-05-01-08.19.54	NXU2	SSM	
IPOCX	OCS1	CQSIP0C0	GPL210.QADATA.MAY2013.CSLPROC.04PREZ	1	9	2013-03-07	2013-05-01-07.31.47	NXU2	CQSIP	
IPOCX	OCS1	CQSSG0C0	GPL210.QADATA.MAY2013.CSLPROC.04PREZ	1	14	2013-03-07	2013-05-01-08.07.23	NXU	CQSSG	
IPOCX	OCS1	DFSCG0C0	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	7	2013-03-07	2013-05-01-07.05.26	NXU	DFSCG	
IPOCX	OCS1	DFSDC01C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	10	2013-03-07	2013-03-07-12.45.03	AXW	DFSDC	
IPOCX	OCS1	DFSDSCMC	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	66	2013-03-07	2013-03-07-12.45.04	AXW	DFSDSCM	
IPOCX	OCS1	DFSDSCTC	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	40	2013-03-07	2013-03-07-12.45.04	AXW	DFSDSCT	
IPOCX	OCS1	DFSPB01C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	99	2013-03-07	2013-05-01-08.07.23	NXU	DFSPB	
IPOCX	OCS1	DFSSPM0C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	5	2013-03-07	2013-03-07-12.45.05	AXW	DFSSPM	
IPOCX	OCS1	DFSSQ01C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	1	2013-03-07	2013-05-01-08.07.23	NXU	DFSSQ	
IPOCX	OCS1	DFSVSM0C	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	15	2013-03-07	2013-03-07-12.45.06	AXW	DFSVSM	
IPOCX	OCS1	DFSYDTC	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	30	2013-03-07	2013-05-01-08.07.23	NXU	DFSYDT	
IPOCX	OCS1	OCS00CD0	GPL210.QADATA.MAY2013.SYSPROC.04PREZ	2	2	2013-03-07	2013-05-01-08.20.09	NXU2	SSM	

Compare ...

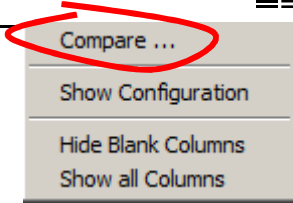
Show Configuration

Hide Blank Columns

Show all Columns

List all <active> parameter members across your enterprise and drill-down to parameter values

Compare configuration across all plexes to make sure you are using the best



MemberName	APPLID1	CPLOG	CSAPSB	CSLG	DBRCNM	DBWP	DC	DLIPSB	DMB	DSCT	FBP	FRE	IRLM	LSO	LUMC	LUMP	MAXPST	OTMAASY	OTMANM	PINCR	PIMAX
DFSPB00M	IMABIMS0	500K	4500K	0BA	ABS0XDRG	32	00M	15M	400	M	7M	1200	Y	S			990	S	IMABIMS0	4	2000
DFSPB01M	IMABIMS1	500K	4500K	0BA	ABS1XDRG	32	01M	15M	400	M	7M	1200	Y	S			990	S	IMABIMS1	4	2000
DFSPB02M	IMABIMS2	500K	4500K	0BA	ABS2XDRG	32	02M	15M	400	M	7M	1200	Y	S			990	S	IMABIMS2	4	2000
DFSPB03M	IMABIMS3	500K	4500K	0BA	ABS3XDRG	32	03M	15M	400	M	7M	1200	Y	S			990	S	IMABIMS3	4	2000
DFSPB00H	IMHSIMS0	16M	2000	0SH	HSS0XDRG	28	00H	6000	400	H	400	1000	N	S			800		IMHSIMS0	4	2000
DFSPB01H	IMHSIMS1	16M	2000	0SH	HSS1XDRG	28	01H	6000	400	H	400	1000	N	S			800		IMHSIMS1	4	2000
DFSPB00C	IMOCIMS0	16M	3500	0C0	OCS0XDRG	32	00C	500	100	C	3000	4000	N	S	50M	500M	400	S	IMOCIMS0	4	8000
DFSPB01C	IMOCIMS1	16M	3000	0C0	OCS1XDRG	32	01C	300	100	C	3000	4000	N	S			400	S	IMOCIMS1	4	8000
DFSPB04C	IMOCIMS4	16M	3000	0C0	OCS4XDRG	32	04C	300	100	C	3000	4000	N	S			400	S	IMOCIMS4	4	8000
DFSPB05C	IMOCIMS5	16M	3000	0C0	OCS5XDRG	32	05C	300	100	C	3000	4000	N	S			400	S	IMOCIMS5	4	8000
DFSPB008	IMVHIMS0	16M		0HV	VHS0XDRG		008				7M	9000					990	S	IMVHIMS0		
DFSPB018	IMVHIMS1	16M		0HV	VHS1XDRG		018				8	7M	9000				990	S	IMVHIMS1		
DFSPB028	IMVHIMS2	16M		0HV	VHS2XDRG		028				8	7M	9000				800	S	IMVHIMS2		
DFSPB038	IMVHIMS3	16M		0HV	VHS3XDRG		038				8	7M	9000				800	S	IMVHIMS3		

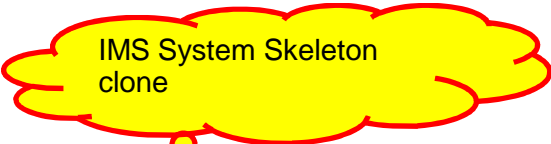
Only show differences; only highlight significant differences

Executing the Migration Plan using IMS tools

Stages of a Regular V2V Migration

■ The Apply Process


- Applying the new release of IMS
- Applying vendor and home grown software upgrades needed to support the new release
- Activating new functionality



IMS System Skeleton
clone

■ Application and Database testing

- Systems with a history of having issues during
- Business critical systems
- Testing new functionality



IMS Database Refresh
clone

■ New functionality

- Load level testing
- Performance statistics to push out new functionality

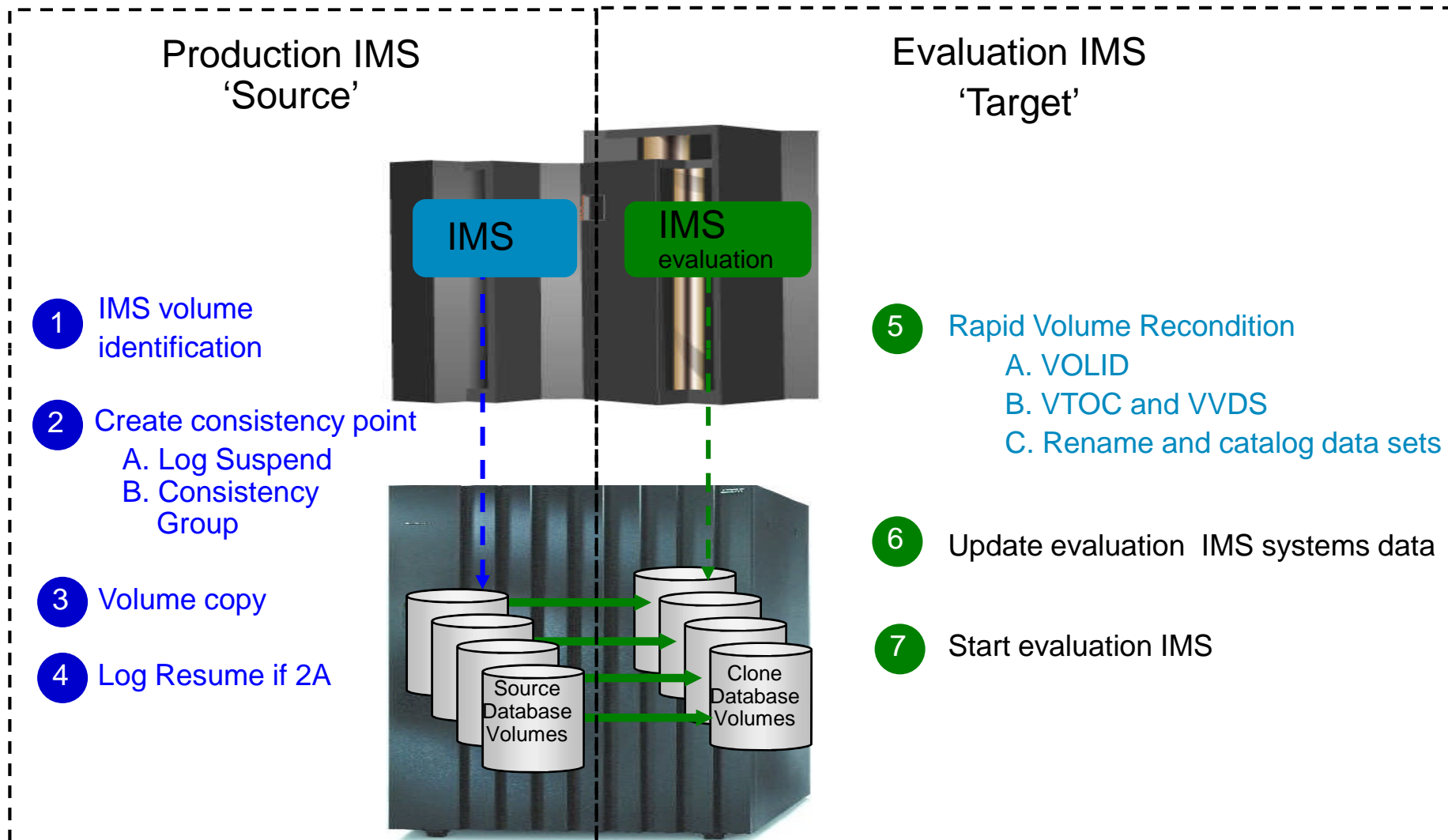


IMS Full System clone

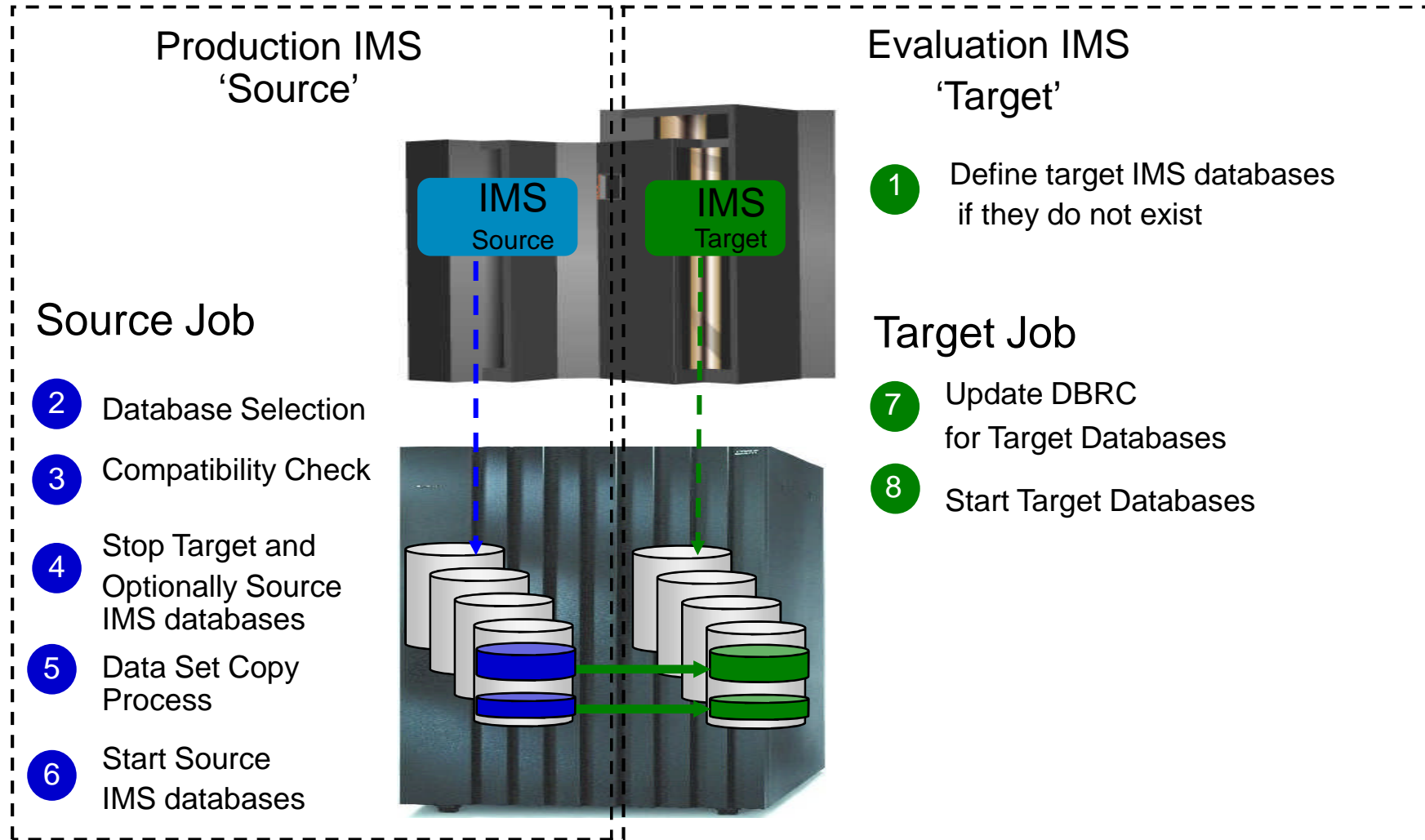
IMS Cloning Tool Creates Evaluation Systems

- **Leverages Storage-based fast replication if available**
 - Large systems cloned in less than 30 minutes
- **If storage-based fast replication not available**
 - Cloning done using z/OS data movement tools
- **Resulting evaluation system after cloning**
 - The copied volumes updated for usability
 - Everything cloned RECON, PROCLIB, JOBS, MDA members – everything you need to bring up your cloned IMS
 - Databases are copied, underlying data sets renamed, DBRC updated

Creating Evaluation Systems with Cloning Tool



Refresh Evaluation IMS Systems Databases



IMS System Skeleton Clone

- IMS System Skeleton clone
 - Clones an IMS system [without cloning any databases](#)
 - The replicated system is accessible and is usable in lieu of the original system [without requiring a system generation](#)
 - Contains all of the database and application definitions
 - Creates an IMS system to test the apply process



```

File  Help
-----
C          Copy IMS System
C  Command ===>
E  Press PF3 or EXIT to copy the IMS system. PF12 or Cancel to cancel.

Source
/   Name . . . . : IADP      Version . . : 10.1
   Description . . :
   IMSplex . . . . : PLXNU

Target
   Name . . . . . ICDP      Version . . . 10.1 +
   Description . . :
   IMSplex . . . . : PLXNU +
   Repository . . . . . IMS Release

Command ===> _____ Row 1 to 5 of 5
                          Scroll ===> CSR

Select IMS release then press Enter.

   VV.R  Description
   .   9.1  IMS  9.1.0
   .  10.1  IMS 10.1.0
   .  11.1  IMS 11.1.0
   .  12.1  IMS 12.1.0
   S  13.1  IMS 13.1.0
***** Bottom of data

DDQ1RM  R
DDQ1SC  S
DDQ2OD  O
HWSINST I
HWSIXD3 I
HWSIXD4 I
HWSIXD6 I
HWS1    I
C  IADP  I
   IBDH  I

```

Discovered IMS

Target version (automates

Update System Resource Definitions

- Update definitions to new release specification
 - Create Stage 1 out if Systems generation used
- Activate DRD in evaluation IMS if needed
 - Create System RDDS if DRD restart used for cold start
 - Import RDDS to IMS Catalog if Catalog used for cold start
- If DRD active, resources can be changed using DRD if changes are needed

Command ==>

Scroll ==> CSR

IMSpIex . . . : PLXDP
Description . :

Search . . V13

Intelligent search for what is new in

/ System	Prompt	Description
- IMSCON		
+ ICMIC00		
- ICMIC02		
- HWSCFG02		
- CICSAPPL=...		The Applid of the remote CICS system
- CICSNETID=...		The Network ID of the remote CICS system
...		
- PORT=(ID=30330,KEEP		
- PORT=(ID=30330,KEEP		
...		
- IMSPLEX (MEMBER=ICM		

Insert new parameters straight into the right members

- BPECFG11		
- CONDSRB=...		Conditional zIIP SRB option

- ODBM		
- S3XDPOD		
- CSLDCPS3		
- SOD=...		Output class for snap dumps
** <SECTION=GLOBAL_DATASTORE_CONFIGURATION>		
** <SECTION=LOCAL_DATASTORE_CONFIGURATION>		
** <SECTION=GLOBAL_DATASTORE_CONFIGURATION>		

What is needed for CSL address

Adding support for the new features you want using Semantic search



```
IMSpdex . . . : PLXDP
Description . :
```

```
Search . . ISC
```

Intelligent search for new feature

/ System	Prompt	Description
- _ ICDP		
- _ DFSDC000		
- _ ISCTCPIP=...		Defines an LU 6.1 via TCPIP link
- _ RCVYSTSN=...		STSN recovery? Yes or No
...		
- _ DFSDSCT0		
- _ AUTLID=...		ISC other system half session qualifier
- _ LCLICON=...		Local ICON that IMS communicates with via
...		
- _ DFSHSB00		
- _ LNK		Timing values for ISC link surveillance
- _ SWITCH		Switch if a surveillance mechanism trigger
...		
+ _ IDDP		
- _ IMSCON		
- _ ICMIC00		
- _ HWSCFG00		
- _ CICSAPPL=...		The Applid of the remote CICS system
- _ CICSNETID=...		The Netork ID of the remote CICS system
...		
- _ RESVSOC=...		The number of send sockets reserved for th
- _ RMTCICS=...		Defines a TCP/IP connection to a remote IB
- _ HWS (ID=ICMIC00,		Identifier
...		

Finds IMS Connect as well as IMS

Shows all parameters that are

Add the new feature parameters using MODEL function



File Edit Edit_Settings

```

EDIT          GPL000.QAAUTO.HWS.PROCLIB(HWSCFG00) - 01.25      Columns 00001 00072
Command ==> MODEL                                           Scroll ==> CSR
CHECK  Validate the member syntax
MODEL  Insert a new parameter with syntax assistance
HELP   Press F1 to request parameter sensitive help
***** ***** Top of Data *****
000001 *-----*
000002 *  - HWS CONFIGURATION MEMBER FOR ICMIC00
000003 *-----*
000004 HWS (ID=ICMIC00,

```

Select a parameter

Row 1 to 11 of 11

Command ==> _____

Select one or more parameters then press EXIT.

Parameter	Description
. ADAPTER	Characteristics of adapters used
. DATASTORE	Defines connections to IMS systems
. HWS	Defines IMS
. IMSPLEX	Defines the
. * ISC	Defines ISC link between local IMS and remote C
. MSC	Defines MSC link between IMS systems
. ODACCESS	Communication between ODBM, DRDA clients
. * RMTICICS	Defines a TCP/IP connection to a remote IBM CIC
. RMTIMSCON	Defines a TCP/IP connection to a remote IMS Con
. RUNOPTS	Language Environment (LE) runtime options
. TCPIP	Defines IMS Connect characteristics
***** Bottom of data *****	

Highlights logical sections

A00029 IMSPLEX=(MEMBER=ICMI00DP,TMEMBER=PLXDP)

IMS System Skeleton Clone

- Activating/Testing New Functionality
 - IMS Connect Enhancements
 - Synchronous Program Switch
 - IMS to CICS via ISC over TCP/IP
 - OTMA Early Termination Support
 - Java Dependent Region use of External Subsystem Attach Facility
 - User Exit Enhancements
 - Refreshable user exits
 - Security user exit removed from IMS Nucleus
 - New exit for IMS Monitor
 - RECON
 - Coexistence
 - Changing the MINVERS

Working with the Evaluation System

IMS System Skeleton Clone Plus IMS Database Refresh Clone

- IMS Database Refresh clone
 - Refreshes specific databases
 - The act of replicating the data, making the replica accessible, and then using the replica in lieu of the original data
 - Copies by data set
 - If you refresh into a System Skeleton Clone
 - All the database and application definitions will exist
 - All the ACB's, PSBs, and DBDs will exist
 - MDA and RECON will be conditioned

IMS System Skeleton Clone Plus IMS Database Refresh Clone

- Test new functionality
 - HALDB Alter
 - DEDB Alter
 - Database Versioning
 - Native SQL for COBOL
 - Further test your TM enhancements
 - Test your system enhancements
 - .NET access to IMS DB
 - Open DB Use of Native SQL Engine

Evaluate Impact of IMS 13

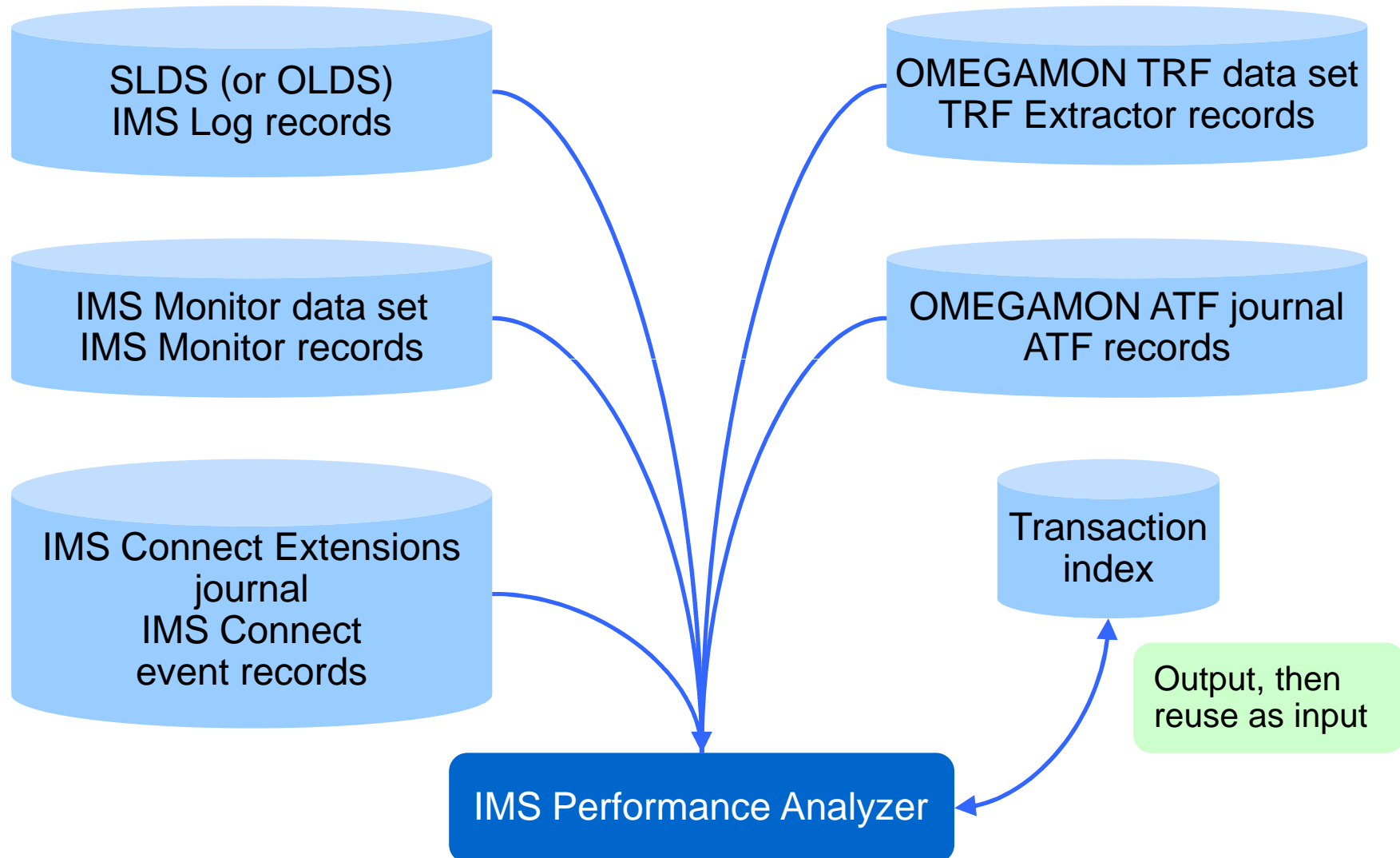
Full System Clone

- IMS Full System clone
 - Clones a complete IMS system including all its databases
 - The act of replicating the data, making the replica accessible, and then using the replica in lieu of the original data **without requiring a system generation**
 - *Less than 30 minutes average when using Fast Replication*

Full System Clone

- Load testing and performance testing
 - MAXPST increase to 4095
 - Log Latch Reduction
 - Type 47 Log Record Restructure
 - Support for more databases with uncommitted updates during system checkpoint
 - Improved Performance and Reduced TCO
 - QCF (Queue Control Facility)
 - IMS Performance Analyzer

IMS Performance Analyzer - Inputs



Performance Comparison between Versions

Trancode	Proc Vers	Tran Count	Avg InputQ Time	Avg Process Time	Avg CPU Time	Avg OutputQ Time	Avg Total IMS Time	Avg IMS Resp Time	Avg DB Get Count	Avg DB Updat Count	Avg DB Wait Count	Avg DC Call Count
ACCOUNT	1210	167	0	345	30	0	345	341	14	135	0	3
	1310	178	0	356	31	0	356	347	14	135	0	3
BALANCE	1210	273	0	93	8	0	93	99	11	42	0	4
	1310	298	0	97	9	0	97	101	11	42	0	4
INVOICE	1210	546	0	174	43	0	174	182	710	67	0	4
	1310	563	0	177	45	0	177	185	710	67	0	4
LOGON	1210	444	0	274	9	0	274	282	14	40	0	3
	1310	423	0	281	11	0	281	287	14	40	0	3
MENU	1210	165035	6	134	16	0	140	84	50	0	0	1
	1310	167381	7	145	19	0	152	85	50	0	0	1
ORDER	1210	342	0	258	10	0	259	266	38	42	0	3
	1310	376	0	263	11	0	263	269	38	42	0	3
STOCK	1210	272	0	155	33	0	156	171	498	38	0	3
	1310	298	0	134	37	0	134	162				
WITHDRAW	1210	134	0	175	9	0	175	184				
	1310	156	0	182	11	0	182	191				

**STOCK Transaction
9ms faster response
time**

IMS Performance Analyzer - Non-“transit” reports

- Resource Usage & Availability
 - Dashboard
 - Management Exception
 - Transaction Resource Usage
 - Resource Availability
 - CPU Usage
 - Internal Resource Usage
 - MSC Link Statistics
 - Message Queue Utilization
 - Database Update Activity
 - Region Histogram
 - OSAM Sequential Buffering
 - Deadlock
 - System Checkpoint
 - BMP Checkpoint
 - Gap Analysis
 - Cold Start Analysis
- Fast Path Resource Usage
 - Resource Usage & Contention
 - Database Call Statistics
 - IFP Region Occupancy
 - EMH Message Statistics
 - DEDB Update Activity
 - VSO Statistics
- Trace
 - DC Queue Manager Trace
 - Database Trace (Full Function)
 - DEDB Update Trace
 - ESAF Trace

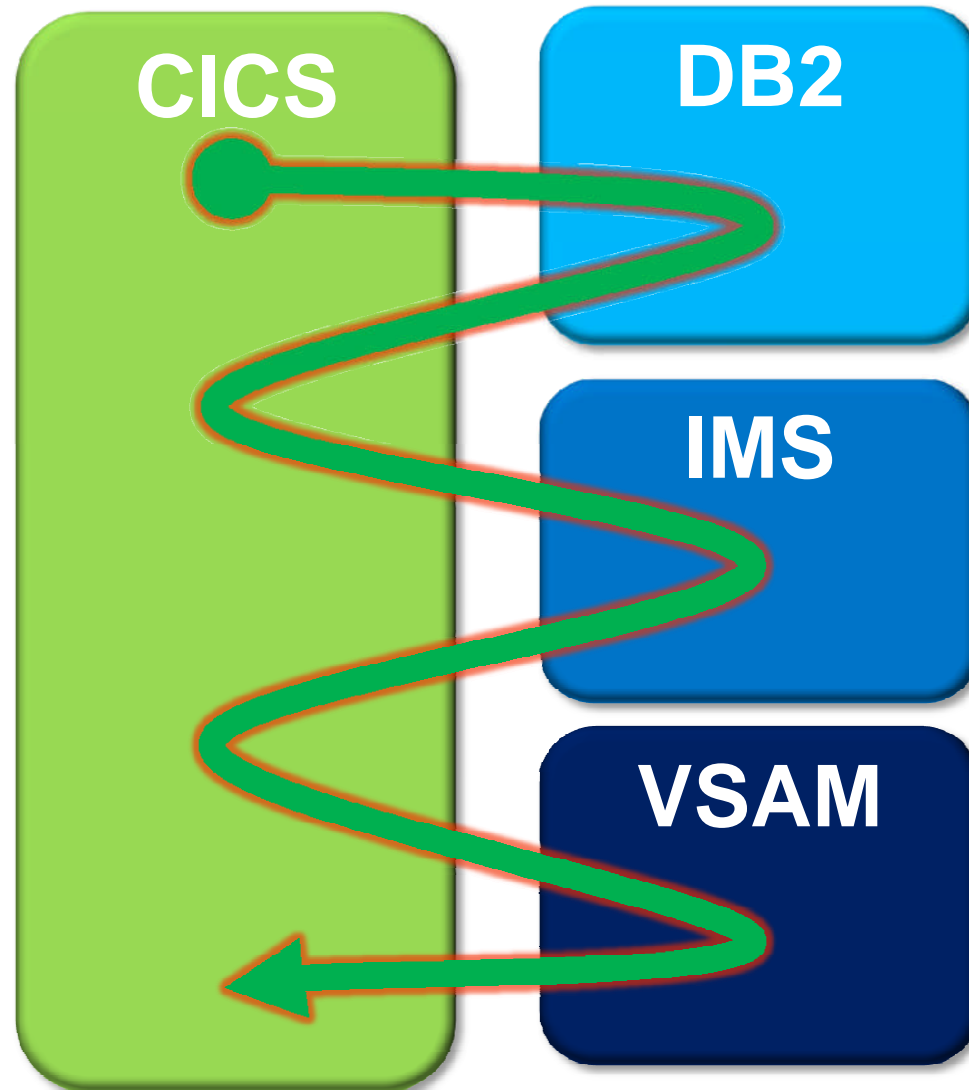
Fixing problems in evaluation system using Transaction Analysis Workbench for z/OS

Create Exception Index to identify problems

- The exception index will identify transaction that need to be investigated
 - Exceptions index entries can be built for
 - Transactions that abended
 - Transactions that exceeded a specified elapsed time
- You probably want to know if any transactions abended as this might show a major issue
- Then you can see if there are performance issues

Where did the delay occur?

- A single transaction can have activity across many subsystems
- To quickly identify performance issues, you need to track the entire transaction
- Subsystem-specific approaches and tools offer a limited perspective
- Each subsystem has its own activity log and SMF records



Subject-matter expert: Exception candidate investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +          Record 00004609 More: < >
Command ===>                          Scroll ===> CSR
Slice . . Duration 00.03.00 Date 2012-06-24 Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2012-06-24 Thursday Time (LOCAL)
-----
/ TX CA01 Transaction                               16.33.33.575325
   UTC=16.33.33.575316 TranCode=MQATREQ1 Program=MQATPGM Userid=FUNTRM15
   LTerm=FUNTRM15 Terminal=SC0TCP15 Region=0004
   OrgUOWID=IADG/C62D2CB467860940 IMSID=IADG IMSRel=101
   RecToken=IADG/0000003600000000
   CPU=0.041999 InputQ=0.000562 Process=0.497229
   TotalTm=0.497791 RegTyp=MPP DBCalls=5
-----
_ CA01 Transaction                               16.33.59.157812
   UTC=16.33.59.157802 TranCode=MQATREQ1 Program=MQATPGM Userid=FUNTRM15
   LTerm=FUNTRM15 Terminal=SC0TCP15 Region=0004
   OrgUOWID=IADG/C62D2CCCCD3E6F81 IMSID=IADG IMSRel=101
   RecToken=IADG/0000003A00000000
   CPU=0.013980 InputQ=0.000543 Process=0.424378
   TotalTm=0.424921 RegTyp=MPP
-----
__ CA01 Transaction                               16.34.30.389305

```

This display has been filtered to show **IMS transaction index (CA01) records** with a process time of greater than 0.4 seconds. Enter TX to show records related to a transaction

Transaction life cycle investigation

```

File Mode Filter Time Labels Options Help
FUWPRBRF GXH.FUW.JCH1.FUW745.UPDATE.CICS.EXTRACT Record 00000001 More: < >
Command ==> Scroll ==> CSR
Navigate < 00.05.00.000000 > Date/Time 2013-05-31 16.27.24.275202
/ Tracking Friday 2013-05-31 Time (Relative)
TX 6E13 CICS Transaction TranCode=FB66 Task=944 16.27.24.275202
___ 086 Signon start DBA6 +0.003469
___ 072 Create thread start DBA6 +0.003546
___ 112 Thread allocate DBA6 +0.003805
___ 073 Create thread end DBA6 +0.003830
___ 053 SQL DESCRIBE/COMMIT/ROLLBAC SQLCODE=0 STMT=000158 DBA6 +0.004096
___ 233 SP entry FBOSP006 STMT=000196 DBA6 +0.005104
___ 015 Index scan begin DBA6 +0.005874
___ 018 Scan end DBA6 +0.006097
___ 055 SQL set current SQLID DBA6 +0.006188
___ 053 SQL DESCRIBE/COMMIT/ROLLBAC SQLCODE=0 STMT=000281 DBA6 +0.006209
___ 060 SQL SELECT STMT=000344 DBA6 +0.006365
___ 017 Sequential scan begin DBA6 +0.006478
___ 006 Read I/O begin DBA6 +0.006582
___ 007 Read I/O end DBA6 +0.006950
___ 018 Scan end DBA6 +1.609979
___ 058 SQL call completion SQLCODE=0 STMT=000344 DBA6 +1.610035
___ 061 SQL UPDATE STMT=000423 DBA6 +1.610336
___ 017 Sequential scan begin DBA6 +1.610463
___ 0020 DB2 Unit of Recovery Control - Begin UR +1.610733
___ 0010 DB2 Savepoint +1.610733
___ 0020 DB2 Update In-Place in a Data Page +1.610749
___ 018 Scan end DBA6 +1.610771
___ 058 SQL call completion SQLCODE=0 STMT=000423 DBA6 +1.611141
___ 233 SP exit FBOSP006 SQLCODE=0 STMT=000196 DBA6 +1.611397
___ 053 SQL DESCRIBE/COMMIT/ROLLBAC SQLCODE=0 STMT=000196 DBA6 +1.611448

```

1. Start tracking a transaction (here, a CICS transaction)
2. See the transaction life cycle events from the related logs (here, an SMF file and a DB2 log), merged together with no preparation required
3. Notice the jump in elapsed time
4. In this case, the problem was caused by a table scan in a DB2 stored procedure.

A drill down of the DB2 trace was able to determine this.

Detail DB2 event data view using forms view

```

+018C Code... 058   SQL Call completion           RC=0000 STMT=002896 DBA6
+0198 Date... 2012-11-21 Wednesday Time... 17.40.04.013647.813

Package
+0034 Location..... 'DB2ALOC'           Collection ID..... 'CSQ5L710'
+0056 Package name... 'CSQ5L710'       Consistency token... 193153A81425EA0D

+0072 SQLCA..... SQL communication area (SQLCA)
+0072 SQLCAID.... 'SQLCA'   SQLCABC.... +136   SQLCODE.... +0
+0082 SQLERRML... +0       SQLERRM.... ' '
+00CA SQLERRP.... 'DSN'     SQLERRD1... +0       SQLERRD2... +0
+00DA SQLERRD3... +0       SQLERRD4... FFFFFFFF SQLERRD5... +0
+00E6 SQLERRD6... +0       SQLWARN0... ' '       SQLWARN1... 'N'
+00EC SQLWARN2... ' '       SQLWARN3... ' '       SQLWARN4... ' '
+00EF SQLWARN5... '1'       SQLWARN6... ' '       SQLWARN7... ' '
+00F2 SQLWARN8... ' '       SQLWARN9... ' '       SQLSTATE... '000

+00FC Statement number... +2896
+0106 Query command ID... 00000000 Query instance ID... 00000000

+0118 QW0058ID... Scantype
+0118 Data type.... 'INDX' Rows processed... +234 Rows examined..
+012C Rows qualified... +7 After stage 1... +4 After stage 2..
+0140 Rows inserted... +17 Rows updated.... +12 Rows deleted...
+0158 Pages scanned.... +76

```

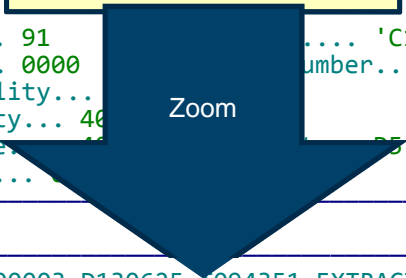
Program statement number 2896 caused an index scan that processed 234 rows in the table



```

+002C QW0065..... IFCID data
      Package
+002C Location... 'DB2BLOC'   Collection ID... 'MQATPGM'
+004E Package name... 'MQATPGM'
+0060 Consistency token... 189E34F81745545D
      Statement
+006A Statement type... 91          .... 'C1'      Isolation.... 'U'
+0080 Reoptimization... 0000          number... +835
+0088 Cursor scrollability...
+0089 Cursor sensitivity... 40
+008A Result table type...
+0094 Query command ID...

```



```

File  Menu  Help
-----
BROWSE   JCH.FUW.P0000003.D130625.1094351.EXTRACT +      Line 00000000
Command ==>                                     Scroll ==> PAGE
***** Top of data *****
+007F QW0065I.... 'U'  Isolation level of the SQL statement.

Off   QW0065RR... 'R'  RR (repeatable read)
Off   QW0065RS... 'T'  RS (read stability)
Off   QW0065CS... 'S'  CS (cursor stability)
Off   QW0065UR... 'U'  UR (uncommitted read)
Off   QW0065XR... 'X'  XR (Repeatable read with X lock)
Off   QW0065XS... 'L'  XS (Read stability with X lock)
***** End of data *****

```

Conclusions

- New Version evaluation can be an opportunity for feature exploitation and comparison early in the planning stage
- IMS Configuration Manager provides a guided approach for managing and implementing changes for new IMS versions
- IMS Cloning Tool automates creating of testing environments to aid in implementation and deployment processes
- IMSPA and Transaction Analysis Workbench lets you fix issues with new release
- Evaluate transaction performance at new release early in process
 - May provide justification due to TCO reduction for migration emphasis

