

# Gain Insight Into your IMS Enterprise

IBM Management Console for IMS and DB2 for z/OS

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IMS Technical Symposium 2015



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# Agenda

- **Management Console**
  - What is it – a unified web interface for IMS and DB2
  - Installation and extensions
- **IMS**
  - Manage IMS
- **Autonomics**
  - IMS
  - DB2
- **IMS Library Integrity Utilities**
- **Demo**



# Management Console



# Introducing the new... IBM Management Console for IMS and DB2 for z/OS 1.1

The screenshot displays the IBM Management Console for IMS and DB2 for z/OS 1.1 interface. The main window is titled "IBM Tools Base Administration Console for z/OS" and shows the "Resources" section for the database "HADMVSAM (ACDEMOFF)".

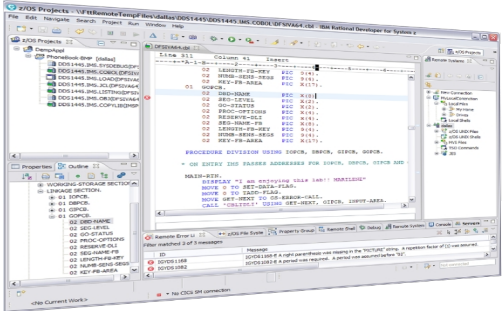
**Resources Pane:**

- Properties:** Environment alias: STLARE2, Locale alias: ACDEMOFF, Database name: HDAMVSAM, Database type: HDAM, Segment levels: 2, Segment types: 3, External databases: 0, Logical children: 0, Access type: VSAM.
- Exceptions (7):** Reorganization recommended. Exceptions as of Fri Oct 19 15:55:25 PDT 2012. Critical (4): Excessive number of synonyms on RAPs, Excessive number of roots not in home blocks, Excessive number of variable-length split segme, One or more data sets are full and approaching the. Severe (0), Warning (3).
- Reports (152):** List of reports including 2012-10-29 (2), 2012-10-28 (2), 2012-10-27 (2), 2012-10-26 (2), 2012-10-25 (2), 2012-10-24 (2), 2012-10-23 (2), 2012-10-22 (2), 2012-10-20 (2), 2012-10-19 (19), 2012-10-18 (2), 2012-10-16 (2).
- Space Use:** Number of Segments. Bar chart comparing HDAMVSD1 and HDAMVSD2. DB NUM SEG values are approximately 12,000,000 and 10,000,000 respectively.
- Optimization:** Number of Database Records. Line chart showing an increasing trend from 8/1/11 to 8/26/12. DB NUM ROOT values range from approximately 500,000 to 1,800,000.
- Fragmentation:** Variable-Length Segment Splits. Bar chart comparing HDAMVSD1 and HDAMVSD2. DB PCT NUM VLSEG SPLIT values are approximately 40% and 30% respectively.

The interface also includes a "Getting Started" sidebar on the left and a "Recommend" table on the right.

# IMS and DB2 Tools User Interface Strategy

Eclipse  
(development)

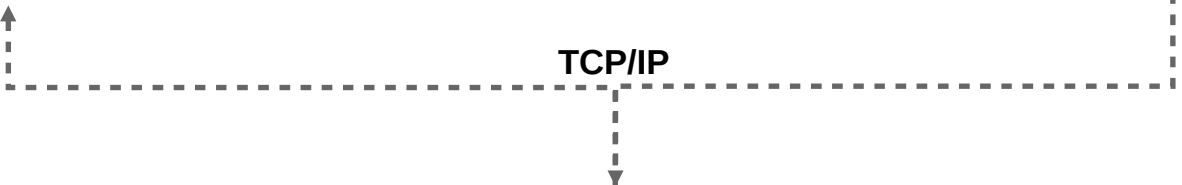
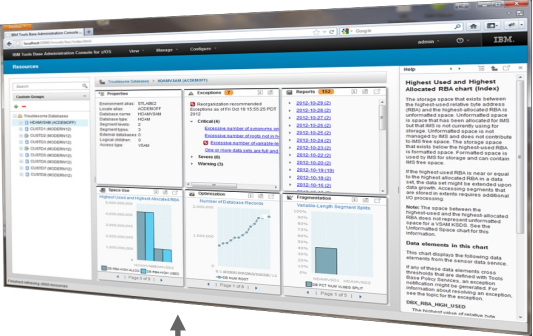


Developers

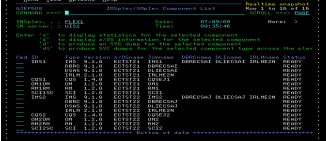


Administrators

Web Browser  
(administration)



ISPF

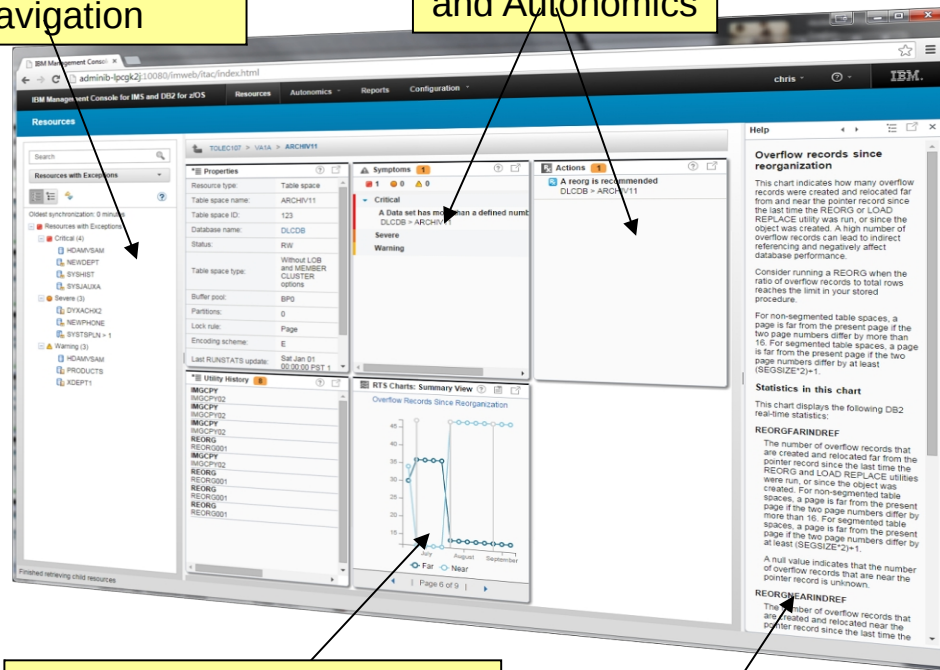


# IBM Management Console for IMS and DB2 for z/OS

- Provides a single, holistic easy-to-use interface to **manage IMS and DB2**
  - Zero-install **web-based interface**
  - **Consolidate** information from IMS, DB2 and tools for **the entire enterprise**
  - **Reduced time** for problem identification and resolution through **tight integration with IMS and DB2 Autonomics**
  - Dramatically **reduced learning curve** for new users of IMS and DB2
- Now available as a separate **no-charge** product (5655-TAC)
  - **Extensible** by growing number of products and solution packs adding additional value

Enterprise-wide Navigation

Object Health and Autonomics



Graphical Visualization of data not possible in ISPF

Integrated Help



# Dashboard based Design

- Current IMS Dashboards
  - IMSplex
  - IMS Subsystem
  - IMS Connect
  - Databases (HDAM/HIDAM/DEDDB/etc)
  - Partitions / Areas
  - Transactions
  - Programs
  - Routing Codes
  - Command Console
- Future Dashboards
  - Message Queues
  - IMS CF Structures
  - etc...
- Current DB2 Dashboards
  - Data Sharing Group
  - Subsystem
  - Database
  - Tablespace
  - Tablespace Partition
  - Indexspace
  - Indexspace Partition
- Future Dashboards
  - Tables
  - Indexes
  - Packages / Collections
  - etc...





# Holistic Dashboards of IMS Databases

IBM Tools Base Administration Console for z/OS

localhost:10080/imweb/itac/index.html

Resources

Troublesome Databases > HDMV SAM (ACDEMOFF)

Custom Groups

- Troublesome Databases
  - HDAMVSAM (ACDEMOFF)
  - CUSTD1 (MODERN12)
  - CUSTD2 (MODERN12)
  - CUSTD3 (MODERN12)
  - CUSTD4 (MODERN12)
  - CUSTD5 (MODERN12)
  - CUSTD6 (MODERN12)
  - CUSTD7 (MODERN12)
  - CUSTD8 (MODERN12)

Properties

Environment alias: STLABE2  
Locale alias: ACDEMOFF  
Database name: HDMV SAM  
Database type: HDAM  
Segment levels: 2  
Segment types: 3  
External databases: 0  
Logical children: 0  
Access type: VSAM

Exceptions 7

Reorganization recommended  
Exceptions as of Fri Oct 19 15:55:25 PDT 2012

Critical (4)

- Excessive number of synonyms on RAPs
- Excessive number of roots not in home blocks
- Excessive number of variable-length split segments
- One or more data sets are full and approaching the limit

Severe (0)

Warning (3)

Reports 152

- 2012-10-29 (2)
- 2012-10-28 (2)
- 2012-10-27 (2)
- 2012-10-26 (2)
- 2012-10-25 (2)
- 2012-10-24 (2)
- 2012-10-23 (2)
- 2012-10-22 (2)
- 2012-10-20 (2)
- 2012-10-19 (19)
- 2012-10-18 (2)
- 2012-10-16 (2)

Space Use

Number of Segments

DB NUM SEG	Number of Segments
HDMVSD1	~12,000,000
HDMVSD2	~10,000,000

Optimization

Number of Database Records

Date	DB NUM ROOT
8/11/12	~500,000
8/13/12	~600,000
8/15/12	~700,000
8/17/12	~800,000
8/19/12	~900,000
8/21/12	~1,000,000
8/23/12	~1,100,000
8/25/12	~1,200,000
8/27/12	~1,300,000
8/29/12	~1,400,000
8/31/12	~1,500,000
9/2/12	~1,600,000
9/4/12	~1,700,000
9/6/12	~1,800,000
9/8/12	~1,900,000
9/10/12	~2,000,000

Fragmentation

Variable-Length Segment Splits

DB PCT NUM VLSEG SPLIT	Percentage
HDMVSD1	~40%
HDMVSD2	~40%

Finished retrieving child resources

from Auto Discovery

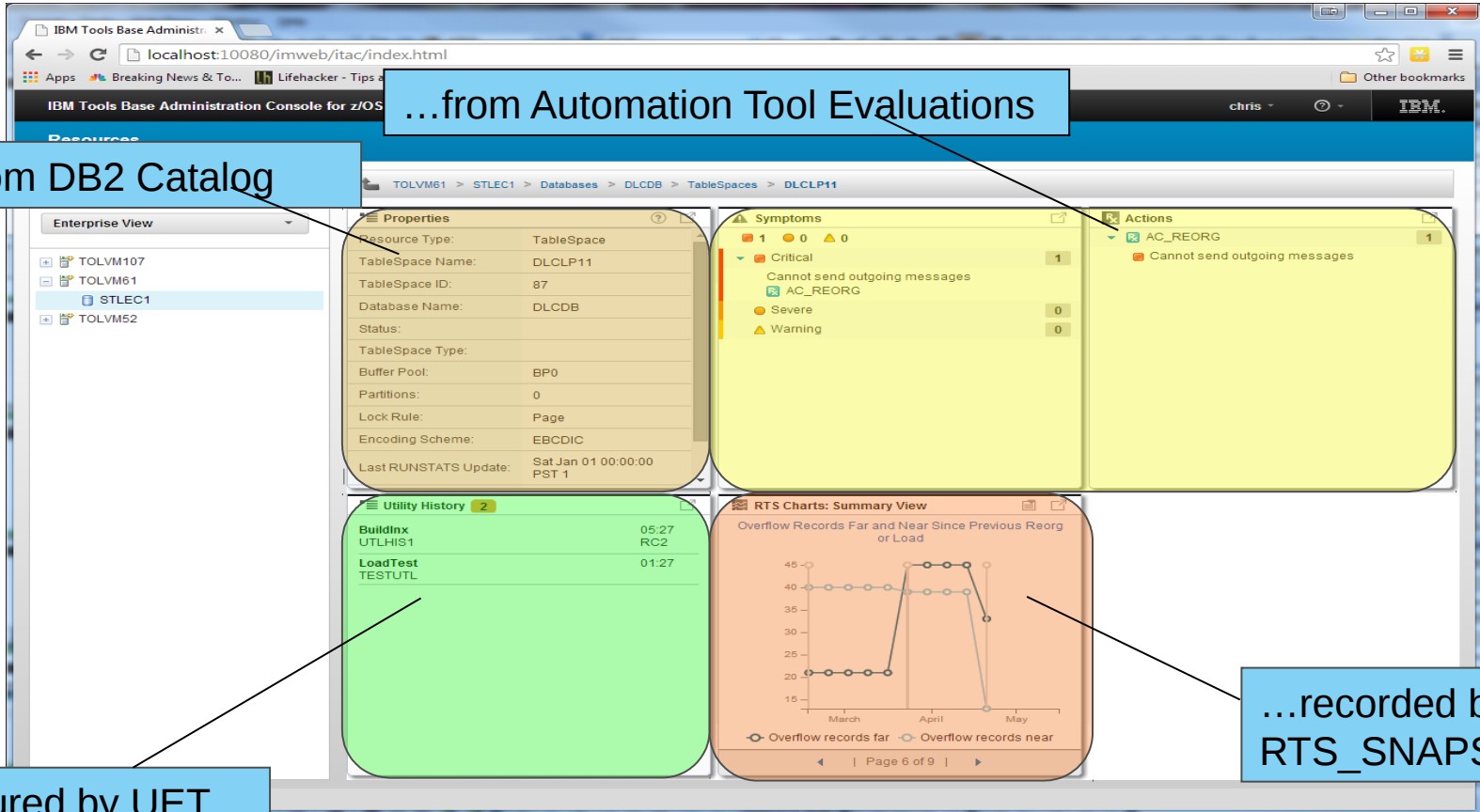
...from Autonomics Director

...from Various HP Tools

...from Sensors



# Holistic Dashboards of DB2 Objects



# Drill down on Exceptions from an Enterprise-wide View

IBM Management Console for IMS and DB2 for z/OS

Resources with symptoms

Summary

Resources	Overall Health	Critical	Severe	Warning	Actions
HDAMVSAM	■	4	0	3	1
DSNRPTAS	■	1	0	1	1
DSNR1EHL	■	1	0	1	1
DSNRSORT	■	1	0	1	1
DSNR1LDJ	■	1	0	1	1
DSNRPGRO	■	1	0	1	1
DSNR19JM	■	1	0	1	1
DSNR1AZM	■	1	0	1	1
DSNR1EHL	■	1	0	1	1
DBJ1AR0	■	1	0	0	0
DSNR1BXM					1
DSNRQUER					1
DSNR19JM					1
DSNR1AZM					1
DSNR1BXM					1
DSNRPTAS					1
DSNR1BXM					1
DSNRQUER					1

Total: 18 Selected: 0

Finished retrieving child resources

Synchronize action contacts each system pulling in exceptions from across the enterprise

Resource status, errors and recommendations are prioritized and presented in a simple summary with the ability to drill-down

# Control of Autonomics for IMS and DB2

The screenshot displays the IBM Management Console interface for IMS and DB2. The left sidebar contains navigation options: Object Profiles, Utility Profiles, Exception Profiles, Job Profiles, and Maintenance Windows. The main content area is titled 'DB2' and shows the configuration for a 'Maintenance Window'. The 'Maintenance Windows' list on the left includes 'WEEKDAY ONLINE REORGS' and 'WEEKEND MAINTENANCE WINDOW'. The 'Maintenance Window' details show the name 'WEEKDAY ONLINE REORGS', description 'Used for maintenance that doesn't require heavy resources or outages', and creation/update information. Below this is the 'Maintenance Period Schedule' table, which visualizes maintenance periods across a week.

**Maintenance Window Details:**

- Maintenance window name: WEEKDAY ONLINE REORGS
- Created by: sysadm
- Created: 2014-08-26 10:38:14.12
- Updated by: sysadm
- Last updated: 2014-08-26 11:01:26.51
- Description: Used for maintenance that doesn't require heavy resources or outages

**Maintenance Period Schedule:**

	Today	Day	4 Days	Week	Month	
2014	Aug 24, 2014	Aug 25, 2014	Aug 26, 2014	Aug 27, 2014	Aug 28, 2014	Aug 29, 2014
0:00		Period ID : 8	Period ID : 5	Period ID : 3	Period ID : 6	Period ID : 4
1:00						
2:00						
3:00						
4:00						
5:00						
6:00						
7:00						
8:00						
9:00						

Ability to view all Autonomics Profiles as well as define and visualize Maintenance Windows



# Integrated Help / Education

The screenshot displays the IBM Tools Base Administration Console for z/OS interface. The main content area is titled "Resources" and shows details for the "Troublesome Databases" section, specifically for "H DAMVSAM (ACDEMOFF)".

**Properties:**

- Environment alias: STLABE2
- Locale alias: ACDEMOFF
- Database name: HDAMVSAM
- Database type: HDAM
- Segment levels: 2
- Segment types: 3
- External databases: 0
- Logical children: 0
- Access type: VSAM

**Exceptions (7):**

- Reorganization recommended
- Exceptions as of Fri Oct 19 15:55:25 PDT 2012
- Critical (4):
  - Excessive number of synonyms on
  - Excessive number of roots not in h
  - Excessive number of variable-le
  - One or more data sets are full and
- Severe (0)
- Warning (3)

**Reports (152):**

- 2012-10-29 (2)
- 2012-10-28 (2)
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- 2012-10-24 (2)
- 2012-10-23 (2)
- 2012-10-22 (2)
- 2012-10-20 (2)
- 2012-10-19 (19)
- 2012-10-18 (2)
- 2012-10-16 (2)

**Charts:**

- Space Allocation:** A bar chart comparing "DB RBA HIGH ALLOC" and "DB RBA HIGH USED" for databases HDAMVSD1 and HDAMVSD2. The y-axis ranges from 0 to 5,000,000,000.
- Optimization:** A bar chart showing the "Number of Database Records" for HDAMVSD1 and HDAMVSD2. The y-axis ranges from 0 to 2,000,000.
- Fragmentation:** A bar chart showing "Variable-Length Segment Splits" for HDAMVSD1 and HDAMVSD2. The y-axis ranges from 0 to 100%.

**Integrated Help Window:**

### Highest Used and Highest Allocated RBA chart (Index)

The storage space that exists between the highest-used relative byte address (RBA) and the highest-allocated RBA is unformatted space. Unformatted space is space that has been allocated for IMS but that IMS is not currently using for storage. Unformatted space is not managed by IMS and does not contribute to IMS free space. The storage space that exists below the highest-used RBA is formatted space. Formatted space is used by IMS for storage and can contain IMS free space.

If the highest used RBA is near or equal to the highest allocated RBA in a data set, the data set might be extended upon data growth. Accessing segments that are stored in extents requires additional I/O processing.

**Note:** The space between the highest-used and the highest-allocated RBA does not represent unformatted space for a VSAM KSDS. See the Unformatted Space chart for this information.

**Data elements in this chart**

This chart displays the following data elements from the sensor data service.

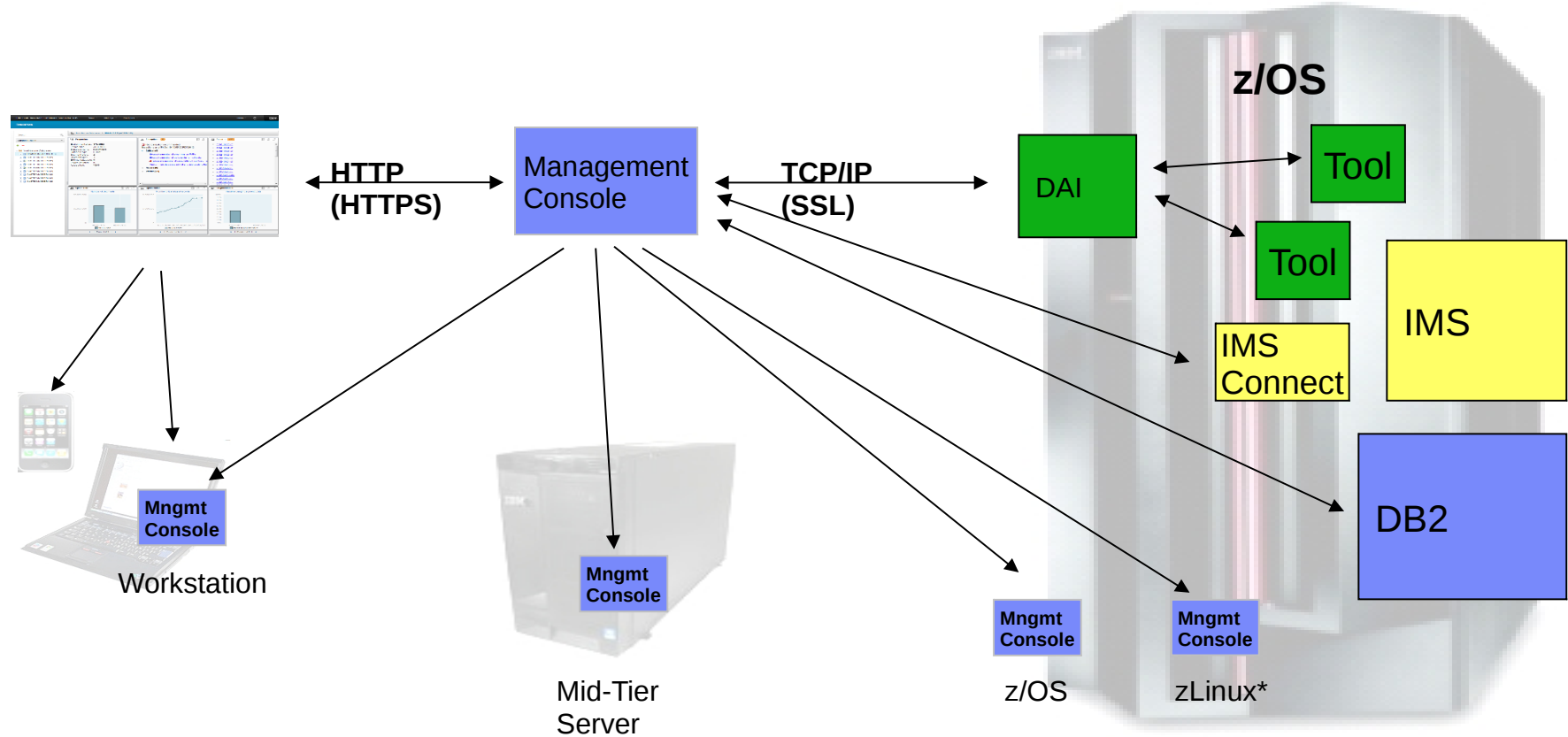
If any of these data elements cross thresholds that are defined with Tools Base Policy Services, an exception notification might be generated. For information about resolving an exception, see the topic for the exception.

**DBX\_RBA\_HIGH\_USED**

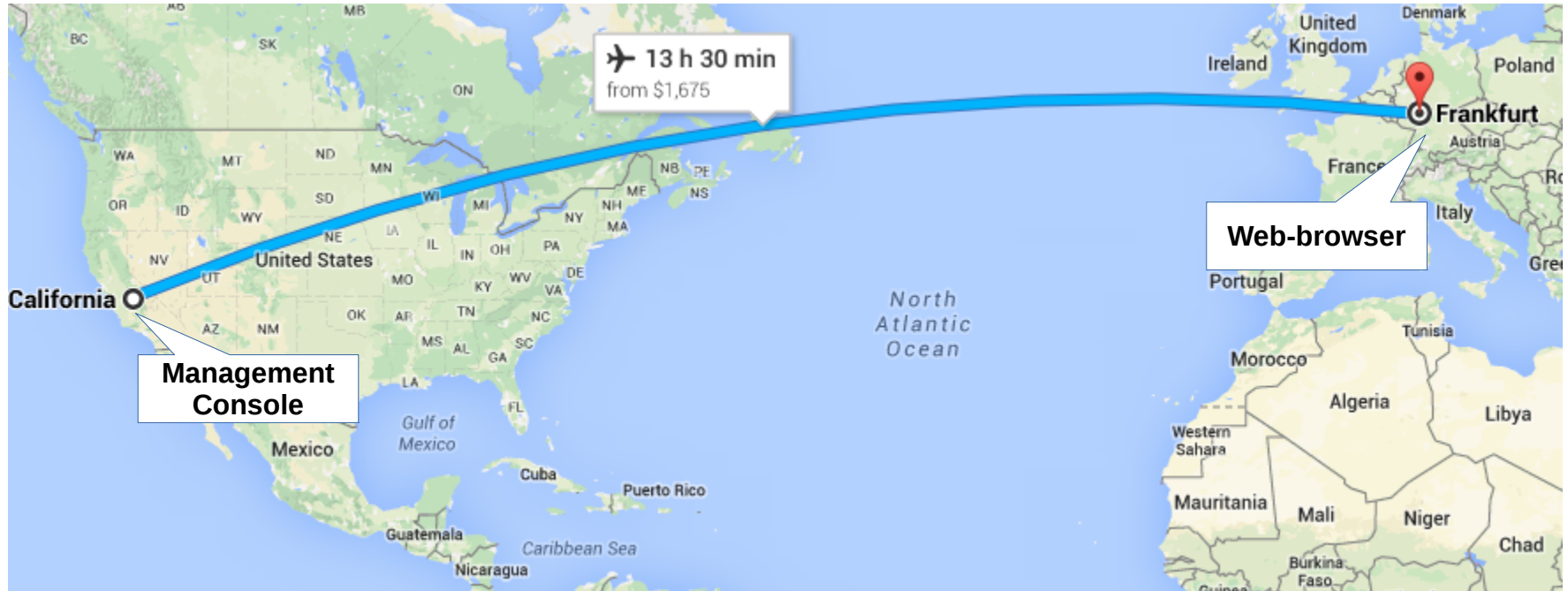
The highest value of relative byte



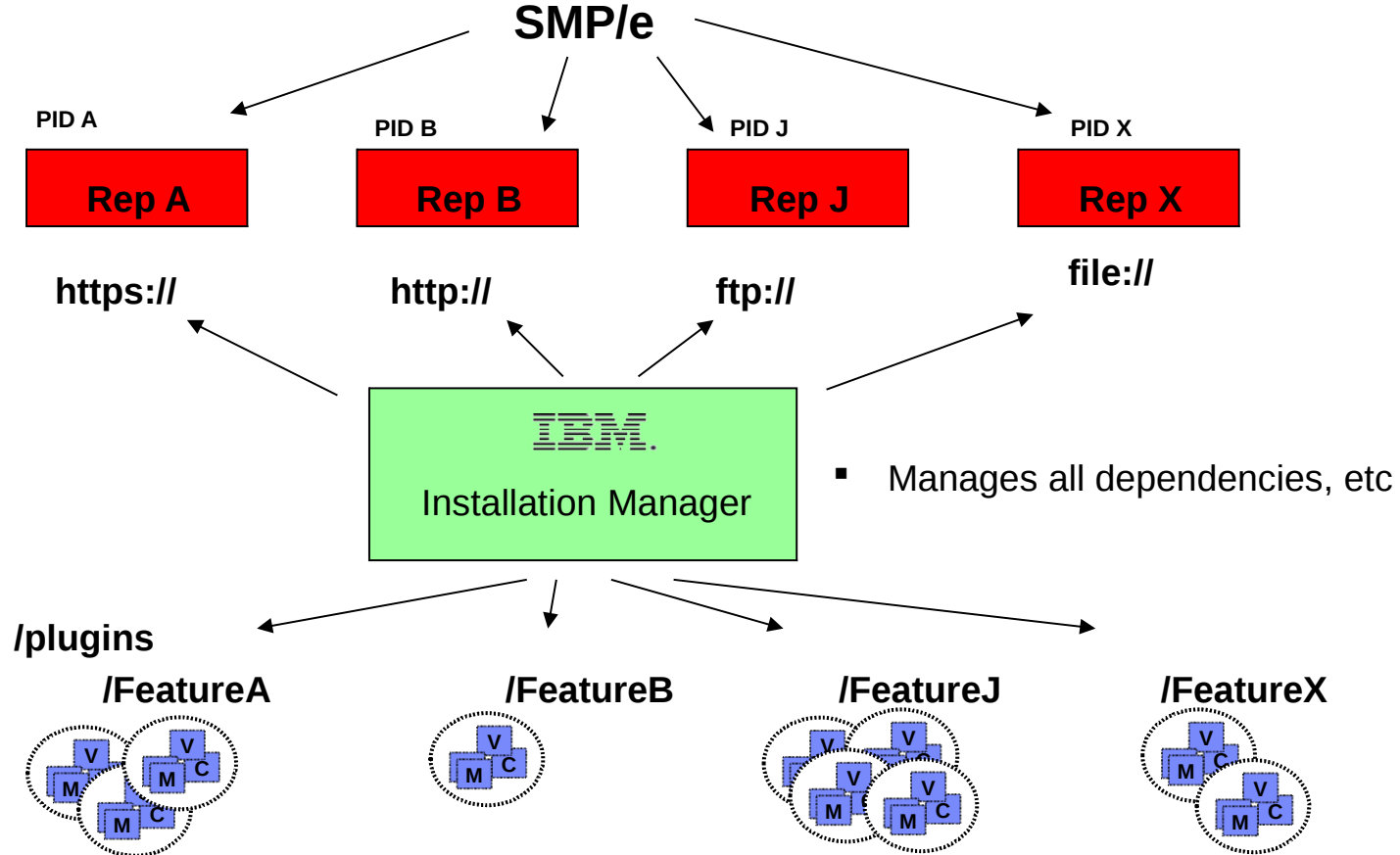
# Management Console Deployment



# Zero-install Web-based Administration



# Installation Manager (managing packages and dependencies)





# IMS



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# IMS Dashboards

- **Enterprise System View**
  - IMS Resource and IMSplex discovery
  - Hierarchical representation starting from the SYSPLEX to the IMS Resources
- **Enterprise Search**
  - Search across the entire enterprise
- **Visual Status**
  - Quickly see the status by color for IMS Resources
  - Hover and click status for reason codes and corrective actions
  - Filter IMS Resources
- **Manage IMS Resources**
  - Start and stop IMS Resources
  - Multi-select IMS Resources to manage and update
- **Resource Relationships**
  - View IMS resource relationships
  - At a glance, understand why a transaction is having a problem
- **Customize**
  - Change the column attribute defaults
- **Command Console**
  - Submit IMS commands
- **IMS Connect and IMS dashboard**



# Discovery

- **Minimal configuration**
  - Create an Environment
    - Add IMS Connects
- **Discovery**
  - IMSPLEXes
  - IMSPLEX Members
  - IMS Connect
  - IMS
  - Transactions
  - Databases
  - Programs
  - Routing Codes



# Configuration

**Environments**

Filter

+ -

- SYSPLEX1
- SYSPLEX2
- SYSPLEX3

Define Environment

Configure IMS Connect



Discovered PLEX1 & PLEX2

## IMS Connect

**✓ Connection validated and IMSplex disco...** 11:01 AM ✕

\* Host name or IP address: ?  
EC03127.VMEC.SVL.IBM.COM

\* Port:  
7777

\* IMSplex name ?  
PLEX1

Use SSL

\* Keystore name: ?

\* Keystore password:

\* Truststore name: ?

\* Truststore password:

Validate the connection and discover other IMSplexes by clicking the Validate button.

IMSplexes that you can associate with this connection.

- PLEX1
- PLEX2



# Discovering

Configuration

Deployment Assistance

## Environment

\* Name: ?

SYSPLEX1

30 characters maximum

Description:

255 characters maximum

\* Required

Save

Cancel

## Components ?

+ -

Name	Type	Status
PLEX1	IMS Operations Manager	✓
PLEX2	IMS Operations Manager	✓
EC03127.VMEC.SVL.IBM.COM	IMS Connect	✓

## IMS Operations Manager

100%

Discovering Routing Codes on IMS2 ...  
Discovering Routing Codes on IMS2 ...  
Discovering Transactions on IMS1 ...  
Discovering Transactions on IMS1 ...  
Discovering Programs on IMS1 ...  
Discovery has completed

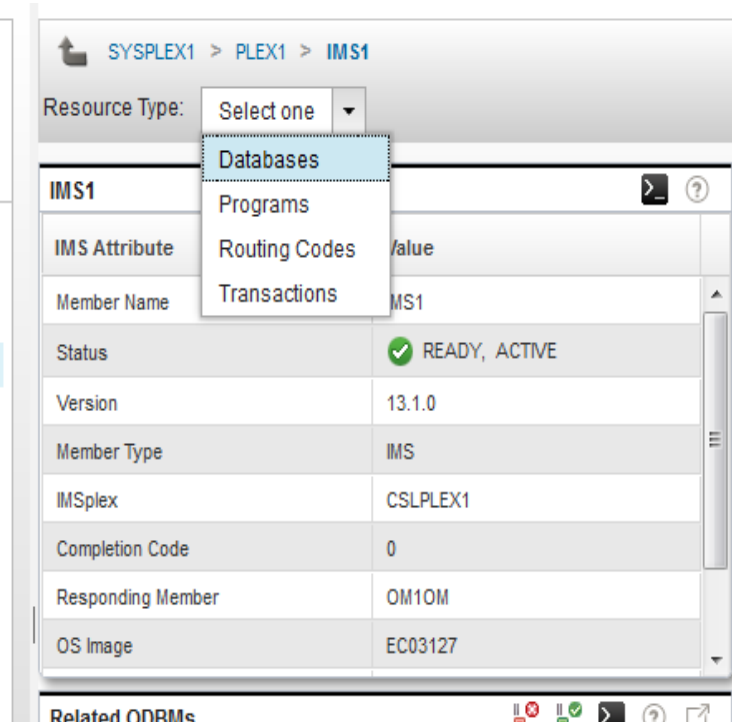
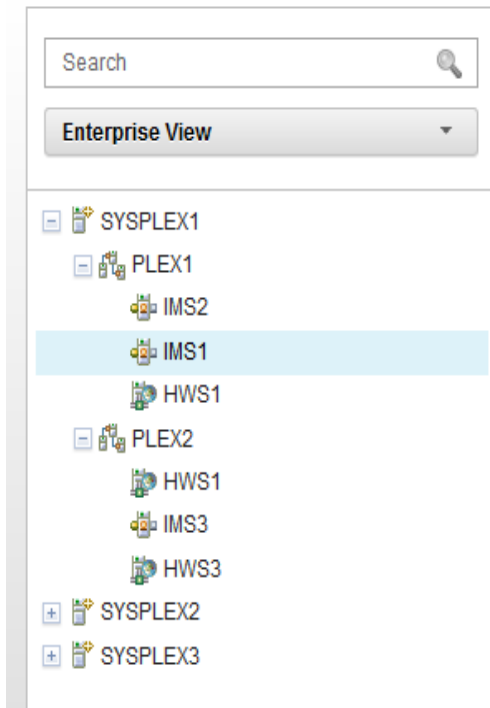
Discover

Discovering Resources



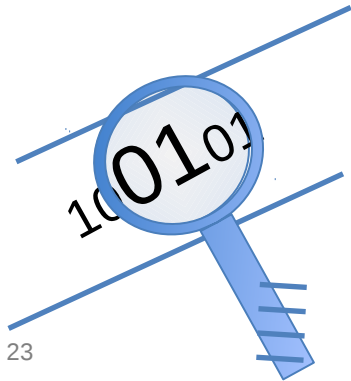
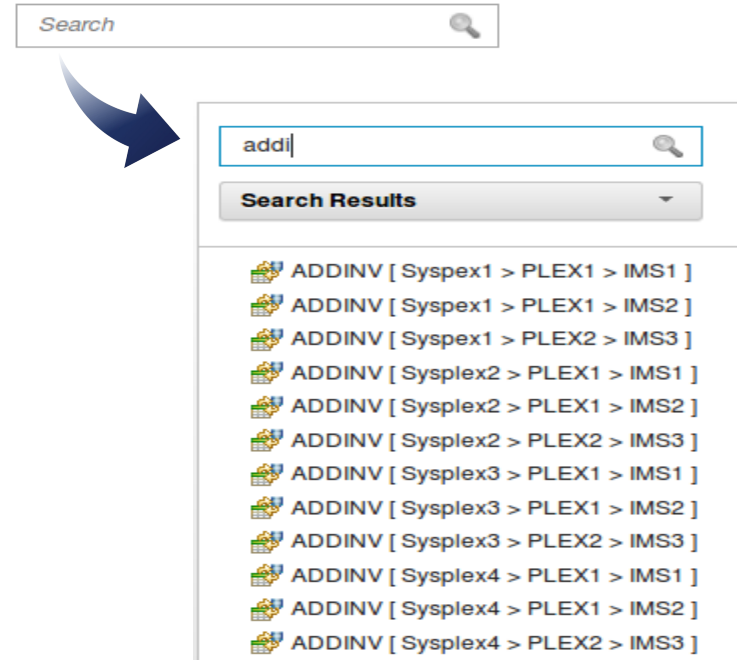
# Enterprise View

- Hierarchical view of IMS Resources
- Logically grouped and auto discovered
- Quickly navigate from one resource to another



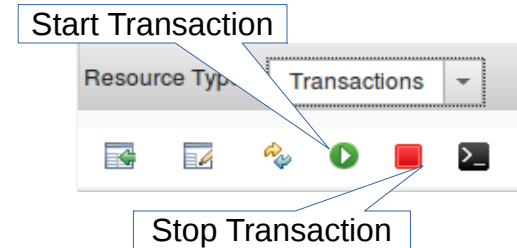
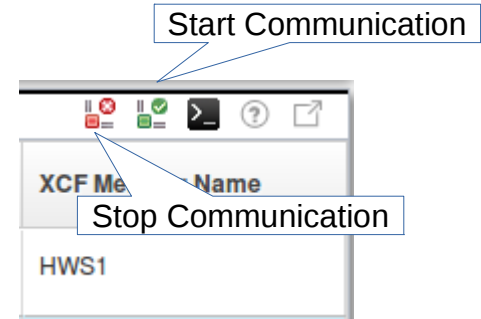
# Enterprise Search

- Search discovered resources by name
  - Transactions
  - Programs
  - Routing Codes
  - Databases
- Type-ahead search
- Visually display resource location
  - SYSPLEX > IMSPLEX > IMS



# Manage IMS

- View IMS statuses at-a-glance
- Start and stop
  - Transactions, Programs, Routing Codes, Databases
- Start/Stop communication link
  - IMSplex, Datastore, Ports, ODBM, Remote IMS Connect
- Update resources graphically
  - Batch and single mode
- Help panels for reason codes and corrective actions
- Filter displayed results



✓ Operations Manager successfully executed the command.





# Manage IMS - Database

Resource Type: Databases

No filter applied

Database Name	Database Type	Status	Data Set Access Type	Area Name	Definition Type	Member Name
<input checked="" type="checkbox"/> AUTODB	DL/I					IMS1
<input type="checkbox"/> AUTODBH						IMS1
<input type="checkbox"/> BANKATMS						IMS1
<input type="checkbox"/> BANKFNCL						IMS1
<input type="checkbox"/> BANKLDGR						IMS1
<input type="checkbox"/> BANKTERM						IMS1
<input checked="" type="checkbox"/> BE2PCUST	DL/I					IMS1
<input type="checkbox"/> BE3ORDER	DL/I					IMS1
<input type="checkbox"/> BE3ORDRX	DL/I					IMS1
<input type="checkbox"/> BE3PARTS	DL/I					IMS1
<input type="checkbox"/> BE3PSID1	DL/I	<input checked="" type="checkbox"/> Normal	EXCL		MODBLKS	IMS1

### Stop Databases

Select the options necessary for your database stop action

Stop

- Access
- Scheduling
- Updates

Lock On

Scope

- All
- Active

Options

- Forced End of Volume (FEOV)
  - FEOV
  - No FEOV
- Leave Randomizer loaded (DEDB)
- Set Prevent Further Authorization (PFA)

OK Cancel

Multi-select

Interactive



# Manage IMS - Resource View

Resources

Enterprise Search

Search

Enterprise View

- SYSPLEX1
  - PLEX1
    - IMS2
    - IMS1
    - HWS1
  - PLEX2
    - HWS1
    - IMS3
    - HWS3
- SYSPLEX2
- SYSPLEX3

SYSPLEX1 > PLEX1 > IMS1 > Transactions

Resource Type: Transactions

Manage Resources



No filter applied

	Transaction Code	Status	Commit Mode	Conversational	Fast Path	Region Class	Limit Count	Message Queue Count	IMSplex Member Name
<input type="checkbox"/>	3270S	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	A1111111	✔ Normal	SNGL	Y	N	1	65535	0	IMS1
<input type="checkbox"/>	A3270	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	ADDINV	✔ Normal	MULT	N	N	4	2	0	IMS1
<input type="checkbox"/>	ADDPART	✔ Normal	MULT	N	N	4	2	0	IMS1
<input type="checkbox"/>	AOBMP	✔ Normal	SNGL	N	N	23	65535	0	IMS1
<input type="checkbox"/>	AOP	✔ Normal	SNGL	N	N	4	4	0	IMS1
<input type="checkbox"/>	AP11	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	AP12	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	AP14	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	AP17	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	APOL11	✔ Normal	MULT	N	N	1	65535	0	IMS1
<input type="checkbox"/>	APOL12	✔ Normal	MULT	N	N	1	65535	0	IMS1

Visual Status

Multi-select



# Manage IMS - Help

- Hover help
- Status by color
- Help panels

Status

	Transaction Code	Status
<input type="checkbox"/>	3270S	✖ STOQ,STOSCHD,AFFIN
<input type="checkbox"/>	A1111111	✖ STOQ,STOSCHD,AFFIN
<input type="checkbox"/>	A3270	⚠ TRA

Hover Help

Help Panel

Conversational (Y) or non-conversational (N) transaction.

Transaction Code	Status
3270S	✖ STOQ,STOSCHD,AFFIN
A1111111	✖ STOQ,STOSCHD,AFFIN
A3270	⚠ TRA

Conversational Y

Help

**IMS™ region status: Available**

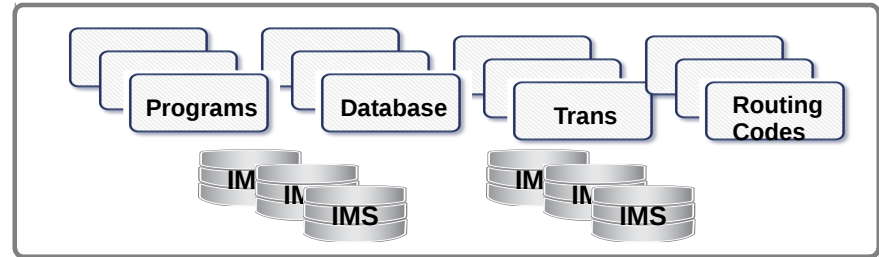
The status code generally indicates that the region is either active, available to schedule an application, or waiting for work.

- [ACTIVE-RRS status code](#)  
The z/OS® Resource Recovery Services (RRS) enablement is active.
- [ACTIVE-XCF status code](#)  
The z/OS cross-system coupling facility (XCF) enablement is active.



# IMS Resource Relationships

- Visually see how resources are related
  - Which database is this program accessing?
- Visually see how communication is established for IMS and IMS Connect
  - Which ODBM is connected to IMS?
  - Which ODBM is connected to IMS Connect?
  - More.....
    - Remote IMS Connect
    - RECON's
    - Datastores
    - Ports
    - XCF Groups
    - Regions.....



# Resource Relationship - Transaction

IBM Management Console for IMS and DB2 for z/OS    Resources    Autonomics    Reports    Configuration    admin    IBM

**Resources**

Search

Enterprise View

- SYSPLEX1
  - PLEX1
    - IMS2
    - HWS2
    - IMS1
    - HWS1
  - SYSPLEX2
  - SYSPLEX3
    - PLEX1
      - IMS2
      - IMS1
      - HWS1
      - HWS2
    - PLEX2
      - TEST

**Transaction: EMHTX2**

IMS Attribute	Value
Transaction Code	EMHTX2
Status	✓
Conversational	N
Commit Mode	SNGL
Fast Path	E
Class	1
Limit Count	0
Message Queue Count	0
IMSplex Member Name	IMS2
PSB	EMHPSB2
AOI Command Support	N
Completion Code	0
Definition Type	MODBLKS
EMH Buffer Size	0

**Related Program**

IMS Attribute	Value
Program Name	EMHPSB2
Status	✓
BMP Program	N
Fast Path	E
Definition Type	MODBLKS
Dynamic Option	N
Member	IMS2
Local Scheduled Type	PARALLEL
Region type	IFP
Completion Code	0
Generated PSB	N
Local Resident	N
Time Created	2014.201 17:21:33.63
Transaction Statistics	N

**Related Routing Code**

IMS Attribute	Value
Routing Code	EMHTX2
Status	✓
Program	EMHPSB2
Inquiry	N
Time Last Accessed	
Definition Type	MODBLKS
Time Last Updated	
Time Last Imported	
Time Created	2014.201 17:21:34.30
Completion Code	0
Member	IMS2

**Related Databases**

Database Name	Database Type	Status	Data Set Access Type	Definition Type	Member	Time Last Accessed	Time Last Updated	Area Name	Run Time Resident	Time Last Imported	Completion Code	Time Created
MSDBLM01	MSNR	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM02	MSNR	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM03	MSNR	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM04	MSNR	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM06	MSRF	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM08	MSRD	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM07	MSRD	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM08	MSNR	✓	EXCL	MOOBLKS	IMS2				Y		0	2014.201 17:21:33.64
----	----	✓	----	----	----				..		-	2014.201

**Databases**



# Resource Relationship - IMS Connect

The screenshot displays the IBM Management Console interface for IMS and DB2 for z/OS. The main navigation bar includes 'Resources', 'Autonomics', 'Reports', and 'Configuration'. The current view is 'Resources' for the path 'SYSPLEX1 > PLEX1 > HWS1'. The interface is divided into several panels:

- IMS Connect:** A table showing IMS attributes for HWS1.
- Datastores:** A table showing related data stores (IMS1, IMS2, IMS3) with their status (ACTIVE) and XCF member names.
- Ports:** A table showing related ports (9999, 7777, 6666D) with their status (ACTIVE) and total active clients.
- IMSplexes:** A table showing related IMSplexes (PLEX1, PLEX2) with their status (ACTIVE) and XCF member names.
- ODBM:** A table showing related ODBMs (ODBM1OD, ODBM2OD) with their status (REGISTERED) and data store aliases.
- Remote IMS Connect:** A table showing related remote IMS connects (HWS3) with their status (ACTIVE) and IP addresses.

Annotations with blue boxes and arrows point to the following elements:

- IMS Connect:** Points to the top of the IMS Connect table.
- Datastores:** Points to the top of the Related Data Stores table.
- Ports:** Points to the top of the Related Ports table.
- IMSplexes:** Points to the bottom of the Related IMSplexes table.
- ODBM:** Points to the bottom of the Related ODBMs table.
- Remote IMS Connect:** Points to the bottom of the Related Remote IMS Connects table.



# Resource Relationship – IMS

IBM Management Console for IMS and DB2 for z/OS    Resources    Autonomics    Reports    Configuration    admin    IBM

**Resources**

Search [ ]    Enterprise View [ ]

SYSPLEX1 > PLEX1 > **IMS2**    **IMS 2**    **XCF Group**    **Structures**

**IMS2**

IMS Attribute	Value
Member Name	IMS2
Status	✓ READY, ACTIVE
Version	13.1.0
Member Type	IMS
MSplex	CSLPLEX1
Completion Code	0
Responding Member	OM10M
OS Image	EC03126
Job Name	IMS2
Member Sub Type	DBDC

**OTMA XCF Group - XCFGRP1**

Member Name	XCF Status	User Status
-IMS2	✓ ACTIVE	✓ SERVER
-HWS1B	✓ ACTIVE	✓ ACCEPT TRAFFIC
-HWS2B	✓ ACTIVE	✓ ACCEPT TRAFFIC

**Related Structures**

Structure Name	Structure Type	Status
IMSMGQ01	MSGQ	✓ CONNECTED, AVAILABLE
IMSEMHQ01	EMHQ	✓ CONNECTED, AVAILABLE

**Related ODBMs**

Member Name	Data Store Connection Status	Current Thread Count	Data Store Alias Name
<input type="checkbox"/> ODBM2OD	✓ STARTED	0	ALI2
<input type="checkbox"/> ODBM1OD			

**Related Regions**

Region ID	Job Name	Region Type	Status
3	MPP2	TP	✓ WAITING
2	MPP1	TP	✓ WAITING
1	TRANBMP1	BMP	⚠ WAIT-INPUT

**Related RECON Data Sets**

IMS Name:	IMS1
Minimum Version:	11.1
RECON 1 Data Set Name:	IMSTESTS.DSHR.RECON1
RECON 1 Data Def Name:	RECON1
RECON 1 Status:	COPY1
RECON 1 Data Set Name:	IMSTESTS.DSHR.RECON2
RECON 2 Data Def Name:	RECON2
RECON 2 Status:	COPY2
RECON 1 Data Set Name:	IMSTESTS.DSHR.RECON3
RECON 3 Data Def Name:	RECON3
RECON 3 Status:	SPARE
RECON Level:	V13R1

**IMS 2**    **ODMB**    **Regions**    **RECON**

# Messages and Commands Displayed

The screenshot displays the IBM Operations Manager interface for a transaction. The breadcrumb navigation shows the path: EC03127 > PLEX1 > IMS1 > Transactions. The resource type is set to 'Transaction'. A search bar and 'Enterprise View' dropdown are visible in the top left. The main content area shows a list of transactions with columns for Transaction Code, Status, Commit Mode, Conversational, and Fast Path. Three transactions are listed: 3270S (Status: STOQ,STOSCHD,AFFIN), A1111111 (Status: STOQ,STOSCHD,AFFIN), and A3270 (Status: TRA). Below the table, a message box indicates that the Operations Manager Member returned a non-zero return code. The message details include the member name (IMS2), the command (CMD(UPDATE TRAN NAME(3270S) SET(CMTMODE(SNGL), CONV(Y), FP(P))) ROUTE(IMS2)), and the return code (00000008). A reason code (00002105) and reason text (conv(y) requires spasz and spatrunc) are also provided. A link to 'Codes for IMS commands routed through OM' is included. A callout box shows the command: IMS Command: CMD(QUERY TRAN NAME(\*)SHOW(ALL))ROUTE(IMS1) with a 'Learn more' link. Another callout box shows the command: IMS Command..... : CMD(UPDATE TRAN NAME(A3270) STOP(TRACE,)) ROUTE(IMS1). A third callout box shows the URL: www-01.ibm.com/support/knowledgecenter and the IBM Knowledge Center logo.

Search

Enterprise View

EC03127

PLEX1

HWS1

EC03127 > PLEX1 > IMS1 > Transactions

Resource type: Transaction

Operations Manager successfully executed the command.

IMS Command..... : CMD(UPDATE TRAN NAME(A3270) STOP(TRACE,)) ROUTE(IMS1)

Transaction Code	Status	Commit Mode	Conversational	Fast Path
3270S	✘ STOQ,STOSCHD,AFFIN	MULT	N	N
A1111111	✘ STOQ,STOSCHD,AFFIN	SNGL	Y	N
A3270	⚠ TRA	MULT	N	N

Operations Manager Member returned a non-zero return code.

Member Name..... : IMS2  
 IMS Command..... : CMD(UPDATE TRAN NAME(3270S) SET(CMTMODE(SNGL), CONV(Y), FP(P))) ROUTE(IMS2)  
 Return Code..... : 00000008  
 Reason Code..... : 00002105  
 Reason Text..... : conv(y) requires spasz and spatrunc  
 Reason Message. : [Codes for IMS commands routed through OM](#)

IMS Command: CMD(QUERY TRAN NAME(\*)SHOW(ALL))ROUTE(IMS1)  
[Learn more](#)

www-01.ibm.com/support/knowledgecenter

IBM Knowledge Center





# IMS Command Console – Text View

EC03127 > PLEX1 > Command Console

**Enterprise Command Routing**

IMS Command: DIS OTMA

Sysplex: EC03127 IMSplex: PLEX1 Route: (\*) Route All

**Command History**

Submit Clear History

---

QUERY IM... x QUERY PG... x DIS OTMA... x

Results: QUERY PGM NAME(\*) SHOW(ALL)...

**Tabbed Results**

PGM	MBR	CC	RGNT	BMPT	FP	DOPT	GPSB	RSDNT	LRSNT	TLS	LANG	SCHD
AD2CONV	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
AD2TP	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
APOL1	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
AUTOGSAM	IMS2	0	JBP	Y	N	N	N	N	N	N		SERIAL
AUTPSB1	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
AUTPSB1H	IMS2	0	MPP	N	N	N	N	N	N	N		PARALLEL
AUTPSB1I	IMS2	0	MPP	N	N	N	N	N	N	N		PARALLEL
AUTPSB11	IMS2	0	JMP	N	N	N	N	N	N	N		PARALLEL
AUTPSB2	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
AUTPSB3	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
AUTPSB4	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
AUTPSB5	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
AUTPSB6	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
AUTPSB7	IMS2	0	JBP	Y	N	N	N	N	N	N		SERIAL
A11APP	IMS2	0	JMP	N	N	N	N	N	N	N		SERIAL
A3270	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
BANKBMP	IMS2	0	BMP	Y	N	N	N	N	N	N		SERIAL
BANKFPP	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
BANKIFP	IMS2	0	IFP	N	E	N	N	N	N	N		SERIAL
BANKMPP	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
BIBPSB	IMS2	0	JMP	N	N	N	N	N	N	N		SERIAL
BMAPJK11	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
BMAPJK21	IMS2	0	MPP	N	N	N	N	N	N	N		SERIAL
BMPFPE01	IMS2	0	BMP	Y	N	N	N	N	N	N		PARALLEL
BMPFPE02	IMS2	0	BMP	Y	N	N	N	N	N	N		PARALLEL
BMPFPE03	IMS2	0	BMP	Y	N	N	N	N	N	N		PARALLEL
BMPFPE04	IMS2	0	BMP	Y	N	N	N	N	N	N		PARALLEL
BMPFPE05	IMS2	0	BMP	Y	N	N	N	N	N	N		PARALLEL

**Dynamic Resource Detection**

Message

Message: .....Operations Manager successfully executed the command.

Command: .....CMD(QUERY PGM NAME(\*) SHOW(ALL)) ROUTE(\*)

Command Routed: ..... (\*)

Time Submitted: ..... 12/3/2015 @ 22:48:3

**Print Results**

View Grid View Text Print Result



# IMS Command Console – Grid View

EC03127 > PLEX1 > Command Console

\* IMS Command DIS OTMA

\* Sysplex EC03127 \* IMSplex PLEX1 Route (\*) Route All **Submit** Clear History

QUERY IM... x QUERY PG... x DIS OTMA... x

Results: QUERY PGM NAME(\*) SHOW(ALL)...

No filter applied

PGM	MBR	CC	CCTXT	RGNT	BMPT	FP	DOPT	GPSB	RSDNT	LRSNT	TLS	LANG	SCHD	LSTT
AD2CONV	IMS2	0			N	N	N	N		N	N		SERIAL	
AD2TP	IMS2	0		MPP	N	N	N	N		N	N		SERIAL	
APOL1	IMS2	0		MPP	N	N	N	N		N	N		SERIAL	
AUTOGSAM	IMS2	0		JBP	Y	N	N	N		N	N		SERIAL	
AUTPSB1	IMS2	0		BMP	Y	N	N	N		N	N		SERIAL	
AUTPSB1H	IMS2	0		MPP	N	N	N	N		N	N		PARALLEL	NOTIF
AUTPSB1I	IMS2	0		MPP	N	N	N	N		N	N		PARALLEL	NOTIF
AUTPSB11	IMS2	0		JMP	N	N	N	N		N	N		PARALLEL	
AUTPSB2	IMS2	0		BMP	Y	N	N	N		N	N		SERIAL	
AUTPSB3	IMS2	0		BMP	Y	N	N	N		N	N		SERIAL	
AUTPSB4	IMS2	0		BMP	Y	N	N	N		N	N		SERIAL	

Message

**View Grid** View Text Print Result



# Update Resources

Edit Attributes

No filter applied

Transaction Code	Status
<input checked="" type="checkbox"/> 3270S	<input checked="" type="checkbox"/> AFFIN
<input checked="" type="checkbox"/> A1111111	<input checked="" type="checkbox"/> AFFIN

Batch Support

<input type="checkbox"/>	BATCH-EDIT	MULT	N	N	
<input checked="" type="checkbox"/>	3270S	MULT	N	N	123
<input checked="" type="checkbox"/>	A1111111	SNGL	Y	N	1

Single Edit

Single Edit **Batch Edit** Submit Updates

Transaction Code	Commit Mode	Conversator	Fast Path	Region Class	Limit Count
<input type="checkbox"/> 3270S	MULT	N	N	123	65535
<input type="checkbox"/> A1111111	SNGL	Y	N	1	65535

Version Specific Attributes



# View Resources from the IMSplex

Search

Enterprise View

EC03127 > PLEX1 > Transactions

Resource type: Transactions

Transactions, Programs, Routing Codes, Databases

No filter applied

IMSplex Level Resources

Transaction in IMS1 & IMS2

		Commit Mode	Conversational	Fast Path	Region Class	Limit Count	Message Queue Count	IMSplex Member Name
3270S	✓	MULT	N	N	1	65535	0	IMS2
3270S	✓ AFFIN	MULT	N	N	123	65535		IMS1
A1111111	✓	SNGL	Y	N	1	65535	0	IMS2
A1111111	✓ AFFIN	SNGL	Y	N	1	65535	0	IMS1
A3270	✓	MULT	N	N	1	65535	0	IMS2
A3270	✓	MULT	N	N	1	65535	0	IMS1



# Filtering Results

Filtered by Commit Mode

**Filter**

Match

Rule 1

Column:

Condition:

Value:

Transaction Code	Status	Commit Mode
3270S	✓ AFFIN	MULT
A3270	✓	MULT

- contains**
- equal
  - starts with
  - ends with
  - does not equal
  - does not contain
  - does not start with
  - does not end with
  - is empty



# IMS & DB2 Autonomics



# The Growing z/OS Skills Gap

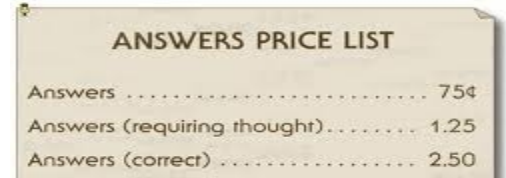


- Expert IMS & DB2 z/OS skills are dwindling
  - Experienced DBAs and SysProgs continue to retire
  - New DBAs and SysProgs take years to become “experienced”
  - Industry wide – modern employees spend less time in a single role
    - Becoming less likely to find as many 25+ year experienced DBAs and SysProg
- Yet, the need for expert DBA / SysProg skills is growing
  - Demands for 24x7 high performance operation continue to increase
  - Allowed outage windows are shrinking and are less frequent
    - Maintenance done in those windows is more important than ever
  - Increasing system complexity makes planning, maintaining, and troubleshooting more difficult and time consuming
- DBAs / SysProgs must become more efficient, more quickly



# IBM Tools Answer...

- Autonomics
  - Automate the routine collection of data
  - Automate the simple analysis of this data
  - Automate the obvious decisions based off this analysis
  - Automate the straight-forward execution of decisions
- Advanced Graphical Interfaces
  - Consolidate and simplify information from various sources
  - Simplify the presentation of complex information (visuals)
  - Shorten the learning curve (integrated assistance and doc)
- Convergence of our Tools
- IBM Tools start working together and leverage each others functions
  - “Sum is greater than the total of its parts”



ANSWERS PRICE LIST

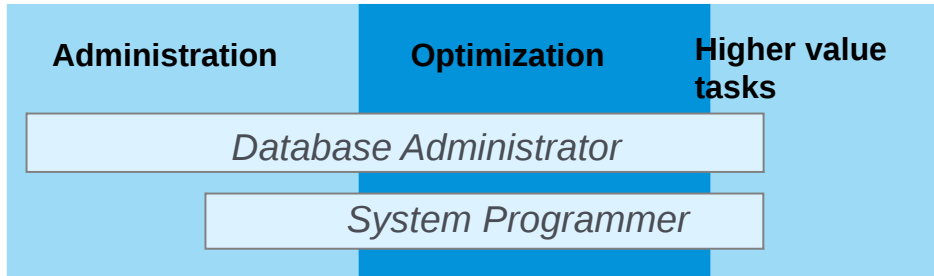
Answers .....	75¢
Answers (requiring thought) .....	1.25
Answers (correct) .....	2.50



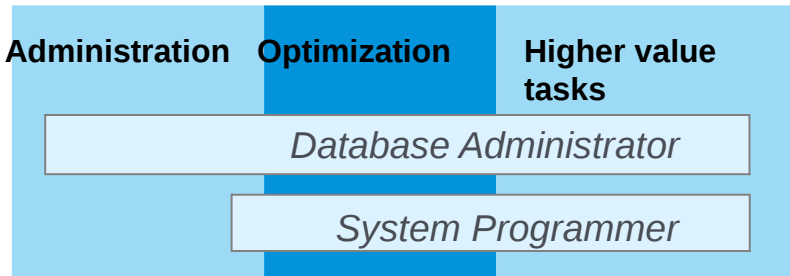


# The Value of Autonomics

## Today



## Target: IMz Tools enables productivity

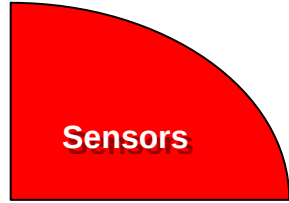


...the essence of autonomic computing is system self-management, delivering better system behavior and **freeing administrators from low-level task management.**

Source: Wikipedia, Oct 2014, [http://en.wikipedia.org/wiki/Autonomic\\_computing](http://en.wikipedia.org/wiki/Autonomic_computing)



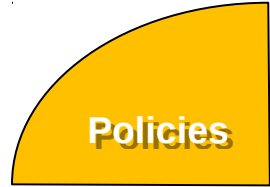
# Sensors: Collecting the Basic Information You Need



- Statistical point-in-time sensor data on your FF/FP Databases
  - Stored in IMS Tools Knowledge Base repository
  - Historically maintained per user specifications
  - Over 60 / 70 separate data elements related to space usage, optimization, and fragmentation
    - Data set extents, DASD volume usage, data set free space, roots distribution, RAP usage, CI/CA splits, and IMS free space, etc...
- Two methods of collection:
  1. Standalone database Sensor utilities for full-function and Fast Path databases
  2. Integrated with existing IMS Tools
- Integrated Tools support
  - High Performance Image Copy, High Performance Pointer Checker
  - Fast Path Analyzer, Fast Path Online Pointer Checker



# Policies: Using Sensor Data to Make Decisions



- Policy definitions are used to evaluate specific database states
  - Threshold values are compared against sensor data for a given database or group of databases
  - When thresholds are met or exceeded, exceptions occur
- Works “out of the box”
  - Ships with predefined policies and threshold values
  - Full ISPF interface provided for policy management
- Customizable to fit your shop
  - You can define your own sets of threshold values
  - Customize the messages sent when exceptions do occur
  - Specify who receives which messages and how
    - WTO, e-mail, or text



# Automation: Delivering on our Vision



Automation

- IBM Tools Autonomics Director 1.3 (Passive)
  - Automates collection and analysis of Sensor Data
  - Recommends when databases should be reorganized
    - With email or text notifications
  - Provides a scheduling feature that allows you to control how frequently sensor data is collected and how frequently policies are evaluated
  - Flexible scheduling around pre-defined PEAK times
- IBM Tools Autonomic Director 1.4 (Active)
  - Actively initiate recommended actions on user-defined database groups
    - Discovery feature for identifying related database groups
    - Ability to manage and coordinate reorganization of multiple IMS database groups as if reorganizing a single database
    - Flexible scheduling only in pre-defined Maintenance windows



# IMS Autonomics

DEDBJ001 (EC01053 > \$IMS13)

View DBD Map

### Summary

Resource	Type	Overall	Critical	Severe	Warning	Recommendations	Reports
DEDBJ001 (EC01053 > \$IMS13)	DEDB	<span style="color: orange;">●</span>	0	1	0	0	6
DBJ1AR0	DEDB	<span style="color: orange;">●</span>	0	1	0	0	1
DBJ1AR1	DEDB	<span style="color: green;">◆</span>	0	0	0	0	1

### Properties

Environment Name:	EC01053
Locale Alias:	\$IMS13
Database Name:	DEDBJ001
Database Type:	DEDB
Status on IMS2 / PLEX1:	✓
Status on IMS1 / PLEX1:	✓
Status on IMS3 / PLEX2:	✓
Data Set Access Type:	UPD
Access Method:	VSAM

### Exceptions 1

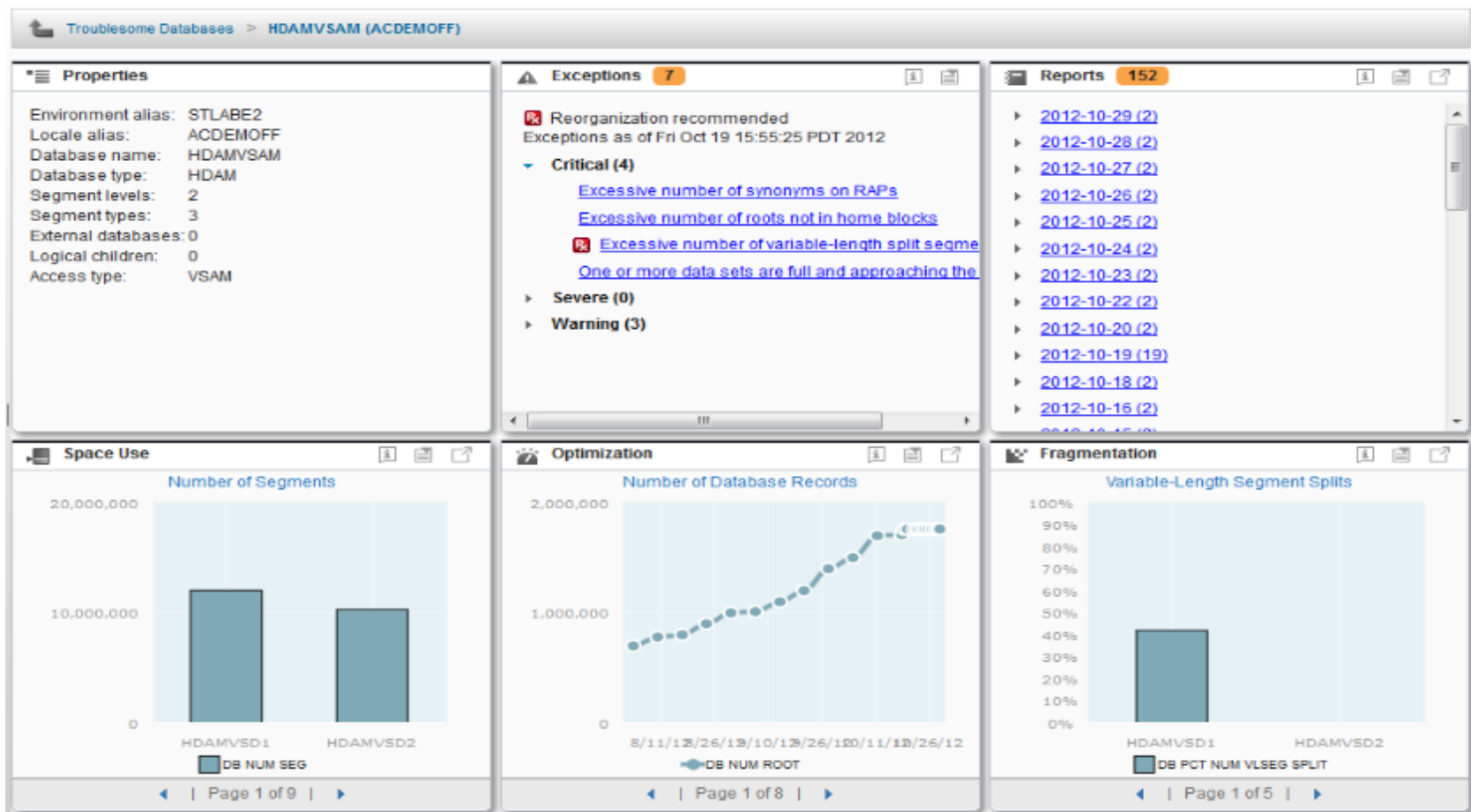
- Actions (0)
- ▼ Critical (1)
  - [Excessive number of RAP CIs that use overflow](#)
- Severe (0)
- Warning (0)

### Reports 6

- ▶ [2014-09-28 \(6\)](#)



# IMS Automonomics



# DB2 Utilities Solution Pack 2.1



- **DB2 Utility Autonomics Support**

- Capture historical utility execution
- Automate analysis and surface potential problems and recommended solutions into the Autonomic Framework
- Autonomically drive REORG, IC, RUNSTATS only when necessary in user configured maintenance windows

- **DB2 Sort v2.1 for z/OS\***

- Greater optimization with a tighter integration between DB2 Sort and IBM DB2 Utilities, delivered via a bi-directional, multi-record interface:
  - Up to 87% reduction of Sort CPU usage when used with zIIP engines (up to 49% w/ no zIIP)
  - Up to 60% reduction of utility CPU usage when used with zIIP engines (up to 39% with no zIIP)
  - Up to 46% reduction of utility elapsed time

- **DB2 Automation Tool v 4.2 for z/OS\***

- Job profile grouping provides flexibility to combine utility maintenance functions within a single job profile to meet application and business needs
- Support for e-mail, text message or Write-to-Operator (WTO) notifications when selected events occur, such as start/end of a job build or start/end of a maintenance window

*“More integration,  
greater value”*

**Optimize, control  
manage & automate**

*Components:*

*DB2 Automation Tool*

*DB2 High Performance  
Unload for z/OS*

*DB2 Sort for z/OS*

*DB2 Utilities  
Enhancement Tool*

*+ Autonomics support*

**DB2 Utilities  
Solution**



# Library Integrity Utilities





# Library Integrity Utilities

DEDBJ001 [ EC01053 > PLEX1 > IMS1 ] > DBD Map & Source

DEDBJ001

**View DBD Map**

**DBD Map**

DEDBJ001 | DEDB  
IMSTESTS.TEMPA.DBDLIB | DSHR02 | DATE 03/08/15 TIME 22:29

**Data Sets**

AREAs

Data set: Area Data Sets  
Number of areas: 2  
Access method: VSAM ESDS

**Outline**

**Segment Properties - Segment List in 'Area Data Sets'**

Segment Code	Segment Name	Segment Length Defined in DBD	Segment Edit/Compression	Segment Format Stored in Database
001	ROOTSEG1	14 - 390 bytes (variable)		Variable length
002	DD01	20 bytes (fixed)		Fixed length
003	DD02	16 - 390 bytes (variable)		Variable length
004	DD03	16 - 390 bytes (variable)		Variable length
005	DD04	16 - 390 bytes (variable)		Variable length
006	DD05	16 - 390 bytes (variable)		Variable length
007	DD06	20 - 390 bytes (variable)		Variable length



# Library Integrity Utilities – DBD Source

The screenshot displays a software interface with two main panels: 'DBD Source' and 'DBD Map'.

**DBD Source Panel:** Shows the source code for segments 4 through 8. The code is as follows:

```
000036 *          SEGMENT NUMBER 4          *
000037 *****
000038     SEGM    NAME=DD03,PARENT=((DD01,)),BYTES=(390,16),RULES=(,HERE),C
000039     TYPE=DIR
000040     FIELD   NAME=(DD03KEY,SEQ,U),START=3,BYTES=14,TYPE=C
000041     FIELD   NAME=(DD03LL),START=1,BYTES=2,TYPE=X
000042 *****
000043 *          SEGMENT NUMBER 5          *
000044 *****
000045     SEGM    NAME=DD04,PARENT=((DD03,)),BYTES=(390,16),RULES=(,HERE),C
000046     TYPE=DIR
000047     FIELD   NAME=(DD04KEY,SEQ,U),START=3,BYTES=14,TYPE=C
000048     FIELD   NAME=(DD04LL),START=1,BYTES=2,TYPE=X
000049 *****
000050 *          SEGMENT NUMBER 6          *
000051 *****
000052     SEGM    NAME=DD05,PARENT=((ROOTSEG1,)),BYTES=(390,16),
000053     RULES=(,HERE),TYPE=DIR
000054     FIELD   NAME=(DD05LL),START=1,BYTES=2,TYPE=X
000055     FIELD   NAME=(DD05FLD1),START=3,BYTES=14,TYPE=C
000056 *****
000057 *          SEGMENT NUMBER 7          *
000058 *****
000059     SEGM    NAME=DD06,PARENT=((ROOTSEG1,)),BYTES=(390,20),
000060     RULES=(,HERE),TYPE=DIR
000061     FIELD   NAME=(DD06LL),START=1,BYTES=2,TYPE=X
000062     FIELD   NAME=(DD06FLD1),START=3,BYTES=14,TYPE=C
000063 *****
000064 *          SEGMENT NUMBER 8          *
000065 *****
```

**DBD Map Panel:** Shows a hierarchical diagram of the data dictionary. The root node is DD05 (variable SC=006), which is highlighted with a dashed box. It is connected to DD07 (KEY=DD07KEY, variable SC=008), which in turn branches into DD08 (KEY=DD08KEY) and DD09 (KEY=DD09KEY).

**Outline Panel:** Shows a tree view of the data dictionary structure, with the nodes corresponding to the DBD Map.



# Library Integrity Utilities – DBD XML

The screenshot displays a software interface with three main panels. The top-left panel, titled 'DEDBJ001', contains a code editor showing XML code for a database structure. The code defines segments and fields, including a segment named 'DD05' with a physical child pointer 'SNGL' and rules 'HERE'. The code is as follows:

```
</field>
<field imsDatatype="X" imsName="DD04LL" name="DD04LL">
  <startPos>1</startPos>
  <bytes>2</bytes>
  <applicationDatatype datatype="BINARY"/>
</field>
</segment>
</segment>
</segment>
<segment imsName="DD05">
  <dedb physicalChildPointer="SNGL" rules="HERE" type="DIR">
    <bytes maxBytes="390" minBytes="16"/>
  </dedb>
  <field imsDatatype="X" imsName="DD05LL" name="DD05LL">
    <startPos>1</startPos>
    <bytes>2</bytes>
    <applicationDatatype datatype="BINARY"/>
  </field>
  <field imsDatatype="C" imsName="DD05FLD1" name="DD05FLD1">
    <startPos>3</startPos>
    <bytes>14</bytes>
    <applicationDatatype datatype="CHAR"/>
  </field>
</segment>
<segment imsName="DD06">
  <dedb physicalChildPointer="SNGL" rules="HERE" type="DIR">
    <bytes maxBytes="390" minBytes="20"/>
  </dedb>
  <field imsDatatype="X" imsName="DD06LL" name="DD06LL">
```

The top-right panel, titled 'DBD Map', shows a hierarchical diagram of the database structure. It features five nodes: DD01 (KEY=DD01KEY, fixed, SC=002), DD02 (KEY=DD02KEY, variable, SC=003), DD03 (KEY=DD03KEY, variable, SC=004), DD04 (KEY=DD04KEY), and DD05 (variable, SC=006). DD01 is the root node, with DD02 and DD03 as its children. DD03 is the parent of DD04. DD05 is shown in a dashed box, indicating it is a separate segment. A dashed line connects the 'SNGL' rule in the XML code to the diagram.

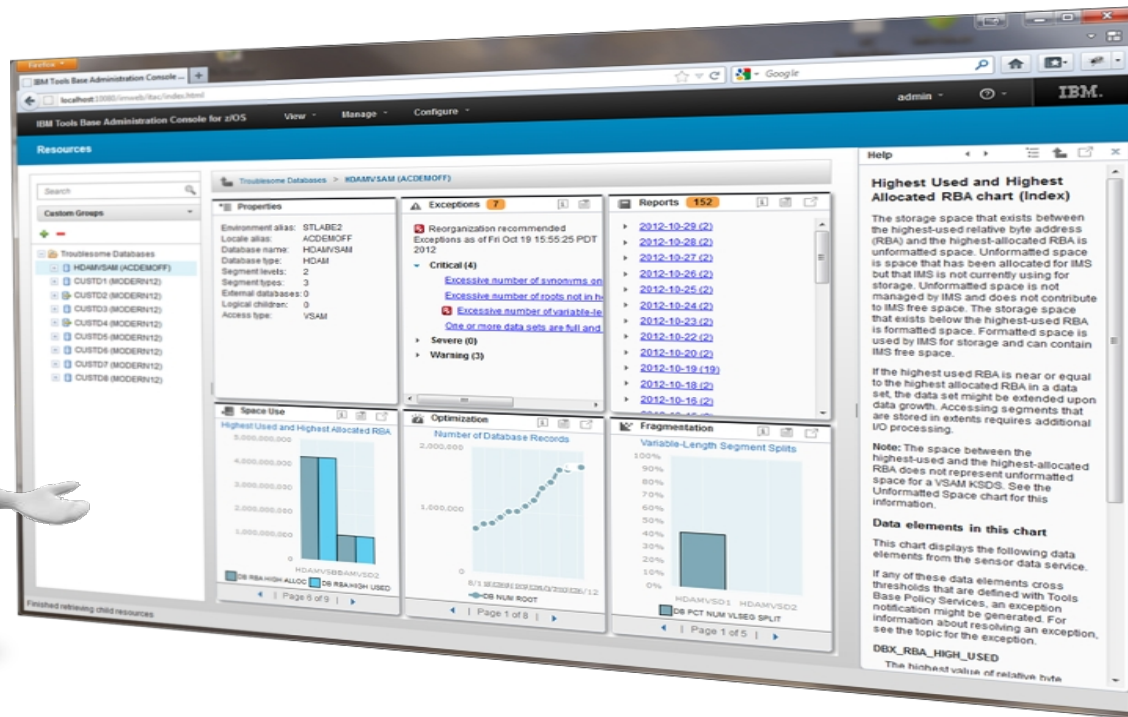
The bottom panel, titled 'Outline', shows a tree view of the database structure, with nodes represented by small icons and text labels.



# Management Console Demonstration



# IBM Management Console Demonstration



Questions ?

# Reserved Charts



# Futures





# Futures

- Display runtime definitions from IMS and the stored resource definitions from the IMSRSC repository
- Display the Datastore Alias for ODBMs communicating with an IMS Connect
- Display the Datastore Alias for ODBMs communicating with an IMS
- Display clients that are connected to IMS Connect ports
- Start/Stop both Dependent Regions
- Batch IMS Commands from the command console
- Batch IMS Commands from the command console with a scheduler
- Export IMS Commands from the command console as comma separated values
- Configure IMS Connect without the need to enter the IMSplex value
- User interface customization preference:
  - configure status icon colors (red,yellow,green)
  - configure column names
  - save filters
  - different roles (Admin, DBA, Programmer, etc...)
  - history of each users commands

