

Simplify management of your IMS data

with the IBM Management Console for IMS and DB2 for z/OS

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Agenda

- ❖ Simplifying access to monitoring information
 - ❖ What is Management Console?
 - ❖ User interface strategy
- ❖ IMS Dashboards
- ❖ Autonomics
- ❖ Questions



Simplifying access to monitoring information



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

The screenshot displays the IBM Tools Base Administration Console for z/OS interface. The main window is titled "Resources" and shows the configuration for the "Troublesome Databases" group, specifically "HDMVSAM (ACDEMOFF)".

Properties:

- Environment alias: STLARE2
- Locale alias: ACDEMOFF
- Database name: HDMVSAM
- 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 16:55:25 PDT 2012
- Critical (4):**
 - Excessive number of synonyms on RAMPs
 - 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
- 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 (12)
- 2012-10-16 (2)

Space Use: Number of Segments. Bar chart comparing HDMVSD1 and HDMVSD2. HDMVSD1 has approximately 12,000,000 segments, while HDMVSD2 has approximately 10,000,000 segments.

Optimization: Number of Database Records. Line chart showing the number of database records over time, with a general upward trend from approximately 500,000 to 1,800,000 records.

Fragmentation: Variable-Length Segment Splits. Bar chart comparing HDMVSD1 and HDMVSD2. HDMVSD1 has approximately 40% variable-length segment splits, while HDMVSD2 has 0%.

The interface includes a sidebar with navigation options like "Add Resources", "Getting Started", and "Automatic Reorganization Assistant". The bottom of the screen shows a task bar with several open windows.

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

The screenshot displays the IBM Management Console interface for IMS and DB2 for z/OS. The interface is divided into several panes:

- Enterprise-wide Navigation:** A callout box points to the left-hand navigation pane, which shows a tree view of resources and exceptions.
- Object Health and Autonomics:** A callout box points to the central pane, which displays the properties and status of a table space (ARCHV11). It includes a 'Symptoms' section with a 'Critical' status and a 'Warning' section.
- Graphical Visualization of data not possible in ISPF:** A callout box points to the 'RTS Charts: Summary View' pane, which shows a line graph titled 'Overflow Records Since Reorganization'. The graph plots the number of overflow records over time, with a legend for 'Far' and 'Near'.
- Integrated Help:** A callout box points to the right-hand pane, which contains help text for 'Overflow records since reorganization'. The text explains that overflow records can lead to indirect referencing and negatively affect database performance, and provides statistics for the DB2 real-time statistics.

IBM Management Console for IMS and DB2 for z/OS, V1.1

Common console for administrating IMS and DB2

10/2014 GA

- ✓ Administrator Console, which was previously included in IBM Tools Base V1.4, are now integrated into IBM Management Console for IMS and DB2, V1.1

Results of DB health-check

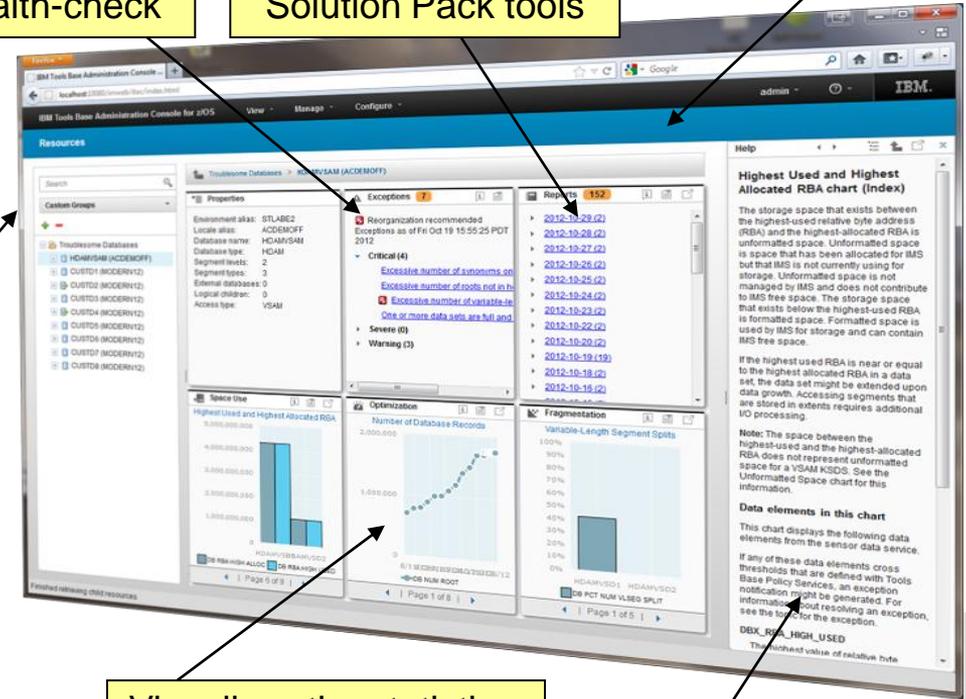
Reports produced by Solution Pack tools

IBM One UI

DB name search and grouping

- ✓ Dashboard to integrate the resources and utilities reports for IMS and DB2

- ✓ Statistics and health-check results of databases are displayed in a Web browser



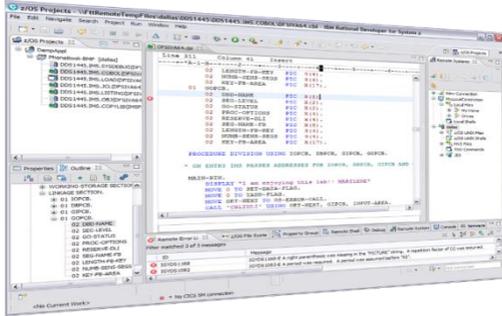
Visualizes the statistics of database and space

Online help



IMS and DB2 Tools User Interface Strategy

**Eclipse
(development)**



Developers



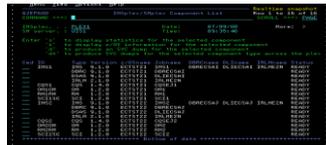
Administrators

**Web Browser
(administration)**



TCP/IP

ISPF



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...

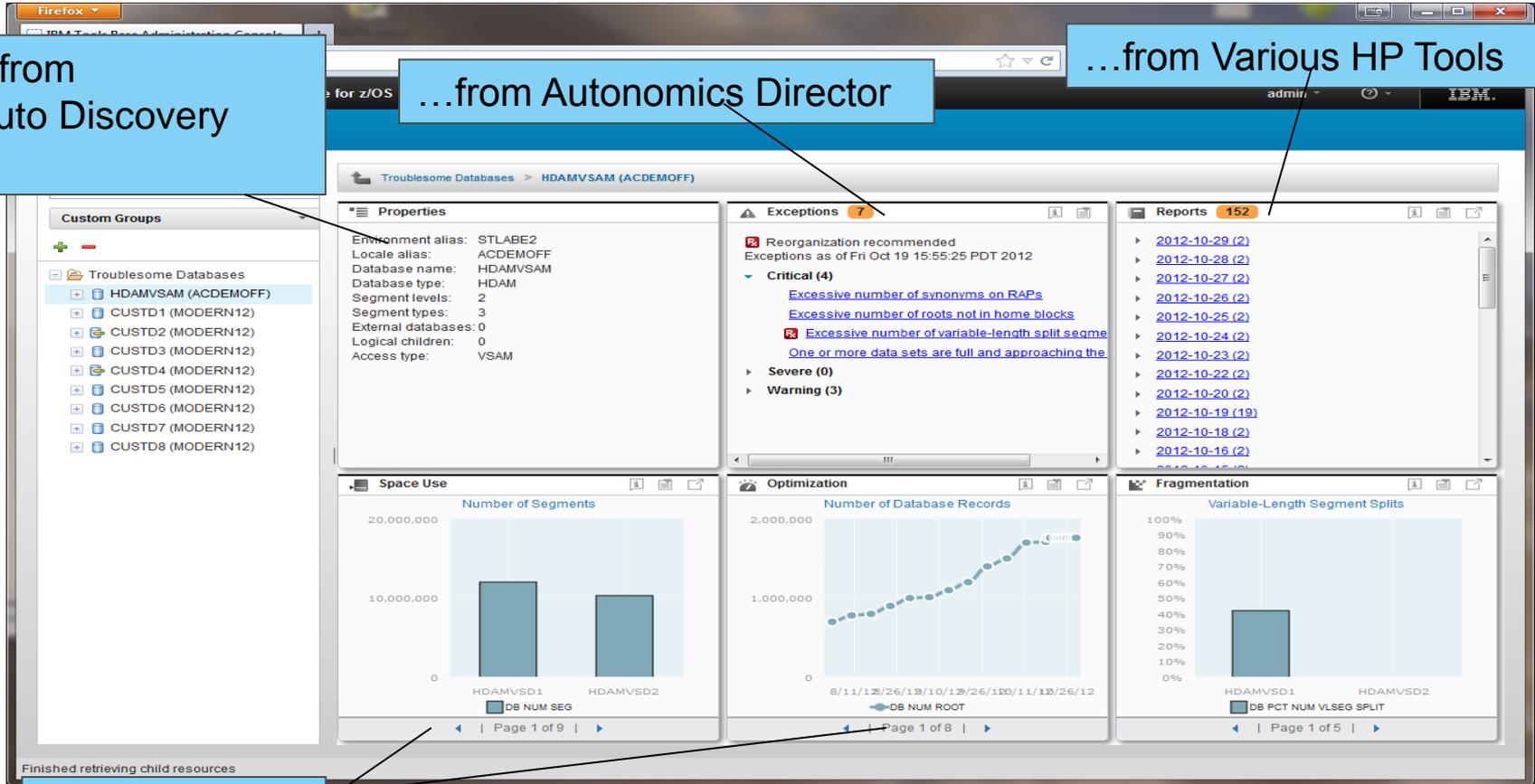


Holistic Dashboards of IMS Databases

...from Auto Discovery

...from Autonomics Director

...from Various HP Tools



...from Sensors



Drill down on Exceptions from an Enterprise-wide View

IBM Management Console for IMS and DB2 for z/OS

Resources with Symptoms

Oldest synchronization: 27 minutes

Resources with Symptoms

- Critical (0)
- Severe (0)
- Warning (17)

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
DSNRPPRED					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 for z/OS. The main content area is titled "Maintenance Window" and shows configuration details for a window named "WEEKDAY ONLINE REORGS".

Maintenance Window Configuration:

- 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
- Limit autonomic activity to this DB2 subsystem: [?]

Maintenance Period Schedule:

The schedule is displayed as a calendar grid for August 2014. The columns represent dates from August 24 to August 29, 2014. The rows represent time slots from 0:00 to 12:00. Maintenance periods are shown as colored blocks:

- Aug 25, 2014, 1:00 - 2:00: Period ID : 8 (Blue)
- Aug 26, 2014, 1:00 - 2:00: Period ID : 5 (Green)
- Aug 27, 2014, 1:00 - 2:00: Period ID : 3 (Red)
- Aug 28, 2014, 1:00 - 2:00: Period ID : 6 (Orange)
- Aug 29, 2014, 1:00 - 2:00: Period ID : 4 (Purple)

A blue callout box on the left side of the screenshot contains the text: "Ability to view all Autonomics Profiles as well as define and visualize Maintenance Windows". An arrow points from this box to the "Maintenance Windows" list in the left-hand navigation pane.



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)".

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- 2012-10-18 (2)
- 2012-10-16 (2)

Space Allocation Chart:

Number of Database Records

Variable-Length Segment Splits

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

IMS Dashboards



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**
 - IMS Plexes
 - IMS Plex 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: 30 characters maximum

Description: 255 characters maximum

* Required

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

Discovering Resources



Enterprise View

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

Search

Enterprise View

- [-] SYSPLEX1
 - [-] PLEX1
 - IMS2
 - IMS1
 - HWS1
 - [-] PLEX2
 - HWS1
 - IMS3
 - HWS3
- [+] SYSPLEX2
- [+] SYSPLEX3

SYSPLEX1 > PLEX1 > IMS1

Resource Type: Select one

- Databases
- Programs
- Routing Codes
- Transactions

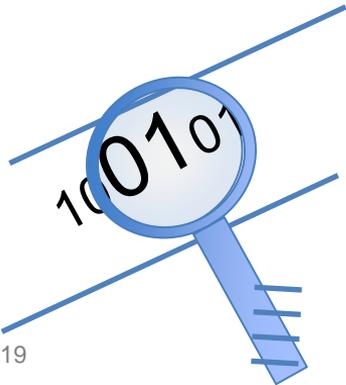
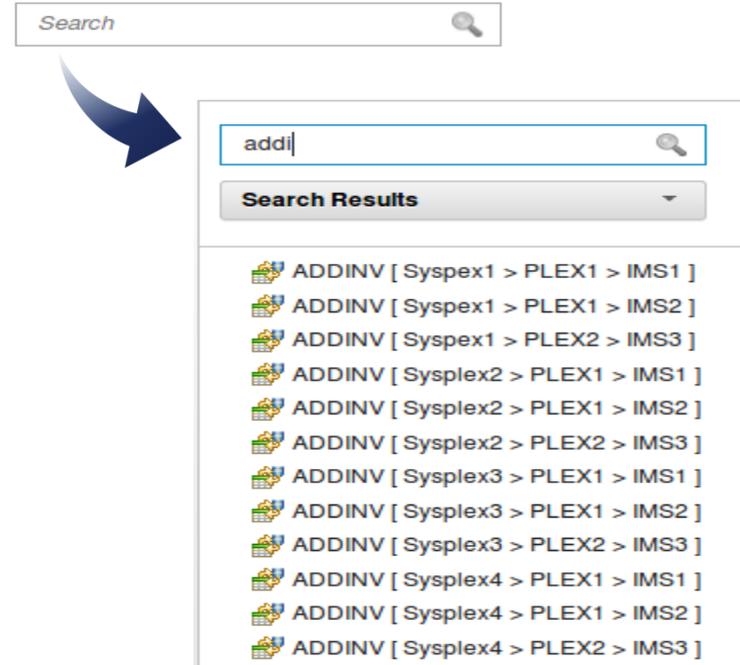
IMS1	
IMS Attribute	Value
Member Name	IMS1
Status	✓ READY, ACTIVE
Version	13.1.0
Member Type	IMS
IMSpplx	CSLPLEX1
Completion Code	0
Responding Member	OM10M
OS Image	EC03127

Related ODRMs



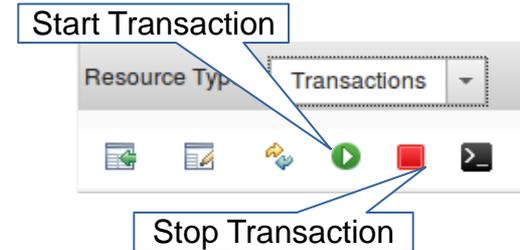
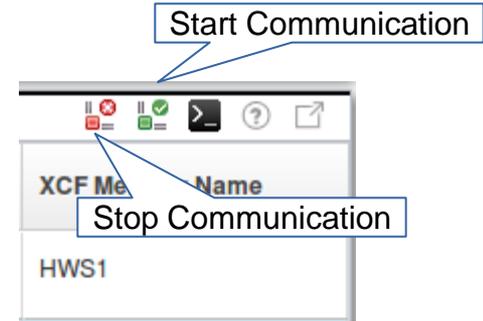
Enterprise Search

- 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

The screenshot displays the 'Databases' management page in a web interface. The breadcrumb path is 'SYSPLEX1 > PLEX1 > IMS1 > Databases'. The 'Resource Type' is set to 'Databases'. A table lists various databases with columns for Database Name, Database Type, Status, Data Set Access Type, Area Name, Definition Type, and Member Name. A modal dialog titled 'Stop Databases' is open, prompting the user to select options for the stop action. The dialog includes radio buttons for 'Stop' (with sub-options for Access, Scheduling, Updates, and Lock On) and 'Lock On'. It also has a 'Scope' section with 'All' (selected) and 'Active' options. An 'Options' section contains checkboxes for 'Forced End of Volume (FEOV)', 'Leave Randomizer loaded (DEDB)', and 'Set Prevent Further Authorization (PFA)'. The 'FEOV' section has radio buttons for 'FEOV' and 'No FEOV'. 'OK' and 'Cancel' buttons are at the bottom of the dialog.

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	✓ 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

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

Help Panel

Help

IMS™ region status: Available

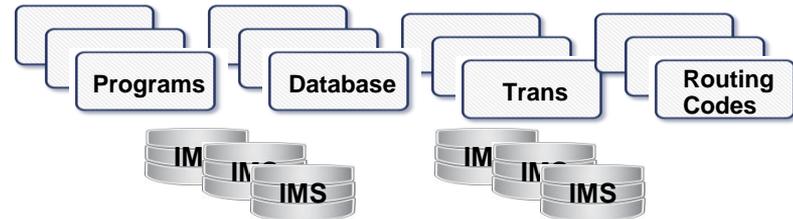
The status code generally indicates that the region is either active, available to schedule an application, or waiting for work.

- [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	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM02	MSNR	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM03	MSNR	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM04	MSNR	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM05	MSRF	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM06	MSRD	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM07	MSRD	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
MSDBLM08	MSNR	✓	EXCL	MODBLKS	IMS2				Y		0	2014.201 17:21:33.64
.....	✓		-	2014.201

Transaction **Program** **Routing Code** **Databases**



Resource Relationship – IMS Connect

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

Resources

Search

Enterprise View

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

SYSPLEX1 > PLEX1 > HWS1

IMS Connect

IMS Attribute	Value
Member Name	HWS1
Status	ACTIVE
Version	13.1.0
Member Type	IMSCON
IMSplex	CSLPLEX1
Completion Code	0
Responding Member	OM10M
OS Image	EC03127
Job Name	HWS1
Member Sub Type	

Datastores

Data Store Name	Status	XCF Member Name	XCF Group
<input type="checkbox"/> IMS1	ACTIVE	HWS1A	XCFGRP1
<input type="checkbox"/> IMS2	ACTIVE	HWS1B	XCFGRP1
<input type="checkbox"/> IMS3	ACTIVE	HWS1C	XCFGRP1

Ports

Port Number	Status	Total Active Clients
<input type="checkbox"/> 9999	ACTIVE	
<input type="checkbox"/> 7777	ACTIVE	7
<input type="checkbox"/> 6666D	ACTIVE	

Related IMSplexes

IMSplex Name	Status	XCF Member Name
<input type="checkbox"/> PLEX1	ACTIVE	HWS1
<input type="checkbox"/> PLEX2	ACTIVE	HWS1

Related ODBMs

ODBM Name	Status	Data Store Alias	RRS
<input type="checkbox"/> ODBM10D	REGISTERED	IMS1	Y
<input type="checkbox"/> ODBM20D	REGISTERED	ALI2	Y

Remote IMS Connects

Remote IMS Connect Name	Status	IP Address
<input type="checkbox"/> HWS3	ACTIVE	9.30.221.171

IMS Connect

Datastores

Ports

IMSplexes

ODBM

Remote IMS Connect



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**

Resource Type: Select one

SYSPLEX1

- PLEX1
 - IMS2**
 - IMS1
 - HWS1
- SYSPLEX2
 - PLEX1
 - IMS1
 - IMSPLEX1
- SYSPLEX3

IMS 2

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			

ODMB

Related Regions

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

Regions

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

RECON

Messages and Commands Displayed

EC03127 > PLEX1 > IMS1 > Transactions

Resource type: Transac

Operations Manager successfully executed the command.

IMS Command..... : CMD(QUERY TRAN NAME(*)SHOW(ALL))ROUTE(IMS1)

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](#)

Transaction Code	Status	Commit Mode	Conversational	Fast Path
<input type="checkbox"/> 3270S	✘ STOQ,STOSCHD,AFFIN	MULT	N	N
<input type="checkbox"/> A1111111	✘ STOQ,STOSCHD,AFFIN	SNGL	Y	N
<input type="checkbox"/> A3270	⚠ TRA	MULT	N	N

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

Operations Manager successfully executed the command.

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

www-01.ibm.com/support/knowledgegece

IBM Knowledge Center



IMS Command Console – Text View

EC03127 > PLEX1 > Command Console

Enterprise Command Routing

Command History

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)...

Tabbed Results

Dynamic Resource Detection

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	Y	N		PARALLEL
BMPFPE02	IMS2	0	BMP	Y	N	N	N	N	Y	N		PARALLEL
BMPFPE03	IMS2	0	BMP	Y	N	N	N	N	Y	N		PARALLEL
BMPFPE04	IMS2	0	BMP	Y	N	N	N	N	Y	N		PARALLEL
BMPFPE05	IMS2	0	BMP	Y	N	N	N	N	Y	N		PARALLEL

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

View Grid View Text Print Result

Print Results



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

Filtering

Grid View

Update Resources

The screenshot displays the 'Edit Attributes' interface. At the top, there is a header with 'Edit Attributes' and a search icon. Below the header, it says 'No filter applied'. The main table has two columns: 'Transaction Code' and 'Status'. Two rows are visible: 3270S with status AFFIN and A1111111 with status AFFIN. A callout box labeled 'Batch Support' points to a detailed view of the A1111111 row, which is highlighted with a red border. This detailed view shows columns for 'Batch-Edit', 'Commit Mode', 'Conversation', 'Fast Path', 'Region Class', and 'Limit Count'. The 'Batch-Edit' column is set to 'MULT'. Below this, there is a 'Single Edit' button and a 'Batch Edit' button. A callout box labeled 'Single Edit' points to the 'Single Edit' button. Another callout box labeled 'Version Specific Attributes' points to the 'Commit Mode' dropdown menu, which is currently set to 'SNGL' and has 'MULT' and 'SNGL' options visible.

Transaction Code	Status
3270S	AFFIN
A1111111	AFFIN

Batch-Edit	Commit Mode	Conversation	Fast Path	Region Class	Limit Count
BATCH-EDIT	MULT	N	N	N	
3270S	MULT	N	N	N	123
A1111111	SNGL	Y	N	N	1

Transaction Code	Commit Mode	Conversation	Fast Path	Region Class	Limit Count
3270S	MULT	N	N	123	65535
A1111111	SNGL	Y	N	1	65535



View Resources from the IMSplex

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

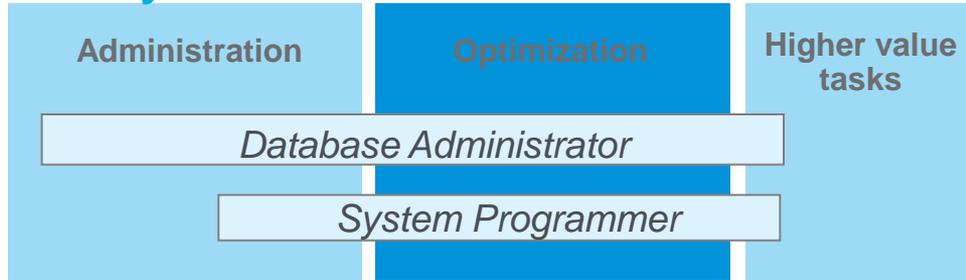


Autonomics for IMS Databases

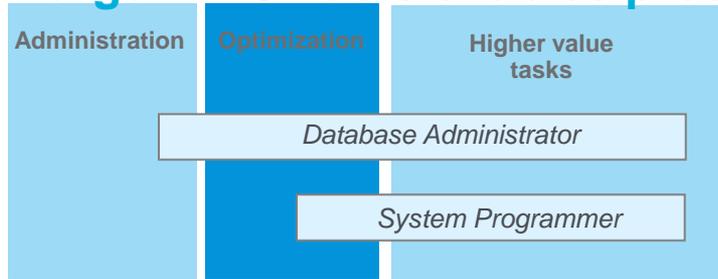


The Value of Autonomics

Today



Target: IMS Tools enables productivity



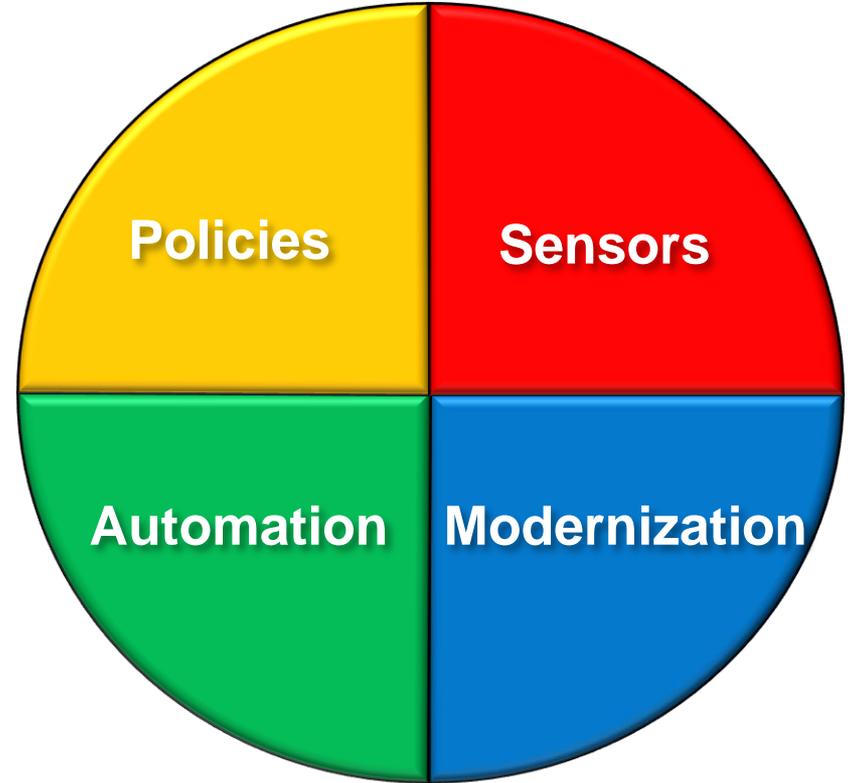
...the essence of autonomic computing is system self-management, delivering better system behavior and **freeing administrators from low-level task management.**



IMS Tools Autonomics Vision



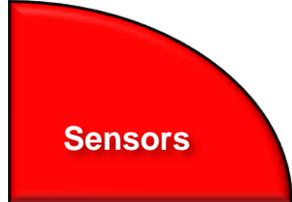
Putting information to work



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 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:
 - Standalone database Sensor utilities for full-function and Fast Path databases
 - Integrated with existing IMS Tools utilities
- Integrated Tools support
 - HP Image Copy, HP Pointer Checker, DB Reorg Expert
 - FPA: Reload, Change, Reorg, Analyze
 - FPO: Online PC, Online Reorg

List of Full Function sensor data collected



Database Record Statistics (per database or HALDB partition)

▪ Nbr. of DB records	▪ Avg. DB record length		
----------------------	-------------------------	--	--

Randomizer Statistics (per HDAM or PHDAM partition)

▪ Nbr. of total RAPs	▪ Nbr. of unused RAPs	▪ % of number of unused RAPs	▪ Nbr. of synonyms
▪ % of number of synonyms	▪ Nbr. of root not on home block	▪ % of root not on home block	▪ % of segment data in overflow
▪ Nbr. of roots in overflow	▪ % of number of roots in overflow	▪ Bytes of segments in RAA	

Volume/Extents Statistics (per data set)

▪ Allocation type (CYL, TRK, ...)	▪ Primary allocation amount	▪ Secondary allocation amount	▪ SMS-managed or not
▪ Max. nbr. of extents for the d.s.	▪ Max. nbr. of extents for the volume	▪ Nbr. of extents allocated	▪ Nbr. of volumes used
▪ Nbr. of unused volumes	▪ Nbr. of unused assigned volumes	▪ Nbr. of unused candidate volumes	
▪ Nbr. of available remaining extents determined by the max. nbr. of data set extents and the max. nbr. of extents available on volumes assigned to the data set			

Data Set Space Usage Statistics (per data set)

▪ Block/CI size	▪ Nbr. of blocks/CIs used	▪ Max. size of the data set	▪ % of data set size against the max.
▪ High-Allocated-RBA	▪ High-Used-RBA		

IMS Space Utilization Statistics (per data set)

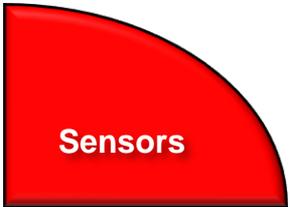
▪ Total bytes of segment data	▪ Total bytes of free spaces	▪ Total bytes of slack bytes	▪ % of free spaces
▪ % of segment data	▪ % of unused bytes in the data set	▪ Total nbr. of segments	▪ Total nbr. of VL segments
▪ Total nbr. of VL-split segments	▪ % of nbr. of VL-split segments	▪ Total nbr. of slack bytes	▪ Avg. nbr. of slack bytes per block
▪ Total nbr. of FSEs	▪ Avg. nbr. of FSEs per block	▪ Nbr. of FSEs valid for shortest segments	▪ Nbr. of FSEs valid for longest segments
▪ Avg. nbr. of non-reusable FSEs	▪ Total nbr. of pointers	▪ Total nbr. of ptrs pointing external block	▪ % of nbr. Of ptrs pointing ext. block

HISAM/SHISAM Statistics (for HISAM)

▪ Logical record length	▪ Total nbr. of CI splits	▪ % of nbr. of CI splits	▪ Total nbr. of CA splits
▪ % of nbr. of CA splits	▪ Total nbr. of HISAM delete bytes	▪ % of nbr. of HISAM delete bytes	



List of Fast Path sensor data collected



Sensors

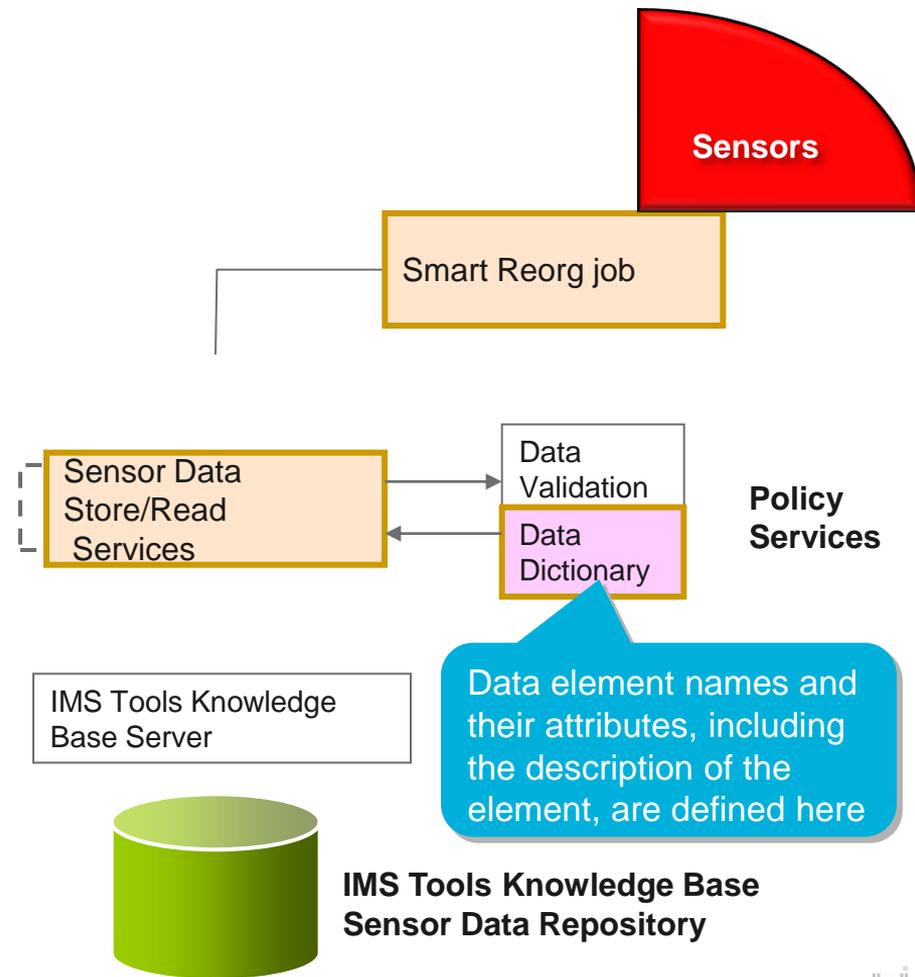
- Area Definition
 - DB_AREADEF_CISIZE
 - DB_AREADEF_UOW1
 - DB_AREADEF_UOW2
 - DB_AREADEF_ROOT1
 - DB_AREADEF_ROOT2
 - DB_AREADEF_NUM_SDEP_CIS
- Free Space
 - DB_PCT_BYTES_FS_RAA
 - DB_PCT_BYTES_FS_DOVF
 - DB_PCT_BYTES_FS_IOVF
 - DB_PCT_BYTES_FS_SDEP
- Overflow
 - DB_PCT_NUM_UOW_USE_DOVF
 - DB_AVG_NUM_DOVFCI_BY_UOW
 - DB_MAX_NUM_DOVFCI_BY_UOW
 - DB_PCT_NUM_UOW_USE_IOVF
 - DB_NUM_UOW_USE_IOVF
 - DB_AVG_NUM_IOVFCI_BY_UOW
 - DB_MAX_NUM_IOVFCI_BY_UOW
 - DB_MIN_NUM_IOVFCI_BY_UOW
 - DB_PCT_NUM_IOVFCI_USED
 - DB_PCT_NUM_RAPCI_OVFL
- Segments
 - DB_NUM_SEG
 - DB_NUM_ROOT
- Randomizing Synonyms
 - DB_AVG_LEN_SYNONYM_CHAIN*
 - DB_MAX_LEN_SYNONYM_CHAIN*
- (Simulated) I/Os
 - DB_AVG_DBREC_IO*
 - DB_MAX_DBREC_IO*
 - DB_AVG_ROOT_IO*
 - DB_MAX_ROOT_IO*
 - DB_ESTIMATED_ROOT_IO
 - DB_ESTIMATED_DBREC_IO
- DB Record Length/Overflow
 - DB_AVG_DBREC_LENGTH*
 - DB_MAX_DBREC_LENGTH*
 - DB_MIN_DBREC_LENGTH*
 - DB_PCT_NUM_DBREC_IOVF*

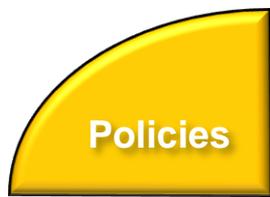


For the full description of sensor data elements,
see [“Data Elements”](#) in the *Policy Services User’s Guide*.

Sensor Data Repository

- The sensor data is stored in the *Sensor Data Repository* as records made up of *data elements*
- The data record is stored in a well-understood and flexible format
 - This allows its use years and multiple product releases later in time
- The data and its format is understandable between products and releases to ensure reliable functionality



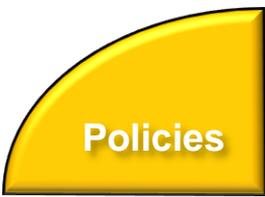


Policies: Using Sensor Data to Make Decisions

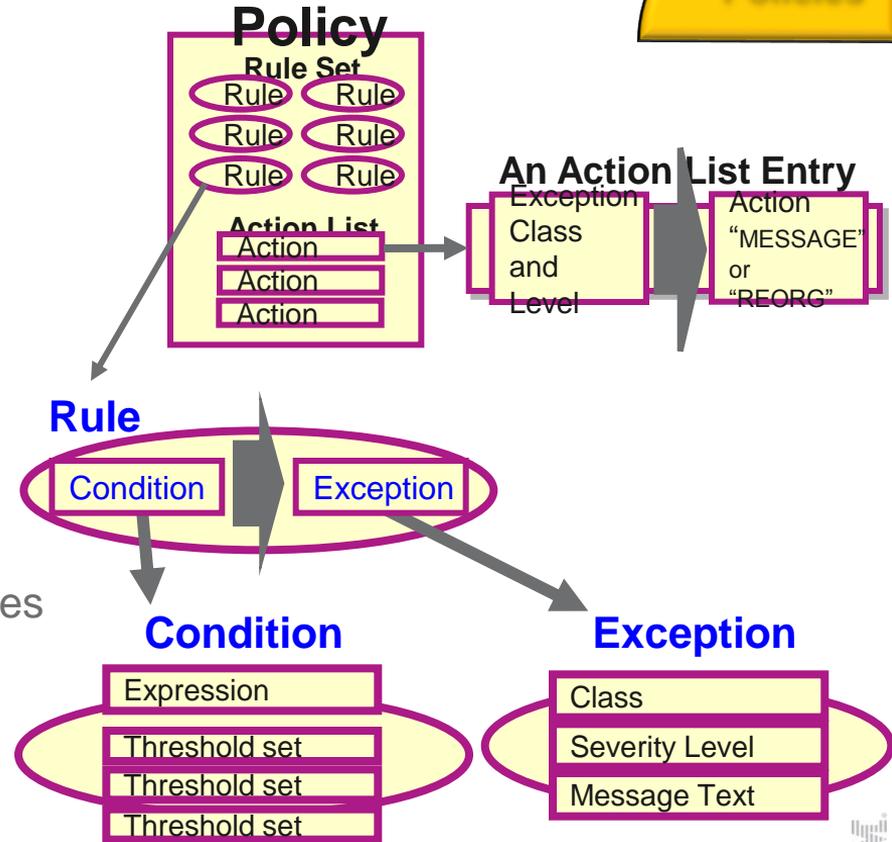
- Policy definitions are used to evaluate specific database states
 - Threshold values are compared against sensor data for a given database or group of databases
 - When thresholds are met or exceeded, exceptions occur
- Works “out of the box”
 - Ships with predefined policies and threshold values
 - 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



Major components of a policy



- Policy has two major components:
 - **Rules** that detect **exceptions**
 - **Exception-to-Action mapping**
- Rule Set for exception detection
 - Rule has two elements:
 - **Condition** (a threshold check formula)
 - **Exception** (a named state of a DB)
- Action List for action mapping
 - An Action List entries defines an exception-action mapping
 - The sequence of Action List entries defines whether to reorganize the subject database



Exception detection condition is defined in a rule



Sample Data Elements

DB_PCT_OF_MAX_DS_SIZE

The percentage of allocated bytes (bytes for High Allocated RBA) compared to the maximum size (4 GB or 8 GB).

DB_PCT_BYTES_FREE_SPACE

The percentage of bytes of total free spaces to the total used bytes for the data set.

A Sample Condition Description

```
Help
REORG/OPERATION                               Evaluation Formula Descrip Row 1 to 10 of 10
Command ==>
Rule name . . . . . : IBM.DBDS_GROWTH.20      Locale . . : $IVP
Value set for threshold . : MED
&1=85, &2=20,
Evaluation formula description
Both of the following thresholds have been reached or
exceeded in a database data set. This condition indicates
the possibility that high percentage of unusable free
spaces has caused the growth in data set size.
- Threshold on the percentage of data set size against
its allowable maximum size:
  &1(85)
- Threshold on the percentage of total free spaces against
the used space that is allocated for the data set:
  &2(20)
***** Bottom of data *****
```

A Sample Set of Threshold Values

```
Commands Help
DOMAIN: REORG                               View Threshold Values      Row 1 to 2 of 2
Command ==>
View threshold values and press End to exit.
Locale . . . . . : $IVP          Rule name : IBM.DBDS_GROWTH.20
Value set for threshold : MED
ID#  Value          Description
&1  85             Numeric, range: 0 to 100
                        The percentage of allocated bytes (bytes for High allocated
                        RBA) in the maximum size (4 GB or 8 GB).
&2  20             Numeric, range: 0 to 100
                        The percentage of bytes of total free spaces compared to the
                        total used bytes for the data set.
***** Bottom of data *****
```

Threshold Set

A named set of threshold values for the threshold variables that are referred to in the condition description above is called *a thres*

“MED” = &1 = 85
&2 = 20

← You can tweak these threshold values

Attributes of an exception

- **Exception class**
 - Represents the specific database event category being monitored
- **Exception severity level**
 - Is a category representing the severity of the detected exception
 - There are fixed three levels:
 - WARNING
 - SEVERE
 - CRITICAL
- **Exception message**
 - Is the text that can be used by the resulting policy action to describe the database event that crossed a rule threshold set
 - Users can modify the message text

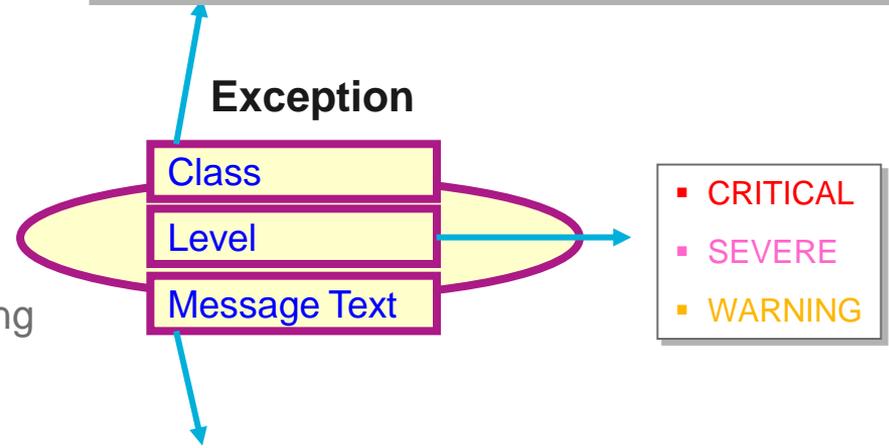
An Example of Exception Class

Exception Class:

FRAGMENTED_FREE_SPACES

* Name of the rule that detects the this exception:

IBM.FRAGMENTATION.10



An Example of Exception Message

“The fragmentation of free space in %RESOURCE% has increased”

* The symbol %RESOURCE% is replaced by a DBD name or a partition name.

Automation: Delivering on our Vision

- 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 reorganizing a single database
 - Ability to manage FP Online Area Extend
 - Flexible scheduling only in pre-defined Maintenance windows



Exception-to-Action mapping

- An *action* is the result of a rule condition being reached or exceeded during a policy evaluation
- A rule threshold set has been mapped to a severity level for the exception class associated with the rule
- In turn, the severity level is mapped to an action

Note: In IBM-provided REORG policies, severity-level-to-action mappings are fixed for each exception class and are not customizable.



```

Commands  Help
REORG/OPERATION          Associate Actions With Rule Thres Row 1 to 3 of 3
Command ==>

Select actions. Then press Enter to be prompted to choose the associated rule
thresholds. Press End to cancel all selections.
Locale . . . : BSNGLOBL Policy name . . . : SYS.DBDBTYPE.HDAM
Locale . . . : BSNGLOBL Rule name . . . : IBM.DBDS.GROWTH.20
Description : Simple rule on the size of data sets that have certain

A: Row Actions: S - Select Actions. (You will then be prompted to choose
                thresholds from a list.)
                U - Unselect.

S: Status:      S - Selected.
                0 - Pre-selected from original policy. (Update only).

A  S  Action      Level      Threshold
-  -  -
-  0  MESSAGE    SEVERE    MED
-  0  MESSAGE    WARNING   LOW
F1=Help  F3=End  F5=RFind  F7=Up    F8=Down  F10=Actions
F12=Cancel
  
```

An example scenario of FP Active Autonomics



1. Everyday after 8:00 p.m., Autonomics Director initiates an OPC utility job for each of the 5 areas. The OPC utility stores the sensor data and notifies Autonomics Director.
2. Autonomics Director evaluates sensor data that is collected from each area, and detected the following conditions:

```

Menu  View  Help
Autonomics Director Monitor List Entries      Row 1 to 5 of 5
Locale . . . : RECON6AC      Group type : DATABASE
Status . . . :
Actions:  S - View the database attributes
          V - View recommendations
          X - Select a database, partition, area for scheduling
          H - View evaluation history

Action Needed Sev DBDName PartName Eval-Date Eval-Time Snsr-Date Snsr-Time
-----
N DEDB0006 DBAR005 Jun 05,'14 14:33:52 Jun 05,'14 14:33:52
N DEDB0006 DBAR004 Jun 05,'14 14:34:01 Jun 05,'14 14:34:01
N DEDB0006 DBAR003 Jun 05,'14 14:34:11 Jun 05,'14 14:34:10
Y DEDB0006 DBAR002 Jun 05,'14 14:33:22 Jun 05,'14 14:33:22
Y DEDB0006 DBAR001 Jun 05,'14 14:32:34 Jun 05,'14 14:32:34
***** Bottom of data *****
  
```

DBAR003, DBAR004 and DBAR005 have no exception

Action REORG is recommended for DBAR002

Reorganization needed
SDEP extension needed
IOVF extension needed
Severity : Y
: N
: C

Actions REORG and EXTENDIOVF are recommended for DBAR001

DBAR001 and DBAR002 need action

Reorganization needed : Y
SDEP extension needed : N
IOVF extension needed : Y
Severity : C



An example scenario of FP Active Autonomics

Automation

- On Sunday after 3:00 a.m., during the defined database maintenance window, Autonomics Director submits the OSM utility job for each area to which some actions were recommended by the last policy evaluation.

A case where all OSM jobs succeeded

```
Menu View Help
Autonomics Director Reorg Job Status Row 1 to 2 of 2
Locale . . . : RECON6AC Group type : USERGRP
Group name . . . : FP6AC
Group description . . . : FOR TEST
Reorg-Date . . . : Jun 05,'14 Reorg-Time . . . : 15:33:43

Row Actions: S - View the job details

Act Job type Job name Job num Job status End status Completed
--- REORG DBAR001R JOB01024 Ended RC00 Successful
REORG DBAR002R JOB01025 Ended RC00 Successful
***** Bottom of data *****
```

DBAR001 and DBAR002 are expanded or reorganized successfully

A case where an OSM job failed

```
Row Actions: S - View the job details

Act Job type Job name Job num Job status End status Completed
--- REORG DBAR001R JOB01001 Ended RC08(OAE) Failed
REORG DBAR002R JOB01002 Ended RC00 Successful
***** Bottom of data *****
```

The OSM job for DBAR001 failed in OAE process, and the OSM job for DBAR002 succeeded



An example scenario of FP Active Autonomics

- Autonomics Director evaluates the sensor data that was notified by the OSM utility job. As result of policy evaluation, Autonomics Director did not detect exceptional state in the two reorganized or expanded areas. Autonomics Director recommends no action for those areas.

```
Menu  View  Help
-----
Autonomics Director Monitor List Entries          Row 1 to 5 of 5
Locale . . . : RECON6AC          Group type : DATABASE
s . . . :
ons:  S - View the database attributes
      V - View recommendations
      X - Select a database, partition, area for scheduling on demand
      H - View evaluation history

Action
-----
Needed Sev  DBDName  PartName  Eval-Date  Eval-Time  Snsr-Date  Snsr-Time
N        N        DEDB0006  DBAR005  Jun 05,'14  15:28:45  Jun 05,'14  15:28:44
N        N        DEDB0006  DBAR004  Jun 05,'14  15:28:55  Jun 05,'14  15:28:55
N        N        DEDB0006  DBAR003  Jun 05,'14  15:29:03  Jun 05,'14  15:29:03
N        N        DEDB0006  DBAR002  Jun 05,'14  15:33:42  Jun 05,'14  15:33:42
N        N        DEDB0006  DBAR001  Jun 05,'14  15:33:42  Jun 05,'14  15:33:42
***** Bottom of data *****

Command ==>
F1=Help  F3=Exit  F5=RFIND  F7=Up  F8=Down  F12=Cancel  Scroll ==> PAGE
          英数 半角                                     22/015
```

The exceptional states of DBAR001 and DBAR002 have been resolved after OSM jobs completed



Adding database(s) to your monitor list

Automation

- Your Monitor List is the custom list of databases you're interested in...

```
Menu View Help
IAVPXIR Autonomics Director Resource List Row 1 to 1 of 1
Command ==> Scroll ==> PAGE
Locale . . . : $IVP Group type . : DATABASE
Row actions: X - Expand database definitions
              A - Add or update the database to the monitor list
              D - Delete the database from the monitor list
              S - Display the database attributes
Action Prompt Monitored DBDName PartName DBORG ACCESS
A_ DEVICEDB
***** Bottom of data *****
```

All of your environment's databases are discovered at run-time by our Auto-discovery function, you can view all or search for the particular database(s) you want added to your Monitor List for automatic monitoring, in this example we

Setting your monitoring criteria

- You can set how often the database should be evaluated, how many evaluations to save, and which policies to use in the evaluation

```

IAVPATT      Add or Update the Group and Database Attributes
Command ==>

Owner . . . . . : USRT013      Acquire ownership?   N   (Y=yes N=no)
Group type . . . : DATABASE      Group name . . . :
DBD name . . . . : DEVICEDB      Partition . . . . :
Priority . . . . . : 1                (Numeric value 1 - 9)

Evaluate after sensor run . . . . . Y   (Y=yes N=no)
Number of evaluations to save . . . . . 10 (1-255, default=10)
Evaluation interval . . . . . 001 : 000 : 00 (days:hours:minutes)
Maximum age of sensor data . . . . . 000 : 000 : 30 (days:hours:minutes)

Cataloged data set with sensor JCL:
  DS Name . . . 'IMSTESTS.RGE410.FP012'
  Member name SDS04

Policy selection by:
3  1.  DBTYPE      (DBORG type)
     2.  DBDNAME    (DBD name)
     3.  Policy name (Policy name)

```

Policies are fully customizable, however, we ship default policies with default threshold settings to get you up and running quickly. You can select policies by DBTYPE, DBDNAME, or Policy Name

Scheduling an evaluation On Demand

- Databases will be monitored and evaluated automatically once you specify your peak times (not shown) but you can always schedule an On Demand evaluation

```
Menu  View  Help
IAVPXML      Autonomics Director Monitor List Entries      Row 1 to 1 of 1
Command ==> _____ Scroll ==> PAGE

Locale . . . : $IVP      Group type . : DATABASE

Row Actions:  S - View the database attributes
              V - View recommendations
              X - Select a database, partition, area for scheduling on demand
              H - View operation history

Action Reorg Sev DBDName Pa Eval-Date Eval-Time Snsr-Date Snsr-Time
X_      Y      C      DEVICEDB          15, '12 03:56:06 May 15, '12 03:56:05
*****
```

We monitor and evaluate databases automatically when allowed but will avoid your peak operations times once you specify them. However, you can always schedule an On Demand evaluation if you suspect a database issue and need the latest sensor data and policy evaluation now.

Immediately...

- Maximum flexibility is provided to get you the most current information available when you need it, so decisions are never made using stale data

```
IAVPXAD      Schedule Sensor or Evaluation Job Run On Demand
Command ==> _____

Enter Y to select run types:
Sensor run . . . . Y
Evaluation run . . Y

Monitor list member:
Database name . . . . : DEVICEDB
Partition or area name :

Enter schedule time option:
1_  1.  Immediately
    2.  At next available period or next available period
        after the specified date
    3.  On specified date

With option 2 or 3:
Month __ Day __ Year __ Time . . __ : __ __ (hh:mm am/pm)
```

View the resulting recommendations

- We keep it simple, if a database reorganization is needed based on the policies you set you'll see 'Y' if not you'll see 'N' no guess work here

```
IAVPVRL      Autonomics Director Evaluation Run Information
Command ==>

Locale . . . . . : $IVP
Enter S to view evaluation run exceptions .

Database name . . . . . : DEVICEDB
Partition name . . . . . :
Database type . . . . . : HDAM
Access method . . . . . : VSAM

Status . . . . . : DB EVALUATION Completed
Return code . . . . . : 00000000
Reason code . . . . . : 00000000
Reorganization needed . . . . . : Y
Severity . . . . . : C
Sensor data from date / time . . . . . : May 15, '12 / 04:00:05
Evaluation run date / time . . . . . : May 15, '12 / 04:00:05

Policy by . . . . . : NAME
Policy name . . . . . : TST.DBDTYPE.HDAM
```

You can drill down further to see just which policy exceptions were triggered

Reorganization needed : Y
Severity : C

View the detailed exceptions via ISPF Browse

Automation

- Complete transparency so you can see exactly why a reorganization is being recommended, we'll even send you an e-mail or text message to notify you

```
Menu Utilities Compilers Help
ISRBR0BA USRT013.EC03253.IMSAD.CMDOUT1
Command ==>
***** Top of Data *****
Autonomics director 1.3.0 Database Diagnosis Report
5655-V93 May 15,'12 04:00:05

Summary of Database Definition
-----
Database..... DEVICEDB
Partition/Area.....
Data Set Organization..... HDAM
Database Type..... VSAM

Summary of Policy Evaluation
-----
Name of Policy Applied..... TST.DBDTYPE.HDAM
Policy Locale..... RECON ID: $IVP
Reorganization Need..... Y

Summary Message:
-----

Exceptions
-----
Imbalanced randomizing and inefficient use of RAPs have increased in DEVICEDB
Class: IMBALANCED_RANDOMIZING Level: SEVERE
Rule: G:IBM.RANDOMIZING.10 Threshold Set: MED
Action: MESSAGE

The number of synonyms in randomizing has increased in DEVICEDB
Class: EXCESSIVE_RAP_SYNONYMS Level: CRITICAL
Rule: G:IBM.RAP_SYNONYMS.10 Threshold Set: HIGH
Action: MESSAGE

The number of roots not in their home blocks in DEVICEDB has increased
Class: EXCESSIVE_HDAM_ROOTS_NOT_HOME Level: SEVERE
Rule: G:IBM.ROOTS_NOTHOME.10 Threshold Set: MED
Action: MESSAGE

The size of a data set in DEVICEDB, which still has a certain amount of free space, has increased
Class: GROWING_DBDS_WITH_FREE_SPACES Level: CRITICAL
Rule: G:IBM.DBDS_GROWTH.20 Threshold Set: TSTHIGH
Action: REORG

***** Bottom of Data *****
```

IMS Autonomics

Modernization

DEDBJ001 (EC01053 > \$IMS13)

View DBD Map

Summary

Resource	Type	Overall	Critical	Severe	Warning	Recommendations	Reports
DEDBJ001 (EC01053 > \$IMS13)	DEDB	●	0	1	0	0	6
DBJ1AR0	DEDB	●	0	1	0	0	1
DBJ1AR1	DEDB	◆	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

Modernization

Troublesome Databases > HDAMVSAM (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 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](#)
- 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 \(2\)](#)
- [2012-10-15 \(2\)](#)

Space Use

Number of Segments

Database	DB NUM SEG
HDAMVSD1	~12,500,000
HDAMVSD2	~10,500,000

Optimization

Number of Database Records

Date	DB NUM ROOT
8/11/12	~600,000
8/26/12	~700,000
9/10/12	~800,000
9/26/12	~1,000,000
10/10/12	~1,200,000
10/11/12	~1,400,000
10/26/12	~1,800,000

Fragmentation

Variable-Length Segment Splits

Database	DB PCT NUM VLSEG SPLIT
HDAMVSD1	~42%
HDAMVSD2	0%

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IMS Database Solution Pack

- ❖ Autonomics
- ❖ IBM Management 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 HALDB Toolkit



IMS Fast Path Solution Pack

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



Summary

- IBM Management Console for IMS and DB2 for zOS shows that you can gain insight in your enterprise using a modern web interface!
- IMS Tools from IBM provide, integrated, easy-to-use solutions that fit your company's needs
- We are continuing to invest in our IMS Tools technology and have a vision for our IMS Tools that centers around autonomic computing
- IBM is dedicated to the continued success and support of IMS and the mainframe. We're invested for the long term, right beside you.



Questions?

