

## Isn't it Time to Stop Baby Sitting Your DB2?

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Session: 17577

#SHAREorg



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# Agenda

- Overview
- Autonomics
  - What is it?
  - IBM's adaptation for DB2 (and IMS)
  - What you need to take full advantage of it
- Management Console
  - What is it?
  - Slides in lieu of demo ☹️
- Questions

# The Modern DBA

- The demands on DBAs and DB2 SysProgs are increasing
  - Companies are expecting more from smaller DBA teams
  - Experienced DBAs and SysProgs continue to retire
  - New DBAs and SysProgs can take some time to become “experienced”
  - Industry wide – modern employees spend less time in a single role
- 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
  - Demands for non-disruptive object maintenance and to keep CPU cycles out of peak processing periods
  - Increasing system complexity makes planning, maintaining, and troubleshooting more difficult and time consuming
- DBAs / SysProgs must become more efficient, more quickly

# IBM Tools Answer...

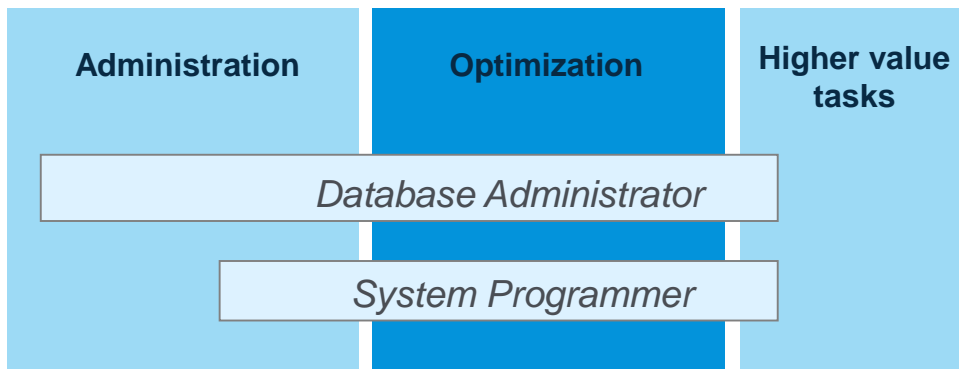


ANSWERS PRICE LIST	
Answers .....	75¢
Answers (requiring thought) .....	1.25
Answers (correct) .....	2.50

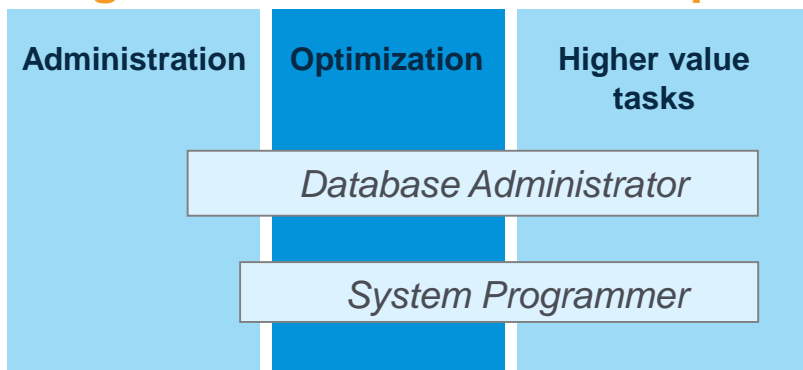
- Autonomics
  - Automate the routine collection of data
  - Automate the analysis of this data
  - Automate the decisions based off this analysis
  - Automate the straight-forward execution of decisions
- Smarter interfaces
  - Consolidate and simplify information from various sources
  - Simplify the presentation of complex information (visuals)
  - Shorten the learning curve (integrated assistance and doc)
  - Unify interfaces to make navigation more familiar
- Integration of our tools
  - IBM tools work better together
  - Share each others data
  - Leverage each others functions

# The Value of Autonomics and Smarter Interfaces

## Today



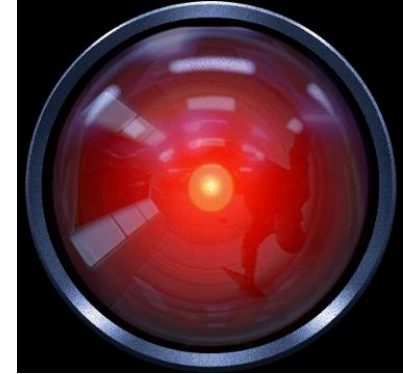
## Target: Smarter Tools enable productivity



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

# autonomic

**Autonomic computing** refers to the self-managing characteristics of distributed computing resources, adapting to unpredictable changes while hiding intrinsic complexity to operators and users. Started by [IBM](#) in 2001, this initiative ultimately aims to develop computer systems capable of [self-management](#), to overcome the rapidly growing complexity of [computing systems management](#), and to reduce the barrier that complexity poses to further growth.



# Autonomics inspiration from John Boyd

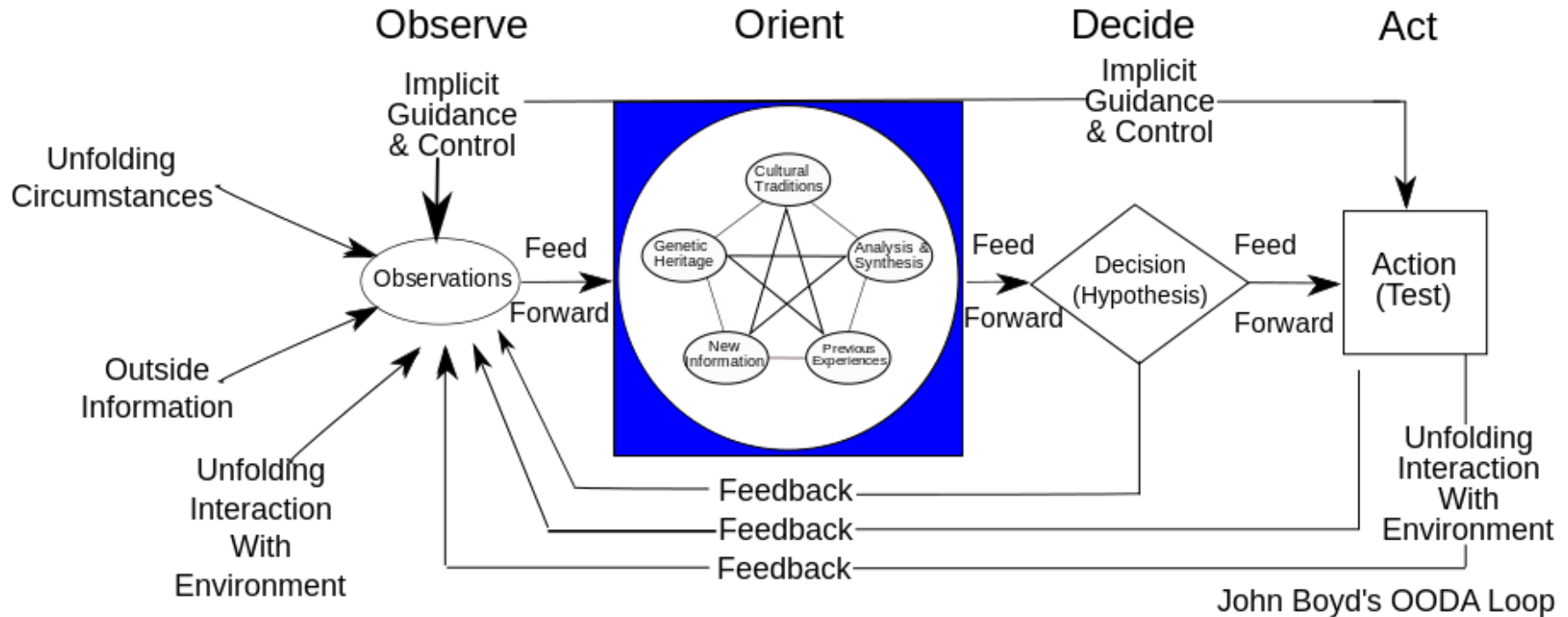


- Colonel John Boyd (1927-1997)
  - USAF F-86 Sabre fighter pilot during the Korean War
  - Became an instructor at the prestigious USAF Weapons School
  - Together with Thomas Christie created the Energy-Maneuverability theory of aerial combat
  - First created the OODA loop as a teaching aid

- OODA loop
  - Observe
  - Orient
  - Decide
  - Act



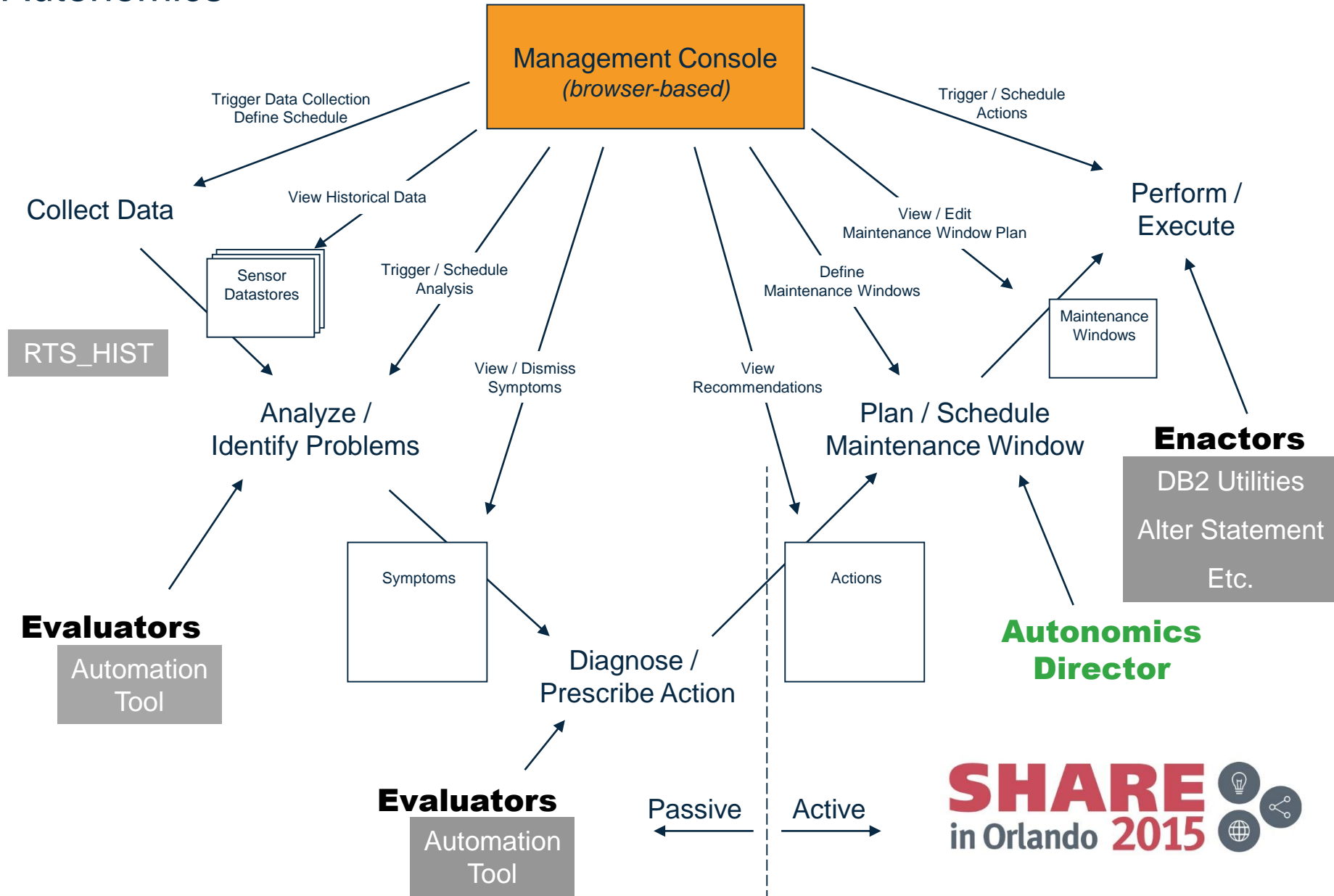
# Autonomics and the OODA loop



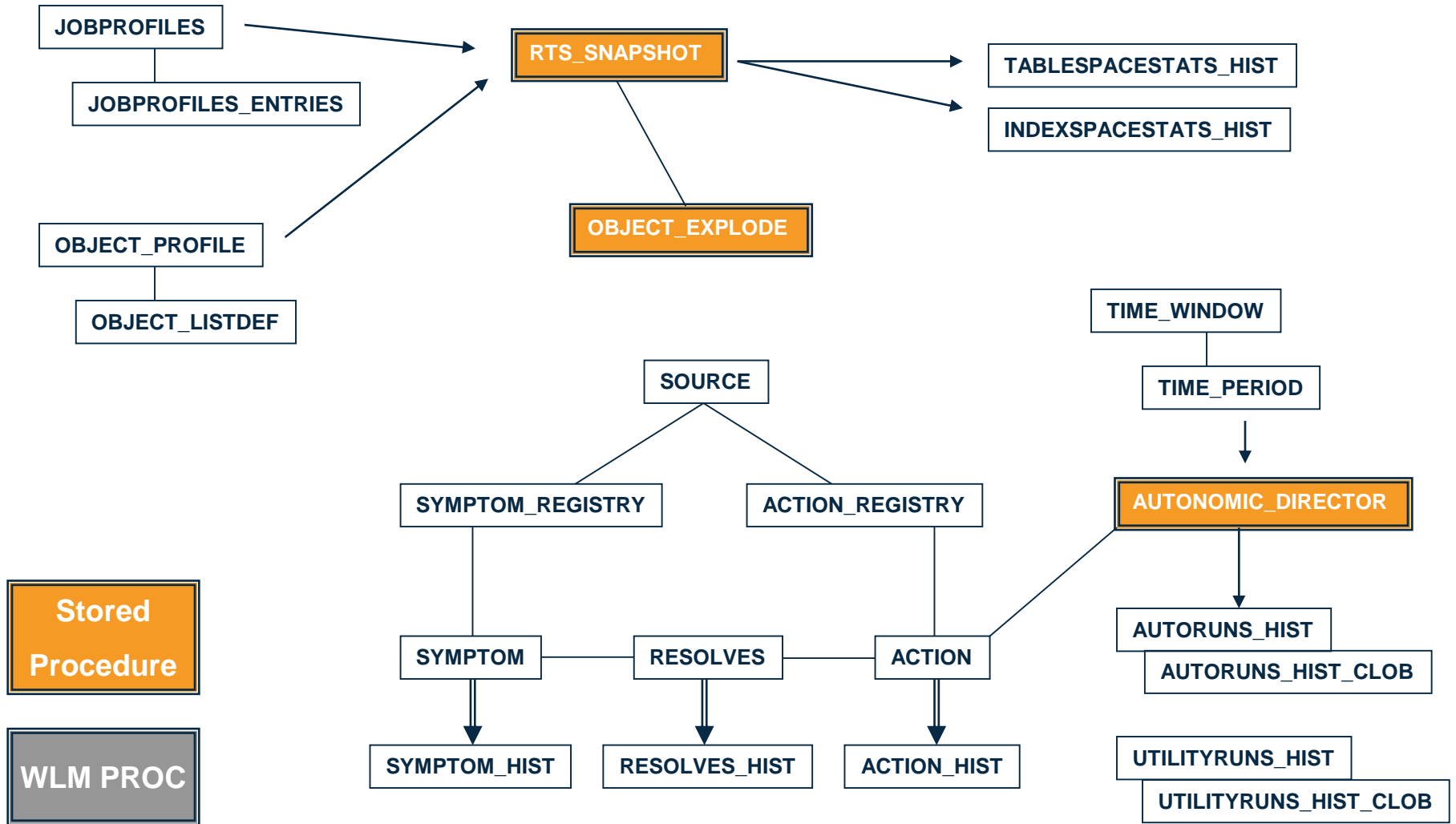
Has found applications in:  
business, politics, sports, litigation theory, game theory, etc...



# Autonomics



# Autonomics Director for DB2 for z/OS Tables/SP



# Object Profile – Tools Base

- Collection of DB2 objects to process
- Much like a LISTDEF
- Support wildcarding
- Many other options to include related spaces
- Can automatically include new objs in application

# DB2 Automation Tool – Exception Profile

- Collection of DB2 object attributes, object status, time based attributes, and object statistics with user definable thresholds:
  - RELOCATED ROWS PCT > n
  - DAYS SINCE LAST COPY > n
  - NUMBER OF EXTENTS > n
  - PSUEDO DELETE PCT > n
  - DAYS SINCE LAST RUNSTATS > n
  - STATUS COPY PENDING (True/False)
- Evaluated per object
- Can be ANDed / ORed together
- End result is True or False
- When true, produce a Symptom

# DB2 Automation Tool – Utility Profile

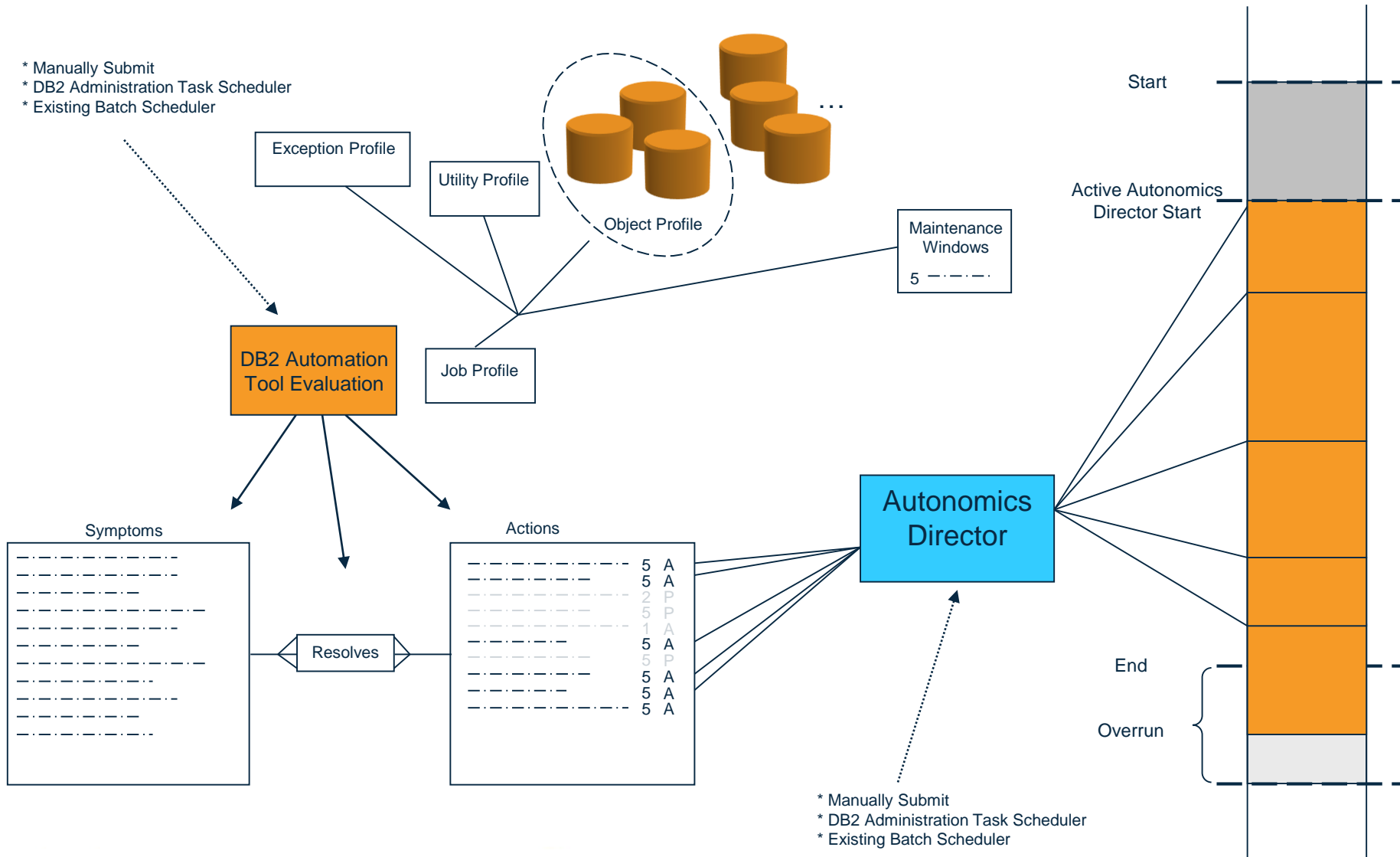
- Collection of DB2 Utilities and/or custom utilities
  - Reorg, Runstats, Copy, Check Data, Modify, Quiesce, Copy to Copy, Recover, Reallocation (alter space), etc
- Specific options for each utility
  - Image Copy
    - FlashCopy, Disk, Tape, Full, Incremental, etc
  - Reorg
    - Inline stats, Discard options, Parallel, Keep Dictionary, Reuse, etc
- Can specify thresholds
  - If NPAGES > n, image copy to tape, disk, or FlashCopy

# DB2 Automation Tool – Job Profile

- Collection of Object Profiles
  - What objects to process
  - Supports wildcarding
  - Chose objects based on attributes with advanced options
- Collection of Exception Profiles
  - What conditions or symptoms are you interested in about those objects
- Collection of Job Profiles
  - What Utilities or Actions will resolve those symptoms produced by the exception profile
- Method to specify these with conditional logic

# DB2 Utility Autonomics Example

- \* Manually Submit
- \* DB2 Administration Task Scheduler
- \* Existing Batch Scheduler



# DB2 Utilities Solution Pack 2.1

new

## 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 email, 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*

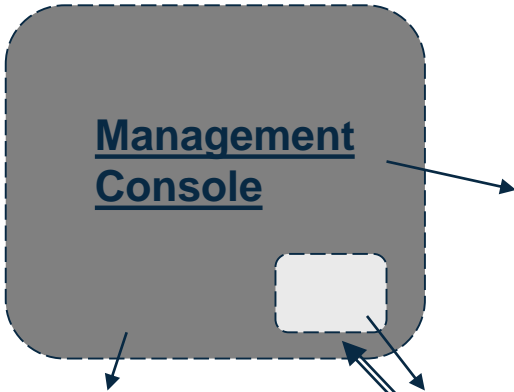
**DB2 Utilities  
Solution**

*\* Also available in point product releases*

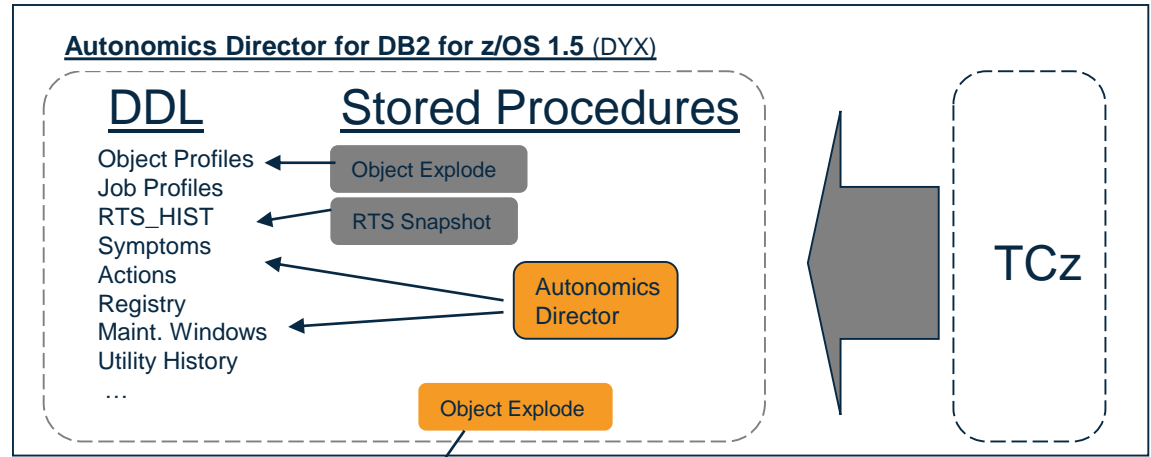


# DB2 Utility Autonomics Products

Management Console for IMS and DB2 for z/OS 1.1 (DYW)  
(no-charge)

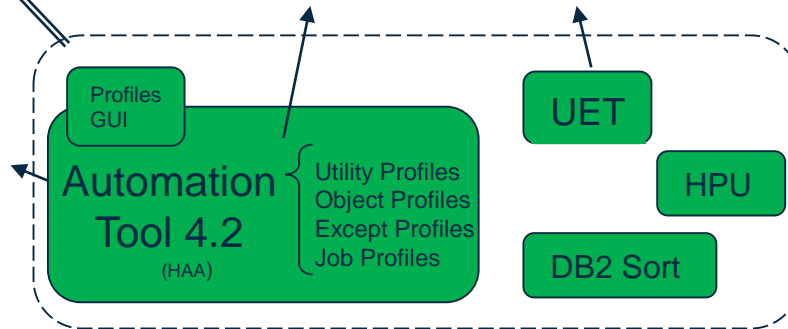


Tools Base 1.5 (no-charge)



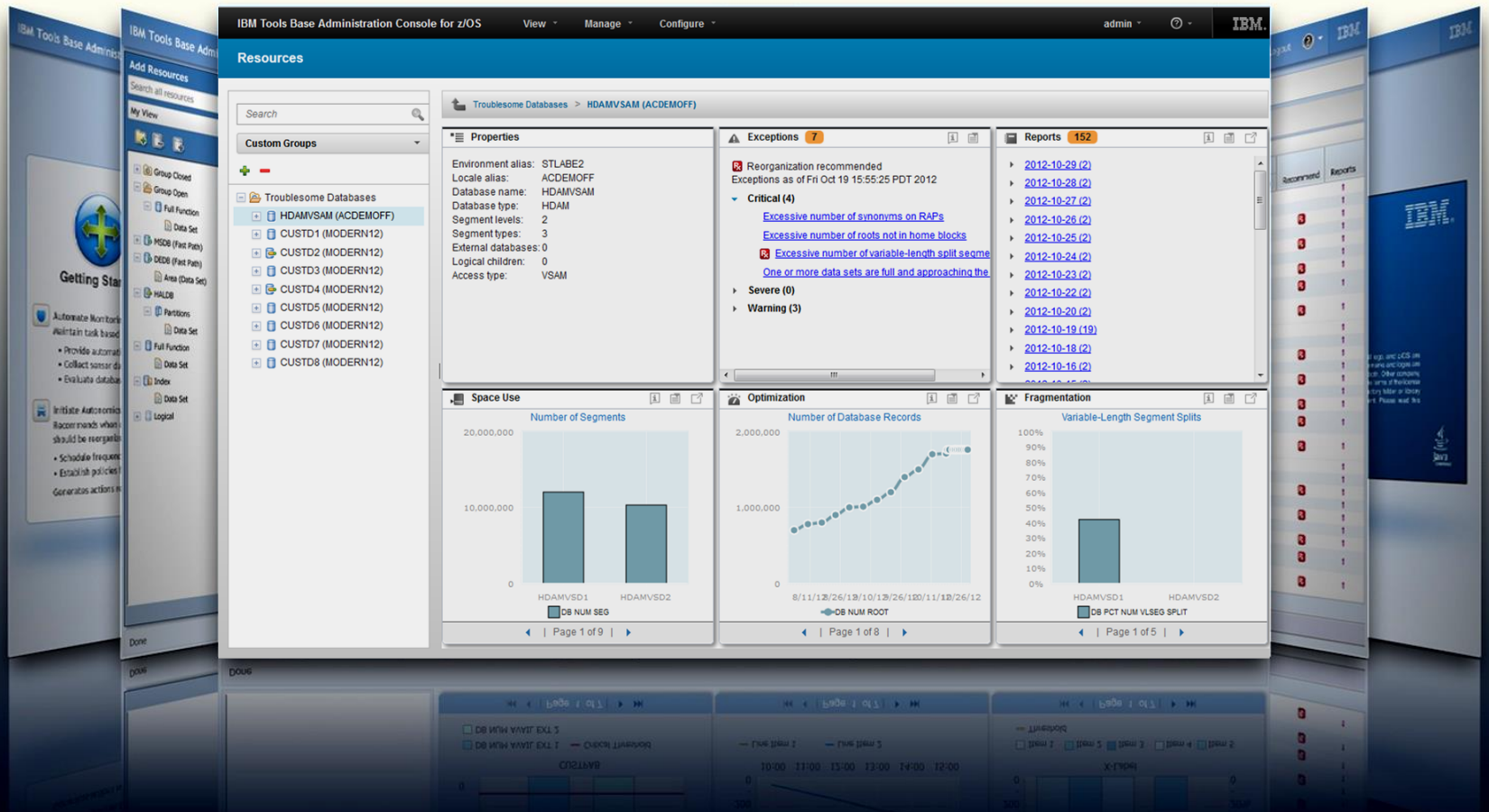
DB2 Admin Scheduler

DB2 v10 / v11



Utility Sol. Pack 2.1 (BBY)

# 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 details for a "Troublesome Database" named "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)

**Space Use:** Bar chart showing the number of segments for HDAMVSD1 and HDAMVSD2.

**Optimization:** Line chart showing the number of database records over time for HDAMVSD1 and HDAMVSD2.

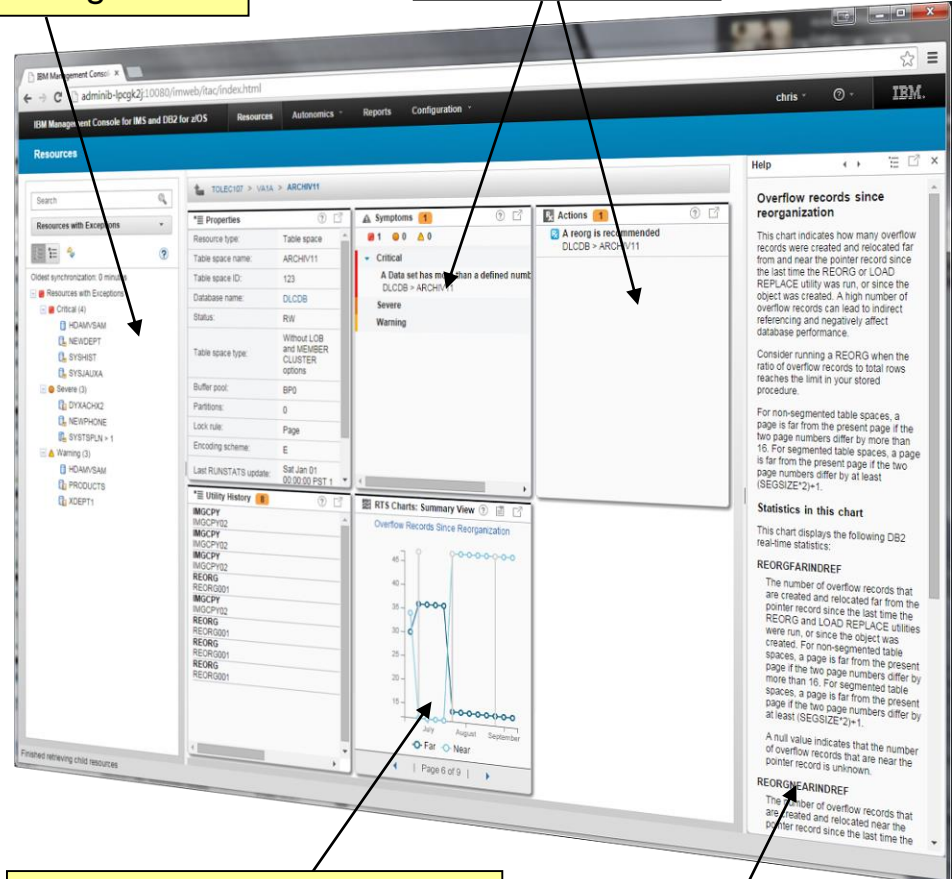
**Fragmentation:** Bar chart showing the percentage of variable-length segment splits for HDAMVSD1 and HDAMVSD2.

# 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 to from across 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



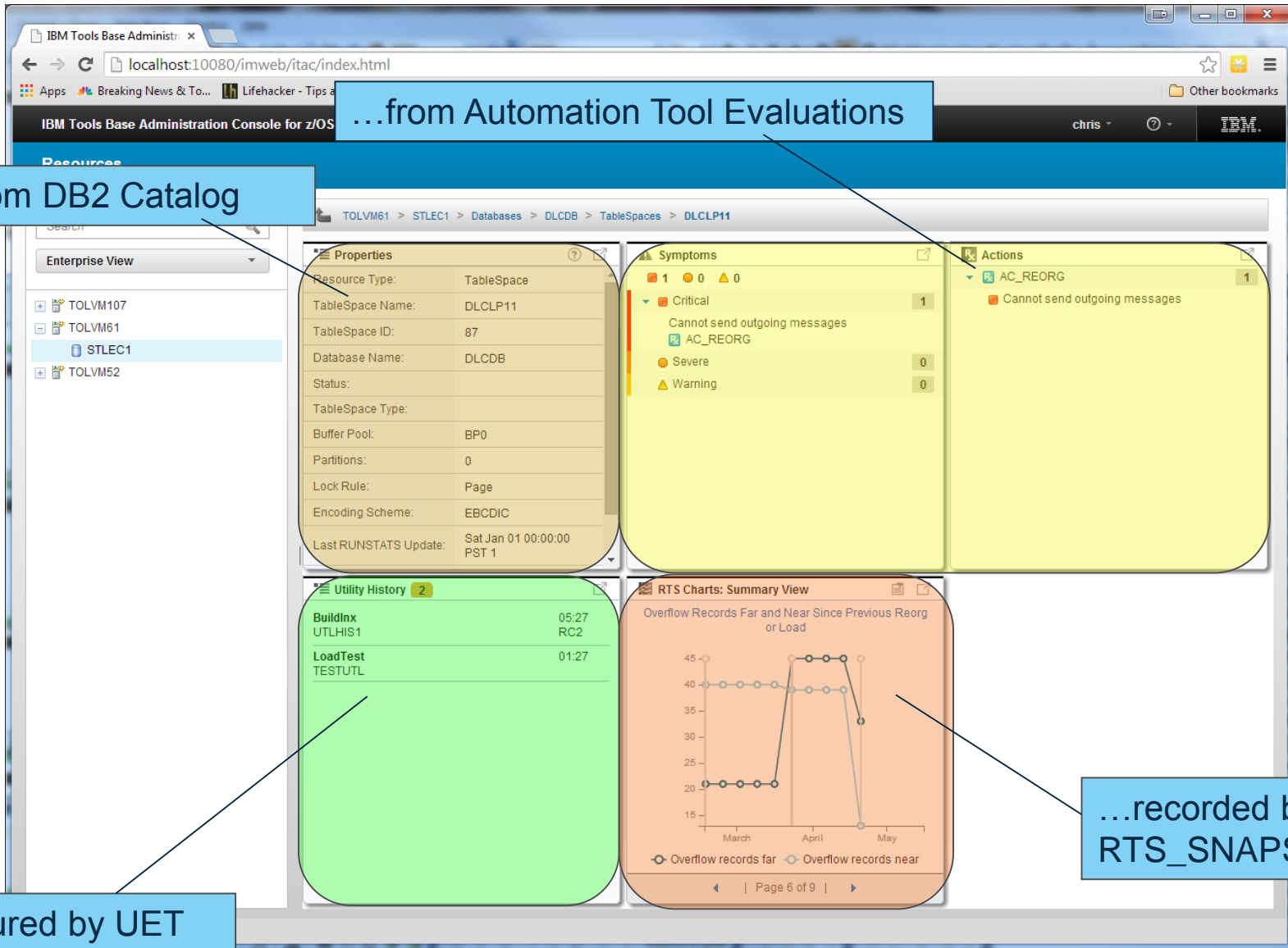
Graphical Visualization of data not possible in ISPF

Integrated Help

# Dashboard based Design

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

# Holistic Dashboards of DB2 Objects



IBM Tools Base Administration Console for z/OS

...from Automation Tool Evaluations

...from DB2 Catalog

...captured by UET

...recorded by RTS\_SNAPSHOT

Enterprise View

TOLVM107  
TOLVM61  
STLEC1  
TOLVM52

TOLVM61 > STLEC1 > Databases > DLADB > TableSpaces > DLCLP1

**Properties**

Resource Type:	TableSpace
TableSpace Name:	DLCLP11
TableSpace ID:	87
Database Name:	DLADB
Status:	
TableSpace Type:	
Buffer Pool:	BP0
Partitions:	0
Lock Rule:	Page
Encoding Scheme:	EBCDIC
Last RUNSTATS Update:	Sat Jan 01 00:00:00 PST 1

**Symptoms**

Critical	1
Severe	0
Warning	0

**Actions**

- AC\_REORG 1
- Cannot send outgoing messages

**Utility History**

BuildInx	05:27
UTLHIS1	RC2
LoadTest	01:27
TESTUTL	

**RTS Charts: Summary View**

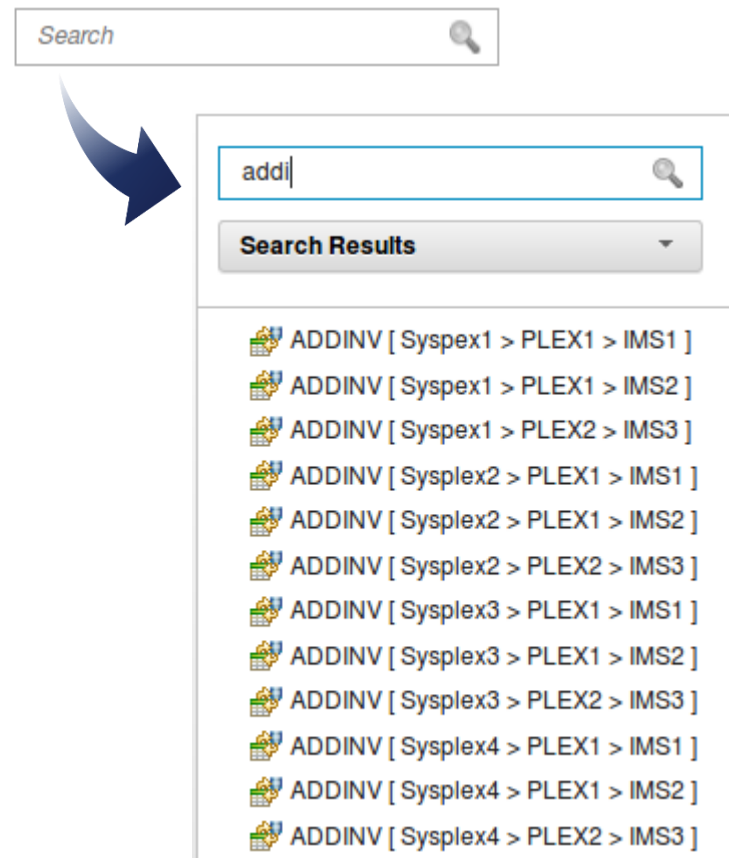
Overflow Records Far and Near Since Previous Reorg or Load

Month	Overflow records far	Overflow records near
March	20	20
April	45	45
May	15	15

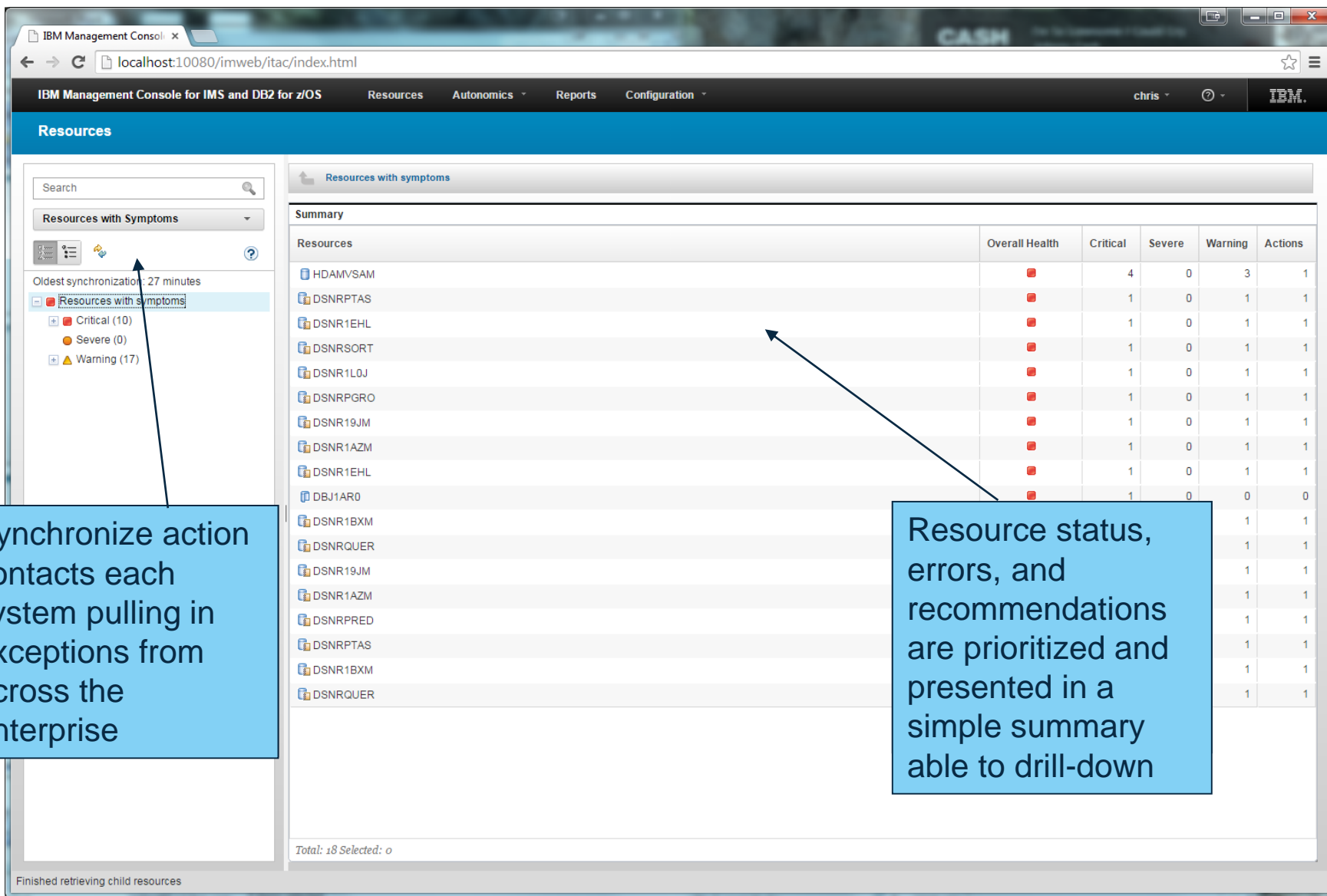
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# Enterprise-wide Object Search

- Objects are locally indexed at discovery time
- This allows global type-ahead search to jump directly to a desired object, be it:
  - IMS Database
  - DB2 Tablespace
  - DB2 Index
  - IMS Transactions
  - etc.



# 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
DSNR1L0J	■	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	1
DSNRQUER				1	1
DSNR19JM				1	1
DSNR1AZM				1	1
DSNRPRED				1	1
DSNRPTAS				1	1
DSNR1BXM				1	1
DSNRQUER				1	1

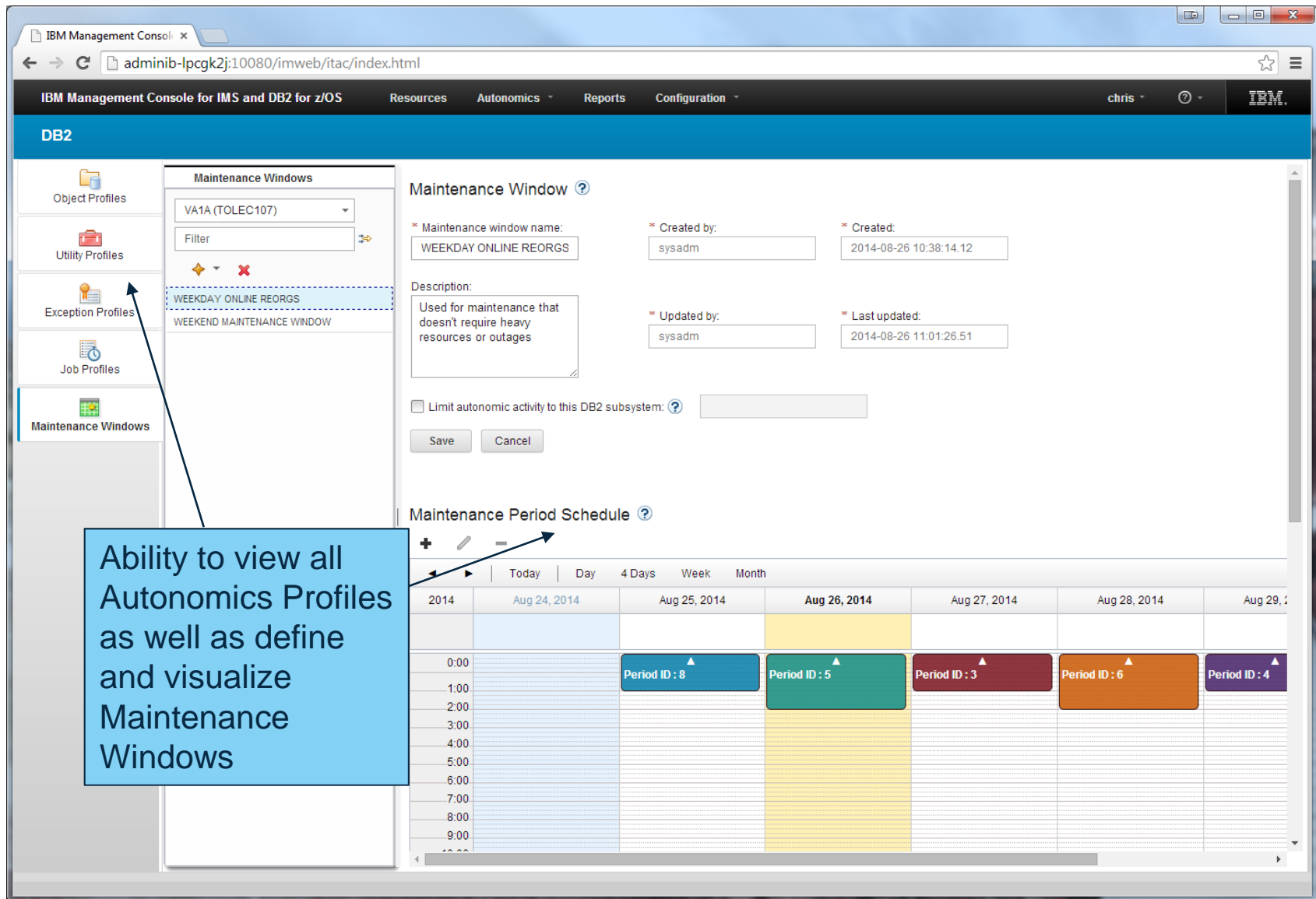
Total: 18 Selected: 0

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 able to drill-down

# Control of Autonomics for IMS and DB2



The screenshot displays the IBM Management Console 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 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
- Limit autonomic activity to this DB2 subsystem:

**Maintenance Period Schedule:**

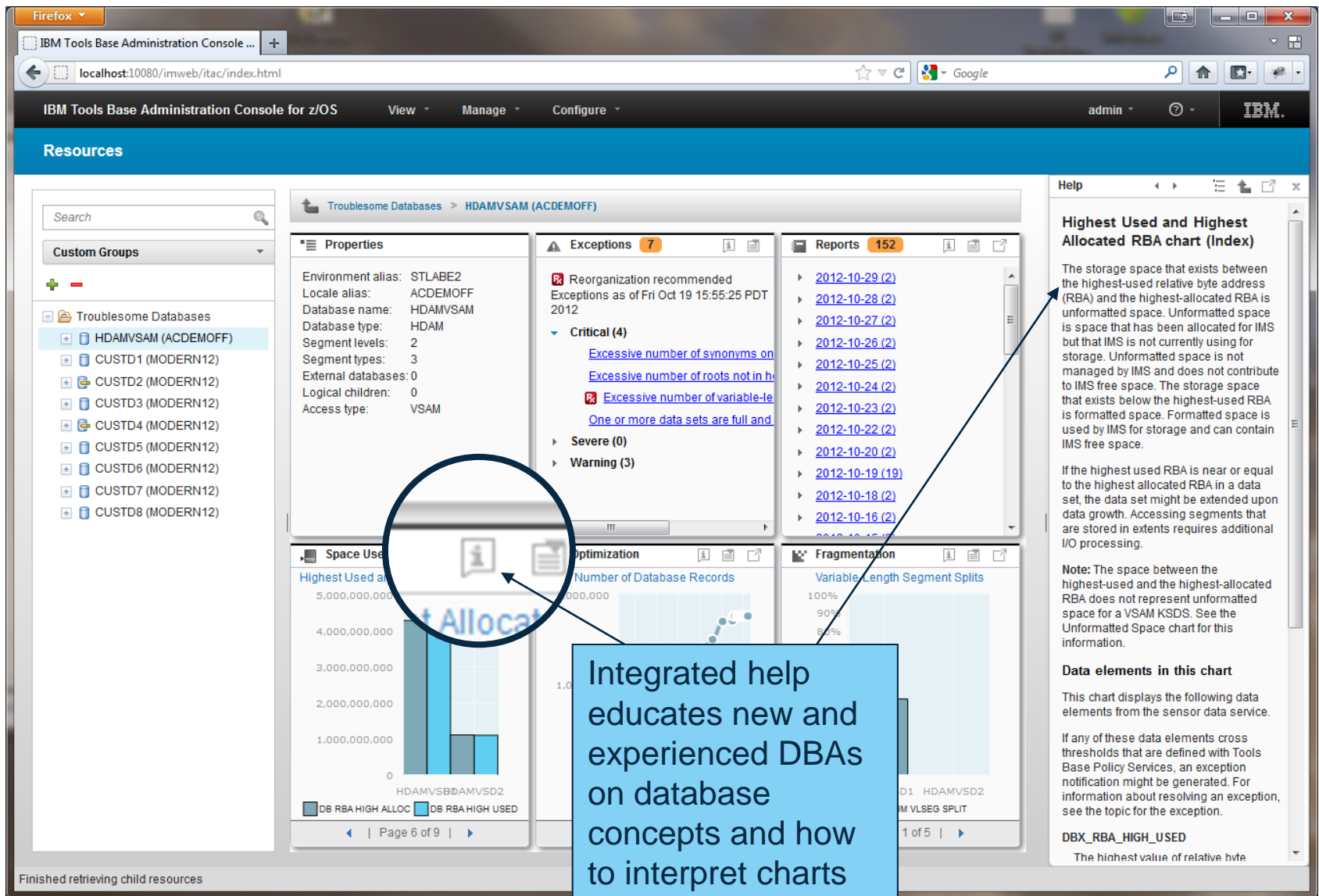
The schedule is visualized as a grid with columns for dates (Aug 24, 2014 to Aug 29, 2014) and rows for time intervals (0:00 to 9:00). Maintenance periods are shown as colored blocks:

Time	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						

A blue callout box with the text "Ability to view all Autonomics Profiles as well as define and visualize Maintenance Windows" is overlaid on the interface, with arrows pointing to the "Maintenance Windows" list in the left sidebar and the "Maintenance Period Schedule" grid.



# Integrated Help / Education



The screenshot displays the IBM Tools Base Administration Console for z/OS interface. The main content area shows details for the database **HDAMVSAM (ACDEMOFF)**. Key sections include:

- 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) exceptions include: Excessive number of synonyms on, Excessive number of roots not in h, and Excessive number of variable-length data sets are full and.
- Reports (152):** A list of reports with dates ranging from 2012-10-15 to 2012-10-29.
- Space Use:** A bar chart titled "Highest Used and Highest Allocated RBA chart (Index)". The Y-axis represents relative byte address (RBA) from 0 to 5,000,000,000. The X-axis shows segments: HDAMVSBIDAMVSD2, HDAMVSD1, and HDAMVSD2. The legend indicates "DB RBA HIGH ALLOC" (blue) and "DB RBA HIGH USED" (light blue).
- Optimization:** Number of Database Records.
- Fragmentation:** Variable Length Segment Splits.

The **Help** pane on the right provides detailed information for the "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 not 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**

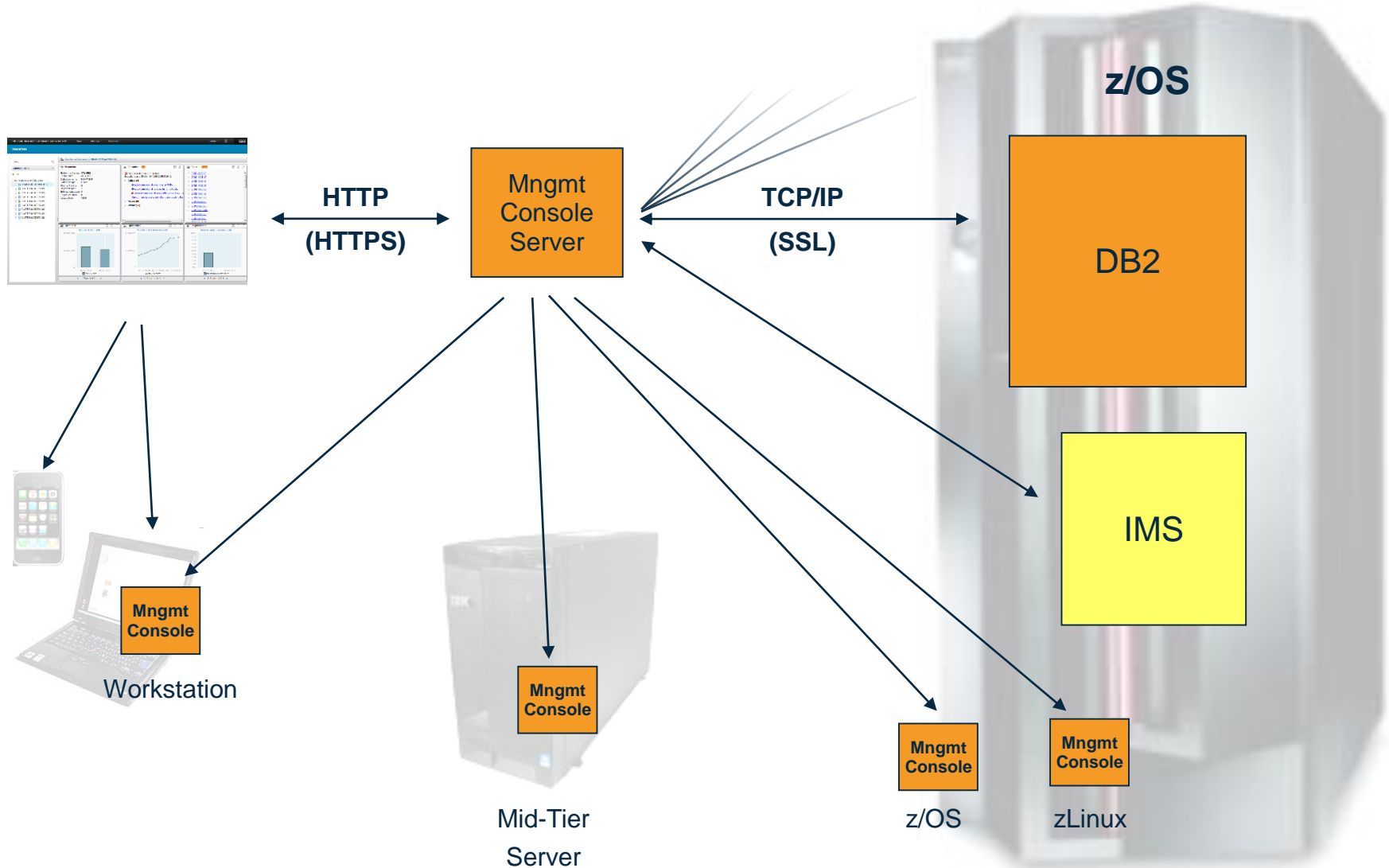
This chart displays the following data elements from the sensor data service.

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.

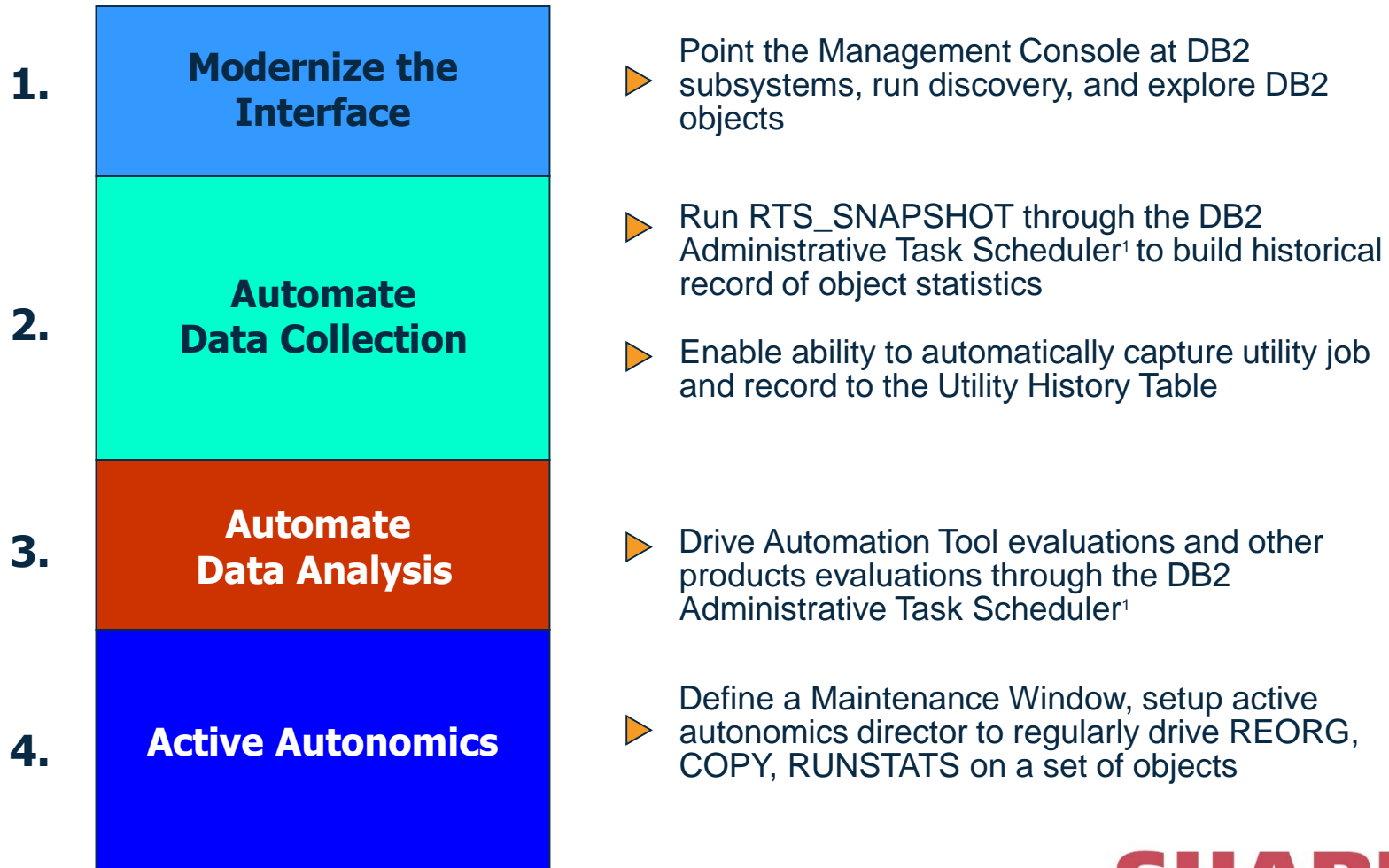
**DBX\_RBA\_HIGH\_USED**  
The highest value of relative byte

**Integrated help educates new and experienced DBAs on database concepts and how to interpret charts**

# Management Console Deployment



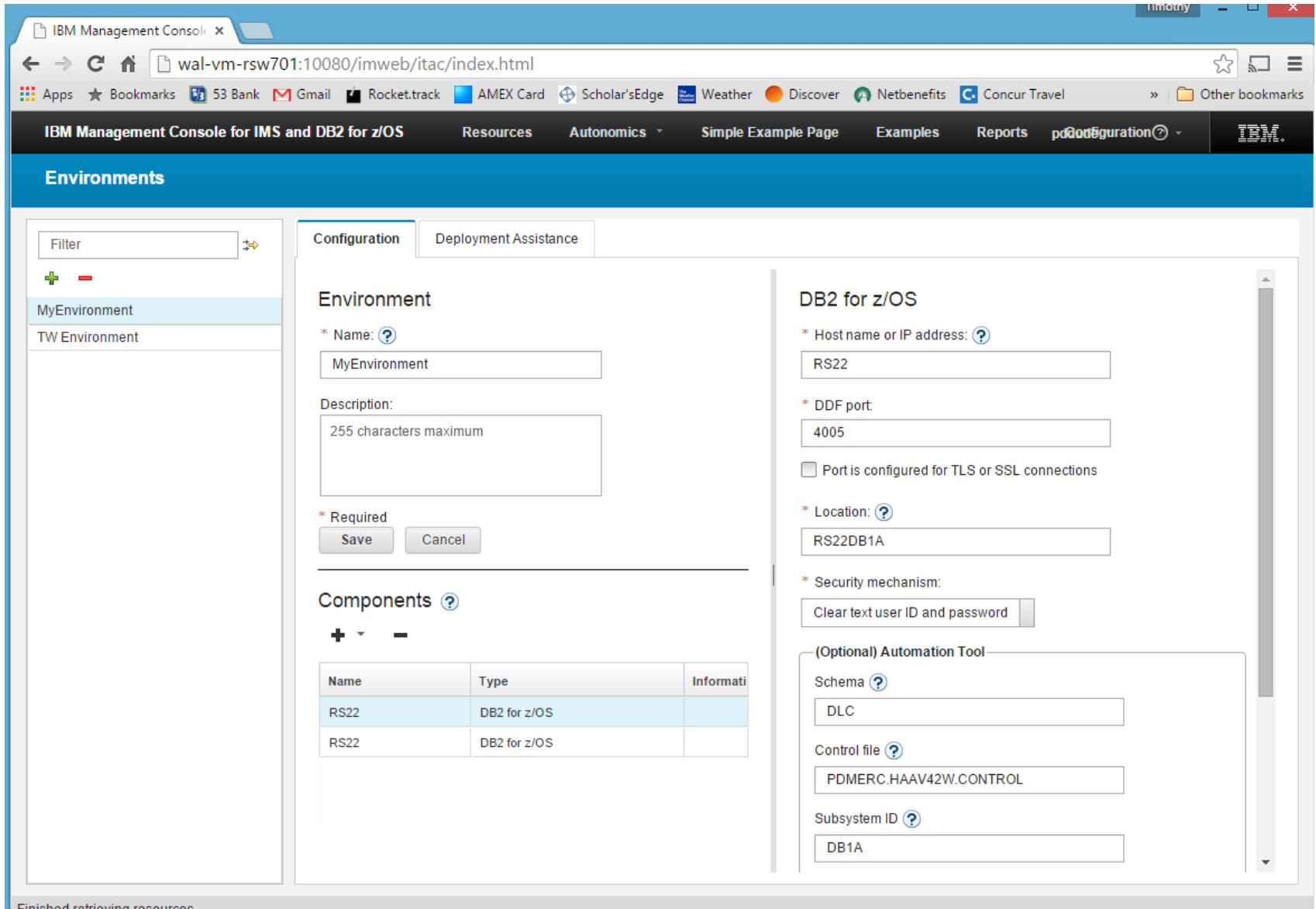
# Autonomics Deployment w/ Utility Solution Pack



<sup>1</sup> or your existing scheduler

# Configuring Enterprise Environments

– Define all your DB2 environments



The screenshot shows the IBM Management Console interface for configuring a DB2 environment. The browser address bar shows the URL: wal-vm-rsw701:10080/imweb/itac/index.html. The page title is "IBM Management Console for IMS and DB2 for z/OS". The main navigation bar includes "Resources", "Autonomics", "Simple Example Page", "Examples", "Reports", and "Configuration". The "Environments" section is active, showing a list of environments: "MyEnvironment" and "TW Environment". The "Configuration" tab is selected, displaying the following fields:

- Environment Name:** MyEnvironment
- Description:** 255 characters maximum
- DB2 for z/OS Host name or IP address:** RS22
- DDF port:** 4005
- Port is configured for TLS or SSL connections
- Location:** RS22DB1A
- Security mechanism:** Clear text user ID and password
- (Optional) Automation Tool:**
  - Schema:** DLC
  - Control file:** PDMERC.HAAV42W.CONTROL
  - Subsystem ID:** DB1A

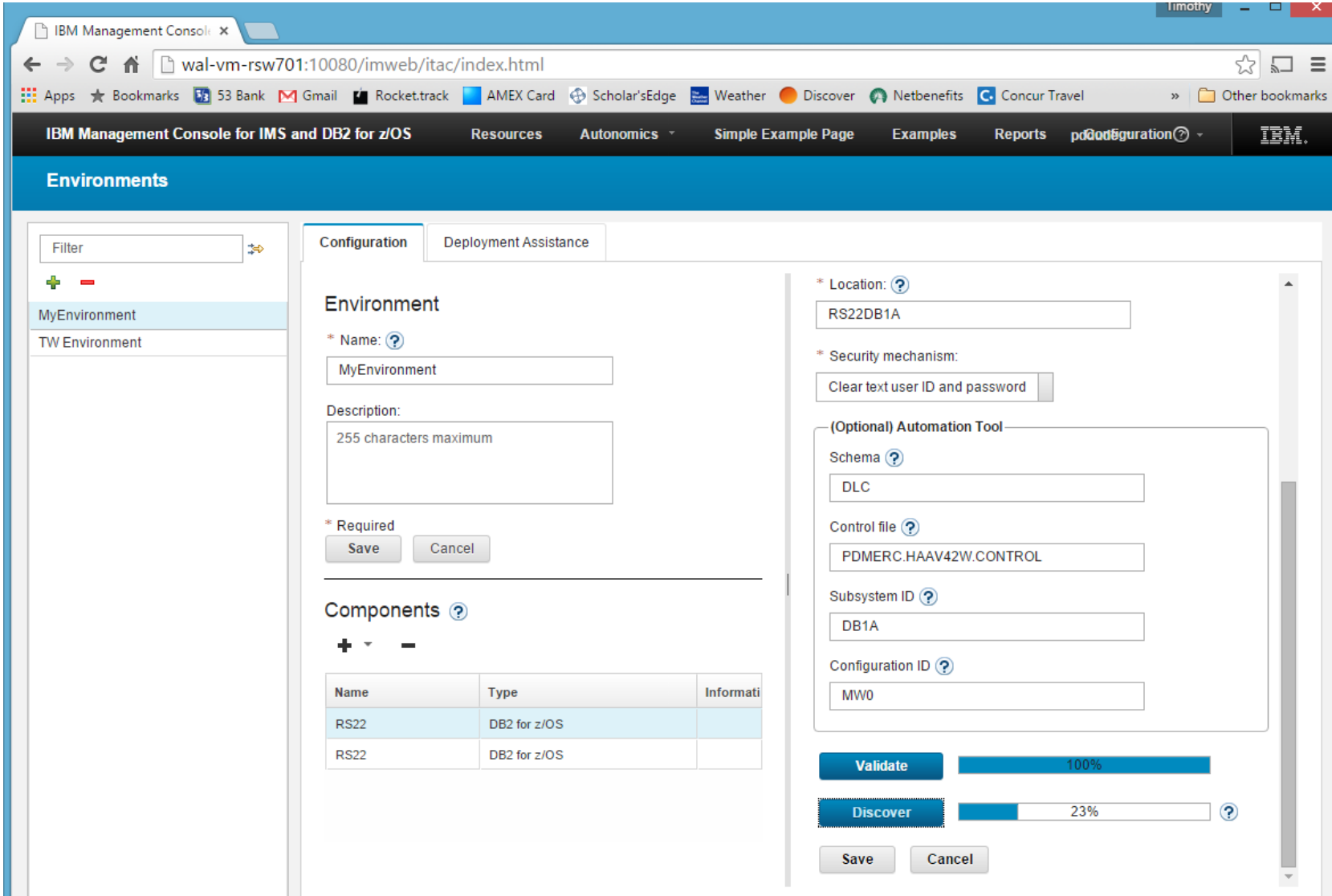
Below the configuration fields, there is a "Components" section with a table listing components:

Name	Type	Information
RS22	DB2 for z/OS	
RS22	DB2 for z/OS	

At the bottom left, there is a status message: "Finished retrieving resources".

# Configuring Enterprise Environments

## – Run Environment Discovery



The screenshot shows the IBM Management Console interface for IMS and DB2 for z/OS. The main content area is titled "Environments" and is divided into two tabs: "Configuration" and "Deployment Assistance".

**Configuration Tab:**

- Environment:** Name: MyEnvironment, Description: 255 characters maximum. Buttons: Save, Cancel.
- Components:** A table listing components:

Name	Type	Informati
RS22	DB2 for z/OS	
RS22	DB2 for z/OS	

**Deployment Assistance Tab:**

- Location:** RS22DB1A
- Security mechanism:** Clear text user ID and password
- (Optional) Automation Tool:**
  - Schema: DLC
  - Control file: PDMERC.HAAV42W.CONTROL
  - Subsystem ID: DB1A
  - Configuration ID: MW0

**Progress Indicators:**


- Validate:** 100% (blue bar)
- Discover:** 23% (blue bar)

Buttons: Save, Cancel

# Modernize the Interface

## Resources

Search 

Enterprise View 

TOLEC61

VA1A

ec03173

TOLEC61 > VA1A

Resource type: Select one

### Properties

Subsystem name: VA1A  
Level: 101  
System name: TOLEC61  
IRLM subsystem: PR21  
IRLM procedure: PRLMPR21  
Catalog level: 101  
Mode: NFM  
Thread count: 5

### Utility History

Utility History is not enabled for your environment.  
[Learn how to enable this feature.](#)

Image Copy	2014-10-24
Runstats	2014-10-24
Reorganization	2014-10-24

### Symptoms

Symptoms are not enabled for your environment.  
[Learn how to enable this feature.](#)

- Critical  
Available primary storage is very low
- Severe  
Fragmentation is high
- Warning  
Access activity is somewhat high  
Available secondary storage is somewhat low

### Actions

Actions are not enabled for your environment.  
[Learn how to enable this feature.](#)

- A reorganization is recommended
- An image copy is recommended
- A runstats job is recommended

# Install and Customize Autonomics Director for DB2



- After customizing AD for DB2 :

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

### Resources

Tolec61 > VA1A > Databases > DYXDB > Table spaces > DYXACTS

Search

Enterprise View

- Tolec61
- VA1A
- ec03173

Properties	
Resource type:	Table space
Table space name:	DYXACTS
Table space ID:	50
Database name:	DYXDB
Status:	RW
Table space type:	Without LOB and MEMBER CLUSTER options
Buffer pool:	BP8K0
Partitions:	0
Lock rule:	Any
Encoding scheme:	E

#### Symptoms 0

No symptoms were found.

#### Actions 0

No actions were found.

#### Utility History 0

No utilities were found.

#### RTS Charts: Summary View

Extents

No statistics data was generated during this time period for this chart.

Page 1 of 9

# Automate Data Collection (RTS History)

- Define Object Profiles :

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

DB2   IMS   DB2

Object Profiles

Utility Profiles

Exception Profiles

Job Profiles

Maintenance Windows

Object Profiles

VA1A (Tolec61)

Filter

TS\_DLC\_ZANA

**TS\_SYSAUTO**

### Object Profile

Profile name: TS\_SYSAUTO

Created by: sysadm

Created: 2014-09-21 20:46:44.236859

Last updated: 2014-09-21 20:46:44.236989

Last updated by: sysadm

Description: 255 characters maximum

Save

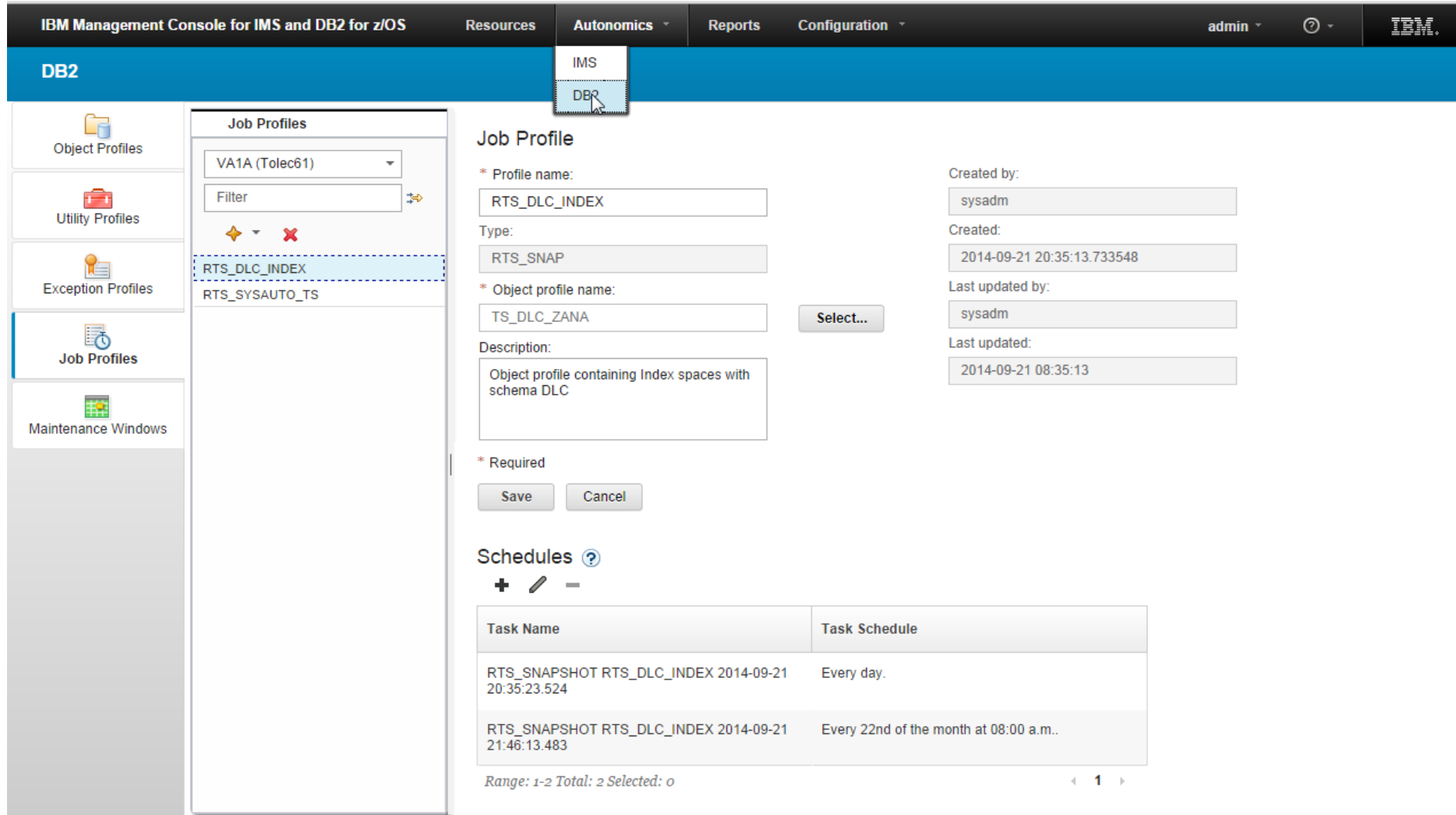
+   -   ↑   ↓   Evaluate

Exclude these objects from the profile	Object name:	Database or schema name:	Object type:	Process partitions	Process auxiliary relations†	Process cloned objects only	Process defined objects:	Process history objects only	Process referentia set	Process related objects:	Last Updated By
Include	*	SYSAUTO	Table	All		N	ALL	N	N	Table space	sysadm



# Automate Data Collection (RTS History)

- Define and Schedule an RTS Snap Job Profile :



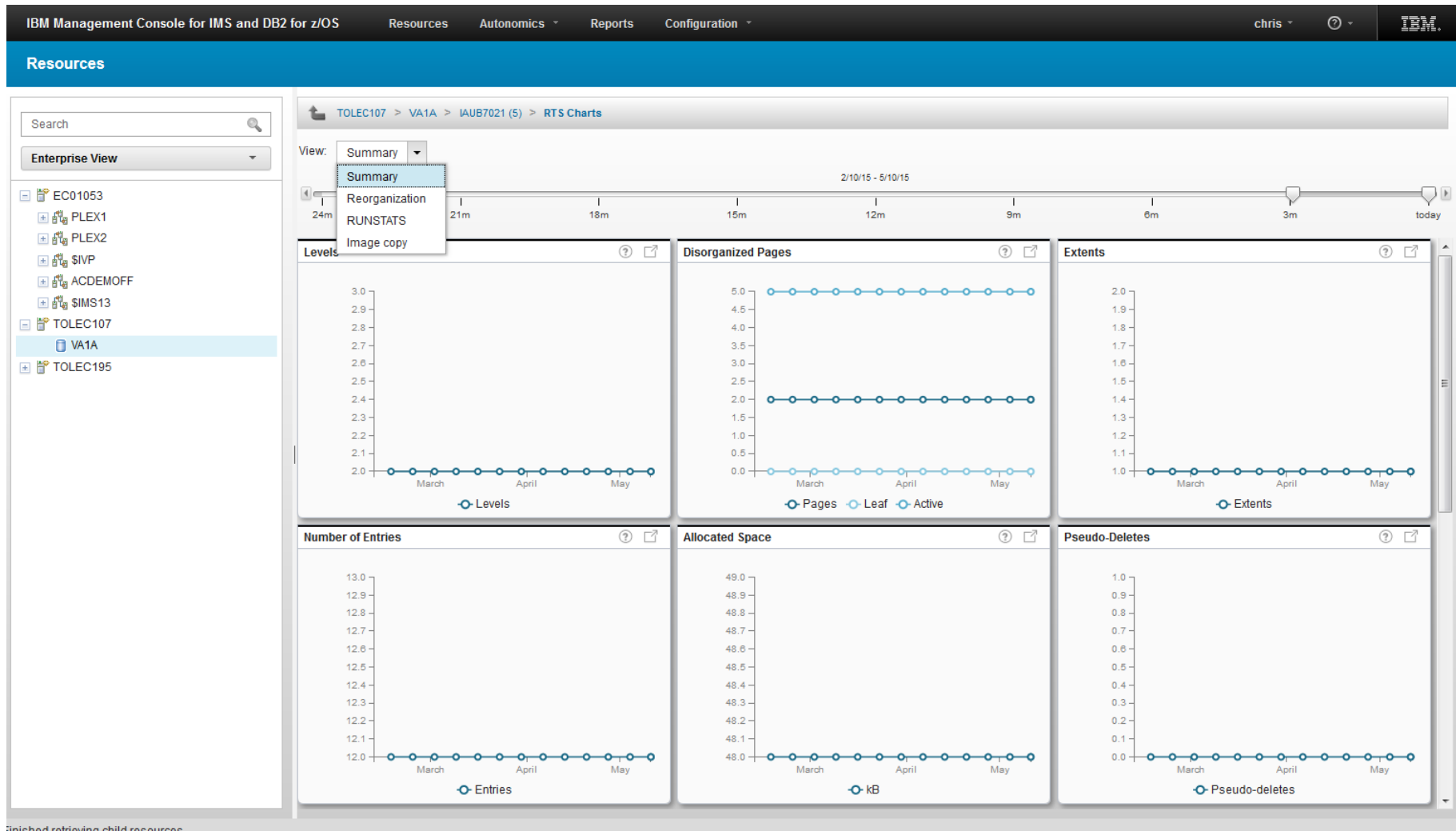
The screenshot displays the IBM Management Console interface for IMS and DB2 for z/OS. The top navigation bar includes 'Resources', 'Autonomics', 'Reports', and 'Configuration'. The 'Autonomics' dropdown menu is open, showing 'IMS' and 'DB2' options. The 'DB2' option is selected, and the 'Job Profiles' section is active. On the left sidebar, 'Job Profiles' is highlighted. The main content area shows the configuration for a job profile named 'RTS\_DLC\_INDEX'. The 'Profile name' is 'RTS\_DLC\_INDEX', the 'Type' is 'RTS\_SNAP', and the 'Object profile name' is 'TS\_DLC\_ZANA'. The description is 'Object profile containing Index spaces with schema DLC'. The 'Created by' is 'sysadm' and the 'Created' date is '2014-09-21 20:35:13.733548'. The 'Last updated by' is 'sysadm' and the 'Last updated' date is '2014-09-21 08:35:13'. Below the configuration, there are 'Save' and 'Cancel' buttons. The 'Schedules' section shows a table with two entries:

Task Name	Task Schedule
RTS_SNAPSHOT RTS_DLC_INDEX 2014-09-21 20:35:23.524	Every day.
RTS_SNAPSHOT RTS_DLC_INDEX 2014-09-21 21:46:13.483	Every 22nd of the month at 08:00 a.m..

At the bottom, it shows 'Range: 1-2 Total: 2 Selected: 0' and a page number '1'.

# DB2 Object Dashboard with RTS History

- View RTS history data on dashboard :

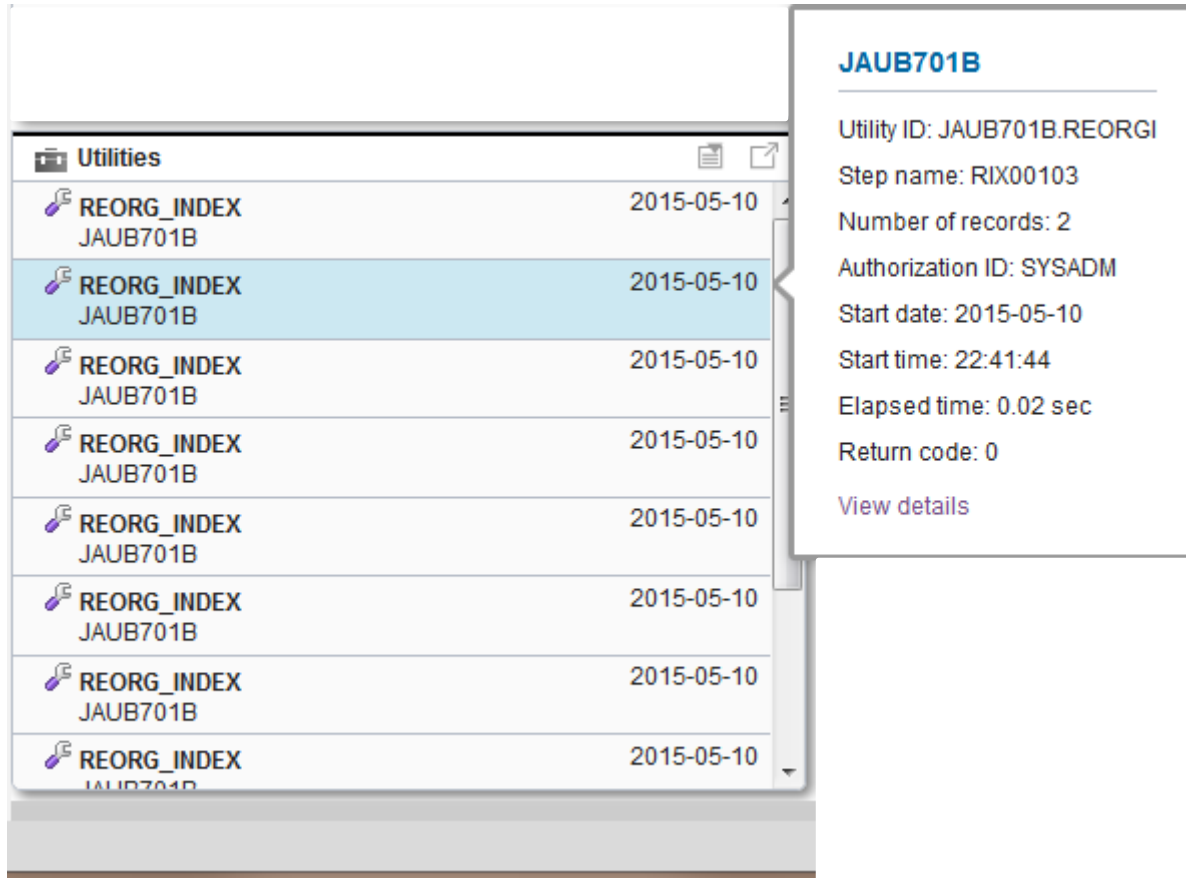


The screenshot shows the IBM Management Console for IMS and DB2 for z/OS. The top navigation bar includes 'Resources', 'Autonomics', 'Reports', and 'Configuration'. The user is logged in as 'chris'. The main dashboard is titled 'Resources' and shows a breadcrumb path: 'TOLEC107 > VA1A > IAUB7021 (5) > RTS Charts'. A search bar and 'Enterprise View' dropdown are visible. A left sidebar lists various objects, with 'VA1A' selected. The main area displays a 'View' dropdown menu with options: Summary, Summary, Reorganization, RUNSTATS, and Image copy. Below the menu are six charts showing RTS history data from March to May:

- Levels:** Y-axis from 2.0 to 3.0. Data points are constant at 2.0.
- Disorganized Pages:** Y-axis from 0.0 to 5.0. Data points are constant at 2.0 for Pages, 0.0 for Leaf, and 0.0 for Active.
- Extents:** Y-axis from 1.0 to 2.0. Data points are constant at 1.0.
- Number of Entries:** Y-axis from 12.0 to 13.0. Data points are constant at 12.0.
- Allocated Space:** Y-axis from 48.0 to 49.0. Data points are constant at 48.0.
- Pseudo-Deletes:** Y-axis from 0.0 to 1.0. Data points are constant at 0.0.

# Automate Data Collection (Utility History)

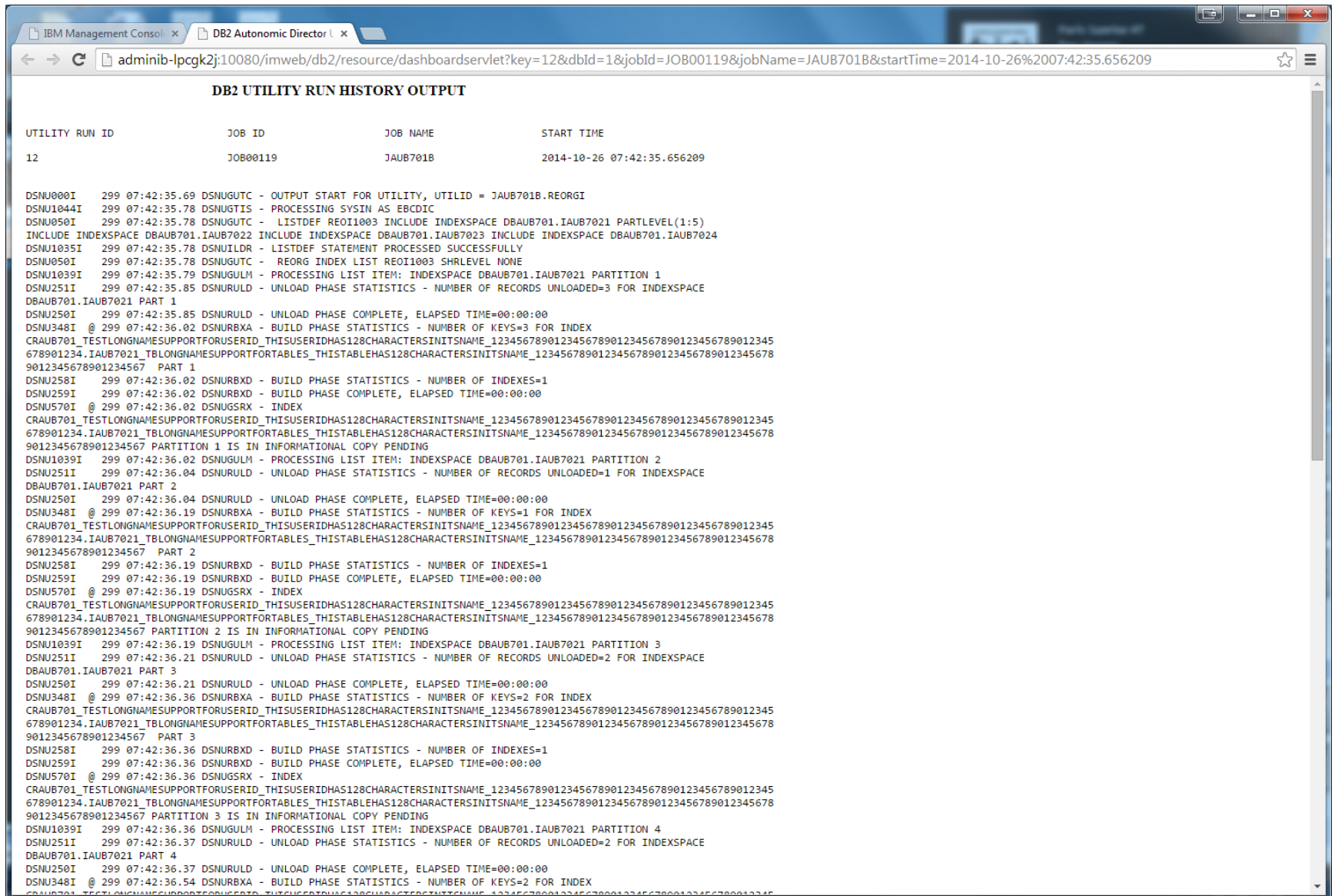
- Install and Customize Utility Enhancement Tool :



The screenshot shows a table of utility history entries. The table has a header 'Utilities' and contains several rows, each with a 'REORG\_INDEX' icon, the text 'REORG\_INDEX JAUB701B', and the date '2015-05-10'. The second row is highlighted in blue. To the right of the table, a detailed view for the selected entry 'JAUB701B' is shown. This view includes the following information:

- Utility ID: JAUB701B.REORGI
- Step name: RIX00103
- Number of records: 2
- Authorization ID: SYSADM
- Start date: 2015-05-10
- Start time: 22:41:44
- Elapsed time: 0.02 sec
- Return code: 0
- [View details](#)

# View Captured Utility Output



The screenshot shows a web browser window with the title "DB2 UTILITY RUN HISTORY OUTPUT". The browser address bar contains the URL: `adminib-lpcgk2j:10080/imweb/db2/resource/dashboardservlet?key=12&dbId=1&jobId=JOB00119&jobName=JAUB701B&startTime=2014-10-26%2007:42:35.656209`. The main content area displays a table of utility run history with the following columns: UTILITY RUN ID, JOB ID, JOB NAME, and START TIME.

UTILITY RUN ID	JOB ID	JOB NAME	START TIME
12	JOB00119	JAUB701B	2014-10-26 07:42:35.656209

Below the table, the utility output text is displayed, showing various DB2 utility commands and their execution details. The output includes commands like DSNUGUTC, DSNUGTIS, DSNUGULM, DSNURULD, DSNURBXA, DSNURBXR, DSNUGSRX, and DSNURULM, along with their respective parameters and execution times. The output is organized into sections for each utility run, with the first section starting at 07:42:35.69 and the last section ending at 07:42:36.37.

# Automation Tool Object / Utility / Exception / Job Profiles



- After customizing DB2 Automation tool view profiles under Autonomics tab :

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

**DB2**

**Exception Profiles**

VA1A (Tolec61)

Filter

◆ ▼ ✕

BEST PRACTICE IMAGE COPY FULL

BEST PRACTICE REORG AVOIDANCE

**BEST PRACTICE RUNSTATS**

CLUSTERRATIO VALUE RANGE

COPY CONDITIONS

LARGE OBJECTS

NEVER COPIED

REORG CONDITIONS

SATURDAY ONLY

SMALL OBJECTS

Creator: SAMPLE , Name: BEST PRACTICE RUNSTATS,  
Share option: U, Description: <empty>

Exception profiles are used to group and store user-selected exceptions for use in utility job generation. [Learn more](#)

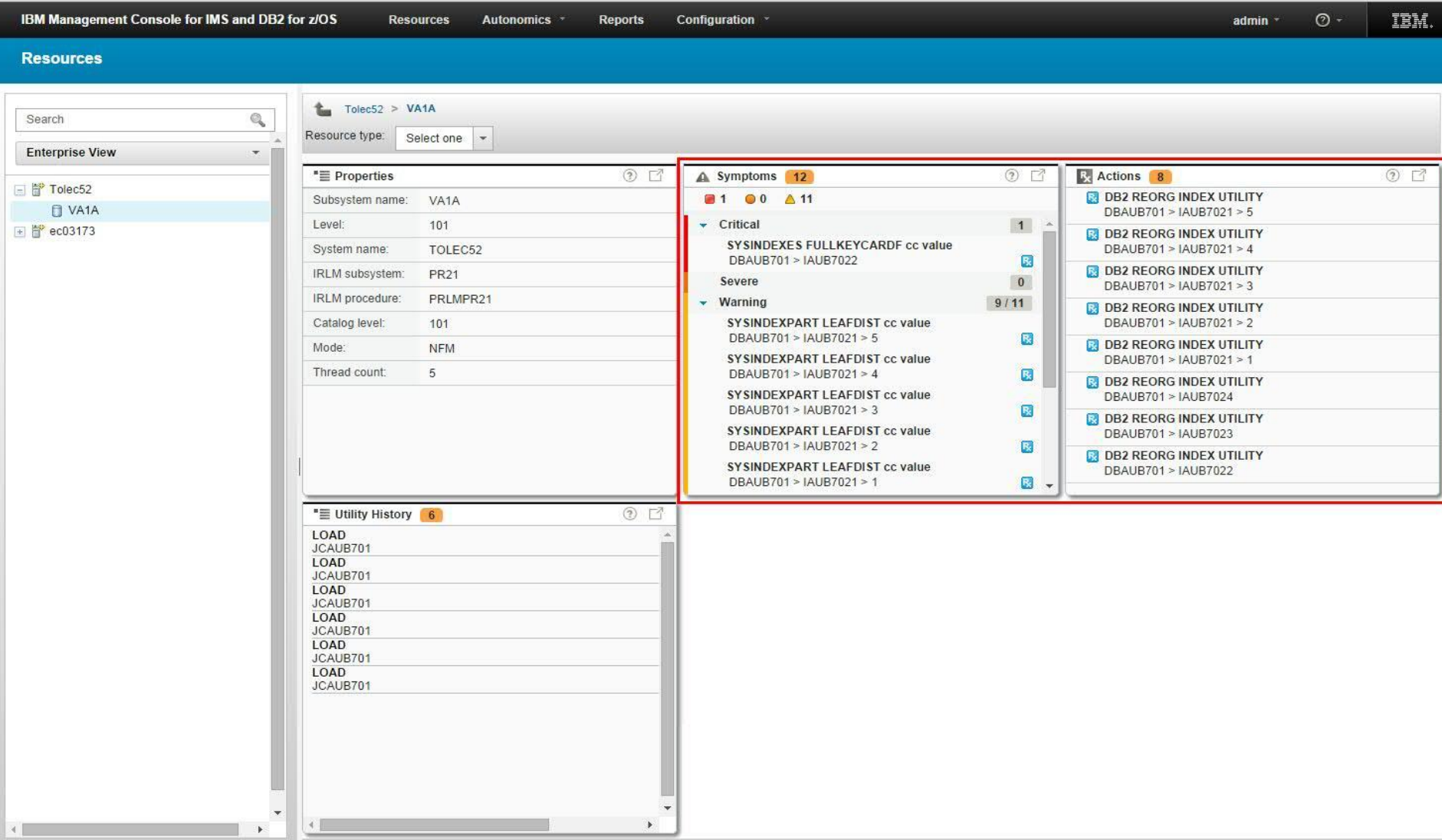
Use statistics from (R - Repository, C - Catalog, U - Runstats, S - Shadow, H - History): R  
Save triggers in repository (Yes/No): N  
WTO number of triggered objects (Yes/No): N  
Combine IX/TS exceptions when evaluating an index triggering a table space (Yes/No): N

**EXCEPTIONENTRIES\_HAASEPRU**

Selection	Statistics type	Column	Condition	Exception value	Description
	DAY OF WEEK	MONDAY			Trigger Exception ONLY if it's a Monday OR ...
	DAY OF WEEK	TUESDAY			a Tuesday OR ...
	DAY OF WEEK	WEDNESDAY			a Wednesday OR ...
	DAY OF WEEK	THURSDAY			a Thursday OR ...
	DAY OF WEEK	FRIDAY			a Friday OR ...
	DAY OF WEEK	SATURDAY			a Saturday OR ...
	DAY OF WEEK	SUNDAY			a Sunday.
	DAY OF MONTH	NTH_MONDAY			Nth Monday of the Month Threshold
	DAY OF MONTH	NTH_TUESDAY			Nth Tuesday of the Month Threshold
	DAY OF MONTH	NTH_WEDNESDAY			Nth Wednesday of the Month Threshold
	DAY OF MONTH	NTH_THURSDAY			Nth Thursday of the Month Threshold
	DAY OF MONTH	NTH_FRIDAY			Nth Friday of the Month Threshold
	DAY OF MONTH	NTH_SATURDAY			Nth Saturday of the Month Threshold
	DAY OF MONTH	NTH_SUNDAY			Nth Sunday of the Month Threshold
	DAY OF MONTH	NTH_DAY			Nth Day of the Month Threshold
	DAY OF MONTH	LAST_DAY			Trigger Exception if it's the Last Day of the Month
	DAY OF MONTH	DAY_MONTH		/ DD/MM	Nth Day of the Specified Month (DD/MM) Threshold

# Automate Data Analysis (Passive Autonomics)

- After customizing DB2 Automation tool view symptoms/actions on

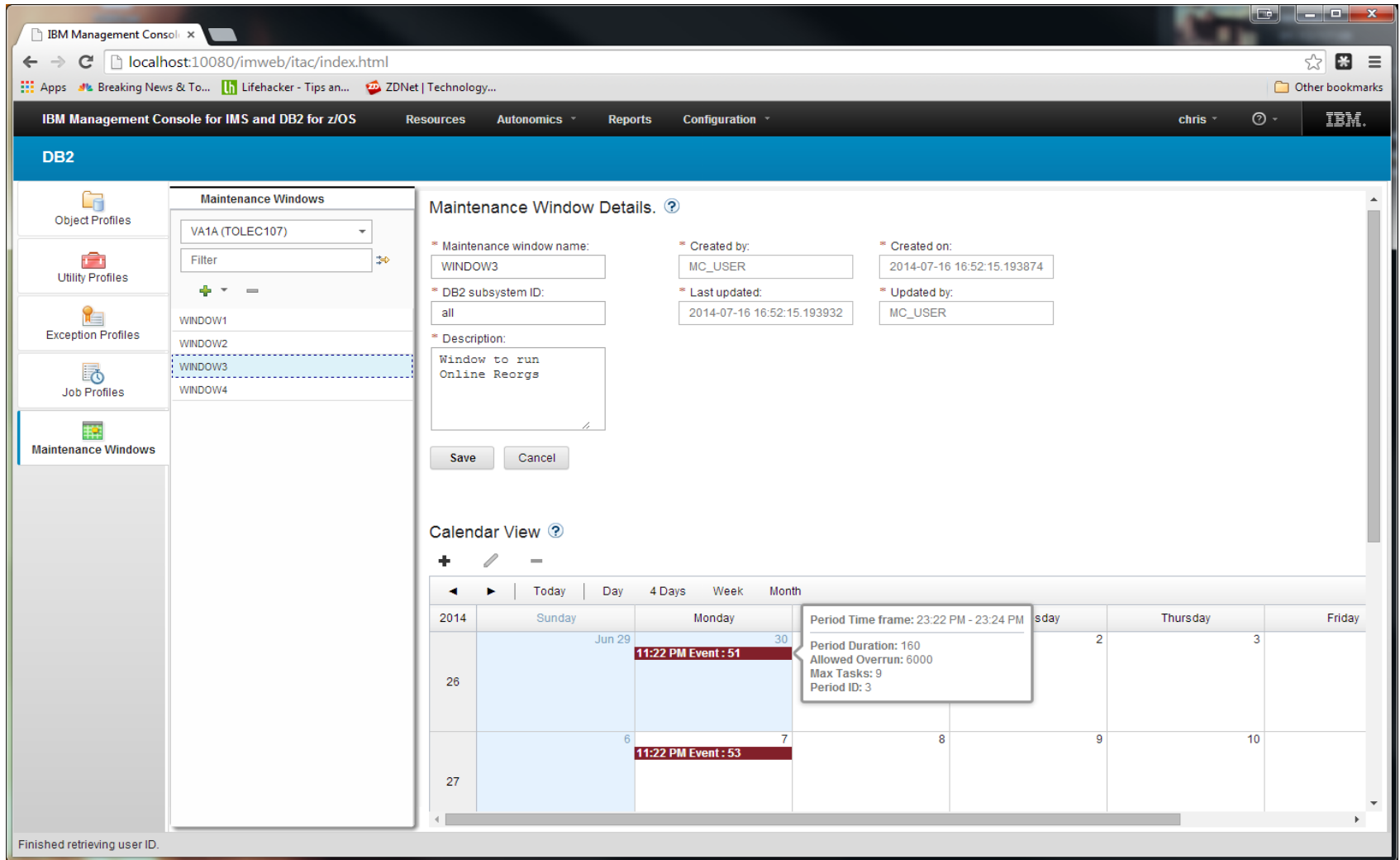


The screenshot displays the IBM Management Console for IMS and DB2 for z/OS. The interface is divided into several sections:

- Top Navigation:** Includes "IBM Management Console for IMS and DB2 for z/OS", "Resources", "Autonomics", "Reports", "Configuration", "admin", and the IBM logo.
- Left Panel:** Shows the "Enterprise View" with a search bar and a tree structure containing "Tolec52", "VA1A", and "ec03173".
- Properties Panel:** Displays details for the resource "VA1A", including Subsystem name, Level, System name, IRLM subsystem, IRLM procedure, Catalog level, Mode, and Thread count.
- Symptoms Panel:** Shows 12 symptoms, categorized into Critical (1), Severe (0), and Warning (9/11). The symptoms listed are:
  - 1 Critical: SYSINDEXES FULLKEYCARDF cc value DBAUB701 > IAUB7022
  - 9 Warning: SYSINDEXPART LEAFDIST cc value DBAUB701 > IAUB7021 > 5
  - 11 Warning: SYSINDEXPART LEAFDIST cc value DBAUB701 > IAUB7021 > 4
  - 3 Warning: SYSINDEXPART LEAFDIST cc value DBAUB701 > IAUB7021 > 3
  - 2 Warning: SYSINDEXPART LEAFDIST cc value DBAUB701 > IAUB7021 > 2
  - 1 Warning: SYSINDEXPART LEAFDIST cc value DBAUB701 > IAUB7021 > 1
- Actions Panel:** Shows 8 actions, all of which are "DB2 REORG INDEX UTILITY" for various DBAUB701 > IAUB7021 > X combinations.
- Utility History Panel:** Shows a list of "LOAD" operations for JCAUB701.

# Active Autonomics

- Define a Maintenance Windows, add to AT Job Profiles
- Run Autonomics Director on Maintenance Windows



The screenshot displays the IBM Management Console interface for IMS and DB2 for z/OS. The main content area is titled "Maintenance Window Details" and shows the configuration for a window named "WINDOW3".

**Maintenance Window Details:**

- Maintenance window name: WINDOW3
- Created by: MC\_USER
- Created on: 2014-07-16 16:52:15.193874
- DB2 subsystem ID: all
- Last updated: 2014-07-16 16:52:15.193932
- Updated by: MC\_USER
- Description: Window to run Online Reorgs

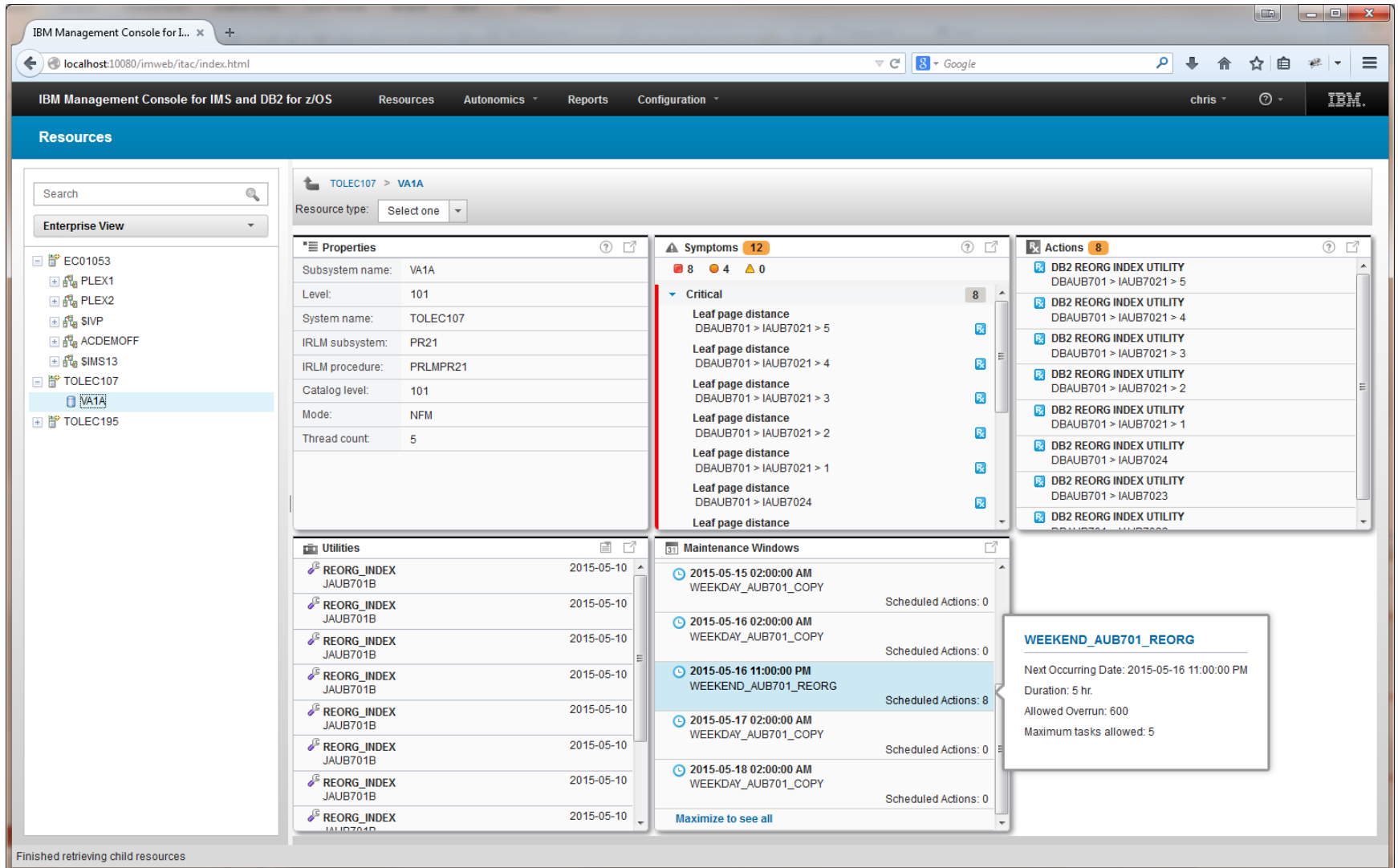
**Calendar View:**

The calendar view shows a grid of dates from June 29 to July 10, 2014. A tooltip is displayed over the date June 30, providing details for a maintenance event:

- Period Time frame: 23:22 PM - 23:24 PM
- Period Duration: 160
- Allowed Overrun: 6000
- Max Tasks: 9
- Period ID: 3

At the bottom left of the console, a status message reads: "Finished retrieving user ID."

# View upcoming autonomic maintenance windows with scheduled actions



The screenshot displays the IBM Management Console interface for IMS and DB2 for z/OS. The browser address bar shows 'localhost:10080/imweb/itac/index.html'. The main navigation bar includes 'Resources', 'Autonomics', 'Reports', and 'Configuration'. The user is logged in as 'chris'.

The 'Resources' section is active, showing a search bar and a tree view on the left with 'VA1A' selected under 'TOLEC107'. The main content area is divided into several panels:

- Properties:** Subsystem name: VA1A, Level: 101, System name: TOLEC107, IRLM subsystem: PR21, IRLM procedure: PRLMPR21, Catalog level: 101, Mode: NFM, Thread count: 5.
- Symptoms (12):** 8 Critical, 4 Minor, 0 Warning. A list of symptoms is shown, including 'Leaf page distance' for various DBAUB701 > IAUB7021 paths.
- Actions (8):** A list of scheduled actions, all labeled 'DB2 REORG INDEX UTILITY' for various DBAUB701 > IAUB7021 paths.
- Utilities:** A table listing 'REORG\_INDEX' utilities for 'JAUB701B' on '2015-05-10'.
- Maintenance Windows:** A table listing scheduled maintenance windows. The current window is highlighted: '2015-05-16 11:00:00 AM WEEKEND\_AUB701\_REORG' with 8 Scheduled Actions.

A tooltip for the selected maintenance window provides details:

- WEEKEND\_AUB701\_REORG**
- Next Occurring Date: 2015-05-16 11:00:00 PM
- Duration: 5 hr.
- Allowed Overrun: 600
- Maximum tasks allowed: 5

At the bottom left, a status message reads: 'Finished retrieving child resources'.



# View/Edit Actions scheduled for upcoming maintenance windows

TOLEC107 > VA1A > Maintenance Windows

- WEEKEND\_AUB701\_REORG
- WEEKDAY\_AUB701\_COPY

Next	Saturday	2015, May 16, 23:00 PM
	Saturday	2015, May 23, 23:00 PM
	Saturday	2015, May 30, 23:00 PM
	Saturday	2015, June 06, 23:00 PM
	Saturday	2015, June 13, 23:00 PM

**Scheduled Actions** ?

*No filter applied*

Recommend Action	Database Name	Resource Type	TS / IS Name	Partitior	Status	Autonomic Type	Priority	Created on
DB2 REORG INDEX UTILITY	DBAUB701	IX	IAUB7021	3	OPEN	<span style="color: green;">A</span>	166	2015-05-10 11:54:40
DB2 REORG INDEX UTILITY	DBAUB701	IX	IAUB7021	2	OPEN	<span style="color: blue;">P</span> Edit	122	2015-05-10 11:53:48
DB2 REORG INDEX UTILITY	DBAUB701	IX	IAUB7024	0	OPEN	<span style="color: blue;">P</span>	71	2015-05-10 11:54:26
DB2 REORG INDEX UTILITY	DBAUB701	IX	IAUB7021	4	OPEN	<span style="color: blue;">P</span>	68	2015-05-10 11:53:58
DB2 REORG INDEX UTILITY	DBAUB701	IX	IAUB7021	1	OPEN	<span style="color: blue;">P</span>	32	2015-05-10 11:14:52

Range: 1-5 Total: 8 Selected: 0 10 | 25 | 50 | All +



# Q & A

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