

Make smarter use of your time with IMS software



Nick Griffin
WW SWG IMS Sales Advisor
ngriffin@usa.ibm.com



Twenty years ago:
Time was plentiful
Space was expensive
It was easy to find IMS DBAs
What happened?



Initial DBA Techniques

```
; Read a MAX3420E register. Uses MAX_Reg(preserved), Updates MAX_Dat.
; -----
rreg:  cIT
rr2:   mov     dat,MAX_Reg ; 000rrrrr
      lsl     dat          ; 00rrrrr0
      lsl     dat          ; 0rrrrr00 (R)
      lsl     dat          ; rrrrr000 (write bit is clear--b1)
      bld     dat,0        ; rrrrr00T (T=ACKSTAT bit)
      rcall  send_byte
;
; Now read the MISO data
;
      SCK_LO
r4:    SCK_HI          ; ready the next input bit
      sec             ; speculatively set CY
      sbis     PINB,MISO ; skip if set
      clc
      SCK_LO
      rol     MAX_Dat  ; shift CY into the data byte
      dec     bitcount
      brne   r4
      SS_HI
      ret
```

Automation of routine IMS DB maintenance:
Build In-house systems for automating DB reports and tracking statistics
Reorganizing all databases on a set schedule
Some combination of these methods



Why a Smarter IMS Software?



Civilization advances by extending the number of important operations which we can perform without thinking of them.

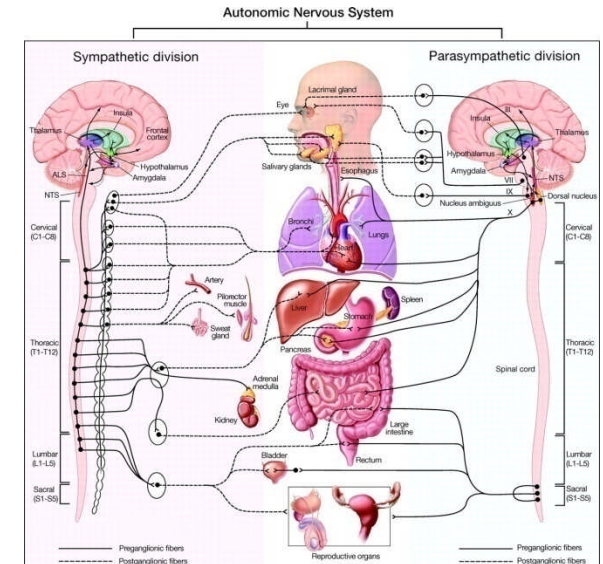
(Alfred North Whitehead)

izquotes.com

Technique that gives us Smarter IMS Software?

■ “Autonomic” according to Merriam-Webster:

- au-to-nom-ic
 - 1 : acting or occurring involuntarily <autonomic reflexes>
 - 2 : relating to, affecting, or controlled by the autonomic nervous system or its effects or activity <autonomic drugs>



Autonomic computing is a self-managing computing model named after, and patterned on, the human body's autonomic nervous system.

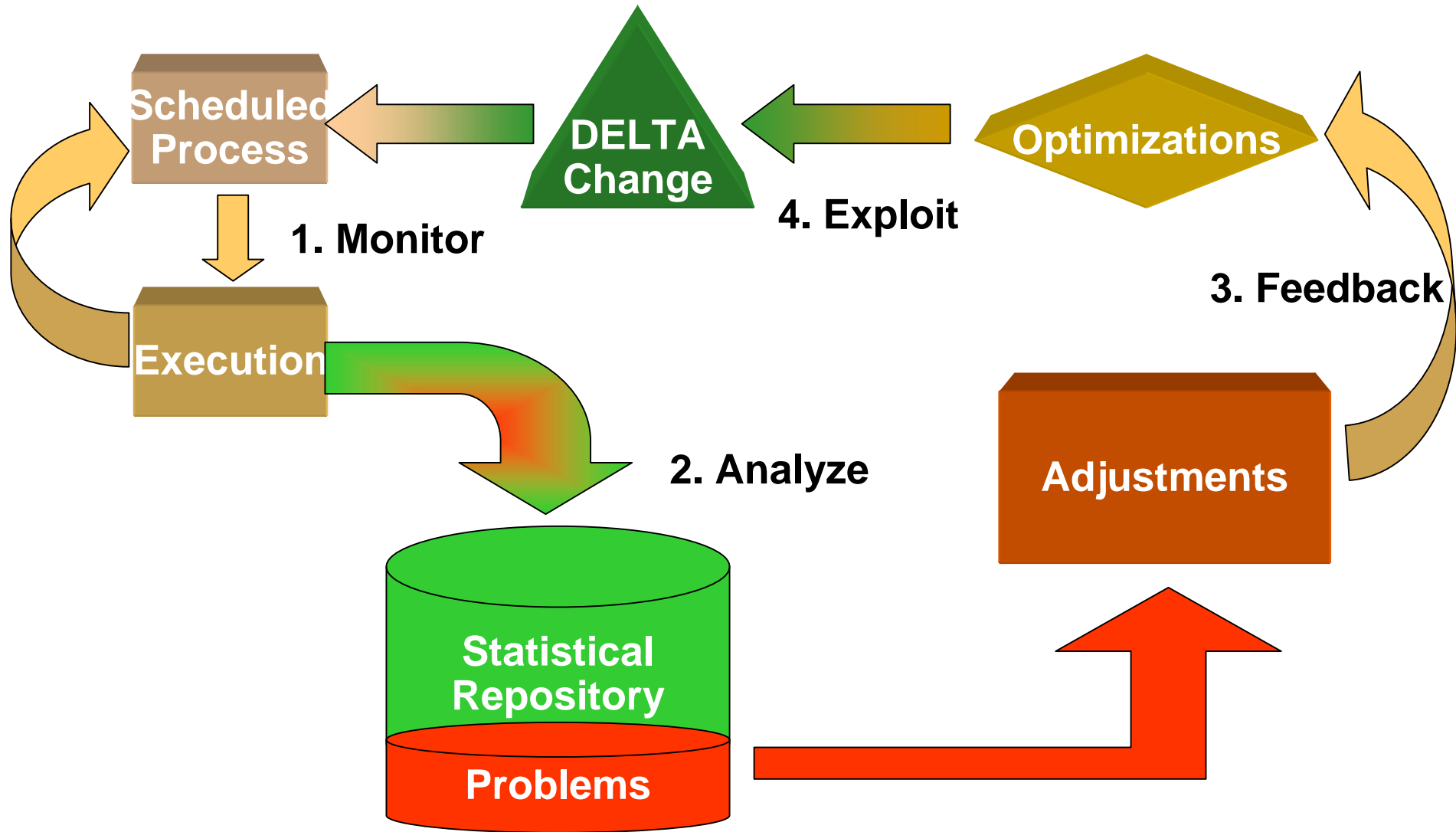


Evolving to Autonomic Computing

	Basic Level 1	Managed Level 2	Predictive Level 3	Adaptive Level 4	Autonomic Level 5
Characteristics	Multiple sources of system generated data	Consolidation of data and actions through management tools	System monitors, correlates and recommends actions	System monitors, correlates and takes action	Integrated components dynamically managed by business rules/policies
Skills	Requires extensive, highly skilled IT staff	IT staff analyzes and takes actions	IT staff approves and initiates actions	IT staff manages performance against SLAs	IT staff focuses on enabling business needs
Benefits		Greater system awareness Improved productivity	Reduced dependency on deep skills Faster/better decision making	Balanced human/system interaction IT agility and resiliency	Business policy drives IT management Business agility and resiliency
	Manual				Autonomic

Source: IBM IMS teleconference Dec '03

How do we get to Autonomics?

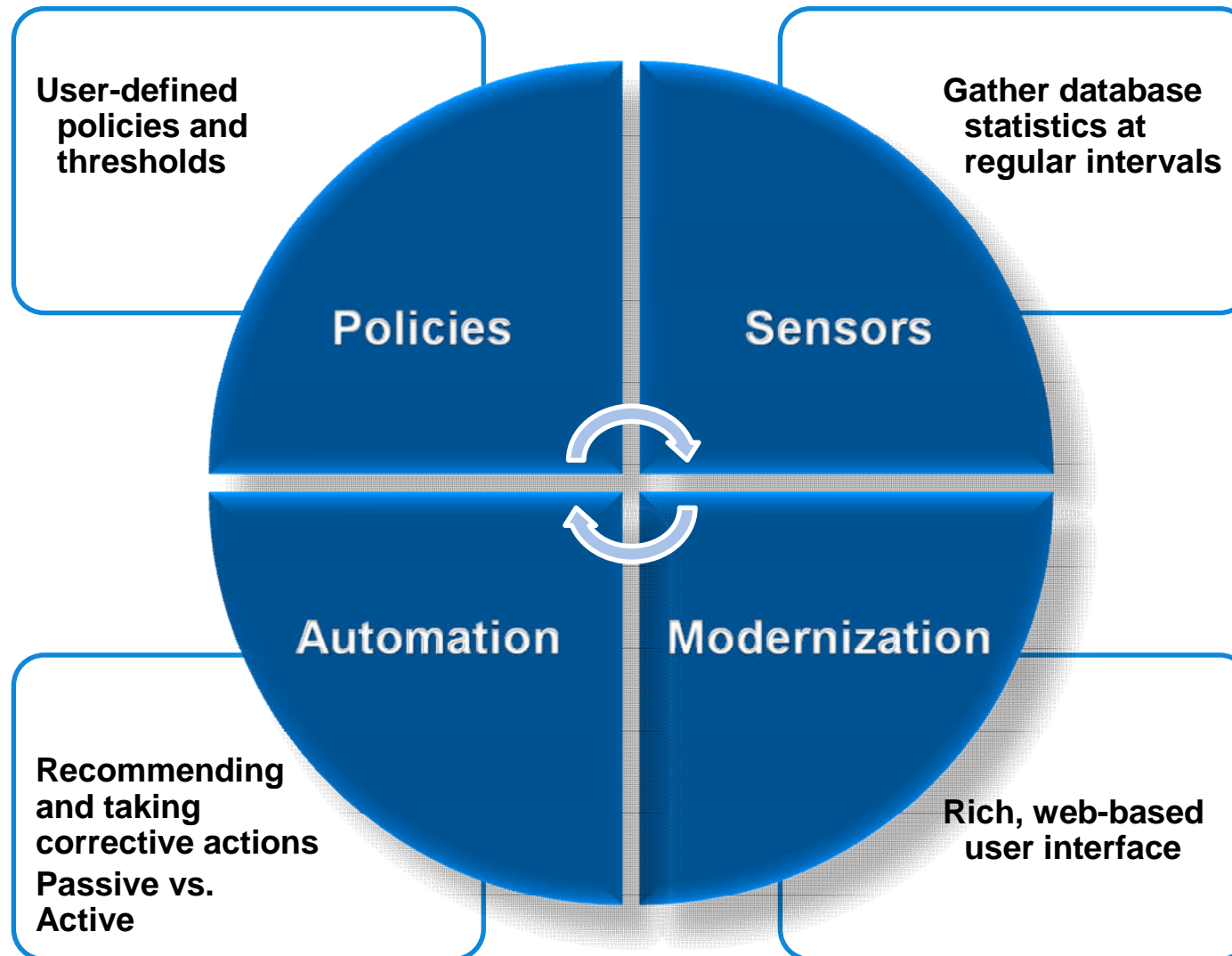


Benefits of Autonomics

- Reduces the amount of time, error, and human effort required to implement and maintain efficient database systems
- Gives expert DBAs more time to concentrate on aligning databases with the business, new technology, planning and strategy
- Provides a means to train novice DBAs through learning what has been automated



Our Vision – Putting AUTONOMICS to work for you



Sensors

....gather database statistics at regular intervals

Works with you – your way – in your environment:

- **Integrated in regularly used utilities**

- HP Image Copy(FF and FP), HP Pointer Checker, DB Reorg Expert, FPA Analyze, FPA Reorg, FPO Analyze, FPO Reorg

- **Automation of sensor capture**

- Autonomics scheduler ensures sensor data capture at frequency that you require

- **When you need it!**

- Ad-hoc / job scheduler batch submitted sensor capture

Policies

...User defined policies and exceptions

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

Automation

...Recommending and Taking Corrective Actions

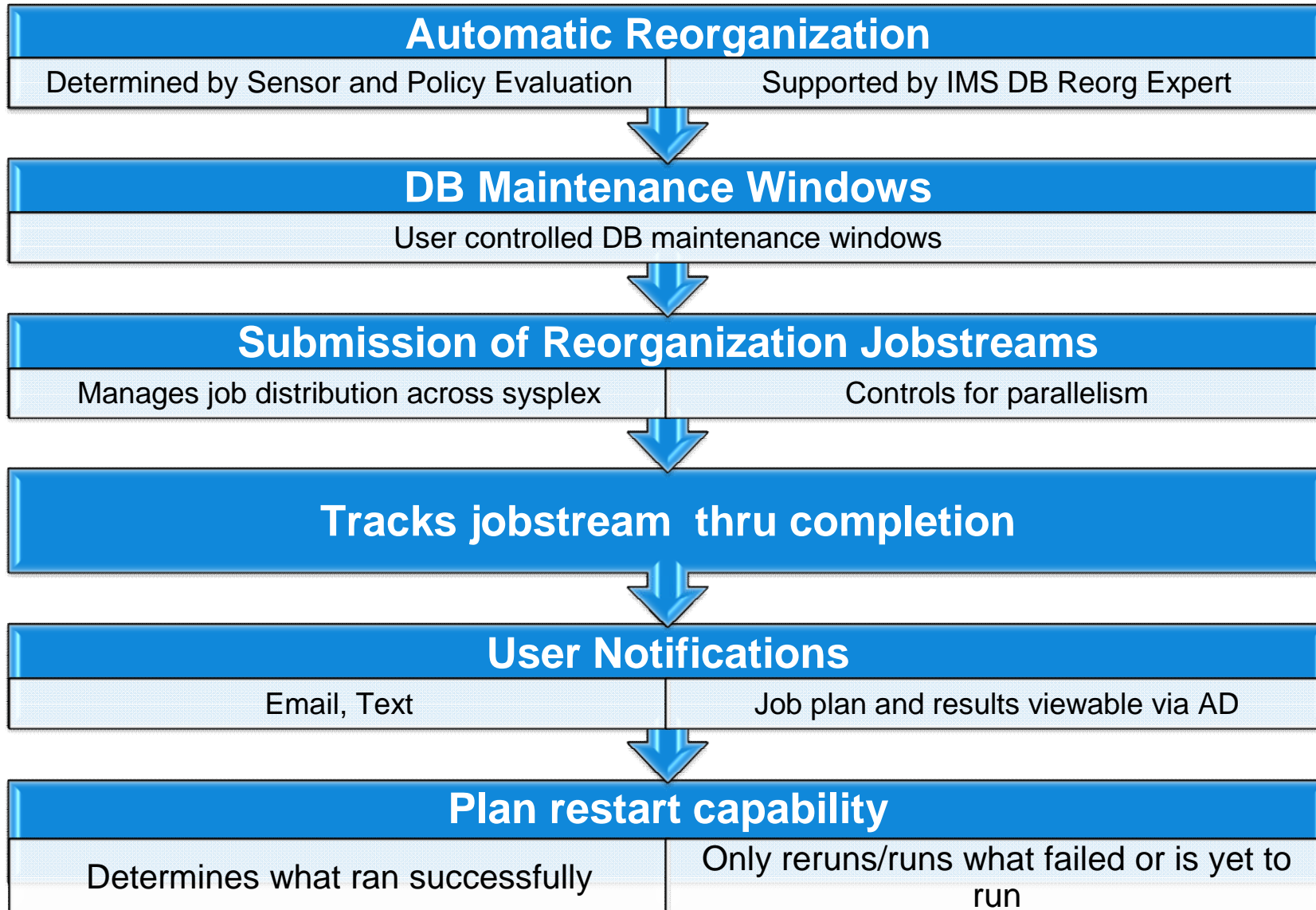
- **Passive Autonomics**

- 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


- **Active Autonomics**



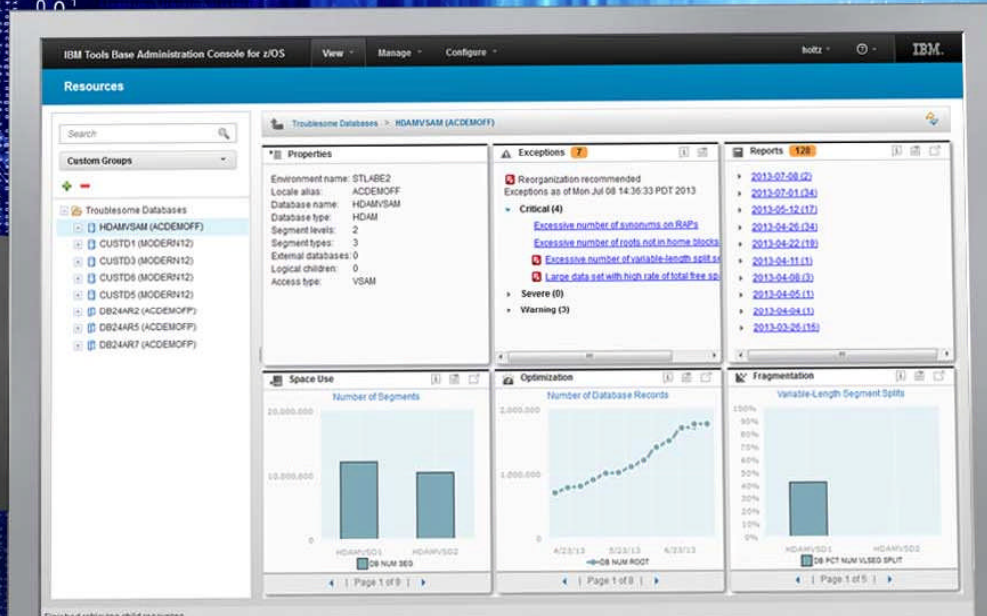
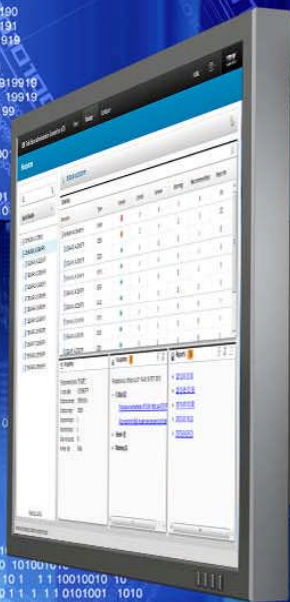
Active Autonomics



Smarter IMS Software

- 
- **Notification of exceptions**
 - Email, text messages
 - Alert DBA to consider taking action
 - **Conditional Reorganization - DB Reorg Expert**
 - Sensors determine need for reorganization
 - Reorganization only runs if needed
 - Pre/Post reporting
 - **Then we developed Sensors and Policies:**
 - Sensor capture
 - Policies pre-loaded by database type
 - User-customizable
 - **First we had IMS Tools Knowledge Base**
 - Report Repository
 - IMS Tools Utilities updated to write their reports to a repository by database

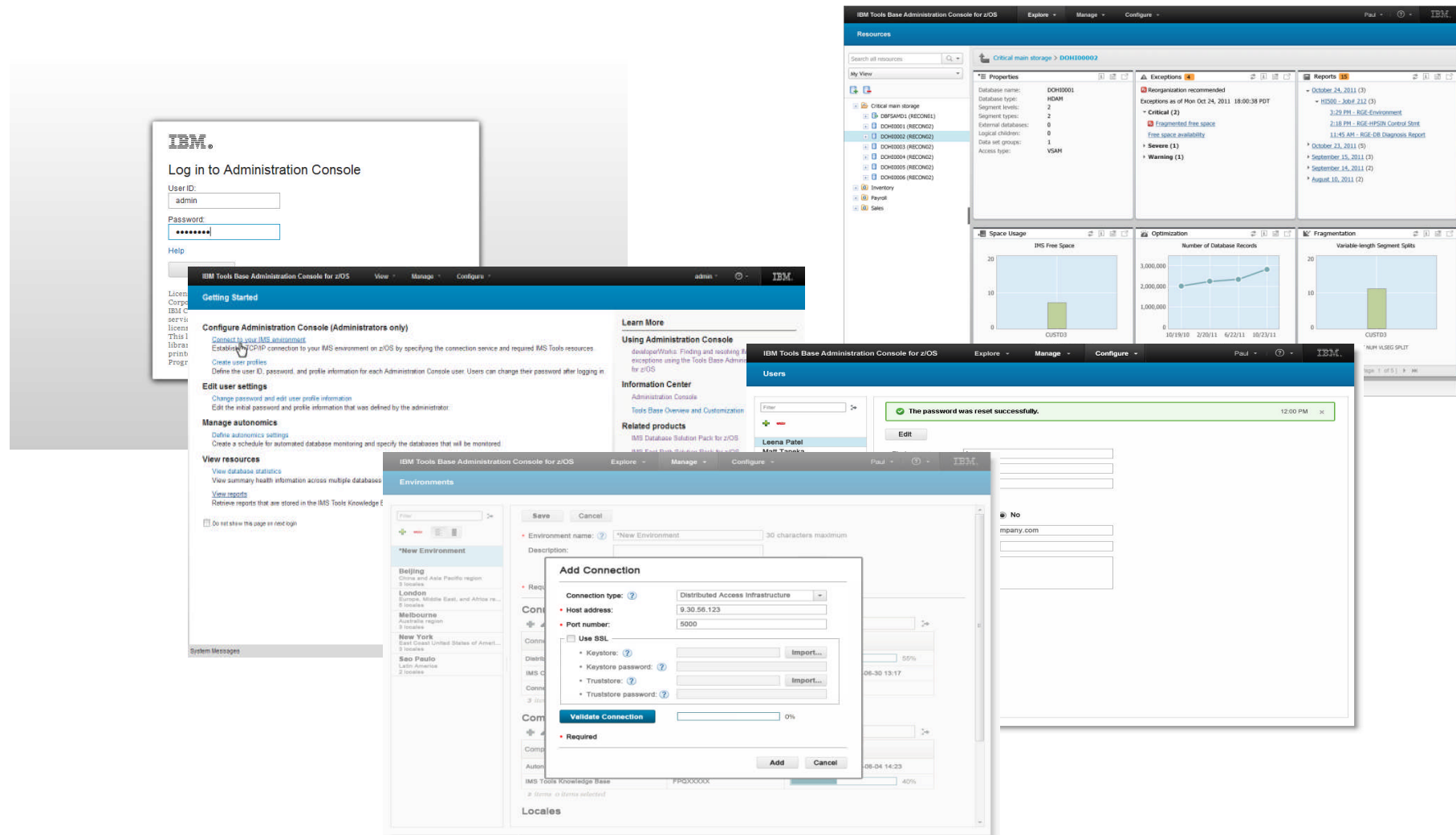
IBM Administration Console



- **IBM Administration Console**
 - New look and feel
 - View / Manage databases from across the enterprise from a single log on
 - Run Administration Console server on z/OS as a started task
 - Manage Autonomic Director Monitor List and Peak periods
 - Initiate on demand and scheduled sensor collection and policy evaluation

Updated look-and-feel: IBM One UI

All IBM products are going toward One UI



Single Log in

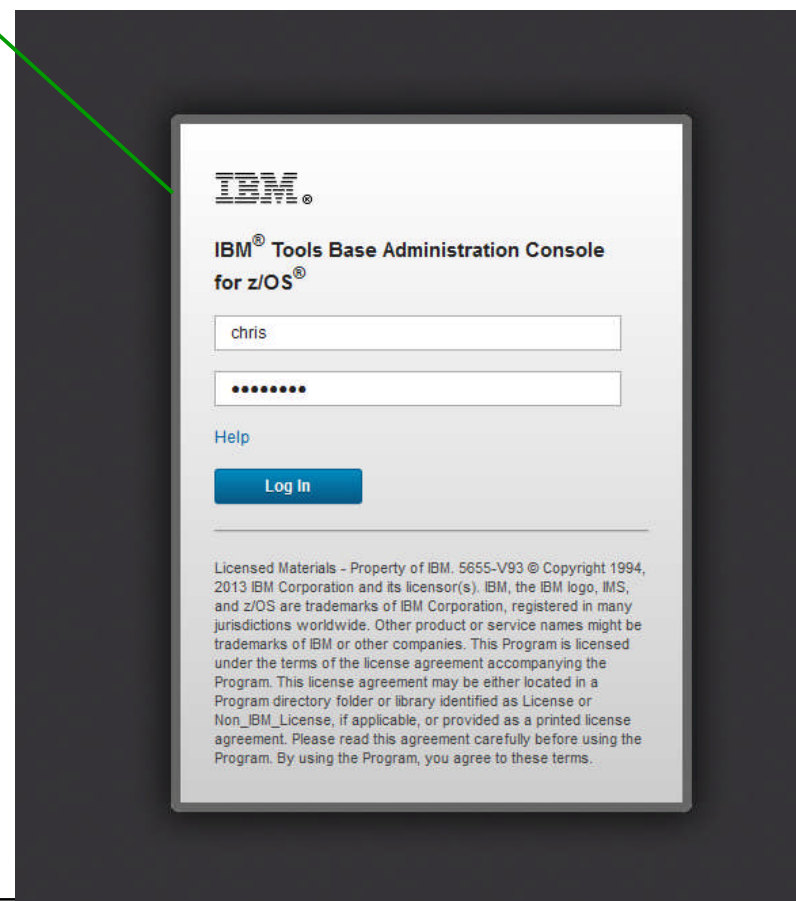


Single login for all users and all environments

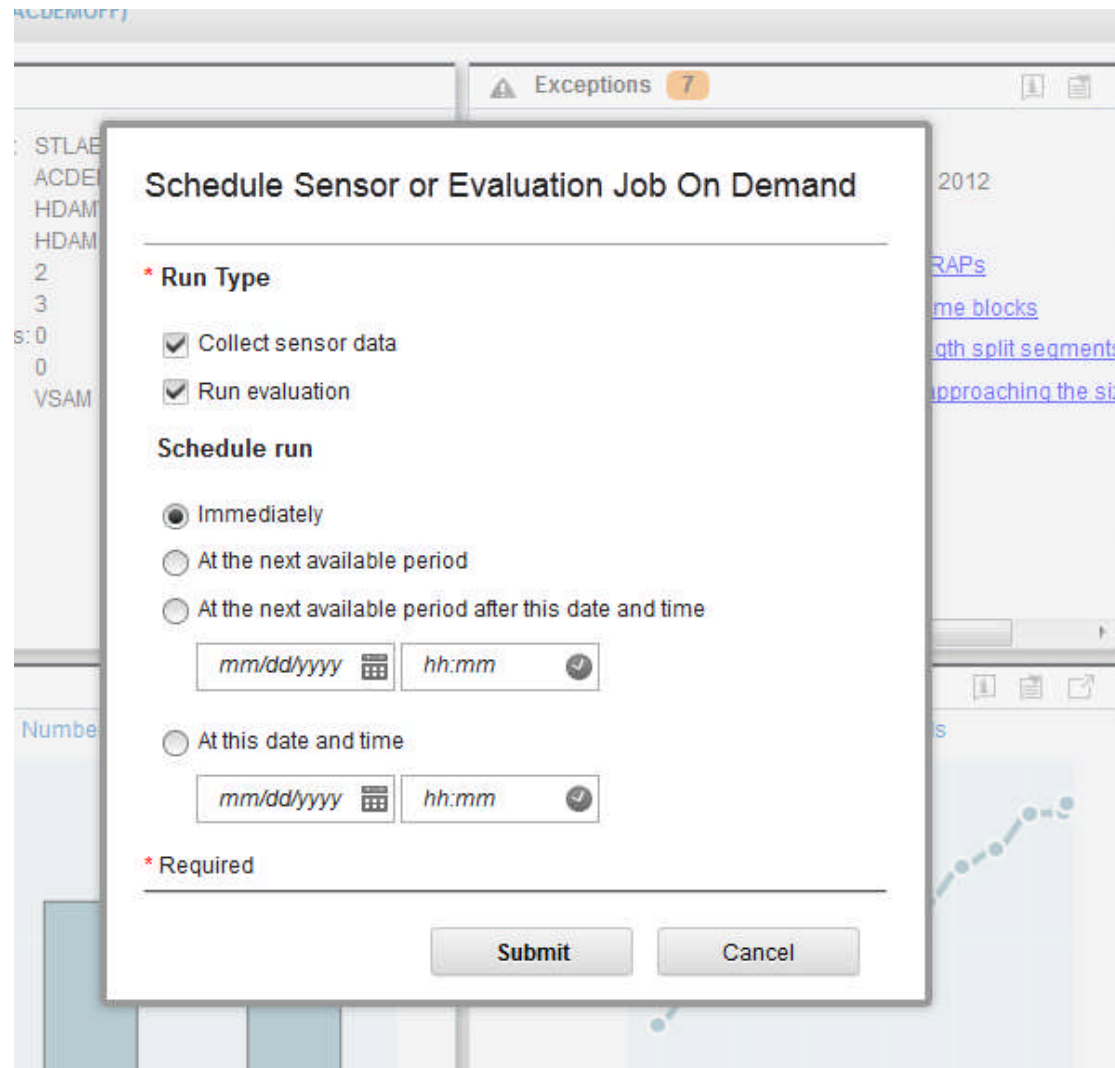
- **Safety and security features are built in**
 - Uses SSL and RACF authentication
- **Single Login**
 - Access all your IMS environments



NEW!



On Demand Sensor and/or Evaluation



Launch key tasks from the Getting Started page

IBM Tools Base Administration Console for z/OS
View ▾
Manage ▾
Configure ▾
admin ▾
?
IBM

Getting Started

Configure Administration Console (Administrators only)

[Connect to your IMS environment](#)
Establish a TCP/IP connection to your IMS environment on z/OS by specifying the connection service and required IMS Tools resources.

[Create user profiles](#)
Define the user ID, password, and profile information for each Administration Console user. Users can change their password after logging in.

Edit user settings

[Change password and edit user profile information](#)
Edit the initial password and profile information that was defined by the administrator.

Manage autonomics

[Define autonomics settings](#)
Create a schedule for automated database monitoring and specify the databases that will be monitored.

View resources

[View database statistics](#)
View summary health information across multiple databases and view detailed statistics for individual database resources.

[View reports](#)
Retrieve reports that are stored in the IMS Tools Knowledge Base report repository.

Do not show this page on next login

Learn More

Using Administration Console

developerWorks: Finding and resolving IMS database exceptions using the Tools Base Administration Console for z/OS

Information Center

[Administration Console](#)

[Tools Base Overview and Customization](#)

Related products

[IMS Database Solution Pack for z/OS](#)

[IMS Fast Path Solution Pack for z/OS](#)

Solution information

Solution scenarios - Automating and simplifying database monitoring with IMS Tools

Database tuning information

[Database tuning guide](#)

Launch key tasks from the Getting Started page

Check the box if you do not want to see the Getting Started page upon the next login

Click (?) in the header to open the Getting Started page again or to access Help

Follow step-by-step instructions in the Help panel

IBM Tools Base Administration Console for z/OS View Manage Configure admin

Environments

Filter

+ -

New Environment

Save Cancel

* Environment name: 30 characters maximum

Description: 255 characters maximum

* Required

Connections ?

+ - Validate

Connection Type	Host Name or IP Address	Port	SSL	Status

Components ?

+ - Validate Discover

Component Name	XCF Group Name	Status

Help

Getting started with environments

Add one or more environments to establish communication between Administration Console and your IMS systems and resources.

For more information about environments, see [Environments overview](#).

Adding an environment

Procedure

1. Click **Add Environment**.
2. Specify an environment name and, optionally, a description.
3. Add one or more connections. A *connection* enables communication between the Administration Console web server and a TCP server that is installed on your z/OS system.

For instructions on adding connections, see [Adding a connection](#).

For more information about connections, see [Connections overview](#).

4. Add components. A *component* provides data and services that you can access with Administration Console.

For instructions on adding a component, see [Adding a component](#).

For more information about components, see [Components overview](#).

5. Review locales. A *locale* is a group of IMS systems and their associated databases within an environment. These IMS systems share RECON data sets.

For more information about locales, see [Locales overview](#).

Follow step-by-step instructions in the Help panel

System Messages

Drill down from User Created Groups

The screenshot shows the IBM Tools Base Administration Console interface. The main content area displays a 'Summary' table for 'Troublesome Databases'. The table has columns for Resource, Type, Overall, Critical, Severe, Warning, Recommendations, and Reports. A callout box highlights the 'Overall' column, indicating that resource status, errors, and recommendations are aggregated here, and users can drill down into these details.

Resource	Type	Overall	Critical	Severe	Warning	Recommendations	Reports
Troublesome Databases	GROUPNODE	292
HDAMVSAM (ACDEMOFF)	HDAM	■	4	0	3	1	152
CUSTD1 (MODERN12)	HDAM	■	-	-	-	-	26
CUSTD2 (MODERN12)	PHDAM	■	1	0	0	0	24
CUSTD3 (MODERN12)	HDAM	■	2	1	1	0	24
CUSTD4 (MODERN12)	PHDAM	●	0	1	0	0	24
CUSTD5 (MODERN12)	SHISAM	◆	0	0	0	0	22
CUSTD6 (MODERN12)	SHISAM	●	0	1	0	0	20
CUSTD7 (MODERN12)	HDAM	-	-	-	-	-	0
CUSTD8 (MODERN12)	HDAM	-	-	-	-	-	0

Resource status, errors, and recommendations can be aggregated with an ability to drill down

Holistic View of IMS Databases

...from Auto Discovery

...from Autonomics Director

...from Various HP Tools

...from Sensors

IBM Tools Base Administration Console for z/OS

localhost:10080/imweb/itac/index.html

Troublesome Databases > HDMVSAM (ACDEMOFF)

Properties

- Environment alias: STLABE2
- 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 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

Number of Segments

20,000,000

10,000,000

0

HDMVSD1 HDMVSD2

DB NUM SEG

Optimization

Number of Database Records

2,000,000

1,000,000

0

8/11/12/26/13/10/13/26/120/11/12/26/12

DB NUM ROOT

Fragmentation

Variable-Length Segment Splits

100%

90%

80%

70%

60%

50%

40%

30%

20%

10%

0%

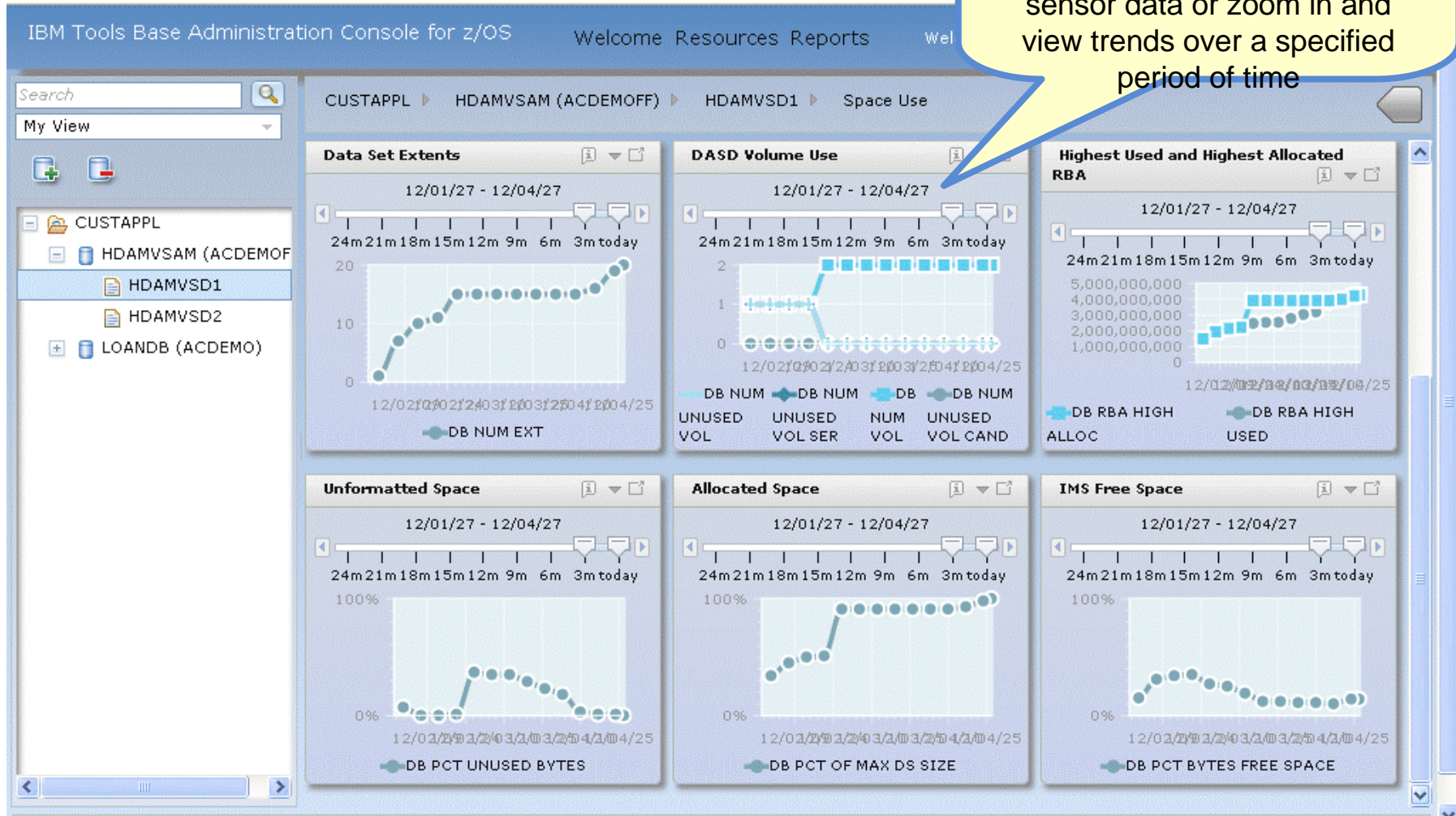
HDMVSD1 HDMVSD2

DB PCT NUM VLSEG SPLIT

Finished retrieving child resources

Data Set Space Usage Charts

Note: all line graphs have an integrated time slider so you can view the most recent sensor data or zoom in and view trends over a specified period of time



Integrated Help Throughout

The screenshot displays the IBM Tools Base Administration Console for z/OS interface. The main content area shows the 'Troublesome Databases' section for 'HDAMVSAM (ACDEMOFF)'. It includes a 'Properties' panel on the left, an 'Exceptions' panel with 7 items (4 Critical, 0 Severe, 3 Warning), and a 'Reports' panel with 152 items. A 'Space Use' chart is visible at the bottom left, showing 'DB RBA HIGH ALLOC' and 'DB RBA HIGH USED' for 'HDAMVSB@AMVSD2'. An integrated help window on the right is titled 'Highest Used and Highest Allocated RBA chart (Index)'. It contains detailed text explaining the chart's purpose: '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.' It also includes a 'Note' and 'Data elements in this chart' section. A callout box with a black border and white text points to the help window, stating: 'Integrated help educates new and experienced DBAs on database concepts and how to interpret charts'. The browser window title is 'IBM Tools Base Administration Console for z/OS' and the URL is 'localhost:10080/imweb/itac/index.html'.

Add / Edit Monitor List

IBM Tools Base Administration Console for z/OS View Manage Configure admin IBM.

Autonomics STLABE2 - ACDEMOFF

Monitor List

Filter

+ -

▼ DATABASE

 H DAMVSAM

 ▶ DBGRP

 ▶ CAGRP

 ▶ DBDSGRP

 ▶ RECOVGRP

Schedules

Database Name: HDAMVSAM

Save Cancel

Owner: HOLTZ

* Priority: ?

Evaluate after sensor run: Yes No ?

* Number of evaluations to save: ? 1 - 255

* Evaluation interval: ? days hours minutes

* Maximum age of sensor data: ? days hours minutes

* Cataloged data set name: ? 44 Characters Maximum

* Member name: ? 8 Characters Maximum

Policy Selection By: Database Organization Type ?
 Database Name ?
 Policy Name: ?

Save Cancel

IMS Tools Solution Packs



IMS Database Solution Pack

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



IMS Fast Path Solution Pack

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



IMS Recovery Solution Pack

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



IMS Performance Solution Pack

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



Thank You for Joining Us today!

Go to

www.ibm.com/software/systemz/events/calendar **to:**

- ▶ Replay this teleconference
- ▶ Replay previously broadcast teleconferences
- ▶ Register for upcoming events