IMS Tools Autonomics and Modernization – Trends and Directions

Session Number IMS-1330A

Christopher Holtz, IBM
Bob Magid, IBM
Joe Sacco, IBM

IBM Software
Information On Demand 2011

Agenda

- Why Autonomics and Modernization?
- IMS Tools Vision
- All-in-One Solutions
  - IMS Database Solution Pack
  - IMS Fast Path Solution Pack
- IMS Tools Autonomics Director
- IMS Tools Administration Console
- Summary
- Questions and Discussion

Why Autonomics and Modernization?

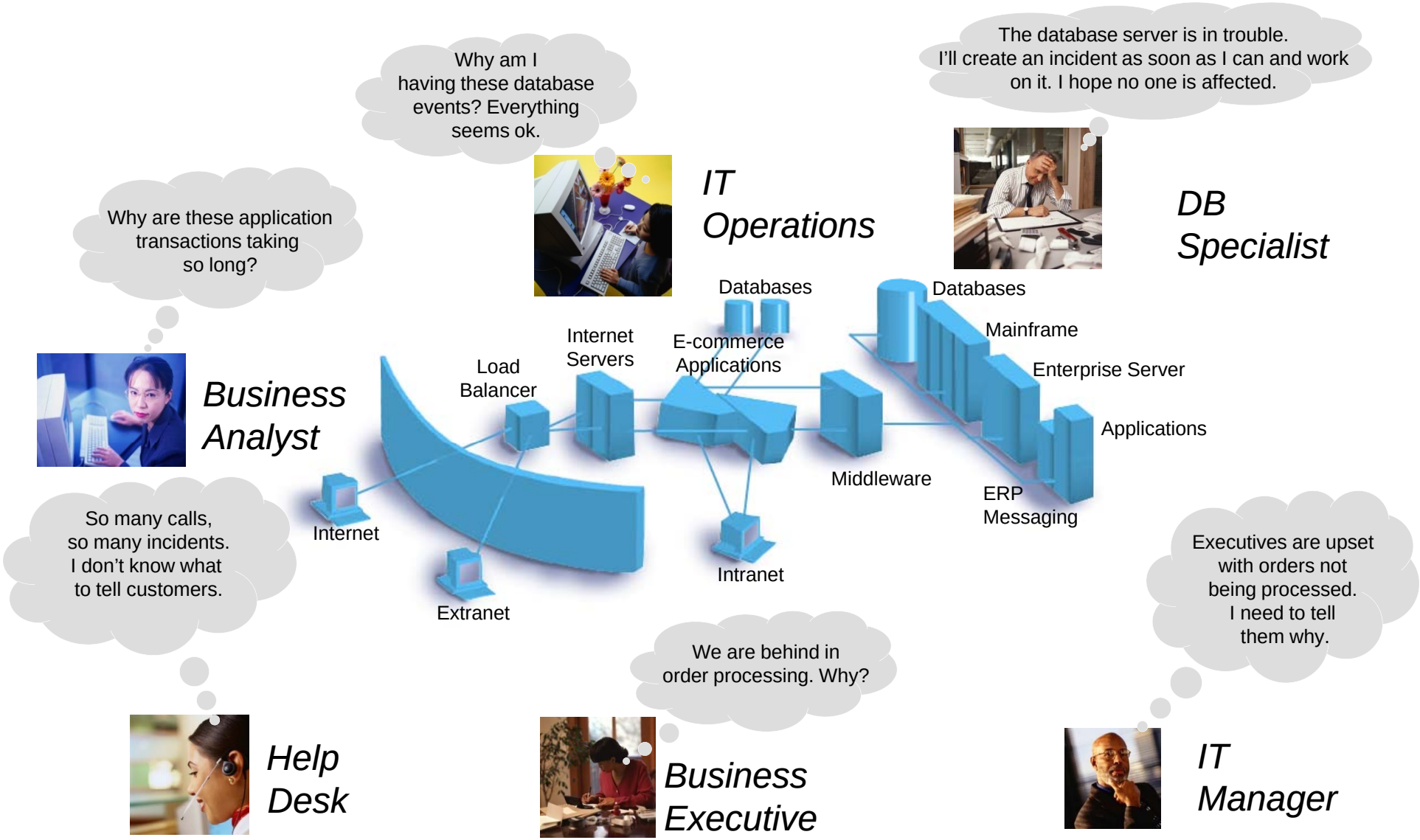
Now more than ever, business challenges demand it

- Unanticipated problems can result in downtime and loss of revenue
- Increased burden of system management and maintenance
- Problem determination is time and resource intensive
  - Expert skills are often spent determining when a problem took place rather than figuring out how to fix it
- DBA resources are dwindling
  - Expert skills are wasted on repetitive tasks
- Time and resources are not available for developing new applications, pursuing new technologies, and growing business

"The information technology industry is obliterating barriers and setting records with astonishing regularity, but now we face a problem springing from the very core of our success....More than any other IT problem, this one, if it remains unsolved, will actually prevent us from moving to the next era of computing. The obstacle is complexity."

— Paul Horn, Senior Vice President, Research, IBM

When problems do occur, the impact can be extensive



User Interface Modernization is Critical

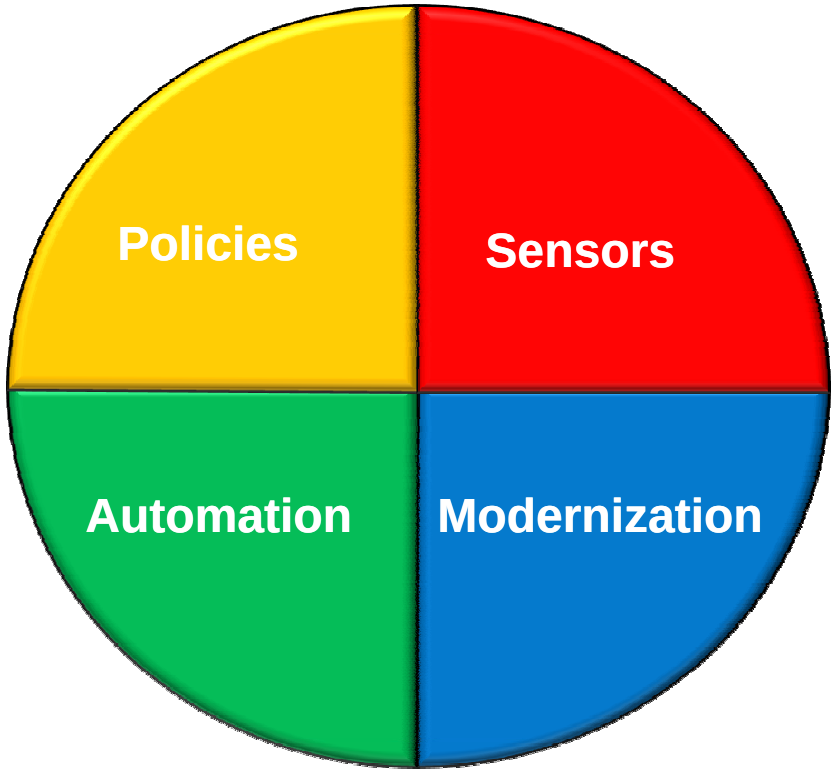
- Modern graphical user interfaces:
  - Provide a richer user experience and can convey more information
  - Reduce the need for IMS or Z specific knowledge
  - Shorten the IMS learning curve for new DBAs
  - Enable deeper integration between tools and across platforms
  - Customers expect it!

What we're doing

- Leap ahead to graphical user interfaces for IMS
  - Focus on web-based interfaces
  - Exploit the latest relevant technologies
  - Allow access from anywhere via the Internet

IMS Tools Vision

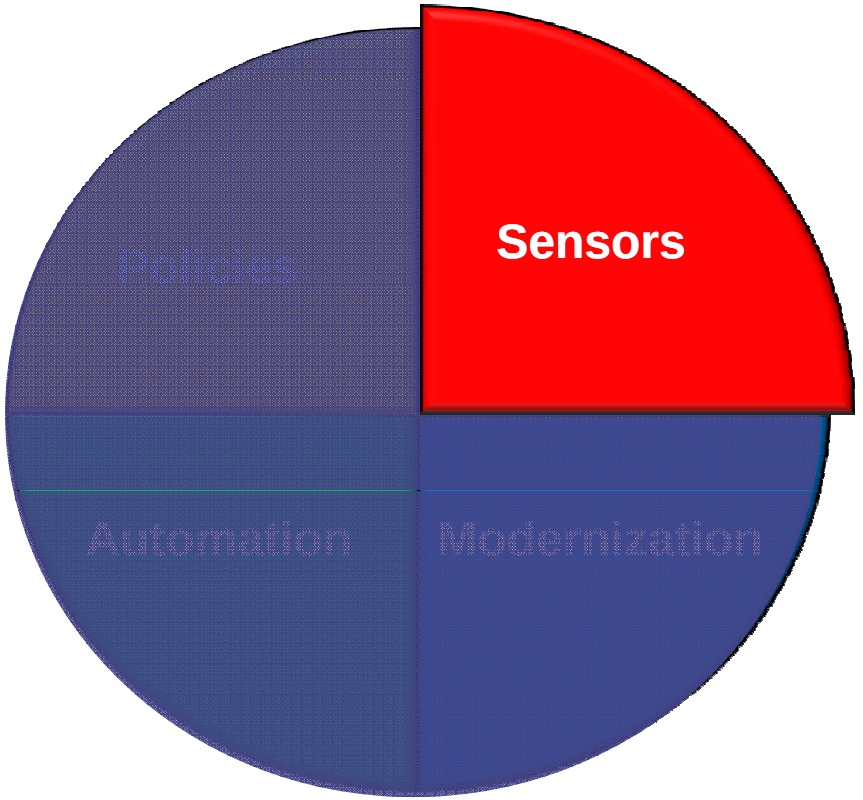
Putting information to work



IMS Tools Vision

Putting information to work

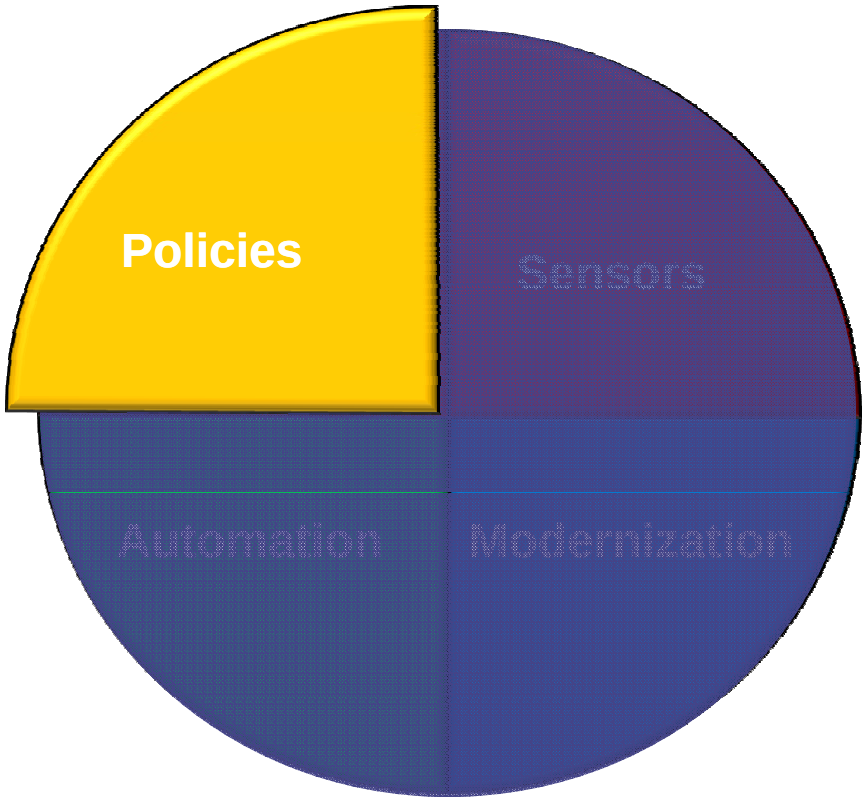
Gather database statistics at regular intervals for your environment – e.g. space utilization, fragmentation, and optimization



IMS Tools Vision

Putting information to work

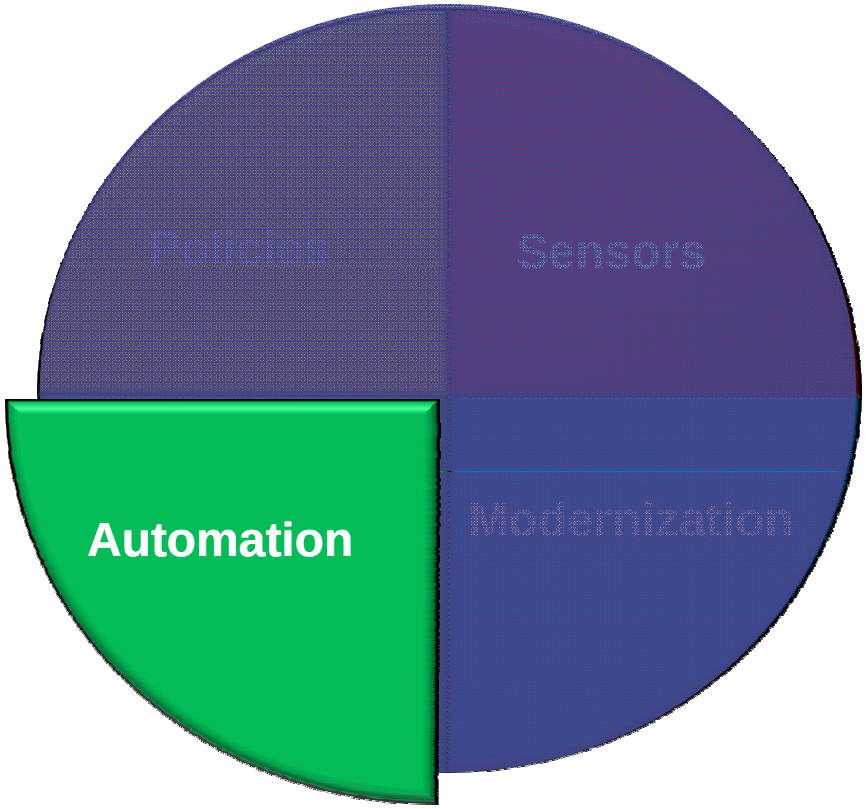
User-defined policies and thresholds to determine when exceptions should be triggered and notifications should be sent



IMS Tools Vision

Putting information to work

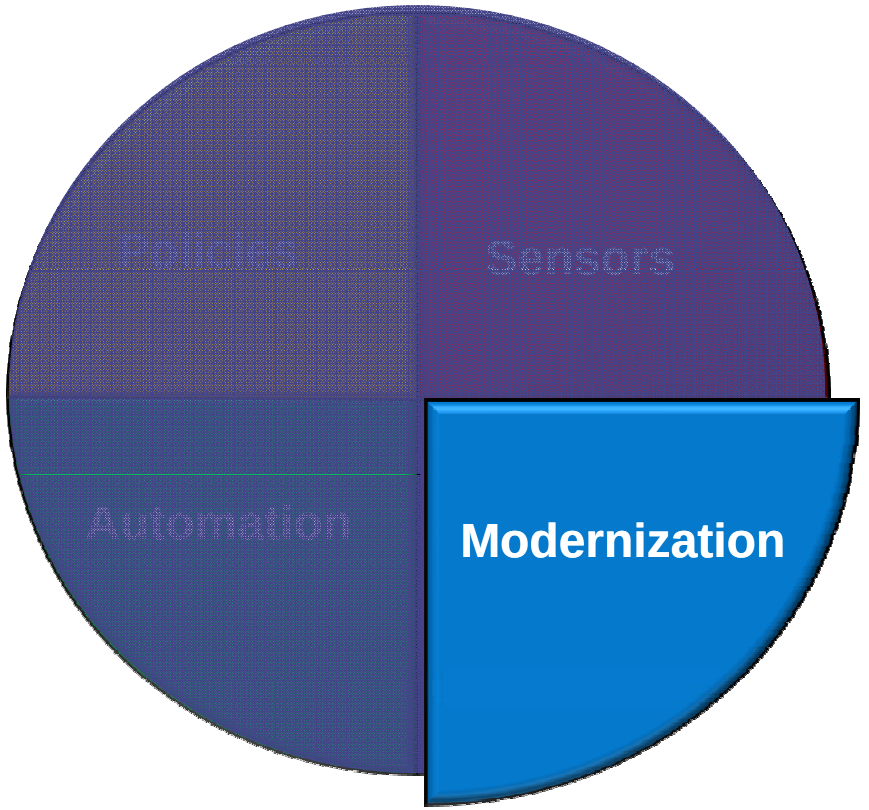
Recommending and taking corrective actions based on the exceptions that are raised when thresholds are reached



IMS Tools Vision

Putting information to work

Performing all of these actions from a rich, web-based user interface that is easy to install and access



Putting it all Together: IMS Tools Solution Packs

- High performance IMS Tools help you perform your IMS database management tasks – providing full end-to-end solutions

- A full suite of IMS Tools to help with:
  - Full-function database maintenance
  - Fast Path database maintenance
  - Recovery
  - Performance and tuning

- Built on our vision, built for you
  - Easier to install
  - Easier to maintain
  - Increased integration
  - Automated
  - Modern
  - Built to fit any size shop

Our Newest Offerings!

- IMS Database Solution Pack 1.2 and IMS Fast Path Solution Pack 1.2
  - Already announced
    - October 11, 2011
  - Available this December
    - December 9, 2011

- Customer value
  - Provides a full set of tools for maintaining and managing your IMS full-function and Fast Path databases
  - Includes important High Performance utilities
  - Utilizes Sensors, Policies, Automation, and Modernization
  - Delivers on the IMS Tools vision

IBM Tools Base for z/OS

- A prerequisite for all IMS Tools Solution Packs
- Contains all the common infrastructure components, including the IMS Tools Knowledge Base, for enabling autonomics and next-generation UIs
- IMS Tools Knowledge Base repository holds the information to help you make expert decisions
  - Sensor Data
  - Policy Services
  - Reports
- No charge PID
  - Program number: 5655-V93
  - IBM Tools Base for z/OS 1.3

Sensors: Collecting the Basic Information You Need

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

Policies: Using Sensor Data to Help Make Decisions

- Policy definitions are used to evaluate specific database states
  - E.g. the state of space utilization at a specific instance in time
  - Threshold values are compared against sensor data for a given database or group of databases
  - When thresholds are met or exceeded, exceptions occur

- Works “out of the box”
  - Ships with predefined policies and threshold values
  - Full ISPF interface provided for policy management

- Customizable to fit your shop
  - You can define your own sets of threshold values
  - Customize the messages sent when exceptions do occur
  - Specify who receives which messages and how
    - WTO, e-mail, or text

Automation: Delivering on our Vision

IMS Tools Autonomics Director

- Passive autonomics for IMS databases
- Automates ongoing database monitoring and maintenance tasks based on a detailed understanding of the current state of your IMS databases
- Recommends when databases should be reorganized
- Provides a scheduling feature that allows you to control how frequently sensor data is collected and how frequently policies are evaluated

Customer value

- Help prevent problems before they occur
  - Higher availability and performance through optimally organized data
- Consistent and reliable monitoring of database status
  - Regular collection/evaluation at predefined intervals

Automation: Delivering on our Vision

- Simplify ongoing database monitoring and maintenance tasks
  - Relieve the day-to-day burden on IMS DBAs
  - Reduce analysis overhead by generating recommended actions
  - Reduce the skill set that is required to analyze database status
- Efficient use of system resources through integration with existing IMS Tools
  - Collect information about database status in conjunction with IMS Tools execution
- Historical collection of database status for growth and trends projections
  - Synergy with the new IMS Administration Console
- Get you up and running quickly
  - Simple to install and customize
  - One-time set up
  - Easy to use

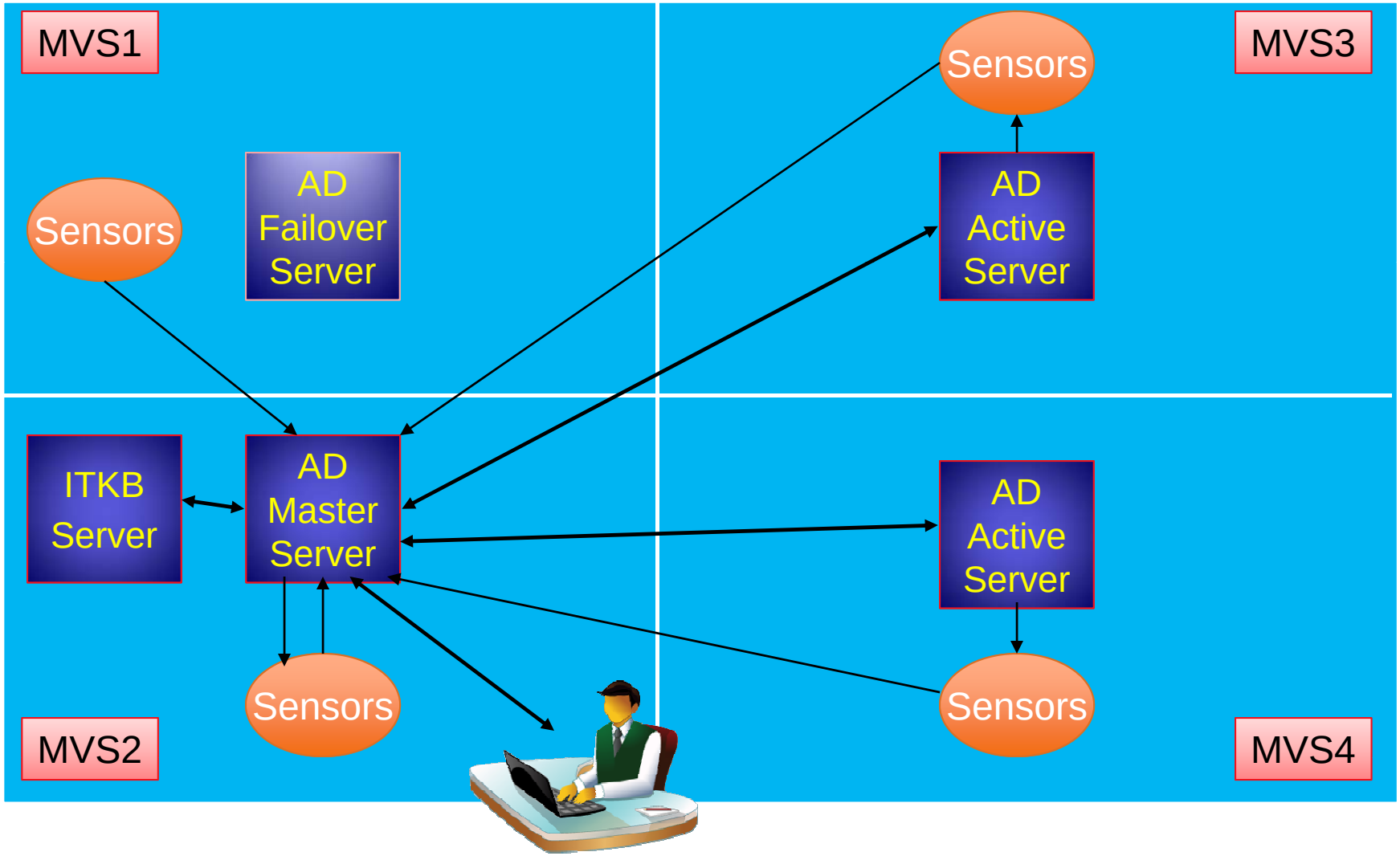
Autonomics Director Overview

- Automatic collection of Sensor data
  - Integrates with IMS Tools image copy and pointer checker processes
- On Demand collection/evaluation for immediate issues
  - “I have a problem and need the information now!”
- Automatic analysis and evaluation of database status
  - Based on user-defined policies and thresholds
- Recommendation for reorganization
  - Easy to understand: simple “yes” or “no”
- E-mail or text notification when a reorganization is recommended
  - Alert DBA to consider taking action
- Flexible scheduling around peak workloads
  - Doesn’t interfere with production throughput or response

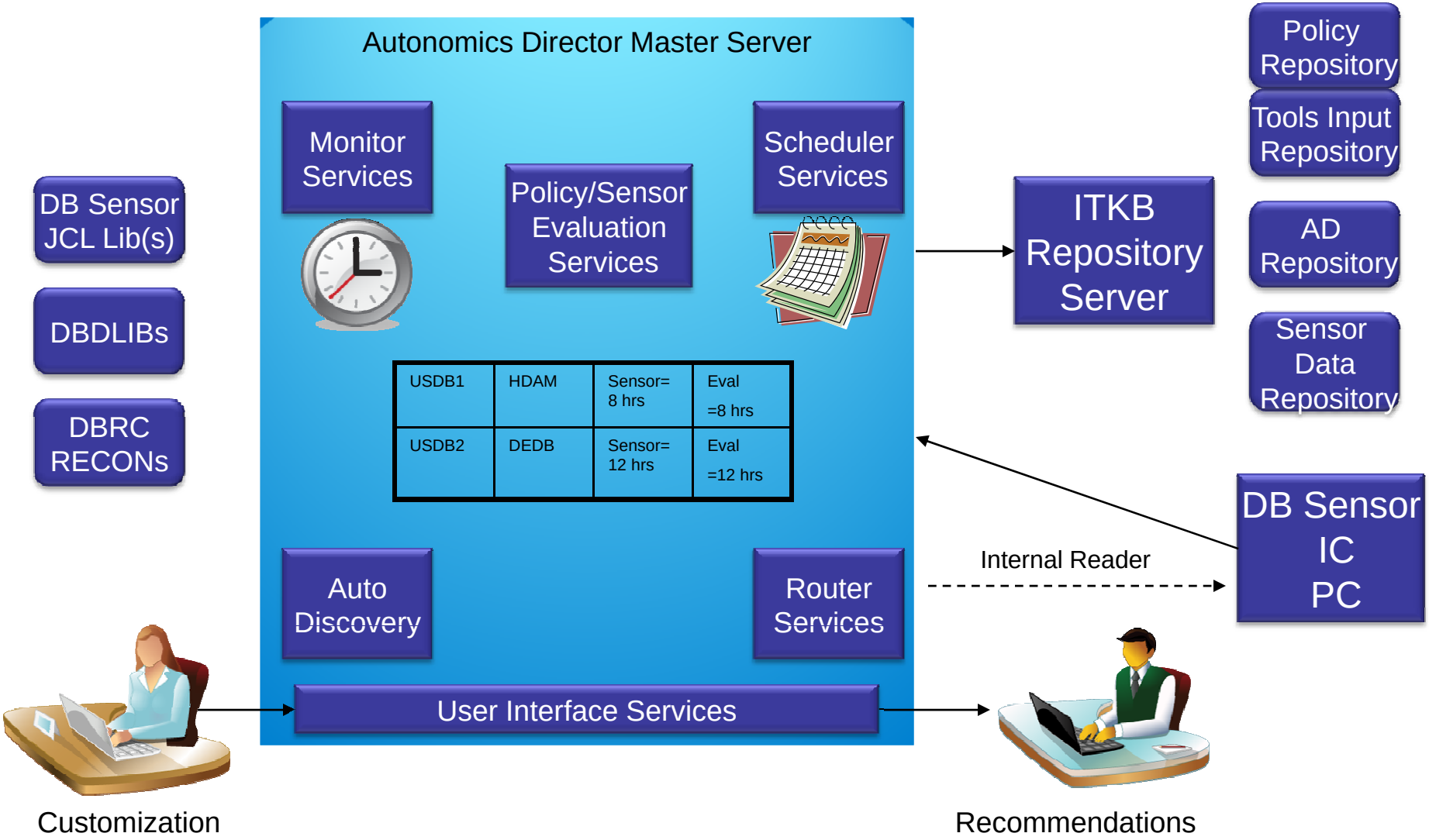
Autonomics Director Overview

- Works with existing job schedulers
- Exploits the power of IMS sysplex
  - Redundant servers for highest levels of availability
  - Spreads data collection/tools workload based on system capacity and status
- Easily customized for groups or individual databases
  - Auto-discovery of databases and existing database groups
  - User-defined groupings: “These are the databases that I’m responsible for”
  - Group-assigned defaults propagate to individual databases
- Intuitive user interfaces for all users
  - Full ISPF interface
  - Integrates with new IMS Administration Console for viewing database status on the web
- Available with upcoming release of IBM Tools Base Pack
  - No charge product

Autonomics Director Configuration



Autonomics Director Process Flow



Customization Highlights

- Auto-discovery feature simplifies customization
  - Define DBD libraries and DBRC RECONs in Knowledge Base repository
  - Awareness and presentation of databases and DBRC groups
  - Menu and selection list driven from this point
- Individual databases
  - Specify monitoring parameters
  - Evaluation Interval, Sensor Data maximum age, Sensor job stream data set
  - Policy by generic database type, database name, policy name
- Group support
  - All DBRC group types supported
  - HALDB databases and partitions
  - Fast Path DEDBs and areas
  - Group expanded to include all members
  - “Add Group” line command
  - Group parameter specifications are propagated to all defined members

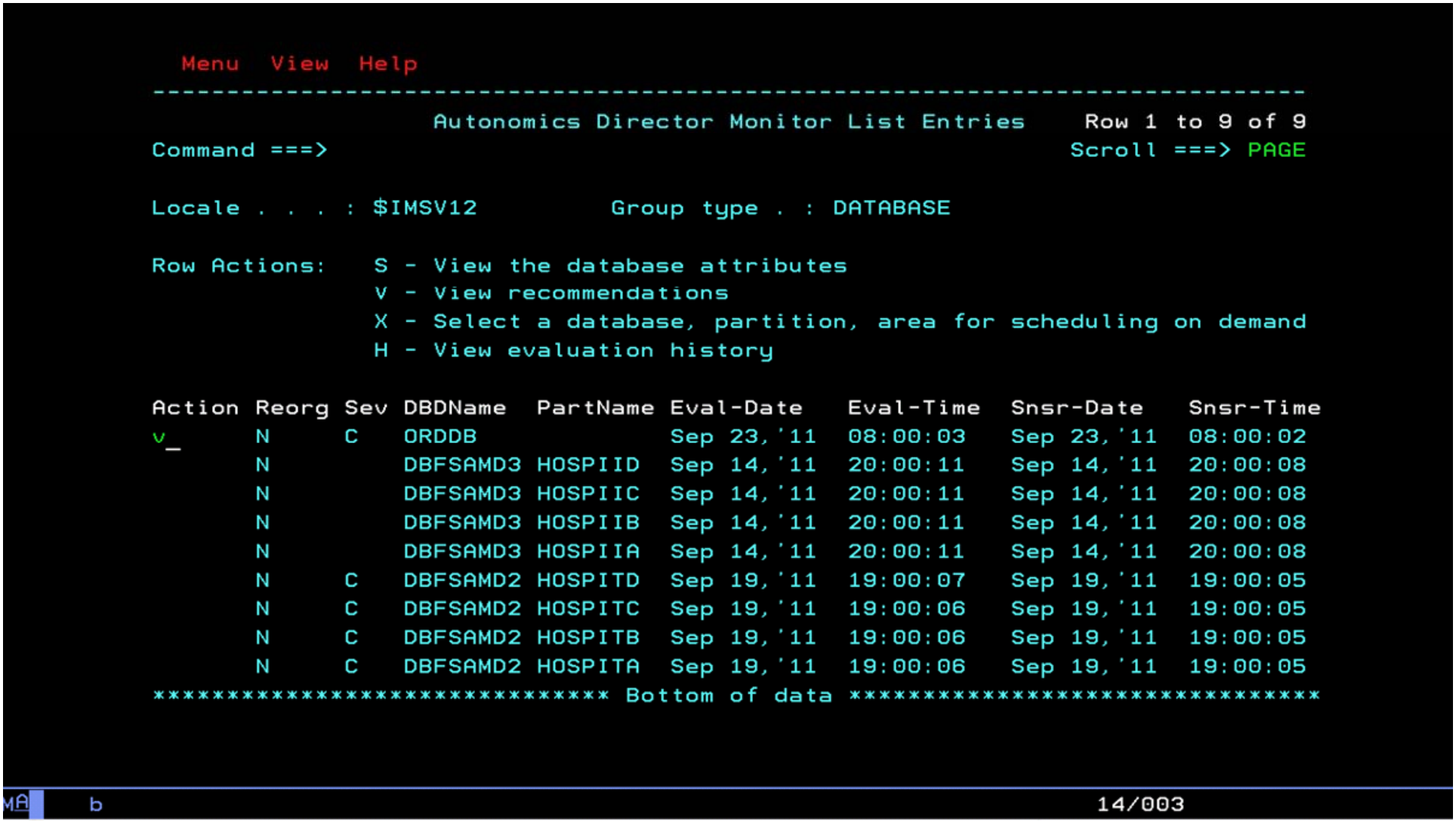
Sensor Data Collection Highlights

- Automatic scheduling
  - Automated or On Demand through Autonomics Director
  - Periodic Basis in days, hours, and minutes
- External scheduling
  - Through job scheduler
  - Manual submission
- Notification
  - Sensors notify Autonomics Director of new sensor data
  - Drives automatic analysis, evaluation, and recommendations

Evaluation Highlights

- Based on user-defined policies
  - IMS Tools Policy Services
  - Policy selection based upon database type, name, or policy name
  - Robust threshold criteria based on key status indicators
- Results and recommendations
  - Retained in repository
  - Historically maintained based on user specifications
  - Accessible via ISPF or web interface
  - Optional email or text alerts

Recommendations



Recommendations

Recommendations

```
   Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    USRT002.ECDBT09.IMSAD.CMDOUT1                 Line 00000021 Col 001 080
 Command ===> _                                            Scroll ===> HALF
Exceptions
------------------------------------------------------------------------------
The number of available extents for a data set of ORDDB is small
   Class: DATA_SET_EXTENTS_AVAILABILITY    Level: CRITICAL
   Rule: G:IBM.DBDS_EXTENTS.10     Threshold Set: HIGH
                                       Action: MESSAGE

Overflow data in ORDDB has increased
   Class: EXCESSIVE_HDAM_OVERFLOW          Level: SEVERE
   Rule: G:IBM.HDAM_OVERFLOW.10    Threshold Set: MED
                                       Action: MESSAGE

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

A data set of ORDDB has many pointers that point to other blocks or CIs
   Class: EXCESSIVE_SEGMENT_SCATTERING     Level: CRITICAL
   Rule: G:IBM.SEGM_SPREAD.10      Threshold Set: HIGH

MA    b                                                          04/015
```

Recommendation Alerts

EMAIL - EXCEPTION MESSAGE:

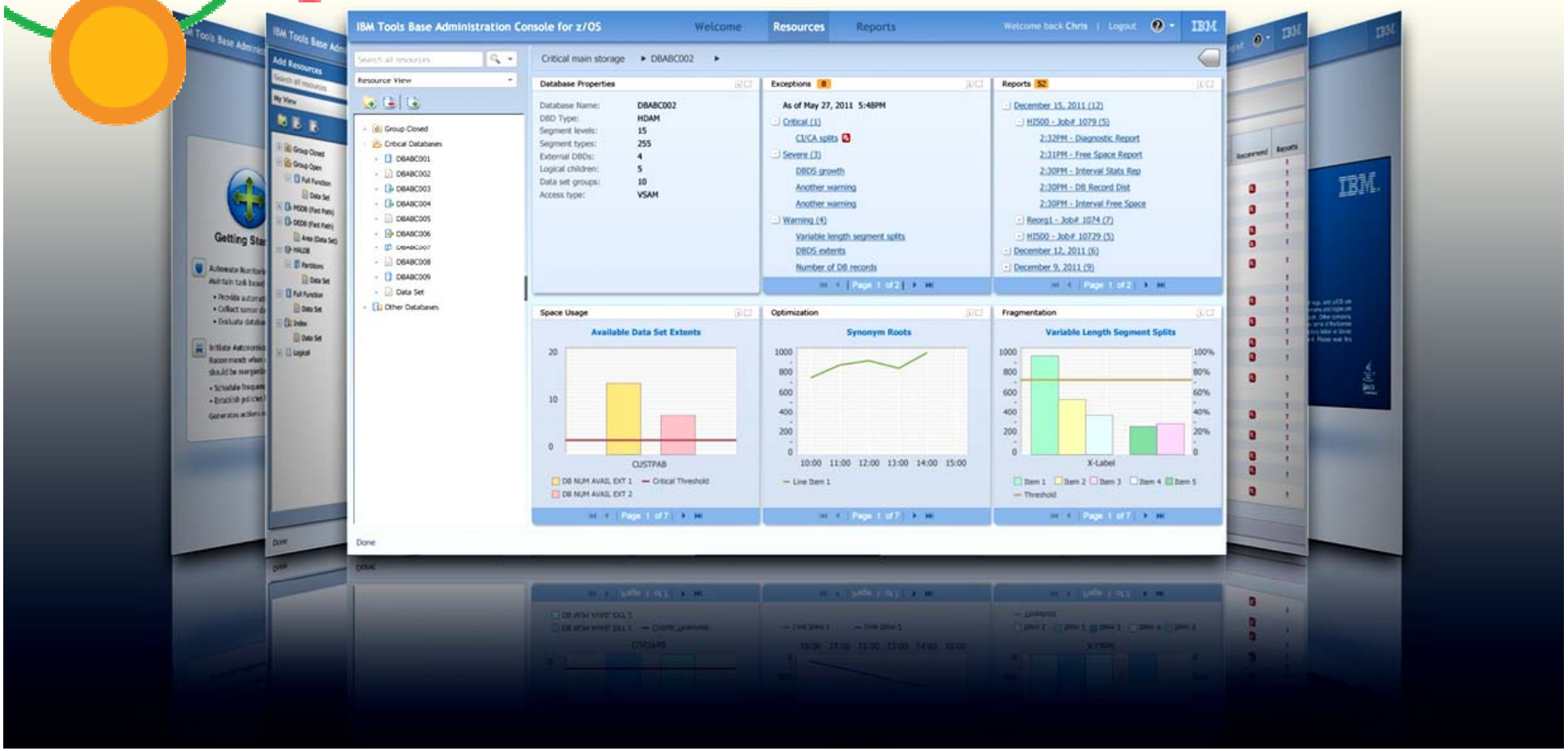
IMS Tools Autonomics Policy Notification

IMS_Tools
to:
User Name
07/25/2011 12:27 PM

Data Base Team

HFP2930I The average number of I/Os per root segment exceeded a threshold in area DEDBDBA1.

IBM Tools Modernization



Modernization: Breaking New Ground

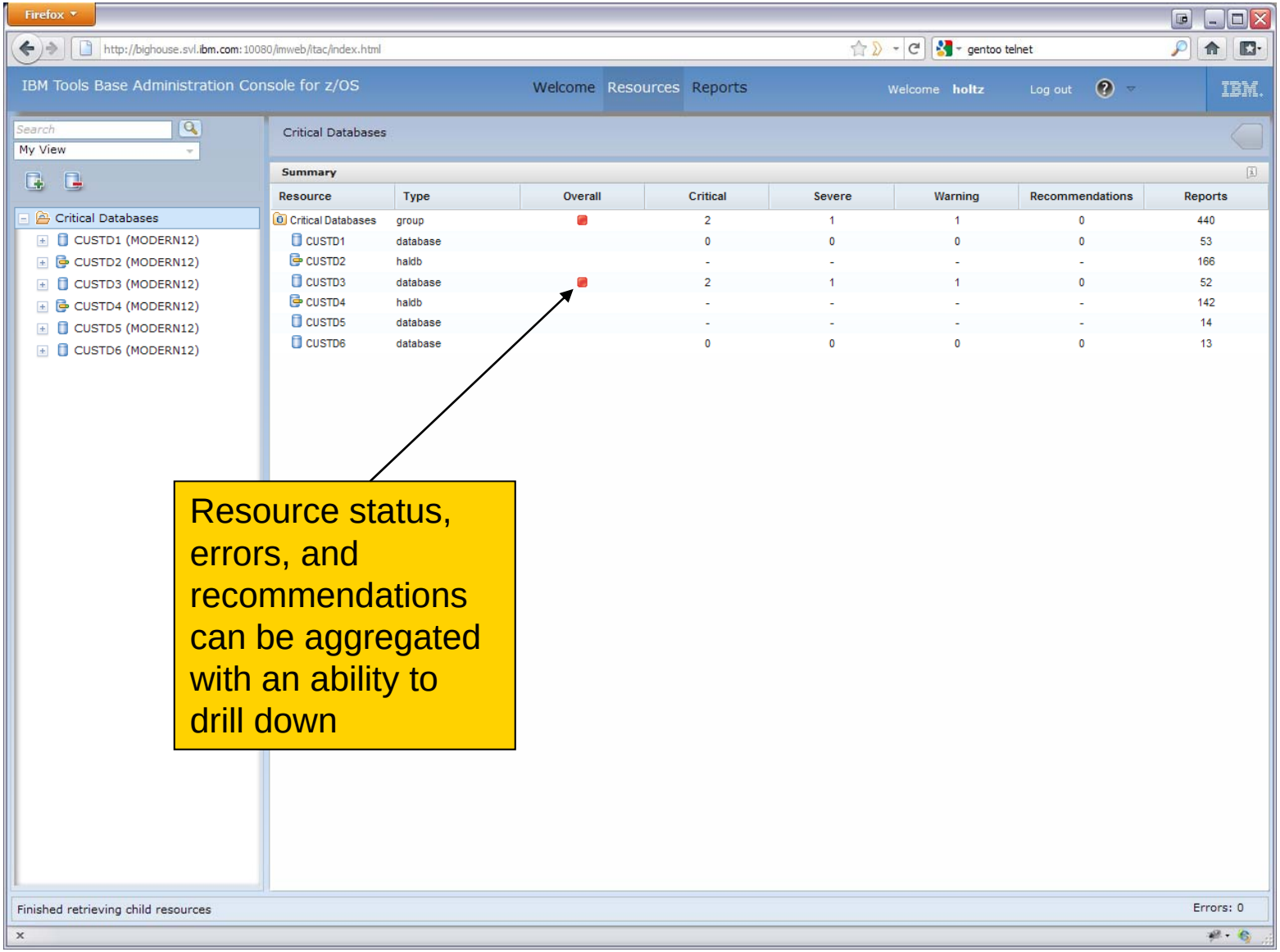
- IMS Tools Administration Console
  - Integrates key IMS information into a single, intuitive, web interface
  - Presents exception notifications and recommended resolutions
  - Presents historical data about database space usage, optimization, and fragmentation in interactive, graphical charts

- Customer value
  - Easily manage databases by exception and take action only when necessary
  - Rapidly interpret database statistics to find opportunities for performance tuning
  - Shorten the IMS learning curve for new DBAs

Administration Console Goals

- Provide a holistic view of your IMS databases from a single, easy-to-use web interface
  - Dynamic, interactive graphs and charts provide you with a visual representation of your sensor data
  - Integration with the Autonomics Director provides a list of policy exceptions and recommended resolutions for all of your monitored databases
  - All IMS Tools reports stored in the IMS Tools Knowledge Base can be searched, retrieved, and viewed effortlessly
- Prepare for the next generation of IMS DBAs
  - Uses the latest web technologies for a rich user experience
  - Access from anywhere via the Internet using the most popular web browsers
  - Includes a robust help system that serves as a learning aid for new IMS DBAs.

Overview of IMS Resources with Drill-down

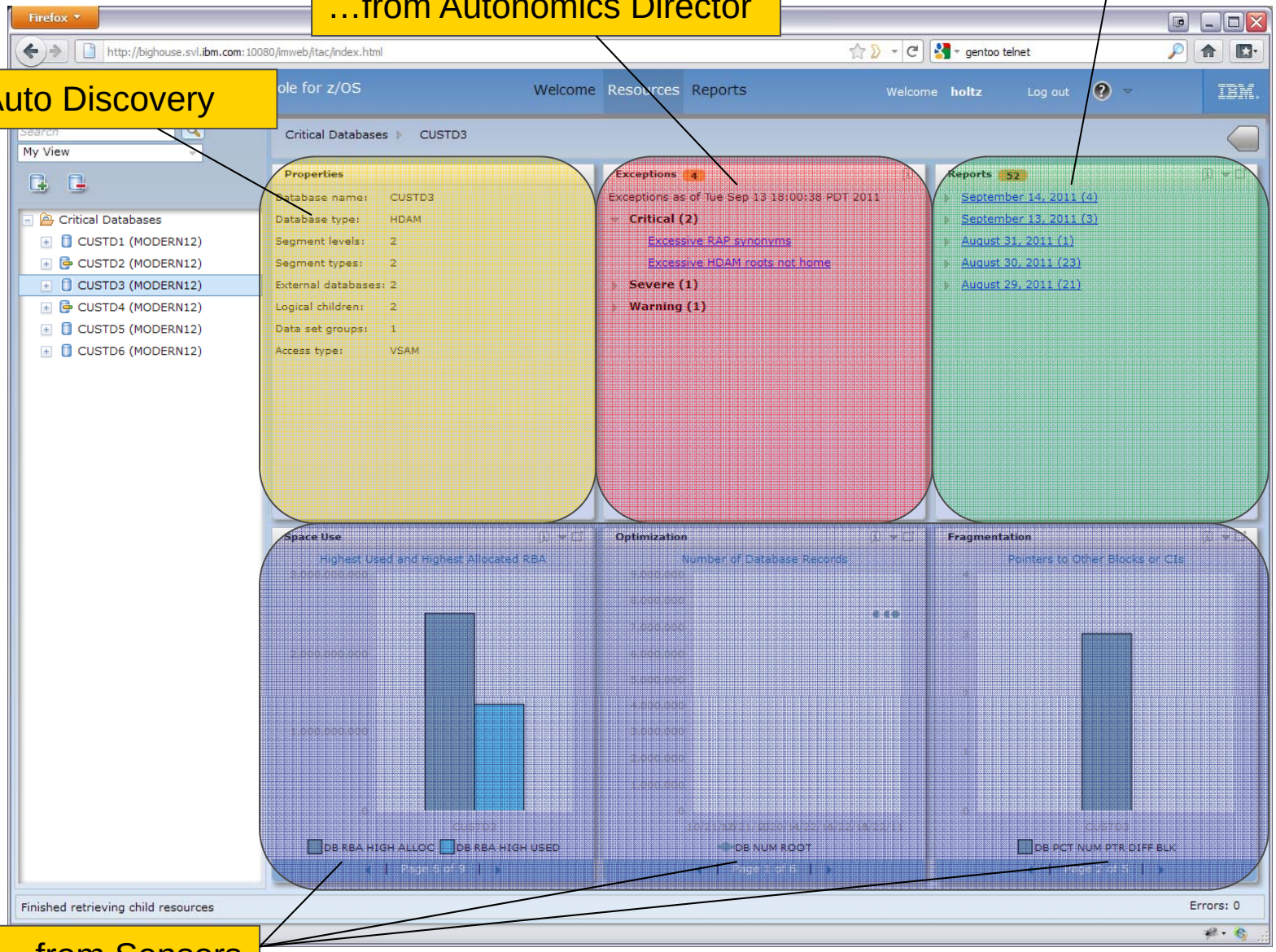


Holistic View of IMS Resources

…from Various HP Tools

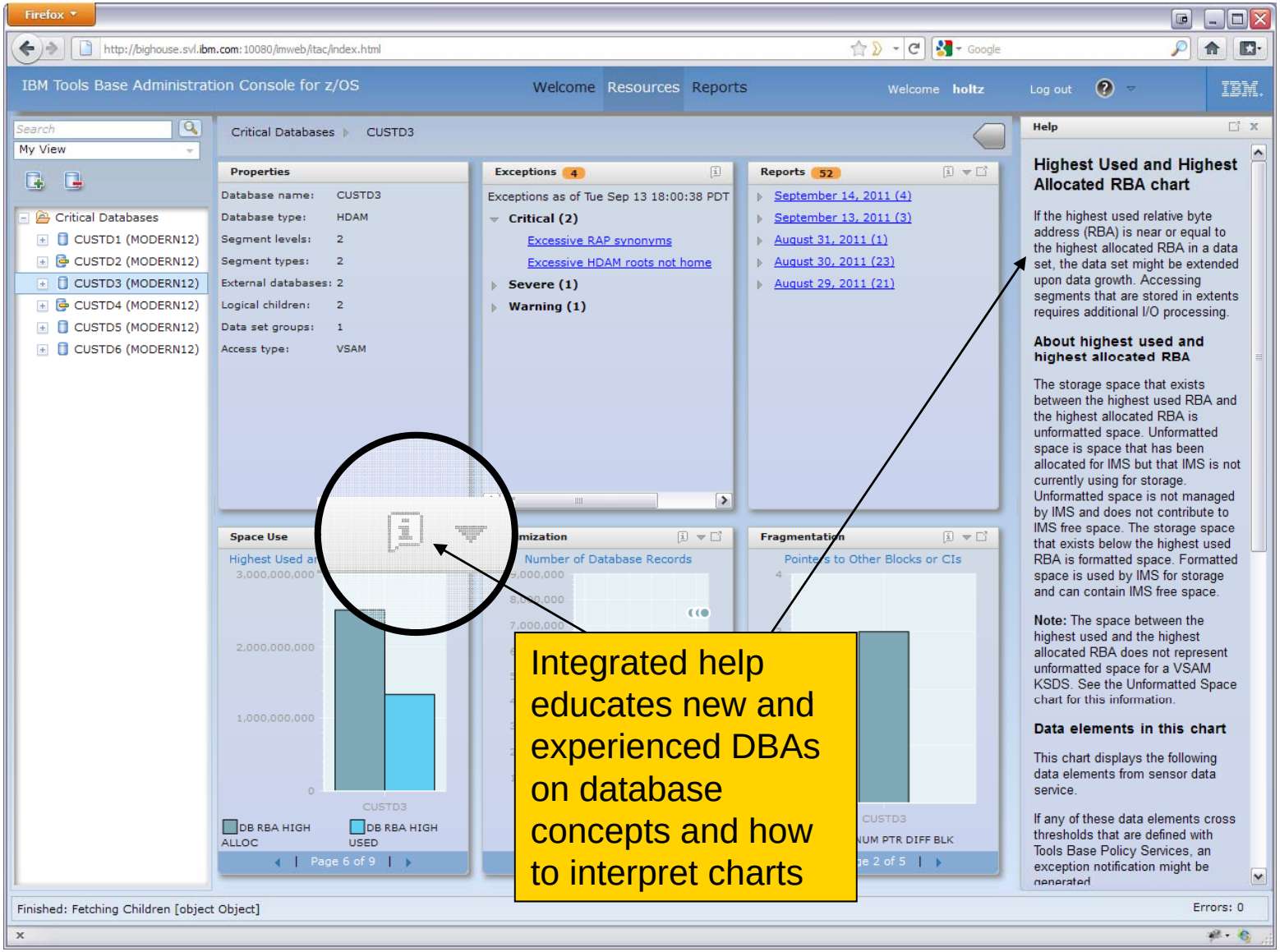
…from Autonomics Director

…from Auto Discovery



…from Sensors

Prepare the next generation of IMS DBAs

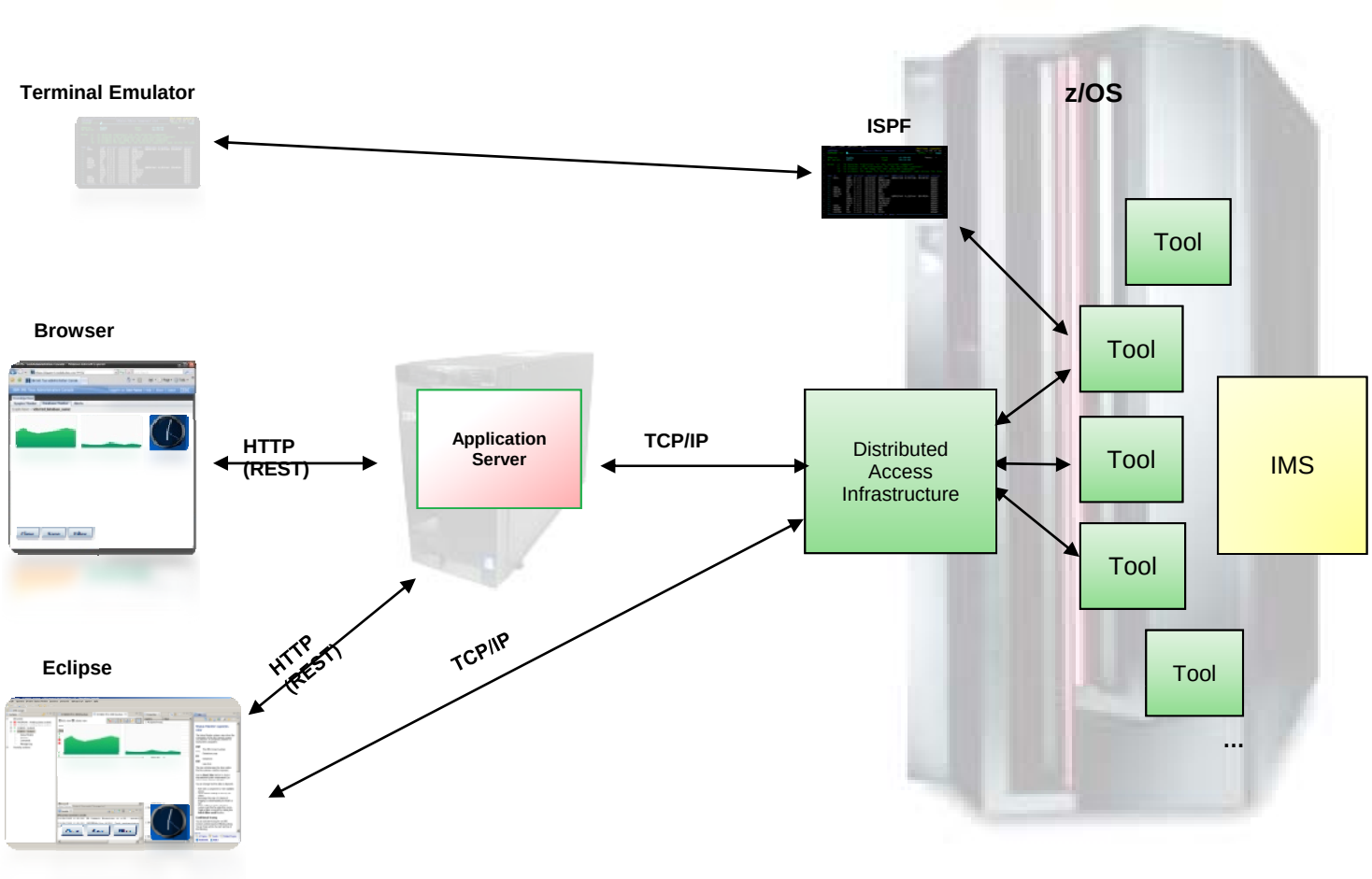


Administration Console Benefits

- Install once, access anywhere via the Internet
  - Single, server-based installation
  - Access through popular web browsers
- Safety and security features are built in
  - Uses SSL and RACF authentication
- Works “out of the box”
  - Immediately view your databases using your existing DBRC groups or Autonomics Director monitor list
- Easily customized
  - Define your own groups of databases to view
- Consolidated information at your fingertips
  - Summary pages provide total counts of warning, severe, and critical exceptions for a database group – drill down to the individual database level from there

Administration Console Installation and Configuration

- Standard SMP/E installation
- Light weight ‘mid tier’ application server installed using simple InstallAnywhere (.exe)



- IMS Administration Console

What's Next in Modernization?

- You tell us!

- Usability Sandbox session # 2074
  - IMS Administration Simplification and Modernization
    - Design walkthroughs and requirements gathering
    - Offered 14 times throughout the week

Summary

- We hear your concerns
- IMS Tools Solution Packs provide the important tools help you manage and maintain your IMS full-function and Fast Path databases
  - The latest versions of the IMS Database Solution Pack and the IMS Fast Path Solution Packs are available this December
  - These Packs deliver on a vision of Autonomics and Modernization, taking the burden of IMS maintenance off of the user once and for all
- Our solutions fit any size shop. They provide immediate benefits and position you for offerings still to come
- Let us help you get there!
  - Come to our Ask the Experts panel session (IMS-3687)

IMS Tools at IOD 2011

7 General Sessions:

IMS-1330 IMS Tools Autonomics and Modernization– Trends and Directions – Joe Sacco, Bob Magid, Chris Holtz, IBM
Tradewinds F - Mon 10/24 – 2:15 pm – 3:15 pm

IMS-1372 New Backup and Recovery Strategies to Save Money and Reduce Recovery Time for IMS – Ron Bisceglia and Rosemary Shay, Rocket
Tradewinds F - Tues 10/25 – 8:15 am – 9:30 am

IMS-1378 IMS Coordinated Recovery – DB2 and IMS Recovery Tools Glenn Galler, IBM
Tradewinds F - Mon 10/24 – 3:45 pm – 5:00 pm

IMS-1431 IMS Batch Terminal Simulator Version 4 What's New – Yoshiko Yaegashi and Chris Holtz, IBM
Tradewinds F - Tues 10/25 – 1:45 pm – 2:45 pm

IMS-1432 It's Now Easier to Pinpoint the Source of Transaction Problems – Jim Martin and John Hancy, Fundi
Tradewinds F - Wed 10/26 – 2:00 pm – 3:00 pm

IMS-1433 Improving the Manageability of IMS with IMS Configuration Manager – Jim Martin and John Hancy, Fundi
Tradewinds F - Thurs 10/27 – 10:00 am – 11:00 am

IMS-1434 Fast Path Secondary Index Support – Janet Leblanc, IBM
Tradewinds F - Thurs 10/27 – 3:30 pm – 4:30 pm

2 Usability Sandbox Sessions:

#2074 (A, B, D-O) IMS Administration Simplification and Modernization – Caroline Law, IBM
Mandalay Bay J (14 sessions during the week)

#2077 [B-E] IMS Development Simplification and Modernization – Caroline Law, IBM
Mandalay Bay J (4 sessions during the week)

5 Drop in Labs (DILs):

IMS-1375 Extending the Scope of Traditional Analysis (Transaction Analysis Workbench) – Jim Martin and John Hancy, Fundi

IMS-1376 The Latest Advances for IMS Database Reorganization Eugene Dong and Andy Nguyen, IBM

IMS-1377 New Backup and Recovery Strategies to Save Money and Reduce Recovery Time for IMS – Ron Bisceglia and Rosemary Shay, Rocket

IMS-1435 Coordinated Disaster Recovery for DB2 and IMS – Glenn Galler, and Hennie Mynhardt, IBM and Rosemary Shay, Rocket

IMS-1440 Managing IMS with IMS Configuration Manager – Jim Martin and John Hancy, Fundi

5 Ask the Experts (panel sessions):

IMS-3685 Problem Analysis with IMS Tools (Jim Martin and John Hancy, Fundi)
Reef D - Tues 10/25 – 11:15 am – 12:15 pm

IMS-3686 Coordinated IMS and DB2 Disaster Recovery (Glenn Galler, Hennie Mynhardt, IBM and Ron Bisceglia, Rocket)
Reef B - Tues 10/25 – 10:00 am – 11:00 am

IMS-3687 Modernizing and Automating IMS Tools (Joe Sacco, Bob Magid, Chris Holtz, and Janet Leblanc)
Reef D - Tues 10/25 – 3:00 pm – 4:00 pm

IMS-3688 Testing IMS Applications Prior to Production (Yoshiko Yaegashi, Janet Leblanc, and Chris Holtz)
Reef D - Mon 10/24 – 10:15 am – 11:15 am

IMS-3689 IMS Database Recovery with IMS Recovery Expert (Ron Bisceglia and Rosemary Shay, Rocket Software)
Reef B - Thurs 10/27 – 11:30 am – 12:30 pm

An exclusive Invitation for System z Attendees

ROCK THE MAINFRAME

at the

HOUSE OF BLUES

Music Hall

Wednesday, October 26th 7:00 pm - 10:00 pm

Enjoy a night of southern hospitality with cocktails and cajun hors d'oeuvres.
Keep the party rockin' by taking a turn on the Rock Band video game.
Join your colleagues, conference speakers and key members from your IBM System z team and GT Software

The House of Blues Music Hall is next door to the restaurant on the casino level across from the Mandalay Bay Hotel.

Wear your IOD badge and Z pin to get in

Z 2011

Acknowledgements and Disclaimers:

Availability. References in this presentation to IBM products, programs, or services do not imply that they will be available in all countries in which IBM operates.

The workshops, sessions and materials have been prepared by IBM or the session speakers and reflect their own views. They are provided for informational purposes only, and are neither intended to, nor shall have the effect of being, legal or other guidance or advice to any participant. While efforts were made to verify the completeness and accuracy of the information contained in this presentation, it is provided AS-IS without warranty of any kind, express or implied. IBM shall not be responsible for any damages arising out of the use of, or otherwise related to, this presentation or any other materials. Nothing contained in this presentation is intended to, nor shall have the effect of, creating any warranties or representations from IBM or its suppliers or licensors, or altering the terms and conditions of the applicable license agreement governing the use of IBM software.

All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer. Nothing contained in these materials is intended to, nor shall have the effect of, stating or implying that any activities undertaken by you will result in any specific sales, revenue growth or other results.

Questions and Discussion

- Thank you for your time
- Feel free to contact us
  - Chris Holtz holtz@us.ibm.com
  - Bob Magid magid@us.ibm.com
  - Joe Sacco jsacco@us.ibm.com
- Find us online
  - IBM IMS Tools Homepage
    - http://www-01.ibm.com/software/data/db2imstools/products/ims-tools.html

Thank You!
Your Feedback is Important to Us

- Access your personal session survey list and complete via SmartSite
  - Your smart phone or web browser at: iodsmartsite.com
  - Any SmartSite kiosk onsite
  - Each completed session survey increases your chance to win an Apple iPod Touch with daily drawing sponsored by Alliance Tech