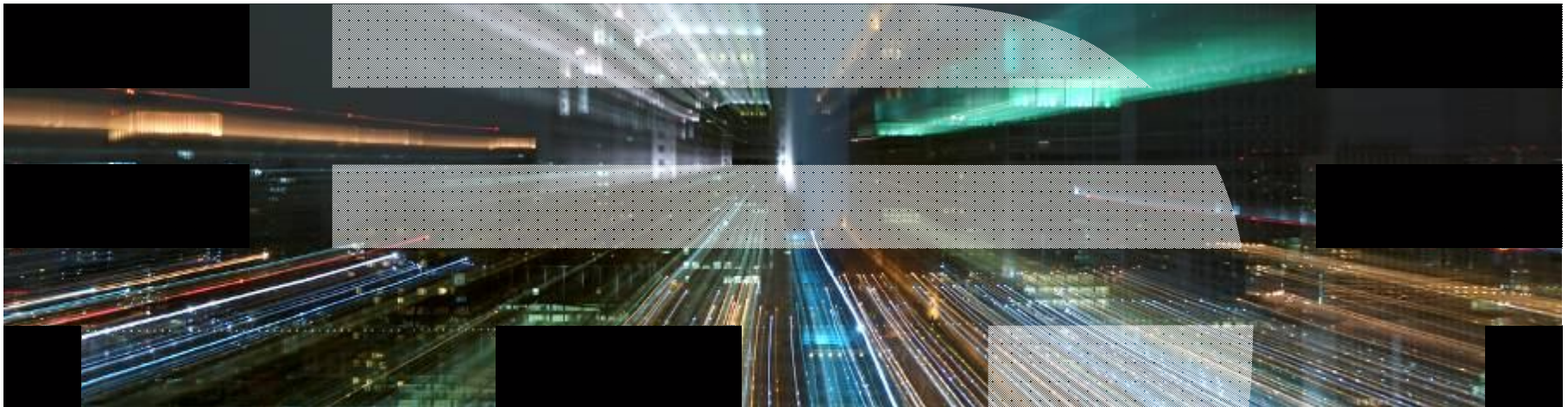# IMS Tools Autonomics and Modernization

Bob Magid, IMS Tools Architect

Chris Holtz, IMS Tools Modernization Architect

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
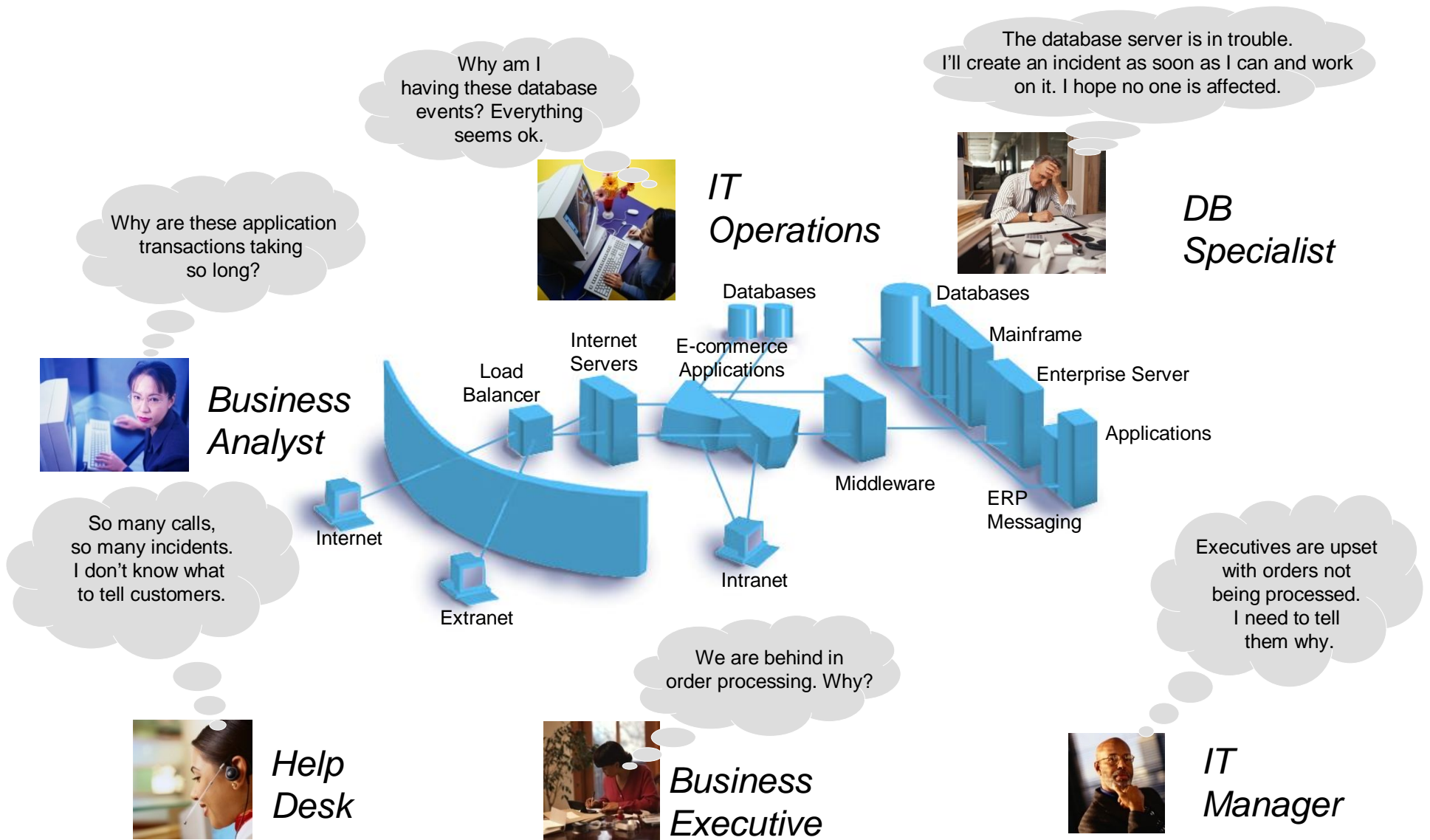
User Interface Modernization is Critical

- 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
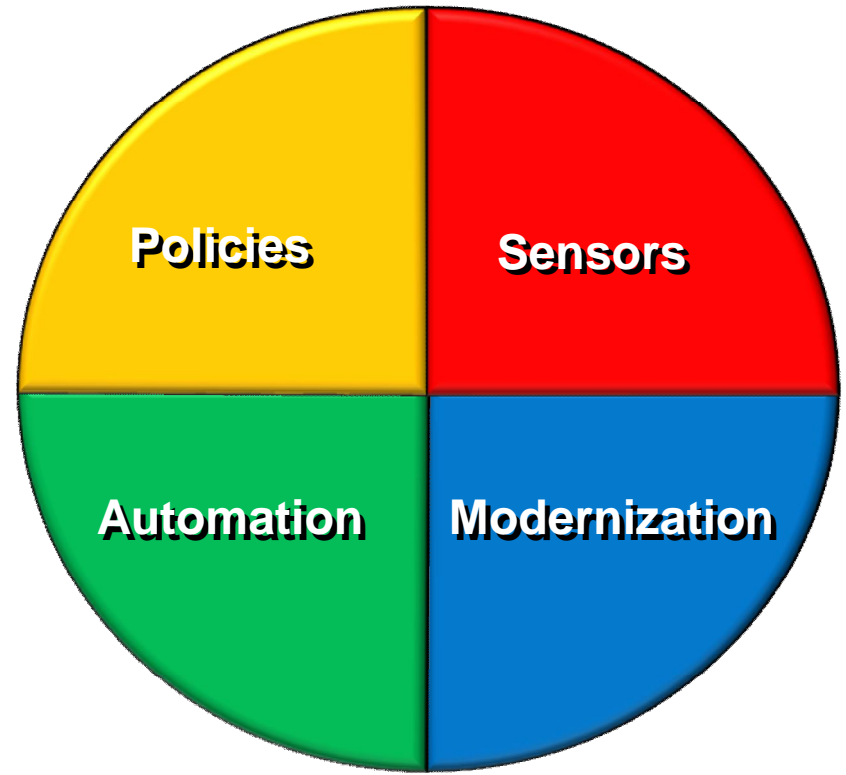
What we're doing

- 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

- Policies
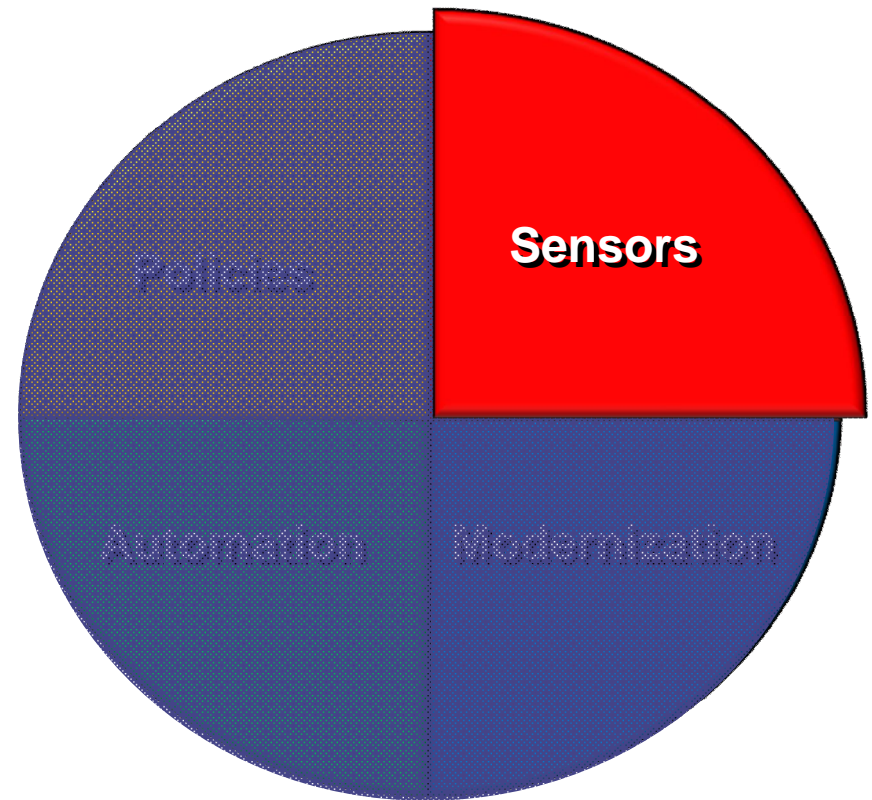- Sensors
- Automation
- Modernization

IMS Tools Vision

Putting information to work

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

Policies

Sensors

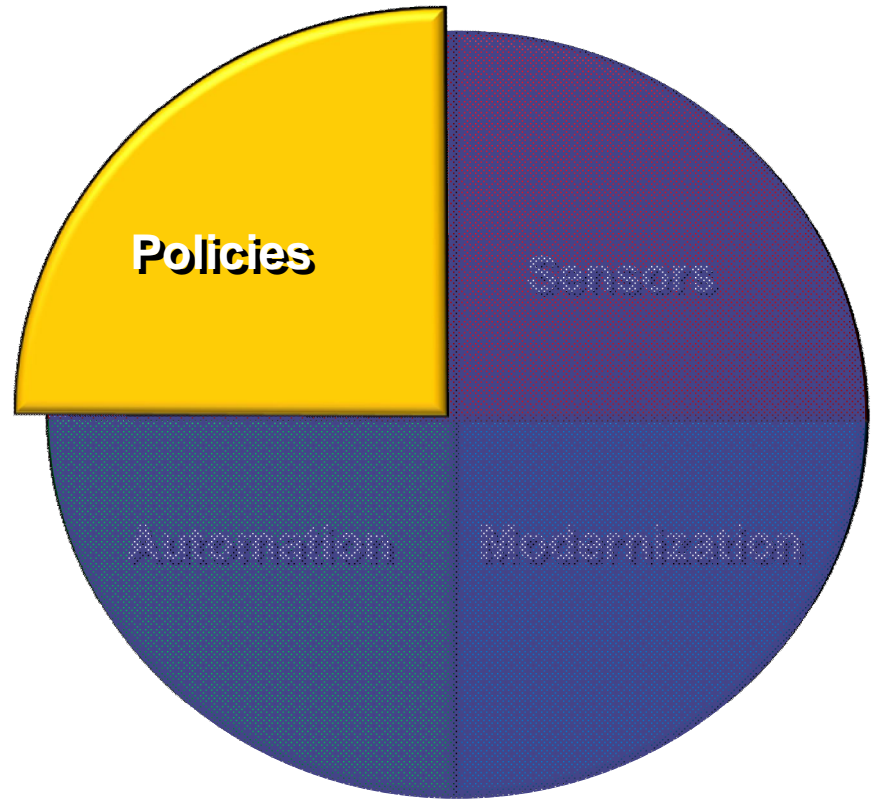Automation

Modernization

IMS Tools Vision

Putting information to work

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

Policies

Sensors
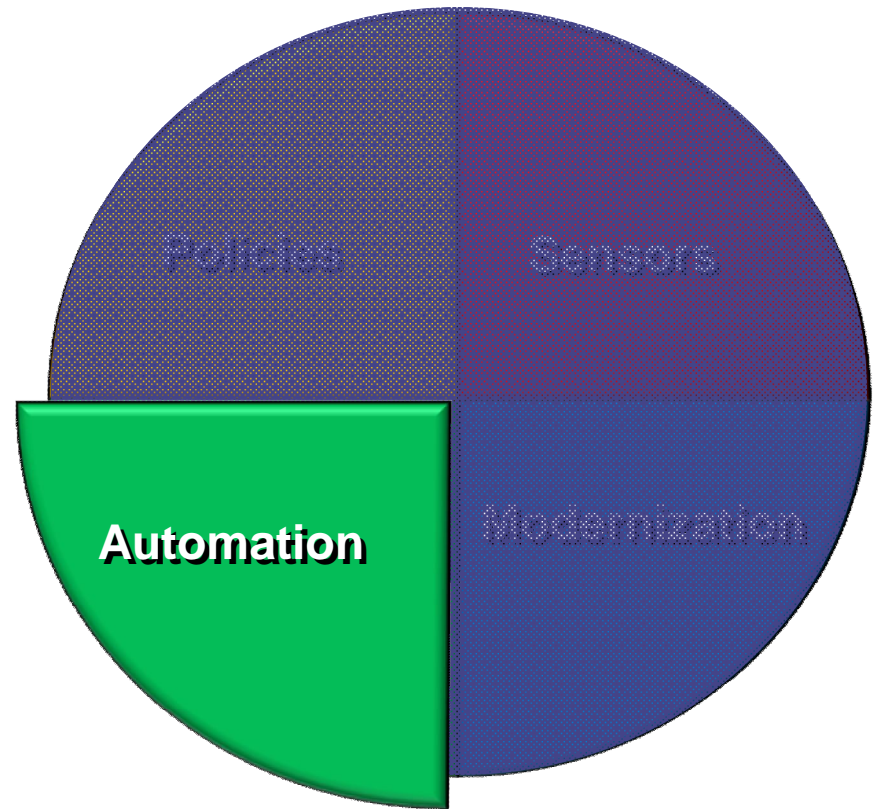
Automation

Modernization

IMS Tools Vision

Putting information to work

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

Policies

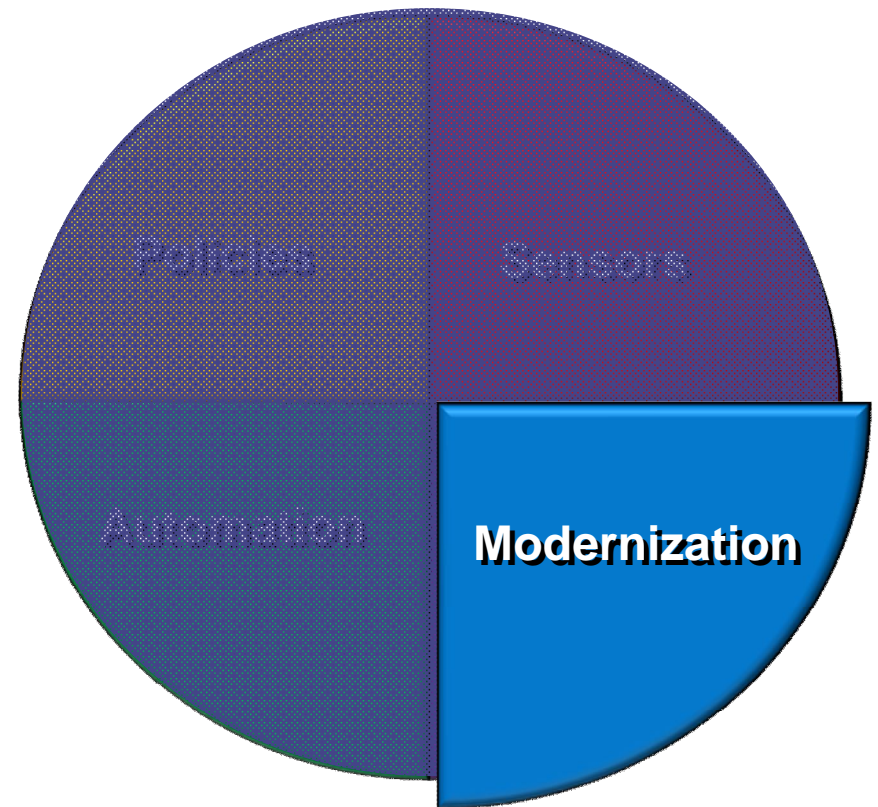Sensors

Modernization

Automation

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

Policies

Sensors

Automation

Modernization

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
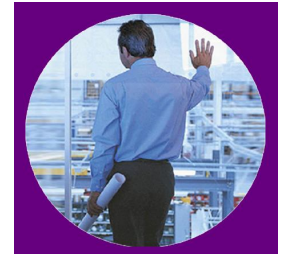
IMS Tools Autonomics Director

- 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
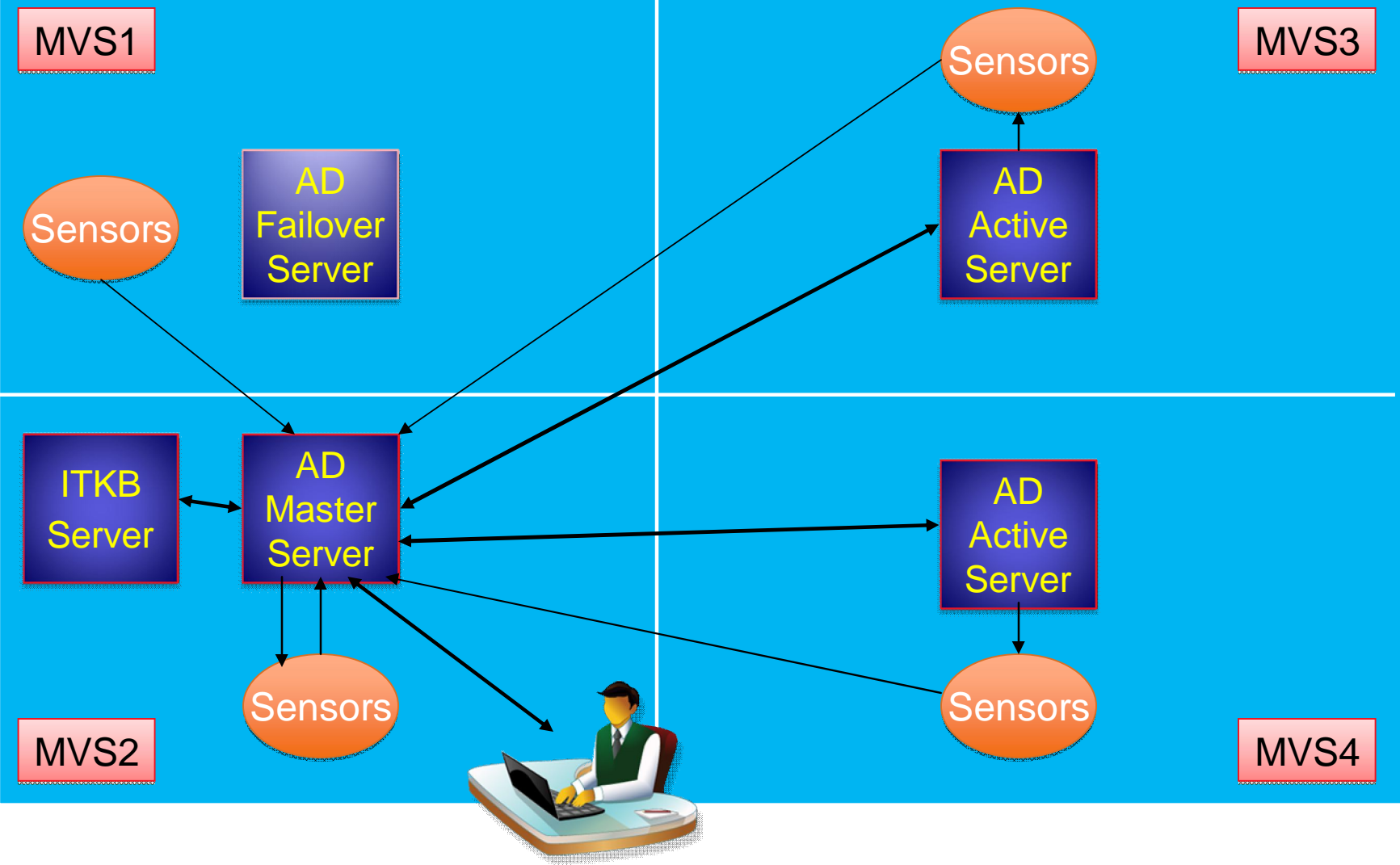
Autonomics Director Overview

- 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
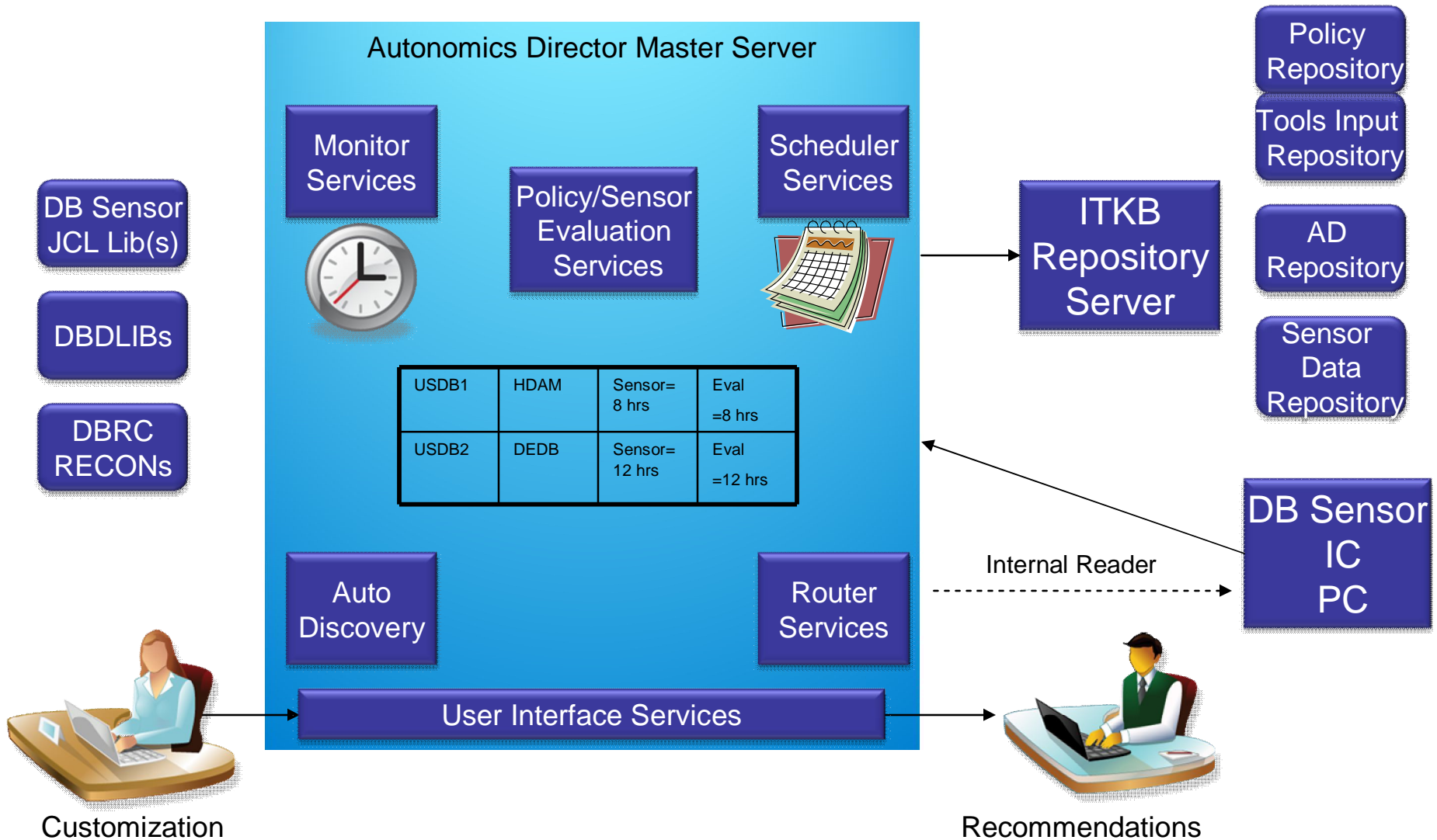
Autonomics Director Overview

- 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

Autonomics Director Master Server

- Monitor Services
- Policy/Sensor Evaluation Services
- Scheduler Services
- Auto Discovery
- Router Services
- User Interface Services

| USDB1 | HDAM | Sensor= 8 hrs | Eval =8 hrs |
| USDB2 | DEDB | Sensor= 12 hrs | Eval =12 hrs |

- DB Sensor JCL Lib(s)
- DBDLIBs
- DBRC RECONs

ITKB Repository Server

- Policy Repository
- Tools Input Repository
- AD Repository
- Sensor Data Repository

DB Sensor IC PC

Internal Reader

Customization

Recommendations

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

```
 Menu   View   Help
 -------------------------------------------------------------------------
                      Autonomics Director Monitor List Entries     Row 1 to 9 of 9
 Command ===>                                                Scroll ===> PAGE

 Locale . . . : $IMSV12          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 evaluation history


 Action Reorg Sev DBDName   PartName Eval-Date    Eval-Time  Snsr-Date    Snsr-Time
 v_        N    C  ORDDB              Sep 23, '11  08:00:03   Sep 23, '11  08:00:02
           N       DBFSAMD3 HOSPIID   Sep 14, '11  20:00:11   Sep 14, '11  20:00:08
           N       DBFSAMD3 HOSPIIC   Sep 14, '11  20:00:11   Sep 14, '11  20:00:08
           N       DBFSAMD3 HOSPIIB   Sep 14, '11  20:00:11   Sep 14, '11  20:00:08
           N       DBFSAMD3 HOSPIIA   Sep 14, '11  20:00:11   Sep 14, '11  20:00:08
           N    C  DBFSAMD2 HOSPITD   Sep 19, '11  19:00:07   Sep 19, '11  19:00:05
           N    C  DBFSAMD2 HOSPITC   Sep 19, '11  19:00:06   Sep 19, '11  19:00:05
           N    C  DBFSAMD2 HOSPITB   Sep 19, '11  19:00:06   Sep 19, '11  19:00:05
           N    C  DBFSAMD2 HOSPITA   Sep 19, '11  19:00:06   Sep 19, '11  19:00:05
 ******************************** Bottom of data ********************************

 MA   b                                                          14/003
```

24

Recommendations


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

Locale . . . . . . . . . . . . . . . . . : $IMSV12

Enter S to view evaluation run exceptions  . . . . . s _

Database name  . . . . . . . . . . . : ORDDB
Partition name . . . . . . . . . . . :
Database type  . . . . . . . . . . . : HDAM
Access method  . . . . . . . . . . . : OSAM


Status . . . . . . . . . . . . . . . : DB EVALUATION Completed
Return code  . . . . . . . . . . . . : 00000000
Reason code  . . . . . . . . . . . . : 00000000
Reorganization needed  . . . . . . . : N
Severity . . . . . . . . . . . . . . : C
Sensor data from date / time . . . . : Sep 23,'11  /  08:00:03
Evaluation run date / time . . . . . : Sep 23,'11  /  08:00:03


Policy by  . . . . . . . . . . . . . : DBTYPE
Policy name  . . . . . . . . . . . . : SYS.DBDTYPE.HDAM
----------------------------------------------------------------------
MA    b                                                    07/057
```

25

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
```

26

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
(IMS Administration Console)

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

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IMS 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

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

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

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)
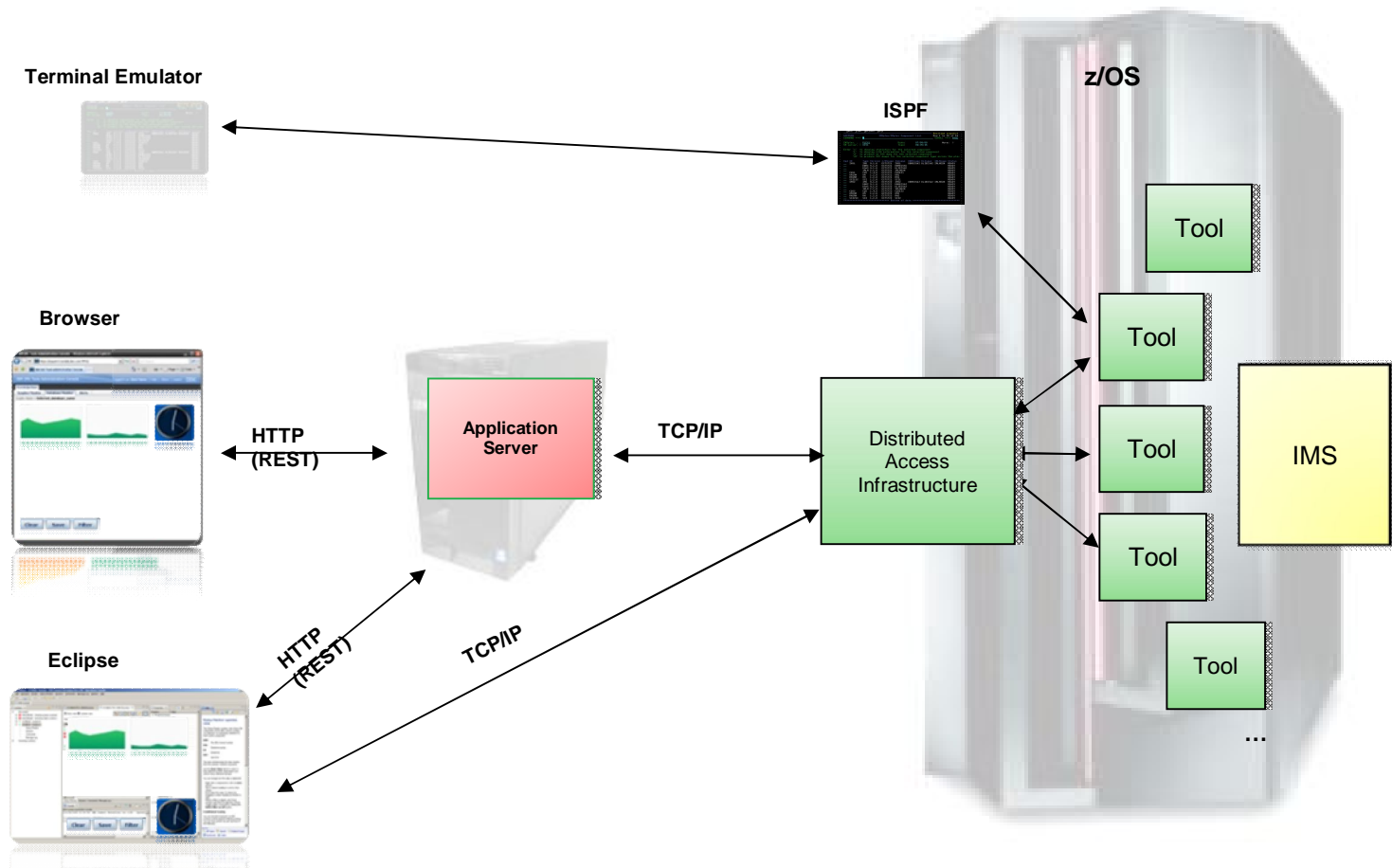
http://bighouse:10080/imweb/common/login.html

Google

IBM Tools Base Administration Console for z/OS

Management

IBM.

Log in to Administration Console

Environment:

User ID:

Password:

Help

Log In

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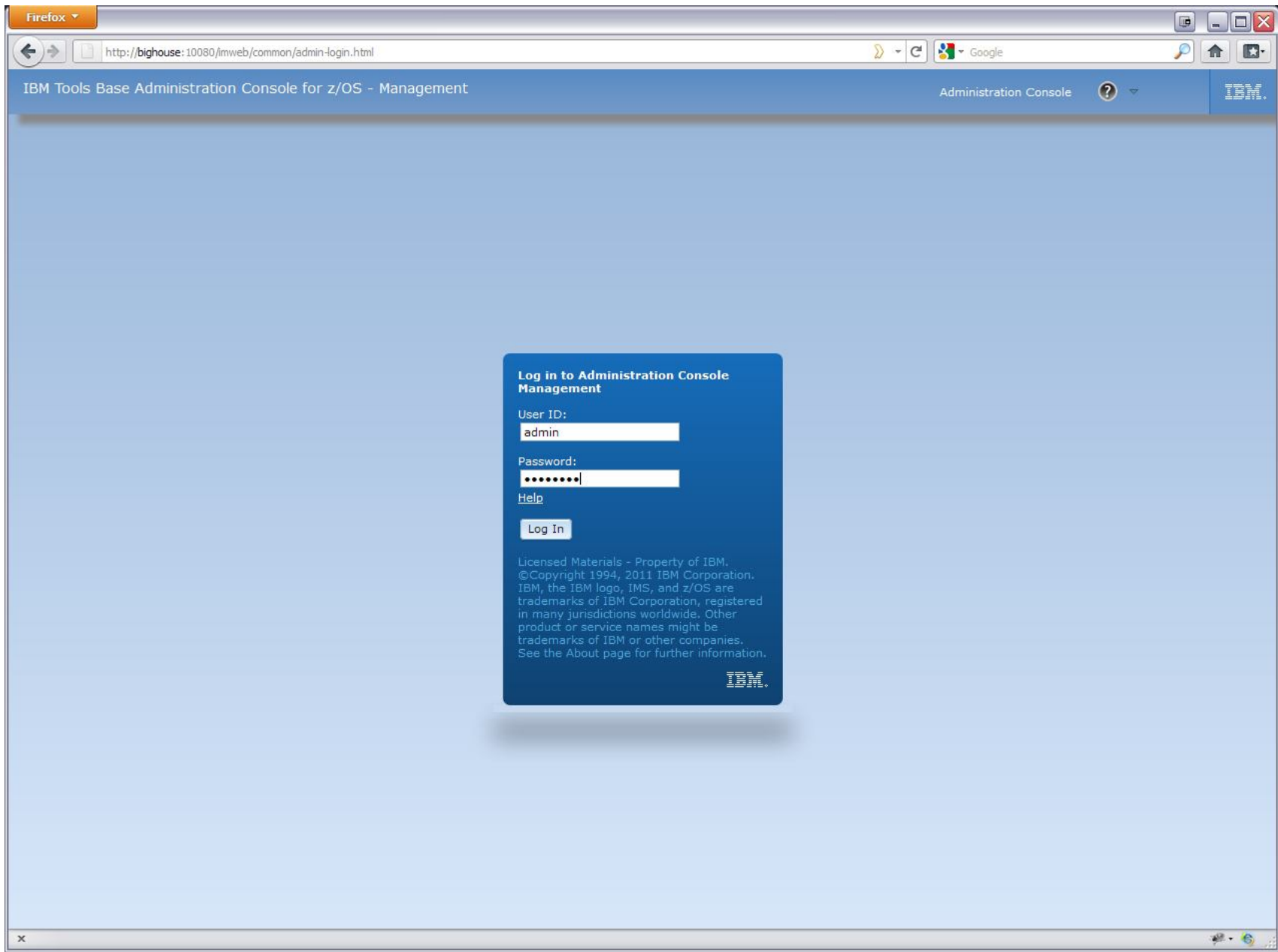
http://bighouse:10080/imweb/common/admin-login.html

Google

IBM Tools Base Administration Console for z/OS - Management

Administration Console

IBM.

Log in to Administration Console Management

User ID:

admin

Password:

••••••••

Help

Log In

IBM.

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http://bighouse:10080/imweb/admin/index.html

Google

IBM Tools Base Administration Console for z/OS - Management

Environments

Welcome **admin**   Log out   ?

IBM.

Add Administration Console environments below. An environment contains the resources that users of Administration Console can manage.

To add an environment, complete the following steps:

1. Click **Add** to define the environment.
2. Click **Discover** to populate Administration Console with the environment's resources.

To log in to Administration Console, enter the following URL in your web browser. Substitute http or https, the DNS name or IP address of the host server, and the port of the host server.

<http or https>://*<DNS name or IP address>*:*<port>*/imweb/common/login.html

| Add... | Remove | Discover |

Environment Name	DAI Address	DAI Port	IMS Tools KB Server	AD Server	Last Discovery Date

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IBM Tools Base Administration Console for z/OS - Management | Environments | Welcome **admin** | Log out ? ▾ | IBM.

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<http or https>://<DNS name or IP address>:<port>/imweb/common/login.html

Add...	Remove	Discover

Environment Name	DAI Address		Discovery Date

Add Environment ✕

* Environment name: `STLABE2`

Distributed Access Infrastructure Connection
* Address: `stlabe2.svl.ibm.com`
* DAI port: `5125`

[Test Connection]

IMS Tools Servers
* IMS Tools Knowledge Base server: `DAIFPQS2`
* Autonomics Director server: `IAVADM00`

* Required   [OK] [Cancel]

✕

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IBM Tools Base Administration Console for z/OS - Management   Environments   Welcome **admin**   Log out   ⑦ ▽   IBM.

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<http or https>://*<DNS name or IP address>*:*<port>*/imweb/common/login.html

[Add...] [Remove] [Discover]

Environment Name	DAI Address	DAI Port	IMS Tools KB Server	AD Server	Last Discovery Date
STLABE2	stlabe2.svl.ibm.com	5125	DAIFPQS2	IAVADM00	

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<http or https>://<DNS name or IP address>:<port>/imweb/common/login.html

[Add...] [Remove] [Discover]

Environment Name	DAI Address	DAI Port	IMS Tools KB Server	AD Server	Last Discovery Date
STLABE2	stlabe2.svl.ibm.com	5125			

Host Security Authorization   ✕

User ID: [|]

Password: [ ]

Save credentials
during this session: [ ]

                              [OK] [Cancel]

✕   📄 ▾ 🌐

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IBM Tools Base Administration Console for z/OS - Management · Environments · Welcome **admin** · Log out · ? ▾ · IBM.

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[Add...] [Remove] [Discover]

Environment Name	DAI Address	DAI Port	IMS Tools KB Server	AD Server	Last Discovery Date
STLABE2	stlabe2.svl.ibm.com	5125			

Host Security Authorization ✕

User ID: | holtz

Password: | ••••••••

Save credentials during this session: ☐

[OK] [Cancel]

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IBM Tools Base Administration Console for z/OS - Management   Environments   Welcome **admin**   Log out   ❓ ▾   IBM.

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<http or https>://*<DNS name or IP address>*:*<port>*/imweb/common/login.html

[Add...] [Remove] [Discover]

Environment Name	DAI Address	DAI Port	IMS Tools KB Server	AD Server	Last Discovery Date
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IBM Tools Base Administration Console for z/OS - Management   Environments   Welcome **admin**   Log out   ⑦ ▽   IBM.

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<http or https>://*<DNS name or IP address>*:*<port>*/imweb/common/login.html

[Add...] [Remove] [Discover]

Environment Name	DAI Address	DAI Port	IMS Tools KB Server	AD Server	Last Discovery Date
STLABE2	stlabe2.svl.ibm.com	5125	DAIFPQS2	IAVADM00	Sep 27, 2011 09:39:52

✕
90%

IBM Tools Base Administration Console for z/OS - Management   Environments   Welcome **admin**   Log out   ⑦ ▾   IBM.

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<http or https>://<DNS name or IP address>:<port>/imweb/common/login.html

Add...	Remove	Discover

Environment Name	DAI Address	DAI Port	IMS		Last Discovery Date
STLABE2	stlabe2.svl.ibm.com	5125	DAIF		Sep 27, 2011 09:42:54

Discovery Results   ✕

RECONs:
     1 Added
Databases:
     29 Added
Partitions:
     33 Added
Areas:
     50 Added
Datasets:
     141 Added

[OK]

http://localhost:10080/imweb/common/login.html

IBM Tools Base Administration Console for z/OS

Management

Log in to Administration Console

Environment:

STLABE2

User ID:

Password:

Help

Log In

IBM.

http://bighouse:10080/imweb/common/login.html

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IBM Tools Base Administration Console for z/OS

Management ?

IBM.

Log in to Administration Console

Environment:

STLABE2

User ID:

holtz

Password:

••••••••

Help

Log In

IBM.

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IBM Tools Base Administration Console for z/OS

Welcome   Resources   Reports

Welcome   **holtz**   Log out   ? ▼

IBM.

Getting Started

Click **Resources** in the menu to see information for your resources.

View video demonstrations that show how to set up and use Administration Console to find and resolve database problems.

See first steps in the Getting Started with Administration Console (PDF) quick reference.

Related Information

Documentation
Administration Console User's Guide
Tools Base Information Center

IMS Tools information
IMS Tools products
Tools Base components

Related products
IMS Database Solution Pack for z/OS

Learning
z/OS Basic Skills Information Center

Support
IMS Tools Support

Key Features

View aggregate statistics to quickly identify the resources that require action.

Identify database exceptions and view recommendations for resolving them.

Analyze database statistics in interactive, graphical charts to find opportunities for performance tuning.

Retrieve IMS Tools reports by using predefined or custom search criteria.

Read the robust help to understand and act on resource information.

Finished retrieving resources

Errors: 0

×

IBM Tools Base Administration Console for z/OS

Welcome Resources Reports

Welcome **holtz** Log out ?

IBM.

Search

My View

My View

RECON Groups

Monitor List

Search Results

Finished retrieving resources

Errors: 0

http://bighouse:10080/imweb/itac/index.html

IBM Tools Base Administration Console for z/OS   Welcome Resources Reports   Welcome **holtz**   Log out   ? ▽   IBM.

Search 🔍

Monitor List ▽

☐ 🗎 CUSTD1 (MODERN12)
☐ 🗎 PCUST24 (MODERN12)
☐ 🗎 PCUST23 (MODERN12)
☐ 🗎 PCUST22 (MODERN12)
☐ 🗎 PCUST21 (MODERN12)
☐ 🗎 CUSTD3 (MODERN12)
☐ 🗎 CUSTD6 (MODERN12)
☐ 🗎 D2V1P11 (MODERN12)
☐ 🗎 F1V3P1 (MODERN12)
☐ 🗎 F1V4P1 (MODERN12)
☐ 🗎 H1V3P13 (MODERN12)
☐ 🗎 H1V3P12 (MODERN12)
☐ 🗎 H1V3P11 (MODERN12)
☐ 🗎 H1V4P13 (MODERN12)
☐ 🗎 H1V4P12 (MODERN12)
☐ 🗎 H1V4P11 (MODERN12)

Finished query to derby database   Errors: 0

✕

http://bighouse:10080/imweb/itac/index.html

Google

IBM Tools Base Administration Console for z/OS   Welcome   Resources   Reports   Welcome **holtz**   Log out   ?   IBM.

H1V

Search Results

⊞	H1V3P1 (MODERN10)
⊞	H1V3P1 (MODERN12)
⊞	H1V3P11 (MODERN10)
⊞	H1V3P11 (MODERN12)
⊞	H1V3P12 (MODERN10)
⊞	H1V3P12 (MODERN12)
⊞	H1V3P13 (MODERN10)
⊞	H1V3P13 (MODERN12)
	H1V3S1 (MODERN10)
	H1V3S1 (MODERN12)
⊞	H1V3S11 (MODERN10)
⊞	H1V3S11 (MODERN12)
⊞	H1V3S12 (MODERN10)
⊞	H1V3S12 (MODERN12)
⊞	H1V3S13 (MODERN10)
⊞	H1V3S13 (MODERN12)
⊞	H1V4P1 (MODERN10)
⊞	H1V4P1 (MODERN12)
⊞	H1V4P11 (MODERN10)
⊞	H1V4P11 (MODERN12)
⊞	H1V4P12 (MODERN10)
⊞	H1V4P12 (MODERN12)
⊞	H1V4P13 (MODERN10)
⊞	H1V4P13 (MODERN12)
	H1V4S1 (MODERN12)
	H1V4S1 (MODERN10)
⊞	H1V4S11 (MODERN10)
⊞	H1V4S11 (MODERN12)
⊞	H1V4S12 (MODERN10)
⊞	H1V4S12 (MODERN12)
⊞	H1V4S13 (MODERN10)
⊞	H1V4S13 (MODERN12)

Results 40 out of 40

Finished query to derby database   Errors: 0

×

http://bighouse:10080/imweb/itac/index.html

Google

IBM Tools Base Administration Console for z/OS

Welcome   Resources   Reports

Welcome   **holtz**   Log out

IBM.

Search

My View

- 📁 Critical Databases
  - ⊞ 📄 CUSTD1 (MODERN12)
  - ⊞ 📄 CUSTD2 (MODERN12)
  - ⊞ 📄 CUSTD3 (MODERN12)
  - ⊞ 📄 CUSTD4 (MODERN12)
  - ⊞ 📄 CUSTD5 (MODERN12)
  - ⊞ 📄 CUSTD6 (MODERN12)

Add Resources   x

My View

Up   Down   Sort

D

Search Results

- 📁 Critical Databases
  - ⊞ 📄 CUSTD1 (MODERN12)
  - ⊞ 📄 CUSTD2 (MODERN12)
  - ⊞ 📄 CUSTD3 (MODERN12)
  - ⊞ 📄 CUSTD4 (MODERN12)
  - ⊞ 📄 CUSTD5 (MODERN12)
  - ⊞ 📄 CUSTD6 (MODERN12)

- ⊞ 📄 D2V1P1 (MODERN10)
- ⊞ 📄 D2V1P1 (MODERN12)
- ⊞ 📄 D2V1P11 (MODERN10)
- ⊞ 📄 D2V1P11 (MODERN12)
- ⊞ 📄 D2V2P1 (MODERN10)
- ⊞ 📄 D2V2P1 (MODERN12)
- ⊞ 📄 D2V2P11 (MODERN10)
- ⊞ 📄 D2V2P11 (MODERN12)
- ⊞ 📄 D2V2P12 (MODERN10)
- ⊞ 📄 D2V2P12 (MODERN12)

Results 10 out of 10

OK

Finished query to derby database

Errors: 0

x

IBM Tools Base Administration Console for z/OS

Welcome   Resources   Reports

Welcome   **holtz**   Log out   ? ▾

IBM.

Search

My View

- ⊟ 📂 Critical Databases
  - ⊞ 🗄 CUSTD1 (MODERN12)
  - ⊞ 🗄 CUSTD2 (MODERN12)
  - ⊞ 🗄 CUSTD3 (MODERN12)
  - ⊞ 🗄 CUSTD4 (MODERN12)
  - ⊞ 🗄 CUSTD5 (MODERN12)
  - ⊞ 🗄 CUSTD6 (MODERN12)

Finished retrieving child resources

Errors: 0

✕

http://bighouse:10080/imweb/itac/index.html

Google

IBM Tools Base Administration Console for z/OS

Welcome   Resources   Reports

Welcome   **holtz**   Log out

IBM.

Search

My View

Critical Databases

Resource	Type	Overall	Critical	Severe	Warning	Recommendations	Reports
Critical Databases	group	■	2	1	1	0	440
CUSTD1	database		0	0	0	0	53
CUSTD2	haldb		-	-	-	-	166
CUSTD3	database	■	2	1	1	0	52
CUSTD4	haldb		-	-	-	-	142
CUSTD5	database		-	-	-	-	14
CUSTD6	database		0	0	0	0	13

Summary

- Critical Databases
  - CUSTD1 (MODERN12)
  - CUSTD2 (MODERN12)
  - CUSTD3 (MODERN12)
  - CUSTD4 (MODERN12)
  - CUSTD5 (MODERN12)
  - CUSTD6 (MODERN12)

Finished retrieving child resources

Errors: 0

http://bighouse:10080/imweb/itac/index.html   ⟩ ▼ C   🔍 ▼ Google   🔍 🏠 ★▼

IBM Tools Base Administration Console for z/OS   Welcome   Resources   Reports   Welcome **holtz**   Log out   ❓ ▽   IBM.

Search 🔍
My View ▼

📥 📤

- 📂 Critical Databases
  - ⊞ 📄 CUSTD1 (MODERN12)
  - ⊞ 📄 CUSTD2 (MODERN12)
  - ⊞ 📄 CUSTD3 (MODERN12)
  - ⊞ 📄 CUSTD4 (MODERN12)
  - ⊞ 📄 CUSTD5 (MODERN12)
  - ⊞ 📄 CUSTD6 (MODERN12)

Critical Databases ▸   CUSTD3

Properties

Database name:	CUSTD3
Database type:	HDAM
Segment levels:	2
Segment types:	2
External databases:	2
Logical children:	2
Data set groups:	1
Access type:	VSAM

Exceptions 4

Exceptions as of Tue Sep 13 18:00:38 PDT 2011

▽ **Critical (2)**
   Excessive RAP synonyms
   Excessive HDAM roots not home
▸ **Severe (1)**
▸ **Warning (1)**

Reports 52

- ▸ September 14, 2011 (4)
- ▸ September 13, 2011 (3)
- ▸ August 31, 2011 (1)
- ▸ August 30, 2011 (23)
- ▸ August 29, 2011 (21)

Space Use

Number of Segments

30,000,000

20,000,000

10,000,000

0
                CUSTD3
☐ DB NUM SEG

◀ | Page 1 of 9 | ▶

Optimization

Number of Database Records

9,000,000
8,000,000   ● ● ●
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
10/21/12/21/2020/14/22/18/22/18/22/11
◉ DB NUM ROOT

◀ | Page 1 of 6 | ▶

Fragmentation

Variable-Length Segment Splits

5

4

3

2

1

0
                CUSTD3
⊠ DB PCT NUM VLSEG SPLIT

◀ | Page 1 of 5 | ▶

×

http://bighouse:10080/imweb/itac/index.html ≫ ▾ C 🔍 ▾ Google 🔍 🏠 ★▾

IBM Tools Base Administration Console for z/OS   Welcome Resources Reports   Welcome **holtz**   Log out (?) ▽   IBM.

Search 🔍
My View ▾

📄 📄

☐ 📂 **Critical Databases**
  ⊞ 📄 CUSTD1 (MODERN12)
  ⊞ 📄 CUSTD2 (MODERN12)
  ⊞ 📄 CUSTD3 (MODERN12)
  ⊞ 📄 CUSTD4 (MODERN12)
  ⊞ 📄 CUSTD5 (MODERN12)
  ⊞ 📄 CUSTD6 (MODERN12)

Critical Databases ▸ CUSTD3

Properties

Database name:	CUSTD3
Database type:	HDAM
Segment levels:	2
Segment types:	2
External databases:	2
Logical children:	2
Data set groups:	1
Access type:	VSAM

Exceptions 4   [i]

Exceptions as of Tue Sep 13 18:00:38 PDT 2011

▽ **Critical (2)**

   [Excessive RAP synonyms](#)

   [Excessive HDAM roots not home](#)

▷ **Severe (1)**

▷ **Warning (1)**

Excessive RAP synonyms

Message:
The number of synonyms in randomizing has increased in CUSTD3

Class: EXCESSIVE_RAP_SYNONYMS
Level: CRITICAL
Rule: G:IBM.RAP_SYNONYMS.10
Threshhold: High

[August 30, 2011 (23)](#)

[August 29, 2011 (21)](#)

Space Use   [i] ▾ ▢

Number of Segments

30,000,000

20,000,000

10,000,000

0
                CUSTD3
☐ DB NUM SEG

◀ | Page 1 of 9 | ▶

Optimization   [i] ▾ ▢

Number of Database Records

9,000,000
8,000,000   ● ● ●
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
10/21/1020/21/2020/14/22/18/22/18/22/11
● DB NUM ROOT

◀ | Page 1 of 6 | ▶

Fragmentation   [i] ▾ ▢

Variable-Length Segment Splits

5

4

3

2

1

0
                CUSTD3
☒ DB PCT NUM VLSEG SPLIT

◀ | Page 1 of 5 | ▶

Finished: Fetching Children [object Object]   Errors: 0

✕

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IBM Tools Base Administration Console for z/OS   Welcome Resources Reports   Welcome **holtz**   Log out   ⑦ ▾   IBM.

Search — My View ▾

Critical Databases ▸ CUSTD3

- Critical Databases
  - ⊞ CUSTD1 (MODERN12)
  - ⊞ CUSTD2 (MODERN12)
  - ⊞ CUSTD3 (MODERN12)
  - ⊞ CUSTD4 (MODERN12)
  - ⊞ CUSTD5 (MODERN12)
  - ⊞ CUSTD6 (MODERN12)

Properties

Database name:	CUSTD3
Database type:	HDAM
Segment levels:	2
Segment types:	2
External databases:	2
Logical children:	2
Data set groups:	1
Access type:	VSAM

Exceptions 4

Exceptions as of Tue Sep 13 18:00:38 PDT 2

▾ **Critical (2)**
  - Excessive RAP synonyms
  - Excessive HDAM roots not home
▸ **Severe (1)**
▸ **Warning (1)**

Reports 52

▸ September 14, 2011 (4)
▸ September 13, 2011 (3)
▸ August 31, 2011 (1)
▸ August 30, 2011 (23)
▸ August 29, 2011 (21)

Help

Excessive RAP synonyms exception

Rule condition and related data elements

At least one of the following data element values has reached or exceeded a threshold value:

- The number of synonyms (DB_NUM_SYNONYM)
- The percentage of synonyms compared to the total number of root segment occurrences (DB_PCT_NUM_SYNONYM)

A root segment occurrence of an HDAM or PHDAM database is a synonym if the occurrence is assigned by the randomizing routine to a root anchor point (RAP) that is already used by another root segment occurrence.

Related chart: Synonym Roots

Resolving this exception

This exception is an informational exception. If the database has additional exceptions, you can view them to determine any necessary actions.

Parent topic: Exceptions overview

Space Use

Number of Segments

30,000,000

20,000,000

10,000,000

0
                CUSTD3
☐ DB NUM SEG
◂ | Page 1 of 9 | ▸

Optimization

Number of Database Records

9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
10/21/21/02/20/41/26/12/28/12/11
◐ DB NUM ROOT
◂ | Page 1 of 6 | ▸

Fragmentation

Variable-Length Segment Splits

5

4

3

2

1

0
                CUSTD3
☒ DB PCT NUM VLSEG SPLIT
◂ | Page 1 of 5 | ▸

Finished: Fetching Children [object Object]   Errors: 0

Firefox ▾

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IBM Tools Base Administration Console for z/OS   Welcome Resources Reports   Welcome **holtz**   Log out   ⑦ ▾   IBM.

Search 🔍
My View ▾

📥 📤

⊟ 📂 Critical Databases
  ⊞ 📄 CUSTD1 (MODERN12)
  ⊞ 📄 CUSTD2 (MODERN12)
  ⊟ 📄 CUSTD3 (MODERN12)
     📄 CUSTD3
  ⊞ 📄 CUSTD4 (MODERN12)
  ⊞ 📄 CUSTD5 (MODERN12)
  ⊞ 📄 CUSTD6 (MODERN12)

Critical Databases ▸ CUSTD3 ▸ MODERN1.ADC1.CUSTD3

Properties

Database name: CUSTD3

Data set ID: 1

DD name: CUSTD3

Data set name: MODERN1.ADC1.CUSTD3

Access type: VSAMESDS

Reports 21

▸ September 14, 2011 (1)
▸ August 30, 2011 (9)
▸ August 29, 2011 (11)

Space Use
Number of Segments

30,000,000

20,000,000   ● ●●

10,000,000

0
10/21/110/21/2020/14/22/10/22/10/22/11
━●DB NUM SEG
◂ | Page 1 of 9 | ▸

Fragmentation
Variable-Length Segment Splits

5

4

3

2

1

0   ●●●
10/21/110/21/110/20/110/14/22/116/22/118/22/11
━●DB PCT NUM VLSEG SPLIT
◂ | Page 1 of 5 | ▸

Finished retrieving child resources   Errors: 0

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IBM Tools Base Administration Console for z/OS   Welcome **Resources** Reports   Welcome **holtz**   Log out   ? ▾   IBM.

Search 🔍
My View ▾

Critical Databases ▸ CUSTD3 ▸ MODERN1.ADC1.CUSTD3 ▸ Space Use ▸ Highest Used and Highest Allocated RBA

Help   ⤢ ✕

⊟ 📁 Critical Databases
  ⊞ 📗 CUSTD1 (MODERN12)
  ⊞ 📗 CUSTD2 (MODERN12)
  ⊟ 📗 CUSTD3 (MODERN12)
      📄 CUSTD3
  ⊞ 📗 CUSTD4 (MODERN12)
  ⊞ 📗 CUSTD5 (MODERN12)
  ⊞ 📗 CUSTD6 (MODERN12)

Highest Used and Highest Allocated RBA   ℹ ▾

9/27/10 - 9/27/11

◀ [▽   ▽] ▶
24m   21m   18m   15m   12m   9m   6m   3m   today

3,000,000,000
2,900,000,000
2,800,000,000
2,700,000,000
2,600,000,000
2,500,000,000   ▬—▬ ▬—▬
2,400,000,000
2,300,000,000
2,200,000,000
2,100,000,000
2,000,000,000
1,900,000,000
1,800,000,000
1,700,000,000
1,600,000,000
1,500,000,000
1,400,000,000
1,300,000,000   ●—◖ ●—●
1,200,000,000
1,100,000,000
1,000,000,000
900,000,000
800,000,000
700,000,000
600,000,000
500,000,000
400,000,000
300,000,000
200,000,000
100,000,000
0
        10/21/10   12/21/10   2/20/11   4/22/11   6/22/11   8/22/11

▬ DB RBA HIGH ALLOC ● DB RBA HIGH USED

Highest Used and Highest Allocated RBA chart

If the highest used relative byte address (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.

About highest used and highest allocated RBA

The storage space that exists between the highest used 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.

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 sensor data service.

If any of these data elements cross thresholds that are defined with Tools Base Policy Services, an exception notification might be

Finished retrieving child resources   Errors: 0

✕

IBM Tools Base Administration Console for z/OS   Welcome Resources Reports   Welcome **holtz**   Log out   IBM.

Search

My View

Critical Databases ▶ CUSTD2 ▶ PCUST21

- Critical Databases
  - CUSTD1 (MODERN12)
  - CUSTD2 (MODERN12)
    - PCUST21 (MODERN12)
      - PCUST21A
      - PCUST21L
      - PCUST21X
    - PCUST22 (MODERN12)
    - PCUST23 (MODERN12)
    - PCUST24 (MODERN12)
  - CUSTD3 (MODERN12)
  - CUSTD4 (MODERN12)
  - CUSTD5 (MODERN12)
  - CUSTD6 (MODERN12)

Properties

Partition name:	PCUST21
Data set name prefix:	MODERN1.ADC1.CUSTD2
Partition ID:	248
Randomizer name:	
OSAM block size:	0
Data sets:	3

Exceptions

No evaluations have been run on this resource

Reports 44

- September 14, 2011 (1)
- September 13, 2011 (1)
- August 31, 2011 (1)
- August 30, 2011 (21)
- August 29, 2011 (20)

Space Use

Number of Segments

600,000

500,000

400,000

300,000

200,000

100,000

0

PCUST21A

☐ DB NUM SEG

◀ | Page 1 of 9 | ▶

Optimization

Number of Database Records

80,000

70,000

60,000

50,000

40,000

30,000

20,000

10,000

0

10/21/11 2/21/11 0/20/11 4/22/11 6/22/11 8/22/11

⬤ DB NUM ROOT

◀ | Page 1 of 2 | ▶

Fragmentation

Variable-Length Segment Splits

5

4

3

2

1

0

PCUST21A

☒ DB PCT NUM VLSEG SPLIT

◀ | Page 1 of 5 | ▶

Finished retrieving child resources   Errors: 0

http://bighouse:10080/imweb/itac/index.html | ☆ 》 ▾ C | 🔍 ▾ Google | 🏠 ▣ ▾

IBM Tools Base Administration Console for z/OS   **Welcome Resources Reports**   Welcome **holtz**   Log out   ❓ ▽   IBM.

Saved Searches

All reports
Today's reports
Yesterday's reports
Last 7 days' reports
Reports with a non-zero completion code

[Delete]

Search Criteria

Add Criteria

Match: ⦿ All criteria ◯ Any criteria

[Clear All] [Save...] [Run]

Search Results: All reports

Product Name	Report Name	DB Name	Area/Parti	DD Name	Recon ID	IMS ID	Group Type	Group Name	Report Start Date	Completion Code	Report Type	System
DB Reorg Expert	RGE-Environment	CUSTD1				MODERN1			Wed Sep 14 15:14:47 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD1				MODERN1			Wed Sep 14 15:09:19 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD1				MODERN1			Tue Sep 13 15:10:28 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD1				MODERN1			Tue Sep 13 15:09:00 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:37:36 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:37:25 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:37:17 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:16:44 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:16:37 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:16:31 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Wed Sep 14 15:16:23 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Tue Sep 13 15:17:47 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Tue Sep 13 15:17:38 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Tue Sep 13 15:17:29 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Tue Sep 13 15:11:49 PDT 2011	0		STLAB
DB Reorg Expert	RGE-Environment	CUSTD2				MODERN1			Tue Sep 13 15:11:37 PDT 2011	0		STLAB
DB Reorg	RGE-Environment	CUSTD2				MODERN1			Tue Sep 13 15:11:27	0		STLAB

Preview

Found 7305 reports   Errors: 0

```
1IMS HIGH PERFORMANCE POINTER CHECKER FOR z/OS                "SEPARATOR PAGE FOR DB/DSG"                    PAGE:    1
 5655-U09                                          DATE: 08/29/2011  TIME: 17.45.28                   FABPMAIN - V3.R1


0RUN TIME OPTION FOR DB/DSG
 --------------------------
0  DBNAME: H1V4P1    DB#: 014 PARTNAME: H1V4P12   PART ID: 00002 REORG#: N / A
                    DSG#:  B PRIM DD:  H1V4P12B  DSNAME: MODERN1.ADC1.H1V4P1.B00002
0  PROC STATEMENT                   DATABASE STATEMENT            OPTION STATEMENT               REPORT STATEMENT
   --------------                   ------------------            ----------------               ----------------
0  TYPE     = ALL                   DB      = H1V4P1              ERRLIMIT = YES                 RUNTM     = YES
   DBORG    = PHIDAM                DD      = H1V4P12B            DIAGDUMP = ERROR               INTST     = YES
   HASH     = NO                    OVERFLOW = N/A                DUMPFORM = FORMAT              BITMAP    = YES
   IXKEYCHK = NO                    DATASET = REAL                HISTORY  = NO                  FSEMAP    = YES
   SEP      = NO                    SCANGROUP= 01                 HOMECHK  = N/A                 MAXFSD    = YES
   VLSSUMM  = NO                                                  INTERVAL = DATASET            INTFS     = YES
   CHECK    = (CHK,111111)                                        INCORE   = NO                 DBDIST    = N/A
   EPSCHK   = NO                                                  KEYSIN   = NO                 CHAINDIST = N/A
   CHECKREC = NO                                                  T2CHK    = (00,07)            DECODEDBD = NO
   ICRG#CHK = N/A                                                 ZEROCTR  = NO                 MAPDBD    = NO
   RETCDDSN = *NO                                                 DIAG     = NO                 COMPFACT  = NO
   ITKBSRVR = DAIFPQS2                                            PRINTDATA = NO                SEGIO     = NO
   ITKBLOAD = 'DBGTOOL.TEST.HAHN130.SHKTLOAD'                     PTRCHK   = YES
   USER     = *NO                                                 NOCHKP   =
                                                                  VSAMBF   = N/A
                                                                  DSSIZE   =
                                                                  ICUNIT   = N/A
                                                                  IBUFF    = 10TRK
                                                                  SPMN     = NO
```

Summary

- We hear your concerns and understand your challenges

- IMS Tools Solution Packs provide everything you need to manage and maintain your IMS Full Function and Fast Path databases

  - The latest versions of the Database Solution Pack and Fast Path Solution Pack will be 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

- These solutions provide immediate benefits and position you for offerings still to come

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

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