

Experiences with IBM zAware

Session 14120

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ATS - IBM Corporation

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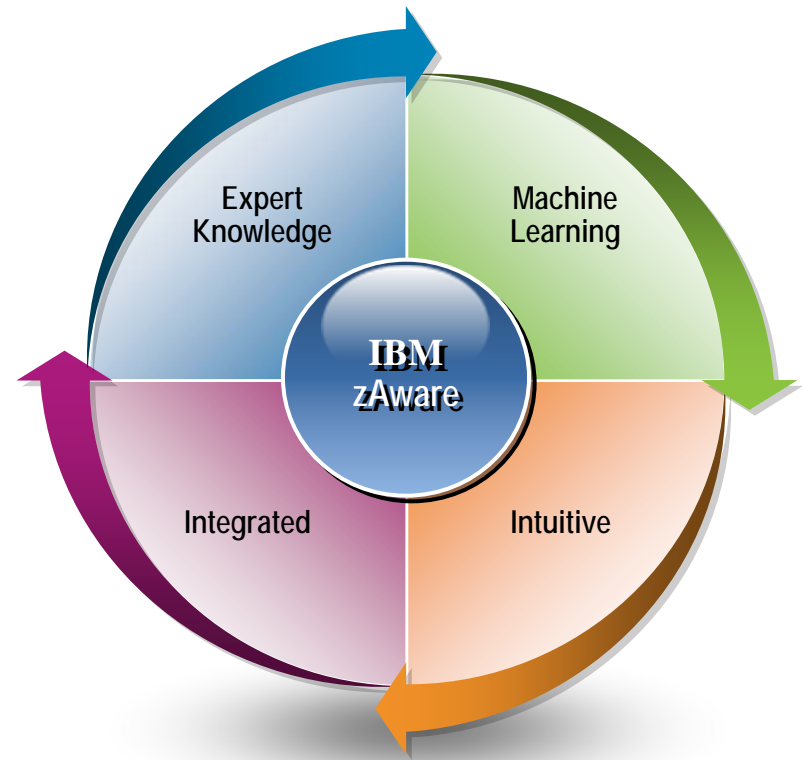
Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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IBM zAware

- ◆ Overview
- ◆ Planning
- ◆ Training set and model
- ◆ Resources
- ◆ Experiences



Why IBM zAware?



Failures and problems in today's complex and integrated systems

- ◆ Happen infrequently, are unique
- ◆ Involve one or more components that are behaving abnormally, but not failing
- ◆ Over time problem can grow, cascade, and snowball
- ◆ Several allowable anomalies can build up over time resulting in a 'soft failure' (sick but not dead)

Detecting and diagnosing problems is challenging

- ◆ Volume of data produced by the system may require a significant amount of time to collect and review
- ◆ Problems are difficult to detect and diagnose, as symptoms may have occurred hours or days earlier

Improve system availability

- ◆ Analyze system behavior in real-time to detect unusual behavior
- ◆ Improve quality and speed of problem determination

What Is IBM zAware?



IBM System z Advanced Workload Analysis Reporter

Server runs in a logical partition on a zEnterprise EC12 or BC12

Monitored clients are z/OS systems running OPERLOG

- ◆ Must be at least z/OS R13 + PTFs

Server analyzes client messages identifying anomalies

- ◆ Cutting edge pattern recognition techniques examine the health of a system to recognize deviations from the 'norm'
- ◆ High speed analytics facilitates the ability to consume large quantities of message logs

Data is presented in a graphical format

- ◆ Detect patterns of anomalies over time on multiple systems
- ◆ Identify problems sooner, before they get bigger
- ◆ Shorten the time to decide on appropriate corrective actions

User interface is IBM zAware Graphical User Interface (GUI)

- ◆ Accessed with a web browser
- ◆ Used for customization and viewing analysis data

XML output can be queued up to existing monitoring systems

IBM zAware Overview

Monitors z/OS OPERLOG messages – z/OS, middleware, applications

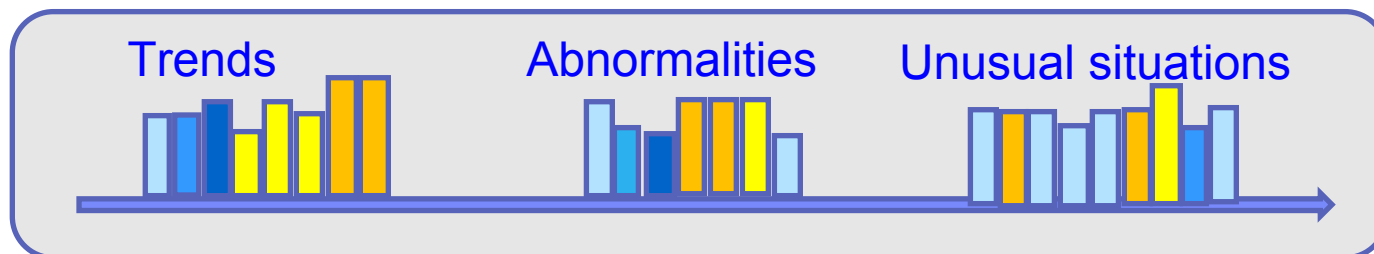
Builds model to represent “normal” behavior and identify message patterns for each system

Compares messages to model and assigns an anomaly score

- ◆ If messages are common, normal a low score is assigned
- ◆ If messages are unexpected a higher score is assigned
- ◆ Score ranges from 0 to 101

Reports on 10 minute intervals

- ◆ Presents intervals in color-coded “bar” chart format
- ◆ Height represents number of unique message IDs
- ◆ Color determined by interval anomaly score
- ◆ Blue small differences, gold more differences, orange significant differences



IBM zAware GUI - Monitoring



Date:

November 2, 2012

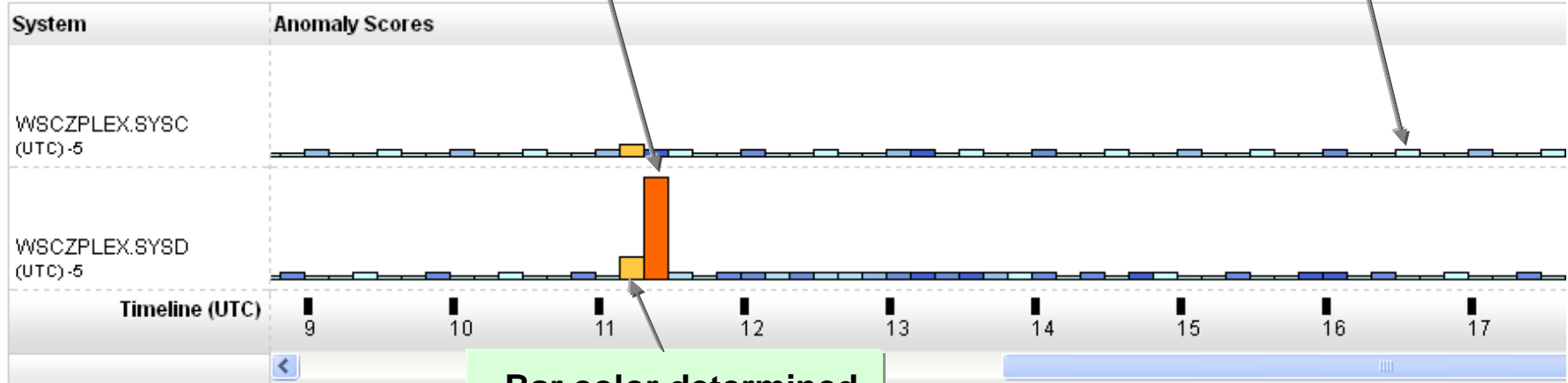
Analysis Source:

All Monitored Systems

Bar height based on number of unique message ids

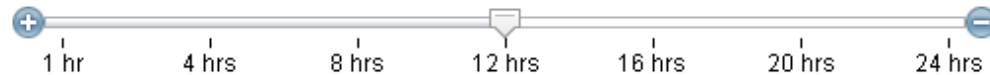
Drill down
Click on interval to show messages

Interval Anomaly Scores by System



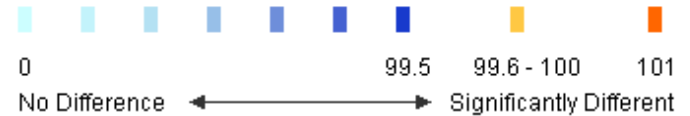
Bar color determined by anomaly score

Zoom level:



Zoom - Set number of hours displayed

Interval anomaly score key:



Anomaly score indicates rarity of message ids

IBM zAware GUI - Analysis



View anomalies across multiple systems

- ◆ Spot a potential problem on a system
- ◆ Detect when a problem affects multiple systems in the sysplex

Date option allows display of 'historical' data

- ◆ Display analysis data by date
- ◆ Examine message patterns and anomalies over days or weeks

Analysis Source option provides filtering to display subset of systems

Current interval is updated every two minutes

IBM zAware Planning and Configuration



Identify systems to be monitored

- ◆ Production systems

 - Important to business, high availability requirements

 - High volume, consistent message traffic

 - Sufficient messages to build model to represent 'norm'

- ◆ Test and development systems

 - Low message traffic, inconsistent messages

 - Insufficient messages to build model, what is 'norm' on these systems?

Determine the number of IBM zAware partitions

- ◆ Network / firewall considerations

- ◆ Location or application considerations

Assign roles and responsibilities

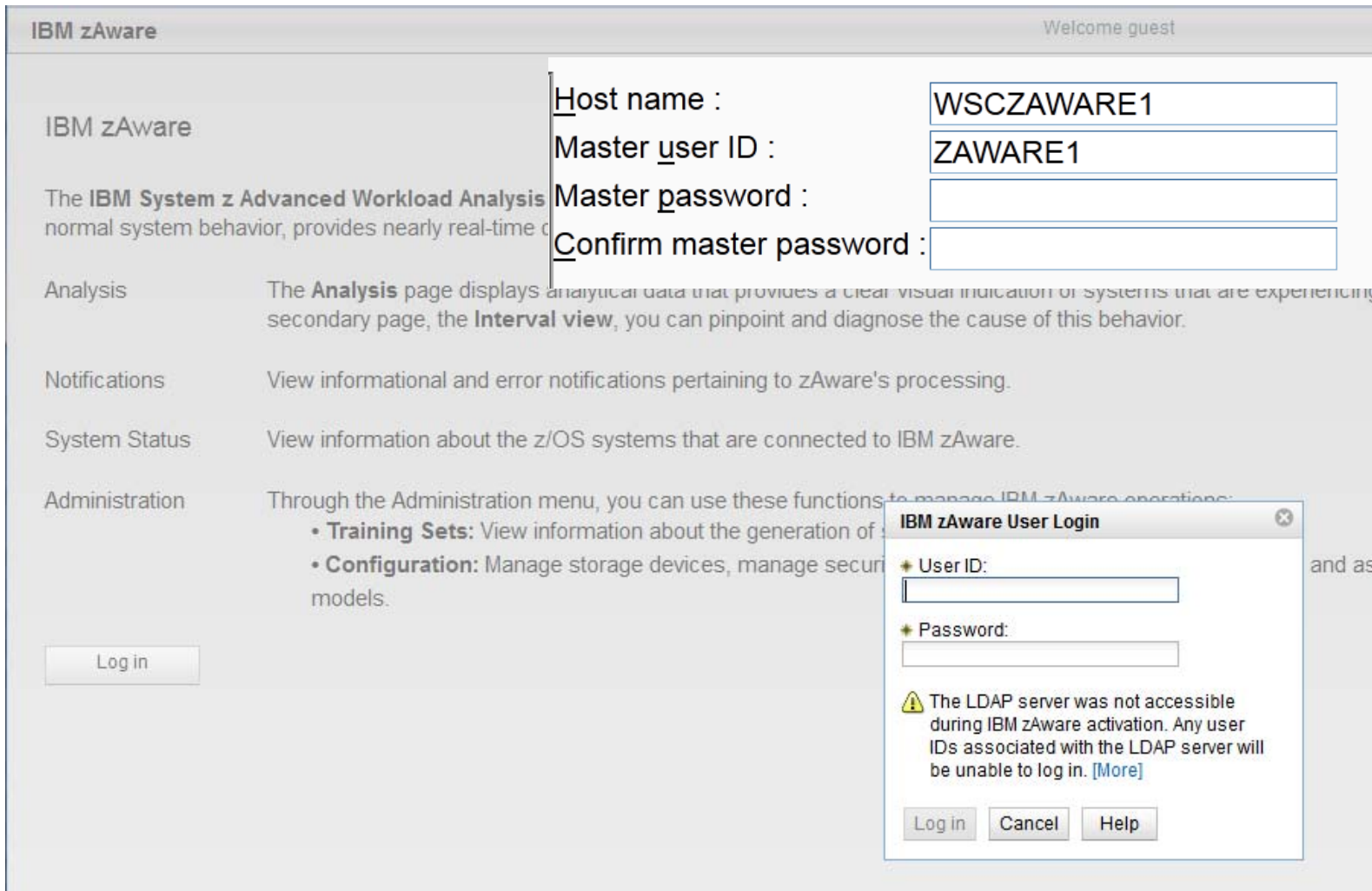
- ◆ Departments or individuals who will use the analysis function

- ◆ Team responsible for setup and on-going support

- ◆ Userids and authentication method (LDAP or data base)

GUI Logon Experience

Log in with master userid and password defined on LPAR activation profile



The screenshot displays the IBM zAware web interface. The main dashboard is visible in the background, featuring a sidebar with navigation links: IBM zAware, Analysis, Notifications, System Status, and Administration. The Administration section is expanded, showing options for Training Sets and Configuration. A 'Log in' button is located at the bottom left of the dashboard.

Overlaid on the dashboard is a 'IBM zAware User Login' dialog box. This dialog contains the following fields and elements:

- Host name : WSCZAWARE1
- Master user ID : ZAWARE1
- Master password : (empty field)
- Confirm master password : (empty field)
- A warning message: "The LDAP server was not accessible during IBM zAware activation. Any user IDs associated with the LDAP server will be unable to log in. [More]"
- Buttons: Log in, Cancel, Help

Check Notifications for messages

IBM zAware Welcome

- Analysis
- Notifications**
- System Status




Administration

- Training Sets
- Configuration

Notifications

The **Notification messages** table displays a list of messages which notify you of some occurrence in the system that requires your awareness or response. If you message from the table by selecting the row and then selecting **Remove** from the **Actions** menu.

Notification messages

Actions ▼		
<input type="checkbox"/> Message ID	Message Text	Message Date/Time
<input type="checkbox"/>  AIFP0007I	During activation, IBM zAware was not able to reconnect to the previously configured LDAP server "9.82.24.72:389". Only the master user ID and locally defined users are able to log in to the GUI until the LDAP server is available and an administrator reconnects IBM zAware to it by reapplying the LDAP configuration through the LDAP Settings page.	Wed Jul 03 2013 12:44:57 GMT-0400 (Eastern Daylight Time)
<input type="checkbox"/>  AIFT0001I	A request to build a model for WPLEX-WSYB started on Mon Jul 08 00:00:00 UTC 2013.	Sun Jul 07 2013 20:00:00 GMT-0400 (Eastern Daylight Time)
<input type="checkbox"/>  AIFT0002I	A request to build a model for WPLEX-WSYB completed successfully on Mon Jul 08 00:00:41 UTC 2013.	Sun Jul 07 2013 20:00:41 GMT-0400 (Eastern Daylight Time)

Training Model

IBM zAware server creates a model to represent normal behavior for a monitored client

Model is built with message data from the monitored client

Training period is the consecutive days of data to build the model

- ◆ Default is 90 days of data
- ◆ Range is 1-365 days, value selected applies to all clients

Building a model

- ◆ May send 90 days of syslog data to prime server and build model
 - Create archive file of syslog data from operlog using IEAMDBLG program
 - Bulk load utility (AIZBLKE) provided to send from z/OS system to server
- ◆ Need sufficient message data to determine 'normal' behavior for client
 - A minimum of 375 unique message IDs, issued at least once in three different ten minute intervals
 - IBM message analysis program (MSGLG610) to analyze syslog data for number of unique messages and frequency

Our Configuration

Three parallel sysplexes to be monitored

- ◆ WPLEX – two z/OS systems
- ◆ WSCZPLEX – four z/OS systems
- ◆ SAOPLEX – five z/OS systems

Two IBM zAware partitions

- ◆ zAware1 partition will monitor WPLEX and WSCZPLEX
 - Resides on lab network
 - Communicate using use network IP address or HiperSocket
- ◆ zAware2 partition will monitor SAOPLEX
 - Resides on private network
 - Communicate over private network

Training data

- ◆ Extract 90 days of syslog data
- ◆ Use bulk load program to sent to IBM zAware partition

zAware

Welcome

- Analysis
- Notifications
- ☐ **Administration**
 - System Status
 - Training Sets
 - Configuration

Configure Settings

Analytics

Data Storage

Security

Sysplex Topology

Priming Data

Priming message data is available for the systems listed below. To assign this data into sysplexes, select systems from the left and add them to sysplexes on the right. Once the data has been added to the desired sysplexes, click the **Assign...** button to confirm and proceed with the assign.

Priming message data by system:

- SYSD
- SYSB
- SYSA
- SYSC

Add >

Add All >>

< Remove

<< Remove All

Assign...

Sysplex Topology

There is no data to display.

Priming Data To Build Model

Displays system names found in the syslog priming data
Each system must be associated with a Sysplex under Sysplex Topology

Configure Settings

Analytics Data Storage Security Sysplex Topology **Priming Data**

Priming message data is available for the systems listed below. To assign this data into sysplexes, select systems from the left and add them to sysplexes on the right. Once the data has been added to the desired sysplexes, click the **Assign...** button to confirm and proceed with the assign.

Priming message data by system:

- SYSD
- SYSB
- SYSA
- SYSC

Buttons: Add >, Add All >>, < Remove, << Remove All

Sysplex Topology
There is no data to display.

Assign...

- No sysplex names under Sysplex Topology
- Need to connect a logstream from a system in the sysplex

Priming Data - Define Topology

Issued ZAICONNECT from SYSB

Sysplex Topology now shows WSCZPLEX and SYSB system

Analytics Data Storage Security Sysplex Topology **Priming Data**

Priming message data is available for the systems listed below. To assign this data into sysplexes, select systems from the left and add them to sysplexes on the right. Once the data has been added to the desired sysplexes, click the **Assign...** button to confirm and proceed with the assign.

Priming message data by system:

- SYSD
- SYSB
- SYSA
- SYSC

Buttons: Add >, Add All >>, < Remove, << Remove All

Sysplex Topology

- WSCZPLEX
- SYSB

Update Sysplex Topology To include all systems

Assign...

Priming Data - Add Systems

Analytics

Data Storage

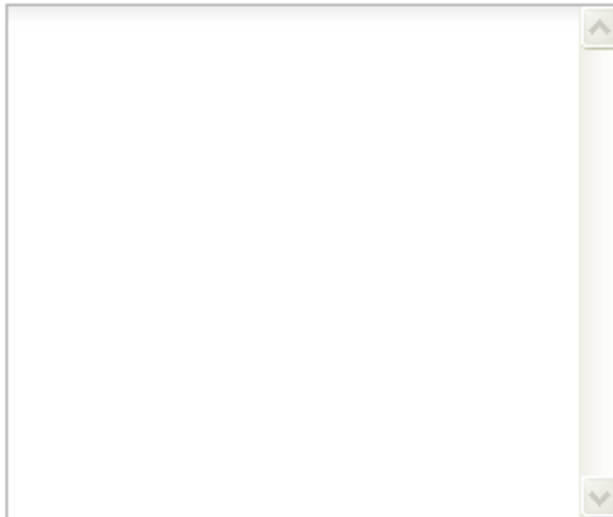
Security

Sysplex Topology

Priming Data

Priming message data is available for the systems listed below. To assign this data into sysplexes, select systems from the left and add them to sysplexes on the right. Once the data has been added to the desired sysplexes, click the **Assign...** button to confirm and proceed with the assign.

Priming message data by system:



Add >

Add All >>

< Remove

<< Remove All

Assign...

Sysplex Topology

- WSCZPLEX
 - SYSA
 - SYSB
 - SYSC
 - SYSD

Systems added to WSCZPLEX

Sysplex Topology

- WPLEX
 - WSYA
 - WSYB
- WSCZPLEX
 - SYSA
 - SYSB
 - SYSC
 - SYSD

Our current Sysplex Topology

Priming Request Training



Training Sets Training sets option to request training for a system

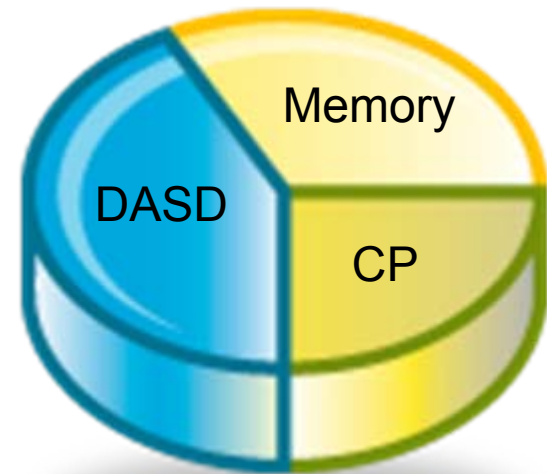
Managed Systems

Actions ▼					
System	Sysplex	Training Progress	Last Training Result	Last Training Result Time	
<input type="radio"/> SYSA	WSCZPLEX	—	<input type="checkbox"/> Not Trained	—	
<input type="radio"/> SYSB	WSCZPLEX	<input checked="" type="checkbox"/> In Progress	—	—	
<input type="radio"/> SYSC	WSCZPLEX	—	<input type="checkbox"/> Not Trained	—	
<input type="radio"/> SYSD	WSCZPLEX	—	<input type="checkbox"/> Not Trained	—	

Managed Systems

Actions ▼					
System	Sysplex	Training Progress	Last Training Result	Last Training Result Time	
<input type="radio"/> SYSA	WSCZPLEX	—	<input type="checkbox"/> Not Trained	—	
<input type="radio"/> SYSB	WSCZPLEX	—	<input checked="" type="checkbox"/> Complete	August 16, 2012 10:15:44 AM Eastern Daylight Time	
<input type="radio"/> SYSC	WSCZPLEX	—	<input checked="" type="checkbox"/> Failed	August 16, 2012 10:21:10 AM Eastern Daylight Time	
<input type="radio"/> SYSD	WSCZPLEX	—	<input checked="" type="checkbox"/> Complete	August 16, 2012 10:19:10 AM Eastern Daylight Time	

IBM zAware Partition Resources



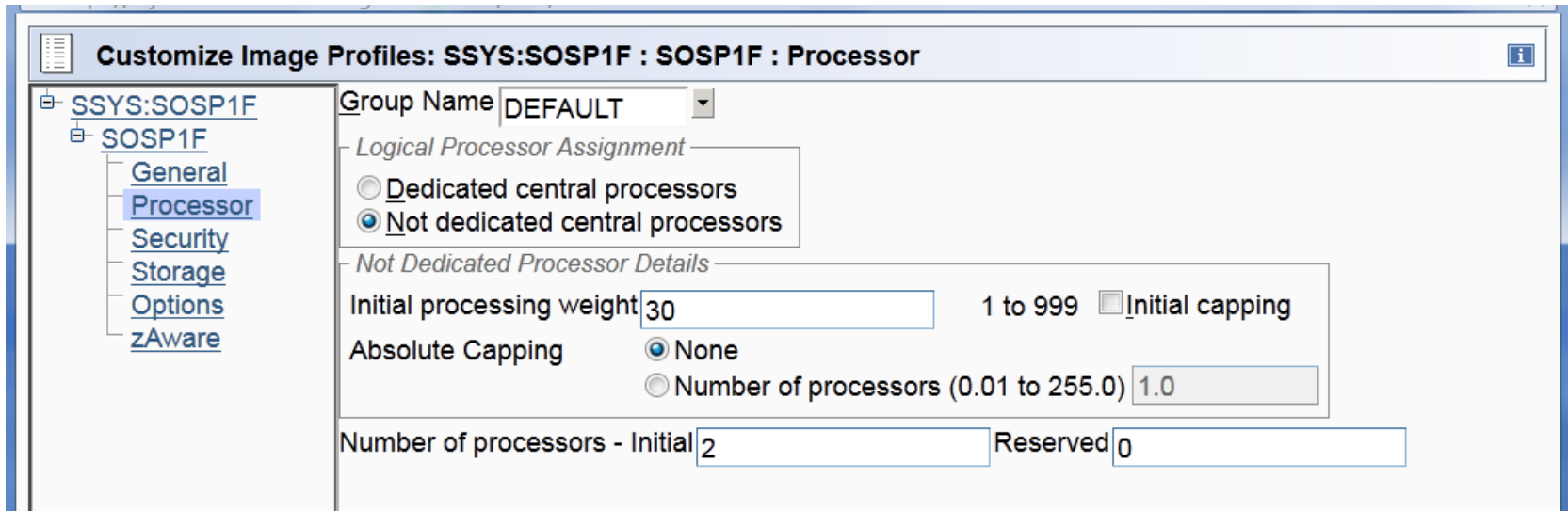
IBM zAware Partition Resources

Processor

- ◆ Specified on image profile for IBM zAware logical partition
- ◆ IFL or general purpose CP – may be dedicated or shared
- ◆ Specify number of processors as initial processors
- ◆ No option in IBM zAware GUI to configure on reserved processors
- ◆ Starting point – 2 shared IFLs/CPs and monitor CPU usage

Monitor processor usage

- ◆ RMF Partition Data report
- ◆ HMC Monitors Dashboard



Customize Image Profiles: SSYS:SOSP1F : SOSP1F : Processor

SSYS:SOSP1F
SOSP1F
General
Processor
Security
Storage
Options
zAware

Group Name: DEFAULT

Logical Processor Assignment

Dedicated central processors
 Not dedicated central processors

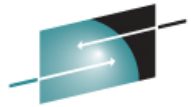
Not Dedicated Processor Details

Initial processing weight: 30 (1 to 999) Initial capping

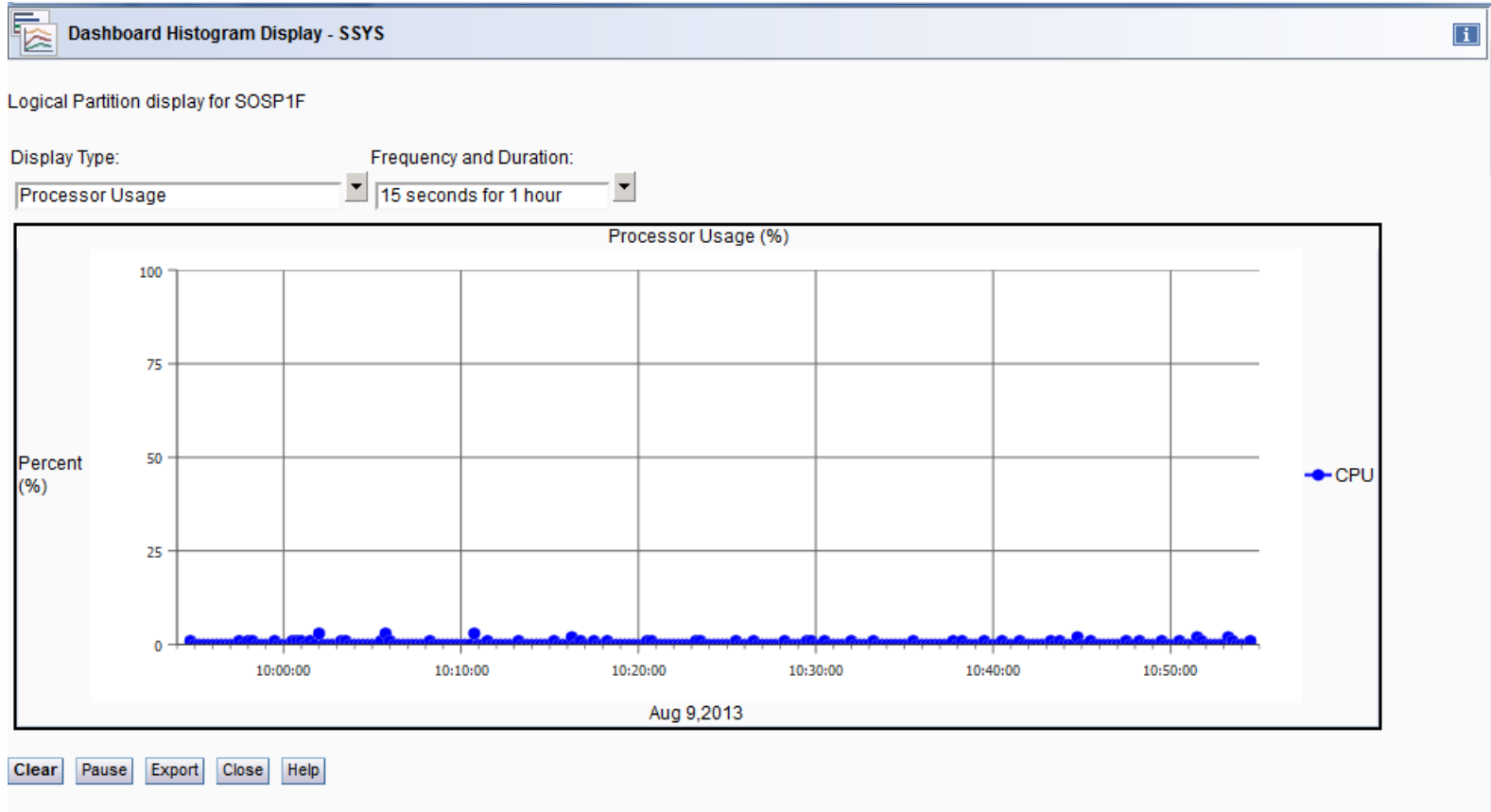
Absolute Capping: None
 Number of processors (0.01 to 255.0) 1.0

Number of processors - Initial: 2 Reserved: 0

Monitors Dashboard - zAware LPAR



SHARE
Technology • Connections • Results



zAware Partition Resources - cont.



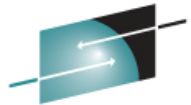
Memory

- ◆ Amount depends number of monitored clients and message traffic
- ◆ Requires a minimum of 4 GB
- ◆ 4 GB of memory will support up to 6 monitored clients with relatively light message traffic (500 messages/second)
- ◆ More than 6 clients - $(4096 \text{ MB} + (256 \text{ MB} * \text{number of clients}))$

DASD Devices

- ◆ Extended Count Key Data (ECKD) devices
- ◆ Analytical data stored on DASD for each monitored client
- ◆ Space needed is dependent on the number of monitored clients, amount of message traffic, length of time data is retained
- ◆ IBM zAware GUI option to manage DASD volumes
 - Add and remove volumes
 - Information on total space and space used

IBM zAware GUI - Data Storage



SHARE
Technology • Connections • Results

The screenshot shows the IBM zAware GUI for Data Storage configuration. At the top, a summary bar displays 'Total capacity 88.62 GB' and 'Storage Used 6.65 GB 7.51%'. Below this is the 'Configure Settings' section with tabs for Analytics, Data Storage, Security, Sysplex Topology, and Priming Data. The 'Data Storage' tab is active, showing three summary metrics: 'Total capacity (GB): 88.62', 'Total storage used (GB): 6.65', and 'Total storage used (%): 7.51'. Below these is the 'Data Storage Devices' section with a table of devices and a 'Refresh' button at the bottom.

Total capacity
88.62 GB

Storage Used
6.65 GB 7.51%

Configure Settings

Analytics | **Data Storage** | Security | Sysplex Topology | Priming Data

Total capacity (GB): 88.62

Total storage used (GB): 6.65

Total storage used (%): 7.51

Data Storage Devices

Add and Remove Devices | Apply Pending Removals

Device	Status	Device Type	Capacity (GB)
8a0a	In Use	3390/0c	22.15
8a0b	In Use	3390/0c	22.15
8a09	In Use	3390/0c	22.15
8a08	In Use	3390/0c	22.15
8a0e	Available	3390/0c	—

Refresh | Last Refresh: Thu Aug 08 2013 23:46:26 GMT-0400 (Eastern Daylight Time)

Add & Remove Devices

IBM zAware Data Retention

Retention times determine how long client analytical data is kept

- ◆ Current data and priming data
- ◆ IBM zAware models
- ◆ Analysis results

Analytics Data Storage Security Sysplex Topology Priming Data

Instrumentation data retention time (training period - 730 days):

days

Number of days data from clients is kept
Data is used for training to build models

Training models retention time (0 - 730 days):

days

Number of days training models are kept
0 keeps only current model

Analysis results retention time (30 - 3650 days):

days

Number of days client analysis data is kept

Training period (1 - 365 days):

days

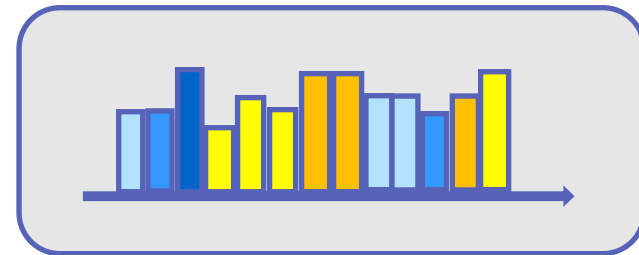
Number of consecutive days of data used to build a model

Training Interval (7 - 365 days):

days

Number of days between automatic build of models

Using the IBM zAware GUI Analysis Examples



GUI - Analysis Example

Analysis

The System Anomaly message information

Select Date

Analysis data for each system in ten minute intervals. To filter data for other days, use the date selector. To

Select systems to be displayed

indicates the number of unique messages and the bar color reflects the common source. To filter by source, click the **Change Source** button.

Date:

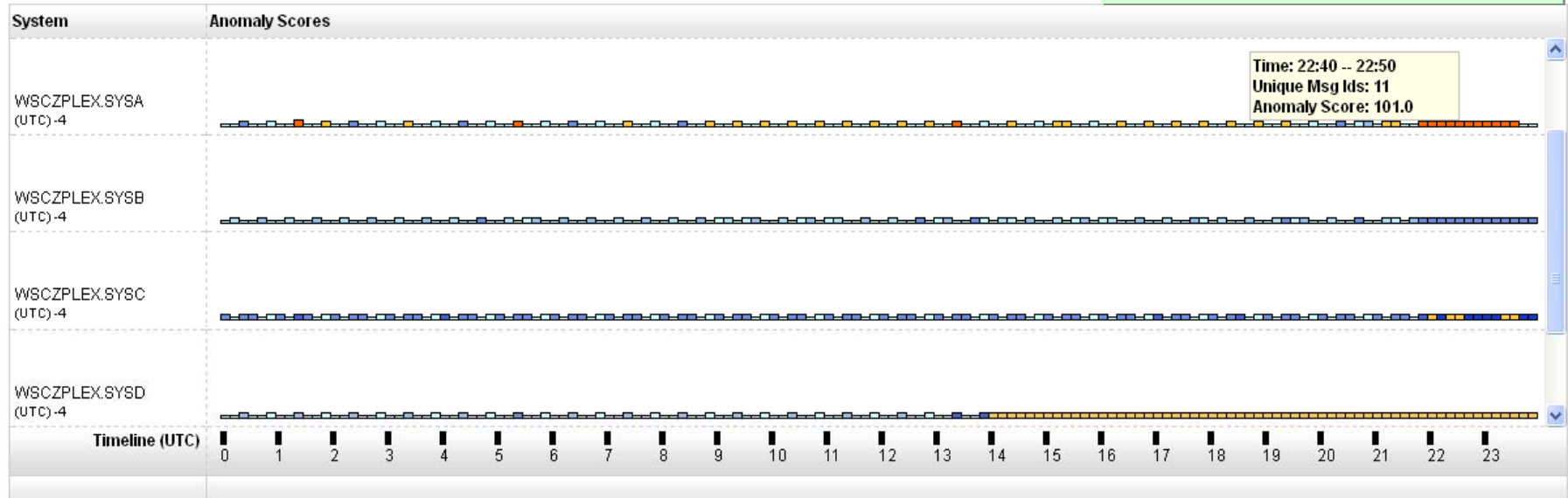
October 26, 2012

Analysis Source:

All Monitored Systems

High anomaly scores on SYSA and SYSD

Interval Anomaly Scores by System



Zoom level:



Interval anomaly score key:



GUI - Analysis Example

Current Analysis ▶ Internal View

Interval View for System SYSA

The Messages table provides detailed analysis information for each message that occurred during the indicated time interval. To view message details for other intervals use the date and ti

Date:

October 26, 2012

Analysis Source:

WSCZPLEX.SYSA

Time interval (UTC):

22:40 -- 22:50

Interval anomaly score:

101.0

Drill down to see message IDs issued during the interval

Messages

Actions ▼								
▼ 1 Anomaly Score	▼ 2 Interval Contribution Score	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score
1	83.901	new	None	6255		IXG251I	IGD17273I ALLOCATION HAS FAILED FOR ALL VOLUMES SELECTED FOR DATA SET	101
1	48.95	new	None	695		IGD17272I	VOLUME SELECTION HAS FAILED FOR INSUFFICIENT SPACE FOR DATA SET	101
1	48.95	new	None	695		IXG301I	SYSTEM LOGGER FAILED TO OFFLOAD DATA FOR LOG STREAM IFASMF.ALLSYS.DATA IN STRUCTURE	101

SMF log stream could not offload – no DASD space

GUI Analysis - System IPL

IPL of systems with new system volumes and new messages

Analysis

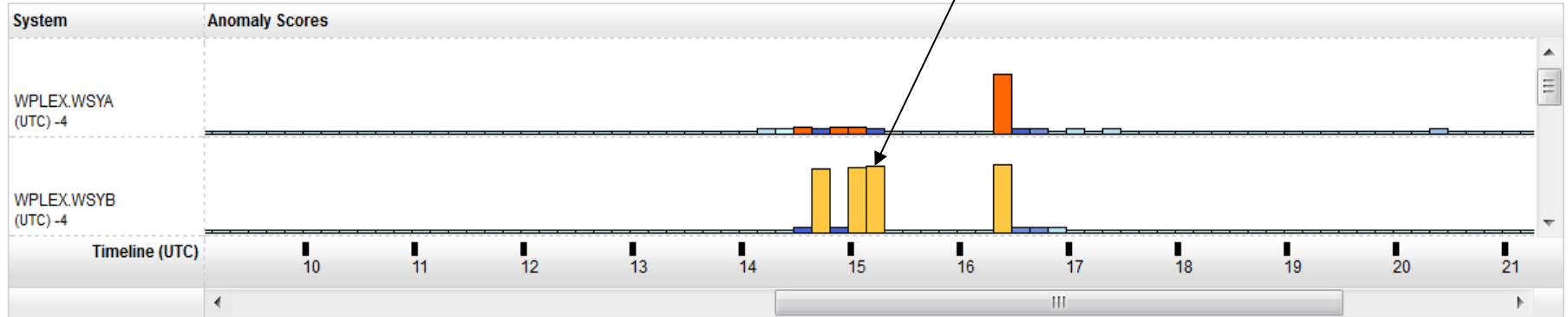
The System Anomaly Scores graph shows message analysis data for each system in ten minute intervals. For each interval, the bar height indicates the number of unique messages and the bar color reflects the common occurring during that interval. Click on an interval bar to access detailed message information. To view messaging analyses systems are shown in the graph, click

Date:

Analysis Source:
All Monitored Systems

15:10 – 15:20
Anomaly score 100

Interval Anomaly Scores by System



Zoom level: (1 hr, 4 hrs, 8 hrs, 12 hrs, 16 hrs, 20 hrs, 24 hrs)

Interval anomaly score key:
0 (lightest blue) to 101 (darkest blue) for 'No Difference', and 99.6-100 (yellow) and 101 (orange) for 'Significantly Different'.
← No Difference → Significantly Different

GUI Analysis - System IPL

Current Analysis > Interval View

Interval View for System WSYB

The Messages table provides detailed analysis information for each message that occurred during the indicated time interval. To view message details for other intervals use the date and time interval selectors. Click the **Back** button to the Analysis view.

Date:

July 3, 2013

Analysis Source:

WPLEX.WSYB

Time interval (UTC):

15:10 - 15:20

Interval anomaly score:

100.0

IPL messages

OSA CHPID 16 issue

Messages

Anomaly Score	Interval Contribution Score	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score	Component	Cluster ID
1	16.462	new	None	15	[REDACTED]	IOS152E	DEVICE 0A60 BOXED BY SUBCHANNEL RECOVERY, DEVICE STATE UNKNOWN	101	IOS	-1
1	10.086	new	None	3	[REDACTED]	BPXF221I	FILE SYSTEM SYSZFS.V1R13.PUT1302.BASE.ZFS FAILED TO MOUNT LOCALLY.	101	BPXF	-1
1	10.086	new	None	3	[REDACTED]	IEA214A	DUPLICATE SYSRES 'SWDRS1' FOUND ON DEVICE 9904.	101	IEA	-1
1	9.33	new	None	2	[REDACTED]	BPXF251I	FILE SYSTEM SYSZFS.V1R13.PUT1305.MQM.ZFS HAS BEEN RECOVERED AND IS	101	BPXF	-1
1	9.33	new	None	2	[REDACTED]	IEA313I	DEVICE 9904 DISMOUNTED	101	IEA	-1
1	8.83	new	None	1	[REDACTED]	BPXF236I	FILE SYSTEM SYSZFS.V1R13.PUT1305.BASE.ZFS WAS NOT MOUNTED. THE	101	BPXF	-1
1	8.83	new	None	1	[REDACTED]	EZZ4309I	ATTEMPTING TO RECOVER DEVICE GIG16	101	EZZ	-1

Return to Analysis

GUI Analysis - Darker Blue Bars

Darker blue bars represent higher anomaly scores

Analysis

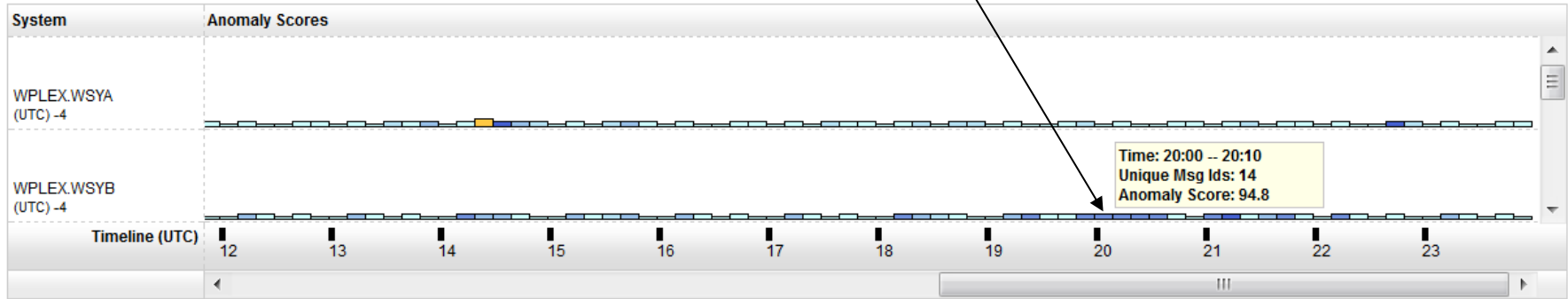
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Date:

Analysis Source:
All Monitored Systems

20:00 – 20:10
Anomaly score 94.8

Interval Anomaly Scores by System



Zoom level: 1 hr 4 hrs 8 hrs 12 hrs 16 hrs 20 hrs 24 hrs

Interval anomaly score key:
0 99.5 99.6 - 100 101
No Difference ← → Significantly Different

GUI Analysis - Auxiliary Storage Shortage



Interval View for System WSYB

The Messages table provides detailed analysis information for each message that occurred during the indicated time interval. To view message details for other intervals use the date and time interval selectors. Click the back to the Analysis view.

Date: → →

Analysis Source:
WPLEX.WSYB

Time interval (UTC): → →

Interval anomaly score:
94.8

Aux Storage Shortage

ASTLEY4 Swapped Out

▼1 Anomaly Score	▼2 Interval Contribution Score	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score	Component	Cluster ID
1	8.83	new	None	1	[Redacted]	IRA203E	ASTLEY4 ASID 0046 SWAPPED OUT FRAMES+SLOTS 06112609 RATE 120794	101	IRA	-1
0.999	8.558	unclustered	Interesting	5	[Redacted]	IRA206I	ASTLEY4 ASID 0046 FRAMES 0001202191 SLOTS 0004910418 % OF AUX 66.3	100	IRA	-1
0.998	7.444	unclustered	Interesting	1	[Redacted]	IRA200E	AUXILIARY STORAGE SHORTAGE	100	IRA	-1
0.998	7.444	unclustered	None	1	[Redacted]	IRA205I	50% AUXILIARY STORAGE ALLOCATED	100	IRA	-1
0.998	7.444	unclustered	None	1	[Redacted]	IRA250I	80% OF STORAGE CLASS MEMORY IS ALLOCATED	100	IRA	-1
0.997	6.29	unclustered	None	1	[Redacted]	HASP100	BPXAS ON STCINRDR	27	HASP	-1
0.991	4.85	unclustered	None	1	[Redacted]	BPXH068E	One or more HFS file systems mounted.	71	BPXH	-1

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Experiences with IBM zAware



Straight forward and fairly easy to setup the IBM zAware partition and configure z/OS to send OPERLOG to the IBM zAware server

For systems with a low message rate, it may be challenging to provide sufficient message traffic to satisfy training requirements

The data used to build the first model is not analyzed and displayed in the GUI

Disk space usage on the IBM zAware server can be monitored with the GUI. Thus far, the space used has been less than I anticipated.

The color coded GUI displaying anomalies helps visually spot a problem. It is helpful to see the information for all the systems in a sysplex.

Sometimes the anomaly score and color of the bar in the GUI is not as expected, so do not ignore the darker blue bars.

IBM zAware is designed to improve business application availability through smarter, faster problem determination

Ability to monitor system anomalies in real time

- ◆ Model built representing normal behavior on each system
- ◆ Analysis of messages uses the model built for that system
- ◆ Color coded graphical display of multiple systems to locate potential problems faster
- ◆ Drill down to see messages

Planning

- ◆ Identify z/OS systems to be monitored clients
- ◆ Assign resources to IBM zAware partitions

Session 13569

IBM zAware – Using Analytics to Improve System z Availability

- ◆ Wednesday at 3:00 PM in room 312
- ◆ Speaker is Garth Godfrey

Session 13580

Setting Up IBM zAware – Step-by-Step

- ◆ Wednesday at 4:30 PM in room 312
- ◆ Speaker is Garth Godfrey

References

- IBM System z Advanced Workload Analysis Reporter Guide, SC27-2623
- Extending z/OS System Management Functions with IBM zAware, SG24-8070
- z/OS MVS Initialization and Tuning Guide, SA22-7591
- z/OS MVS Initialization and Tuning Reference, SA22-7592
- z/OS MVS System Commands, SA22-7627
- z/OS MVS Setting Up a Sysplex, SA22-7625
- IBM zEnterprise EC12 Technical Guide, SG24-8059
- <http://www-03.ibm.com/systems/z/os/zos/features/unix/bpxa1ty2.html>
Message Analysis Program from z/OS Tools and Toys web site