

IBM zAware

Using Analytics to Improve System z Availability

Chris Brooker – IBM zAware Development

cbrooke@us.ibm.com

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Agenda – IBM zAware Overview

- Why IBM zAware?
- What is IBM zAware, and what can it detect?
 - How can it help identify problems on z/OS systems?
 - How can it help diagnose problems on z/OS systems?
 - How can it identify changes after maintenance or new workloads?
- Use of the IBM zAware GUI
- Operating requirements
- Integration with other management products
- IBM zAware Setup

Background – Why IBM zAware

Systems are more complex and more integrated than ever

- *Errors can occur anywhere in a complex system*

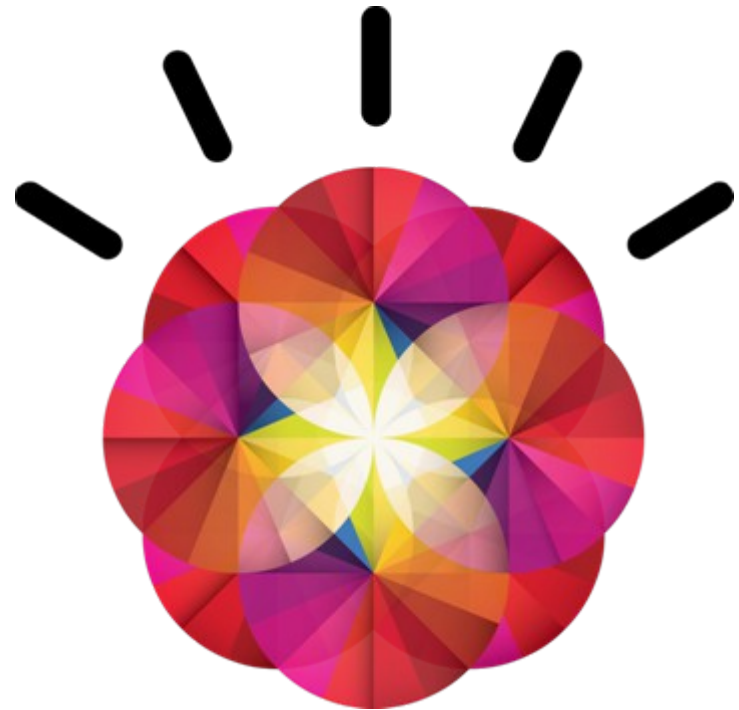
- *Some problems are particularly...*
 - **Difficult to detect**
 - Several allowable anomalies can build up over time
 - Symptoms / problems can manifest for hours or days
 - Problem can grow, cascade, snowball
 - **Difficult to diagnose**
 - Sometimes finding the *system* in error is a challenge
 - Many times finding the *component* in error is a challenge
 - Volume of data is not humanly consumable, *especially* when seconds count

- *Need information and insight*



IBM System z Advanced Workload Analysis Reporter Smarter Computing Needs Smarter Monitoring

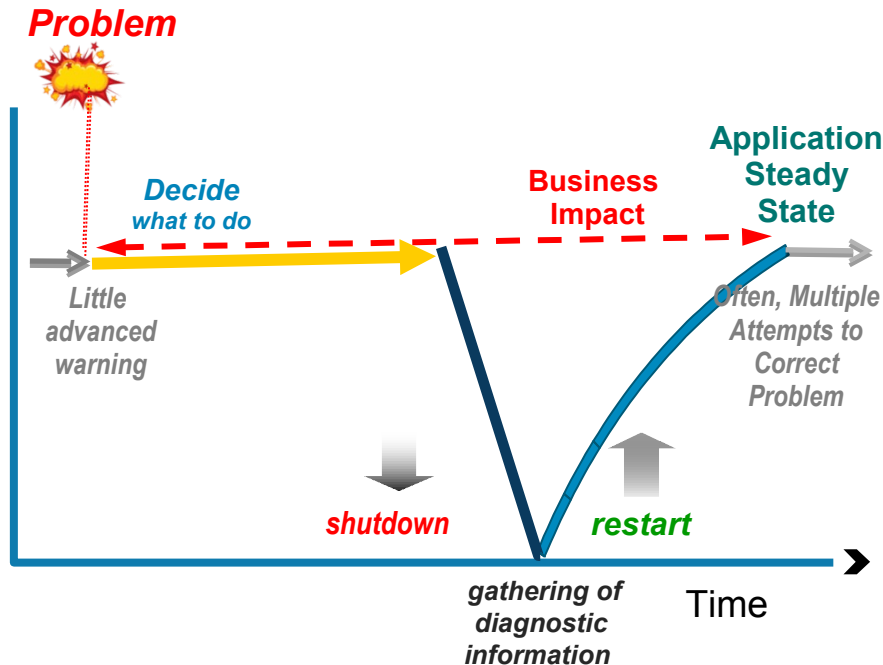
- New technology based on machine learning developed by IBM Research
- Cutting edge pattern recognition techniques look at the health of a system to pinpoint deviations from the 'norm'
- High speed analytics facilitates the ability to consume large quantities of message logs
- Improves problem diagnosis across a set of System z servers
- Speeds up the time to decide on appropriate corrective actions on problems before they get bigger
- Allow establishment of procedures to prevent reoccurrence



zAware's capacity as a 'watch dog' can help to detect unusual behavior in near real time

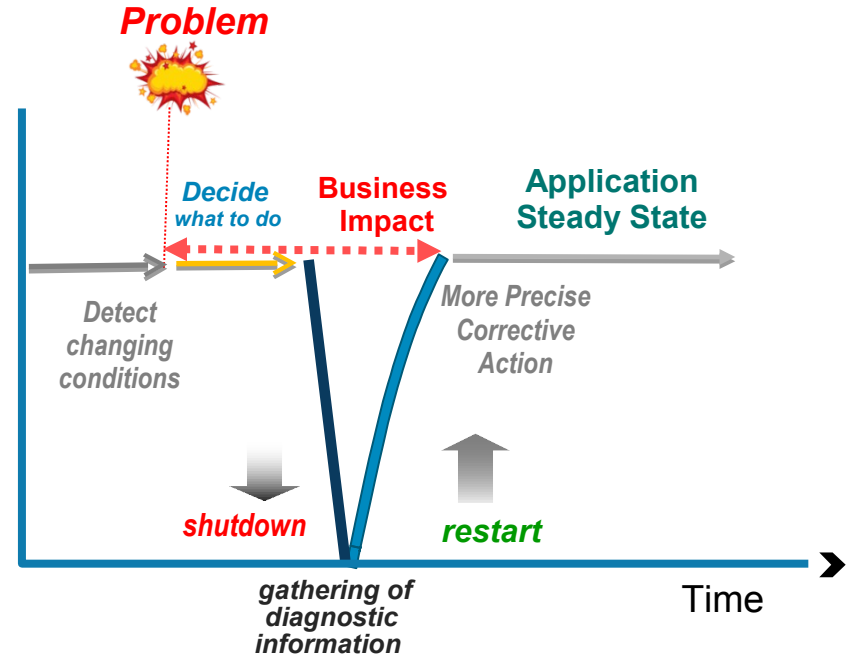
IBM zAware can reduce time to repair to improve availability

Without IBM zAware



Ineffective time spent in problem determination and trial and error. Incorrect problem identification may result in the wrong fixes being applied.

With IBM zAware



More precise and early diagnosis can shorten impact time and help you to avoid a similar problem. Gain an edge in your ability to respond to events.

IBM zAware – System Analytics for Availability



- Identifies unusual system behavior of z/OS workloads
- Runs in a special purpose firmware partition (isolated from production)
 - on zEC12 or zBC12
- Monitors zEC12 or other System z servers running z/OS v1.13 +PTFs or later
- **Requires OPERLOG**

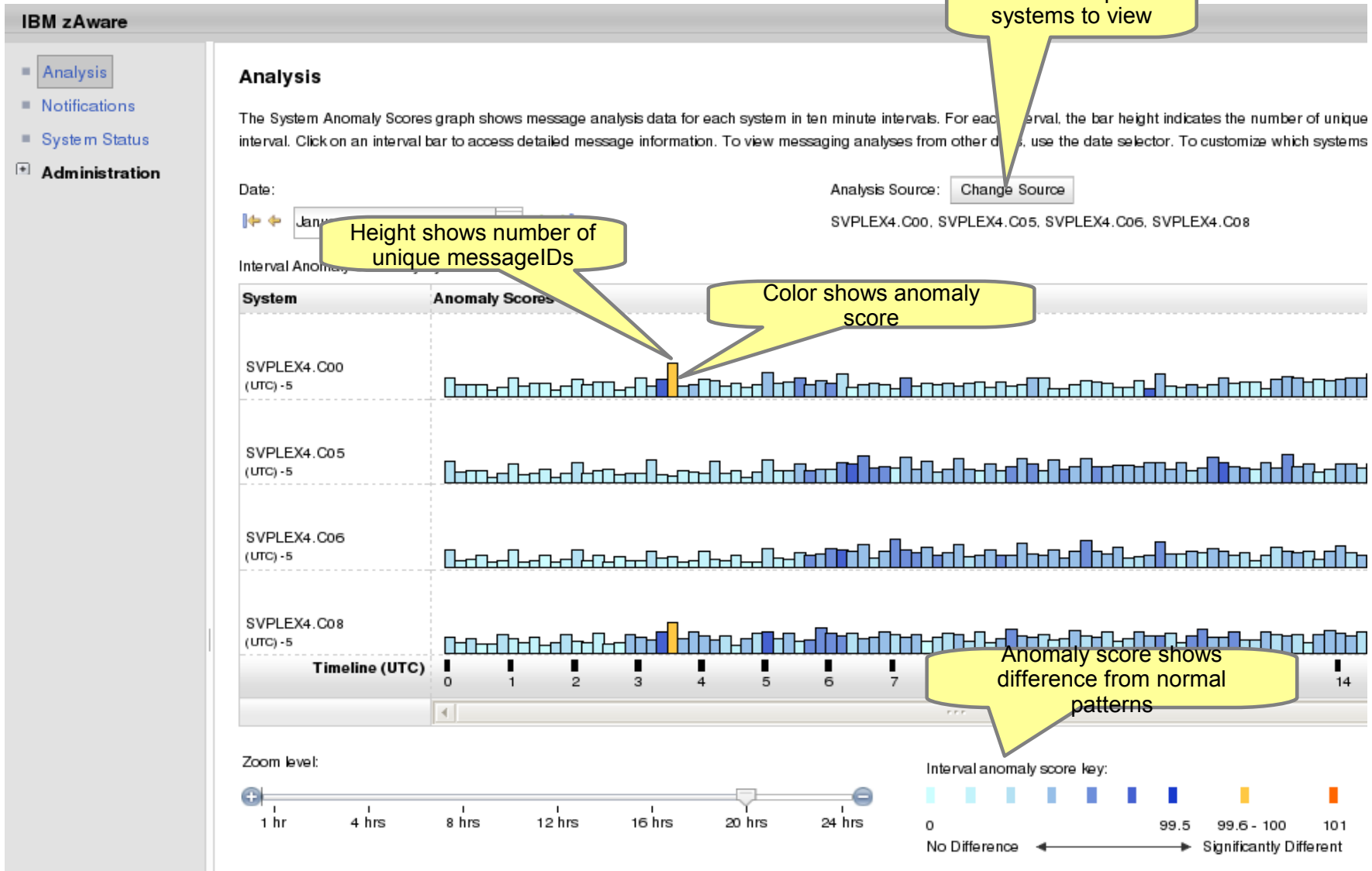
Inside IBM zAware Analytics

- OPERLOG is processed per-system
- zAware recognizes any well-formed message IDs,
 - including IBM and non-IBM products and customer applications
- zAware summarizes the common message text and records the occurrences
- zAware builds a **model** of normal behavior based on the last 90 days
 - Called “Training”
 - Automatically trains every 30 days
 - Can be forced manually
 - Customizable
 - Unusual days can be excluded from future models
- z/OS utility is used to load historical logs into zAware

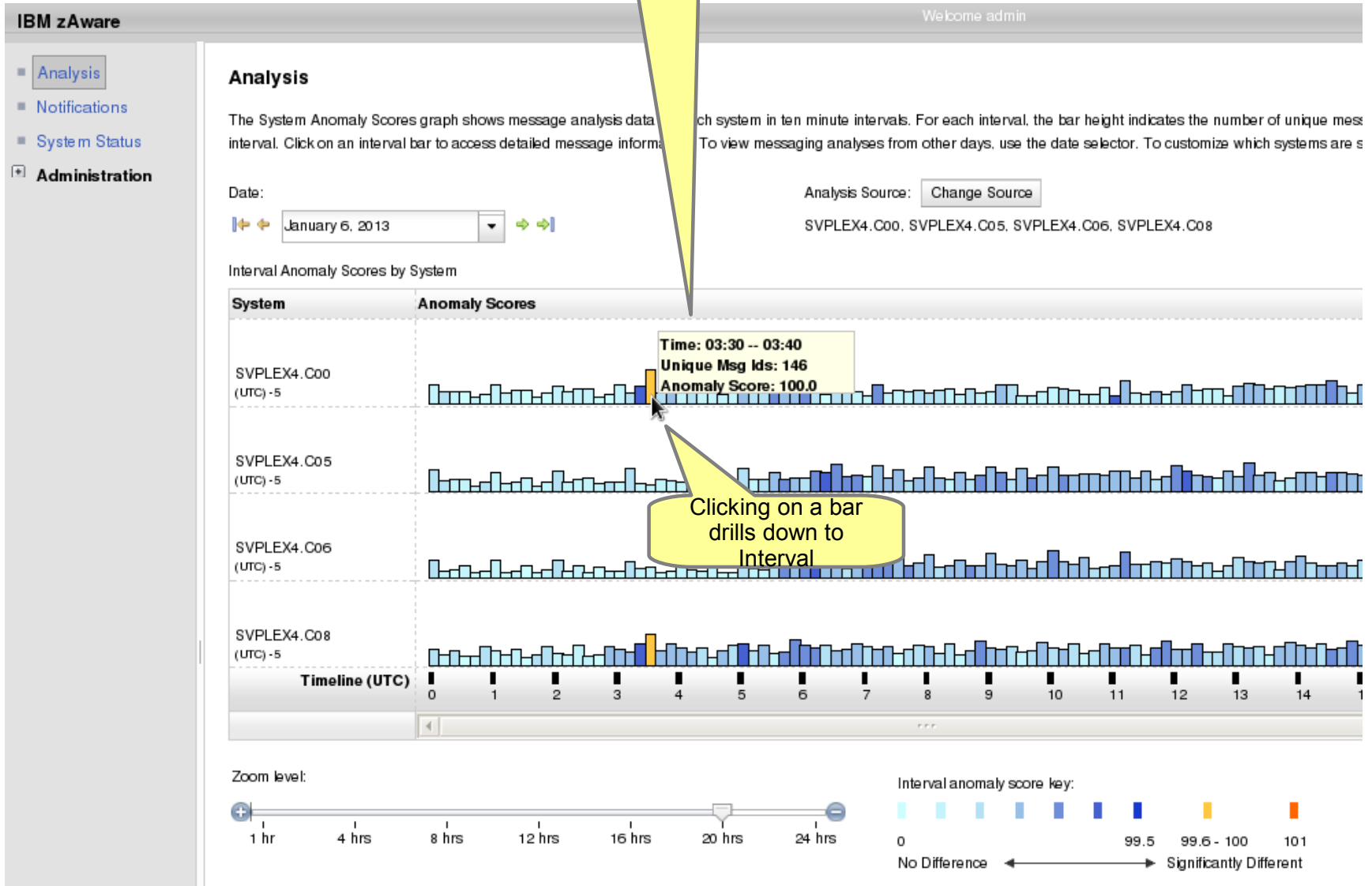
Inside IBM zAware Analytics

- Real-time OPERLOG data is compared to the model
- Assigns a **message anomaly** score to indicate deviation from the model
 - Rare messages
 - Out of context from normal patterns
 - High counts
- Uses z/OS-specific knowledge to influence the scores
- Generates an **interval anomaly** score per 10 minute interval
 - Current interval is updated every 2 minutes
 - GUI shows number of unique message IDs (bar height)
 - GUI shows interval anomaly score (bar color)
- Drill down on interval shows the message scores
- XML output available via HTTP APIs to drive alerting

Analysis View



Analysis View



Interval View

IBM zAware Welcome admin Log out

Current Analysis > Interval View Help

Interval View for System C00

The Messages table provides detailed 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 **Return to Analysis** button to go back to the Analysis page.

Date:

Time interval (UTC):

Messages

Interval anomaly score: 100.0

SVPLEX4.C00

Interval Anomaly Score	Interval Contribution Score	Message Count	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score	Component	Cluster ID
1	41.348	new	None	238		IGW702I	PDSE Directory Validation Unsuccessful DESC:<ND> Structure is corrupted LTK:	101	IGW	-1
1	41.3	new	None	237		IGW699I	PDSE Directory Validation Unsuccessful DESC:PDSE structure is corrupted	101	IGW	-1
1	18.184	new	None	16		IEC909I	212-00,MSR13M7 , TESTM7 ,SAM00001,00000024,06105AF8	101	IEC	-1
1	10.684	new	None	2		IEC036I	002-6C,IGC0005E,MSR13M7,TE:IST.DFSMS.MAS1IR13.DS00000:	101	IEC	-1
1	7.818	unclustered	IMPORTANT	1		CNZZ002E	MESSAGE THRESHOLD REACHED FOR JOB Z850A010 ASID 021B	74	CNZZ	-1
1	0	in_context	IMPORTANT	1		CNZZ007E	MESSAGE RATE EXCEEDED 600 MESSAGES IN <1 SECONDS.	64	CNZZ	22
1	0	in_context	IMPORTANT	4		IEA611I	COMPLETE DUMP ON D83DUMP.DYNZOS21.C00.D130: DUMPID=003 REQUESTED BY	47	IEA	109

Several messages never seen in the model

Time Line shows occurrences within interval

Message ID is a link to LookAt

z/OS specific rules affect anomaly score

Identify unusual behavior quickly

Which z/OS image is having unusual message patterns?

- High score generated by unusual messages or message patterns
- GUI shows all systems or selected subsets

Which subsystem or component is abnormal?

- Examine high-scoring messages

When did the behavior start?

- Current 10 minute interval or earlier?
- Which messages are unusual?
- How often did the message occur?
- When did the messages start to occur?

Were similar messages issued previously

- Easily examine prior intervals or dates

Is the unusual behavior after some maintenance or upgrade?

- Easily pinpoint changes caused by new software levels, configuration settings.

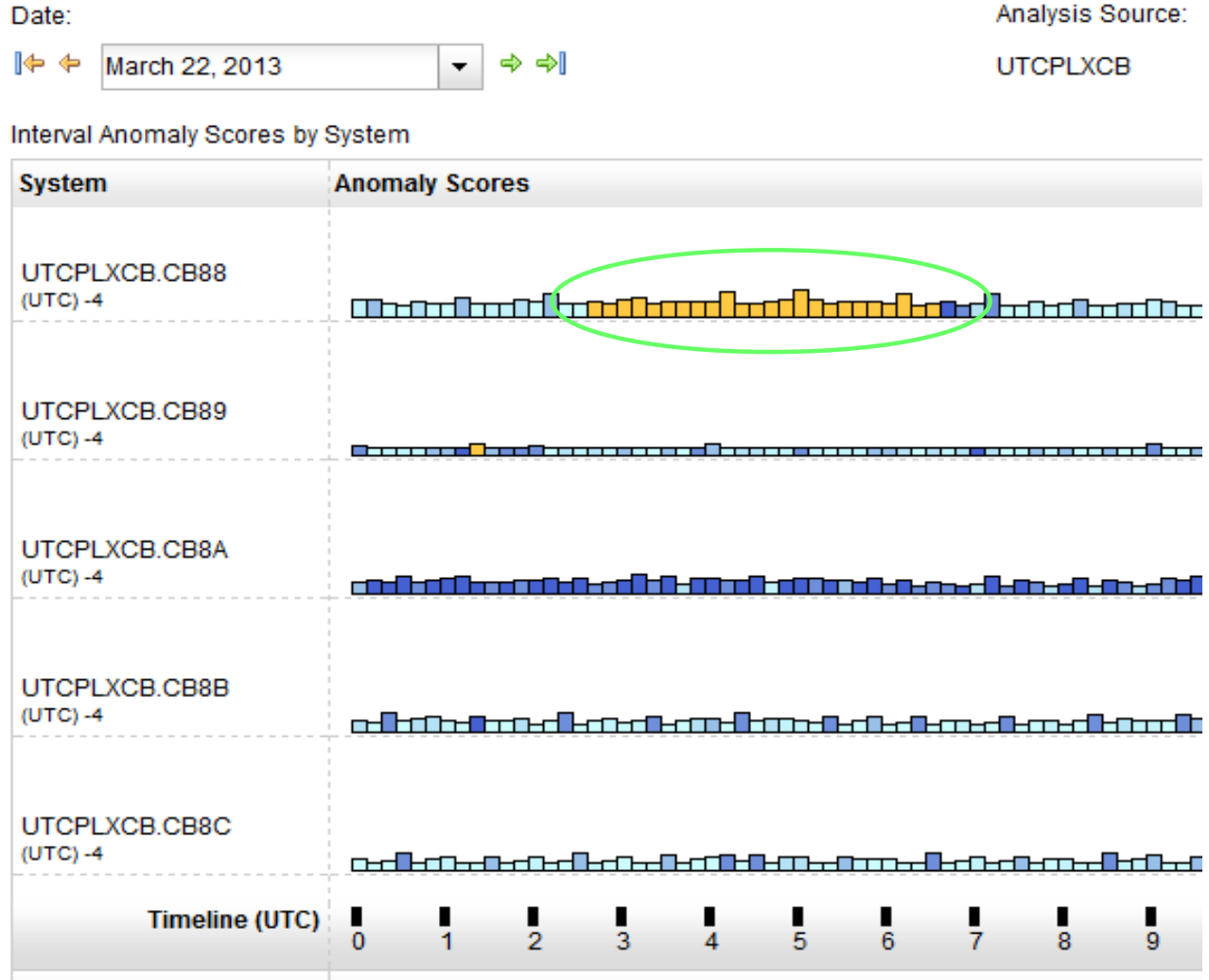
Identify unusual behavior quickly

Which z/OS image is having unusual message patterns?

- **Yellow and dark blue on CB88**

When did the behavior start?

- **Around 2:30**



Identify unusual behavior quickly – Configuration Error

Interval View for System CB88

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 Re

Date:

March 22, 2013

Analysis Source:

UTCPLXCB.CB88

Time interval (UTC):

02:40 – 02:50

Interval anomaly score:

99.8

Messages

Anomaly Score	Interval Contribution Score	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score	Component	Cluster ID
0.999	196.275	unclustered	None	898		IRRC131	(<) RACF ENCOUNTERED AN R_PROXYSERV ERROR WHILE ATTEMPTING TO CREATE AN	73	IRRC	-1
0.999	48.115	unclustered	None	932		IRRC144	(<) RACF ENCOUNTERED AN R_PROXYSERV ERROR: SAF RETURN CODE=X'00000008',	85	IRRC	-1

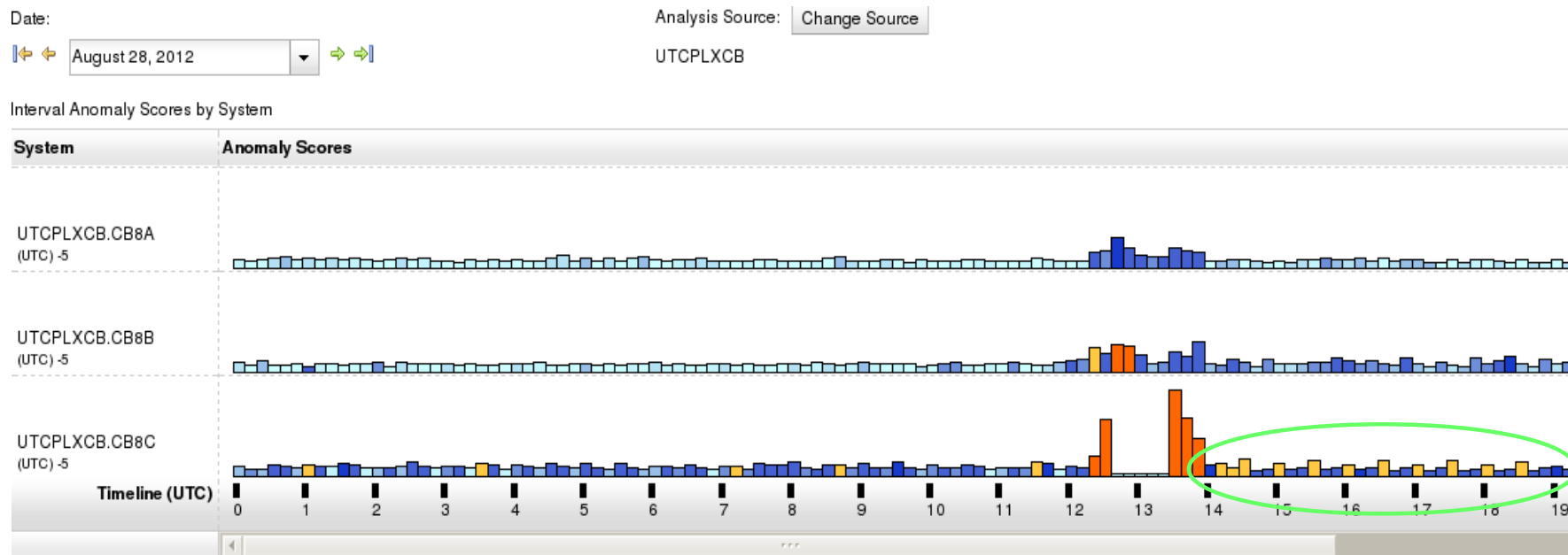
What component is having the problem?

- **Drill down indicates 900 IRRC131I and IRRC144I messages per interval. A review of SYSLOG showed that this was the result of work being performed in the LDAP address spaces. Further analysis showed that the LDAP PC Callable Interface was not enabled. At 6:40, the function was enabled, and the 131I and 144I messages are no longer generated.**

Impact

- **Unnecessary messages blocking ability to see anything else. Impacts ability to look at the console.**

Identify unusual behavior quickly



Which z/OS image is having unusual message patterns?

- **Recurring yellow and dark blue on CB8C**

When did the behavior start?

- **After an IPL at 13:30**

Identify unusual behavior quickly – Configuration Error

Interval View for System CB8C

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 **Return to Analysis** button to go back to the Analysis view.

Date:

Analysis Source: UTCPLXCB.CB8C

Time interval (UTC):

Interval anomaly score: 99.6

Messages

▼1 Anomaly Score	Interval ▼2 Contribution Score	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score	Component
0.999	14.369	unclustered	None	2		IEE838I	TNPROC NON-CANCELABLE - ISSUE FORCE ARM	93	IEE
0.999	12.943	unclustered	None	2		EZZ0621I	AUTOLOG FORCING TNPROC, REASON: TCP/IP HAS BEEN RESTARTED	100	EZZ
0.999	9.41	unclustered	None	1		IXG601I	10.27.18 LOGGER DISPLAY 081 CONNECTION INFORMATION BY	62	IXG
0.997	6.078	unclustered	None	3		IEA631I	OPERATOR GTHOMPS NOW INACTIVE, SYSTEM=CB8C, LU=TCP8C003	31	IEA

Which subsystem or component is abnormal?

- Examine high-scoring messages

When did the behavior start?

- When did the messages start to occur?

Were similar messages issued previously?

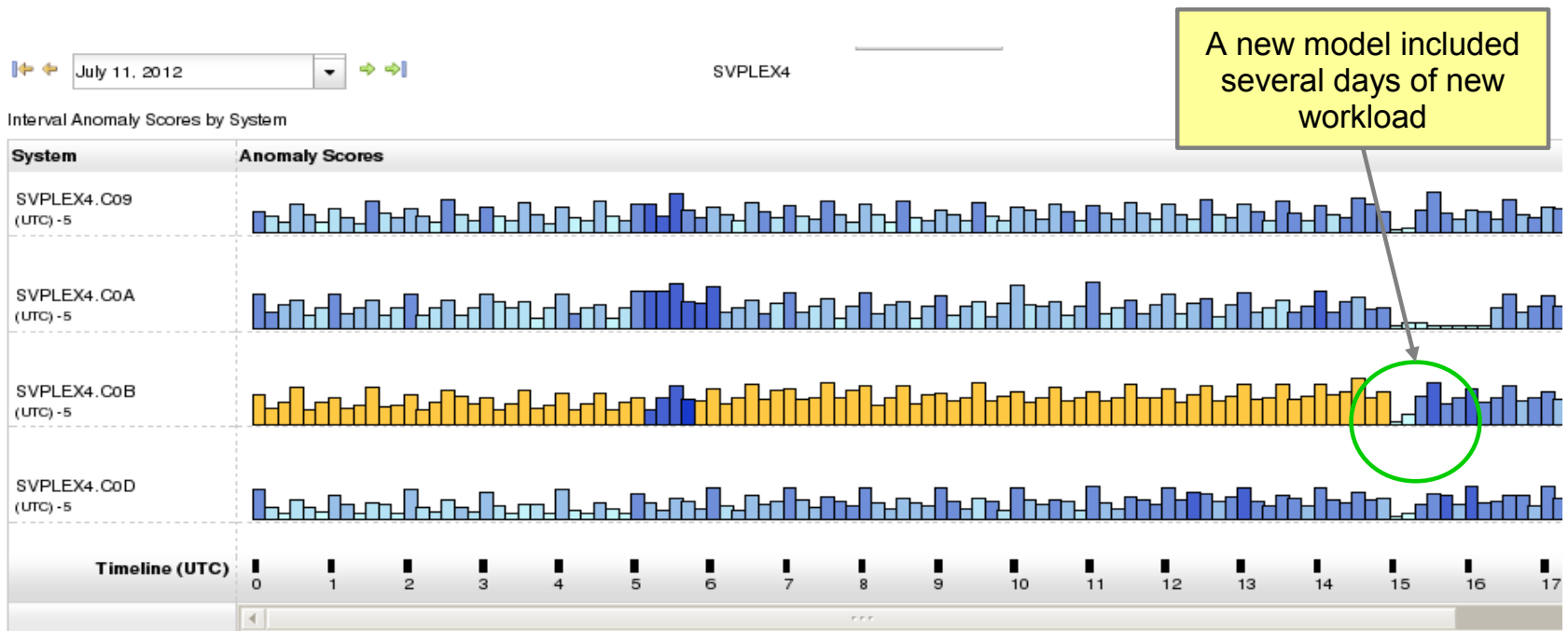
- Easily examine prior intervals or dates

Moving left and right by interval shows messages due to TNPROC being cancelled by TCP/IP

Identify behavior after a change

Are unusual messages being issued after a change?

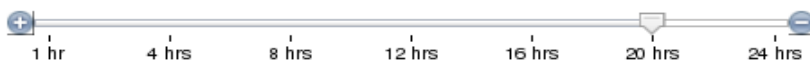
- New / updated workload (OS, middleware, apps) was introduced
- Detected as yellow bars
- Once messages confirmed as ok, can rebuild your system model, and workload now understood as “normal.”



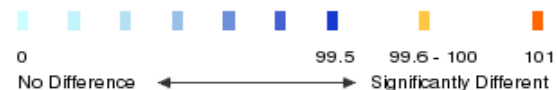
A new model included several days of new workload



Zoom level:



Interval anomaly score key:



New function available Sept 20 2013



Customer added domain knowledge – Ignore messages

When a new workload is added to a system monitored by zAware

- Software upgrade, workload movement
- Generates messages that are not in the zAware model
- New messages are flagged as anomalous
 - Orange/yellow bars on zAware Analysis
 - High anomaly scores on the Interval View

Review of these messages is needed to improve the scoring



Ignore messages continued High scoring message review

A) If a **real problem** is indicated,

- **Fix the problem** on the monitored system
- Check subsequent zAware Analysis to confirm the resolution
- Do **not** mark these messages as ignored

B) If the messages are **normal messages from the new workload**,

- Mark these as **ignore until next training**
- At the next training for this system, these messages will be built into the model, and removed from the system's ignored list

C) If the messages are **always ok** (normal, but infrequent)

- Mark these as **ignore until manually restored**
- In subsequent analysis, the ignored messages will not contribute to the anomaly scores
- This setting will **persist** after trainings
- This **reduces false positives**, based on user input, so real problems are not masked

This gives the user input into the IBM zAware rules.

Ignore messages continued GUI selection



- From the Interval View
- When logged in as Admin
- When no IBM Rule (Rules Status is None)

Date:

→ →

Analysis Source:

SVPLEX4.C05

Time interval (UTC):

→ →

Interval anomaly score:

85.8

Messages

Actions ▼								
▼1 Anomaly Score	Interval Contribution Score ▼2	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score
1	13.248	new	None	5		AOF310I	22:10:26 : JES2 RECOVERY IS SET ON - RECOVERY NOT FOUND	101
0.999	19.894	unclustered	None	7		GFSA1033E	(MVSNFSP4) There are many delays detected. There is more information	49
0.999	8.033	unclustered	None	2		AOF917E	The high-level qualifier has not been defined.	71

Click for options to ignore this message in future interval analyses.

Ignore messages continued GUI selection



- Choose duration specific to this message, on this monitored system
- Takes effect on next analysis interval. Shows in Rules Status
- Lists available from Training Sets > Actions > Manage Ignored Messages

Date: August 5, 2013
 Time interval (UTC): 02:10 -- 02:00
 Analysis Source: SVPLEX4.C05
 Interval anomaly score: 05.0

▼1 Anomaly Score	▼2 Interval Contribution Score	M	C	Message Example	Ra
1	13.248	n		22:10:26 : JES2 RECOVERY IS SET ON - RECOVERY COMMAND NOT FOUND	
0.999	19.894	u		(MVSNFSP4) There are many delays detected. There is more information	
0.999	8.033	u		The high-level qualifier has not been defined.	
0.995	5.514	u		Analysis of command response (CMR) time detected one or more	

Ignore Message Status

The current ignore status for the selected message ID is shown in the following information. To change this status for future intervals on the current system, select a different ignore message option in the list and click OK.

Selected message ID: AOF310I Current system: SVPLEX4.C05

Current ignore status: Not Ignored Current ignore status applied (UTC): N/A

Ignore message option for future intervals:

Do not ignore message. (current status)

Ignore message until next training occurs for the current system.

Ignore message until manually restored. Messages can be restored using the Manage Ignored Messages action in the Training Sets task.

OK Cancel Go to Manage Ignored Messages view on OK.

IBM zAware – Using Analytics to Improve System z Availability

Operating Requirements

Operating Requirements – IBM zAware Server



- Logical partition on a **zEC12 or zBC12** server
 - Runs on **IFLs** or general purpose **CPs** – may be dedicated or shared
 - Runs its own self-contained firmware stack
 - Recommended 2 partial engines
 - Initial priming and training: 25-80% of 1 **zEC12** IFL (30-95% of 1 **zBC12** IFL)
 - Analysis: 20-40% of 1 IFL (zEC12 or zBC12)
- Memory and DASD resources are dependent on the number of monitored clients, amount of message traffic, length of time data retained
 - Minimum Memory is **4 GB** for 6 clients with light message traffic (500 msgs/sec)
For > 6 clients + **256 MB per client** required
 - Estimated DASD storage is **500 GB (ECKD) + 5GB per client**
- Network resources
 - HiperSockets or shareable OSA ports or IEDN
 - IP address for partition
- Browsers
 - Internet Explorer 9
 - Firefox ESR 17

Operating Requirements – z/OS Monitored Clients

- System z servers supported as IBM zAware monitored clients
 - zEC12
 - zBC12
 - IBM zEnterprise™ 196 (z196) or z114,
 - IBM System z10™ EC or BC
 - Prior generations that meet the OS and configuration requirements

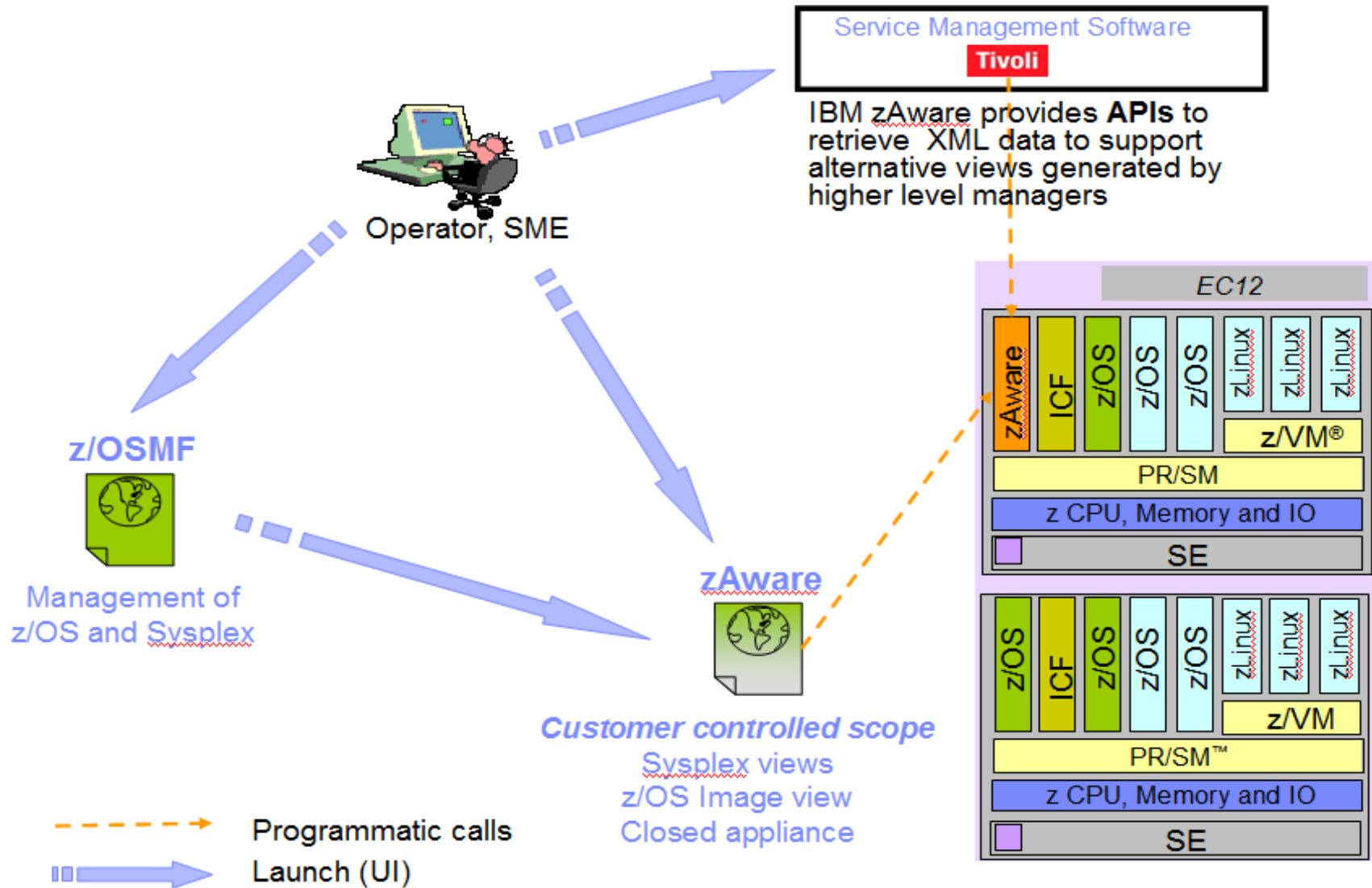
- Running **z/OS 1.13 + PTFs** **or z/OS 2.1**
 - APAR OA38747
 - APAR OA38613
 - APAR OA39256
 - APAR OA42095

- System needs to be configured as a monoplex, system in a multisystem sysplex, or a member of a parallel sysplex
- Using operations log (**OPERLOG**) as the hardcopy medium
- Sysplex name + system name must uniquely identify system
- Requires an OSA or IEDN or HiperSocket for IP network connection
- z/OS zAware monitored client MIPs usage ~ 1%

IBM zAware – Using Analytics to Improve System z Availability

Integration with other management products

IBM zAware Complements Your Existing Environment



Integration with z/OSMF

- **Using the z/OSMF GUI**
 - Configure a new external **link**
 - to access IBM zAware from z/OSMF
 - Administration > Links > Actions > New
 - Provide link name, SAF suffix, **zAware GUI URL**
 - Category – recommend Problem Determination
 - Define authority required to use the link

Integration with other System Management products

- **APIs**
 - Provides **XML** equivalent to GUI
 - Analysis page
 - Interval View page
 - Requires HTTPS
 - From z/OS, use AT-TLS
 - HTTP GET/POST requests
 - **Connect and authenticate** to IBM zAware server
 - *UserID known as a zAware user (e.g. LDAP)*
 - **Retrieve analysis** for a monitored client
 - **LPAR** *Interval scores for date*
 - **INTERVAL** *Message scores for a 10-minute interval*

Integration with other System Management products

- IBM Tivoli **NetView** for z/OS
 - Use the APIs to pull the IBM zAware results
 - Sample programs are available from <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home/wiki/Tivoli%20System%20z%20Monitoring%20and%20Application>
 - Described in detail in the Redbook:
 - **Extending z/OS System Management Functions with IBM zAware**
 - The samples can be tailored to drive NetView message **automation** for high anomaly scores:
 - Generate a message
 - Generate an event
 - CANZLOG – Browse consolidated logs for PD
- **Announced July 2013**, Tivoli Integrated Service Management products use of IBM zAware results.
 - Omegamon XE on z/OS (including predefined situations)
- Other products can exploit the XML format results



Omegamon XE on z/OS – July 2013

Chart of last hour anomaly scores most recent at left

Client and server status

Last hour in 10 minute increments. Anomaly and unique messages

zAware Client Status	zAware Server Status	zAware Version	zAware Port	zAware Location
Active Client	Active	1	2001	RP502CONSOLES.RALEIGH.IBM.COM

Current Interval Time	Current Anomaly Score	Current Unique Messages	Interval Time 02	Anomaly Score 02	Unique Messages 02	Interval Time 03	Anomaly Score 03	Unique Messages 03	Interval Time 04	Anomaly Score 04	Unique Messages 04	Interval Time 05	Anomaly Score 05	Unique Messages 05	Interval Time 06	Anomaly Score 06	Unique Messages 06
06/13/13 20:20:00	78.3	4	06/13/13 20:10:00	57.9	2	06/13/13 20:00:00	91.8	29	06/13/13 19:50:00	78.3	4	06/13/13 19:40:00	81.7	3	06/13/13 19:30:00	92.9	12

Omegamon XE on z/OS – July 2013

Product provided situations

**Two for status
Two for MOSWOS**

**Critical situation
Anomaly ≥ 101**

Every 5 min

Situations for - zAware Analysis

- zAware Analysis
 - MVS System
 - KM5_zAware_Analysis_Crit
 - KM5_zAware_Analysis_Warn
 - KM5_zAware_Client_Status
 - KM5_zAware_Server_Status

Formula editor

Name: KM5_zAware_Analysis_Crit

Description: Anomaly Score (02) exceeds the critical threshold

Formula:

	Anomaly Score 02
1	≥ 101.0
2	
3	

Sampling interval: 0 / 0 : 5 : 0 (ddd hh:mm:ss)

State: Critical

Run at startup:

zAware Analysis - Last Hour

Current Interval Time	Current Anomaly Score	Current Unique Messages	Interval Time 02
06/13/13 20:20:00	78.3	4	06/13/13 20:10:00

Event Console

Severity	Status	Owner	Name	Display Item	Source	Impact
Unique Messages 05	Interval Time 06	Anomaly Score 06	Unique Messages 06			
	06/13/13 19:30:00	92.9	12			

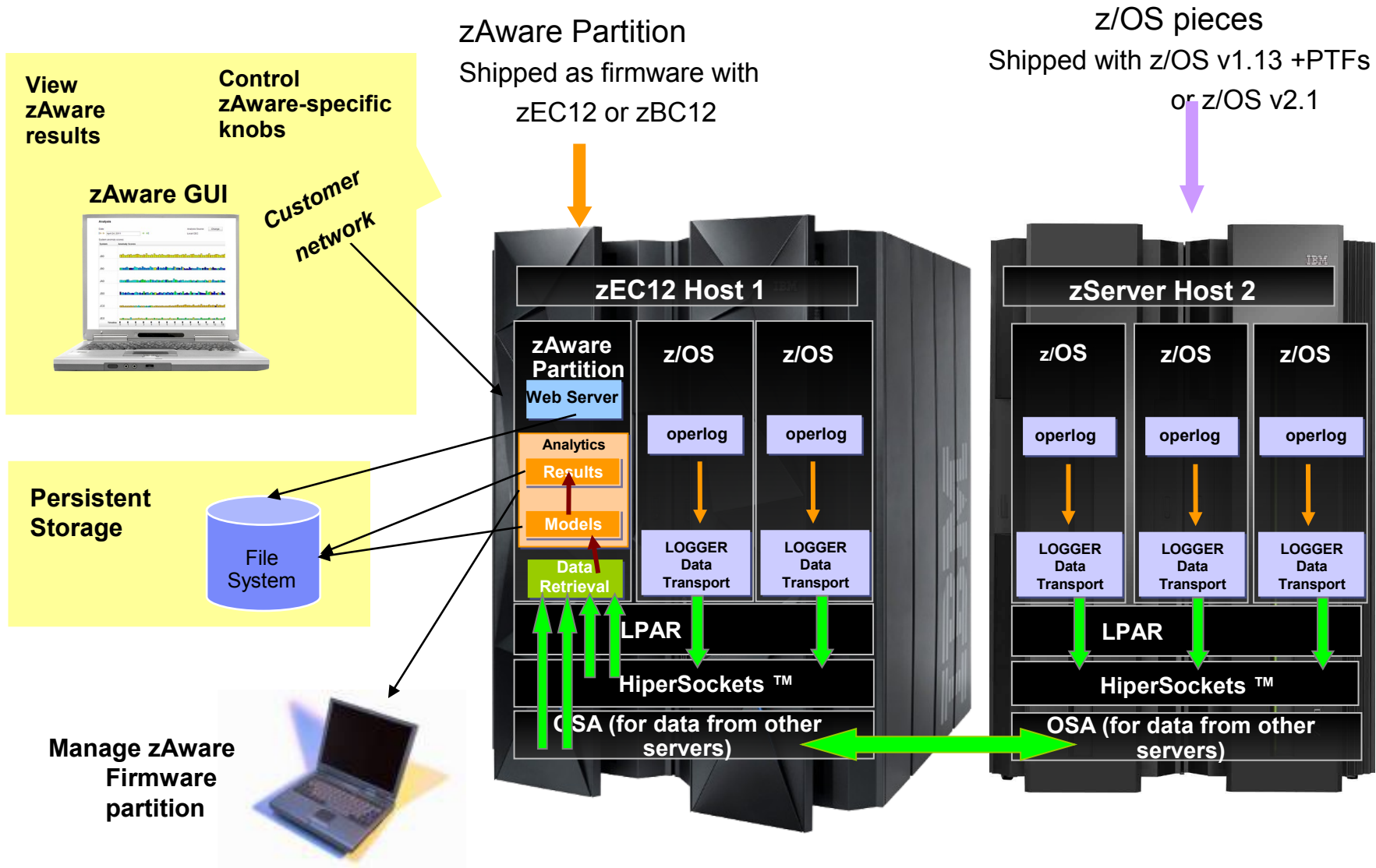
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Setting up IBM zAware

Setting up IBM zAware in a nutshell

- Define the zAware partition
- zAware GUI Configuration
 - ┆ Assign DASD Storage
 - ┆ Security set up
- Setup on z/OS for monitored systems
- Prime the zAware partition with existing data
 - ┆ z/OS Bulk load
 - ┆ zAware GUI assignment
 - ┆ Train a model

Inside IBM zAware



zAware Partition Background & IOCDs Definition

- IBM zAware Partition, including I/O, is defined like any other partition.
 - Use Hardware Configuration Definition (HCD) / Hardware Configuration Management (HCM) or equivalent.
- Similar in many ways to Coupling Facility type partitions
- zAware application loaded from Support Element (SE)
- zAware application is firmware
 - Separate EC stream
 - Updated like all other firmware
 - Part of Support Element (SE) version 2.12.0 (2.12.1 required for zBC12)
 - Hardware Management Console (HMC) support starting with HMC version 2.12.0
 - Concurrent Driver Upgrade (CDU)
 - EC Upgrade
 - MCFs/MCLs
- Prerequisites to defining a zAware partition: Purchase and install the zAware Feature Codes (FC)

Define the zAware Partition with the HMC

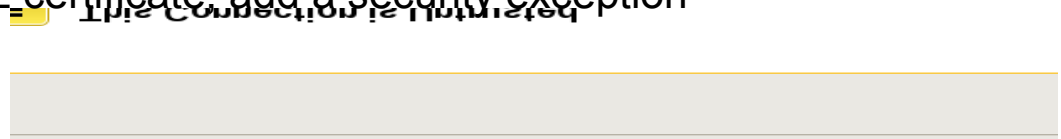
- Create the Image Profile
 - Partition mode **zAware**
 - Assign processors, storage (memory)
 - **Master userID / password** - for initial login (and as a back up)
 - **IP address** or DNS entry

- Activate the partition using the **Activate** task

- Dynamic changes to the zAware partition can be made by using the Firmware tab

zAware Initial GUI login

- URL is **https://*addr*/zAware**
 - where *addr* is IP address from the image profile or hostname from the DNS entry
- If browser warns of the default SSL certificate, add a security exception



- Use master userID and password

Data Storage assignment

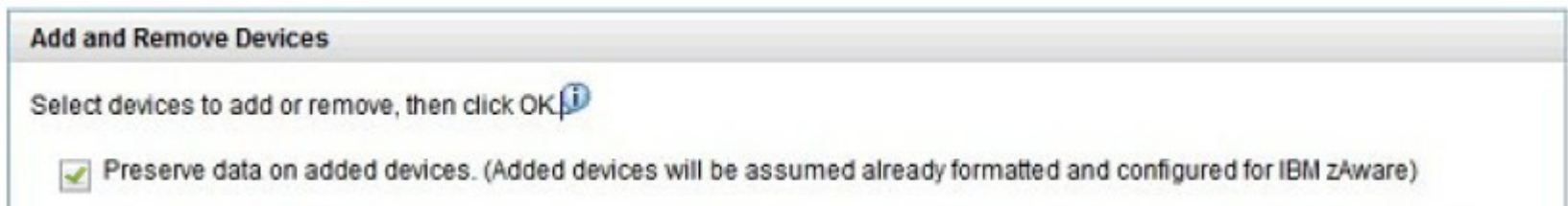
- ECKD DASD is required
- Add storage devices defined in the I/O configuration
- Devices must be exclusively for use by IBM zAware
 - Recommend use of **Channel Path definition lists** or **Explicit Device Candidate List** in HCD to restrict specific devices to the zAware partition

Total capacity (GB): 0.00	Total storage used (GB): 0.00	Total storage used (%): 0
Data Storage Devices		
Add and Remove Devices		Apply Pending Removals
Device	Status	Device Type
4f20	Available	3390/0c
4f21	Available	3390/0c

New function available Sept 20 2013 Alternate Data Storage Set



- Add DASD volumes without formatting
- Allow a backup copy of zAware data to be added after a failure.
 - DASD CU failure – Restore backup to zAware
 - Partition failure – Switchover to an alternate zAware with backed up copy of data
- Replication is not handled by zAware (Use IBM FlashCopy, DFSMS XRC, PPRC, ...)
- Manage the primary devices and the backup devices as separate, but equivalent sets
 - Same number of devices, same sizes



Security set up

SSL

- To secure browser communication, request an SSL cert from a CA, and import it
- zAware has function to Generate Certificate Signing Request and import a certificate

LDAP

- User authentication via existing LDAP repository
- Alternatively, use a local file-based repository

Role mapping

- Search
- Add users or groups to **Admin** or **User** role

Operating Requirements - (*REMINDER*) z/OS Monitored Clients

- System z servers supported as IBM zAware monitored clients
 - zEC12
 - zBC12
 - IBM zEnterprise™ 196 (z196) or z114,
 - IBM System z10™ EC or BC
 - Prior generations that meet the OS and configuration requirements

- Running z/OS 1.13 + PTFs or z/OS 2.1
 - *APAR OA38747*
 - *APAR OA38613*
 - *APAR OA39256*
 - *APAR OA42095*

- System needs to be configured as a monoplex, system in a multisystem sysplex, or a member of a parallel sysplex
- Using operations log (**OPERLOG**) as the hardcopy medium
- Sysplex name + system name must uniquely identify system
- Requires an OSA or IEDN or HiperSocket for IP network connection with zAware

z/OS monitored system set up

- Configure network connection to zAware
 - TCP/IP profile, DNS, Resolver, firewall settings
- Configure **z/OS logger** to send data to zAware
 - Give IXGLOGR a z/OS UNIX segment for TCP/IP connectivity
 - ADDUSER IXGLOGR OMVS(UID(xxxx) HOME('/'))
 - From a user with SAF update access to IXGZAWARE_CLIENT resource in the FACILITY class
 - Create **IXGCNFxx** parmlib member for logger
 - Sample in **SYS1.SAMPLIB(IXGCNFX)**
 - The **ZAI** statement contains parameters for IBM zAware
 - **SERVER**(*host_name* | *IP_address*)
 - **PORT**(*number*) Port must be 2001
 - Log stream buffer settings
 - Add **IXGCNF=xx** to IEASYSxx parmlib member

z/OS monitored system - logger config

- Update the OPERLOG log stream to add:
 - **ZAI(YES)**
 - **ZAIDATA('OPERLOG')**
- **SET IXGCNF=xx** to dynamically pick up the logger settings
- **DISPLAY LOGGER,STATUS,ZAI,VERIFY** to verify the config


```
ZAI LOGSTREAM CLIENTS: AVAILABLE
BUFFERS IN USE: 00 GB 0000 MB
ZAI VERIFY INITIATED, CHECK FOR MESSAGES IXG37X, IXG38X
...
IXG380I ZAI LOGSTREAM CLIENT ESTABLISHED
FOR DISPLAY ZAI,VERIFY
```
- Start sending to zAware Also, defines the *plex.system* to zAware

SETLOGR FORCE,ZAICONNECT,LSNAME=SYSPLEX.OPERLOG

```
IXG651I SETLOGR FORCE ZAICONNECT COMMAND ACCEPTED FOR
LOGSTREAM=SYSPLEX.OPERLOG
IXG386I ZAI LOGSTREAM CLIENT CONNECT ATTEMPT IN PROGRESS FOR LOGSTREAM
SYSPLEX.OPERLOG
STATUS: ATTEMPTING SOCKET CREATE
...
IXG380I ZAI LOGSTREAM CLIENT ESTABLISHED FOR LOGSTREAM SYSPLEX.OPERLOG
```

Priming zAware – Bulk Load from z/OS

- Prior SYSLOG data may be sent to IBM zAware
- Reduces the time to build a model, and begin analysis
- Data sets should not exceed 90 days earlier than today
- Bulk load may be run from any z/OS system configured for IBM zAware

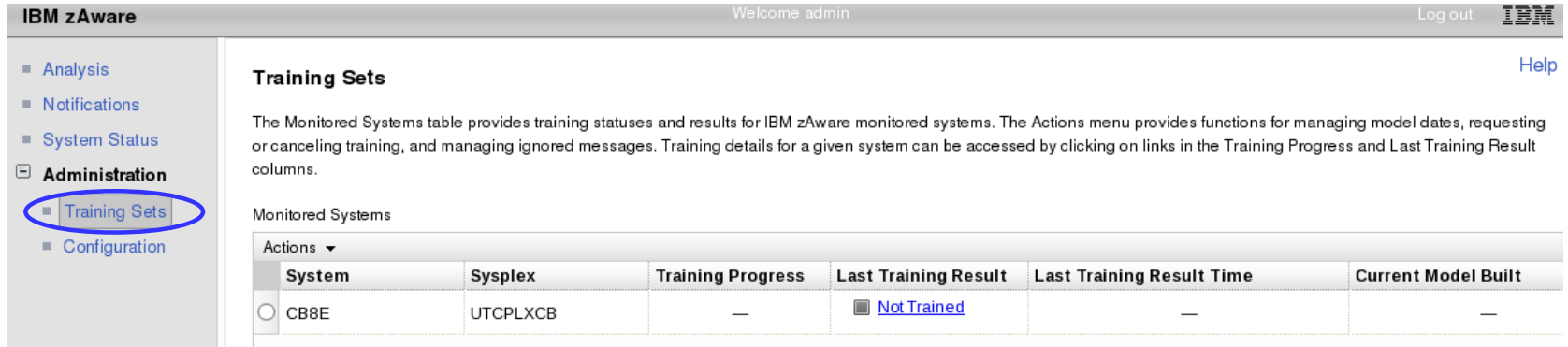
- Copy SYS1.SAMPLIB(AIZBLK) JCL to your JCL and modify
–See instructions in the file
- Copy SYS1.SAMPLIB(AIZBLKE) REXX to your SYSEXEC


- Run bulk load for a small set of data to verify config
- Run bulk load for one plex at time

Priming zAware – zAware GUI

- Recommended to bulk load all logs before **assigning** to the appropriate **sysplex**
 - Connections are terminated during assignment

Training a model



IBM zAware Welcome admin Log out 

Help

Administration

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

Training Sets


The Monitored Systems table provides training statuses and results for IBM zAware monitored systems. The Actions menu provides functions for managing model dates, requesting or canceling training, and managing ignored messages. Training details for a given system can be accessed by clicking on links in the Training Progress and Last Training Result columns.

Monitored Systems

System	Sysplex	Training Progress	Last Training Result	Last Training Result Time	Current Model Built
<input type="radio"/> CB8E	UTCPLXCB	—	<input type="checkbox"/> Not Trained	—	—

- Actions > Request Training
 - Queued and processed asynchronously
- Once a model is built, a connected system will generate Analysis results

Notifications

- zAware messages for asynchronous events
 - Storage, Training, Bulk load, ...
- Viewable by all users
- Persistent, until removed by an admin, or partition is re-activated.
- New ones indicated by  in header





IBM zAware
Welcome admin

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

Notifications

Notification messages

Actions ▾

<input type="checkbox"/>	Message ID	Message Text	Message Date/Time
<input type="checkbox"/>	 AIFP0003I	Storage configuration has started adding device 4860.	Tue Jan 15 2013 14:48:59 GMT-0500 (EST)
<input type="checkbox"/>	 AIFP0004I	Storage configuration has completed adding device 4860.	Tue Jan 15 2013 14:49:01 GMT-0500 (EST)
<input type="checkbox"/>	 AIFP0003I	Storage configuration has started adding device 4861.	Tue Jan 15 2013 14:49:01 GMT-0500 (EST)
<input type="checkbox"/>	 AIFP0004I	Storage configuration has completed adding device 4861.	Tue Jan 15 2013 14:49:02 GMT-0500 (EST)

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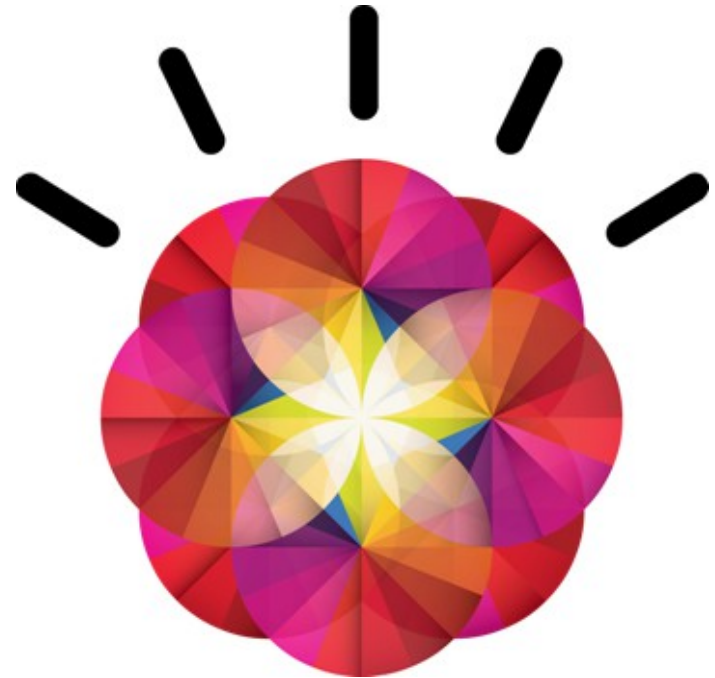
Summary

IBM zAware – Smarter Computing Needs Smart Monitoring

IBM zAware is a self learning, integrated solution that analyzes messages in near real time to provide insight into the behavior of your system.

Benefits

- Helps diagnose problems quickly and more accurately to **improve service recovery time**
- **Reduces risk** by identifying “what changed” after maintenance.
- Helpful when problems involve multiple teams
- Easy-to-use graphical interface
- Integrates with existing alerting environment



References

- IBM System z Advanced Workload Analysis Reporter (IBM zAware) Guide SC27-2623-00
<http://www.ibm.com/systems/z/os/zos/bkserv/r13pdf/#E0Z>
or IBMResourceLink Library → zEC12 → Publications
- Redbook: Extending z/OS System Management Functions with IBM zAware SF24-8070-00
<http://www.redbooks.ibm.com/abstracts/sg248070.html?Open>
- **IBM Mainframe Insights blog** **www.ibm.com.systemz**
 - The Journey to IBM zAware
http://www.ibm.com/connections/blogs/systemz/entry/zaware?lang=en_us
 - zAware Installation and Startup
http://www.ibm.com/connections/blogs/systemz/entry/zaware_installation?lang=en_us
 - Top 10 Most Frequently Asked Questions About IBM zAware
http://www.ibm.com/connections/blogs/systemz/entry/zawarefaq?lang=en_us
 - IBM zAware Demo
http://www.ibm.com/connections/blogs/systemz/entry/zawaredemo?lang=en_us

Additional References

- Available from “Books” group of Classic Style UI and the Welcome page of the Tree Style UI (& IBM Resource Link: Library->zEC12->Publications)
 - IBM SC28-6919: Hardware Management Console Operations Guide (Version 2.12.0)
 - IBM SC28-6920: Support Element Operations Guide (Version 2.12.0)
 - IBM SB10-7030: Application Programming Interfaces
 - IBM SC28-2605: Capacity on Demand User’s Guide
 - IBM SB10-7154: Common Information Model (CIM) Management Interfaces
 - IBM SB10-7156: PR/SM Planning Guide
 - IBM SA22-1088: System Overview

- Available from IBM Resource Link: Library->zEC12->Technical Notes
 - System z Hardware Management Console Security
 - System z Hardware Management Console Broadband Remote Support Facility
 - System z Activation Profile Update and Processor Rules