



IT Operations Analytics Solutions for z Systems

Session 17931 Lunch & Learn



*Paul Smith (Smitty) (paulmsm@us.ibm.com)
IBM z Systems Service Management / zAnalytics Architect*



**SHARE is an independent volunteer-run information technology association
that provides education, professional networking and industry influence.**



Topics for Today

- The IT Challenge
- IBM zAware and Anomaly Detection
- Capacity Management Analytics – Forecasting
- Log Analysis – Search and Analyze

The Challenge

Find the right needle in one of many haystacks – QUICKLY!





404 ERROR



It's SLOW!!





Where do I start??

*Centralized,
Distributed, Cloud,
Resilient Architectures
Increase Data Volume*

**Everything is
“green”**

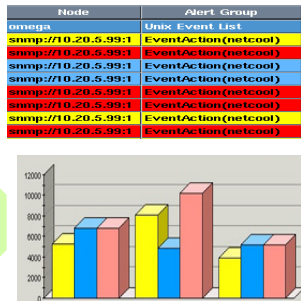
**Logs,
Traces,..**

Core files

[10/9/12
5:51:38:295 GMT
+ 05:30] 0000006a
servlet E
com.ibm.ws.webcont
ainer.servlet.Servlet
Wrapper service
SROB000001110
00011100110001
11110000110001
11111100011001
11000111

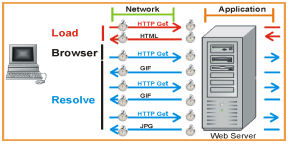
Events

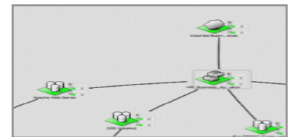
Metrics



Transaction

Config





Analytics – Turning data into information and information into ‘Insight’!

- Is your environment becoming more complex every day?
- Do you want to be more proactive?
- Would you like to be aware of new problems before they occur?
- Do your existing tools give you access to the data that you need?
- How much manual work are you doing to gather and correlate data? And how much time is it taking you to diagnose problems?
- Would you like to have tools that enable you to predict when you will need more capacity?
- Would you like to have tools that enable the next generation?

Move from reactive to proactive!

Avoid manual analysis and correlation of data!

Let analytics do the heavy lifting!

IBM is focused on managing end-to-end analytics for improved performance and workload management

Predict:

- Pro-Active Outage Avoidance
- Predict problems before they occur

Search:

- Quickly search large volumes of data from a single search bar
- Perform log and performance analysis while searching
- Correlate messages from multiple logs for end-to-end problem diagnosis

Optimize:

- Improve performance across IT Infrastructure

IBM Analytics solutions for System z

Proactive Outage Avoidance

Predict

OMEGAMON & NetView
w/ IBM zAware

Faster Problem Resolution

Search

IBM Operations
Analytics for z Systems

Optimized Performance

Optimize

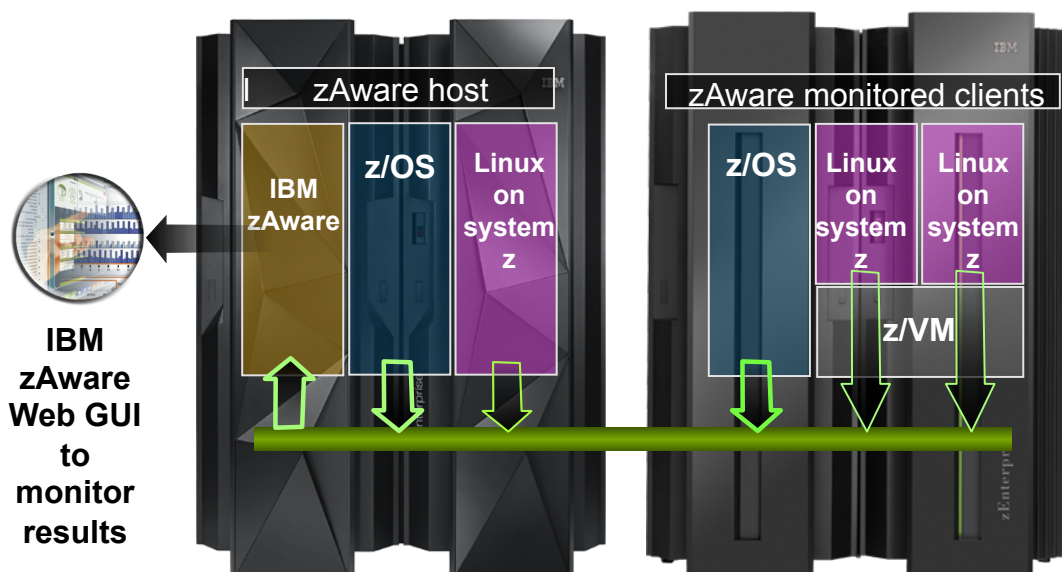
IBM Capacity
Management Analytics
(CMA)

IBM System z Advanced Workload Analysis Reporter (IBM zAware)



Using Analytics to Improve z Availability

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



- Runs in a special purpose firmware partition on z Systems
- Monitors z Systems running z/OS v1.13 +PTFs or later

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

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

SHARE
in Orlando **2015**



IBM zAware – Early Problem Identification

IBM zAware runs as a **firmware appliance** on the zEC12 and z13

- zAware provides z/OS and Linux on System z Message log analysis and anomaly detection in a firmware partition for faster diagnosis and improved availability.
- Logs are fed into zAware and analyzed in near-real time

■ Identify a possible z/OS incident

▶ *Which image is having a potential problem?*

- Examines unique messages
- High score generated by unusual messages or message patterns

▶ *When did this unusual behavior start?*

- For a selected 10 minute interval either the current 10 minute interval or past intervals
 - **Which messages are unusual?**
 - **How often did the message occur?**
 - **When did the message start to occur?**

▶ *Were similar messages issued in the past?*

- Understands message characteristics and message patterns

■ Identify behavior after a change has been made

▶ *Are unusual messages being issued after a change ?*

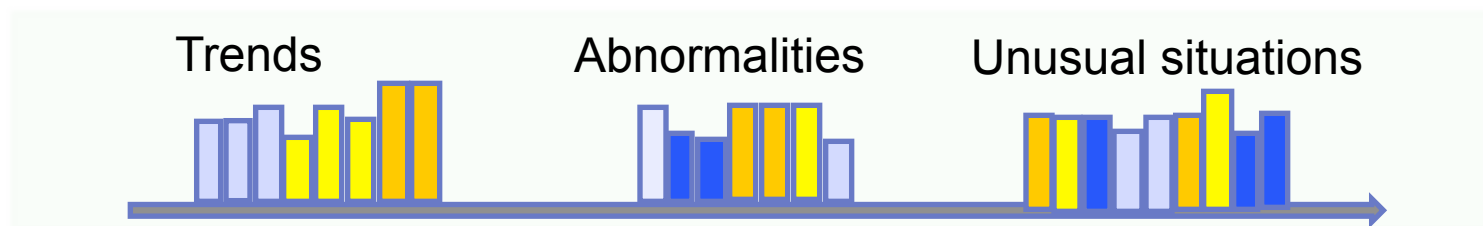
- New software levels (operating system, middleware, applications)
- Updated system settings or system configurations

■ Diagnose intermittent problems

▶ *Are new unusual messages being issued in advance of the problem?*

- Are more messages issued then expected?
- Are messages issued out of a normal pattern?

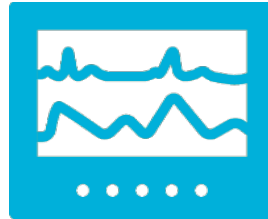
Appeals to IT VP, Support, Operations, Systems Staff, Service Centers



IBM Capacity Management Analytics

Cost effective, optimal use of IT Infrastructure capacity: Today, tomorrow, beyond

A single, integrated cost-effective solution for zSystems & Distributed Infrastructures



- System management
- Problem identification and resolution
- Capacity forecasting and monitoring
- Software Cost Analysis

Manage the complete time horizons



- Historical reporting of past performance
- Forecasting future requirements
- Real-time anomaly detection

Jump-start your time to value and ease implementation



- Built on IBM's ease-of-use analytics
- Includes prepackaged, interactive reports
- Optional services and education

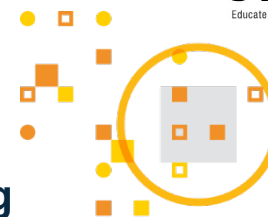
Questions capacity management can answer

System and workload characteristics, performance and trending



- How is my environment performing?
- What's driving the demand on my capacity?
- Is my IBM Workload Manager environment properly tuned?
- Am I achieving my performance goals?
- Are capacity constraints causing bottlenecks and what is being impacted?
- What anomalies occurred that impacted resource usage, performance or both?

System and workload optimization, prediction and forecasting



- Do I have windows of available capacity to which I can move workloads and applications in order to alleviate bottlenecks during peak processing?
- Can I better balance my resource usage across servers, logical partitions (LPARs) and virtual machines (VMs) and defer a capacity upgrade?
- Do I have enough available capacity to add new workloads and applications to my current environment?
- When will I need to upgrade capacity in the future to support the planned addition of new workloads and applications?

IBM Operations Analytics for z Systems Solution Branding – Name Change



This solution was previously branded as 'IBM SmartCloud Analytics - Log Analysis'.

The support to search and analyze z/OS logs **was initially provided in March, 2014** under the following product names:

- IBM SmartCloud Analytics - Log Analysis z/OS - Insight Packs – SYSLOG V1.1'
- IBM SmartCloud Analytics - Log Analysis z/OS - Insight Packs - IBM WebSphere® Application Server V1.1

Subsequent releases were named with the SmartCloud brand until April, 2015 when Version 2 of the product was rebranded to

5698-AAP IBM Operations Analytics for z Systems V2.1.0

Note that the distributed product is now named
IBM Operations Analytics – Log Analysis

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



IBM Operations Analytics for z Systems



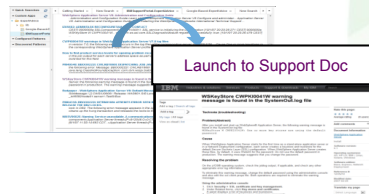
Accelerate problem isolation and identification Reduce mean time to repair

- **Analyse** various types data (logs and metrics) from multiple sources (mainframe and distributed)
- **Locate problems** from system, configuration, software logs and performance metrics using **rapid index search** and **pattern analysis**
- **Isolate issues** across various domains including OS, Middleware, applications, etc
- **Leverage Expert Advice** via links to support documentation and operations notes to resolve problems quickly
- **Visualize** search results with analytic tools to **rapidly determine root cause**
- **Out-of-the-box analysis and insights** for z/OS, WebSphere, DB2, CICS, IMS, MQ, Network as well as distributed systems
- **Fully customizable** to meet your needs



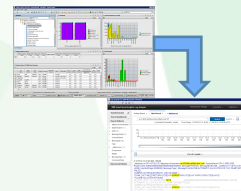
SEARCH

ANALYZE



RESOLVE

INTEGRATE

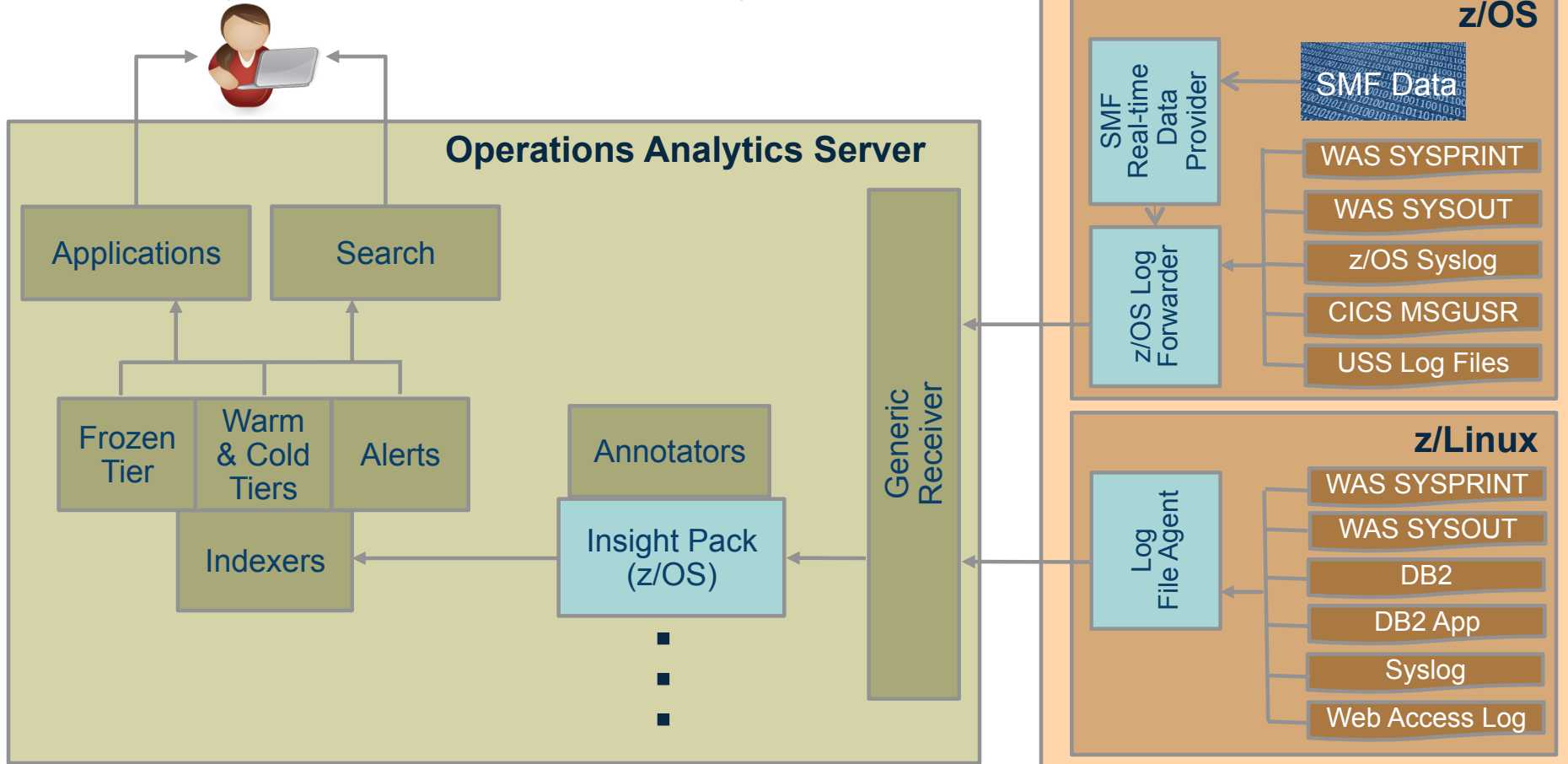


in 2015

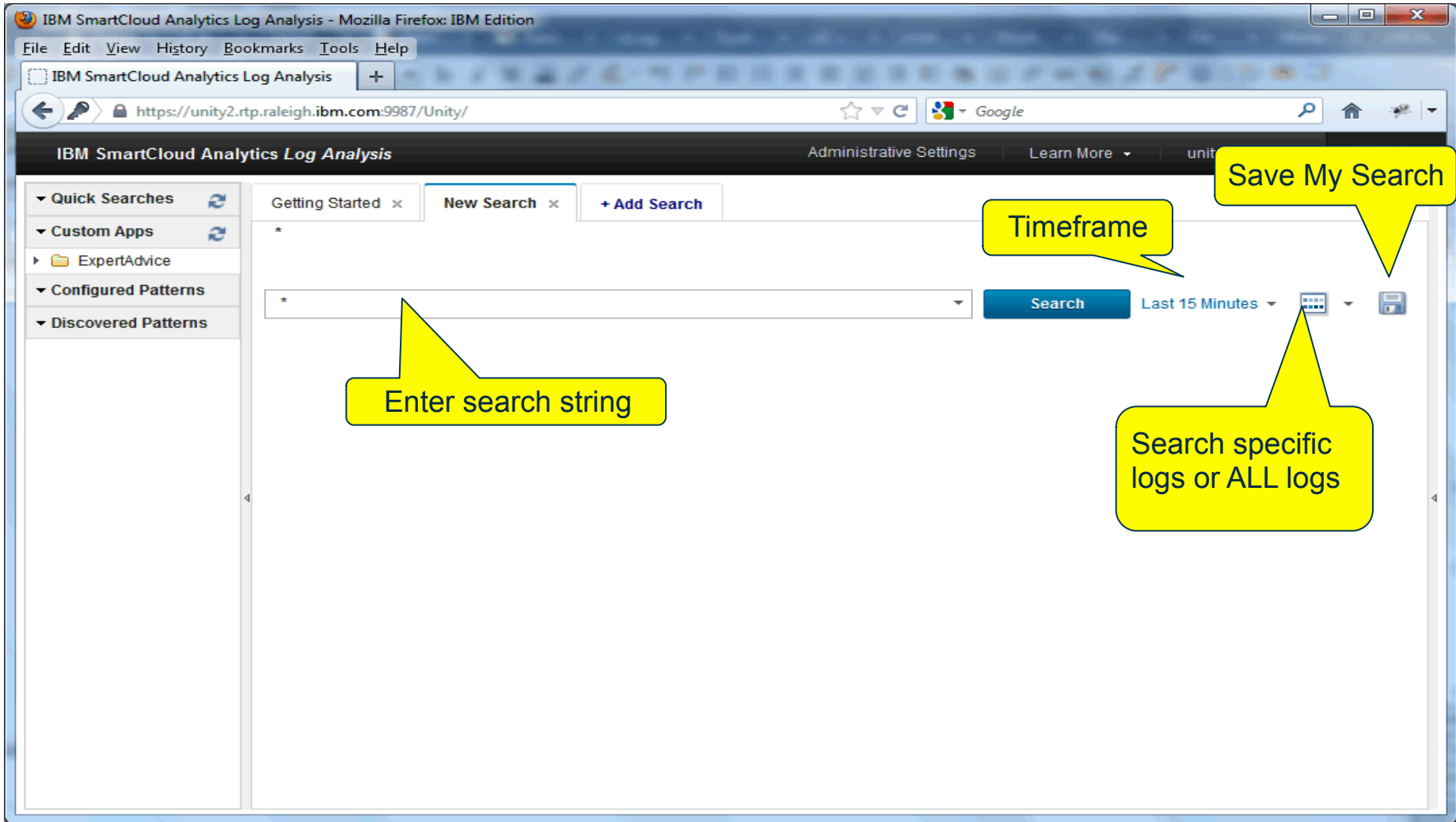
- Network Insights
- Event notification
- Hadoop Support
- Analysis of Performance Metrics (new SMF real time Data Provider)
- Integration with ITM/OMEGAMON and Netcool Operations Insight, Service Management Unite, Trouble Ticketing

IBM Operations Analytics for z Systems

- The IBM Operations Analytics server is installed on z System (or x System) running Linux (64 bit)
- z/OS Insight Packs are installed on the IBM Operations Analytics server
- z/OS Log Forwarder / SMF Data Provider installed on each z/OS LPAR where you want to provide Search and Analysis

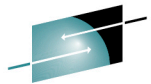


Simple Search Interface – Easy to Customize



The screenshot shows the IBM SmartCloud Analytics Log Analysis web application running in Mozilla Firefox. The browser address bar displays <https://unity2.rtp.raleigh.ibm.com:9987/Unity/>. The application interface includes a left sidebar with navigation options: Quick Searches, Custom Apps, ExpertAdvice, Configured Patterns, and Discovered Patterns. The main content area features a search interface with a search bar containing an asterisk (*), a 'Search' button, and a 'Last 15 Minutes' timeframe selector. A 'Save My Search' button is located in the top right corner. Yellow callout boxes highlight the search bar with the text 'Enter search string', the timeframe selector with 'Timeframe', and the 'Save My Search' button with 'Save My Search'. Another callout box points to the search bar with the text 'Search specific logs or ALL logs'.

WebSphere Application Server Search – java Exception pattern



SHARE
Educate • Network • Influence

This is just one of many examples

The screenshot shows the IBM SmartCloud Analytics Log Analysis interface. On the left, a sidebar lists 'Quick Searches' with 'WAS_TVT7008' selected, and 'Configured Patterns' including 'javaException (5)'. The main panel shows a search for 'javaException:=="org.apache.openjpa.persistence.PersistenceException"' with a 'Search' button. A timeline graph shows a peak in events at 3:26 AM. Below the graph, a table displays search results with columns: exceptionPackageName, msgClassifier, _datasource, and threadID.

Search WAS log

Timeframe of problem

Log analysis displays number of java exceptions during this timeframe

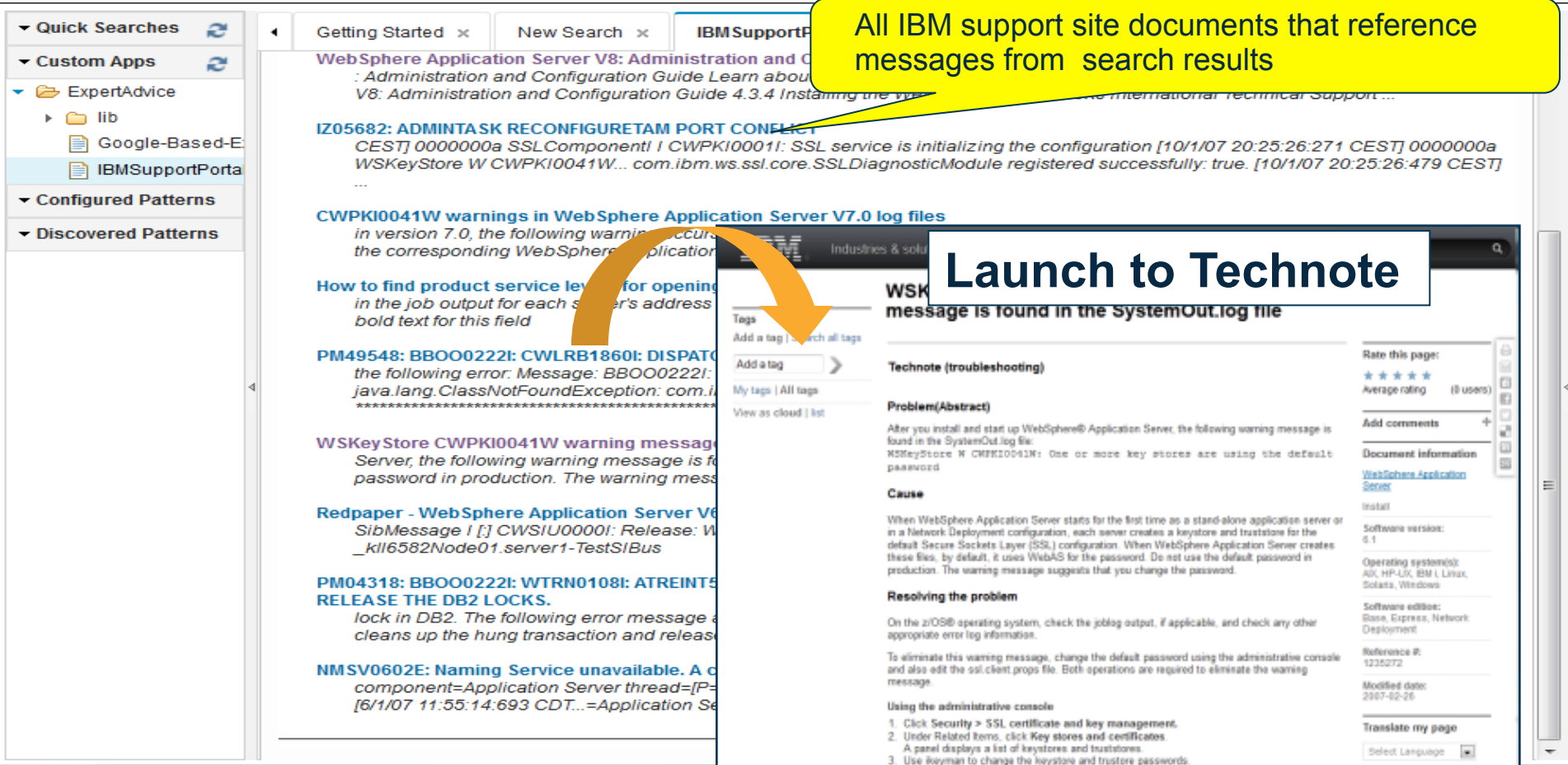
Search results

exceptionPackageName	msgClassifier	_datasource	threadID
	BBOO0222I	TVT7008_SYSOUT	0X00000023
	BBOO0222I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BBOO0220E	TVT7008_SYSOUT	0X00000030
	BBOO0222I	TVT7008_SYSPRT	
	FFDC1003I	TVT7008_SYSOUT	0X00000015
	BBOJ0011I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BBOO0220E	TVT7008_SYSOUT	0X00000030
	BBOO0222I	TVT7008_SYSPRT	
	BBOO0222I	TVT7008_SYSOUT	
	BBOJ0051I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BBOO0220E	TVT7008_SYSOUT	0X00000030
	BBOJ0077I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BBOO0220E	TVT7008_SYSOUT	0X00000030
	BBOJ0077I	TVT7008_SYSPRT	

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Quickly and easily access IBM Support Portal based Expert Advice from Log Analysis

Search for expert advice with the click of a button



Quick Searches
Custom Apps
ExpertAdvice
lib
Google-Based-E
IBMSupportPorta
Configured Patterns
Discovered Patterns

Getting Started x New Search x IBMSupportP

WebSphere Application Server V8: Administration and Configuration Guide Learn about WebSphere Application Server V8: Administration and Configuration Guide 4.3.4 Installing the WebSphere Application Server V8 International Technical Support ...

IZ05682: ADMINTASK RECONFIGURETAM PORT CONFLICT
CEST] 0000000a SSLComponentI | CWPki00011: SSL service is initializing the configuration [10/1/07 20:25:26:271 CEST] 0000000a
WSKeyStore W CWPki0041W... com.ibm.ws.ssl.core.SSLDiagnosticModule registered successfully: true. [10/1/07 20:25:26:479 CEST]
...

CWPki0041W warnings in WebSphere Application Server V7.0 log files
in version 7.0, the following warning occurs:
the corresponding WebSphere Application Server log file

How to find product service level for opening
in the job output for each server's address
bold text for this field

PM49548: BBOO0222I: CWLRB1860I: DISPATCH
the following error: Message: BBOO0222I:
java.lang.ClassNotFoundException: com.ibm.

WSKeyStore CWPki0041W warning message
Server, the following warning message is found
password in production. The warning message

Redpaper - WebSphere Application Server V6
SibMessage I [.] CWSIU0000I: Release: W
_kll6582Node01.server1-TestSIBus

PM04318: BBOO0222I: WTRN0108I: ATREINT
RELEASE THE DB2 LOCKS.
lock in DB2. The following error message
cleans up the hung transaction and releases

NMSV0602E: Naming Service unavailable. A component=Application Server thread=[P=6/1/07 11:55:14:693 CDT...]=Application Se

All IBM support site documents that reference messages from search results

Launch to Technote

WSK
message is found in the SystemOut.log file

Tags
Add a tag | Search all tags
Add a tag
My tags | All tags
View as cloud | list

Technote (troubleshooting)

Problem(Abstract)
After you install and start up WebSphere® Application Server, the following warning message is found in the SystemOut.log file:
WSKeyStore W CWPki0041W: One or more key stores are using the default password

Cause
When WebSphere Application Server starts for the first time as a stand-alone application server or in a Network Deployment configuration, each server creates a keystore and truststore for the default Secure Sockets Layer (SSL) configuration. When WebSphere Application Server creates these files, by default, it uses WebAS for the password. Do not use the default password in production. The warning message suggests that you change the password.

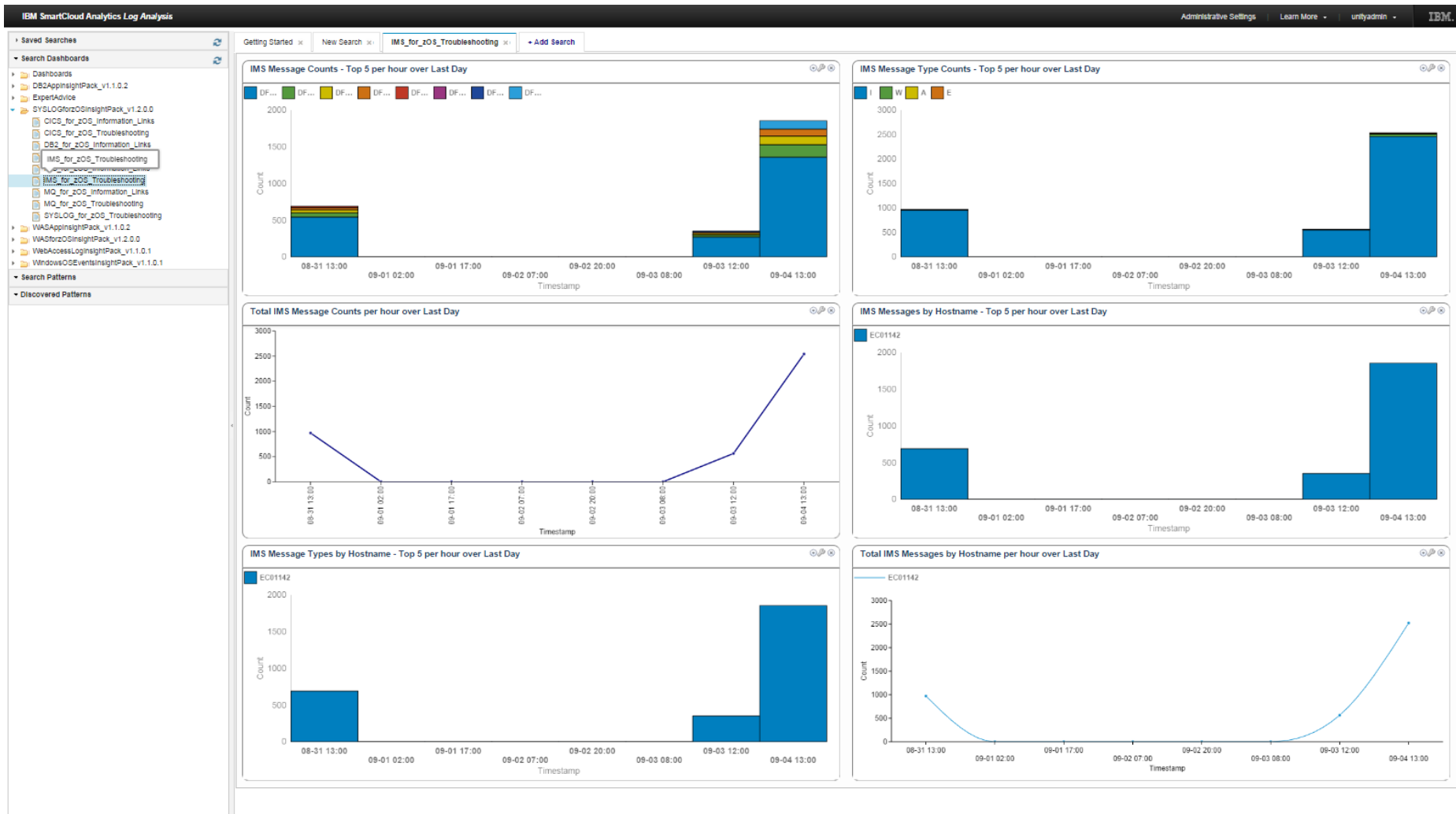
Resolving the problem
On the z/OS® operating system, check the joblog output, if applicable, and check any other appropriate error log information.
To eliminate this warning message, change the default password using the administrative console and also edit the ssl.client.props file. Both operations are required to eliminate the warning message.

Using the administrative console
1. Click Security > SSL certificate and key management.
2. Under Related Items, click Key stores and certificates.
A panel displays a list of keystores and truststores.
3. Use keyman to change the keystore and truststore passwords.

Rate this page:
Average rating (8 users)
Add comments
Document information
WebSphere Application Server
Install
Software version:
6.1
Operating system(s):
AIX, HP-UX, IBM i, Linux, Solaris, Windows
Software edition:
Base, Express, Network Deployment
Reference ID:
1235272
Modified date:
2007-02-26
Translate my page
Select Language

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Sample dashboard – View your log and metric data however you like



Complete your session evaluations online at www.SHARE.org/Orlando-Eval

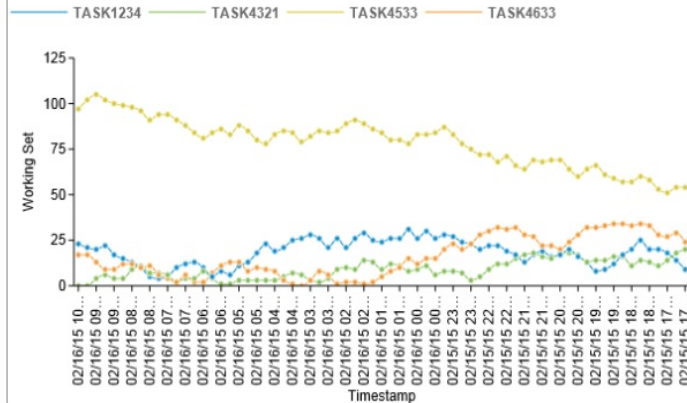
Analyze your SMF data AND your log data for a complete view of the enterprise

Getting Started × New Search × SMF30 for z/OS Dashboard × + Add Search

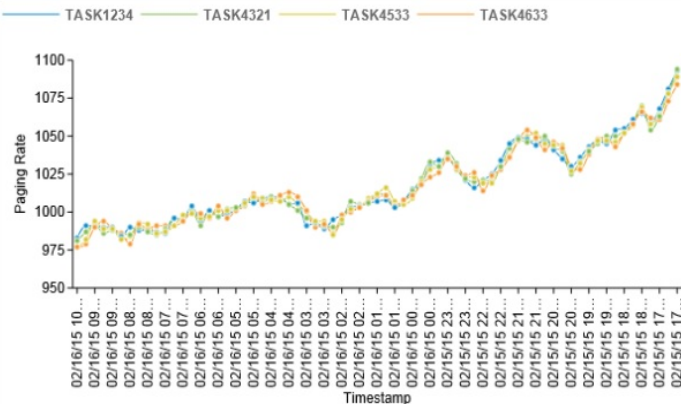
CPU Utilization by Task over Last Day



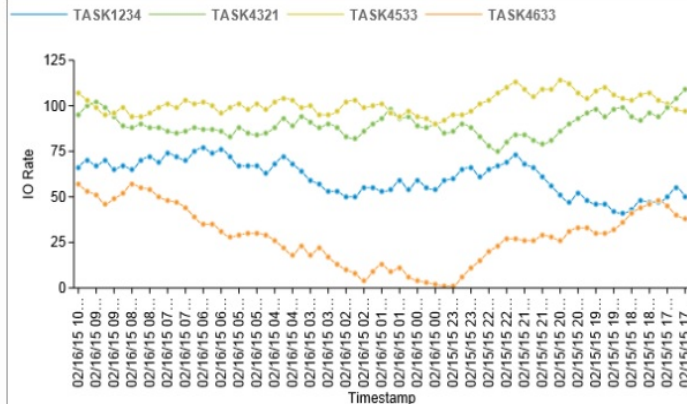
Working Set size by Task over Last Day



Paging Rate by Task over Last Day

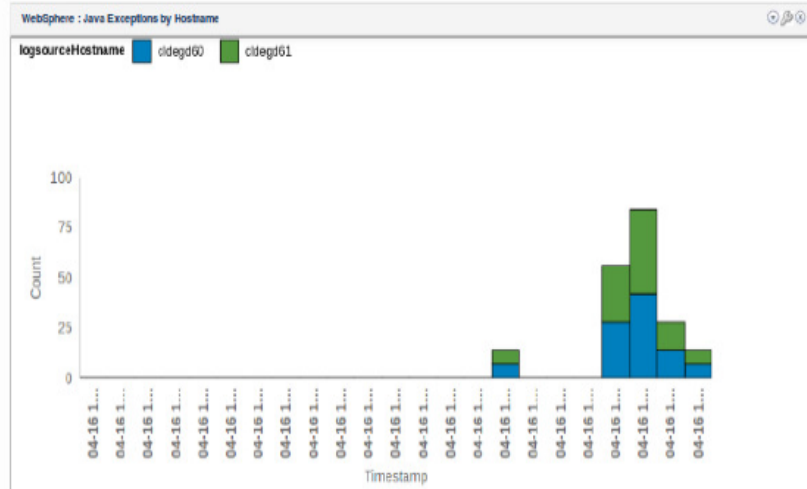
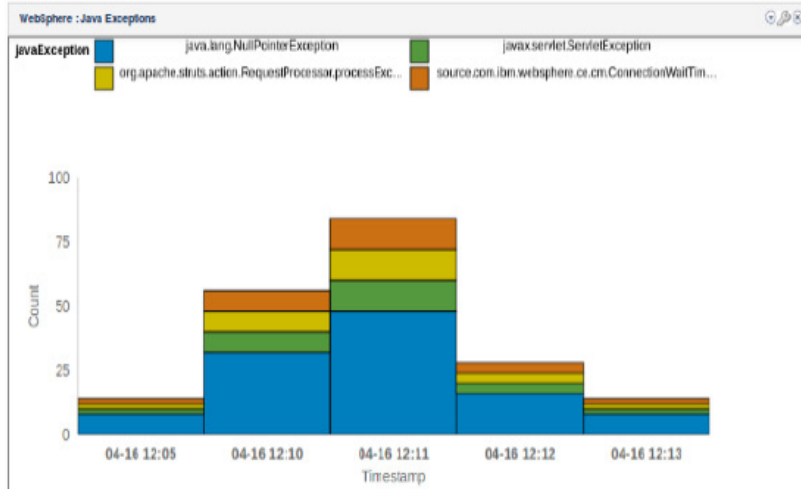
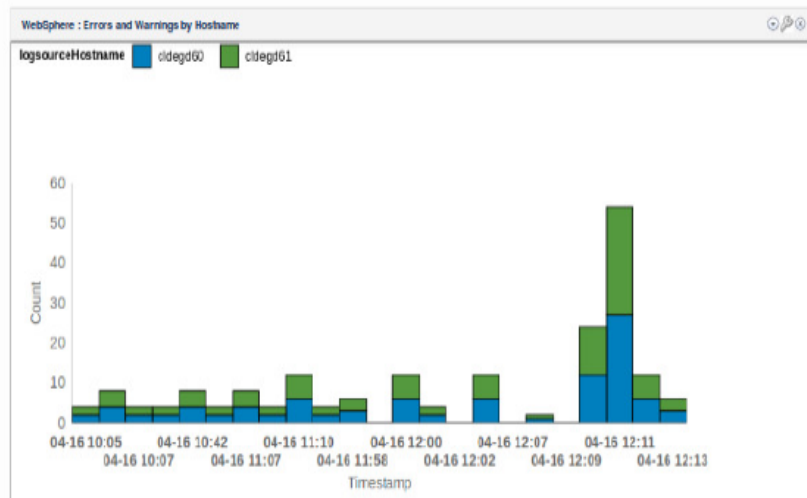
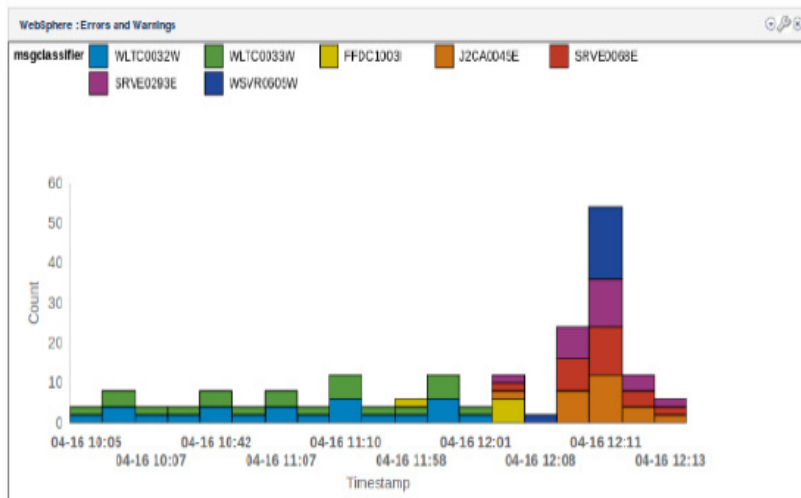


IO Rate by Task over Last Day



Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Multiple charting options – WebSphere Example

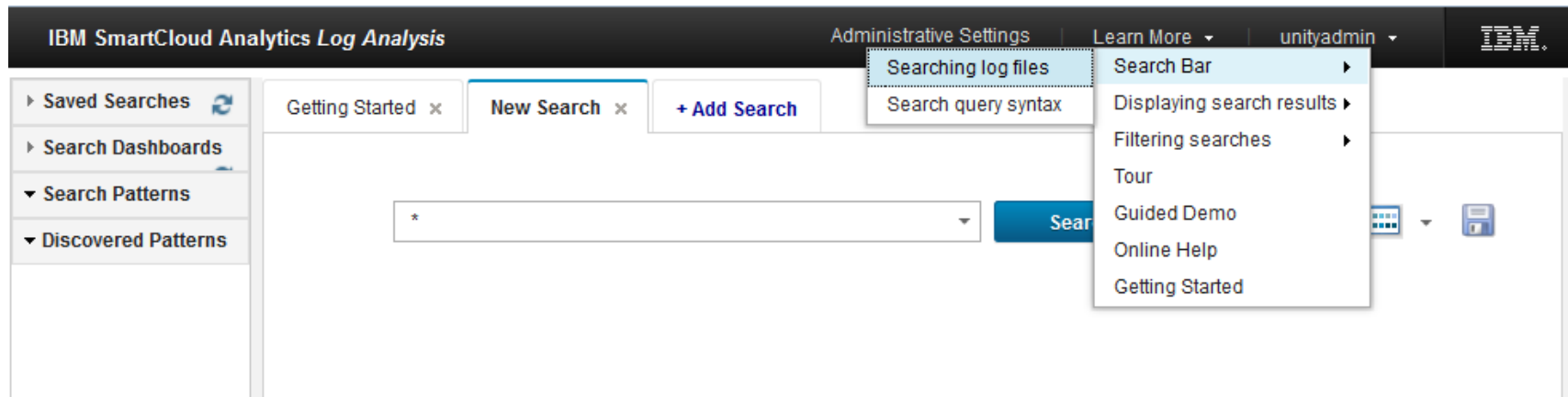


Create your own – Queries, Dashboards, Feeds



The Out-of-the-Box capabilities provide immediate value.
Additionally, IOA can easily be tailored to your specific needs.

- Perform simple free form searches using the standard set of search keywords and operators
- Build complex queries with range searches and *DateMath* functions
- To learn more, consult Online Help available from the **Learn More** → **Search Bar** → **Search query syntax** menu:



- BYOD – Bring your own Data – The z/OS Log Forwarder can be configured to forward your text logs to enable the Search capability.
- BYOIP – Build your own Insight Pack

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

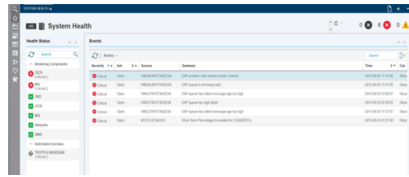
Network Operations Insight + IOA – Search and Analyze Events

Event Analytics – for Seasonal Event Identification

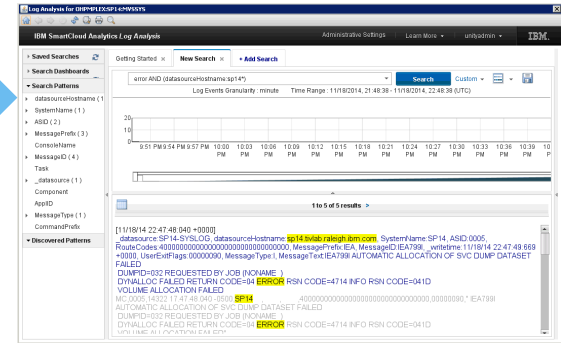
- Easily identify ‘related’ Events that may be candidates for suppression
- Identify “difficult to spot” seasonal events that often result in regular periodic problems
- Leverage visualizations that help you quickly isolate more severe and significant problems.



Log Analysis Integration with existing Service Management Solutions



**Service Management
Unite**



**Search and
analyze logs,
metrics and
events**



**Event Management
OMNibus/Netcool
Operations
Insight**



**Problem
Determination
NetView
CANZLOG**



**Performance
Monitoring
ITM/OMEGAMON**

Surface anomalies



IBM zAware



**POWERful tools integrate to ensure
performance and high availability
of your Enterprise.**

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Send us your logs!

- Request a product demo using logs from your own test, development or production environments
 - IBM will load your logs into an IBM Operations Analytics server, then demo the results back to you
 - A secure, dedicated drop box will be assigned to you
 - You will be sent detail upload instructions via email
 - Any file uploaded will be automatically moved to a dedicated IBM Operations Analytics environment within 24 hours
 - All log data will be purged from the IBM Operations Analytics environment within 48 hours after the demo event

To request your hosted demo, visit:

<http://services-useast.skytap.com:18280/WebDemo/>

Or take the product for a test drive using IBM-provided sample data at:

<http://zscala.ibmzoperationsanalytics.com:9182/ZLALiveDemo>

IOA for z Systems Early Access and Beta Program



Announcing the **IBM Operations Analytics for z Systems Early Access and Beta Program!**

In 2015, we are building on the strong foundation established over the past year as we develop and implement our product roadmap.

We are looking for customers and business partners worldwide who would like to help influence our roadmap and test new capabilities. The program is open-ended; interested participants may join at any time and stay on as long as they wish. That said, it is our desire to establish a set of “customer sponsor” relationships that will become instrumental in shaping the future of our offering.

To see the full program announcement, and to learn how to sign up, please visit us in our developerWorks community at:

<https://ibm.biz/BdEkZV>

Complete your session evaluations online at www.SHARE.org/Orlando-Eval

Summary

- IBM has various solutions for IT analytics that address different use cases.
 - **IBM zAware** for proactive anomaly detection and faster diagnosis
 - **Operations Analytics for z Systems** for faster problem diagnosis with search, analysis and expert advice.
 - **Capacity Management Analytics (CMA)** to enable optimal use of z Systems and Distributed Systems capacity by managing and predicting consumption of IBM® z Systems® and Distributed infrastructure resources

S'more SHARE Presentations and Demos



Monday - 12:30pm-1:30pm - Southern Hemisphere 3

Lunch & Learn - IT Operations Analytics Solutions for z Systems

Speaker: Paul Smith, z Systems Service Management Architect

Thursday – 11:15am-12:15pm - Southern Hemisphere 5

Session 17595 – Exploiting IT Log Analytics to Find and Fix Problems Before They Become Outages

Speaker: Paul Smith, z Systems Service Management Architect

Thursday – 1:45pm-2:45pm - Europe 2

Session 17442 - z/OS Log Analysis Product Shoot-Out: CorreLog, Syncsort/Splunk and IBM

Speaker: Paul Smith, z Systems Service Management Architect

Thursday – 4:30pm – 5:30pm - Southern Hemisphere 1

Session 17879 - Taking z System Resiliency to New Heights with IT Analytics

Speaker: Anuja Deedwaniya, z Systems Architect

Or come see Nisha Bonda for a Demo in the Expo area

Complete your session evaluations online at www.SHARE.org/Orlando-Eval



धन्यवाद

Hindi

多謝

Traditional Chinese

ขอขอบคุณ

Thai

Спасибо

Russian

Gracias

Spanish

Thank You

English

Obrigado

Brazilian Portuguese

شكراً

Arabic

Grazie

Italian

多谢

Simplified Chinese

Danke

German

Bedankt

Dutch

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

감사합니다

Korean