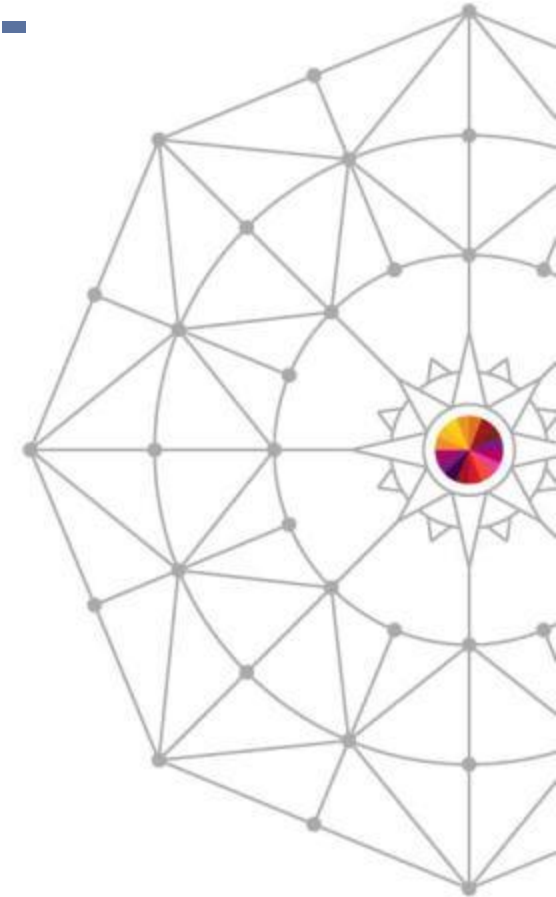


IT Analytics and Big Data - Making Your Life Easier

Paul Smith 'Smitty'
IBM Service Management Architect
Cloud and Smarter Infrastructure

Wednesday, March 12, 2014
Session # 15190



Agenda

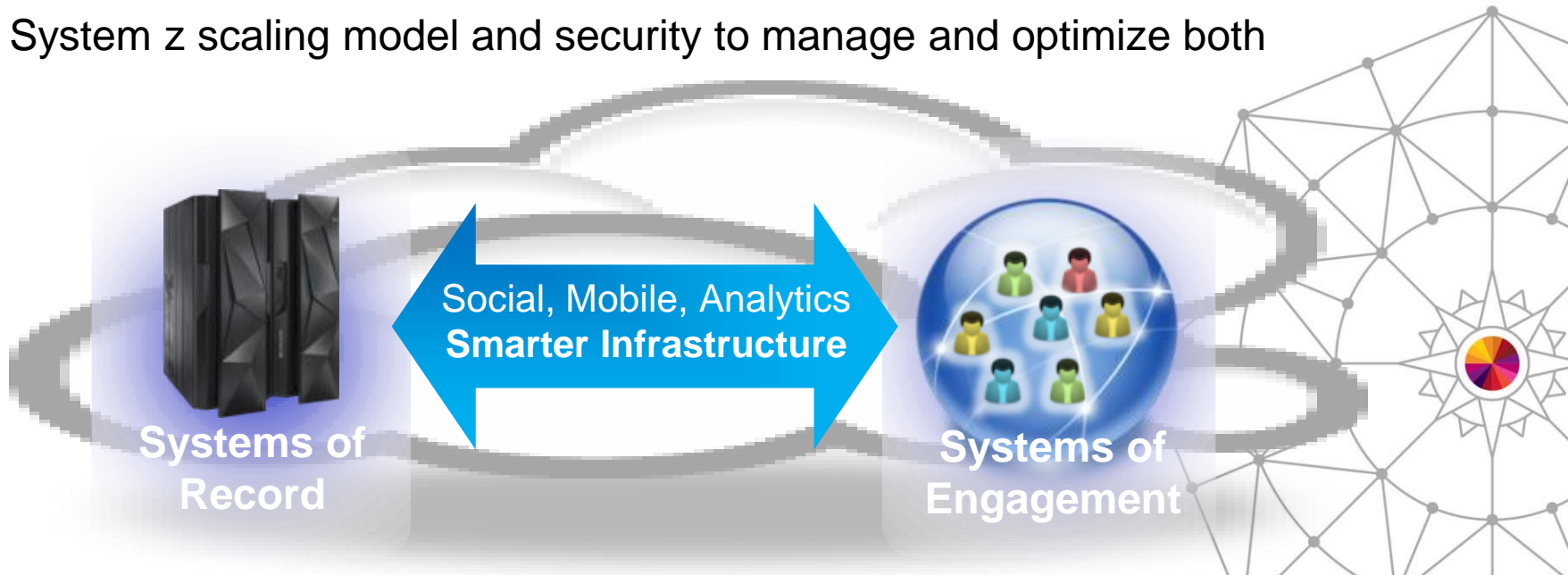


- Big Data and Customer Pain Points
- Predict, Search, Optimize
- SmartCloud Analytics – Log Analysis (z/OS Insight Packs)
 - Overview
 - Architecture
 - Demo



Rapid growth of data from next generation technologies can be supported seamlessly on System z

System z scaling model and security to manage and optimize both



- Business Transactions
- Quality of Service
- Command & Control
- Facts and data “source of truth”
- System z

- Mobile and Social
- Dynamic
- Interactions and Collaboration
- Insight, trends, analytics

Analytics for System z addresses predict, search and optimize requirements on impact from new technology



- **Much greater amount of critical IT operational data** (SMF, log, journal) than distributed-only environments.
 - Focus on problem determination and time to resolution while placing premium on availability of services and applications.
- By 2016, **20% of Global 2000 enterprises will have IT operations analytics** architecture in place, up from < 1% today, looking to integrate across their enterprise to reduce outages (Gartner).
- **90% of the Fortune 1000 companies are running z** and have 'Systems of Record' dependencies for transactional processing and data serving applications .



Client pain points and challenges

- **Takes too long to isolate, diagnose problems in applications and infrastructure.**
 - Customer environments have become very complex. Application workloads span multiple platforms and include several different diagnostic capabilities.
 - Datacenters generate a large amount of data. (performance metrics, events, infrastructure logs, application logs, configuration files, traces). **Current management systems rely on a subset of this information (metrics & events).**
- **Existing tools becoming inappropriate for management of Systems of Engagement and mobile applications.**
 - 100x to 1000x explosion in users and data flooding existing tools. (terabytes)
 - New runtimes, programming languages needing complex instrumentation to use traditional tools.
- **Critical missed information leads to outages and/or poor customer experience. Most management of problems reactive.**
 - Analyzing all information is a better indicator for predicting problems.

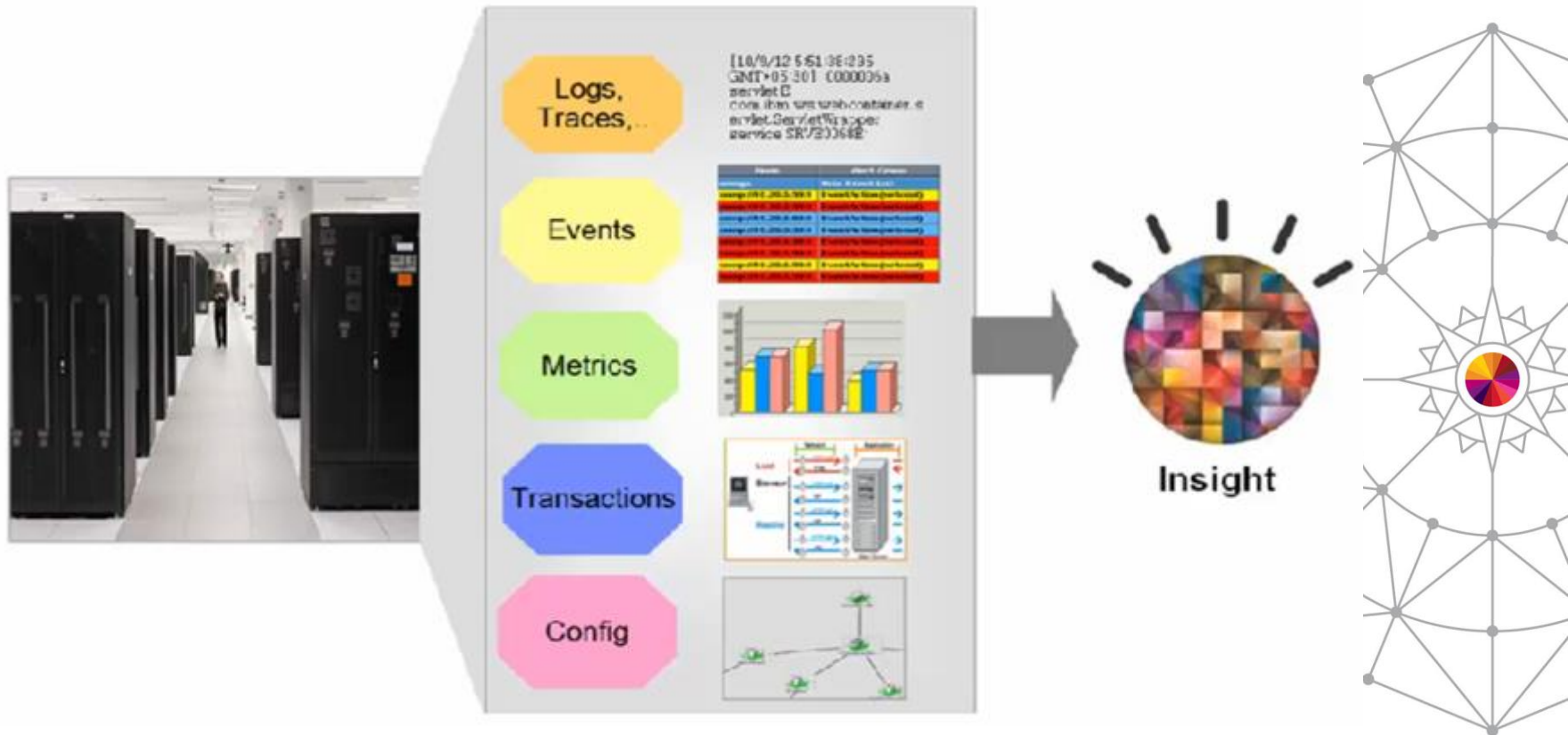


Is managing your environment like sipping from a fire hose?



Application and Infrastructure Problem Diagnosis

Operators and subject matter experts are overwhelmed with **volumes of data** that they **manually process** to determine the cause, location and scope of a problem.



- Only 3% of the data generated is operations-oriented metric data
- 97% is unstructured/semi-structured data
- An enterprise with 5000 servers generates over 1.3 TB of data per day

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

Predict:

- Pro-Active Outage Avoidance
- Predict Problems before occurrence

Search:

- Quickly analysis large volume of log data
- Match Log-files with alerts and metrics

Optimize:

- Improve Performance across IT Infrastructure

IBM Analytics solutions for System z

Proactive Outage Avoidance

Predict

- IBM SmartCloud Analytics - Predictive Insights
- OMEGAMON & NetView w/ IBM zAware

Faster Problem Resolution

Search

IBM SmartCloud Analytics -
Log Analysis

Optimized Performance

Optimize

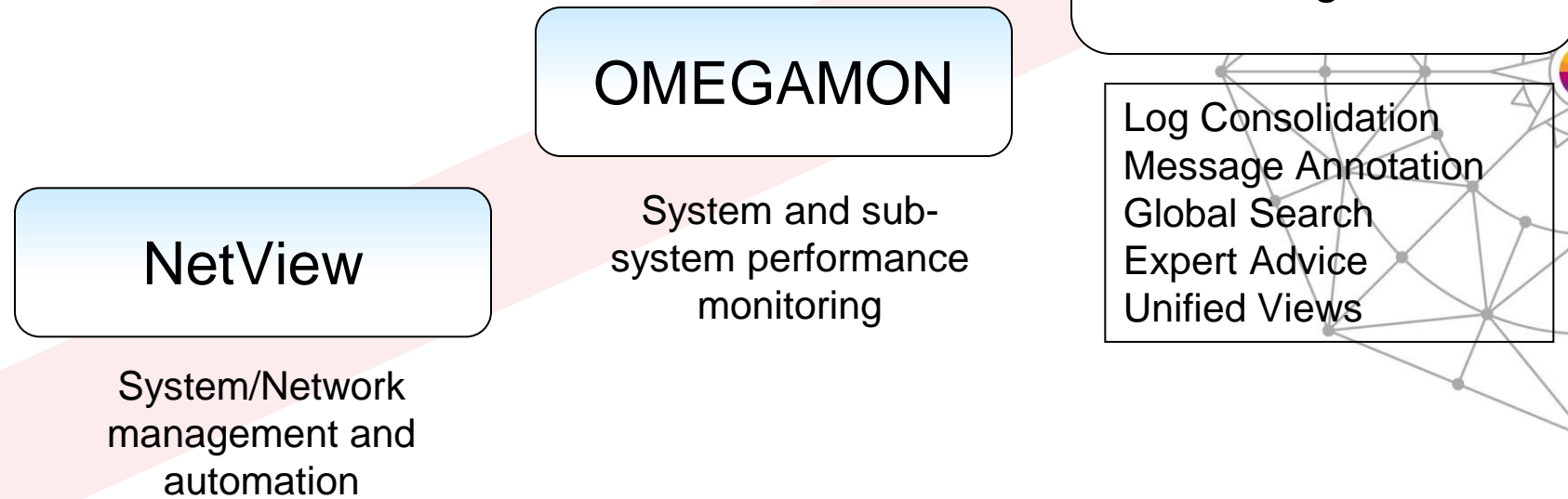
IBM Capacity
Management Analytics
(CMA)



z/OS Log Analysis Insight Pack next step in IBM value add for zEnterprise performance and availability management



- **Complete your toolbox** with advanced search capabilities
- Correlate problem information across multiple logs
- Included in SmartCloud Analytics – Log Analysis



* Log Analytics does not require NetView or OMEGAMON

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



Search for and rapidly analyze unstructured data to assist in problem identification, isolation and repair

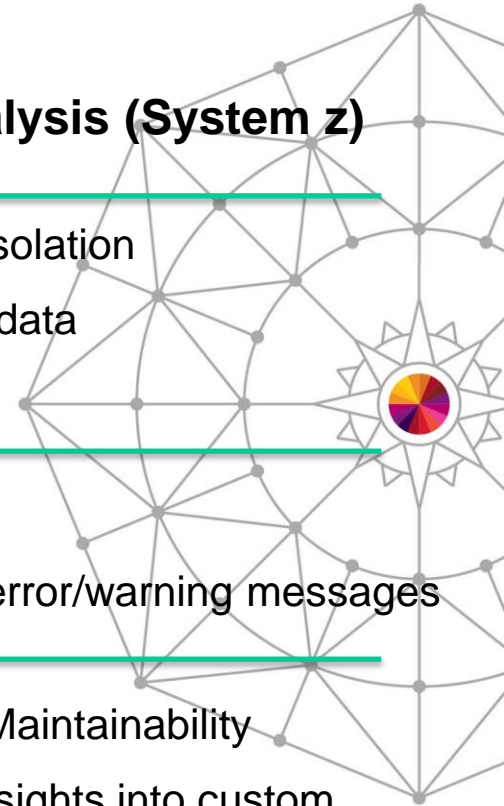


Search

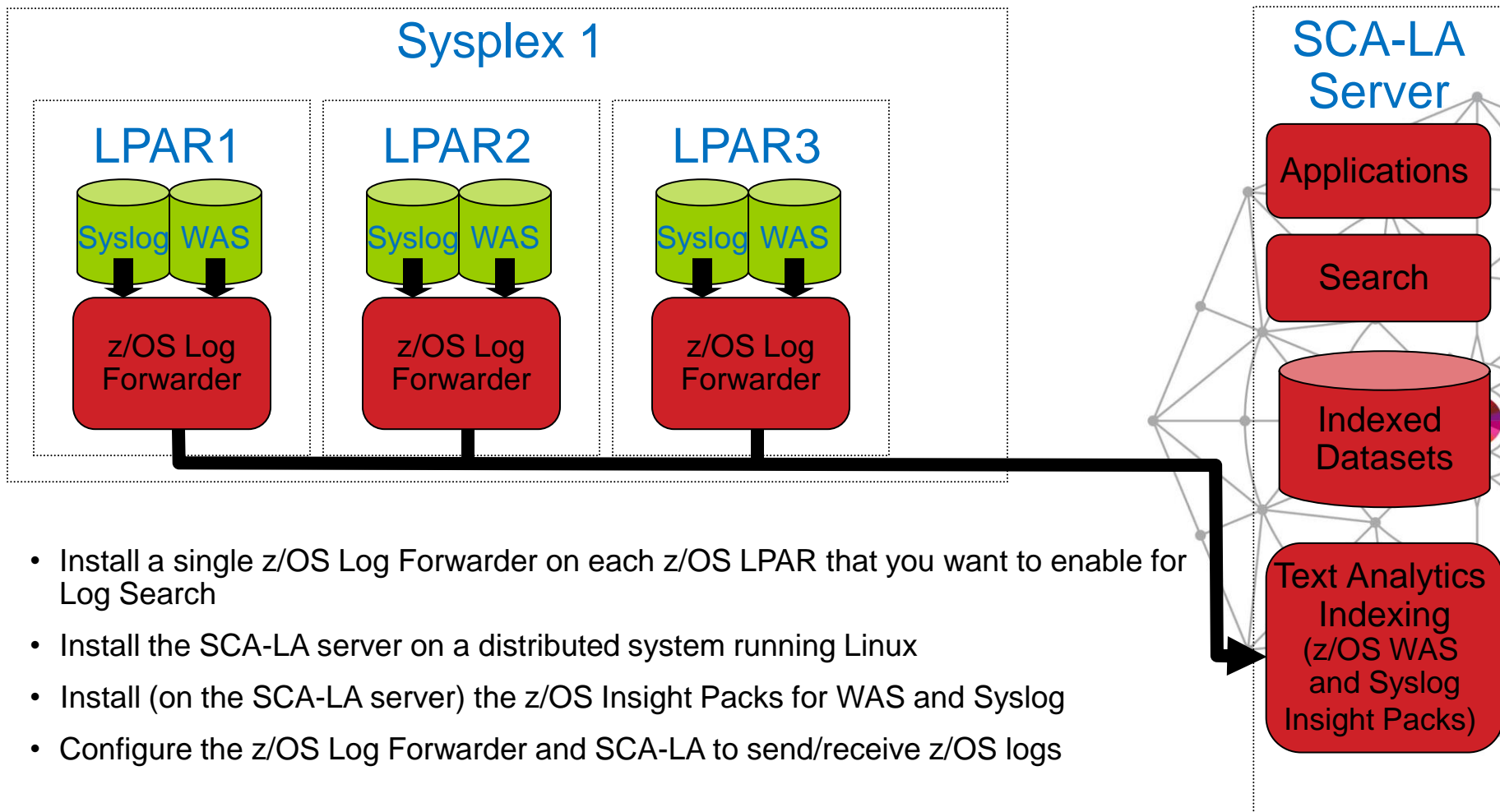


SmartCloud Analytics – Log Analysis (System z)

- Faster Problem Identification and Isolation
 - Search and indexing of logs and data
 - Cross domain analysis
- Faster Problem Repair
 - Linking expert knowledge to log error/warning messages
- Improved Service Availability and Maintainability
 - Provide users with advanced insights into custom applications



SCA-LA and z/OS components

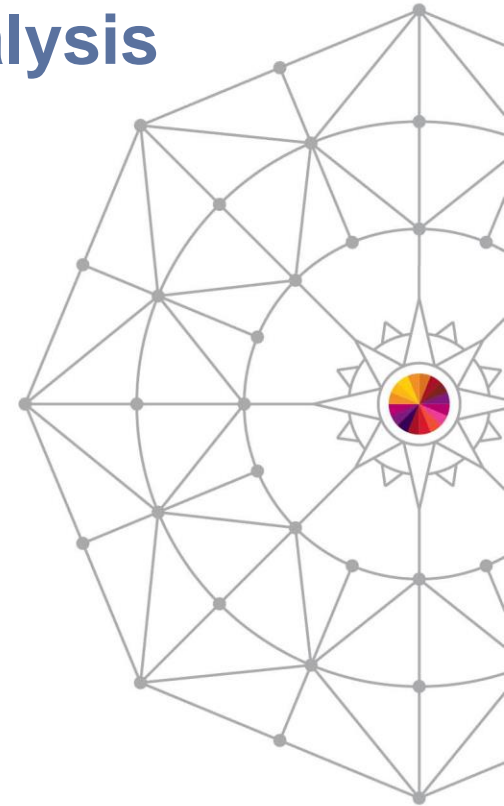


- Install a single z/OS Log Forwarder on each z/OS LPAR that you want to enable for Log Search
- Install the SCA-LA server on a distributed system running Linux
- Install (on the SCA-LA server) the z/OS Insight Packs for WAS and Syslog
- Configure the z/OS Log Forwarder and SCA-LA to send/receive z/OS logs

* SCALA Server currently runs on xLinux.

SmartCloud Analytics – Log Analysis z/OS Insight Packs

DEMO



Search Workspace – Search, Navigate, Visualize

The screenshot shows the IBM SmartCloud Analytics Log Analysis web application in a Mozilla Firefox browser. The interface includes a navigation sidebar on the left with categories like 'Quick Searches', 'Custom Apps', 'ExpertAdvice', 'Configured Patterns', and 'Discovered Patterns'. The main area features a search bar with a dropdown menu, a 'Search' button, and a 'Last 15 Minutes' timeframe selector. A 'Save My Search' button is also visible. 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 points to the search bar area with the text 'Search specific logs or ALL logs'. The browser title bar reads 'IBM SmartCloud Analytics Log Analysis - Mozilla Firefox: IBM Edition' and the address bar shows 'https://unity2.rtp.raleigh.ibm.com:9987/Unity/'.

Simple search interface
EASY to customize

WebSphere Application Server Search – java Exception pattern

4pm - WAS application owner is alerted to a response time issue with a WebSphere application



The screenshot shows the IBM SmartCloud Analytics Log Analysis interface. On the left, a sidebar lists 'Configured Patterns' with 'org.apache.openjpa.persistence.PersistenceException' selected, showing 71 occurrences. The main area displays a search for 'javaException:=="org.apache.openjpa.persistence.PersistenceException"' with a bar chart showing a peak at 3:26 AM. Below the chart is a table of search results.

exceptionPackageName	msgClassifier	_datasource	threadID
	BB000222I	TVT7008_SYSOUT	0X00000023
	BB000222I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BB000220E	TVT7008_SYSOUT	0X00000030
	BB000222I	TVT7008_SYSPRT	
	FFDC1003I	TVT7008_SYSOUT	0X00000015
	BBOJ0011I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BB000220E	TVT7008_SYSOUT	0X00000030
	BB000222I	TVT7008_SYSPRT	
	BB000222I	TVT7008_SYSOUT	
	BBOJ0051I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BB000220E	TVT7008_SYSOUT	0X00000030
	BBOJ0077I	TVT7008_SYSPRT	
org.apache.openjpa.kernel	BB000220E	TVT7008_SYSOUT	0X00000030
	BBOJ0077I	TVT7008_SYSPRT	

Search WAS log

Timeframe of problem

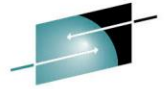
Log analysis already shows a number of exceptions during this timeframe

Quick and easy search with out-of-box log analysis

Search results

z/OS SYSLOG Search

z/OS SME searches the Syslog for error messages



SHARE
Connections • Results

IBM SmartCloud Analytics Log Analysis

Administrative Settings | Learn More | unityadmin

Getting Started x New Search x TVT7008_SYSLOG x + Add Search

Search Syslog

Log Events Granularity : hour Time Range : 01/19/2014, 00:00:00 - 01/26/2014, 00:00:00 (UTC)

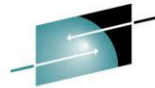
Timeframe of problem

Log analysis already shows a number of exceptions during this timeframe

MessageType	MessageID	MessageText	_datasource	Task
I	BBOM00011	control_region_dreg_on_no_srs: NOT SE...	TVT7008_SYSLOG	STC02717
I	BBOJ00771	traceSettingsFile = /u/WebSphere/V7R0/c...	TVT7008_SYSLOG	STC02710
I	BBOM00011	control_region_https_queue_timeout_per...	TVT7008_SYSLOG	STC02717
I	BBOJ00771	java.util.prefs.PreferencesFactory = java...	TVT7008_SYSLOG	STC02709
I	BBOM00011	com.ibm.Server.Security.Enabled: 0.	TVT7008_SYSLOG	STC02716
I	BBOJ00771	user.country = US	TVT7008_SYSLOG	STC02710
I	BBOM00011	config_root: NOT SET.	TVT7008_SYSLOG	STC02716
I	BBOJ00771	java.security.policy = /u/WebSphere/V7R...	TVT7008_SYSLOG	STC02709
I	BBOM00011	control_region_jvm_localrefs: NOT SET, D...	TVT7008_SYSLOG	STC02717
I	BBOJ00771	eclipse.commands = -nosplash -applicatio...	TVT7008_SYSLOG	STC02710
I	BBOM00011	control_region_confirm_recovery_on_no...	TVT7008_SYSLOG	STC02716
I	BBOJ00771	eclipse.security =	TVT7008_SYSLOG	STC02709
I	BBOM00011	control_region_http_queue_timeout_perc...	TVT7008_SYSLOG	STC02716
I	BBOJ00771	java.assistive = ON	TVT7008_SYSLOG	STC02709

Search results

IBM Support Portal based Expert Advice



Search for expert advice with the click of a button

The screenshot shows a web browser window with several tabs. The active tab is titled "IBMSupportPortal-ExpertAdvice". The search results on the left list several items, including "WebSphere Application Server V8: Administration and Configuration Guide", "IZ05682: ADMINTASK RECONFIGURETAM PORT CONFLICT", "CWPKI0041W warnings in WebSphere Application Server V7.0 log files", "How to find product service levels for opening problem records (FA1776)", "PM49548: BBOO0222I: CWLRB1860I: D... CHING... JAVA.LANG...", "WSKeyStore CWPKI0041W warning message is found in the SystemOut.log file", "Redpaper - WebSphere Application Server V6: Default SibMessage I [...] CWSIU0000I: Release: WAS601.S..._kll6582Node01.server1-TestSIBus", "PM04318: BBOO0222I: WTRN0108I: ATREINT5 ERROR RELEASE THE DB2 LOCKS.", and "NMSV0602E: Naming Service unavailable. A communication component=Application Server thread=[P=912046... [6/1/07 11:55:14.693 CDT...=Application Server thre".

A yellow speech bubble points to the search results with the text: "All IBM support site documents that reference messages from your search results".

A red arrow points from the search results to a detailed Technote page. The Technote title is "WSKeyStore CWPKI0041W warning message is found in the SystemOut.log file". The page includes a "Technote (troubleshooting)" section with a "Problem(Abstract)" and a "Cause" section. The "Cause" section states: "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." The "Resolving the problem" section provides instructions on how to change the default password using the administrative console and the ssl client props file. A numbered list of steps is provided: 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.

Launch to Technote

WAS for z/OS Troubleshooting App – Top 5 messages, exceptions



Out-of-the-box application views – Example – Display message counts and java exceptions

SHARE
Technology · Connections · Results

IBM SmartCloud Analytics Log Analysis

Administrative Settings | Learn More | unityadmin | IBM

Getting Started x New Search x **WAS_for_zOS_Troubleshooting** x + Add Search

Message Counts - Top 5 over Last Day

msgClassifier

- BBOO0222I
- BBOJ0077I
- BBOO0220E
- SRVE0242I
- SRVE0239I
- FFDC1003I
- BBOO0221W
- BBOJ0113I

msgClassifier	01-19 03:00	01-19 04:00
BBOO0222I	~220	~10
BBOJ0077I	~180	~10
BBOO0220E	~50	~10
SRVE0242I	~20	~10
SRVE0239I	~10	~10

Messages by Hostname - Top 5 over Last Day

datasource...

- ibmscala

Host	01-19 03:00	01-19 04:00
ibmscala	~520	~50

Java Exception Counts - Top 5 over Last Day

javaException

- PersistenceException
- ServletException
- SQLException
- StaleConnectionException
- WsException
- XAException
- EJBTransactionRolledbackExcept
- EJBException
- FinderException
- ObjectClosedException
- createClosedException

javaException	01-19 03:00	01-19 04:00
SQLException	~80	~200
PersistenceException	~70	~10
ServletException	~10	~10
WsException	~10	~10
XAException	~10	~10

Java Exception by Hostname - Top 5 over Last Day

datasource...

- ibmscala

Host	01-19 03:00	01-19 04:00
ibmscala	~100	~300

Learn more about Analytics on z at SHARE



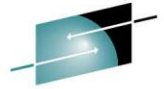
15380: Capacity Management Analytics on System z
Monday, March 10, 2014: 3:00PM – 4:00PM

15190: IT Analytics and Big Data - Making Your Life Easier
Wednesday, March 12, 2014: 9:30AM - 10:30AM

15375: Exploit analytics to monitor and manage new technologies on System z
Wednesday, March 12, 2014: 12:00PM - 1:00PM

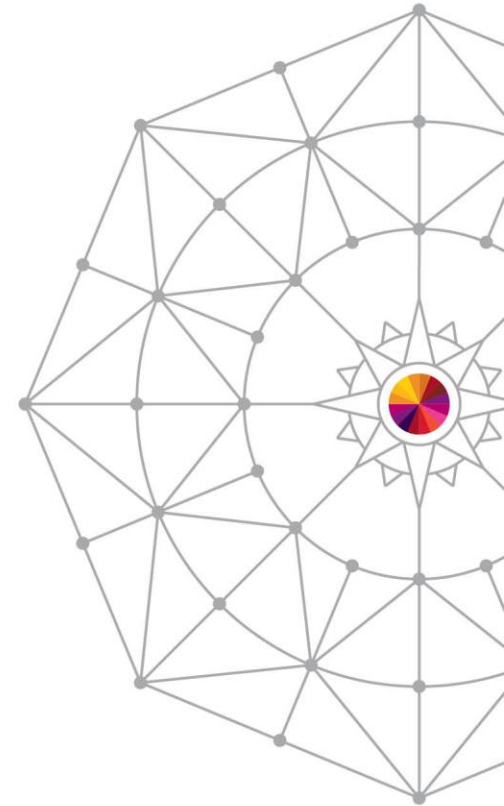
15036: Enabling Best-of-breed analytics with zEnterprise
Wednesday, March 12, 2014: 3:00PM – 4:00AM





SHARE
Technology • Connections • Results

Thank You!!!



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

