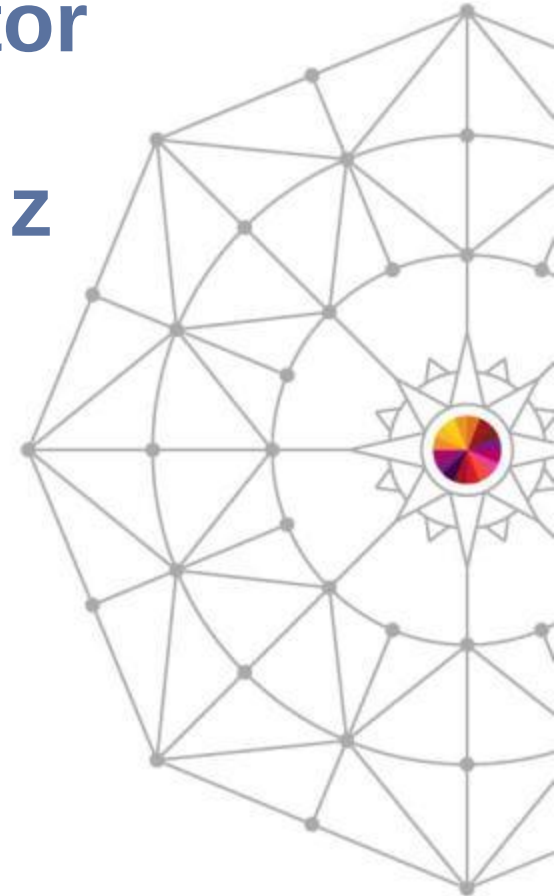


Exploit analytics to monitor and manage new technologies on System z

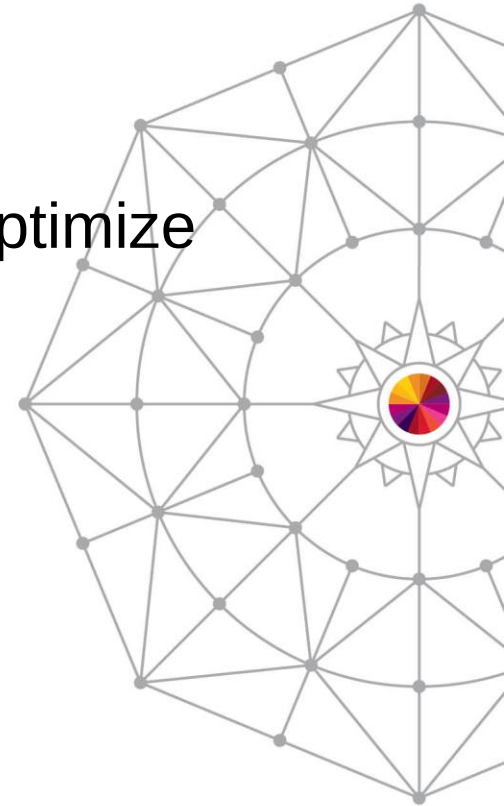
Paul Smith ('Smitty')
IBM Service Management Architect
Cloud and Smarter Infrastructure

Wednesday, March 12, 2014
Session # 15375



Agenda

- Stepping Stone to Analytics
- Customer Pain Points – Big Data
- IT Operations Analytics – Predict, Search, Optimize
- IBM Analytics Solutions
 - SmartCloud Analytics – Predictive Insights
 - SmartCloud Analytics – Log Analysis
 - zAware w/NetView and OMEGAMON
 - Capacity Management Analytics



Analytics is the next step in IBM value add for zEnterprise performance and availability management



- This journey started with NetView/SA
 - Too many messages
 - Need to filter, automate, generate events
- Next focus was on performance monitoring
 - Slow and under-capacity system are just as bad as Unavailable systems
- Next step – Enable to data to work for YOU
 - Analyze existing data, surface anomalies, predict outages and decrease mean time to recovery (MTTR)

NetView/SA

System/Network
management and
automation

OMEGAMON

System and sub-
system performance
monitoring

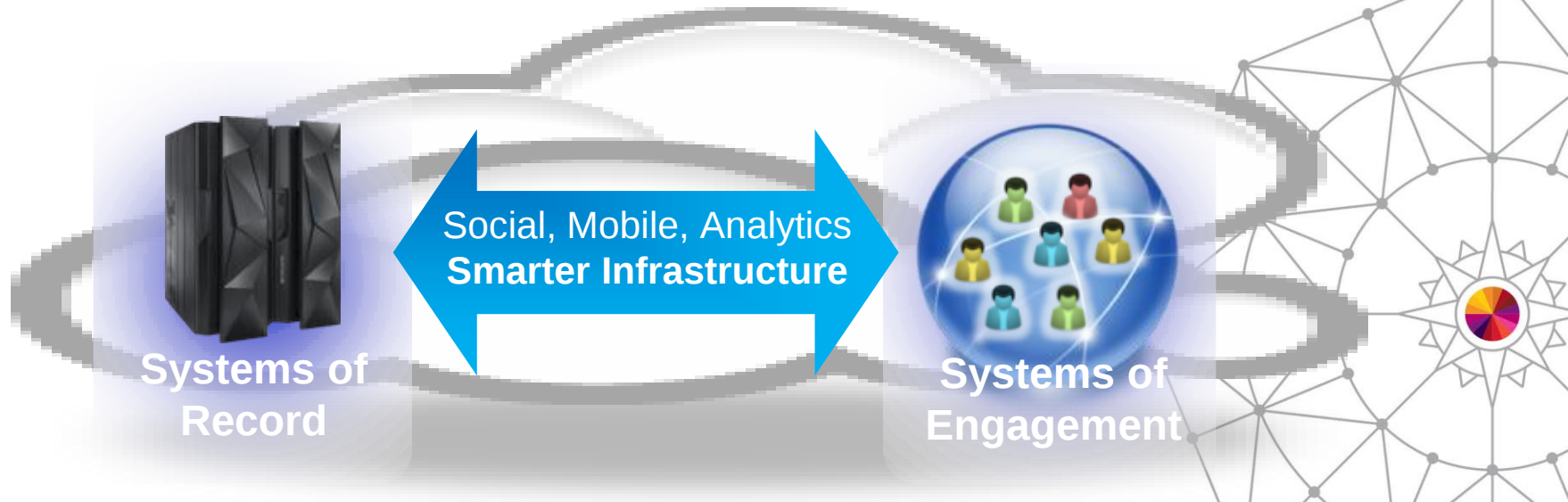
IT Analytics

Analyze metric and log data
Predict outages
Forecast capacity, CPU, etc
Surface anomalies
Improve search techniques
Reduce MTTR
Provide expert advice
Plug into existing service
management tooling

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

Customer 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.

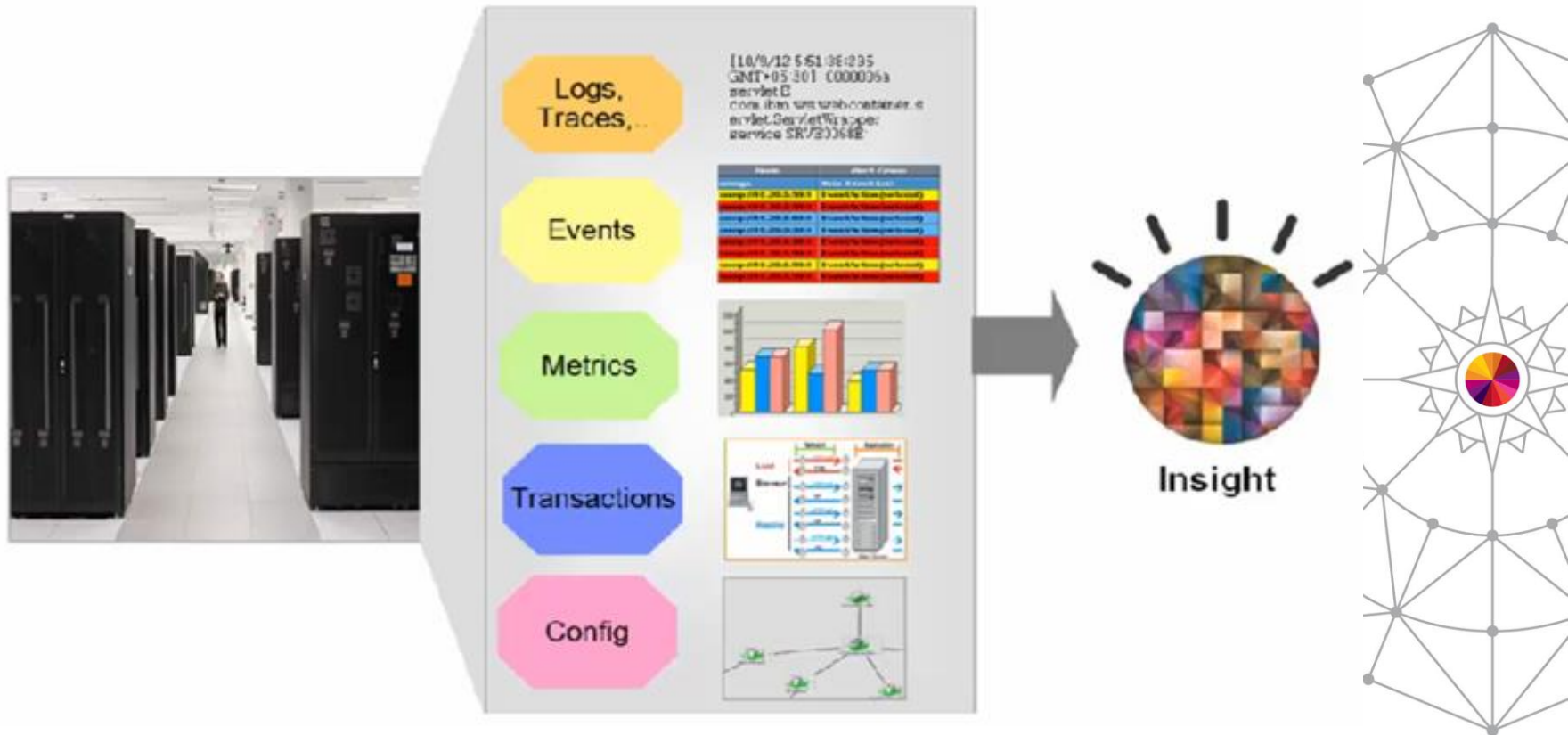


Is managing your environment like sipping from a fire hose?



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)

SmartCloud Analytics: IBM's solution for IT Operational Analytics

Performance Data



Avoid Outages and service degradation through early detection of abnormalities

Improve insight through the analytical discover of metric relationships and trends

Reduce root cause analysis by reducing time to isolate faulty components in complex infrastructure

Unstructured Data



Identify problems quicker with insight to large unstructured repositories

Isolate problems quicker by bringing relevant unstructured data into problem investigations

Repair problems quicker with the right details quickly to hand.

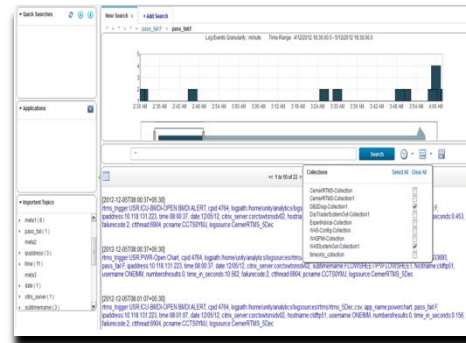
SHARE
Technology • Connections • Results

A diagram of a fiber optic cable. It shows a rectangular cross-section with a central core (light blue) and an outer cladding (dark blue). Two white arrows represent light rays traveling through the core. One ray enters from the left and reflects off the top boundary. The other ray enters from the left and reflects off the bottom boundary. This illustrates the principle of total internal reflection.

SmartCloud Analytics – Log Analysis

Differentiating Capabilities

Detect service issues in unstructured datasets with built-in expert knowledge on software components from IBM and/or ISVs



Delivering Business Results

Improve service availability by leveraging expert knowledge of applications and infrastructure.

Download and install in minutes for quick time-to-value

SmartCloud Analytics – Log Analysis Capabilities



Log Collection technology

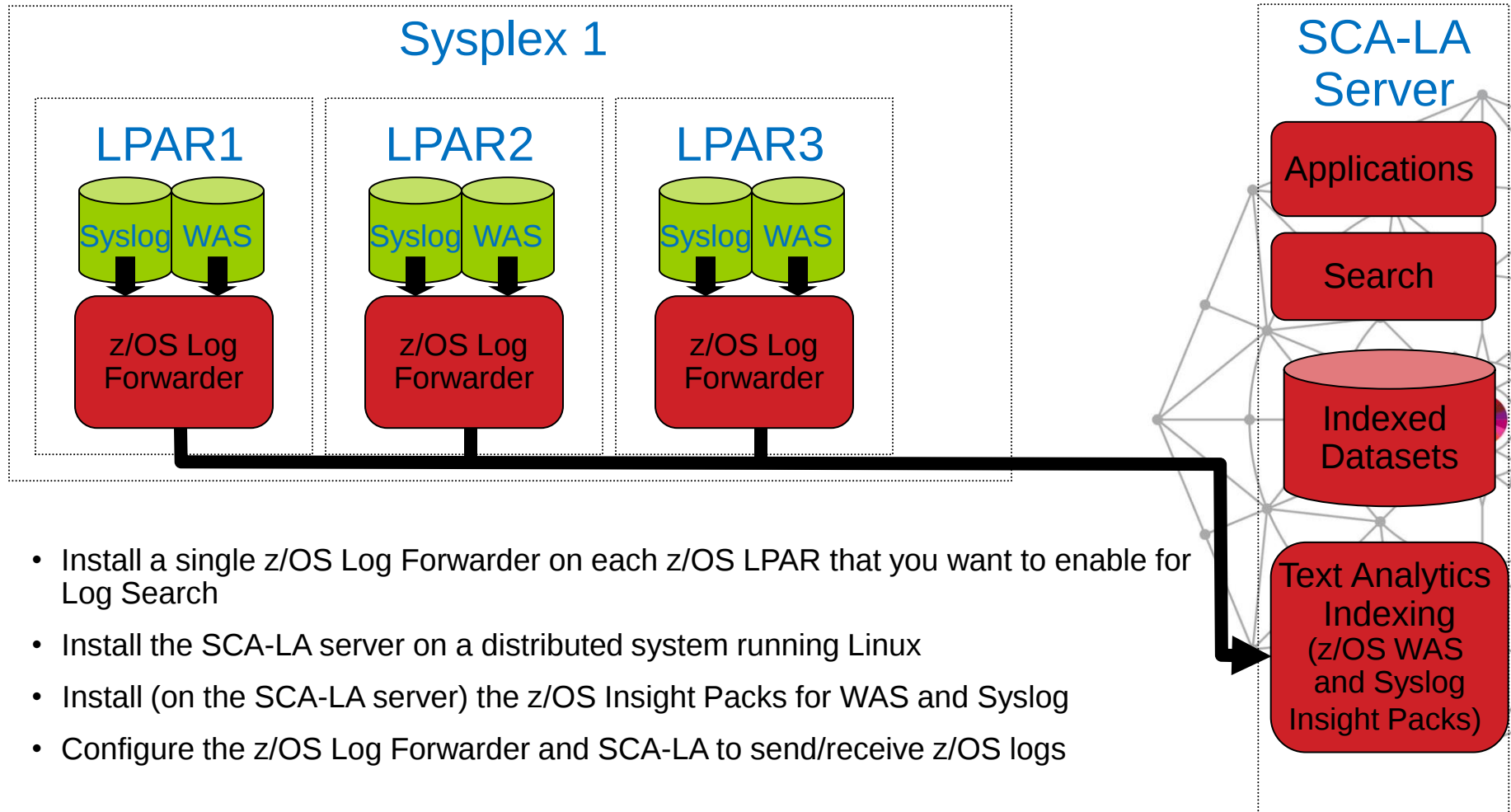
Search log files quickly

Visualize data through reports and dashboards

Expert guidance

Ability to build insight packs for domain/application

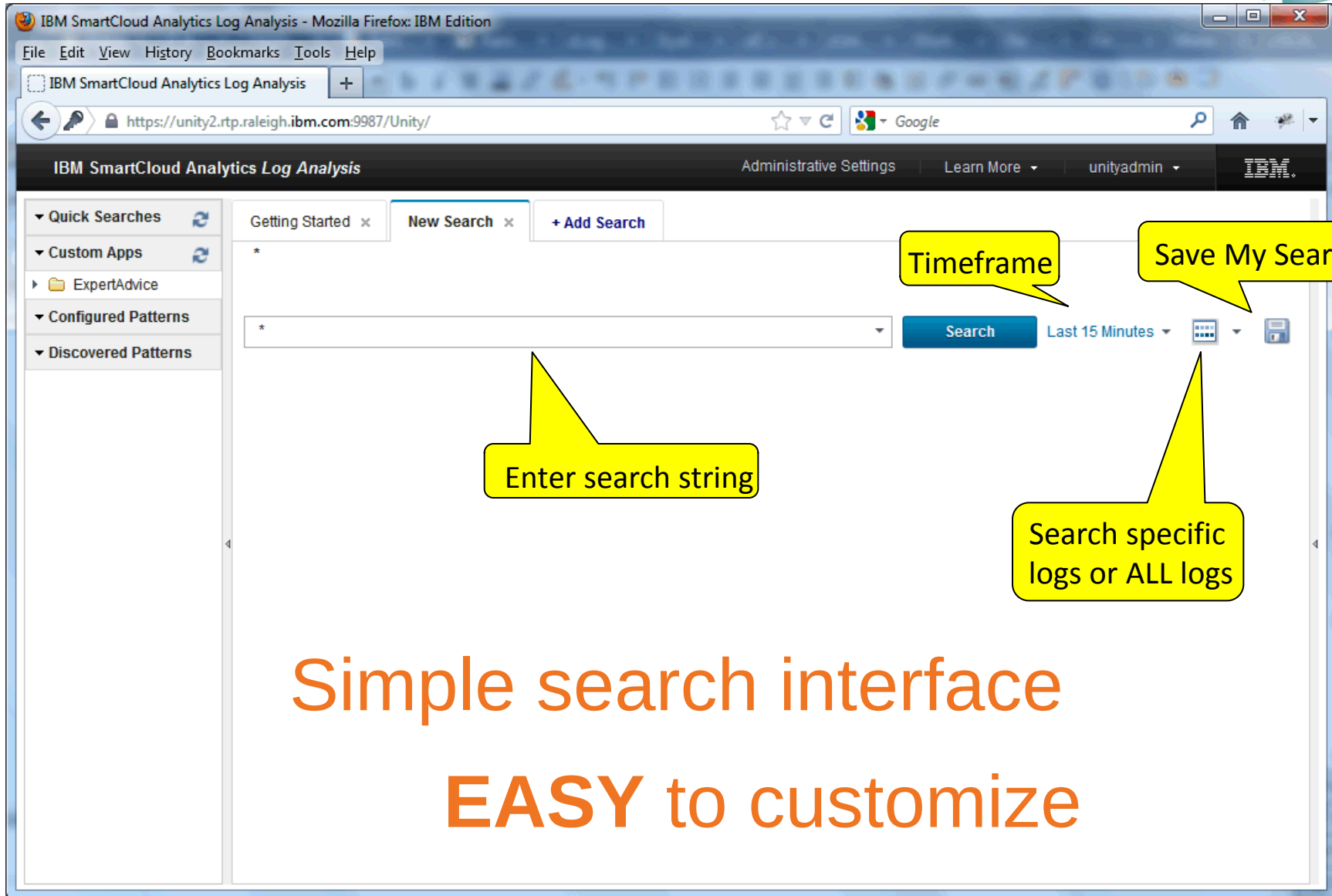
SCA-LA and z/OS components



- 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

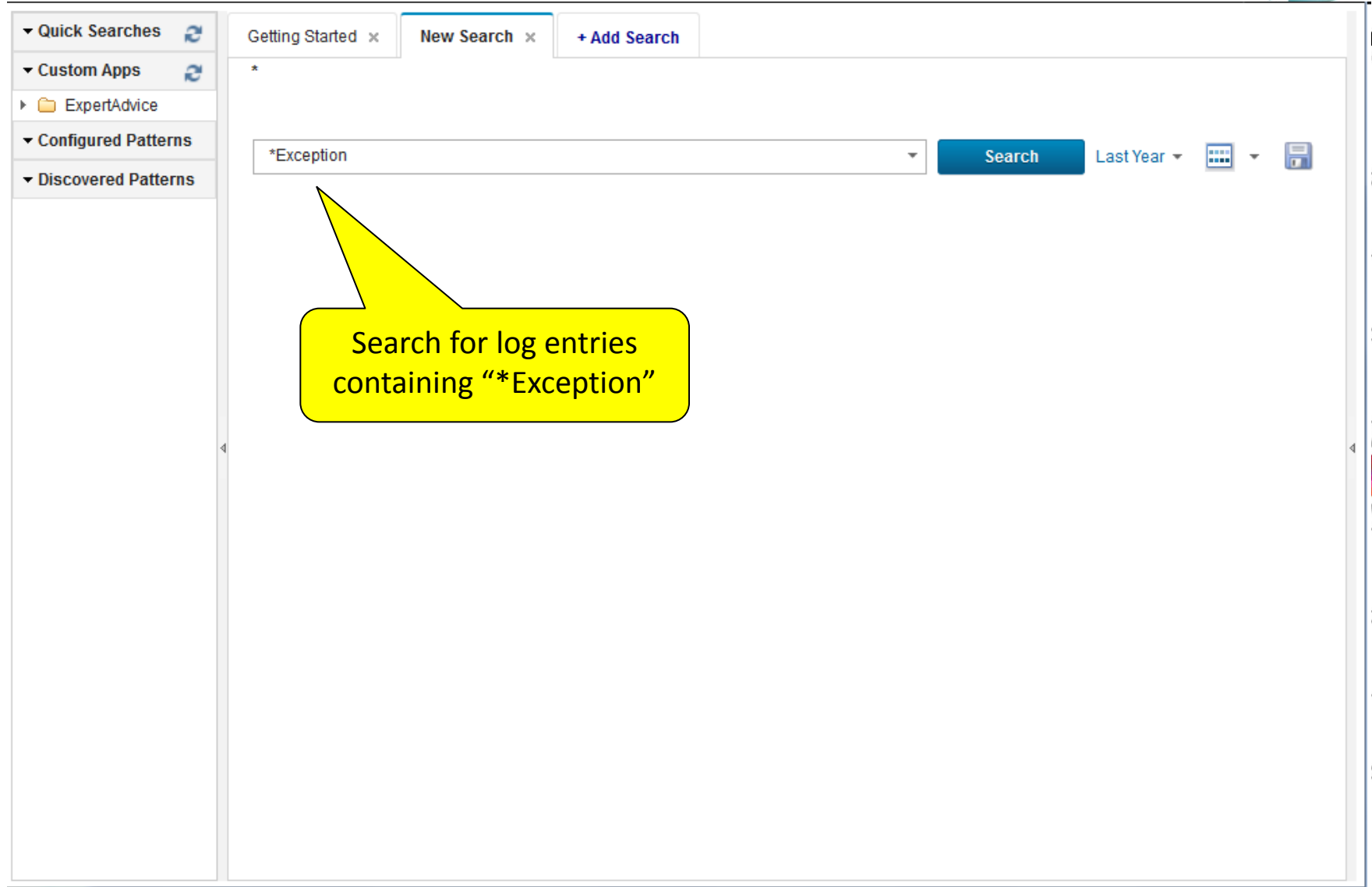
* **SCALA Server** currently runs on xLinux.

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 left sidebar with navigation options: Quick Searches, Custom Apps, ExpertAdvice, Configured Patterns, and Discovered Patterns. The main area has tabs for 'Getting Started', 'New Search', and '+ Add Search'. A search input field with an asterisk placeholder is present, with a yellow callout 'Enter search string' pointing to it. To the right of the input field is a blue 'Search' button. Further right is a dropdown menu currently set to 'Last 15 Minutes', with a yellow callout 'Timeframe' pointing to it. Next to the dropdown is a save icon (floppy disk) with a yellow callout 'Save My Search' pointing to it. Below the save icon is another yellow callout 'Search specific logs or ALL logs' pointing to the dropdown menu. The bottom of the interface features large orange text: 'Simple search interface' and 'EASY to customize'.

Search WAS Applications for Java Exceptions



The screenshot displays the 'Search WAS Applications' web interface. On the left is a sidebar with navigation links: 'Quick Searches', 'Custom Apps', 'ExpertAdvice' (with a folder icon), 'Configured Patterns', and 'Discovered Patterns'. The main area at the top has tabs for 'Getting Started', 'New Search', and '+ Add Search'. Below the tabs, a search input field contains the text '*Exception'. To the right of the input field is a blue 'Search' button, followed by a 'Last Year' filter dropdown and two icons (a calendar and a document). A yellow callout bubble points to the search input field with the text: 'Search for log entries containing “*Exception”'. The interface also features a top-right corner logo and a vertical sidebar on the right with a 'E ults' label and a decorative geometric pattern.

Search results containing “Exception” – Grid View

Apps

Search Filters
For easy drilldown on java exceptions

Switch to List View

Column headers derived from annotation

Getting Started x New Search x + Add Search

*Exception

*Exception Search Custom

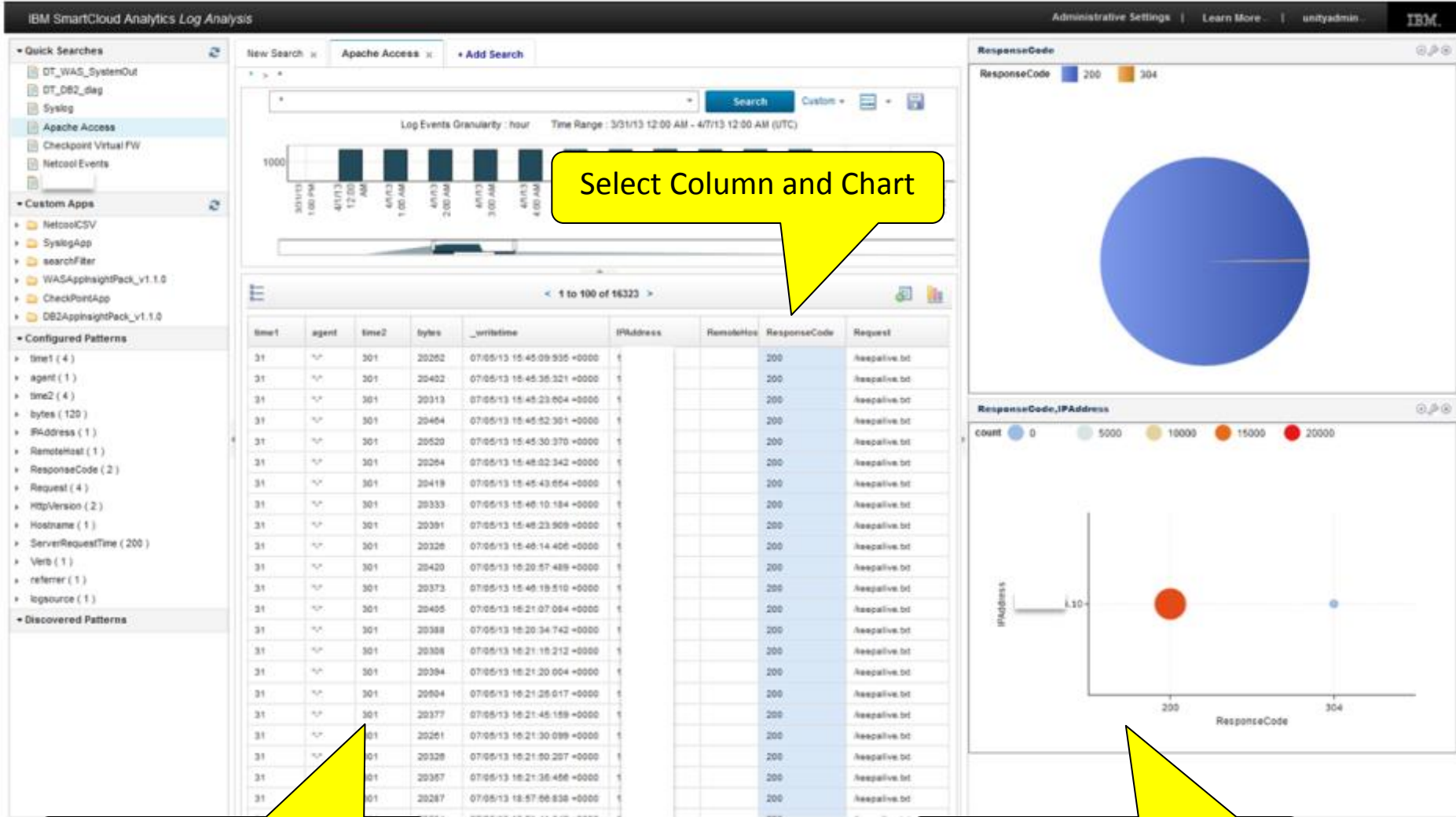
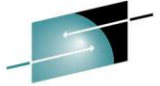
Log Events Granularity : week Time Range : 10/17/12, 7:11 AM - 10/17/13, 7:11 PM (UTC)

50
25

10/3/13 10/10/13 10/17/13 10/24/13

exceptionLineNumber	javaException	fileLine	exceptionClassName	timestamp
1110	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1111	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1112	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1113	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1114	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1115	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1116	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/
1117	tracejava.lang.StringIndexOutOfBoundsE...	733	String	10/16/

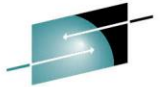
Grid View - Interactive



Interactive grid

Several chart options

IBM Support Portal based Expert Advice



ARE
actions • Results

Quick Searches

Custom Apps

ExpertAdvice

- lib
- Google-Based-E
- IBMSupportPorta

Configured Patterns

Discovered Patterns

Getting Started x New Search x **IBMSupportPortal-ExpertAdvice** x

WebSphere Application Server V8: Administration and Configuration Guide
: Administration and Configuration Guide Learn about Websphere Application
V8: Administration and Configuration Guide 4.3.4 Installing the WebSphere...

IZ05682: ADMINTASK RECONFIGURETAM PORT CONFLICT
CESTJ 0000000a SSLComponent I CWPKI0001: SSL service is initializing
WSKeyStore W CWPKI0041W... com.ibm.ws.ssl.core.SSLDiagnosticModule

...

CWPKI0041W warnings in WebSphere Application Server V7.0 log files
in version 7.0, the following warning occurs in the log files of the corresponding server... 09 8:56.... Cause One or more keystores in
the corresponding WebSphere Application Server profile is having... of these steps start all the IBM WebSphere ...

How to find product service levels for opening problem records (FA1776)
in the job output for each server's address space as part of a message: CWPKI0000I Release: WAS70.SIB Level: o1212.06 Use the
bold text for this field

PM49548: BBOO0222: CWLRB1860I: DISPATCHING JOB JAVA.LANG.CLASSNOTFOUNDEXCEPTION:
the following error: Message: BBOO0222: CWLRB1860I: Dispatching Job A
java.lang.ClassNotFoundException: com.ibm.ws.spi.base.router.SubJobCo

WSKeyStore CWPKI0041W warning message is found in the SystemOut.log file
Server, the following warning message is found in the SystemOut.log file
password in production. The warning message suggests the

Redpaper - WebSphere Application Server V6: Default Message
SibMessage I [] CWSIU0000I: Release: WAS601.SIB Level
_kl6582Node01.server1-TestSIBus

PM04318: BBOO0222: WTRN0108I: ATREINT5 ERROR SEEN IN
RELEASE THE DB2 LOCKS.
lock in DB2. The following error message appears in the Ap
cleans up the hung transaction and releases the locks to the

NMSV0602E: Naming Service unavailable. A communications
component=Application Server thread=[P=912046;O=0;CT
[6/1/07 11:55:14:693 CDT...=Application Server thread=[P=9

All IBM support site documents that reference message results from log search

Launch to Technote

WSKeyStore CWPKI0041W warning 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 is 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 the down arrow to change the keystore and truststore passwords.

Rate this page:
Average rating (0 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 #: 1235272
Modified date: 2007-02-26
Translate my page
Select Language

Handle more complex workloads with increasing metrics for early prediction of problems

SmartCloud Analytics – Predictive Insights

- **New next-generation behavioural learning and predictive analytic solution.**
- **Discovers how your IT & Network infrastructure is related from a holistic viewpoint.**
- **Maximizes early detection of problems manifest in performance and monitoring data before service or business is disrupted (enabling prevention)**
- **Identifies problems before you know to look for them, catching them the first time they happen.**

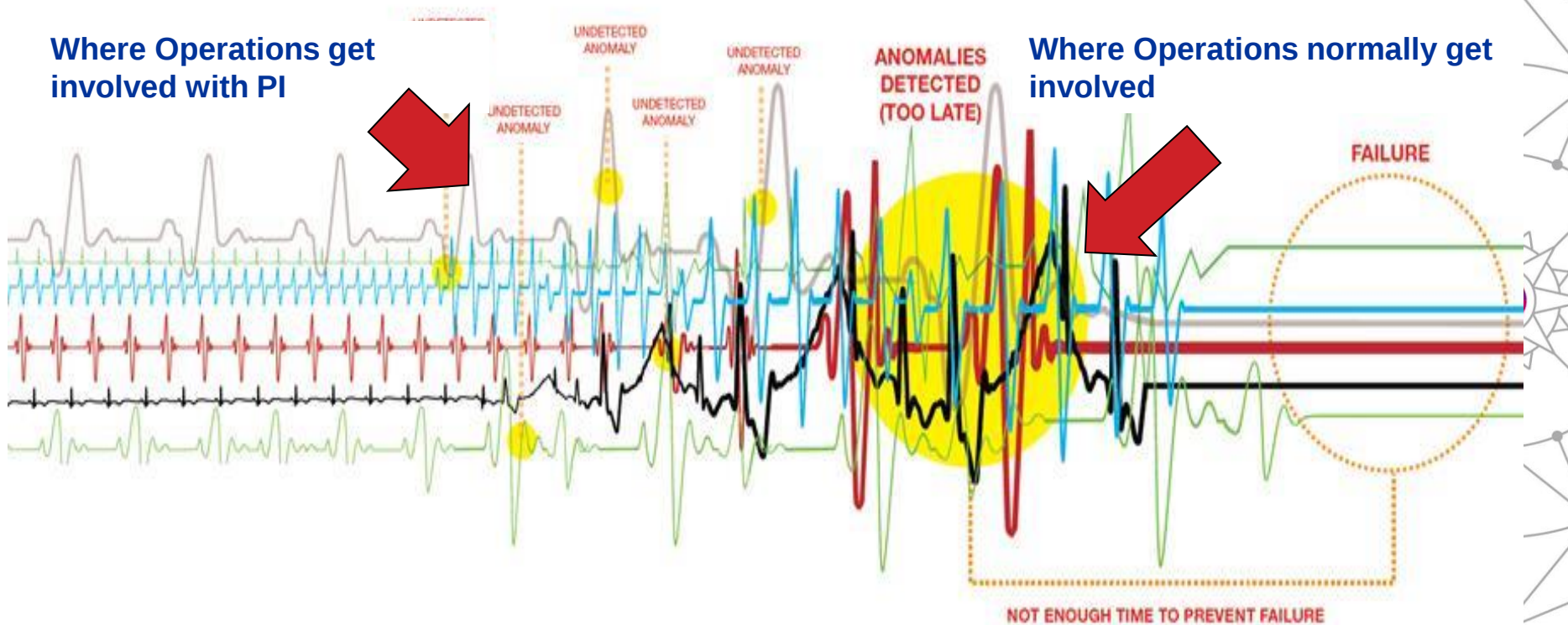
Highlights

- Learns normal operational behaviour, including how metrics behave together.
- Accurately identifies problems, and reduces expensive and time consuming false alerts.
- Provides maximum warning of service impact, deterioration or outage.
- Detects service impacts that are not identifiable by standard adaptive & seasonal thresholds.
- Leverages state-of-the art IBM InfoSphere Streams real-time analytic engine for unsurpassed performance and scalability.



Predictive Insights (PI) Analytics reports on events and anomalies that could cause future problems

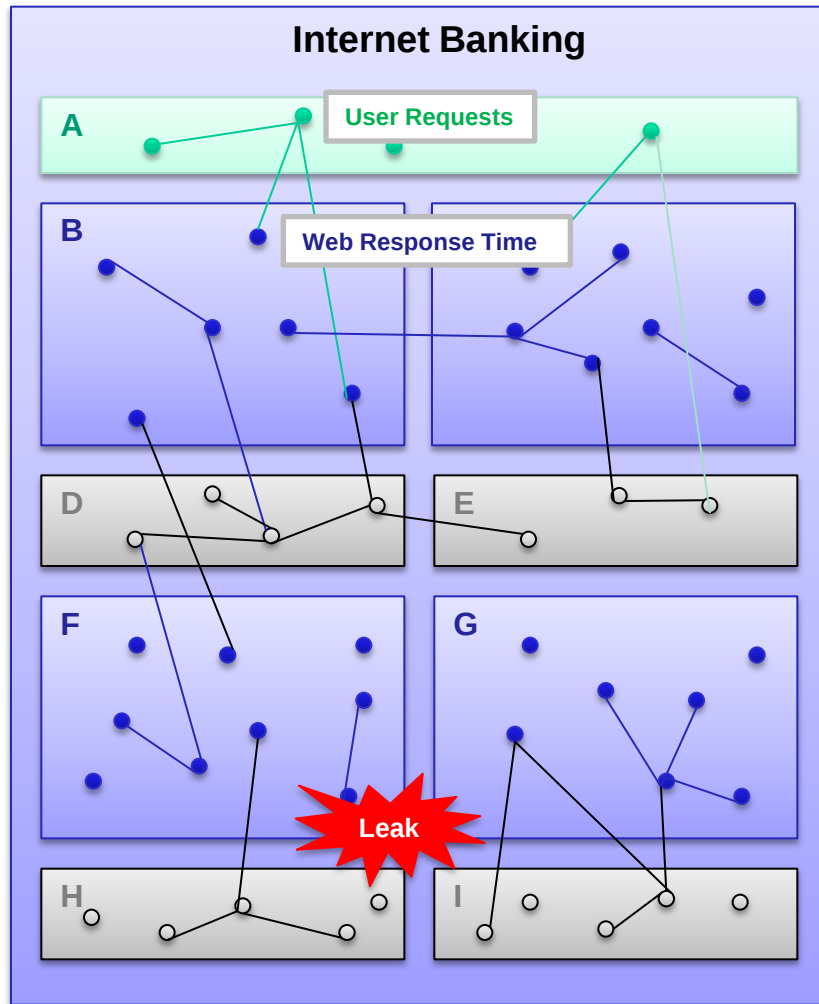
Using SmartCloud Analytics – Predictive Insights



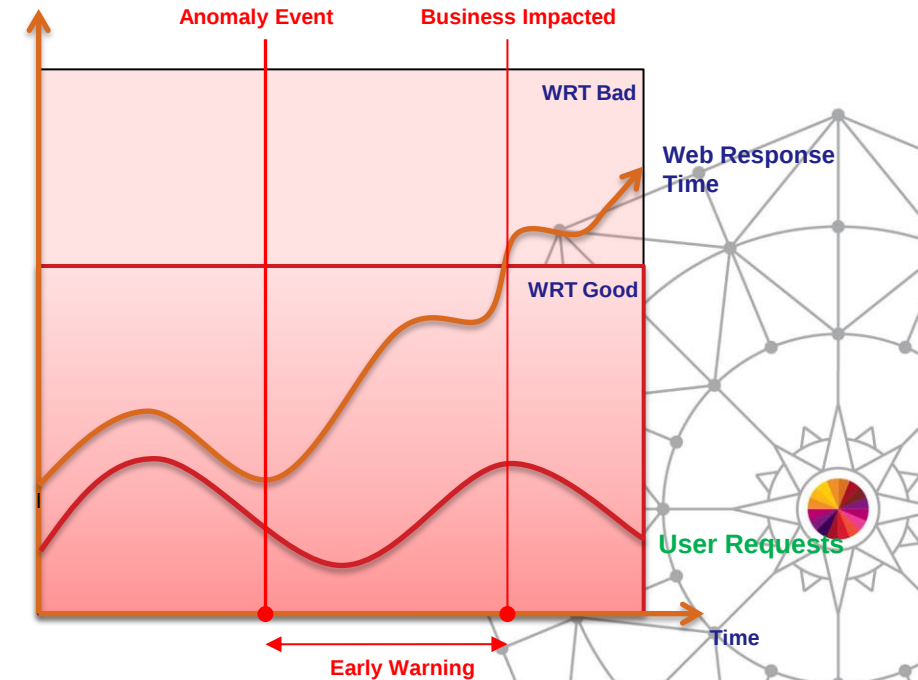
- Operations teams can now focus more on prevention!
- Predictive Insights can consume data from distributed and mainframe systems

Example Scenario: Internet Banking Application

Granger based analytics learns the mathematical relationship between metrics



Web Response Time



- Learns 'Web Response Time' has a normal causal relationship with 'User Requests' - **WRT gets slower as user load gets higher.**
- **If this healthy historical relationship breaks down, say due to a memory leak, an anomaly is raised immediately**
- **The problem is detected even while WRT service is "good"**

Emerging problems can be detected even while service levels are good

Predictive Analysis with IBM zAware – Log Analytics on System z using Anomaly Detection

- Save money by ensuring z/OS availability (decrease time to perform problem determination and lower Mean time to Repair)
- Problem isolation and management (NetView/OMEGAMON) and event visibility (OMNIBus)

Predict



Event
Management
OMNIBus



Problem
Determination
NetView
CANSLOG



Performance
Monitoring
OMEGAMON

IBM zAware



Surface
Anomalies

Optimize Big Data and applications to create knowledge for easier business and IT planning



Capacity Management Analytics (CMA) solution

- Analytics, monitoring and management across Big Data on System z environment including CICS, DB2, IMS, WAS
 - Insights into operations with TDSz, SPSS and Cognos
- Focuses on data related to System and Workload Characteristics, Performance and Trending
- Provides recommendation to optimize Systems and Workloads based on Predictions and Forecasting



<http://www-03.ibm.com/software/products/en/capacity-management-analytics/>

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



Capacity Management Analytics supports key customer requirements for improved business agility



- **System/Workload Characteristics, Performance and Trending**
 - What's driving demand?
 - Capacity constraints causing bottlenecks and what's being impacted
 - Anomalies occurred that impacted resource usage and/or performance
- **System/Workload Optimization, Prediction and Forecasting**
 - Available capacity to move workloads / applications to alleviate bottlenecks
 - Balance resource usage across servers/LPARs/VMs and defer capacity upgrade
 - Enough available capacity to add new workloads/applications to current environment



IBM Capacity Management Analytics provides cost effective, optimal use of zEnterprise capacity



A single, integrated cost effective solution



**System Management:
Problem Identification & Resolution
Capacity Forecasting & Monitoring**

Manage the complete time horizons



**Historical reporting of past performance
Forecasting future requirements
Right-time optimal decision making**

Jumpstart your time to value & ease implementation.



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

IBM Capacity Management Analytics: Systems Management

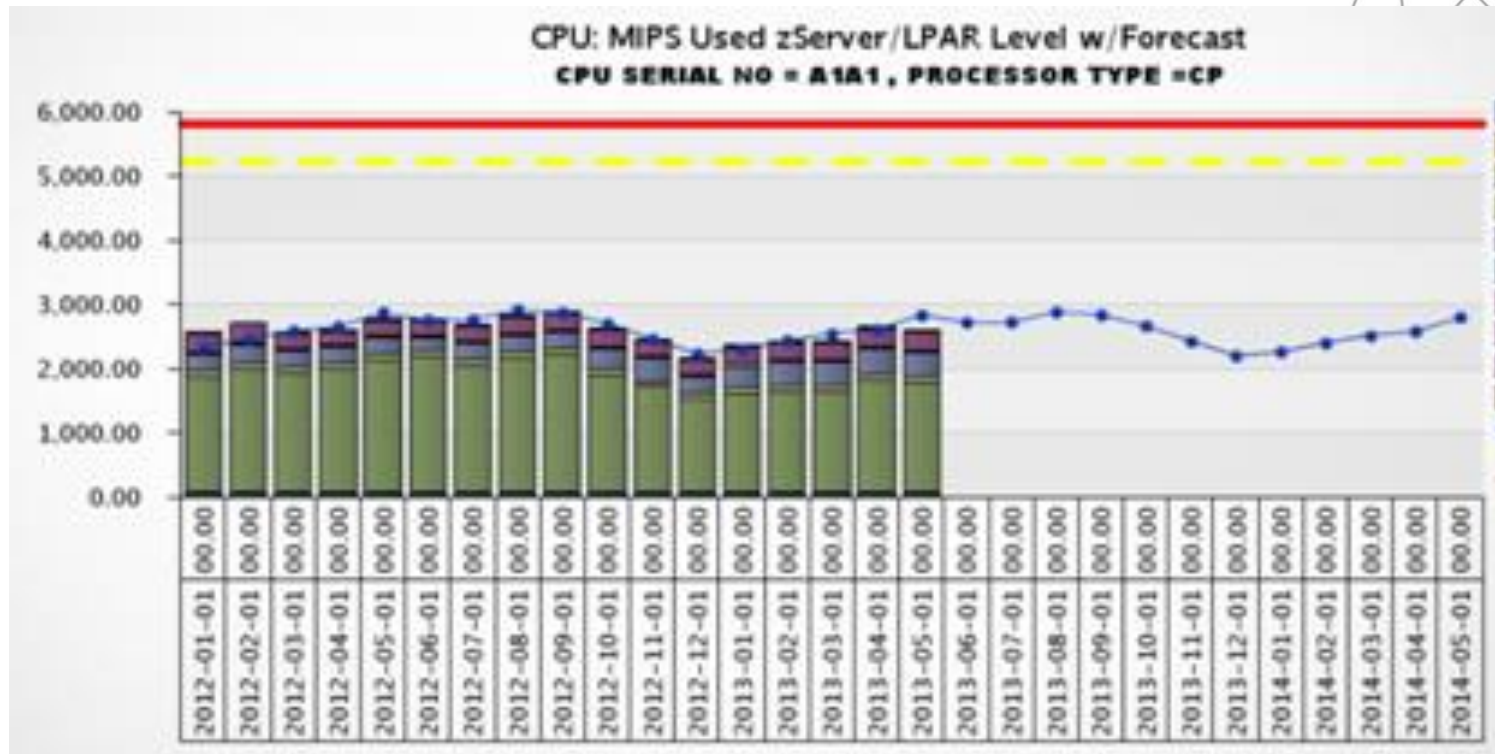


Dashboard & report capabilities provide executives, managers, capacity & performance specialists with custom views



IBM Capacity Management Analytics: Predictive Analytics, Capacity Forecasting & Real-time Scoring

- Predictive analytics helps organizations use data to make better decisions
 - Draw reliable, data-driven conclusions about current conditions and future events.
- Requirements forecasted to ensure sufficient capacity available when business needs it.
- Real-time scoring of transactions performed enabling comparison to forecast.



IBM System z analytics improving ability to reduce risks by adding capability over time



- Operators and subject matter experts overwhelmed with volumes of data to be manually processed
- Enhance current tools with analytics for more efficiency and productivity
- Add additional analysis capability over time

Predictive Analytics
Predictive Insights
OMEGAMON/
IBM zAware
Capacity Management
Analytics

Log Data Analysis
Log Analytics

Detailed Event Analysis

**Configuration
Change Analysis**

Gain insight into entire end-to-end workload

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



Thank You!!!

