IT Operations Analytics Solutions for z Systems

Session 17931
Lunch & Learn

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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!

Centralized, Distributed, Cloud, Resilient Architectures
Increase Data Volume

Where do I start??

Logs, Traces,..

Core files

[10/9/12
5:51:38:295 GMT
+05:30] 0000006a
servle E
com.ibm.ws.webcont
ainer.servlet.Servlet
Wrapper service
GRV080006EL10
00011100110001
11110000110001
11111100011001
1100011

Everywhere is “green”

It’s SLOW!!

404 ERROR

Transaction

Config

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Operational Analytics – Rationale and Approach

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!

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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

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**IBM Analytics solutions for System z**

- **Predict**
  - OMEGAMON & NetView w/ IBM zAware
- **Search**
  - IBM Operations Analytics for z Systems
- **Optimize**
  - IBM Capacity Management Analytics (CMA)

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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

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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 than expected?
- Are messages issued out of a normal pattern?

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

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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

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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?

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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
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

**New 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

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Simple Search Interface – Easy to Customize

Enter search string

Search specific logs or ALL logs

Timeframe

Save My Search
WebSphere Application Server Search – java Exception pattern

This is just one of many examples

Log analysis displays number of java exceptions during this timeframe

Search WAS log

Timeframe of problem

Search results

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

Search for expert advice with the click of a button

All IBM support site documents that reference messages from search results

Launch to Technote

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Sample dashboard – View your log and metric data however you like
Analyze your SMF data AND your log data for a complete view of the enterprise

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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 \textit{DateMath} functions
- To learn more, consult Online Help available from the \textbf{Learn More} \rightarrow \textbf{Search Bar} \rightarrow \textbf{Search query syntax} menu:

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

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Integration with Event Management

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 sever and significant problems.

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Log Analysis Integration with existing Service Management Solutions

Event Management OMNibus/Netcool Operations Insight

Problem Determination NetView CANZLOG

Performance Monitoring ITM/OMEGAMON

Search and analyze logs, metrics and events

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

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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
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
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**

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