zAware User Experience

Brian Peterson

Optum Technology

UnitedHealth Group

brian_d_peterson@optum.com
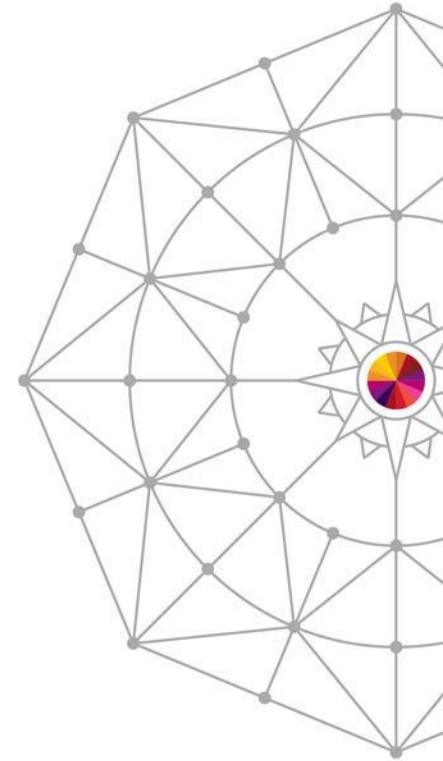
Agenda

- Overview
- Installation Experiences
- Using zAware
- Overall impressions

Overview

- zAware "high level"
  - Runs as a hardware LPAR on an appropriate (recent) System z machine – EC12 or BC12
  - "Software" is shipped as machine microcode
    - Customer supplies CPU capacity (IFL or GP, ~0.5 to 2)
    - Customer supplies LPAR memory (minimum 4 GB)
    - Customer supplies DASD capacity (~500 GB)
- Consumes z/OS messages (OPERLOG)
- Applies analytics to z/OS message patterns
  - Learns what is "normal" for a particular system
  - Highlights the "unusual" for a particular system
- Web browser view of results, plus some rudimentary API capabilities for interface with z/OS automation / tools

Installation Experiences

- We have several machines in our environment
    - We chose an IFL-only box to run zAware
        - Seemed an obvious choice to minimize MP effect cost of additional LPAR for existing z/OS workloads
        - zAware wouldn't "activate" on an IFL-only machine
        - Temporary workaround

- Today zAware works fine on an IFL-only machine

Installation Experiences

- zAware has two modes of operation
  - Bulk loading (batch process to load x months of syslog into zAware to build its model of "normal")
  - Normal processing
- During Bulk loading, the zAware machine "phoned home" (called IBM hardware support) repeatedly

- Today, zAware does not "phone home" nearly as much (or perhaps not at all)

Installation Experiences

- Another Bulk loading problem
- One of our z/OS OEM software products was occasionally generating ill-formed WTO messages
  - Normal WTO traffic about 4 million messages/day
  - Two ill-formed messages per IPL caused issue
- When Bulk load encountered such a message, it abended (and phoned home)
- zAware was intolerant of imperfections in the syslog stream
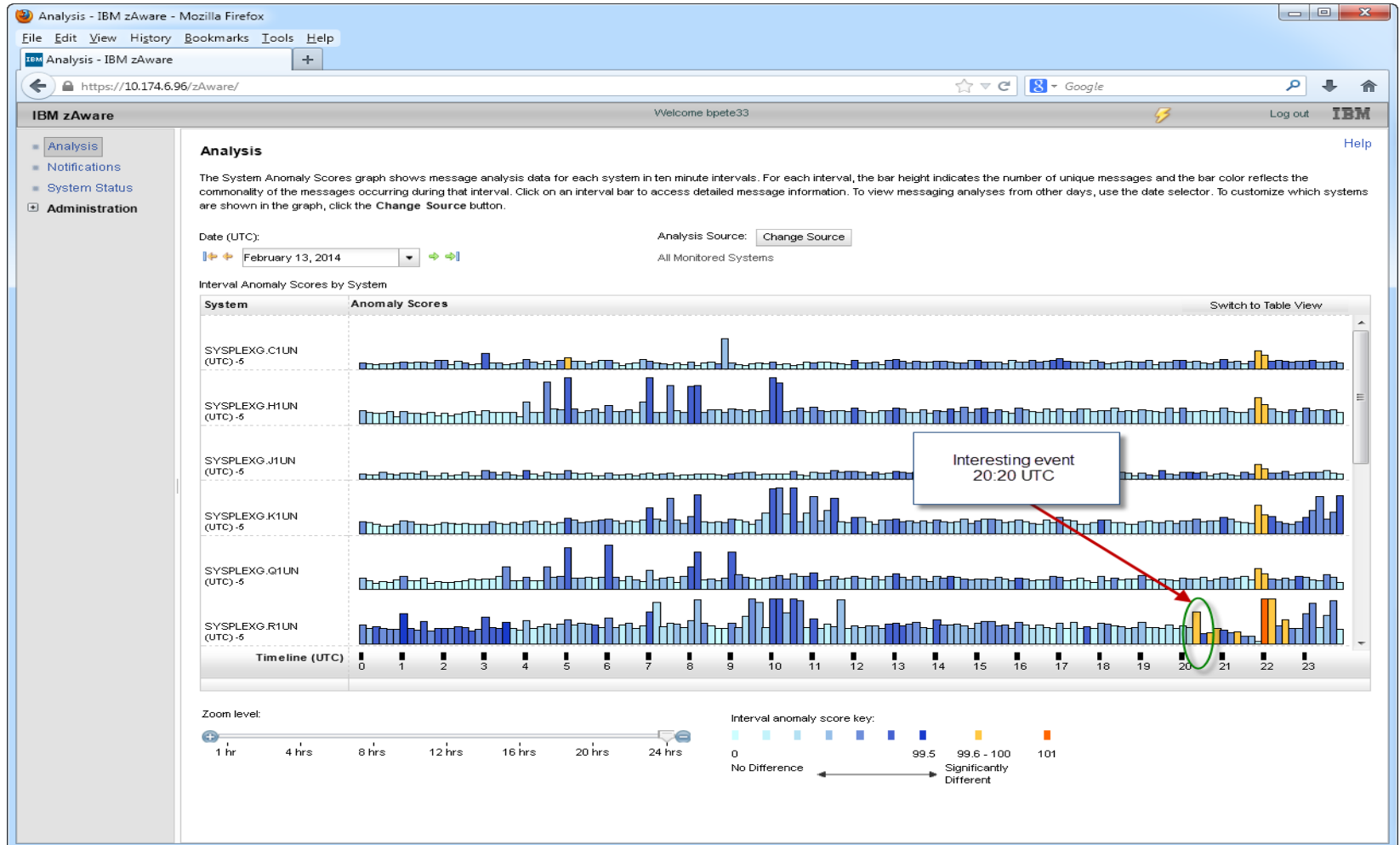- We believe this problem is fixed as well

Installation Experiences

- zAware needs some DASD storage

- Storage team allocated some volumes and handed them over to us

- zAware could not accept them due to how they were formatted – VTOC, Index, etc.

- Turned out there were undocumented expectations for volume formatting

- Today, zAware is much more accepting of storage

Installation Experiences

- We restrict the zAware LPAR via IODF/IOCDS to make sure zAware cannot access non-zAware DASD volumes

- zAware will use (that is, format) any volume given to it by the zAware administrator – this means RACF will not protect z/OS systems from zAware – the only protection is at the hardware IODF/IOCDS level, similar concept to SAN LUN zoning in distributed environments

Using zAware

Using zAware

Messages

Actions ▼

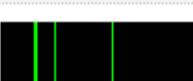| ▼1 Anomaly Score	Interval ▼2 Contribution Score	Message Context	Rules Status	Appearance Count	Time Line	Message ID	Message Example	Rarity Score	Component
1	26.844	new	Interesting 📄	49		IRA100E	SQA SHORTAGE	101	IRA
1	26.678	new	None 📄	48		EZZ4215I	TCP/IP ABEND - DUMPING	101	EZZ
1	26.678	new	None 📄	48		IRA102I	SQA SHORTAGE RELIEVED	101	IRA
1	24.651	new	None 📄	37		EZZ4223I	TCP/IP DUMP NOT TAKEN - SDUMPX RETURN CODE 08 REASON CODE 02	101	EZZ
1	21.593	new	None 📄	24		IST1957I	STALL ALLEVIATED FOR RTP CNR00046 TO GOLD.INDVTAMM	101	IST
1	21.025	new	None 📄	22		IST1955I	STALL DETECTED FOR RTP CNR00046 TO GOLD.INDVTAMM	101	IST
1	17.508	new	None 📄	12		TTCP10821E	- BPX call EZBTMIC1 failed RC=FFFFFFF7 17BD0800	101	TTCP

Using zAware

- What happened?
- An MVS storage administrator issued a command
  - HSEND QUERY REQUEST
- DFHSM filled all of CSA for this LPAR with the response

- Suggest everyone read APAR OA44478, and implement a reasonable limit to number of text lines that this DFHSM command can send back to the TSO user, thus limiting the amount of common storage (CSA/ECSA) that DFHSM can use

Living with zAware

- Alerts
  - "Out of the box", zAware provides a web browser interface
    - Also an interface to Omegamon, I'm told
    - We don't have Omegamon
  - zAware provides an API where a z/OS REXX program can query zAware for current status/issues
    - Very much an exercise left to the customer
  - We have not yet figured out an effective "push" alert mechanism - other customers may have solved this

  - zAware should have a better and more complete "out of the box" experience for customers

Living with zAware

- Support for zAware is via the z machine on which it runs

- The hardware CE is the intermediary between the customer and support

- Or, open a PMV – "poor man's PMR"

- In our experience, zAware issues are almost never "hardware"

- IBM should provide systems programmers with a support path for zAware, such as via PMR (the normal software support paradigm)

Living with zAware

- zAware is a technology with significant potential
  - Lends itself to "agile" development techniques
- Significant cycle-time mismatch between zAware development cycles and customer hardware microcode deployment
  - "Agile" – develop x weeks, share with customers for feedback, repeat
  - "z Driver" – GA1 and GA2: maybe two Drivers per machine, and MCLs typically stop after next machine Generally Available
- The "concept" of a z machine "appliance" LPAR is fine
- The "reality" is NOT fine

- IBM should figure out a way to make zAware deployment more "agile"
- The z Driver and MCL stream seems anything but agile

Questions ?