Session 17728:

Approaches to Enterprise-Wide Monitoring and Problem-Solving on IBM z Systems

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Abstract

Examples of how best to leverage the OMEGAMON Tivoli Enterprise Portal to dramatically reducing problem isolation time for several critical problem scenarios. This was accomplished by:

- Discovering how simple it was to create new views.
- Moving away from out of the box views to custom ones that matched the complex problems they were trying to solve.
- Confirming the new navigator views provided the promised savings.

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Agenda: Approaches to Enterprise-Wide Monitoring

- Overview
- Enterprise Views
- Mashups
- Enterprise Wildcard FINDs
- Topology Views
- Leveraging History
- Dots Health View
- Situations overrides
- Situation Audit tool
What is the TEP and e3270ui?

- **TEP (Tivoli Enterprise Portal) GUI**
  - Manage z/OS and distributed resources from a single interface.
  - Displays data in graphs, charts and table formats
  - View real time and historical data, at the same time
  - Workspaces, Situations, and Expert Advice
  - Configure, right from the TEP

- **e3270ui**: New OMEGAMON V5 3270 interface
  - Revolutionary new 3270 interface that takes advantage of modern technics
  - Common Feed as TEP (OMEGAMON XE agents)
  - Out of box best practice cross enterprise cross OMEGAMON views
  - Supports up to large 62x160 screen sizes and mouse hot spots

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Workspaces to Match the Symptoms

Locating problems
Lots of Drill Down
• LPAR
• OMEGAMON
• Regions, Queues, Jobs...

TCP Connection
DB2 Thread
CICS Region
MQ Queue
JOB
CICS Transaction
Database

Hang
Response Time
High CPU

Locating Problems

Reduce analysis time
• Enterprise workspaces
  • Across LPARS
  • Across OMEGAMONs
  • Filter on issues

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Workspaces to Match the Symptom

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Locating Problems

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TEP - Terminology

Navigator View

Workspace

Workspace

Navigator View

Workspac
Enterprise Views

- Eliminate physical tree maze.
- Consolidated view
  - Cross LPAR
- View targeted to specific issues
  - Filtered at Agents
Create a Navigator view with limited drill down

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Cross DB2 SYSTEM - Cross LPAR View

Reduced amount of drill down

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New Dynamic Navigator View

1. Edit Navigator Views

2. Create a New Navigator View

3. Close Navigator editor since we will dynamically populate. Select the new view we just created in the navigator pull down.

4. Right click select Properties

5. Select *MVS_DB2 From Available Members

This is a dynamic group of all DB2 systems on all LPARs
Creating a Cross System View

1. Select table (drag and drop)
2. Assign Query
3. Assign Systems
4. Customize Table
Mashup View from JOBNAME

- **OMEGAMON on z/OS**
  - CPU Utilization
- **OMEGAMON for DB2**
  - Detailed Thread Exceptions
- **OMEGAMON for Storage**
  - Volume Performance
  - Dataset Response time
  - TCP/IP Connections

- Use JOBNAME to assign Variables into Queries in other OMEGAMONs
- Query Source can be from all systems

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Connect:Direct (NDM) Mashup

TCP/IP Listener

- Connection Backlog Rejections
- Connection Rate

TCP/IP Connections

- Inbound / outbound bytes buffered
- Response time
- Traffic rate
- Retries, congestion, timeouts
- Endpoints and Topology
- Commands (PING, TRACERTE, NSLOOKUP, DROP)
Connect:Direct (NDM) Mashup

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Enterprise Find Command

- A cross LPAR Wildcard search for a resource
- Examples:
  - Connections, FTPs or TN3270 sessions by IP Addresses
  - MQ Queues
  - CPU, Threads or transactions by Job Name
- Filtering is done at the OMEGAMON agents
  - Provides phenomenal performance in large environments
- Basically a LINK that generates a prompt

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Cross Enterprise Wildcard FINDs - Overview

- A cross LPAR Wildcard search for a resource, Examples:
  - Already available with MFN Enterprise_Networks View V5.1.1
  - MQ Queues
  - CPU, Threads or transactions by Job Name
- Filtering is done at the OMEGAMON agents
  - Provides phenomenal performance in large environments
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**FIND Link**

1. **Prompt**
2. **Wildcard In Query**
3. **Send to OMEGAMON Agents**
4. **Results from Agents**

**List Connections**
- Enter Remote IP Address
- OK
- Cancel
OMEGAMON for MFN Enterprise_Networks FIND

Displays performance metrics for connections matching search criteria specified by the end user. Try all Connections on port 1920 on all LPAR.
SMS Storage Group Trend FIND

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Cross Enterprise Wildcard FINDs – 1 of 2 Create Target

1. Create Table View as Target for Link
2. Select Properties or Assign the query now
3. Click here to assign query

Create Another Query

4. Enter new Query name
5. Select Field to Find on
6. Click on “v” and select Scan

7. Enter Variable to shop up in Link wizard: $RIP$

8. Target workspace from Find
Cross Enterprise Wildcard FINDs – 2 of 2 Create Link

1. **Link Wizard**
   - Create new link
   - Name of new Link
   - Absolute Link
   - Select Target Workspace of Link (created previously)
   - Link Function to prompt for INPUT

2. **INPUT('Enter Remote IP Address')**

3. **Evaluate**

4. **Complete**

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Visit [www.SHARE.org/Orlando-Eval](http://www.SHARE.org/Orlando-Eval)
Topology

- Show relationships
  - LPARs to OSA-Express Adapters
  - z/VM to Linux Servers
  - IP Addresses to Applications
- Dynamic query based view
- Filter to limit topology size
  - By utilization or status
- Thresholds Highlight issues
- Flyover pop-ups
Example of Creating your own Topology

Example: a Dynamic Topology of OSA-Express connected LPARS
  • Leverages OMEGAMON XE for Mainframe Networks
    • OSA-Express LPARs Query

1. Select Query
2. View Data in Table
3. Drag Topology ICON

Create Topology from Column attributes
  • LPAR Name
  • Channel Number
Customize Topology Properties

1. Set Node to Column Mappings
2. Set Node ID Column: LPARName
3. Set Node Name Column: LPARName
4. Set To Connection Column: ChannelNumber
5. Set From Connection Column: LPARName
6. Create implied nodes
7. Set Layout
8. Set Thresholds
Mouse popup box shows current data
Topography is dynamic as data changes
Can set to timed Auto-refresh
Colors set by Threshold tab
**z/VM and Linux Dynamic Topology**

**Topology of Linux servers running on 2 z/VM System**

- **Unfiltered too busy**

- **Filter out idle Servers**

**Define Topology**

- Topology showing which z/VM each of Linux Server is running on
  - From OMEGAMON on z/VM and Linux workload query
- Filter-out idle Linux systems in large environments
- Highlight problem servers with setting thresholds
  - CPU, paging, Storage

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OMEGAMON History

• Configure History
• Requires TEP ID Authorization

• Create History Collection
• < 24 hours
  • z/OS Persistent Datastores
• > 24 hours
  • TDW(Tivoli data Warehouse)

• History Filter
• Reduce about of history
• Filter out unnecessary history
Filtered History

1. Launch History Configuration
2. Create History Collection
3. History Sampling rate
4. Distribute to systems
5. Set History Filter
6. How long to keep history
- Visually see problem threads
- Filtered history in a plot chart
- DB2 Threads by CPU time
- The Steeper the line the more quickly the thread is using CPU
- The longer the line the longer it has been running
Historical and Statistical Baselines

We had a CPU spike only on Thursday.
Historical Baseline Today vs Yesterday

Historical Baseline

Last week compared to this week
Statistical Baseline Example

Statistical Baseline (average over time)
Situation Association

- Alert on simple or complex conditions
- Associate in custom navigator view
  - Control who sees them, how they see them
  - Copy into Graphic View

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Create Navigator Views folders for situation Dots

1. Create Folders in Navigator View

2. Assign Monitored Resources to be associated

3. Select Graphic View

4. Customize Graphic View

5. Drag and Drop folders onto graphic view

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Associating Situations to Navigator Views

1. Operations Console
2. Show Situations that are:
   - Associated with Monitored Application.
   - Eligible for Association.
   - Associated with this object.
3. CICS Status
   - CICSplex
   - CICS_SOS
4. Set Situation State
5. Situation Status Dots
   - CICS Status
   - Critical Application
   - DB2 Status
Situation Overrides

• The need to set different thresholds by **Schedule** or Attributes
• Situations have a formula limit that can force multiple situations
• Situation Override dramatically increases formula limit to 4K

This example shows a daily schedule over three days that applies the override >= 75 from 01:00 to 06:00.

***See ITM TEP User's Guide for Details and Limitations***

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Situation Overrides

1. Create Situation

2. Select Distribution Assigned System

3. Override Formula

4. Add Overrides

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Sitworld: ITM Situation Audit tool

- Dramatically Improve Performance of Situations
- Identify situations that would never trigger correctly
- Produces report of warning messages for static situation issues.
- Such as **TEMS** filtering instead of **Agent** query filtering
  - If query is too big, filters **not sent to agent**!
  - Distribute by Managed System Groups to help limit size

Visit Blog to **DOWNLOAD**, see other audit tools or request for audit report assistance

Google: **Sitworld** (Blog created by John Alvord from IBM ITM L2)

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Additional SHARE OMEGAMON sessions

- **17708 Filling In the IT Systems Management White Space Gap** - Ed Woods, Tuesday, August 11: 10:00 AM-11:00 AM Asia 2
- **17527 Managing z/VM & Linux Performance Best Practices** – Mike Sine Tuesday, August 11: 3:15 PM-4:15 PM Americas Seminar
- **17474 Managing a z/VM and Linux on z Systems Environment Using IBM Solutions** - Hands-on Lab Tuesday, August 11: 4:30 PM-5:30 PM Asia 5
- **17536: Identify z/OS Networking Issues without Tracing** - Ernie Gilman & Dean Butler Wednesday, August 12: 1:45 Southern Hemisphere 5
- **17584 OMEGAMON V5 Enhanced 3270 Hands-on Lab** Wednesday, August 12: 4:30 PM-5:30 PM Asia 5
- **17548 OMEGAMON XE for Storage and RMM Reporting** -Vickie Dault Thursday, August 13: 8:30 AM-9:30 AM Europe 3

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