



Tivoli Monitoring

z/VM and Linux Performance Management

New Product Overview

Tivoli software

A decorative horizontal bar with a red background and various colorful patterns and images, including a white starburst, a woman's face, and abstract shapes.

ON DEMAND BUSINESS™

Agenda

- Opportunity
 - ▶ New work loads
 - ▶ New monitoring needs
- Previous products
 - ▶ OMEGAMON for z/VM
 - ▶ z/VM Performance Toolkit
- New product
 - ▶ A monitoring infrastructure - TMS
 - ▶ Solution architecture – big animal pictures
 - ▶ Scenarios
- Workspaces

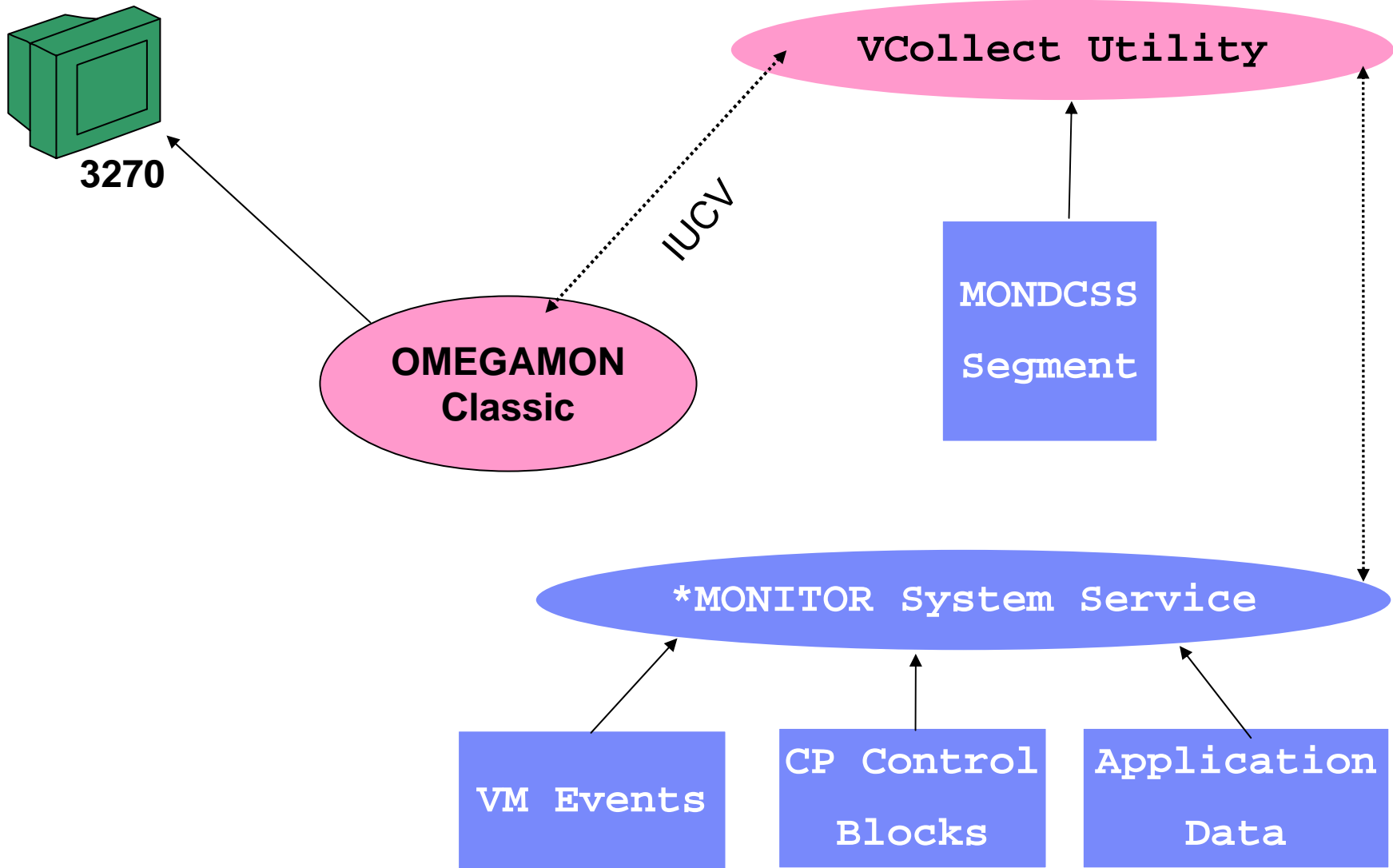


Opportunity

- New workload
 - ▶ Linux on zSeries/System z
 - ▶ WAS, DB2, Java
 - ▶ Migration
- Performance
 - ▶ Real and Virtual resources
 - ▶ Monitoring needs
 - ▶ Managing needs
- Complex environment
 - ▶ Software stack
 - ▶ End to end needs



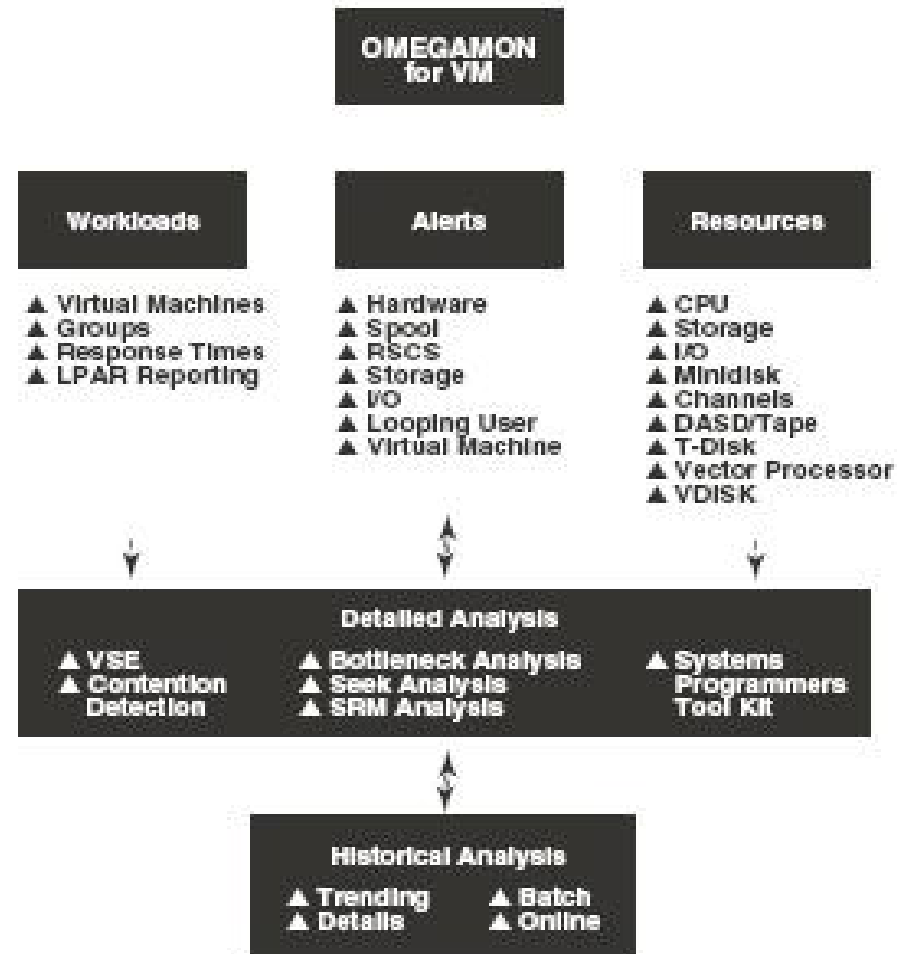
OMEGAMON for z/VM – 5000 foot View



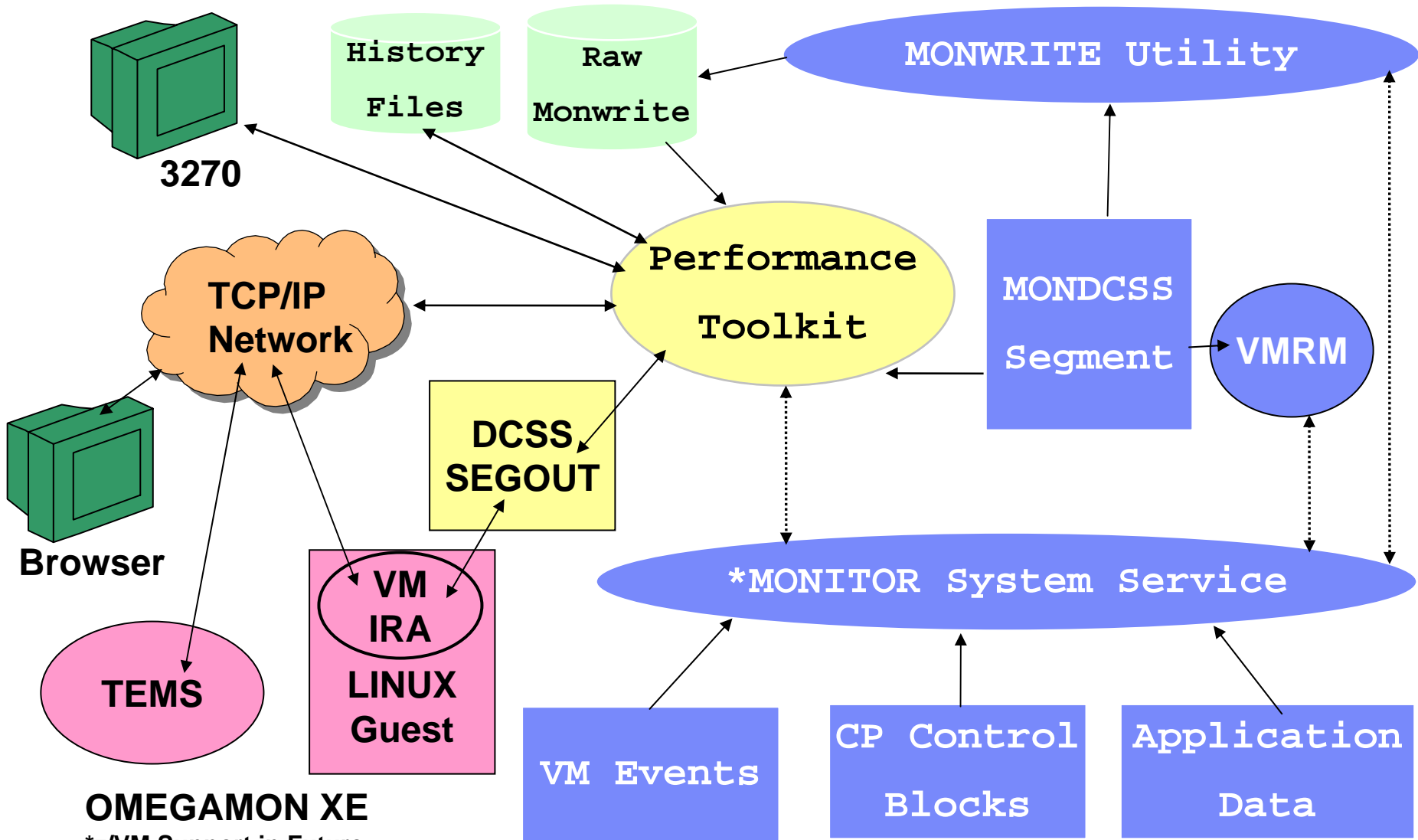
OMEGAMON for z/VM

What is OMEGAMON Classic?

- ▲ A software performance monitor for the z/VM operating system.
- ▲ Contains both a Real-Time and Historical collection component.
- ▲ Used to analyze system health and diagnose problems.
- ▲ Used to monitor system resource/workloads and pro-actively report potential problems.
- ▲ Used to perform trend analysis and capacity planning.
- ▲ “Green-screen” product, menu or command line driven.
- ▲ Each instance a data collector, plus VCOLLECT for historical data.
- ▲ Not used by OMEGAMON XE on z/VM Linux.



z/VM Performance Toolkit Overview - 5,000 Foot View



OMEGAMON XE
*z/VM Support in Future

z/VM Performance Toolkit Overview

- Full-Screen operator console (FCON)
- Real Time performance monitor capability for z/VM.
 - ▶ CPU Performance
 - ▶ Storage Utilization
 - ▶ Channel, I/O Device Performance
 - ▶ Detailed I/O Analysis
 - ▶ Detailed User Performance data
 - ▶ TCP/IP Server Performance
 - ▶ Linux Performance data
- 3270 interface, with ability to exploit GDDM graphics.
- Some web server capability.
- Some ability to customize screens.
- Some integration with other platform monitors (Linux).



Other Performance Toolkit Functions

- Exception reporting
- Threshold monitoring
- Looping User management
- User Defined Screens
- User Classes - grouping
- Multiple VM System Management
- Regular Report Generation
- Linux Data
 - ▶ Linux Kernel VM Appldata
 - ▶ RMFPM Interface
- Benchmarking of
 - ▶ Users
 - ▶ Devices



FCX124 Performance Screen Selection (FL520 VM63967) GDLM7

General System Data

- 1. CPU load and trans.
- 2. Storage utilization
- 3. Reserved
- 4. Priv. operations
- 5. System counters
- 6. CP IUCV services
- 7. SPOOL file display*
- 8. LPAR data
- 9. Shared segments
- A. Shared data spaces
- B. Virt. disks in stor.
- C. Transact. statistics
- D. Monitor data
- E. Monitor settings
- F. System settings
- G. System configuration
- H. VM Resource Manager
- I. Exceptions
- K. User defined data*

I/O Data

- 11. Channel load
- 12. Control units
- 13. I/O device load*
- 14. CP owned disks*
- 15. Cache extend. func.*
- 16. DASD I/O assist
- 17. DASD seek distance*
- 18. I/O prior. queueing*
- 19. I/O configuration
- 1A. I/O config. changes

User Data

- 21. User resource usage*
- 22. User paging load*
- 23. User wait states*
- 24. User response time*
- 25. Resources/transact.*
- 26. User communication*
- 27. Multitasking users*
- 28. User configuration*
- 29. Linux systems*

History Data (by Time)

- 31. Graphics selection
- 32. History data files*
- 33. Benchmark displays*
- 34. Correlation coeff.
- 35. System summary*
- 36. Auxiliary storage
- 37. CP communications*
- 38. DASD load
- 39. Minidisk cache*
- 3A. Storage mgmt. data*
- 3B. Proc. load & config*
- 3C. Logical part. load
- 3D. Response time (all)*
- 3E. RSK data menu*
- 3F. Scheduler queues
- 3G. Scheduler data
- 3H. SFS/BFS logs menu*
- 3I. System log
- 3K. TCP/IP data menu*
- 3L. User communication
- 3M. User wait states

Pointers to related or more detailed performance data can be found on displays marked with an asterisk (*).

Select performance screen with cursor and hit ENTER

Command ==> _____

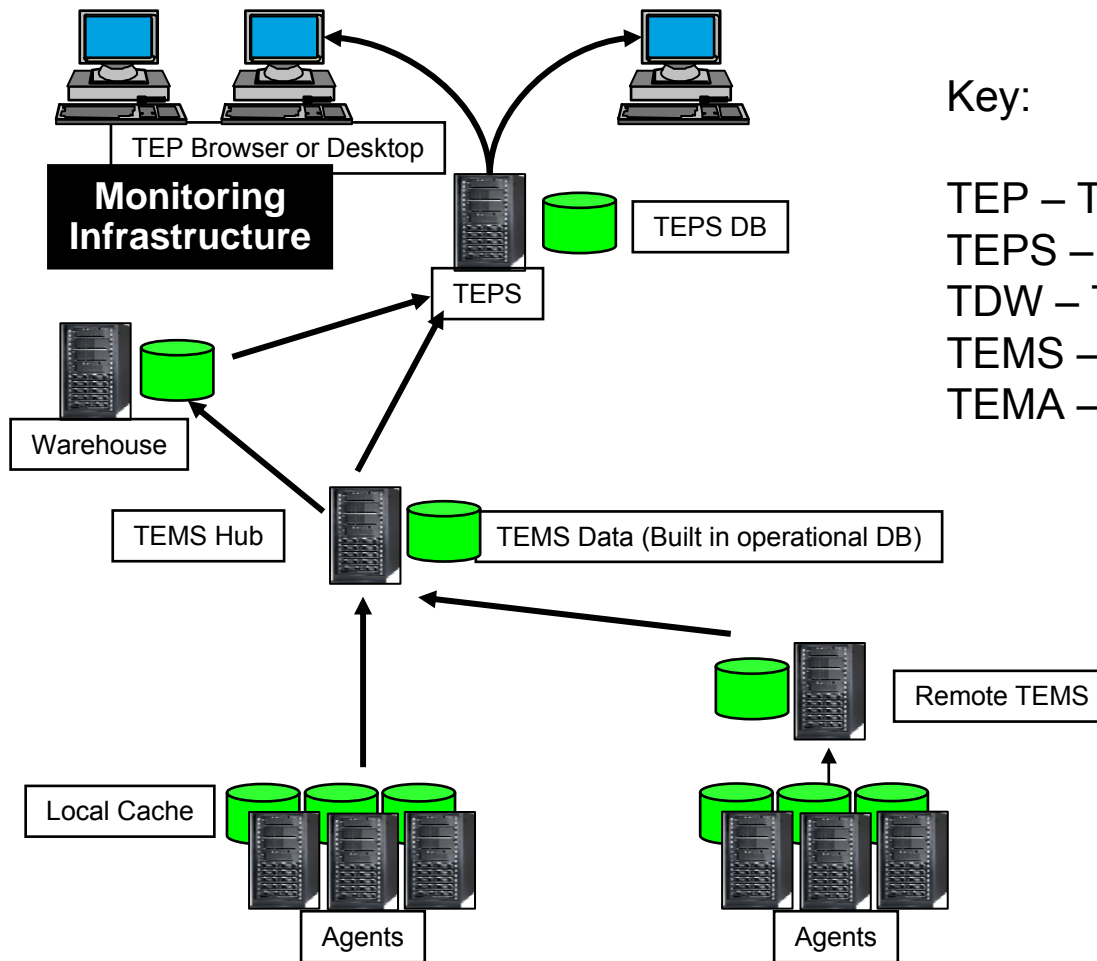
F1=Help F4=Top F5=Bot F7=Bkwd F8=Fwd F12=Return

TMS Overview

An Integrated Monitoring Approach



TMS/OMEGAMON XE Architecture Overview

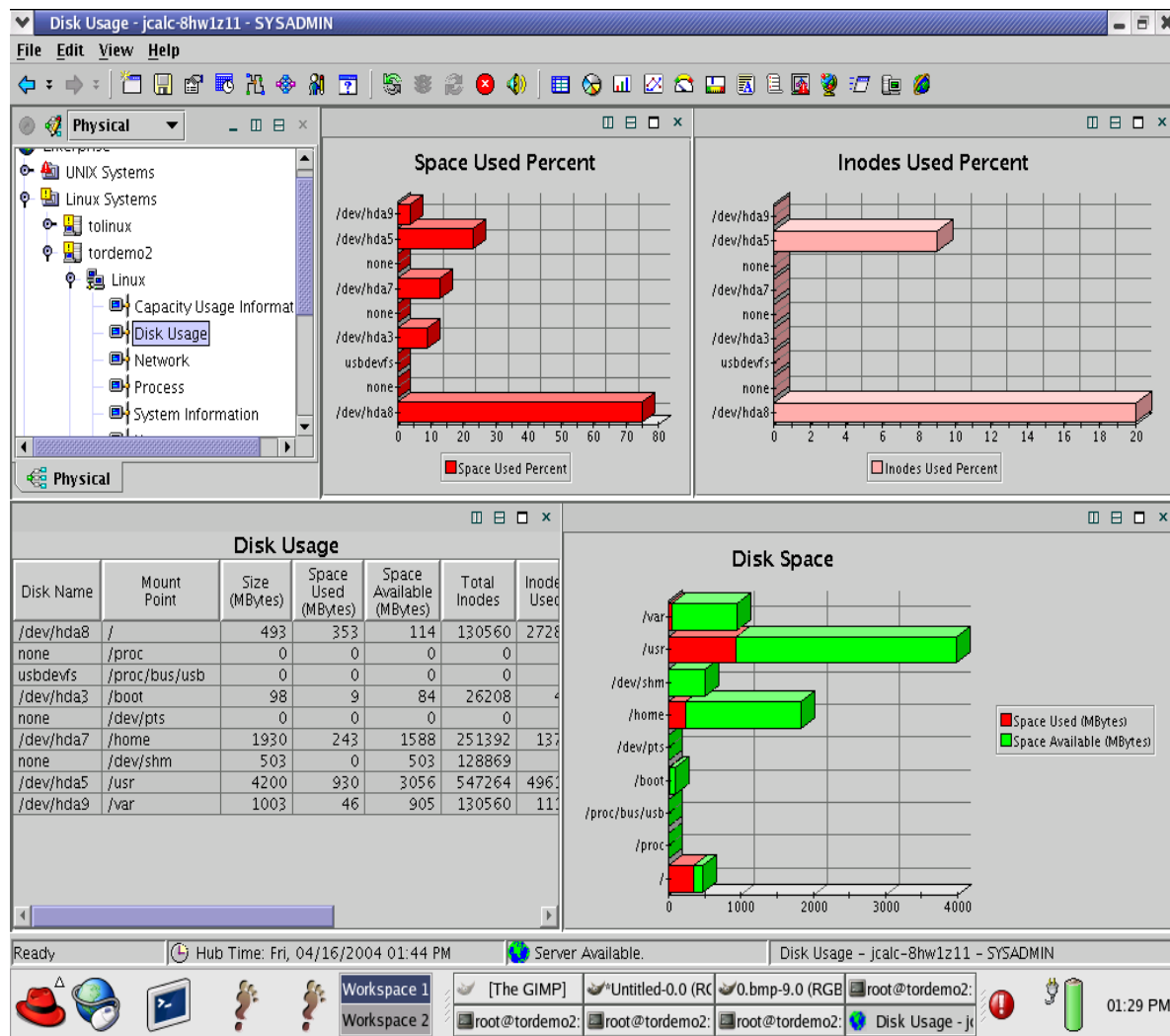


Key:

- TEP – Tivoli Enterprise Portal
- TEPS – Tivoli Enterprise Portal Server
- TDW – Tivoli Data Warehouse
- TEMS – Tivoli Enterprise Monitoring Server
- TEMA – Tivoli Enterprise Monitoring Agent

TEPS/TEMS Function

- Principal User Interface
 - ▶ End users
 - ▶ Administrators
- Browser-based or desktop application
- Flexible formatting
 - ▶ Multiple Views per Workspace
 - ▶ Discrete Queries to populate each View
 - ▶ Many ways to represent data
 - ▶ Many navigation options



Workspaces

The screenshot displays the Tivoli Enterprise Console interface for monitoring processes on a Linux system. The main window is titled "Process - PHKMSM - SYSADMIN *ADMIN MODE*".

Process Information Detail Table:

Process Command name (Unicode)	Process ID	Process Parent ID	Process State	Process System CPU (Percent)	Process User CPU (Percent)	Cumulative Process System CPU (Percent)	Cumulative Process User CPU (Percent)	Kernel Priority	Nice Value	Total Size(pages)	Resident Set Size(pages)
klzagent	9064	1	Sleeping	0.12	0.37	0.00	0.00	16	0	19371	294
pdflush	12	4	Sleeping	0.06	0.00	0.00	0.00	15	0	0	0
kswapd0	13	1	Sleeping	0.03	0.00	0.00	0.00	16	0	0	0
slpd	2029	1	Sleeping	0.02	0.01	0.00	0.00	16	0	888	291
cupsd	2105	1	Sleeping	0.01	0.00	0.00	0.00	16	0	1771	811
pickup	8756	2190	Sleeping	0.00	0.01	0.00	0.00	17	0	1196	39
events/0	4	1	Sleeping	0.00	0.00	0.00	0.00	5	-10	0	0
kslowcrw	8	4	Sleeping	0.00	0.00	0.00	0.00	15	-10	0	0
init	1	0	Sleeping	0.00	0.00	1.15	1.50	16	0	157	6
cio	6	4	Sleeping	0.00	0.00	0.00	0.00	15	-10	0	0
cio_notify	7	4	Sleeping	0.00	0.00	0.00	0.00	15	-10	0	0
aio/0	14	4	Sleeping	0.00	0.00	0.00	0.00	15	-10	0	0
kblockd/0	5	4	Sleeping	0.00	0.00	0.00	0.00	5	-10	0	0
kmcheck	43	1	Sleeping	0.00	0.00	0.00	0.00	25	0	0	0

Tivoli Enterprise Portal (TEP)

- **Tivoli Enterprise Portal provides the user interface for ITM & OMEGAMON monitors, and integrating applications**
- **The TEP Application Window has a number of components:**
 - ▶ Navigator
 - Tree like view of monitored environment
 - Shows alert icons when problems arise
 - You can create custom navigator views
 - ▶ Workspaces
 - Presents information to the user
 - Displayed as one or more Views
 - Pre-defined workspaces provided
 - Workspaces can be created and customized
 - ▶ Views
 - Displays data from agents
 - Based on queries and filters from agent data
 - You can define links to go directly to specific views



Tivoli Enterprise Portal

Improve your ability to Diagnose and Resolve Problems

**Easy to use
Browser controls**

Selectable Chart Options

Personalized Views

Navigation Tree

View Zoom

Intelligent Linking

Splitter controls

Persistent customized workspaces

The screenshot displays the Tivoli Enterprise Portal interface for monitoring OS/390 UNIX processes. It features a navigation tree on the left, a central area with two bar charts (UNIX Run Time and CPU Times), and a table of process details at the bottom. The interface includes various browser controls, splitter controls, and zoom options.

MVS Status	Process Status	Execution State	Process ID	Parent Process ID	Leader Session ID	Process Group	Foreground Pro
Normal	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	50462821	1	50462821	50462821	
Normal	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	33685615	1	33685615	33685615	
Normal	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	50462832	1	50462832	50462832	
Normal	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	33685672	1	33685672	33685672	
Swapped_Out	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	16908492	1	16908492	16908492	
Swapped_Out	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	33685727	1	33685727	33685727	
Normal	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	16908519	1	16908519	16908519	
Normal	Multiple_Tasks_In_Process_+ Pthrea...	Running_not_in_kernel_wait	50462998	1	50462998	50462998	

Situation Analysis

The screenshot displays the Tivoli Enterprise Console interface. On the left, a tree view shows the hierarchy: Enterprise > Windows Systems > IBM-734U41Z8ERV > Processor > NT_System_CPU_Critical. The main area is divided into several panes:

- Initial Situation Values:** A table showing the state at the start of the situation.
- Current Situation Values:** A table showing the current state.
- Take Action:** A panel with a dropdown for 'Action Name' and a list of commands: 'Start Service' and 'Stop Service'.
- Expert Advice:** A panel titled 'NT_System_CPU_Critical' with sections for 'Situation Description' and 'Possible Causes'.

Blue arrows point from text boxes on the right to the following elements in the interface:

- Initial Cause: Points to the 'Initial Situation Values' table.
- Current State: Points to the 'Current Situation Values' table.
- Expert Advice: Points to the 'Expert Advice' panel.
- Take action to fix the problem: Points to the 'Take Action' panel.

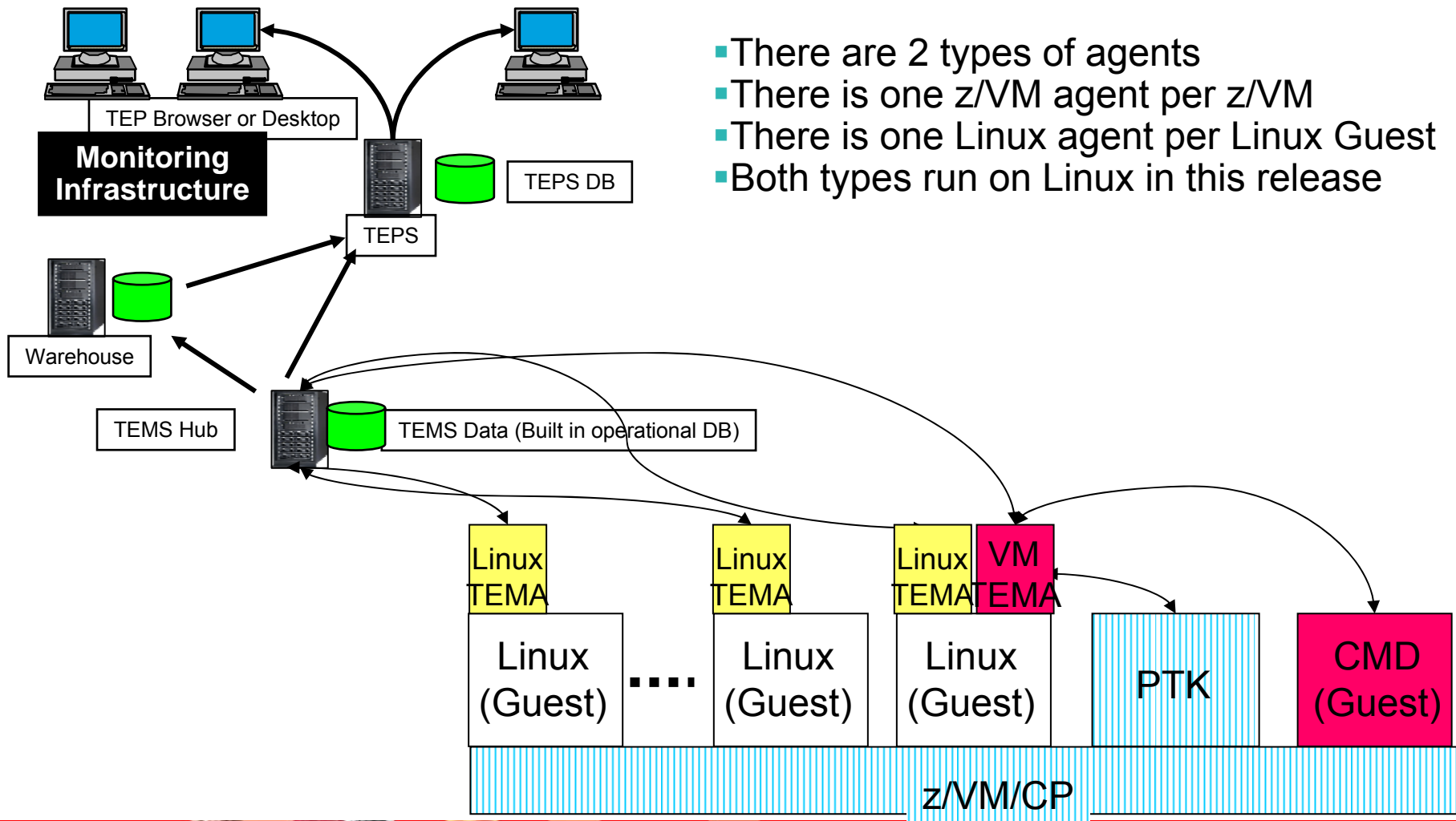
Initial Cause

Current State

Expert Advice

Take action to fix the problem

OMEGAMON XE on z/VM and Linux agents



- There are 2 types of agents
- There is one z/VM agent per z/VM
- There is one Linux agent per Linux Guest
- Both types run on Linux in this release

Tivoli OMEGAMON XE on z/VM and Linux

Release Timeline

- OMEGAMON for VM v630 released 1Q04
- Next major release in 2006

Platform Support

- Current product: z/VM Versions 3.1.0, 4.3.0, 4.4.0 (in either 31-bit or 64-bit images), 5.1.0 or 5.2.0
- Next release: z/VM v5.2, SLES 9 for S/390 and zSeries initially. Others as function is available.

New Features in Last Major Release

- Scan key metrics and compare results with baseline thresholds
- View workloads for virtual machines, groups, response times and LPAR reporting
- Historical reporting and trending analysis
- Bottleneck Analysis

Key Features in Current Release

- Single product offering for Linux on zSeries and z/VM
- Integrated OMEGAMON XE operations console for z/VM



Software Pre-requisites

- z/VM 5.2
- Performance Toolkit 5.2
- SLES 9 with DCSS support

Tivoli OMEGAMON XE on z/VM and Linux - a Scenario

Problem

- Uneven Linux Guest CPU consumption

Solution

- Use Linux Guest Workload workspace to identify problem Linux guest
- Link to Linux workload/process workspace to identify problem app/process
- Notify app owner of app performance problem

Potential Benefits

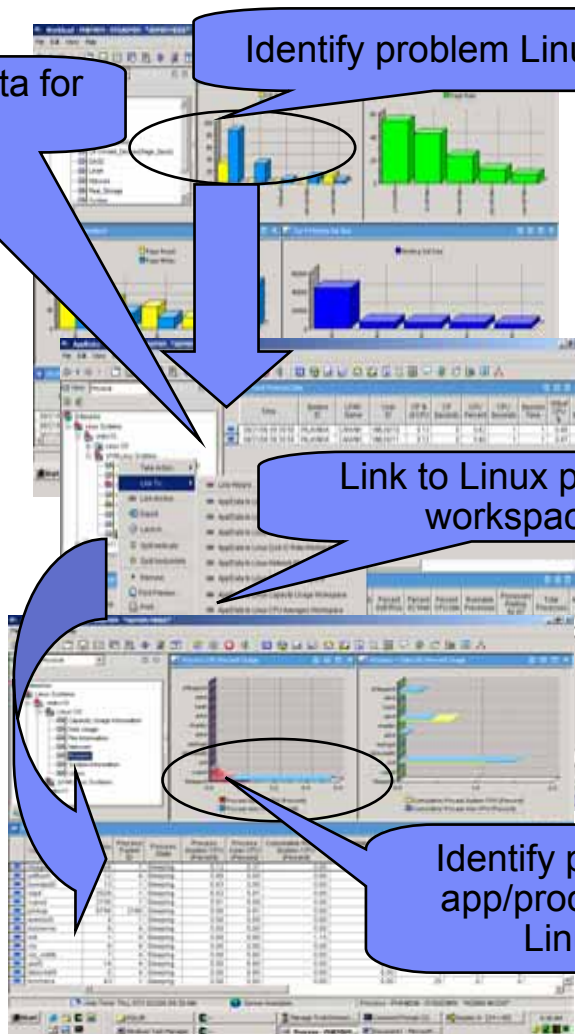
- Quicker identification of base problem
- Can manage z/VM and Linux from a single point of control

Look at additional data for Linux Guest

Identify problem Linux Guest

Link to Linux process workspace

Identify problem app/process on Linux



Tivoli OMEGAMON XE on z/VM and Linux a Scenario

Problem

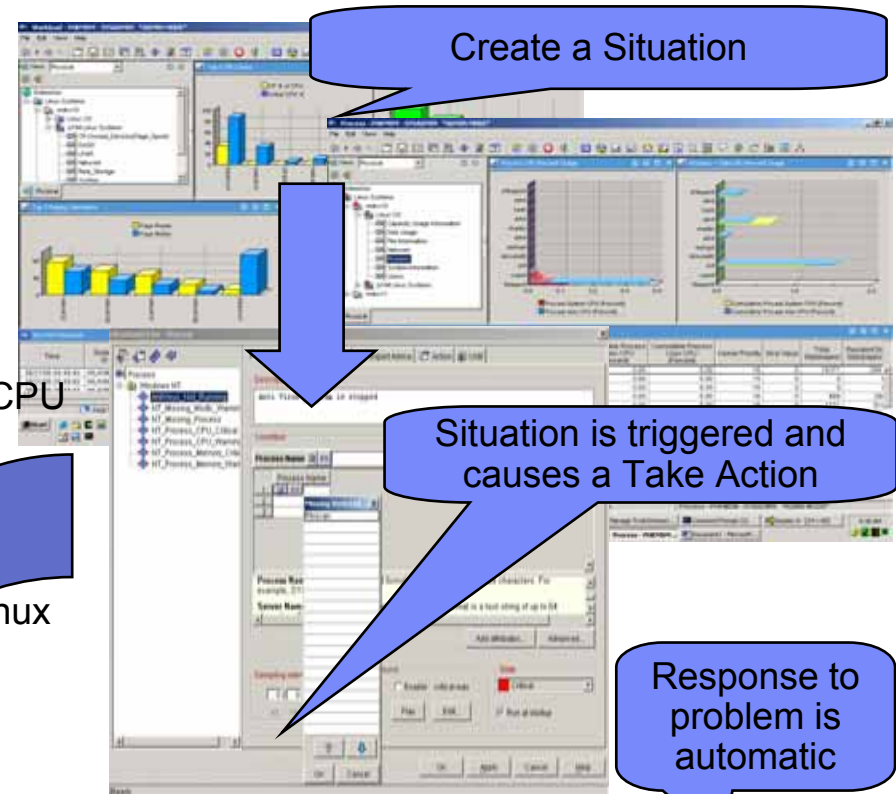
- Uneven Linux Guest CPU consumption

Solution

- Use situation to recognize high swapping with high CPU and working set size
- Send message to Operations Manager
- Operations Manager invokes a rule to execute a CP tuning command to allocate more resource to the Linux Guest

Potential Benefits

- Automated problem resolution
- Integrated solution



Create a Situation

Situation is triggered and causes a Take Action

Response to problem is automatic

Message is sent and triggers z/VM automation

Main Server
(GOMMAIN)

Action Processing
Server
(GOMSVMnn)

Automation Product (Operations Manager)

Tivoli OMEGAMON XE on z/VM and Linux

An integrated approach

Environment

- Browser based user interface
- A SOA application running on WAS
- DB backend
- WAS running on Linux
- Linux running on z/VM

Symptom

- Slow application GUI response

Needs

- Top to Bottom and End to End information
 - Application on SOA on WAS on Linux on z/VM
 - Browser to Firewall to Load Balancer to Router to Application to Back End DB and back
- Easy way to hand off information across team/specialty boundaries

An Infrastructure

- This product is part of a larger suite
- Linkages, situations and policies can be developed across apps and teams to address common problems/scenarios
- Common look and feel and data handling enables problem sharing
- Generates common events/alerts
- Uses common db interface
- Toolkit available for integrating other apps or tools

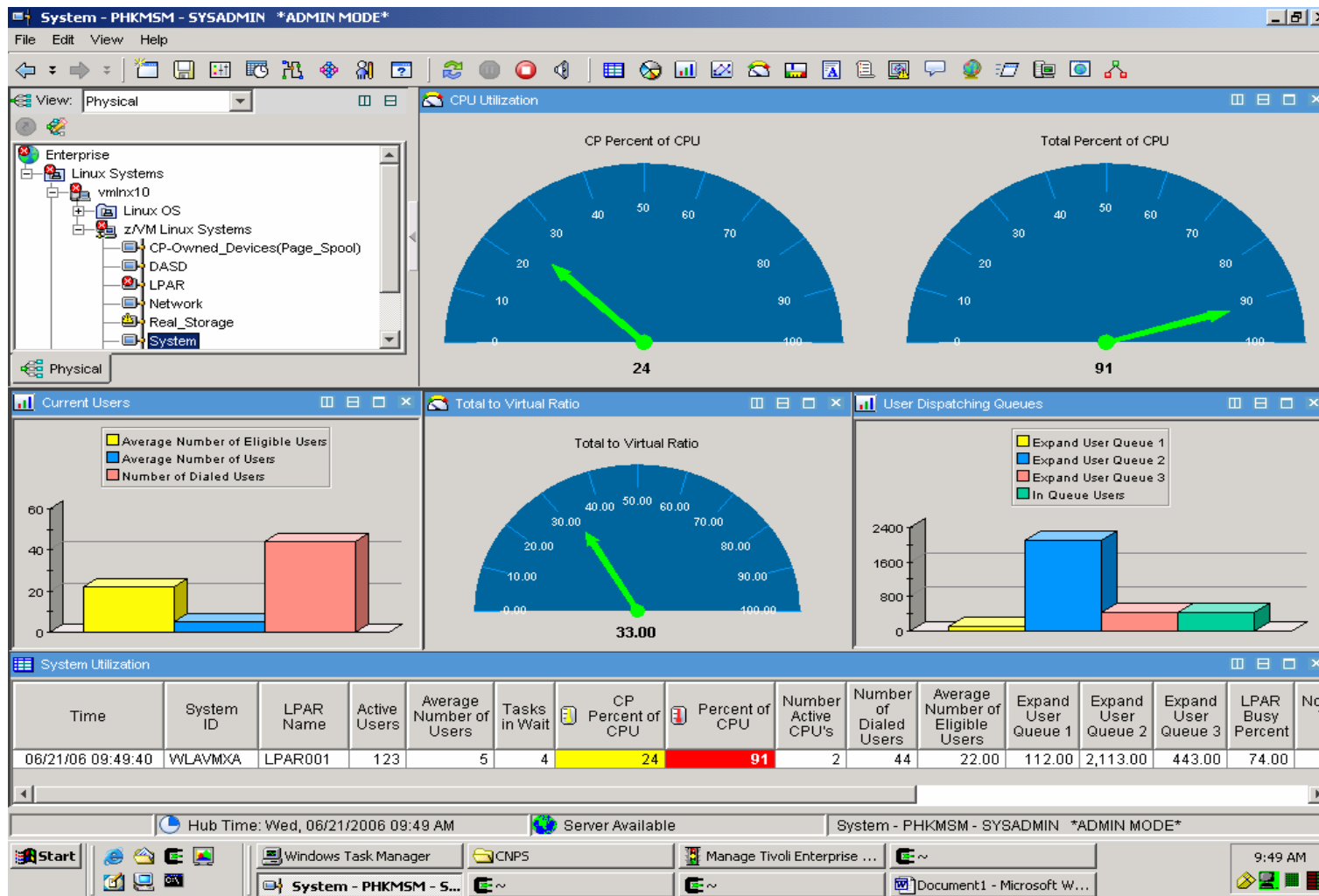


z/VM Workspaces

- **z/VM Linux Default Workspace**
- **PAGING and SPOOLING Utilization**
- **DASD**
- **LPAR Utilization**
- **NETWORK Utilization (Hiper Socket and Virtual Switch)**
- **REAL STORAGE Utilization**
- **TCPIP Utilization – Server**
- **TCPIP Utilization - Users**
- **SYSTEM Utilization**
- **System Terminal Workspace**
- **Workload (z/VM User ID) Activity**
- **Linux Workload Workspace**
- **ApplData Workspace**



SYSTEM Utilization



LPAR Utilization

LPAR - PHKMSM - SYSADMIN *ADMIN MODE*

File Edit View Help

View: Physical

Enterprise

- Linux Systems
 - vmnx10
 - Linux OS
 - zVM Linux Systems
 - CP-Owned_Devices(Page_Spool)
 - DASD
 - LPAR**
 - Network
 - Real_Storage
 - System
 - TCPIP
 - Workload
 - vmnx11

Physical

LPAR Busy

LPAR Name	LPAR Busy (%)	Physical CPU Busy (%)
TEST	18	33
VM1	33	12
MVS1	12	4
MVS2	4	0
LINUXST	0	23
VSE1	23	18
VM2	18	16
MVS2	16	0

LPAR Load

LPAR Name	LPAR Load (%)
TEST	18
VM1	33
MVS1	12
MVS2	4
LINUXST	0
VSE1	23
VM2	18
MVS2	16

LPAR Weight

LPAR Name	LPAR Weight (Average)
TEST	18
VM1	33
MVS1	12
MVS2	4
LINUXST	0
VSE1	23
VM2	18
MVS2	16

Partition Suspension

LPAR Name	LPAR Suspended Time (%)
TEST	18
VM1	33
MVS1	12
MVS2	4
LINUXST	0
VSE1	23
VM2	18
MVS2	16

LPAR Utilization

Time	System ID	LPAR Number	LPAR Name	LPAR Busy
06/21/06 09:49:40	WLAVMXA	1	TEST	18
06/21/06 09:49:40	WLAVMXA	2	VM1	33
06/21/06 09:49:40	WLAVMXA	3	MVS1	12
06/21/06 09:49:40	WLAVMXA	4	MVS2	4
06/21/06 09:49:40	WLAVMXA	5	LINUXST	0
06/21/06 09:49:40	WLAVMXA	6	VSE1	23
06/21/06 09:49:40	WLAVMXA	7	VM2	18
06/21/06 09:49:40	WLAVMXA	8	MVS2	16

Hub Time: Wed, 06/21/2006 09:48 AM Server Available LPAR - PHKMSM - SYSADMIN *ADMIN MODE*

Windows Task Manager CNPS Manage Tivoli Enterprise ... 9:48 AM

LPAR - PHKMSM - SYS... Document1 - Microsoft W...

WORKLOAD (z/VM User ID) Activity

Workload - PHKM5M - SYSADMIN *ADMIN MODE*

View: Physical

- Enterprise
 - Linux Systems
 - vmlnx10
 - Linux OS
 - z/VM Linux Systems
 - CP-Owned_Devices(Page_Spool)
 - DASD
 - LPAR
 - Network
 - Real_Storage
 - System

Physical

Top 5 CPU Users

| User | CP % of CPU | Virtual CPU % |
|---------|-------------|---------------|
| PERFKIT | ~40 | ~90 |
| VMLNX3 | ~10 | ~40 |
| OPER2 | ~5 | ~10 |
| VMLNX2 | ~5 | ~15 |
| VMLNX4 | ~15 | ~10 |

Top 5 Page Rate

| User | Page Rate |
|---------|-----------|
| PERFKIT | ~55 |
| VMLNX3 | ~45 |
| VMLNX2 | ~25 |
| VMLNX32 | ~15 |
| VMLNX4 | ~10 |

Top 5 Paging Operations

| User | Page Reads | Page Writes |
|---------|------------|-------------|
| VMLNX2 | ~75 | ~55 |
| VMLNX32 | ~55 | ~45 |
| VMLNX3 | ~55 | ~35 |
| VMLNX2 | ~45 | ~25 |
| PERFKIT | ~15 | ~85 |

Top 5 Working Set Size

| User | Working Set Size |
|---------|------------------|
| OPER1 | ~45000 |
| PERFKIT | ~10000 |
| VMLNX1 | ~10000 |
| VMLNX4 | ~10000 |
| VMLNX3 | ~10000 |

| Time | System ID | LPAR Name | User ID | CP % of CPU | CP Seconds | CPU Percent | CPU Seconds | Session Time | Virtual CPU % | Virtual Seconds | Page Rate | Page Reads | Page Writes | Resident Pages | Resident Pages > 2GB |
|-------------------|-----------|-----------|---------|-------------|------------|-------------|-------------|--------------|---------------|-----------------|-----------|------------|-------------|----------------|----------------------|
| 06/21/06 09:49:40 | WLAVMXA | LPAR001 | VMLNX1 | 0.01 | 0 | 0.06 | 2 | 2 | 0.05 | 1 | 0.01 | 0.01 | 0.01 | 43 | 76 |
| 06/21/06 09:49:40 | WLAVMXA | LPAR001 | VMLNX2 | 0.11 | 2 | 1.00 | 123 | 123 | 1.00 | 1 | 3.00 | 77.00 | 54.00 | 55 | 4 |
| 06/21/06 09:49:40 | WLAVMXA | LPAR001 | VMLNX3 | 0.21 | 1 | 32.00 | 231 | 231 | 32.00 | 1 | 43 | 46.00 | 23.00 | 66 | 46 |

Hub Time: Wed, 06/21/2006 09:55 AM Server Available Workload - PHKM5M - SYSADMIN *ADMIN MODE*

Windows Task Manager CNPS Manage Tivoli Enterprise ... 9:55 AM

Workload - PHKM5M ... Document1 - Microsoft W...

System Information

System Information - PHKMSM - SYSADMIN *ADMIN MODE*

View: Physical

- Enterprise
 - Linux Systems
 - vmlnx10
 - Linux OS
 - Capacity Usage Information
 - Disk Usage
 - File Information
 - Network
 - Process
 - System Information**
 - Users
- z/VM Linux Systems
 - vmlnx11

Physical

System Load

0.010
0.000

- System Load Last 1 Minute
- System Load Last 5 Minutes
- System Load Last 15 Minutes

Paging Rates

12
10
8
6
4
2
0

- Pages paged in per sec
- Pages paged out per sec
- Pages Swapped In
- Pages Swapped in per sec

CPU Usage

100
80
60
40
20
0

- User CPU (Percent)
- User Nice CPU (Percent)
- System CPU (Percent)
- Idle CPU (Percent)

System Statistics

| Context Switches per second | Percent Change Context Switches per second | Processes created per second | Percent Change Processes Created | Number of User Logins | System Load |
|-----------------------------|--|------------------------------|----------------------------------|-----------------------|-------------|
| 44 | 528.57 | 0 | 0.00 | 3 | 0.00 |

Virtual Memory Statistics

240
200
160
120
80
40
0

- Swap Space Used(MB)
- Swap Space Free(MB)
- Memory Used(MB)
- Memory Free(MB)
- Shared Memory(MB)
- Memory in Buffers(MB)
- Memory Cached(MB)

CANVM1.VMLNX10:LZ

Hub Time: Thu, 07/13/2006 09:38 AM Server Available System Information - PHKMSM - SYSADMIN *ADMIN MODE*

Start SQLLIB Manage Tivoli Enterpri... Command Prompt (2) Session A - [24 x 80] 9:38 AM

Windows Task Manager System Informatio... Document1 - Microsoft...

CPU Averages

CPU Averages - DEPTF72A - SYSADMIN

File Edit View Help

View: Physical

- TCPIP
- Workload
- Windows Systems
 - GDLVICOM
 - Linux OS
 - Capacity Usage Information
 - Disk Usage
 - File Information
 - Network
 - Process
 - System Information
 - Users
 - z/VM Linux Systems
 - CP Owned Devices(Paging Spooling)

Physical

Current Overall CPU Usage

CPU Averages (Hourly Updates)

CPU Usage Trends

| Estimated Days until CPU Upgrade | Total CPU Used Current Average (Percent) | Total CPU Used Moving Average (Percent) | User Nice CPU Current Average (Percent) | User Nice CPU Moving Average (Percent) | User CPU Current Average (Percent) | User CPU Moving Average (Percent) | System CPU Current Average (Percent) | System CPU Moving Average (Percent) | Idle CPU (Percent) | Idle CPU Moving Average (Percent) |
|----------------------------------|--|---|---|--|------------------------------------|-----------------------------------|--------------------------------------|-------------------------------------|--------------------|-----------------------------------|
| 0 | 0.00 | 9.71 | 0.00 | 0.00 | 6.96 | 5.97 | 4.30 | 2.43 | 88.71 | 90.30 |

Hub Time: Mon, 11/20/2006 02:00 PM Server Available CPU Averages - DEPTF72A - SYSADMIN

Process

The screenshot displays the Tivoli Process Monitor interface. On the left is a tree view of the system hierarchy. The main area contains two charts: 'Process CPU Percent Usage' and 'Process + Child CPU Percent Usage'. Below the charts is a 'Process Information Detail' table.

| Process Command name (Unicode) | Process ID | Process Parent ID | Process State | Process System CPU (Percent) | Process User CPU (Percent) | Cumulative Process System CPU (Percent) | Cumulative Process User CPU (Percent) | Kernel Priority | Nice Value | Total Size(pages) | Resident Set Size(pages) |
|--------------------------------|------------|-------------------|---------------|------------------------------|----------------------------|---|---------------------------------------|-----------------|------------|-------------------|--------------------------|
| klzagent | 9064 | 1 | Sleeping | 0.12 | 0.37 | 0.00 | 0.00 | 16 | 0 | 19371 | 294 |
| pdflush | 12 | 4 | Sleeping | 0.06 | 0.00 | 0.00 | 0.00 | 15 | 0 | 0 | |
| kswapd0 | 13 | 1 | Sleeping | 0.03 | 0.00 | 0.00 | 0.00 | 16 | 0 | 0 | |
| slpd | 2029 | 1 | Sleeping | 0.02 | 0.01 | 0.00 | 0.00 | 16 | 0 | 888 | 291 |
| cupsd | 2105 | 1 | Sleeping | 0.01 | 0.00 | 0.00 | 0.00 | 16 | 0 | 1771 | 81 |
| pickup | 8756 | 2190 | Sleeping | 0.00 | 0.01 | 0.00 | 0.00 | 17 | 0 | 1196 | 39 |
| events/0 | 4 | 1 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 5 | -10 | 0 | |
| kslowcrw | 8 | 4 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 15 | -10 | 0 | |
| init | 1 | 0 | Sleeping | 0.00 | 0.00 | 1.15 | 1.50 | 16 | 0 | 157 | 6 |
| cio | 6 | 4 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 15 | -10 | 0 | |
| cio_notify | 7 | 4 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 15 | -10 | 0 | |
| aio/0 | 14 | 4 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 15 | -10 | 0 | |
| kblockd/0 | 5 | 4 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 5 | -10 | 0 | |
| kmcheck | 43 | 1 | Sleeping | 0.00 | 0.00 | 0.00 | 0.00 | 25 | 0 | 0 | |

Summary

- IBM had two z/VM performance monitoring tools.
- IBM is converging these with Linux for zSeries monitoring.
- The converged product is based on the Tivoli monitoring infrastructure which includes:
 - ▶ Linux and z/VM monitoring
 - ▶ Flexible, user configurable interface
 - ▶ Situations and Policies
 - ▶ Historical data warehousing – aggregation and pruning
 - ▶ 3270 based drill down supplement – z/VM Performance Toolkit
- The new product is part of an integrated monitoring suite that can provide broad performance monitoring and management to help address broader problems with a 3270 drill down capability.

