

Monitoring VMware ESX Server
Virtual Machines with HP
OpenView and MOM2005
Management Pack

Hank Wright

Executive Vice President

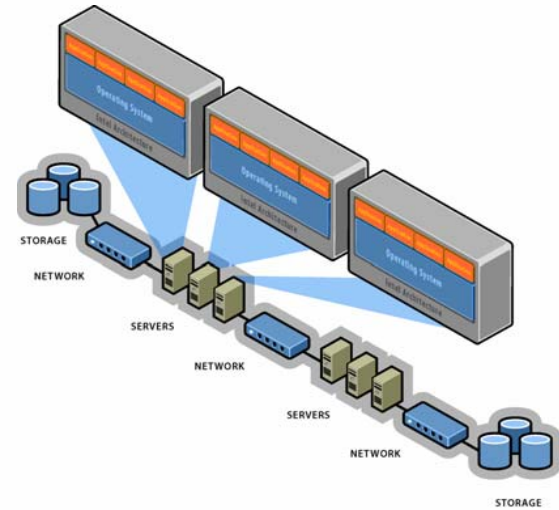


VMWORLD 2006

VMware ESX Server & VirtualCenter

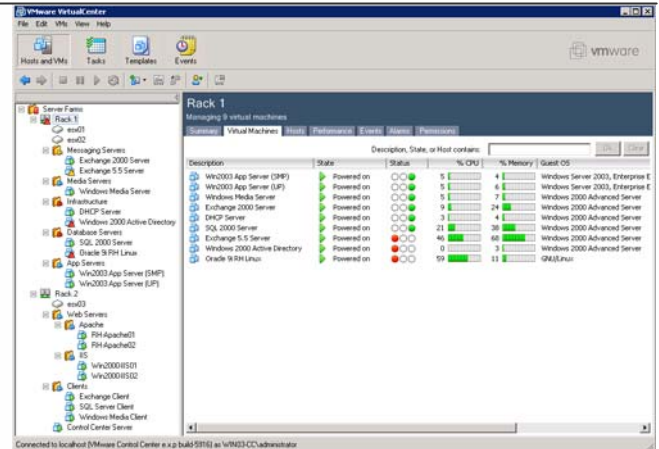
ESX Server

- Server Containment
- Provisioning on Demand
- Security
- Scalability
- Business Continuity

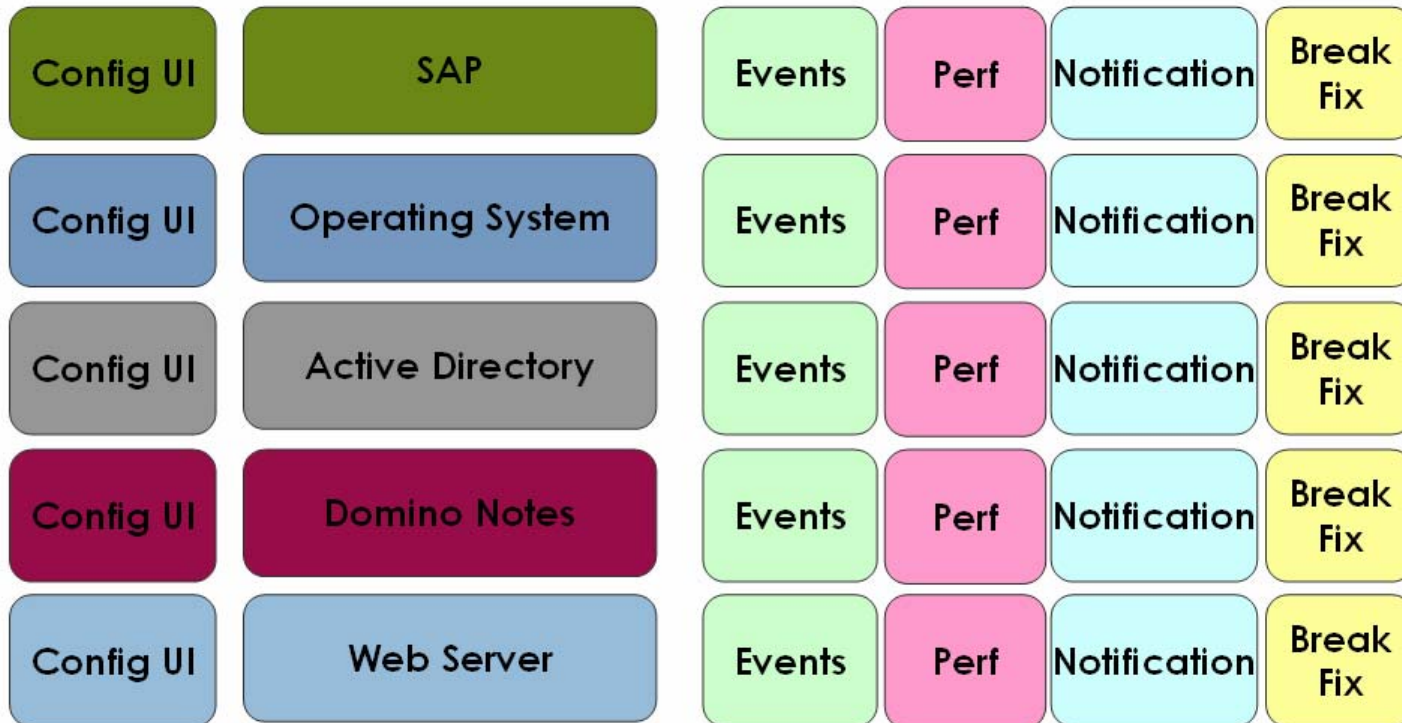


VirtualCenter

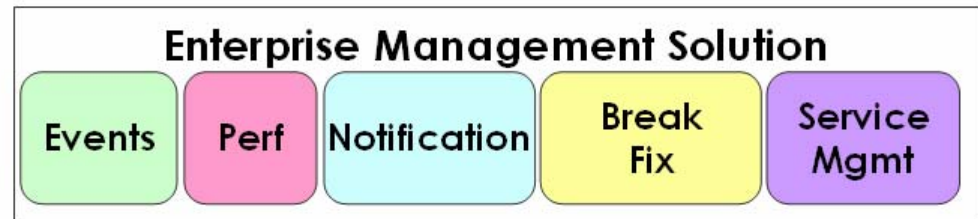
- Infrastructure Management
- Administrator's Console
- VMotion
- VMware specific



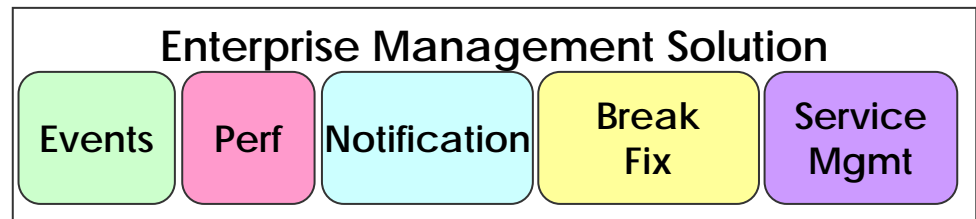
Why Enterprise Management?



Why Enterprise Management?

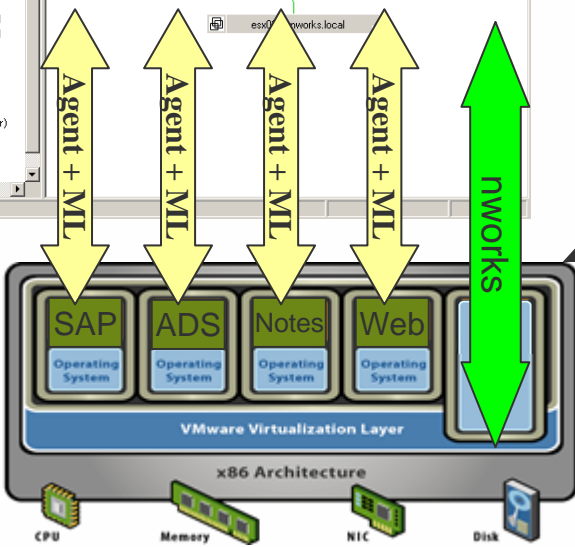
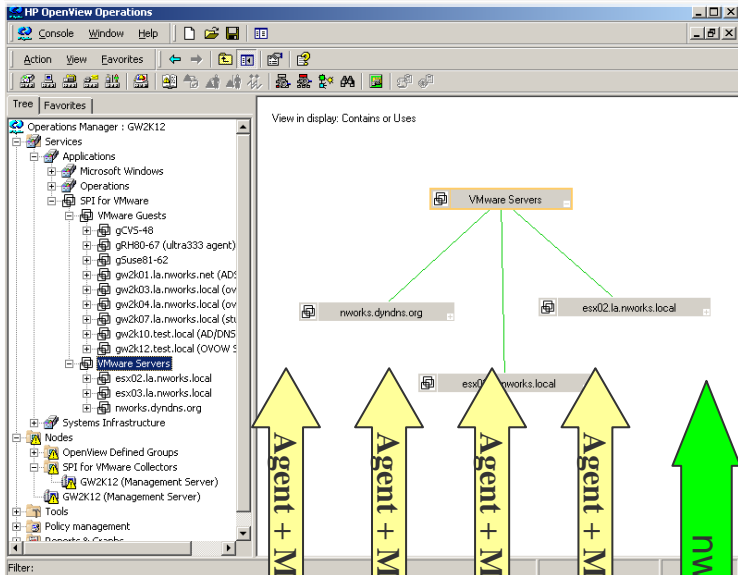


Why Enterprise Management?

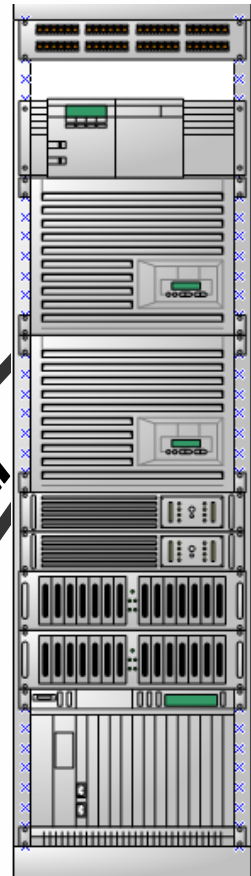


EMS & Element Manager

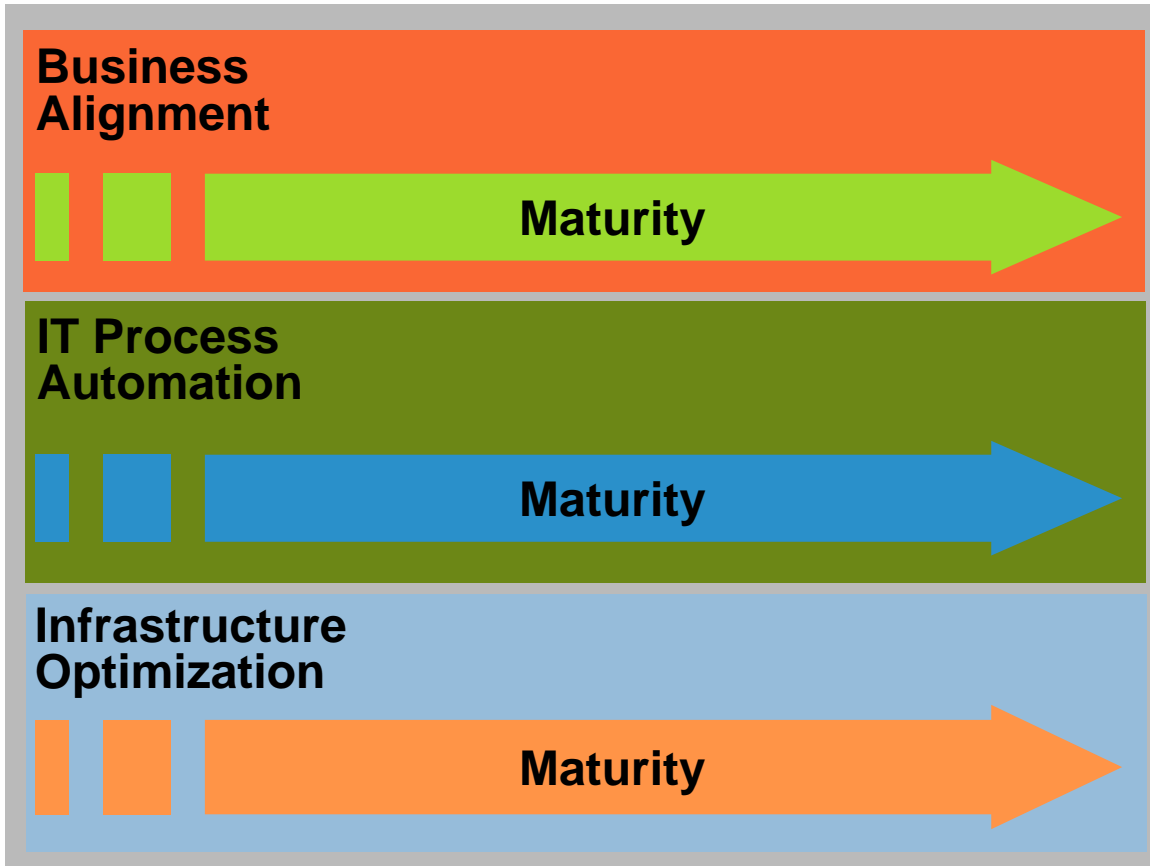
Enterprise Manager (Application & Service Management)



Element Manager (Hardware Life-Cycle Management)



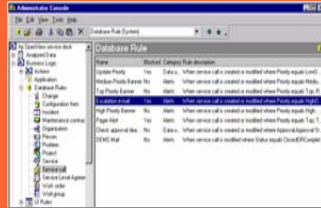
Enterprise Management



To be successful in the new IT world, an IT team must address all three of these interrelated vectors

HP OpenView

Business Alignment



HP OpenView

- * Service Desk
- * Service Center
- * Business Process Insight
- * ...

IT Process Automation



Windows



Unix

HP OpenView

- * Operations
- * Change & Configuration
- * Asset Management
- * ...

Infrastructure Optimization

- SQL Server
- Exchange
- Active Directory
- Domino/Notes
- Citrix
- Windows/Netware/Linux
- HPUX/AIX/Solaris



HP Systems Insight Manager

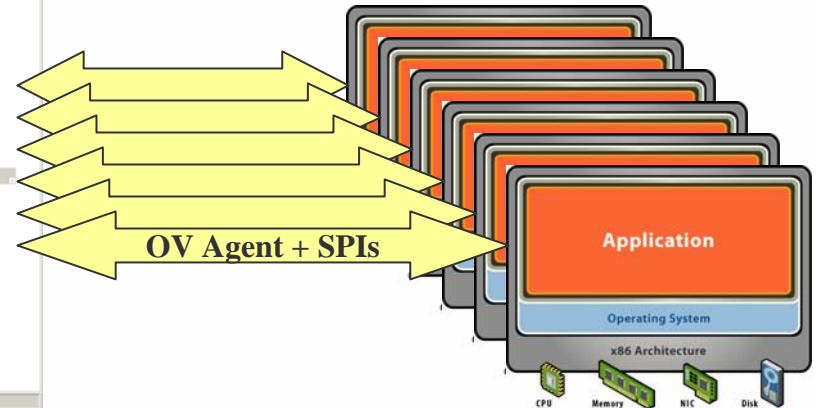
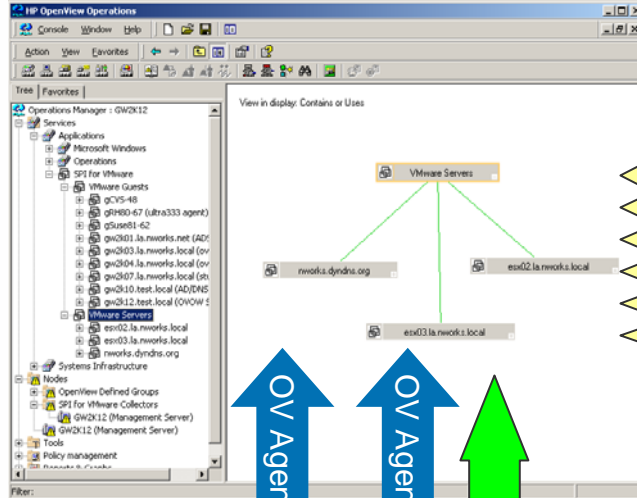
- * Virtual Machine Management
- * Server Migration Pack

VMware

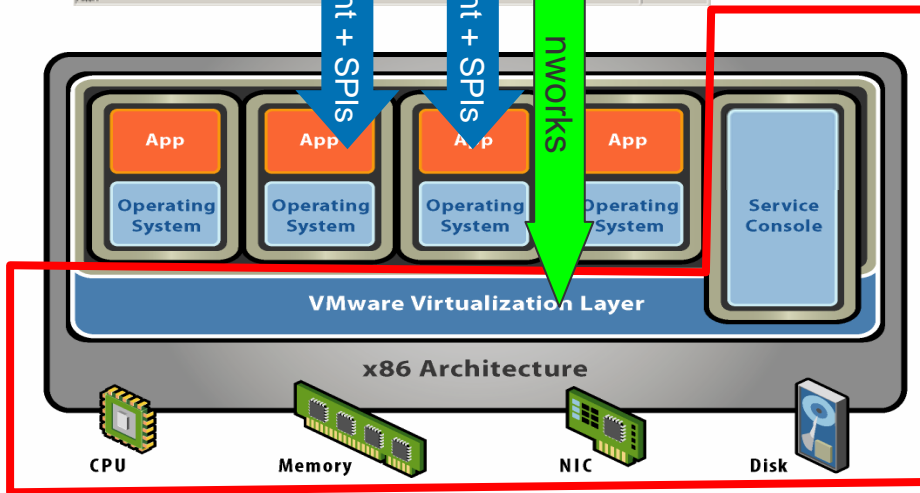
- * VirtualCenter

Application Services Management

HP OpenView Operations

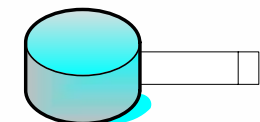
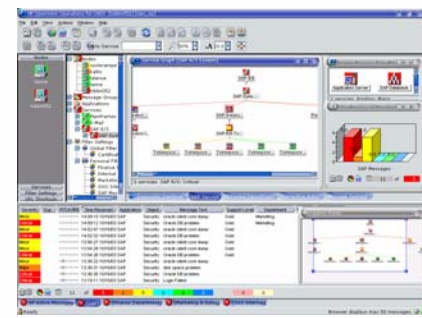
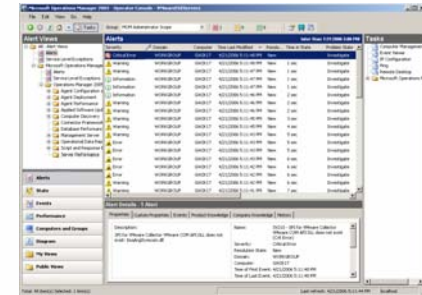
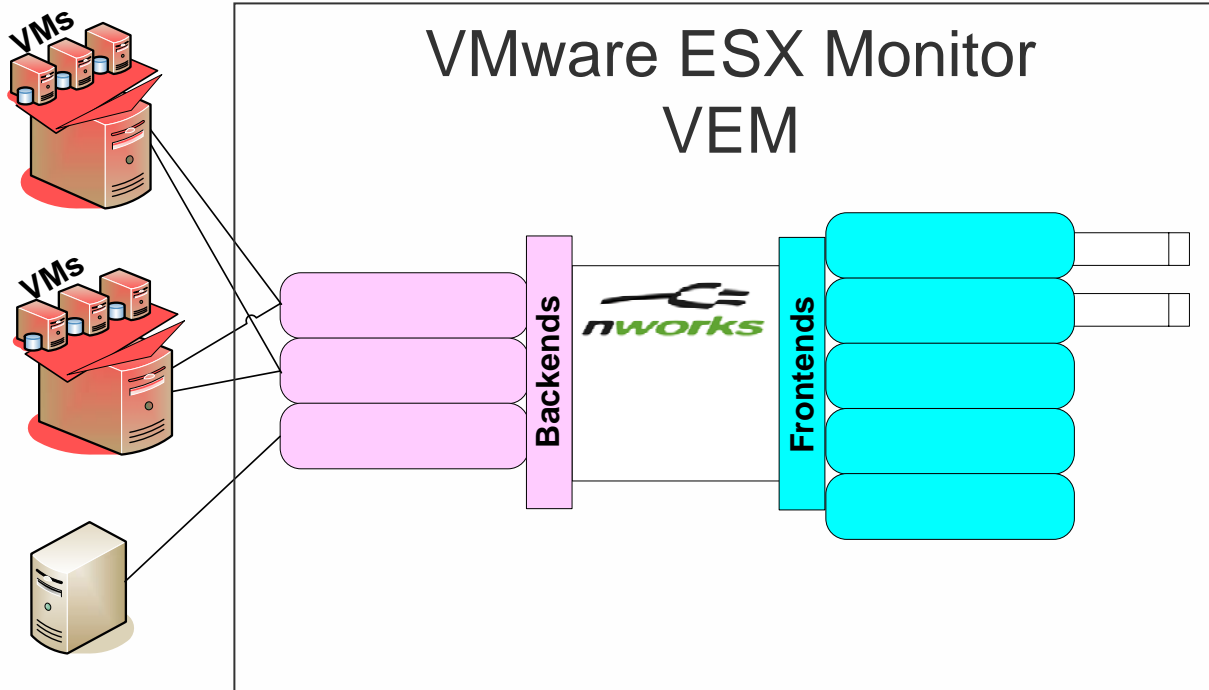


ESX Server

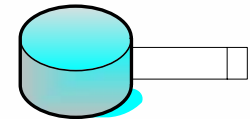
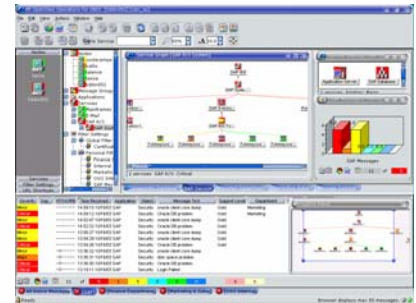
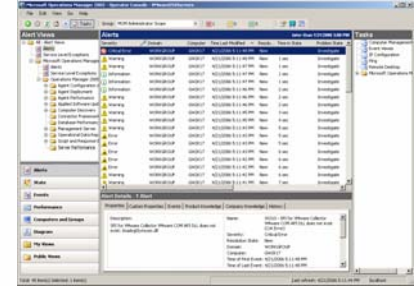
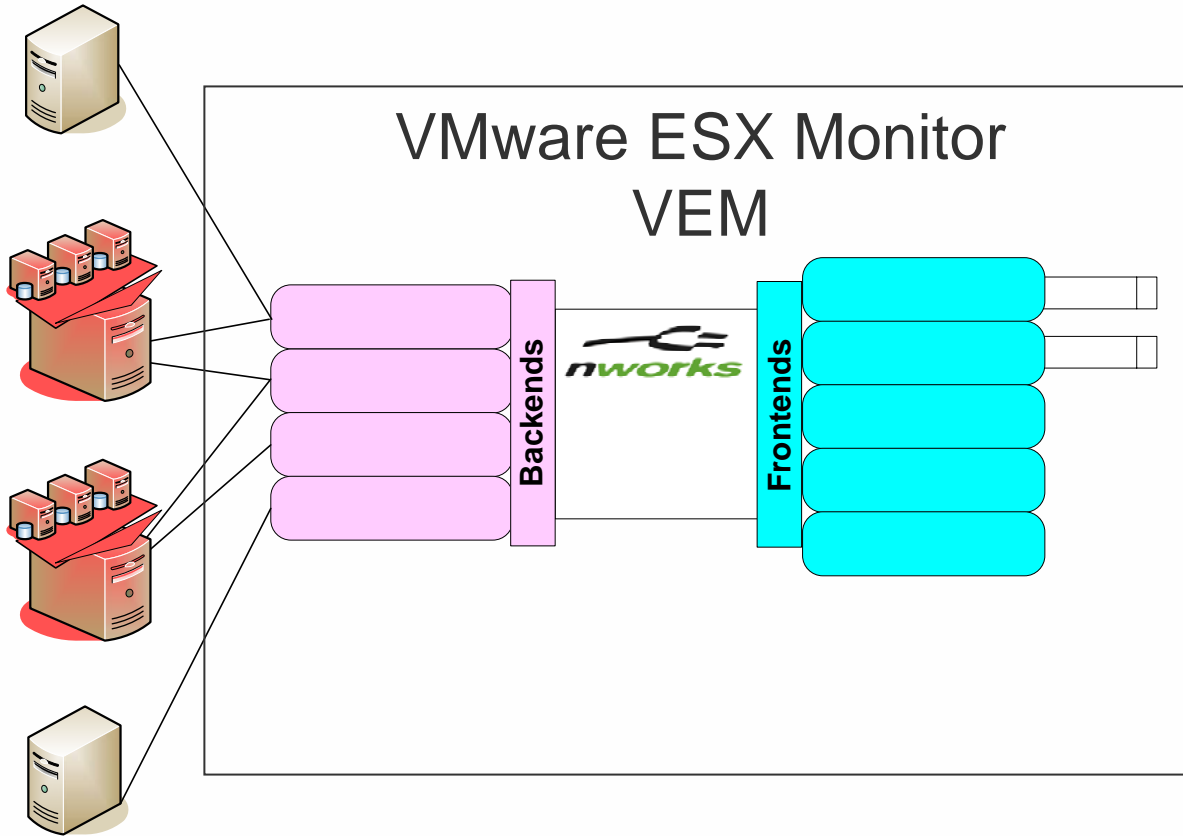


- Time becomes non-linear with virtualization
- What is the true physical resource usage?
- Where is my Virtual Machine?
- Do I have capacity?

Version 2.10



Version 3

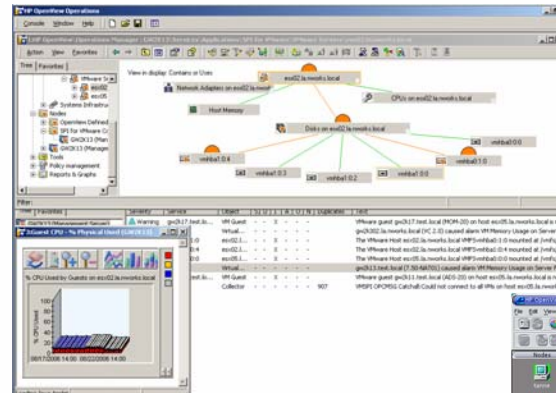


nworks Smart Plug-in for VMware

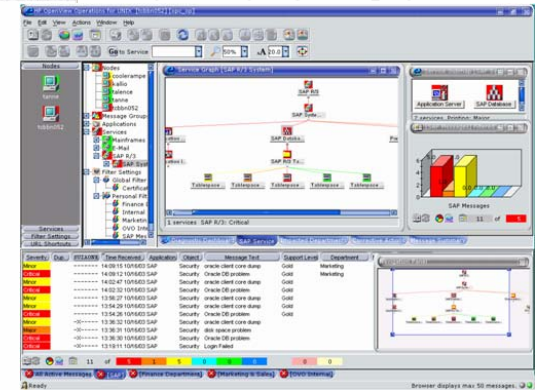
■ nworks.com/vmware - SPI for VMware

- Performance, capacity, configuration, and event tracking
- No agents on the ESX server or VirtualCenter
- Graphing & reporting
- Policies/templates
- Service maps

OVOW 7



OVOU 7/8



Events

The screenshot shows the HP OpenView Operations console. The main window displays a message browser for 'NWORKS2 (Management Server)' with the following table of active messages:

Severity	S	U	I	A	O	N	Received	Node	Application	Object	Text
Normal	-	X	-	-	-	-	4/28/2004 9:47:34 AM	NWORKS2 (Ma...	SPI for VMWare	Collector	SPI for VMWare Collector Servi
Warning	-	X	-	-	-	-	4/28/2004 9:47:34 AM	NWORKS2 (Ma...	SPI for VMWare	Runtim...	SPI for VMWare Collector Tracir
Major	-	X	-	-	-	-	4/28/2004 9:47:34 AM	NWORKS2 (Ma...	SPI for VMWare	Collector	Cannot connect to host 206.17
Major	-	X	-	-	-	-	4/28/2004 2:40:04 PM	NWORKS2 (Ma...	SPI for VMWare	Collector	Cannot connect to host 206.17
Normal	-	X	-	-	-	-	4/28/2004 2:40:04 PM	NWORKS2 (Ma...	SPI for VMWare	Collector	SPI for VMWare Collector Servi
Warning	-	X	-	-	-	-	4/28/2004 2:40:04 PM	NWORKS2 (Ma...	SPI for VMWare	Runtim...	SPI for VMWare Collector Tracir

Two 'Message Properties' windows are open, showing details for selected messages:

Message Properties (Left):

- Message: SPI for VMWare Collector Service Started
- Original Event:
 - Node:
 - Message group: VM_SPI
 - Application: SPI for VMWare
 - Object: Collector
 - Severity: Normal
 - Text: SPI for VMWare Collector Service Started

Message Properties (Right):

- Message: VMWare guest /root/vmware/winNetStandard/winNetStandard01.vmx on host 206.171.162.20 is configured, but not running.
- Original Event:
 - Node:
 - Message group: VM_SPI
 - Application: SPI for VMWare
 - Object: Status
 - Severity: Minor
 - Text: VMWare guest /root/vmware/winNetStandard/winNetStandard01.vmx on host 206.171.162.20 is configured, but not running.

Tools

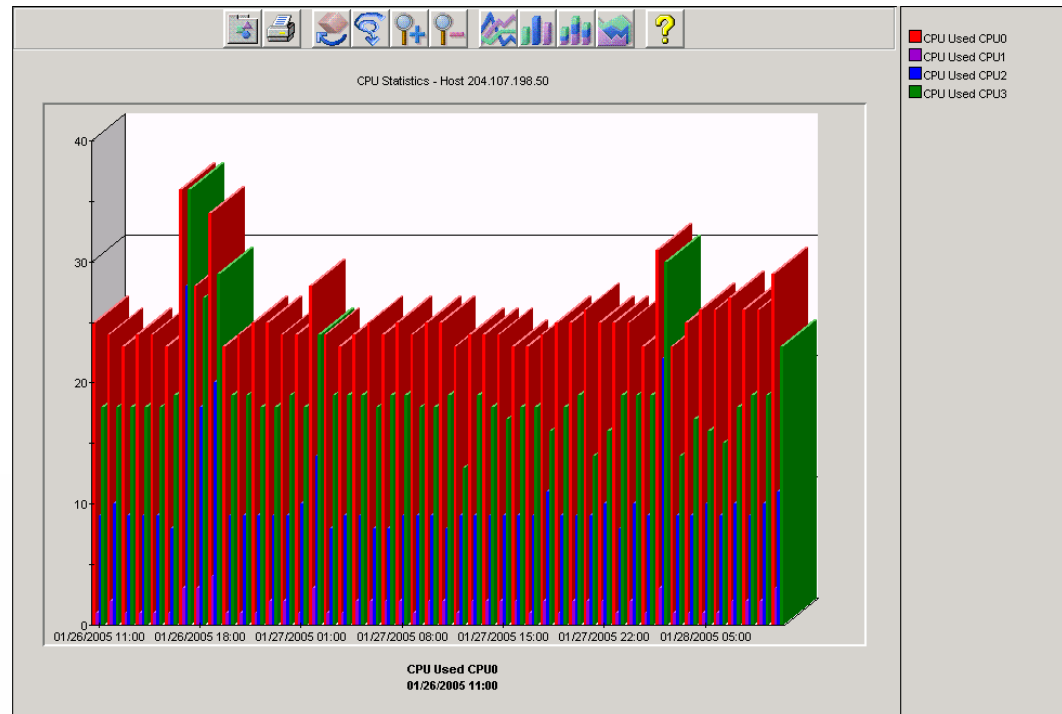
The image displays three overlapping windows from a VMware management interface:

- Tool Status:** A window showing a table of launched tools. The table has columns for Status, Action, Node, and Command. One entry is visible: Succeeded, OVOW Patches..., ManagementSe, and a command starting with "%OVOWInstallDir%\bin\ovowstat". Below the table is a "Tool Output:" section with a text area containing patch details.
- esx02.la.nworks.local VMware ESX Stats 2005-07-21 18:50:01 (Recent) - Microsoft Internet Explorer:** A browser window showing the VMware ESX Server usage statistics. It includes a "Recent" section with three CPU system graphs for hosts: 148 gSus-009.test.local (13) /rc, 149 gSUs-010.test.local (17) /h, and another partially visible one. Each graph shows CPU usage over time.
- VMware SPI Configuration - Microsoft Internet Explorer:** A browser window showing the "SPI for VMware Collector Configuration" page. It features a navigation menu with "Host", "VirtualCenter", "Tools", and "Support". The main content area is titled "Hosts (ESX Servers) to be Monitored" and includes buttons for "Add Host", "Edit Host", "Delete Host", and "Test Host". A list of hosts is shown: esx02.la.nworks.local, esx03.la.nworks.local, and esx05.la.nworks.local. The nworks logo is present, along with version and license information: Collector UI Vers: 1.50, Collector Vers: 1.50, License Key: 6166479-13044-0.

Graphs

esxhost01

- Root Cause
- Impacted
- Map
- Launch Tool
- Show Graph...
- Show Report...
- Active Messages
- Acknowledged Messages
- Properties



Reports

- Configuration information

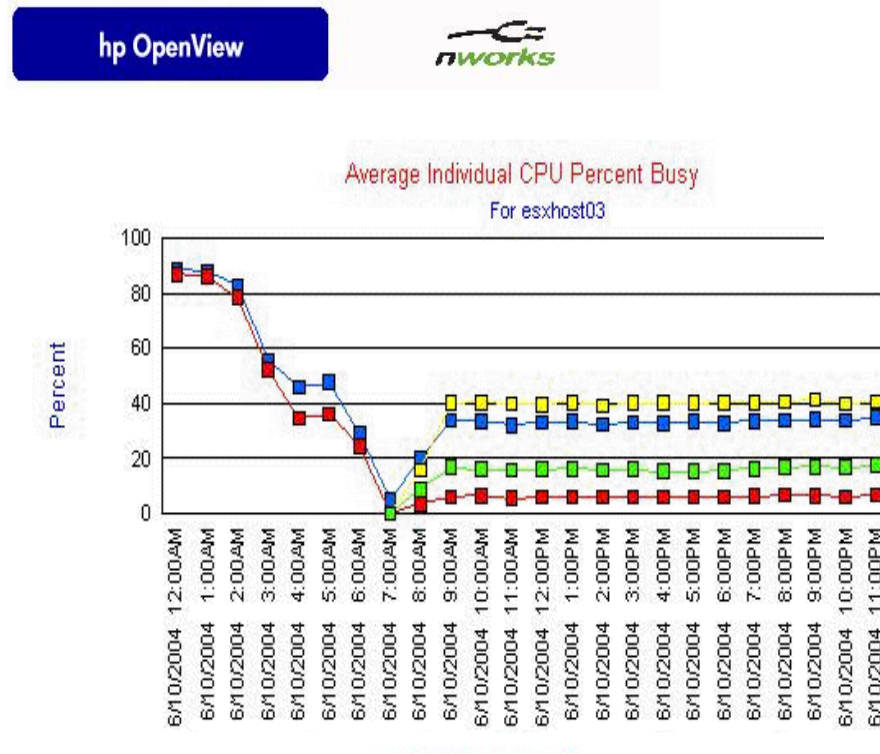
- ▶ Version
- ▶ VMS/OS
- ▶ ESX Servers

- Host

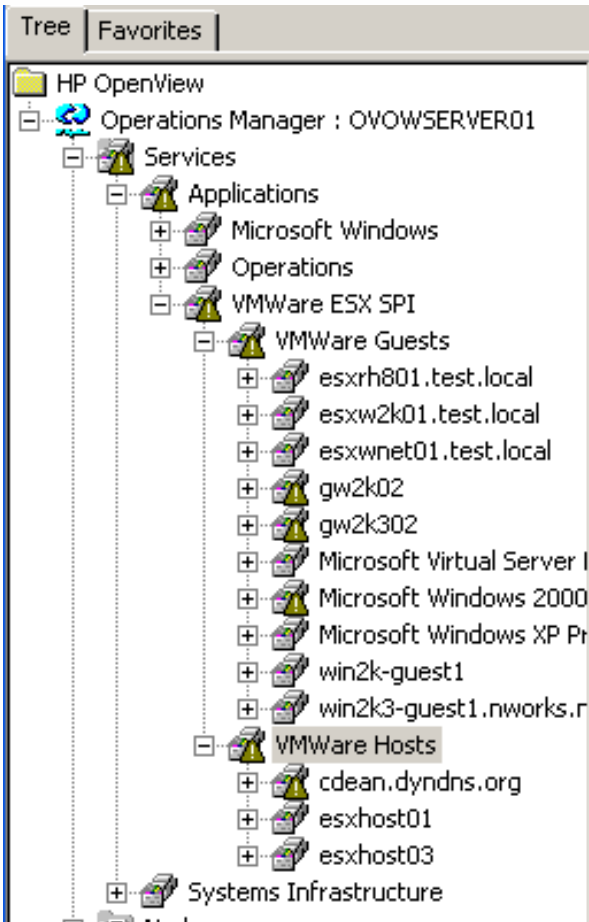
- ▶ Memory
- ▶ CPU
- ▶ Disk
- ▶ Network

- Guest

- ▶ Memory
- ▶ CPU
- ▶ CPU affinity
- ▶ Network
- ▶ Disk

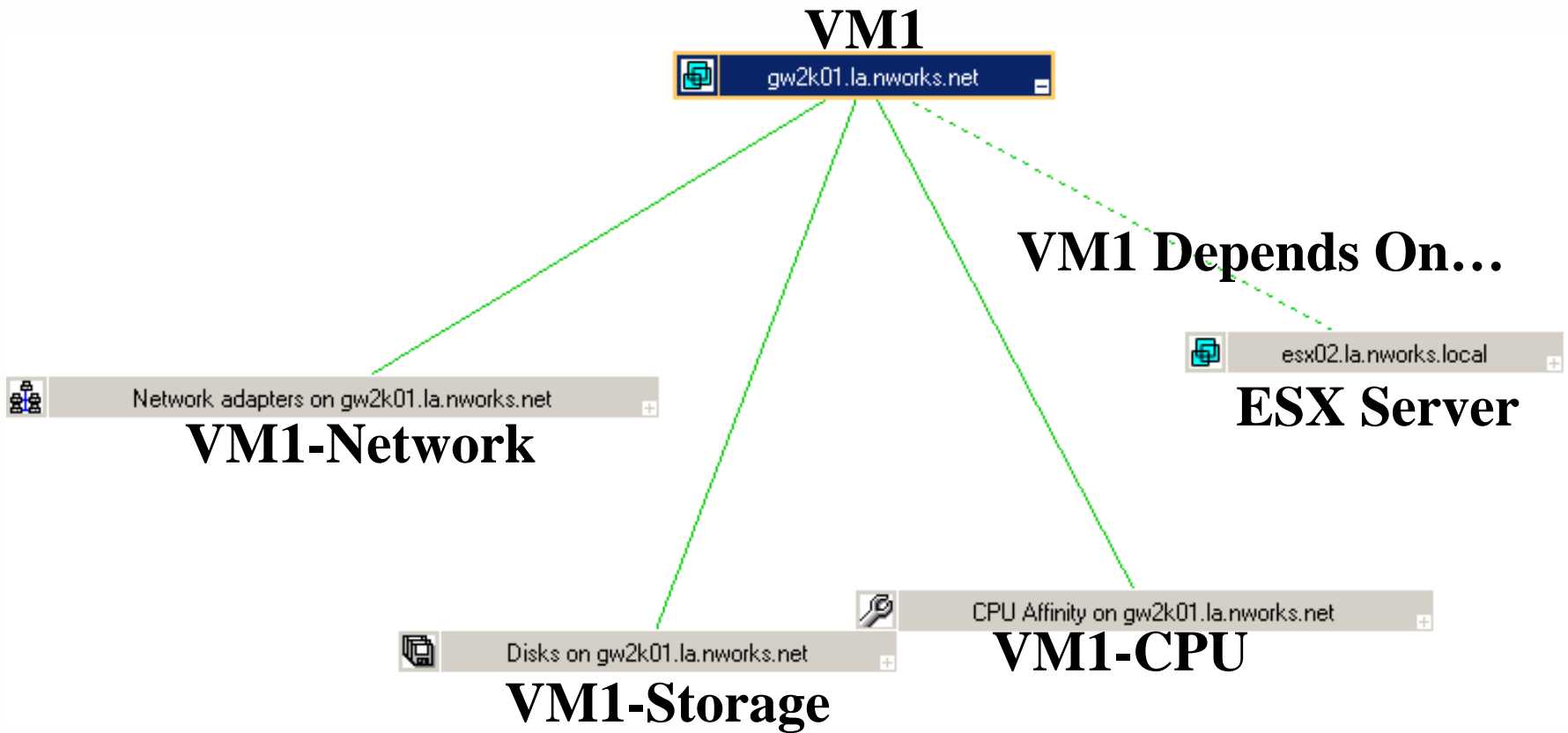


Service Mapping

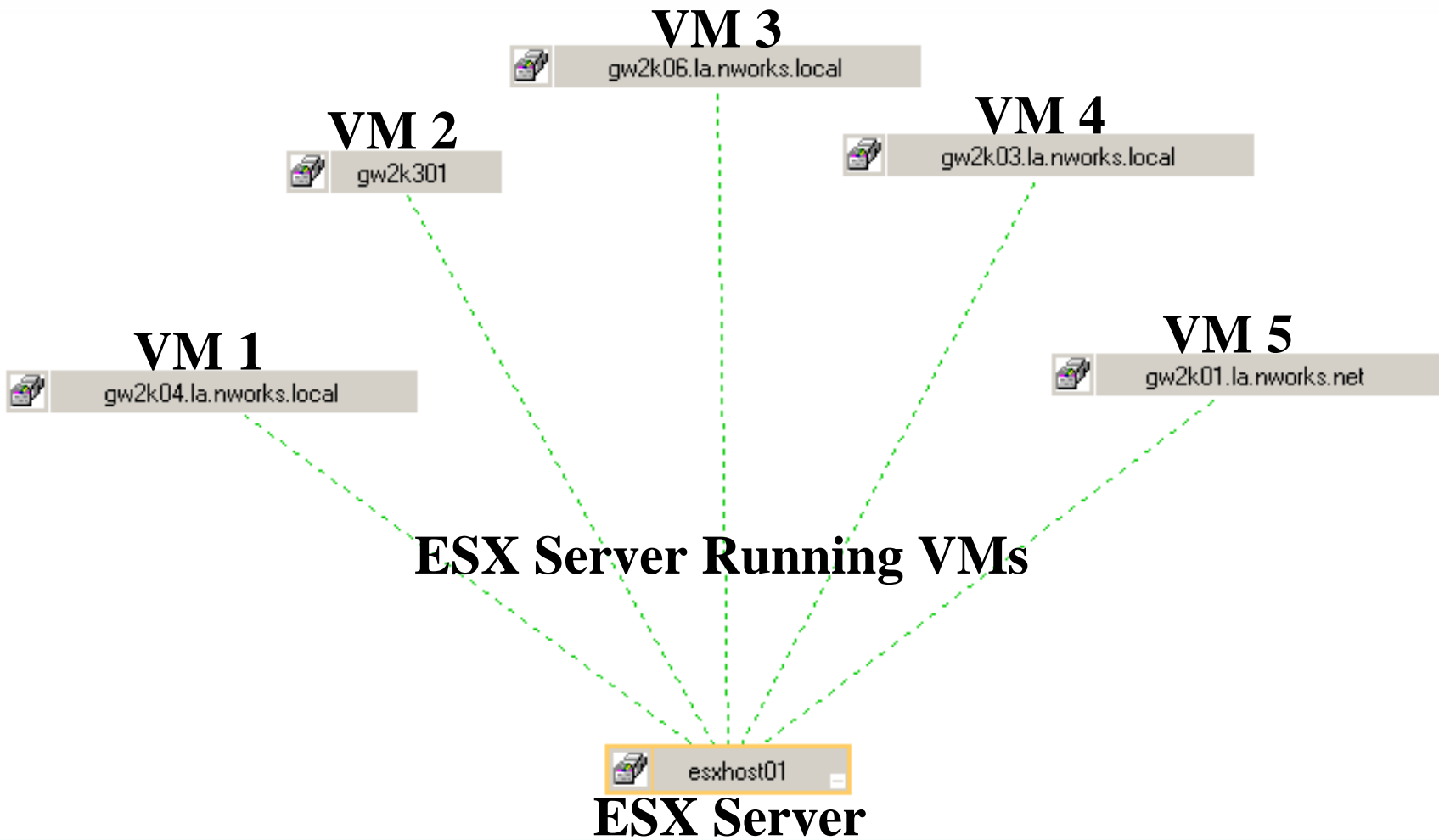


- Automatic Virtual Machine guest discovery
- Dynamically updated
- ESX Server VM guest to ESX Server mapping
- ESX Server to VM guests mapping
- Events mapped correct to ESX Server/VM guest

VM Guest to ESX Server Mapping



ESX Server To VM Guest Mapping



VMware Events Management Pack

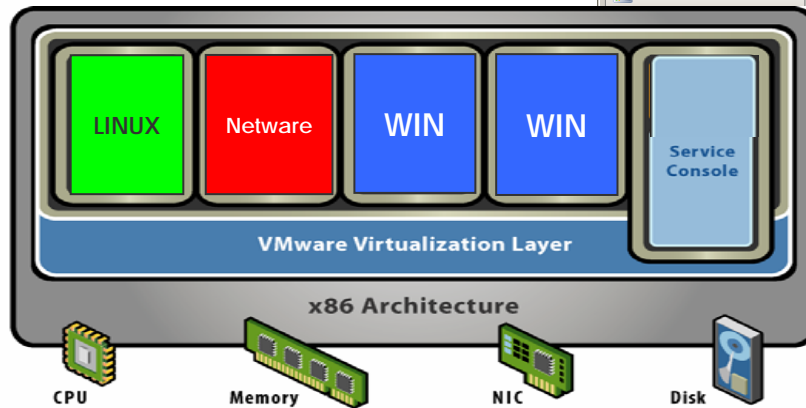
- Supported on MOM 2005
- VMware ESX Server Events
- VirtualCenter Events
- Five rule groups
- Performance Thresholds
- 190 rules

The screenshot displays the Microsoft Operations Manager 2005 Operator Console for VMware ESX Servers. The interface includes a navigation tree on the left, a main alert list, and a detailed alert view at the bottom.

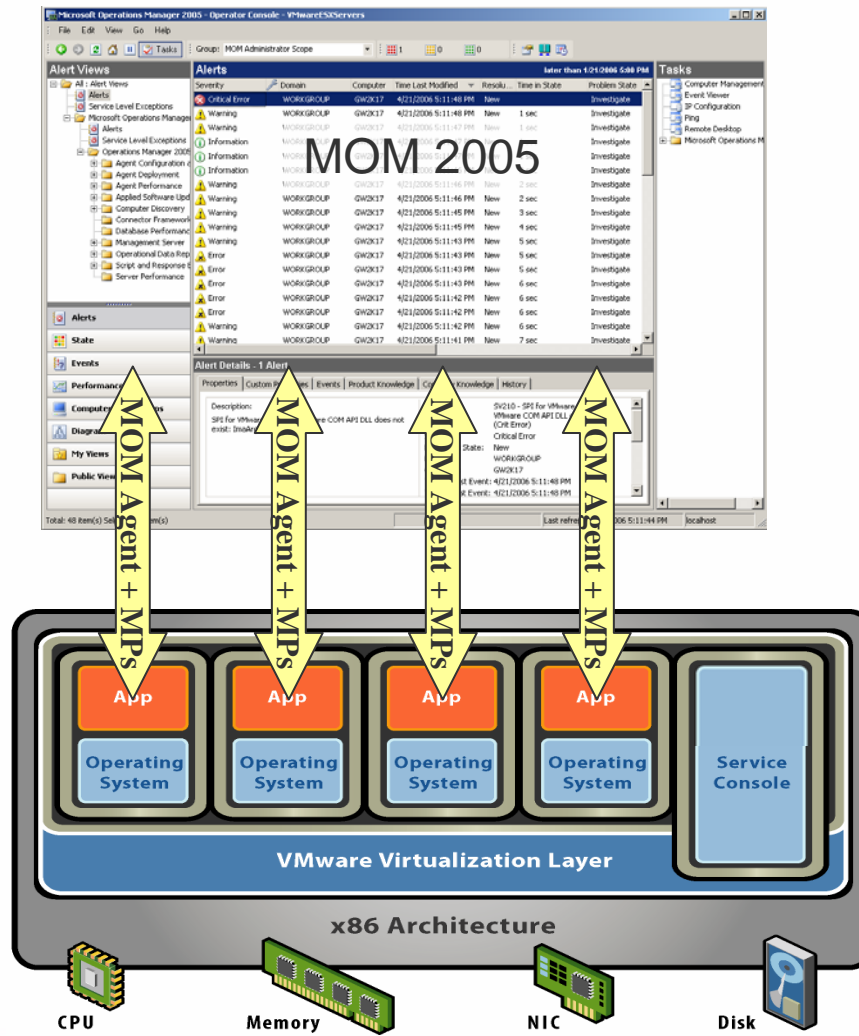
Severity	Domain	Computer	Time Last Modified	Resolu...	Time In State	Problem State
Critical Error	WORKGROUP	GW2K17	4/21/2006 5:11:48 PM	New		Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:48 PM	New	1 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:47 PM	New	1 sec	Investigate
Information	WORKGROUP	GW2K17	4/21/2006 5:11:47 PM	New	1 sec	Investigate
Information	WORKGROUP	GW2K17	4/21/2006 5:11:47 PM	New	1 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:46 PM	New	2 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:46 PM	New	2 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:46 PM	New	2 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:45 PM	New	3 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:45 PM	New	4 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:43 PM	New	5 sec	Investigate
Error	WORKGROUP	GW2K17	4/21/2006 5:11:43 PM	New	5 sec	Investigate
Error	WORKGROUP	GW2K17	4/21/2006 5:11:43 PM	New	5 sec	Investigate
Error	WORKGROUP	GW2K17	4/21/2006 5:11:43 PM	New	6 sec	Investigate
Error	WORKGROUP	GW2K17	4/21/2006 5:11:42 PM	New	6 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:42 PM	New	6 sec	Investigate
Warning	WORKGROUP	GW2K17	4/21/2006 5:11:41 PM	New	7 sec	Investigate

The detailed alert view shows the following information:

- Description:** SPI for VMware Collector VMware COM API DLL does not exist: ImaArg0\vmcom.dll
- Name:** SV210 - SPI For VMware Collector VMware COM API DLL does not exist (Crit Error)
- Severity:** Critical Error
- Resolution State:** New
- Domain:** WORKGROUP
- Computer:** GW2K17
- Time of First Event:** 4/21/2006 5:11:48 PM
- Time of Last Event:** 4/21/2006 5:11:48 PM



Microsoft Operations Manager 2005



Detailed Architecture

ESX Servers



Configuration, performance, state, & events

VMware ESX Monitor (VEM)

IIS ASP.Net

Configuration component

SSH

Syslog

VMCOM API

VC SDK

Collector component

WMI

MOM Agent

Microsoft Operations Manager 2005



Operator Console



Reporting Console

VMware MP AKM

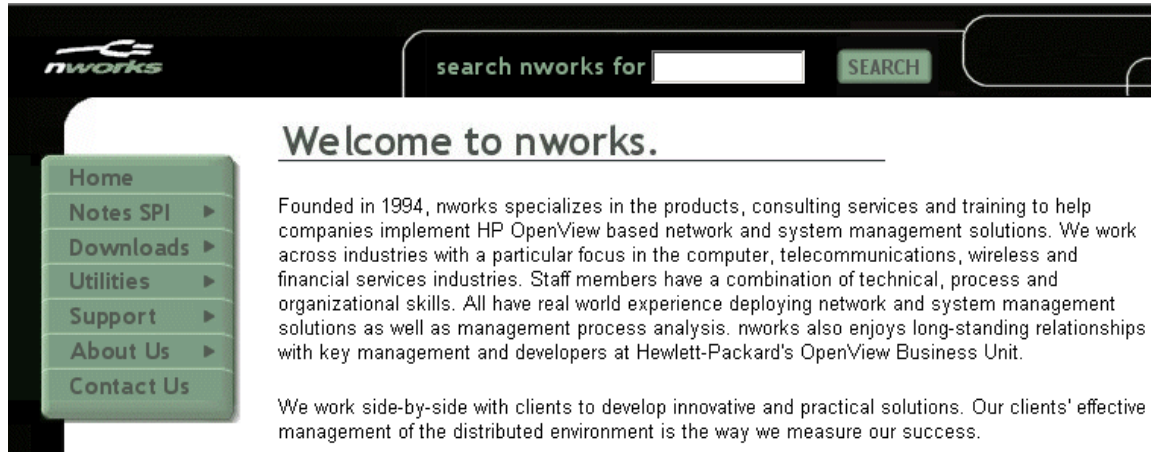
Import

Licensing

- One License / ESX Server
 - Price per socket on server
 - Unlimited number of VMs
 - Unlimited number of VEMs (collectors)
- One agent for each VEM
- # of ESX servers / VEM depends on:
 - # of VMs on ESX Servers
 - Bandwidth between VEM and ESX Servers
 - Bandwidth between VEM and Management Server

Further Information

www.nworks.com



The screenshot shows the nworks.com website homepage. At the top left is the nworks logo. To the right is a search bar with the text "search nworks for" and a "SEARCH" button. Below the search bar is a navigation menu with the following items: Home, Notes SPI, Downloads, Utilities, Support, About Us, and Contact Us. The main content area features a "Welcome to nworks." heading followed by a paragraph of text: "Founded in 1994, nworks specializes in the products, consulting services and training to help companies implement HP OpenView based network and system management solutions. We work across industries with a particular focus in the computer, telecommunications, wireless and financial services industries. Staff members have a combination of technical, process and organizational skills. All have real world experience deploying network and system management solutions as well as management process analysis. nworks also enjoys long-standing relationships with key management and developers at Hewlett-Packard's OpenView Business Unit." Below this is another paragraph: "We work side-by-side with clients to develop innovative and practical solutions. Our clients' effective management of the distributed environment is the way we measure our success."

- sales@nworks.com
- 209/545-5000 x1
- <http://www.nworks.com/vmware>

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