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Monitoring UNIX/Linux with Microsoft System Center Operations Manager 2007 R2

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Agenda

- Introduction to SCOM 2007
- Supported Platforms
- Cross Platform Extensions features
- Architecture
- Partner Extensions
- Demos

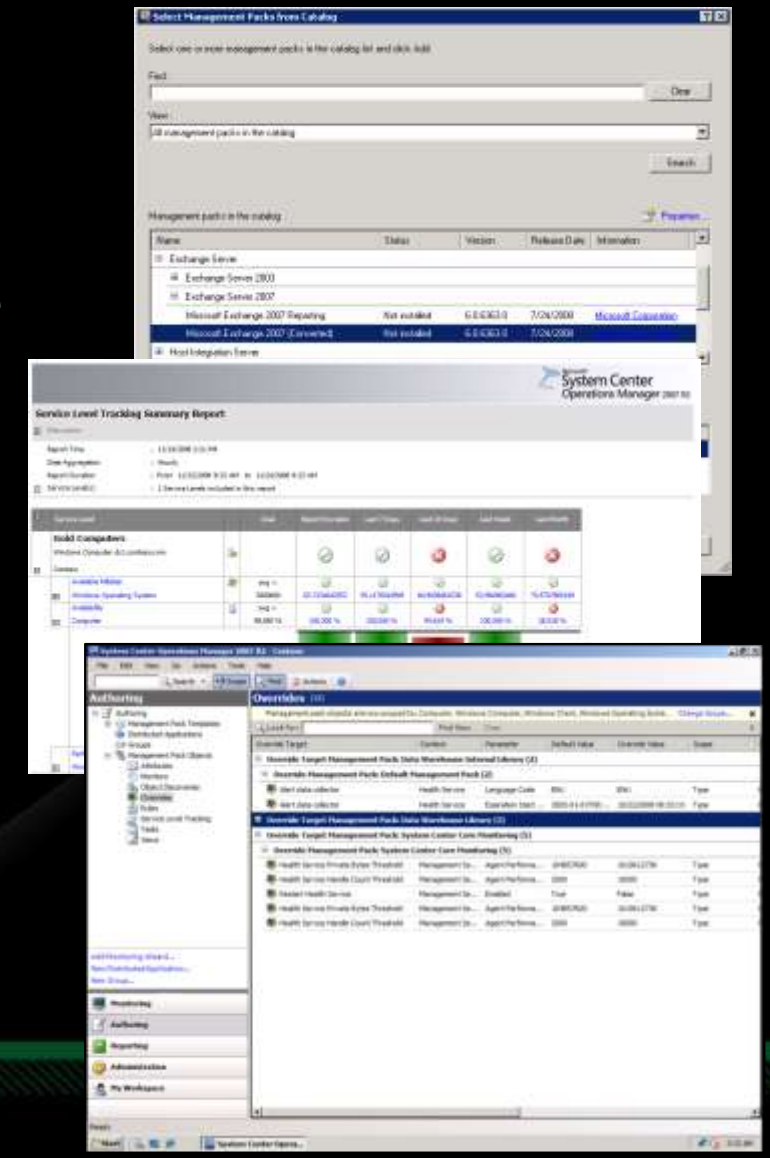
Customer Challenges in Monitoring the Data Center

- It's rare to find data centers running just Microsoft technologies
  - UNIX/Linux servers are hosting applications that are critical to their daily business operations
  - 46% of the enterprise sector customer base of one Microsoft Partner runs non-Microsoft workloads on Windows
- Customers want to manage both their Microsoft and non-Microsoft systems and workloads using fewer tools
  - Many customers manage their heterogeneous environments using *multiple* technologies and products
  - Linux systems tend to be managed individually via SSH and local tools (tools residing on each system).
  - Each separate tool has its own management console, resulting in the need for dedicated FTE resources to manage/maintain those tools!

Introducing System Center Operations Manager 2007 R2

Microsoft System Center Operations Manager 2007 R2

- Key Benefits
  - Enhanced application performance and availability across heterogeneous platforms
    - Monitoring across Windows, Linux and Unix servers, and their workloads
  - Improved management of applications in the data center
    - Delivers scale for URL monitoring
    - Helps meet agreed service levels through enhanced service level tracking
  - Increased speed of access to information and functionality to drive management
    - Improved console performance, with simplified administrative experience
    - Integrated wizard for identification of new and updated
      management packs, and their download



- RC available today!
  - http://technet.microsoft.com/en-us/opsmgr/dd239186.aspx
  - RTM in June FY09

XPlat - What's New Since MMS 2008?

- Cross Platform capabilities will only be available in Operations Manager 2007 R2
  - Ops Mgr 2007 R2 release timeframe
    - RC available now
    - Ops Mgr 2007 R2 RTM expected Q4 FY2009
  - No Xplat support for Ops Mgr 2007 or Ops Mgr 2007 SP1
- In Operations Manager 2007 R2:
  - New monitoring templates
    - Monitor UNIX/Linux log file (matches by regular expression)
    - Monitor UNIX/Linux Service (daemon)
  - New Run-As architecture
    - Allows different management accounts to be assigned to different UNIX/Linux systems
  - Support for additional UNIX/Linux platforms

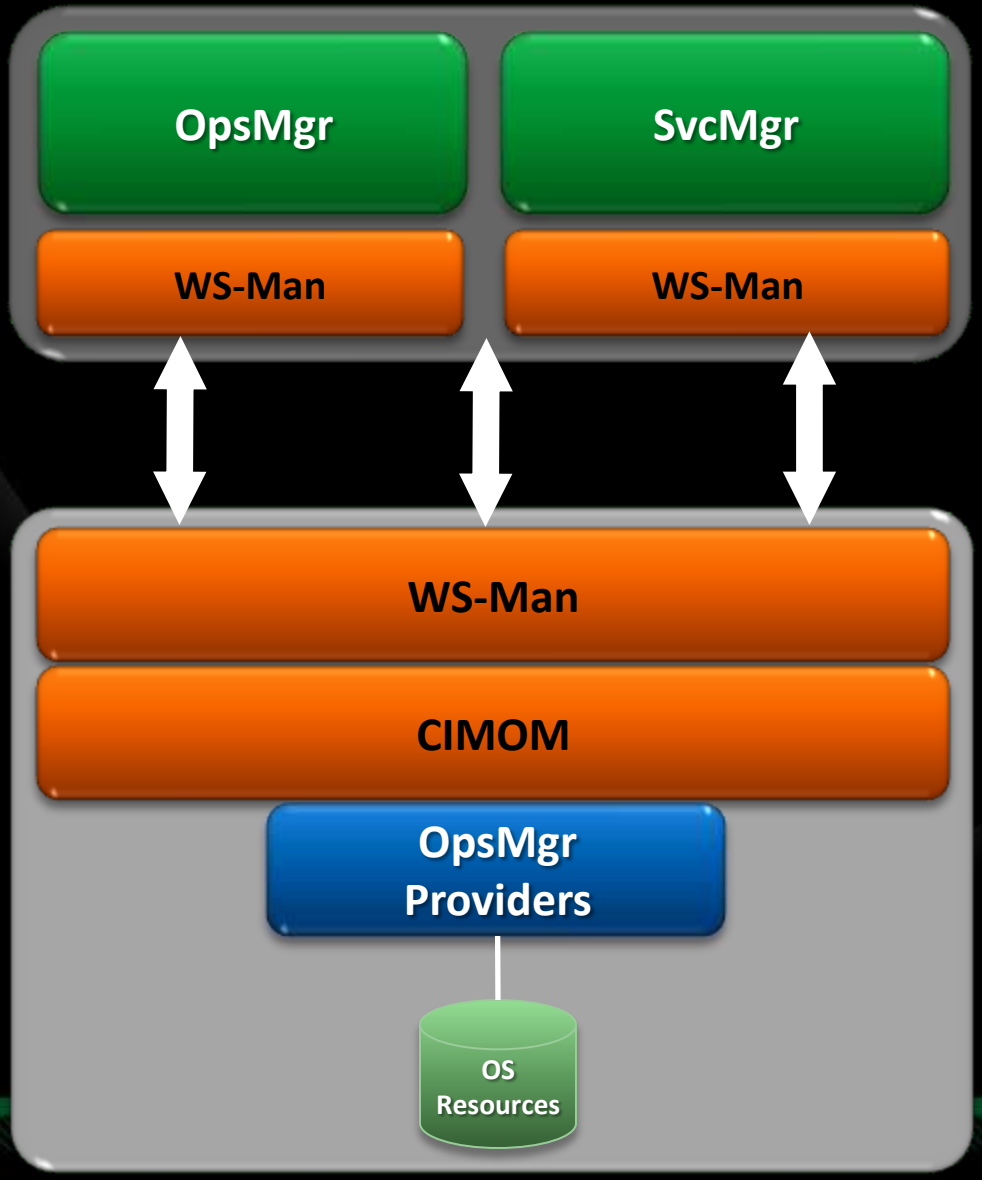
Features

Feature
Tasks that execute script on non-Windows System and return output to UI
Support for customized UI pages for non-Windows templates, monitors etc
Support for using non-Windows entities in Distributed Application Designed
Reports for data from non-Windows Systems and entities
Templates for creating custom monitoring rules and MPs
Agent Uninstall
Agent Upgrade
Fully data driven

Supported Platforms

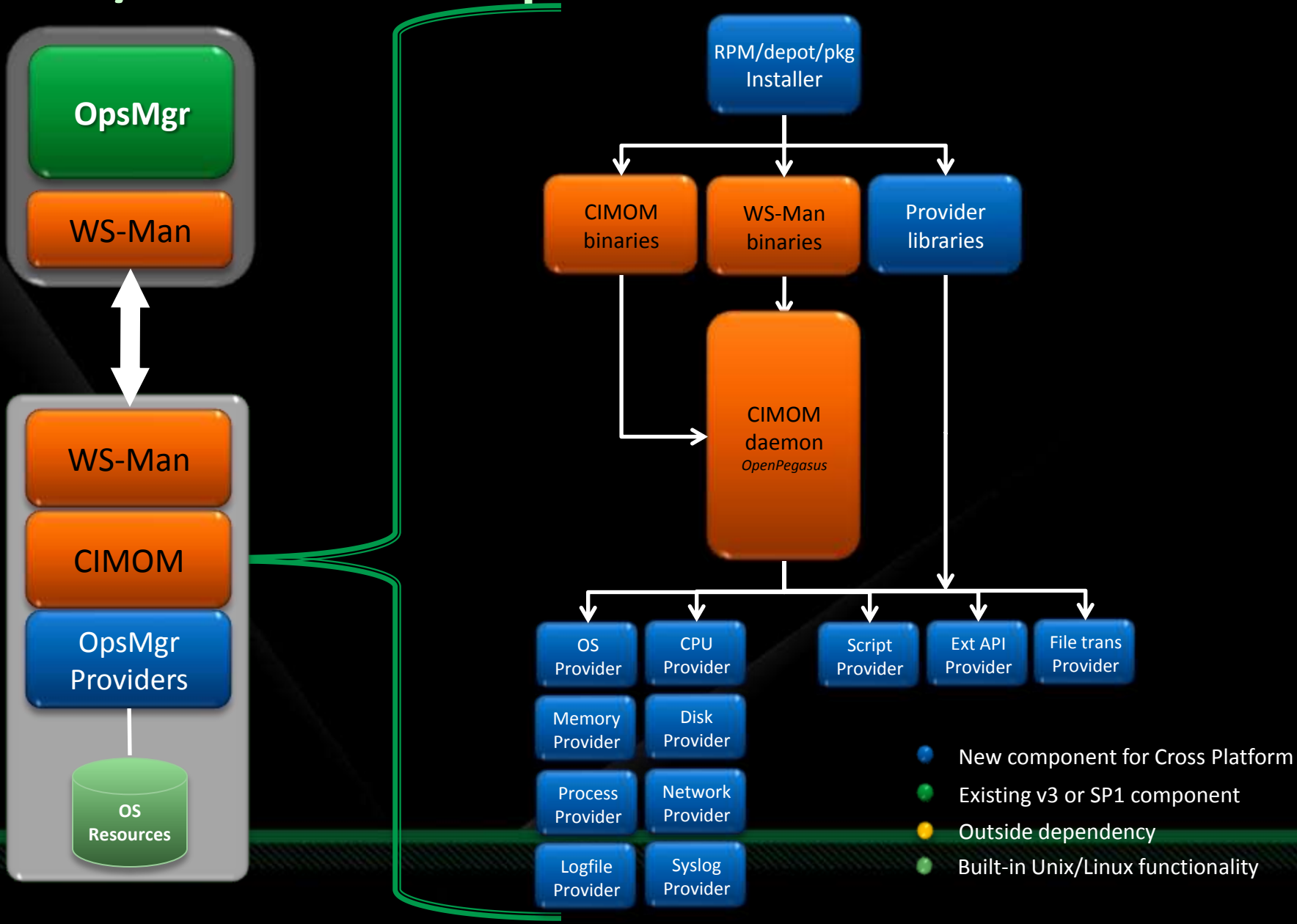
- 17 Platforms supported at RTM
  - AIX
    - Version 5.3 (Power)
    - Version 6.1 (Power)
  - HP-UX
    - Version 11iv2 (PA-RISC/IA64)
    - Version 11iv3 (PA-RISC/IA64)
  - Red Hat Enterprise Linux
    - Version 4 (x86/x64)
    - Version 5 (x86/x64)
  - Solaris
    - Version 8 (SPARC)
    - Version 9 (SPARC)
    - Version 10 (SPARC/x86)
  - SUSE Linux Enterprise Server
    - Version 9 (x86)
    - Version 10 SP1 (x86/x64)

Architecture Overview

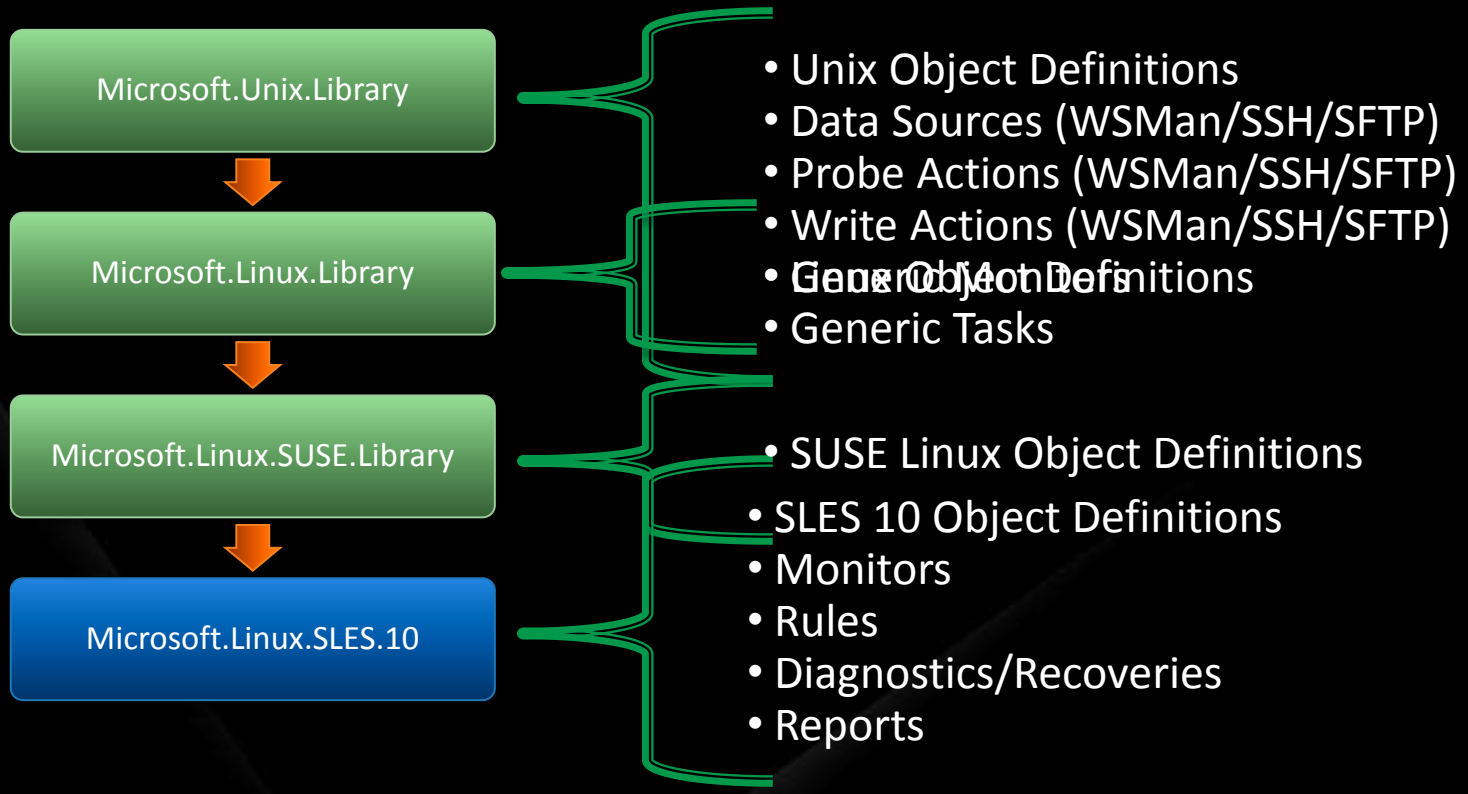


- New component for Cross Platform
- Existing v3 or SP1 component
- Outside dependency
- Built-in Unix/Linux functionality

Unix/Linux Component Overview



Management Pack Hierarchy



Management Pack

Generic Libraries (Imported Automatically)

Name	Description
Microsoft.Unix.Library	Defines all objects, DS, WA, PA for Unix-type systems
Microsoft.Unix.Views	Defines all generic views used with Cross Platform
Microsoft.Unix.LogFile.Library	Used by Unix/Linux LogFile Management Pack Template
Microsoft.Unix.Service.Library	Used by Unix/Linux Service Management Pack Template

Management Pack

OS Type Libraries

Name	Description
Microsoft.AIX.Library.mp	Generic AIX Operating System Library
Microsoft.HPUX.Library.mp	Generic HP-UX Operating System Library
Microsoft.Linux.Library.mp	Generic Linux Operating System Library
Microsoft.Linux.RedHat.Library.mp	Generic Red Hat Operating System Library
Microsoft.Linux.SUSE.Library.mp	Generic SUSE Linux Operating System Library
Microsoft.Solaris.Library.mp	Generic Solaris Operating System Library

Management Pack

Base OS Management Packs

Name	Description
Microsoft.AIX.5.3.mp	AIX 5.3 Base OS MP
Microsoft.AIX.6.1.mp	AIX 6.1 Base OS MP
Microsoft.HPUX.11iv2.mp	HP-UX 11iv2 (11.23) Base OS MP
Microsoft.HPUX.11iv3.mp	HP-UX 11iv3 (11.31) Base OS MP
Microsoft.Linux.RHEL.4.mp	Red Hat Enterprise Linux 4 Base OS MP
Microsoft.Linux.RHEL.5.mp	Red Hat Enterprise Linux 5 Base OS MP
Microsoft.Linux.SLES.9.mp	SUSE Linux Enterprise Server 9 Base OS MP
Microsoft.Linux.SLES.10.mp	SUSE Linux Enterprise Server 10 Base OS MP
Microsoft.Solaris.8.mp	Solaris 8 Base OS MP
Microsoft.Solaris.9.mp	Solaris 9 Base OS MP
Microsoft.Solaris.10.mp	Solaris 10 Base OS MP

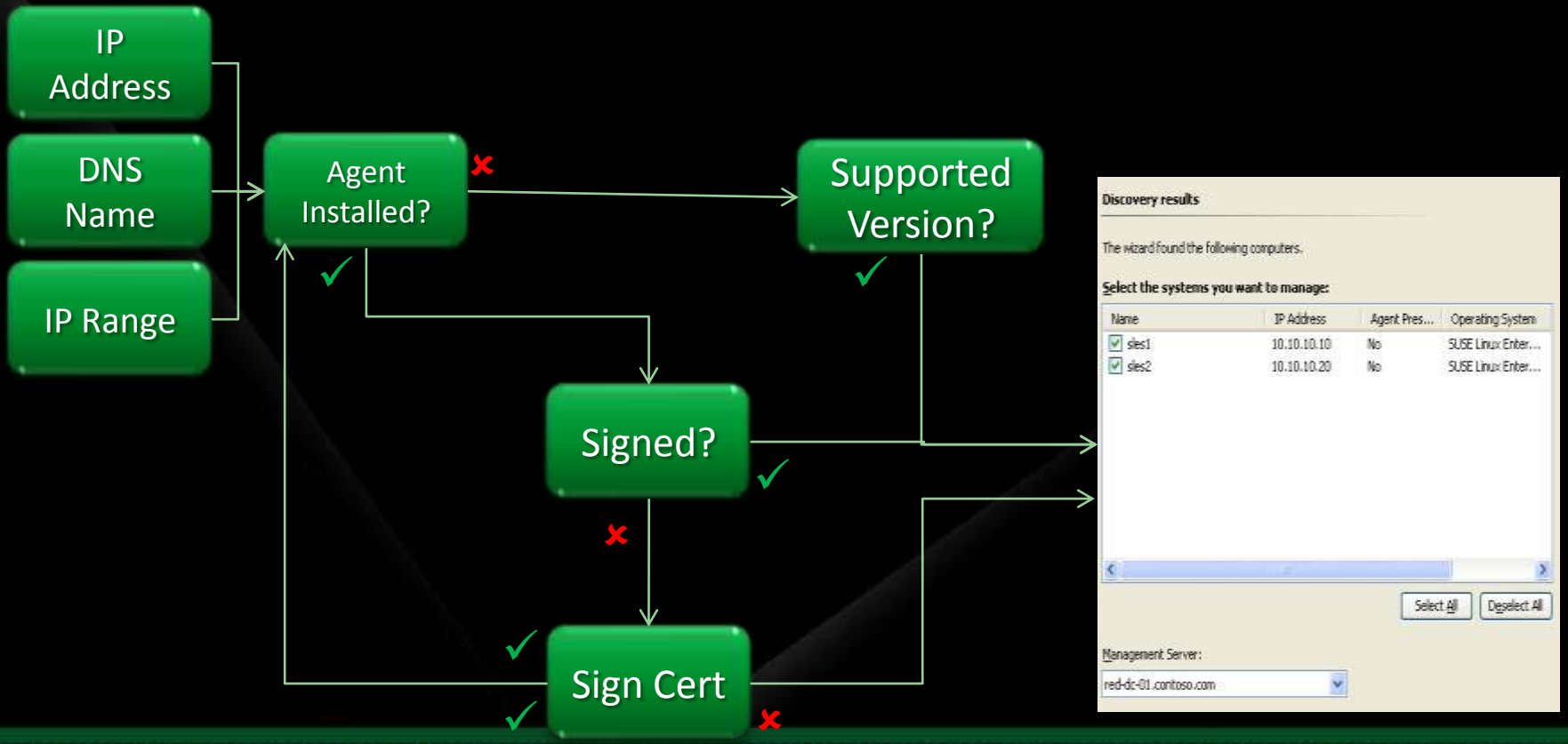
Configuration

- Import Management Packs
- Create Run As Accounts
- Associated Run As Accounts with Run As Profiles

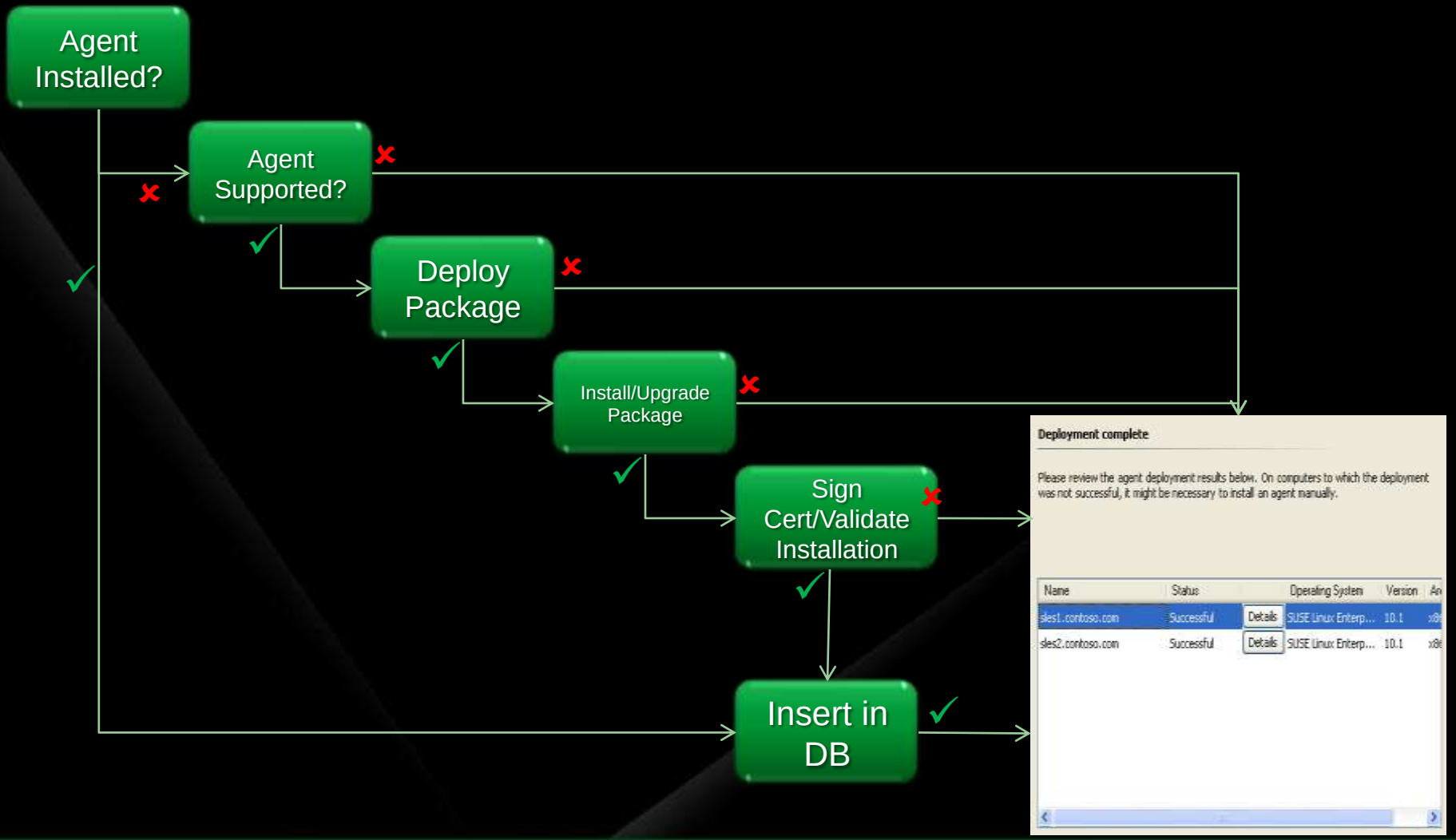
Discovery Wizard

- Built on the Ops Mgr Discovery Wizard Framework
- Fully integrated into the Ops Mgr Discovery Wizard

Discovery Wizard – Phase 1



Discovery Wizard – Phase 2



DEMO

Importing MP and Discovery

‘Out of the Box' Monitoring Capabilities

- Keep Systems Up and Running
  - File systems
  - Network interfaces
  - Core processes
  - Key configuration requirements
- Proactively Avoid Space & Memory Issues
  - Disk Space
  - Swap Space
  - System Memory
- Monitor System & Application Performance
  - Processor Utilization & Metrics

Performance Indicators for Disk

Monitored Object		Measured Performance Indicators
Physical Health	Health	Identifies if disk is unmounted, dead, or bad in any way
	Capacity	• Available physical memory in Mbytes (MB) • Available physical memory as a percentage (%)
	Performance	• Average time of a disk transfer (Avg. Disk s/Transfer) • Average time of a read of data from the disk (Avg. Disk s/Read) • Average time of a write of data from the disk (Avg. Disk s/Write)
	Utilization	• % of time disk is reading data • % of time disk is writing data % of time disk is busy

Performance Indicators for Disk

Monitored Object		Measured Performance Indicators
Logical Disk	Health	Identifies if disk is unmounted, dead, or bad in any way
	Capacity	• Available memory in Mbytes (MB) • Available memory as a percentage (%)
	Performance	• Current I/O queue length Total disk Bytes per second (Disk Bytes/s) • Bytes read from disk per second (Disk Read Bytes/s) • Bytes written to disk per second (Disk Writes Bytes/s) • Total I/Os per second (Disk Transfers/s) • Read I/Os per second (Disk Reads/s) • Write I/Os per second (Disk Writes/s) • Average time of a disk transfer (Avg. Disk s/Transfer) • Average time of a read of data from the disk (Avg. Disk s/Read) • Average time of a write of data from the disk (Avg. Disk s/Write)
	Utilization	• % of time disk is reading data • % of time disk is writing data % of time disk is busy • % time disk is idle

Performance Indicators for Memory

Monitored Object		Measured Performance Indicators
Physical Memory	Memory Utilization	• Available physical memory in Mbytes • Available physical memory as a percentage (%) • Used physical memory in Mbytes (MB) • Used physical memory as a percentage (%)
	Memory Paging	• Pages read or written to disk to resolve hard page faults (Pages/sec) • Pages read from disk to resolve a hard page fault (Page Reads/sec) • Pages written to disk to resolve hard page faults (Page Writes/sec)
Swap Space		• Available swap space in MBytes (MB) • Available swap space as a percentage (%) • Used swap space in MBytes (MB) • Used swap space as a percentage (%)

Processor Performance Metrics

Monitored Object	Measured Performance Indicators
Processor	• % Processor time • % Idle time • % User time • % Nice time • % Privileged Time • % IO Wait Time • % Interrupt Time • % DPC Time • Queue Length

DEMO

Monitoring

Logfile Monitoring

- SU Command Execution
- Root login failures
- Critical authentication errors
- Breakin attempts
- SSH authentication failures
- Successful login to root

Management Pack Templates

- LogFile Monitoring
  - Monitor for events in any logfile
  - Target a single computer or group of computers
  - Choose RegEx Filter
  - Test Expression
- Service Monitoring
  - Monitor any service, daemon or process
  - Target a single computer or group of computers

Partner Extensions

Key Partners

- Xandros
- Novell

Novell

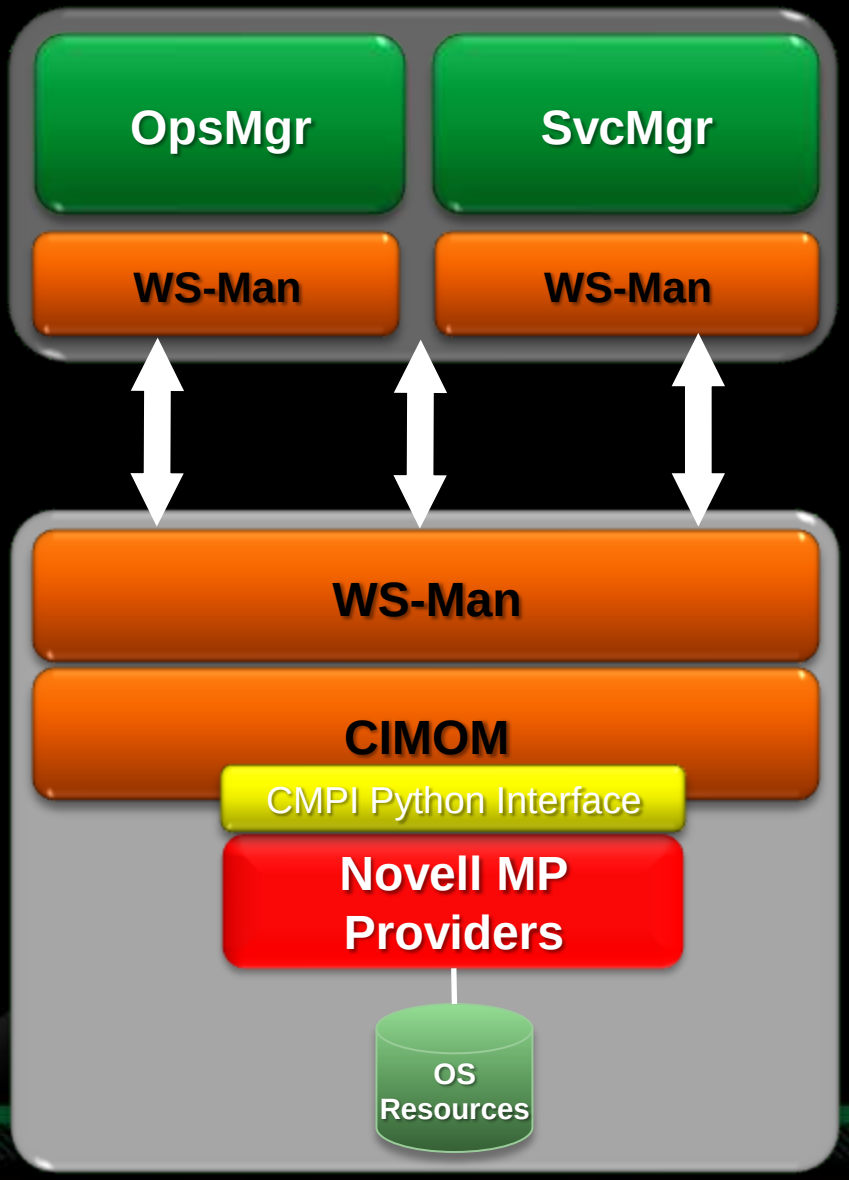
- Linux Roles Management Packs:
  - BIND/DNS
  - DHCP Server
  - SAMBA
  - NFS server
  - LDAP server (OpenLDAP)
  - Print server (CUPS)
  - Firewall (SuSEfirewall2)

Services Monitored by Novell MP

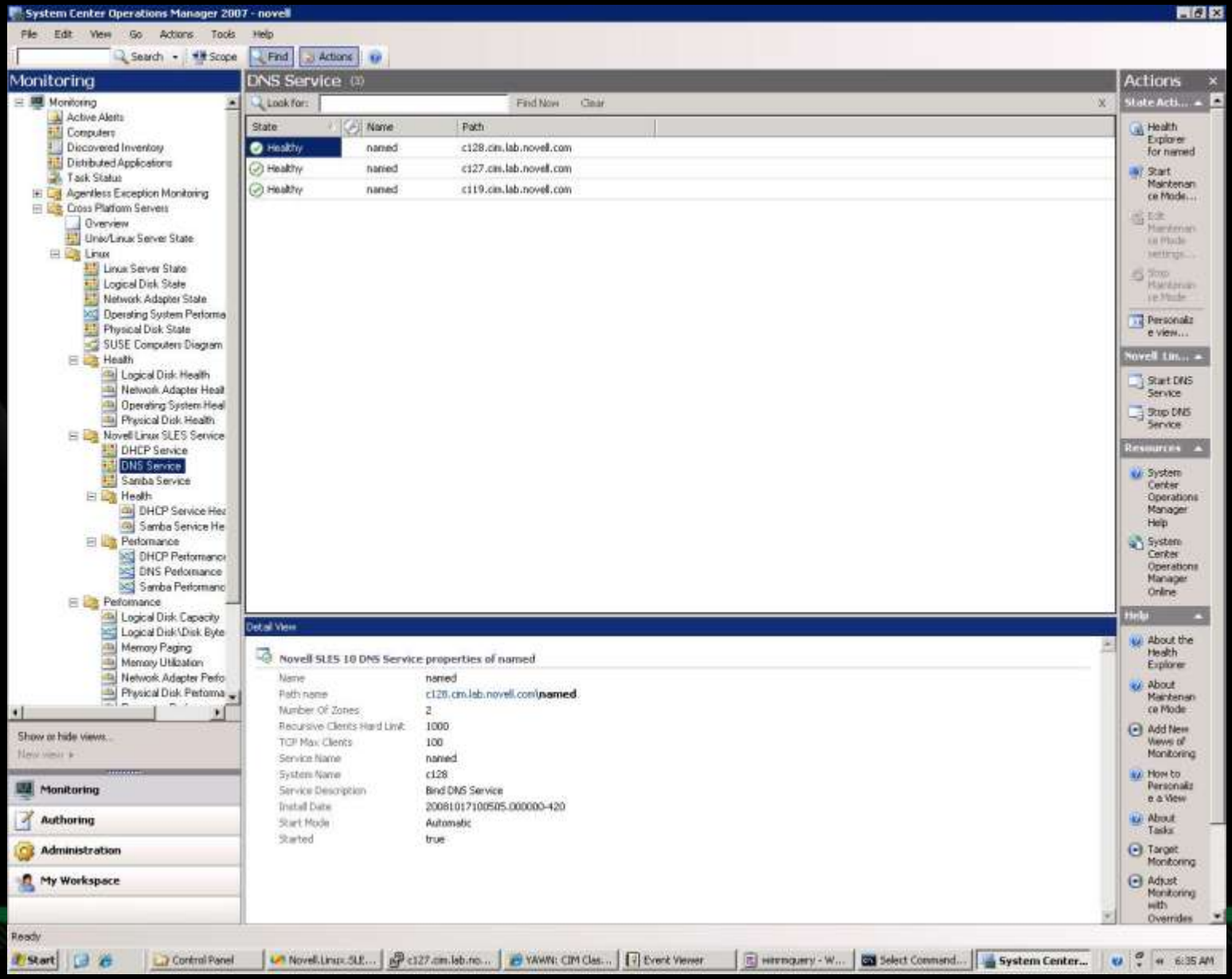
Service	Description	Core Capabilities
BIND/DNS	BIND *(Berkeley Internet Name Domain)* is the de-facto standard for DNS on UNIX-like systems	• Monitor named daemon • Start/stop/restart • List of allocated DNS names
DHCP Server	DHCP (Dynamic Host Configuration Protocol) is used to allocation configuration and IP addressing to clients in a network	• Monitor named daemon • Start/stop/restart • List of allocated DHCP addresses
SAMBA	Delivers Microsoft-based file and print services to UNIX-like systems	• Monitor smbd/nmbd/winbind daemons • Start/stop/restart • List of Samba shares
NFS server	Originally developed by Sun Microsystems, allows users to access files across a network	• Monitor nfsd daemon • Start/stop/restart • List of connections to NFS mount
LDAP server (OpenLDAP)	An open source implementation of the Lightweight Directory Access Protocol (LDAP)	• Monitor LDAP daemon • Start/stop/restart
Print server (CUPS)	CUPS (*Common Unix Printing System*) enables UNIX-like systems to act as a print server	• Monitor cupsd daemon • Start/stop/restart
Firewall (SuSEfirewall2)	Firewall software for SUSE Linux distributions	• Monitor SuSEfirewall2 daemon • Start/stop/restart

Novell MP Architecture

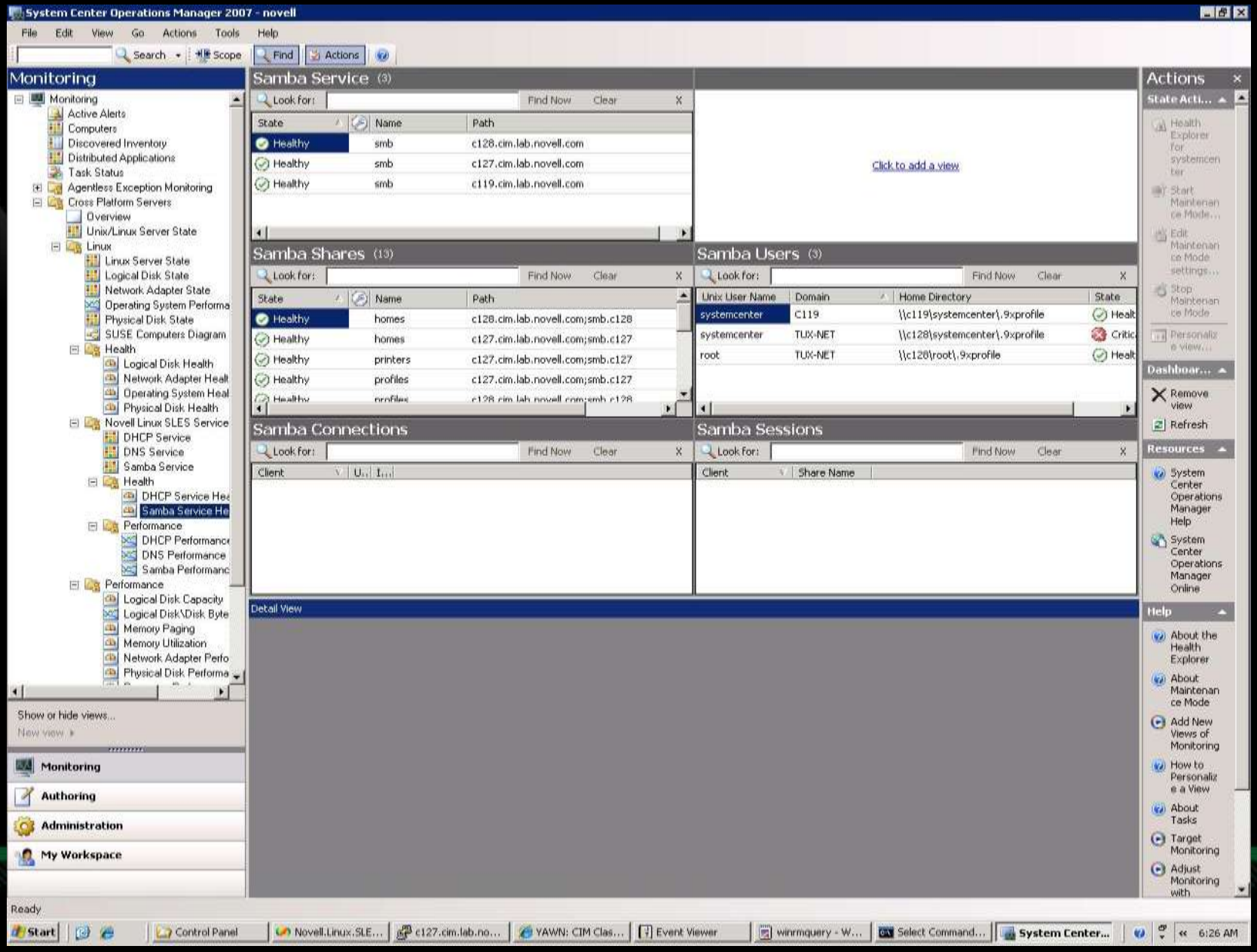
- Uses a Python library for making CIM operations over HTTP using the WBEM CIM-XML protocol
- Allows provider to be implemented using the Python scripting language



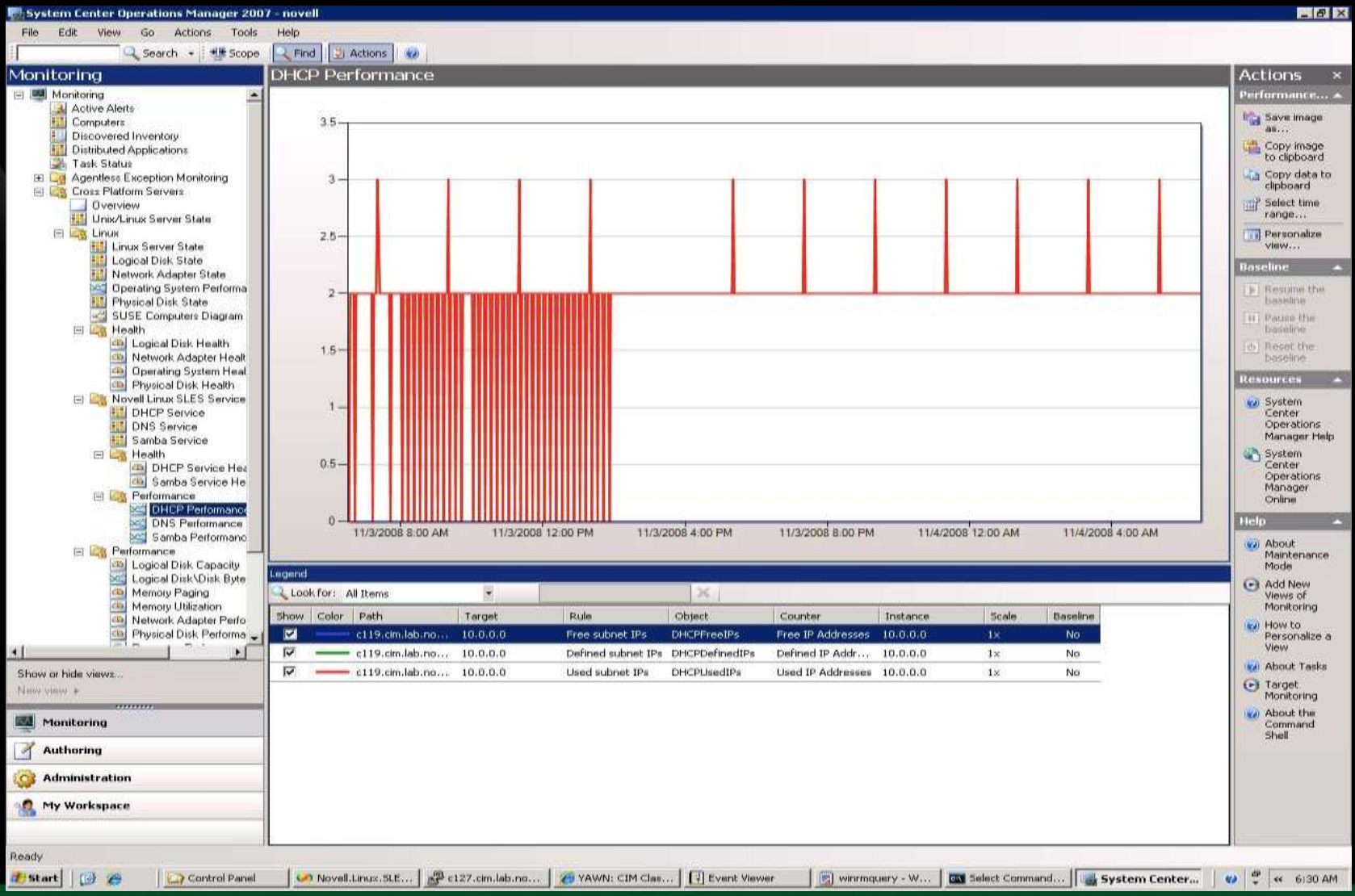
DNS Service


System Center Operations Manager 2007 - novell
File Edit View Go Actions Tools Help
Search Scope Find Actions
Monitoring
Monitoring
Active Alerts
Computers
Discovered Inventory
Distributed Applications
Task Status
Agentless Exception Monitoring
Cross Platform Servers
Overview
Unix/Linux Server State
Linux
Linux Server State
Logical Disk State
Network Adapter State
Operating System Performa
Physical Disk State
SUSE Computers Diagram
Health
Logical Disk Health
Network Adapter Healt
Operating System Heal
Physical Disk Health
Novell Linux SLES Service
DHCP Service
DNS Service
Samba Service
Health
DHCP Service Hea
Samba Service He
Performance
DHCP Performanc
DNS Performance
Samba Performanc
Performance
Logical Disk Capacity
Logical Disk\Disk Byte
Memory Paging
Memory Utilization
Network Adapter Perfo
Physical Disk Performa
Show or hide views...
Monitoring
Authoring
Administration
My Workspace
DNS Service (3)
Look for: Find Now Clear
State Name Path
Healthy named c128.cin.lab.novell.com
Healthy named c127.cin.lab.novell.com
Healthy named c119.cin.lab.novell.com
Detail View
Novell SLES 10 DNS Service properties of named
Name named
Path name c128.cin.lab.novell.com\named
Number Of Zones 2
Recursive Clients Hard Limit 1000
TCP Max Clients 100
Service Name named
System Name c128
Service Description Bind DNS Service
Install Date 20081017100505.000000-420
Start Mode Automatic
Started true
Actions
State Acti...
Health Explorer for named
Start Maintenance Mode...
Edit Maintenance Mode settings...
Stop Maintenance Mode
Personalize view...
Novell Lin...
Start DNS Service
Stop DNS Service
Resources
System Center Operations Manager Help
System Center Operations Manager Online
Help
About the Health Explorer
About Maintenance Mode
Add New Views of Monitoring
How to Personalize a View
About Tasks
Target Monitoring
Adjust Monitoring with Overrides
Ready
Start
Control Panel
Novell.Linux.SLE...
c127.cin.lab.no...
YAWN: CIM Clas...
Event Viewer
mimquery - W...
Select Command...
System Center...
6:35 AM

Samba Service Health



DHCP Service Performance



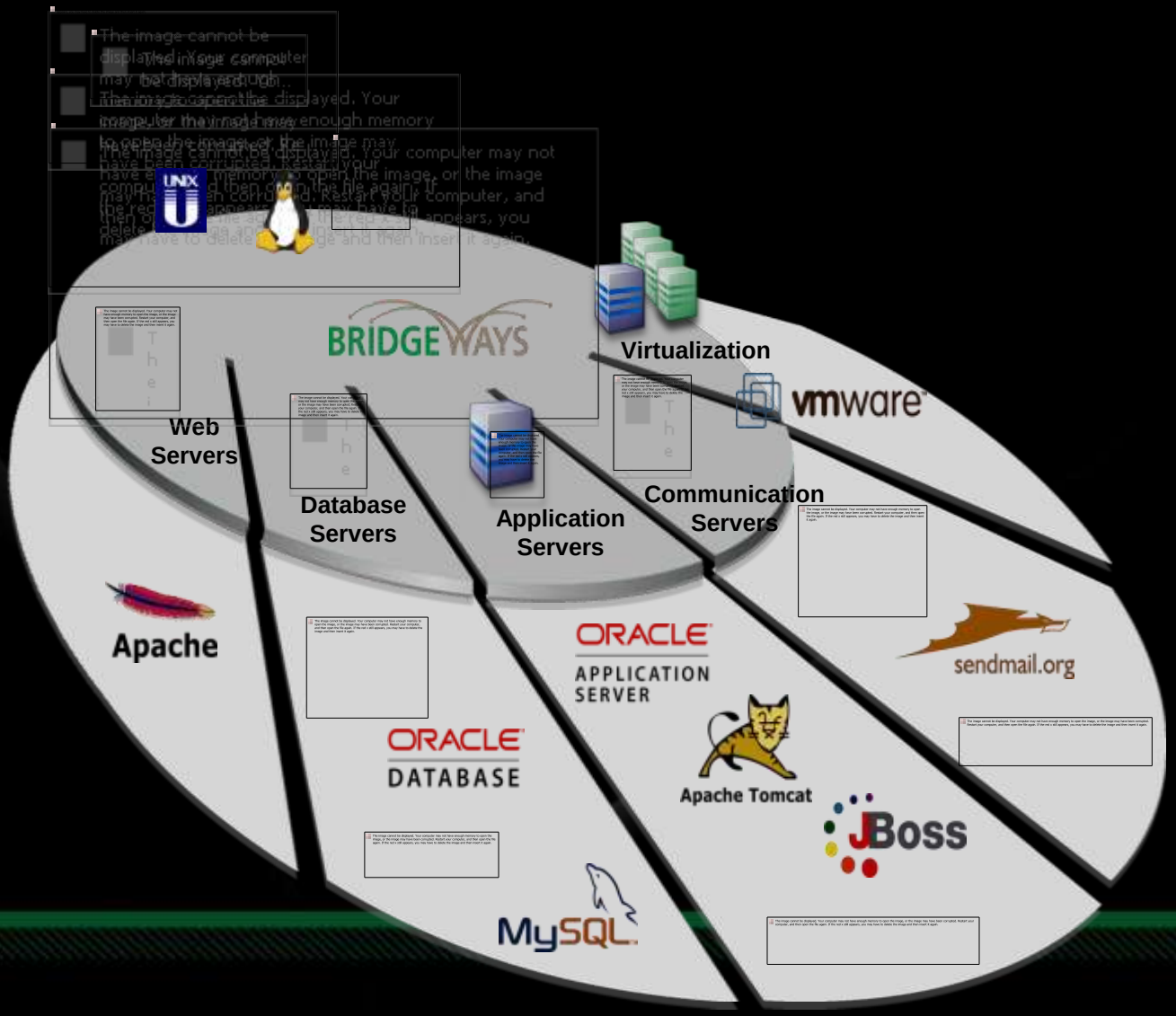
Novell - Project Plan & Roadmap

- Scope
  - English Only release
  - Leverage DMTF CIM and OpenWS-man Standards
- Release Schedule
  - Alpha at TechEd EMEA in November2008
    - BIND/DNS, DHCP server, SAMBA
  - Beta in February 2009
    - Deliver complete list of service monitoring capabilities
  - RTM to align with that of Operations Manager 2007 R2
- Process to continue to align to Open Source strategy
  - OpenPegasus Project
  - Providers to OMC project (www.omc-project.org)

Xandros

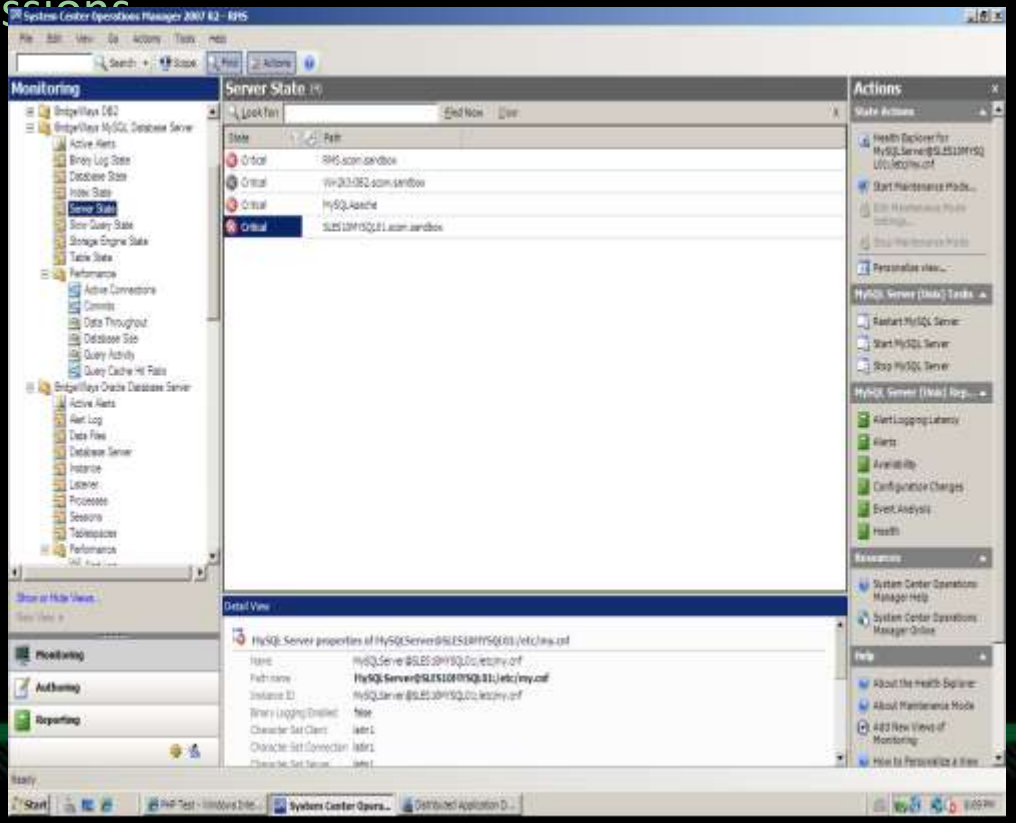
- Currently in Beta:
  - Apache
  - MySQL
  - Oracle Database
  - VMWare
  - JBoss
- All available for Windows, Linux and Solaris (where applicable)

Planned Roadmap



Database Server Monitoring
Oracle, MySQL

- Delivers ability to monitor multiple servers and databases
- Tracks key database performance metrics
  - Active connections and sessions
  - Commits and rollbacks
  - CPU intensive sessions
  - Data throughput
  - Cache hit ratio
  - Slow queries
  - Table scans
  - Sorts in memory or disk
- Monitors table sizes and indexes, locks and deadlocks



Web Server Health & Performance

Apache HTTPD Server

- Delivers ability to administer multiple servers and sites
- Measures data throughput, connection metrics and worker performance
- Determines PHP availability and response times
- Tracks pages requested and data served to clients
- Tracks site performance and page response times

Application Server Monitoring

Oracle Application Server, Jboss

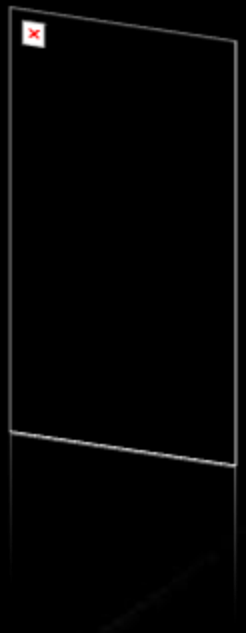
- Core capabilities:
  - Measures server performance
  - Determines application availability
  - Measures key application performance metrics
- Configuration Information collected includes:
  - Version
  - Server up down historical data
  - Ports for container and JMX
- Monitored Components include:
  - JMS, JDBC, EJB, Servlets, JVM, Web Server

BridgeWays Management Packs

Coverage for Operations Manager 2007 R2 release

Find out More on the Web

- **Learn What's New in Operations Manager 2007 R2**
  http://www.microsoft.com/systemcenter/operationsmanager/en/us/whats-new.aspx
  - Find new collateral, including datasheets and more
  - Read customer testimonials
  - Watch our R2 Overview video blogs
- **Examine our R2 resources on TechNet**
  http://technet.microsoft.com/en-us/opsmgr/dd239186.aspx
  - **Download the R2 Release Candidate Today!**
  - Watch webcasts on Operations Manager 2007 R2, on demand!
  - Get access to product team and System Center blogs
  - Meet the product team through their video blogs on key features (coming soon!)



Q&A

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