# Managing and Monitoring Data Center Assets with Dell KACE and OpenManage Essentials

This Dell Technical White Paper addresses integration of Dell KACE K1000 appliance with OpenManage Essentials (OME) and how Dell KACE and OME can play an important role of managing and monitoring data center assets in a simple, cost-effective solution to bring fault resolution in a quick and proactive manner.

Dell | KACE

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# **Executive summary**

Customers already using Dell<sup>™</sup> | KACE<sup>™</sup> K1000 Systems Management Appliance to manage their client environment (workstations, desktops, laptops etc.) can leverage OpenManage<sup>™</sup> Essentials (OME), a free Dell application, to manage their server environment. Integrating KACE and OME allows customers to extend KACE service desk for server fault management without adding cost to their balance sheet. As part of OME and KACE K1000 Service Desk integration, users need to:

- Configure e-mail alert action in OME that gets triggered when an alert is received (based on filters set, including Alert Severity, Alert Category, Device/Device group).
- Configure Service Desk in the KACE K1000 appliance to parse the e-mail received from OME and create a trouble ticket.
- Validate the configuration by sending a test e-mail from OME.

# Introduction

Constant change in computing environments, often driven by new requirements meant to meet business goals and demands, represents a daunting challenge for every IT organization. Change is also introduced by external influences, frequently unplanned, in the form of component faults and remediation, required driver and firmware updates and software patches, and configuration modifications necessary to thwart security threats. IT staff can be diligent in planning for change and schedule system updates accordingly, but even effective planning gets sidetracked by surprises in system downtime or the discovery of critical issues that alter priorities. To ensure project planning stays on track and system health is maintained, IT staff must proactively control the discovery, testing, and implementation of system changes.

This is especially true of managing change within a server environment. Servers are typically housed in secured, air conditioned environments and thus are not constantly monitored, yet they are responsible for tasks critical to the day-to-day operations of the enterprise and therefore warrant additional scrutiny. If our approach to identifying and addressing issues with these systems is to react when a problem arises, we risk significant disruption to IT services, to the organizations that rely on those services, and to the staff responsible for managing them. To begin proactively managing our servers, the following questions need to be answered:

- What models of devices do we have in our data center? What components are installed on them? Are the drivers and firmware for those components up-to-date?
- What software is installed on those systems? Have we applied all necessary patches from our software vendors?
- Are our system configurations consistent across servers? How do we manage server boot options and BIOS settings across those servers without having to visit each server and attach a console?
- Are our service contracts up-to-date on our servers? When will our warranties expire? How can we be notified of this event before it occurs?
- Are our systems vulnerable to security threats? How are we identifying our vulnerabilities? What are we doing to remediate these threats and how do we track that the remediation has been performed successfully?
- How do we know when a component has failed? How quickly are we able to react? How do we track the resolution of a component failure and record what we've learned?

To answer these questions effectively, we need a comprehensive view of the systems under management and the necessary tools to assess and update these systems before issues arise. Of course, this needs to be accomplished with minimal impact on the IT budget. So the tools need to be easy to

acquire and easily adopted by existing staff. Deployment of these management tools should minimize investment in time and resources and quantitatively return that investment quickly.

In this whitepaper, we will address these questions with Dell's innovative approach to systems management. The Dell | KACE K1000 Systems Management Appliance, combined with Dell OpenManage Essentials, provides a simple, cost-effective, and comprehensive approach that meets the needs of most enterprises.

The following diagram illustrates how these products interact to provide a solution for proactive systems management.



Figure 1. Solution overview of Dell OpenManage Essentials and Dell | KACE

- Inventorying and Managing Data Center Assets—Computer environment inventory requires that the data collected be comprehensive for virtualization platforms, network devices, printers, computer hardware and software. This data collection must be kept up-to-date in a way that does not distract from other day-to-day tasks. Both OME and the K1000 leverage industry-standard SNMP, IPMI, CIM, WMI, and other protocols to fully automate this task.
- Managing System Configurations—Managing consistent system configurations across multiple systems is essential to maintaining overall compute environment health. The combination of OpenManage and KACE allow this capability to be centrally controlled across a heterogeneous environment.
- Managing Dell System Updates—Keeping driver and firmware updates in control is essential as you work to protect your Dell computing investment. Both OME and the K1000 offer fully integrated Dell system update capabilities to provide you with choices that best meet your environments needs.
- Assessing and Resolving Security Vulnerabilities—The Dell | KACE K1000 Systems Management Appliance provides vulnerability assessment tools based on industry standards and fully integrated patch management, configuration management, and distribution capabilities to resolve identified threats.

- System Monitoring and Fault Resolution—The Dell OpenManage Essentials toolset provides active system monitoring via SNMP and IPMI, and delivers issues that have been identified for remediation to the Dell|KACE service desk for ownership assignment and resolution.
- Reporting on Data Center Assets and Activities—Extensive reporting capabilities are provided to track progress and validate processes.

# Inventorying and managing data center assets

The automation of inventory data collection is an essential first step in proactively managing data center assets. Since change is constant, this task must be performed consistently and on a regular basis to reflect an accurate baseline of the systems under management. While both OpenManage Essentials and the Dell|KACE K1000 Appliance can discover devices on the network using ICMP and SNMP, far richer capabilities for servers are enabled by deploying agent software to the operating systems running on Dell PowerEdge™ Servers. For OpenManage Essentials this agent is the OpenManage Server Administrator (OMSA) software. OMSA may be deployed to Windows, Linux, and ESX/ESXi platforms, and provides a consistent interface across all of these.

The data collected into OpenManage Essentials inventory by OMSA details the various hardware components and associated firmware and driver packages in the PowerEdge chassis, including model and manufacturer information, relevant interface capabilities, and form factor data. Any changes that occur due to field servicing would be reflected when new data is collected. Additionally, OME will collect ICMP and SNMP data on other devices, such as storage arrays, network devices, printers, and virtualization platforms for VMware and Microsoft®.

ces Device Search Discovery and Inve	Tutorials Extension	ensions vstem Update   Re	mote Tasks	-	-	-	-				
All Devices	M60505-W2	K8x64									
– 💟 Clients	Patale Mater 1	tanducana Loope									
- 🗹 HA Clusters	Decais Alerts P	iardware Logs									
I 💹 KVM	ET Des	ice Cumm									
Microsoft Virtualization Servers	Dev	ice summ	ary								
- Withmark Devices	Health Status	Connection Status	Device Name	Device Type	Model	Service Tag	Asset Tag	Express Service Code	Location	Revision	Device Discovery
- Switches	0	🕑 On	M60505-W2K8x64	Server	PowerEdge M	600 3NJWHL1	N/A	7954497541	Please set the val	ue N/A	8/29/2012 4:35:
- 🔽 OOB Undassified Devices											
- VI IPMI Unclassified Devices	os os	Informati	on								
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🖬 - 📝 PDU	US Name			US Total	Physical Hemol	V(MB) US Local	a US Revisi	ion		Service P	ack version
L 💟 UPS	Plicrosoft Winde	ows Server 2008 R2	, Enterprise x64 Edit	ion 32768		N/A	Version 5	.1 (Build 7600) (x64) 5	erver Full Installati	in N/A	
2- 💟 Printers	-										
3- 🚨 RAC	Soft	tware Age	nt Inform	ation							
- 🔯 Servers	Agent Global S	tatus Agent Name			Agent Version	Agent Descriptio	n		Agent	Manufacture	e
- 🤐 Storage Devices	0	Server Admi	nistrator		6.5.0	Management sof	tware for De	ð systems.	Dell Ir	6	
- A DOLLENC Artaxs	123	Server Admi	nistrator (Storage H	ananement)	3.5.0	Configuration an	d monitoring	of disk storage devices	Dell Ir	c	
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EqualLogic Arrays     Generation of the second		-			227	and the second second					

# Figure 2. OpenManage Essentials inventory

For the Dell|KACE K1000 Appliance, the KAgent manages the required data collection for inventory, and extends this collection into the software applications that are running on the platform. It is also responsible for managing vulnerability assessment, patching, configuration, and deployment tasks for the managed systems and their software. The Dell|KACE K1000 Appliance can also leverage the OMSA agent provided by OpenManage to collect additional data and manage configurations for Dell servers running Windows Server® 2000, 2003, and 2008, as well as Red Hat Linux 4 and 5. Information for other

assets such as printers, network devices, and virtualization hosts can be loaded into the K1000 Asset Management module.



Deell H	KACE	Managem	ent Center				
🚰 Home	📃 Inventory	Asset	Distribution	Scripting	🔒 Security	A Service Desk	Kepo
Computers	Software	Processes	Startup Se	ervice IP Scar	n MIA		

#### Computers : Detail Item "blob"

[Expand All] [Printer Friendly Version]	
Summary	
Name:	blob
Model:	PowerEdge R610
Chassis Type:	server
IP Address:	10.159.22.170 📃 🚍
MAC:	00:22:19:54:4F:88
RAM Total:	12.00 GB
Processors:	CPU Chip Count: 2
	CPU Core Count: 8
	CPU0: Intel(R) Xeon(R) CPU E5520 @ 2.27GHz (4 cores)
	CPU1: Intel(R) Xeon(R) CPU E5520 @ 2.27GHz (4 cores)
OS Name:	Microsoft Windows Server 2008 R2 Standard x64
Uptime Since Last Reboot:	6 days 12 hours 57 minutes
Agent Version:	5.3.43742
Agent Timezone:	America/Los_Angeles
AMP Connection:	Ø at 2011-09-07 06:01:00
Last Inventory:	10 minutes, 56 seconds ago on 2011-09-07 at 06:01:00
Record Created:	2011/05/17 16:05:58
Disk #1:	Drive C: (Physical Disk) FileSystem: NTFS Used: 77.44GB Total: 408.28GB [ 18.97%
Force Inventory Update	

#### Figure 4. K1000 software inventory

Installed Programs (32) 7-Zip 4.65 (4.65.00.0) Dell KACE Agent (5.3.43742) Dell OpenManage Server Administrator (6.5.0) Dell Remote Access Port EZ GPO Power Management Config Tool (2.2.3) Intel(R) Network Connections Drivers (14.2) Matrox Graphics Software (remove only) Microsoft .NET Framework 1.1 (1.1.4322) Microsoft Application Error Reporting (12.0.6015.5000) Microsoft Security Compliance Manager (1.1.3.0) Microsoft SQL Server 2008 (64-bit) Microsoft SQL Server 2008 Browser (10.1.2531.0)

The K1000 Appliance agent leverages the relevant registry information on the operating system to identify the software packages that have been installed, including their version number, location within the file system, online links for additional information about each software title, and metadata for categorizing the inventory entry. Multiple software packages may be rolled up into a software title for management, including metering and license management.

Using the Managed Installation functionality of the K1000, the OMSA agent may be installed on multiple machines, greatly simplifying the deployment of the overall solution. The managed installation will transfer the installation package for OMSA to the target servers and execute the installation using the supplied installation parameters as shown below:

KACE Management Center					
😤 Home 📃 Inventory 🗃 Asset 💿 Distribution 🎡 Scripting 🛔	🗟 Security 🛛 & Service Desk 🛛 🖾 Reporting 🖉 Settings				
Managed Installations File Synchronization Wake-on-LAN Replication	n iPhone Dell Updates				
Managed Software Installation : Edit Detail					
Install using "om-srvadmin-dell-web-win-6.5.0-2247_a01.10.exe":					
The windows client will install this via: "om-srvadmin-dell-web-win-6.5.0-2247_a01.10.exe" msiexec.exe /i Syst	Mgmt.msi /qn				
[ Software Detail for Dell OpenManage Server Administrator (6.5.0) ]					
This software will only be installed on the following Operating Systems: (edit) Windows Server 2008 R2 Std x64					
Software: Dell OpenManage Server Administrator (6.5.0)	•				
Filter: (3) Also show software without an Associated File					
Lioload & Associate New File-	Drawn				
opload a Associate New File.	Browse				
Installation Command:	Ose Default <sup>™</sup> Configure Manually				
Run Parameters:	msiexec.exe /i SysMgmt.msi /qn				
Delete Downloaded Files:					
Use Alternate Download:					
AppDeploy Live					
The following details on Dell OpenManage Server Administrator are from the AppDe	eploy Software KB				
Threat: Not Reported					
Category: Unknown					
<ul> <li>More details at AppDeploy.com</li> </ul>					

#### Figure 5. K1000 managed installations

# Managing system configurations

When OMSA is deployed to a server version of the Windows operating system of a Dell PowerEdge Server, it introduces Dell CIM instrumentation providers that deliver a WMI namespace (\\root\CIMv2\Dell) with several new classes and extensions to existing classes for managing devices within the Dell PowerEdge chassis and their associated applications and events. OpenManage Essentials leverages these CIM providers in its data collection for these devices as part of its core functionality. The Dell|KACE K1000 appliance can also collect this information as part of its inventory by defining custom inventory fields against the provided namespace.



In the above example, the Dell WMI namespace is accessed to retrieve information about the out-ofband management facilities of the Dell Remote Access Controller (DRAC), allowing the administrator to quickly identify and access a remote console for the server and control power management, BIOS settings, and other options even if the operating system on the server is not available. However, this approach is limited to Windows platforms.

For cross-platform support, the OMREPORT and OMCONFIG command line interfaces of the OMSA agent may also be leveraged within the K1000 inventory for consistent data collection and operational control across both Windows and Linux operating systems.

Custom Inventory Rule: 😰	
ShellCommandTextReturn(omrepo	ort storage pdisk controller=0)
	ma man have
<ol><li>System Physical Disks:</li></ol>	List of Physical Disks on Controller PERC 6/i Integrated (Embedded)
	Controller PERC 6/i Integrated (Embedded) ID : 0:0:0
	Status : Ok
	Name : Physical Disk 0:0:0
	State : Online
	Power Status : Not Applicable
	BUS PROTOCOL: SAS
	Revision : \$220
	Failure Predicted : No
	Certified : Not Applicable
	Encryption Capable : No
	Encrypted : Not Applicable
	Progress : Not Applicable
	Mirror Set ID : Not Applicable
	Capacity : 130.13 GD (140103103792 Dytes)
	Available RAID Disk Space : 0.00 GB (0 bytes)
	Hot Spare : No
	Vendor ID : DELL(tm)
	Product ID : ST9146802SS
	Serial No.: 3NM8HLBK

#### Figure 7. Custom inventory with OMSA OMREPORT

Actions may be enabled within the K1000 inventory that direct the administrator to the OMSA and DRAC web interfaces, conveniently placing remote control access to the server directly within the system management interface.

Computer Inventory				Vie	ew by: All Item
Choose Action - Found 4 compute	ers.				
Name [labels hidden]		Last Sync 🖑	Description	IP	
ns7		18m	beschpeion		245 105 253
lightening test kace com		19m	empty		150 17 43
		1511	empty	II.	135.17.43
	GE™ SERVER ADMINISTRAT	OR			
PowerEdge R610 BLOB\administrator Admin	BIOS				
System Main System Chassis Batteries	BIOS Setup Jump to: General   Serial Communica	ations			
Fans	General				
Firmware Hardware Performai ≅	Instructions: Click each BIOS setup	object to set its state.			
Intrusion	Boot Sequence			SATA Optical Drive	
Memory	Num Lock			On	
Network	User Accessible USB Ports			All Ports On	
Ports	Processor Virtualization Technolo	ogy		Enabled	
Power Management	Processor Logical Processor (Hy	perThreading)		Enabled	
Power Supplies	AC Power Recovery Mode			Last	
Processors Romoto Accesso	Embedded SATA Controller			ATA	
Remote Access	SATA Port 0			Auto	
Tomperatures	Dual NIC (1/2)			Enabled with 1st NIC PXE and 2nd	1 NIC None
Temperatures	Dual NIC (3/4)			Enabled with 1st NIC None and 2r	nd NIC None

Figure 8. Attaching a machine action to enable OMSA or DRAC

As changes occur to the system over time, these changes are recorded in the asset history of the system within the K1000 inventory, providing a single location to review what's been altered, when, and by whom.

#### Figure 9. Tracking change history with the K1000 asset history

Show All History						
History						
Time	Changes	Who				
2011/08/17 19:25:39	Machine disconnected.					
2011/08/14 13:23:57	Machine connected with address 12.201.5.178.					
2011/08/11 07:01:03	Found software item Security Update for Microsoft Windows (KB2539634) in inventory. Found software item Security Update for Microsoft Windows (KB255632) in inventory. Found software item Security Update for Microsoft Windows (KB255049) in inventory. Found software item Security Update for Microsoft Windows (KB2560656) in inventory. Found software item Security Update for Microsoft Windows (KB2562937) in inventory. Found software item Security Update for Microsoft Windows (KB2563894) in inventory. Found software item Security Update for Microsoft Windows (KB256780) in inventory. Found software item Security Update for Microsoft Windows (KB256780) in inventory. Found software item Update for Microsoft Windows (KB256780) in inventory.					
2011/08/11 07:01:03	Last Reboot changed from '2011-07-29 17:56:08 -0700' to '2011-08-11 04:18:49 -0700'					

The K1000 scripting module may be used to configure various system attributes on the managed services by leveraging the OMCONFIG command line interface of the OMSA agent. In this fashion, multiple Red Hat Linux and Windows servers in the managed environment may be consistently configured, even at the BIOS level. The OMCONFIG CLI provides extensive options for managing SNMP configurations and alert actions, log settings for system event logs (alert, command, and ESM), system

shutdown and recovery options, chassis configurations, asset management, and power management and monitoring.

For example, SNMP events may be enabled or disabled for specific event types (e.g. power supplies, redundancy, temperature, fans, voltage, system power, memory, chassis intrusion, battery, and logs) and severity levels. The OMCONFIG command for enabling all event types would look like:

omconfig system events enable type=<all>

Detailed documentation for the OMCONFIG command set can be found in the OMSA manual. <u>http://support.dell.com/support/edocs/software/svradmin</u>

# Managing system updates

Both OME and the K1000 integrate with the Dell Update Center to provide the latest firmware and drivers updates for the components installed in your Dell equipment purchases. Updates are identified as critical, recommended or optional in accordance with the Dell Update Center and contain all pertinent details such as the version number and date of release.

OME introduces an optional component for loading driver and firmware updates into a local repository to manage reporting of available packages and scheduling deployment of the packages to systems. This functionality relies on the OMSA agent, and allows updates to be deployed to Windows, Linux, and ESX/ESXi host computers within the environment.

DELL REPOSITORY MANAGER Server Mode							
Repository Information ftp.dell.com/catalog/Catalog.cab * COpen	Remove	Details Compare					
Bundles Components	Repos	itory: ftp.dell.com/cata	log/Cata	alog.c	ab (ftp	.dell.cc	om/c
Select Search Filter •	Bundles	(Selected/Total): (0/389)					
▼ Text Search	All	Name	Version 🔺	OS	Date	Size	Author
		System Bundle (Linux) PE2970 v380	B107896.380	Linux	4/8/2011	264.05 MB	DELL
		System Bundle (Windows) PE2970 v380	B107896.380	Windows	4/8/2011	552.27 MB	DELL
▼ IIndate Type *		System Bundle (Linux) PE2970 v390	B107896.390	Linux	8/3/2011	264.12 MB	DELL
		System Bundle (Windows) PE2970 v390	B107896.390	Windows	8/3/2011	552.5 MB	DELL
🗸 Drivers 🖌 Firmware 🗹 BIOS 🗹 Applications √ Utilities		System Bundle (Linux) PE860 v380	B110855.380	Linux	4/8/2011	102.06 MB	DELL
▼ Criticality		System Bundle (Windows) PE860 v380	B110855.380	Windows	4/8/2011	280.24 MB	DELL
		System Bundle (Linux) PE860 v390	B110855.390	Linux	8/3/2011	102.1 MB	DELL
Optional Recommended Urgent		System Bundle (Windows) PE860 v390	B110855.390	Windows	8/3/2011	280.28 MB	DELL
		System Bundle (Linux) PE840 v380	B110857.380	Linux	4/8/2011	159.62 MB	DELL
► Form Factor		System Bundle (Windows) PE840 v380	B110857.380	Windows	4/8/2011	393.2 MB	DELL
Component Version		System Bundle (Linux) PE840 v390	B110857.390	Linux	8/3/2011	159.7 MB	DELL
		System Bundle (Windows) PE840 v390	B110857.390	Windows	8/3/2011	393.29 MB	DELL
<ul> <li>Operating System</li> </ul>		System Bundle (Linux) PE6950 v380	B115842.380	Linux	4/8/2011	131.65 MB	DELL
Supported Platforms		System Bundle (Windows) PE6950 v380	B115842.380	Windows	4/8/2011	406.4 MB	DELL

# Figure 10. OME Dell update repository

The K1000 integrates Dell updates as well, allowing the administrator to leverage a consistent set of functionality to schedule a set of driver and firmware updates to be applied to the machines that need them in the same fashion that they schedule OS and application patching. Unlike OME, these same processes for Dell updates and software patching may also be used for client systems, providing a consistent approach to all systems management. Extensive reporting is also provided including driver

and firmware comparison reporting by each individual machine or across a range of machines in the environment

While a choice will typically be made to use the Dell Update Center processes exclusively from either OME or the K1000, that choice can be driven by the needs of the environment rather than any incremental costs to the solution since both offerings provide Dell Update Center integration as part of their core functionality.





# Assessing and resolving security vulnerabilities

Because the K1000 Appliance extends systems management to include the operating system and software applications, it is able to assess and address vulnerabilities across a full range of configurations. Assessments are performed using industry-standard approaches such as the Open Vulnerability Assessment Language (OVAL) and the Security Content Automation Protocol (SCAP). Use of OVAL and SCAP ensures a reliable and reproducible set of metrics that are constantly updated as new threats are identified.

-		User: Bryan Brooks Log Out
(mail)	KARE Management Conter	Organization: ITA 💌
( m		Global Search
Home	🖳 🖳 Inventory 🛃 Asset 🕘 Distribution 🕸 Scripting 🔒 Security 🐴 Service Desk 📓 Reporting 🕅 Settings	🕜 Help
Patching	OVAL Assessment SCAP Scan Secure Browsers	
OVAL	Table	
OVAL	View by: Vulneral	bility •
Choose A	ction  Showing 1-150 of 2982 tests. [Next]	Last Updated: 2011/09/07 03:25:00am
OVALID 3	Description	CVE Number
3	The Server Service (SRV:SYS driver) in Microsoft Windows 2000 SP4, XP SP1 and SP2, Server 2003 up to SP1, and other products, allows remote attackers to obtain control in a service of the service of th	CVE-2006-1315
4	bolan sensore motion of contract representation of the sensor of the sensor of the sensore contract of the sensore sensore motion and sensore sens Sensore sensore sen	CVE-2006-3647
5	2008-4993 Microsoft Internet Explorer 5 SP4 and 6 do not properly garbage collect when "multiple imports are used on a styleSheets collection" to construct a chain of Cascading Style Sheets (CSS), which allows remote attackers to execute arbitrary code via unspecified vectors.	CVE-2006-3451
8	Unspecified vulnerability in the Server service in Microsoft Windows 2000 SP4, Server 2003 SP1 and earlier, and XP SP2 and earlier allows remote attackers to memote whitemic advances in a confluent earlier Allow Researce Microsoft Windows 2000 SP4.	CVE-2006-4696
12	Execute industry Clove via it railwap provide, and show the indiant is unemained by: Internet Explore 7.5. and 6.0 allows remote attackers to bypass restrictions for executing scripts via an object that processes asynchronous events after the initial	CVE-2002-0026
13	security creacy nave been made. Heap-based buffer overflow in HTML Help ActiveX control (hhctrl.ocx) in Microsoft Internet Explorer 6.0 alows remote attackers to cause a denial of service (application crash) and possibly execute arbitrary code by repeatedly setting the Image field of an Internet.HHCtrl.1 object to certain values, possibly related to immorore rescannia and iona strinons.	CVE-2006-3357
16	Buffer overflow in the chunked encoding transfer mechanism in Internet Information Server (IIS) 4.0 and 5.0 Active Server Pages allows attackers to cause a denial of service in exercise attractions code.	CVE-2002-0079
17	Internet Explorer 5.01, 5.5 and 6.0 allows remote attackers to read arbitrary files via malformed requests to the GetObject function, which bypass some of GetObject's security checks.	CVE-2002-0023
18	Buffer overflow in Windows Shell (used as the Windows Desktop) allows local and possibly remote attackers to execute arbitrary code via a custom URL handler that has not been removed for an annication that has been improperly uninstalled.	CVE-2002-0070
10	Cross-site scripting vulnerability in Internet Explorer 6.0 allows remote attackers to execute scripts in the Local Computer zone via a URL that exploits a local HTML	CVE 2002-0190



Assessments may be applied across multiple machines using the same dynamic grouping mechanism available to all features of the K1000, allowing scanning schedules to account more frequently for those systems that are of highest concern. When vulnerabilities are identified, patching and system configuration changes for the affected system may be addressed directly within the appliance.

Security	
Patching Detect/Deploy Status	
Threat Level 5 List (0)	
Oval Vulnerabilities (2)	
OVAL Test Runner	✓ View Logs
Vulnerable Vulnerable Vulnerable Vulnerable True True True True True True True Tru	<ul> <li>3556: The Microsoft .NET forms authentication capability for ASP.NET allows remote att</li> <li>1039: Buffer overflow in a component of SQL-DMO for Microsoft Data Access Components (</li> <li>454: Microsoft XML Core Services 6 is installed</li> <li>4870: The operating system installed on the system is Microsoft Windows Server 2008 (3</li> <li>5525: Test if this OS should support WMI service. Note: different Objects are</li> <li>1934: Microsoft .NET Framework 2.0 (Original RTM or later) is installed</li> <li>310: Microsoft Visual Studio .NET 2005 is installed</li> <li>324: Microsoft XML Core Services 3 is installed</li> <li>6210: A version of Microsoft Internet Explorer 8 is installed</li> </ul>

#### Figure 13. OVAL test as applied to a machine in inventory

The K1000 provides an extensive patch management system as part of its feature set that includes a constantly updated patch repository, and scheduling system for deploying different sets of patches to different machines based on the attributes of the patches and machines in question. The flexibility of this approach allows differing policies to be applied to different servers in the environment while providing a single, unifying view of vulnerability assessment and remediation across all systems in the environment. Extensive reporting delivers the assurance that systems are up-to-date, including detailed reporting of each individual system and any operating system or applications patches that have been identified as needed for that system.

Figure 14.	Patching status	for a	machine	in	inventory
------------	-----------------	-------	---------	----	-----------

65	?	Sun Java JRE 1.6.0_25 for Windows (Full/Upgrade) (All Languages) (See Notes)	NOTPATCHED	2011-06- 14T17:08:00- 07:00	0000-00- 00 00:00	0	0000-00- 00 00:00	0
66	?	WinZip 14.5 (Full Install) (All Languages) (See Notes)	NOTPATCHED	2011-06- 14T17:08:00- 07:00	0000-00- 00 00:00	0	0000-00- 00 00:00	0
67	Ľ	2443685 Update for Windows Server 2008 R2 x64 (KB2443685)	PATCHED	2011-06- 14T17:08:00- 07:00	0000-00- 00 00:00	0	0000-00- 00 00:00	0
68	2	974431 Update for Windows Server 2008 R2 x64 Edition (KB974431)	PATCHED	2011-06- 14T17:08:00- 07:00	0000-00- 00 00:00	0	0000-00- 00 00:00	0

The ability to detect system vulnerabilities using industry-standard protocols, and resolve those vulnerabilities by applying needed system firmware and driver updates as well as operating system and application software patches—all within a single system management platform—means greater productivity for your IT staff. System administrators will spend less time identifying and researching issues, and applying appropriate remedies to resolve vulnerabilities. And management will have the assurance and proof that system weaknesses have been addressed via the compliance reports.

# System monitoring and fault resolution

Possibly the most important task to be automated is proactive identification of faults within the systems being monitored, and tracking of the fault remediation to its conclusion. OME provides active monitoring of Dell and non-Dell computer systems and other devices via industry-standard SNMP and IPMI protocols. Specific faults to be monitored may be configured within the OpenManage Server Administrator or OME may capture any SNMP trap information that has been issued on a monitored system. Because the K1000 can control configurations across a range of machines by accessing the OMSA OMCONFIG command line interface, SNMP and IPMI settings can be consistently applied for multiple systems.





Once a fault has been identified by OME, filters may be applied to determine if it is a fault that requires administrative intervention. If so, the alert information is transmitted as an email via SMTP to the K1000 service desk for ownership assignment and remediation within the IT team. Information contained within the alert is assigned into the appropriate fields within the email that will generate the ticket so that the necessary reference information is available to the assigned administrator. In this fashion, complete control can be maintained for those faults that require intervention and remediation.

DE OPENMANAGE ESSENTIALS					
Home Manage Reports Preferences	Tools Tutorials				
Devices Device Search Discovery and I	nventory <b>Alerts</b> System	Update Custom Tasks			
Alert Logs 🗸 🗸 🗸	K1000 Service	Desk			
Alert Actions ^	Name	Value			
Alert Actions	Name	K1000 Service Desk			
Application Launch	Action Enabled	Enabled			
- Email	Туре	Email			
- Ignore	Description				
	То	ita@k1000demo7.kace.com			
Alert Categories	From	bryan_brooks@dell.com			
	Subject	Device:\$n \$ip; Severity:\$sev			
	Message	<pre>@category=\$cat @machine=\$n @custom_1=\$st @custom_2=\$at @create_date=\$d \$t @priority=\$sev Message: \$m</pre>			
	Arguments	-t "ita@k1000demo7.kace.com" -f "bryan @machine=\$n @custom_1=\$st @custom_2=\$at @create_date=\$d \$t @priority=\$sev Message: \$m"			
	Associated Severity	Warning, Critical			
	Associated Alert Categories	All			

### Figure 16. Delivering alerts to the K1000 appliance

When configuring the Alert Action in OME, the administrator has options for filtering the alerts to only those that require action, and defining which attributes of the alert need to be transferred to the service desk in the K1000 so the assigned administrator may resolve the issue. Alerts may be filtered based on the severity of the event, user-defined alert category, device type, and time of the event.

When configuring the email that will be sent to the K1000 service desk for a filtered alert, the following attributes may be communicated as part of the event:

- Device (\$n)-The fully qualified domain name of the device as returned from DNS.
- Device IP (\$ip)-The assigned IP address for the device.
- Service Tag (\$st)—The Dell Service Tag assigned to the device.
- Asset Tag (\$at)-The asset tag assigned by the customer to the device within BIOS .

- Date and Time (\$d and \$t)-The date and time of the alert event.
- Severity (\$sev)-The severity of the event (Normal, Warning, Critical, Unknown).
- Alert Category Name (\$ct) The category of the alert. Several default values are preconfigured and more may be configured within OME.
- Alert Source Name (\$st)—The source of the alert.
- Package Name (\$pkn)-The package associated with the alert event.
- Enterprise OID (\$e)—The object identifier for the type of managed object that generated the trap.
- Specific Trap OID (\$sp)—The specific trap code identifier for the generated trap.
- Generic Trap OID (\$g)-One of a number of generic trap types as generated from SNMP.
- Message-(\$m)-The message of the alert identifying details of the identified issue.

These attributes are assigned to fields in the K1000 service desk ticket by mapping them to the appropriate receiving field in the K1000 service desk. The receiving field is identified by using a @ sign and the name or label of the field in the service desk ticket configuration. For example, to map the Asset Tag to a custom field in the service desk ticket, the mapping may appear as:

• @custom\_n=\$at (where "n" is the custom field in the ticket being used for asset tag)

Or

• @asset\_tag=\$at (where asset\_tag is the label assigned to the custom\_n field used for asset tag)

When the ticket is created within the K1000 service desk, the category of the alert is available to manage routing of the ticket to the right team for resolution, and all of the controls necessary for managing ownership assignment, approvals, and other tracking are available. When the Kagent is present on the machine, its entry in the K1000 inventory is directly accessible from the ticket by clicking on the "Machine" link in the ticket. If the device in the ticket does not have the Kagent installed on it, it may still be referenced using the "Asset" link provided the asset information has been loaded into the K1000.

Figure 17	7. Ticket for an alert in	the K1000 servi	ice desk			
	E Management Cent	er				
📸 Home 📃 Inve	entory 🛃 Asset 💿 Distribut	ion 😨 Scripting	Security & Service Desk			
Tickets Software	e Library Knowledge Base L	sers Roles Cor	nfiguration			
Ticket TICK:0218						
Title:	Device:blob 10.159.22.170:	Severity:Warning	licket Actions			
Impact:	Many people can't work	<b>•</b>				
Category:	Storage Peripheral	•				
Status:	New -					
Priority:	Warning 👻					
Owner:	bryan_brooks@dell.com	▼ Filter:	(2)			
Machine: 🧭	blob					
Asset:	Unassigned	▼ Filter:	(11)			
Service Tag:	92091J1					

Working together, OME and the K1000 provide an end-to-end solution for proactively identifying and resolving issues within the environment.

# Reporting on data center assets and activities

Delivering effective reporting to the IT team and to management communicate issues that may impact priorities and illustrates successful and timely execution of processes. Both OME and the K1000 provide out of the box reports that describe the inventory under management.

The K1000 extends this to provide reporting on activities being conducted within the environment, including service desk ticket resolution, patching status across multiple machines, top vulnerabilities that need to be addressed, software compliance issues, and so on. Custom reports may also be configured to address processes that are specific to the environment.

Additionally, the K1000 will collect the warranty information for machines in inventory and provide reporting and alerting for warranty expirations that are coming due. This provides the peace of mind that the servers under management have up-to-date service contracts.

# KACE Management Center Home Inventory Inventory Asset Distribution Scripting Reports Classic Reports Schedule Reports Alerts Email Alerts

Figure 18. K1000 service desk reports

# K1000 Reports

Cł	Choose Action  Found 22 reports.						
	Ø	Report					
	Ø	Closed Satisfaction Survey last 31 days by Owner					
	Ø	Closed Ticket Resolutions last 7 days by Owner					
		Closed Ticket Resolutions last 31 days by Owner					
	Ø	Closed Tickets last 7 days by Owner					
		Closed Tickets last 31 days by Category					
	Ø	Closed Tickets last 31 days by Owner					
	Ø	Escalated/Open Tickets by Owner					
	Ø	Open Tickets by Category					
	Ø	Open Tickets by Owner					
	Ø	Open Tickets last 7 days by Owner					

#### Figure 19. Dell warranty information in K1000 inventory

- Service Tag:
   H192BK1

   System Type:
   PE R610 Thidwick,OEM

   Ship Date:
   2009/06/22
- Country: United States

#	Description	Provider	Start Date	End Date	Days Left
1	Next Business Day Support	UNY	2010/06/23	2012/09/20	380
2	Next Business Day Support	UNY	2009/06/22	2010/06/22	0

Refresh

# Integrating Dell K1000 with OME

The features of the Dell|KACE K1000 Systems Management Appliance are exceptionally well suited to manage a distributed desktop environment. But what about managing the servers in your environment? Obviously, most of the K1000 features such as automated inventory and machine labeling, server operating system patching, Dell driver and firmware updates for servers, OVAL and SCAP vulnerability assessment, scripted configuration management, and reporting also work well for managing servers. A key feature that's often a requirement for server management that you may also need is active system monitoring based on protocols like SNMP or IPMI. While the K1000 can perform SNMP scans to assist in device discovery, it doesn't receive SNMP traps to assist in identifying issues with those servers.

In any IT environment, 24/7 accessibility to the data center is essential in order to proactively monitor system health, identify faults, and automatically notify IT administrators for immediate resolution of these faults. Dell OpenManage Essentials (OME) allows IT organizations to actively monitor Dell servers, non-Dell Servers<sup>1</sup>, and other devices via industry standard SNMP and IPMI protocols. By configuring devices to send SNMP traps/alerts and IPMI Platform Event Traps (PET) to an OME management station, OME acts as a centralized monitoring application.

Many IT organizations have implemented a centralized mechanism for tracking and handling these server faults such as hard drive failure, loss of network connection etc. These server faults are typically managed through a service desk or a help desk. KACE 1000 Service Desk can receive alerts information from OME, then open a trouble ticket and assign it to an IT administrator for remediation. Information contained within the alert is assigned into the appropriate fields within the email that will generate the ticket so that the necessary reference information is available to the assigned administrator. In this fashion, complete control can be maintained for those faults that require intervention and remediation.

# Configuring OME and K1000

Dell OpenManage Essentials is a Windows-based systems management console that replaces Dell IT Assistant. A physical or virtual server running Windows Server 2008 will be required to run OME. This installation is quite simple and largely self-contained. OME includes Microsoft SQL Server® Express for small deployments. If you plan to manage a large environment, however, OME supports use of Microsoft SQL Server Enterprise.

- 1. Install OME
- 2. Launch the OME console and select Manage  $\rightarrow$  Discovery and Inventory.
- 3. In the left pane, select **Discovery Ranges** → Add **Discovery Ranges** to define an IP range for discovering your servers.
- 4. Enter the **IP address / range** or a list of **DNS hostnames** for the machines you want to monitor, and select an applicable protocol, provide credentials then click **Finish**.

<sup>&</sup>lt;sup>1</sup> Supported only if the corresponding MIB is imported into OME.

	GE ESSENTIALS				Dell TechCenter   Support   He
Home Manage Reports Prefer Devices Device Search Disco Discovery Portal ^ Discovery Portal	rences Logs Tutorials Extensio Discover Devices Discovery Range Configura	tion Discovery Range	• Configuration		∞ 1/10
Common Tasks       A         Add Discovery Range       A         Add Discovery Range Group       A         Add Exclude Range       Discovery Schedule         Inventory Schedule       Status Schedule         Discovery Ranges       ^            — @ All Ranges        A         Exclude Ranges       ^	Discovery Range Configuration ICMP Configuration SNMP Configuration WMI Configuration Storage Configuration WS-Man Configuration SSH Configuration	Specify IP address Enter an IP address or a wildcard(*) in the last tw IP address / range: Host name: Subnet mask:	s, range, or host na range. The first octet ce o octets. DNS.KACE.com 255 . 255	ame. 	e (for example, 12-115) or
– Exclude Ranges	IPMI Configuration Discovery Range Action Summary Help	IP Range / Host Name 192.168.6.100-255	Discovery Range Name	Subnet Mask 255.255.255.0 Cancel	Next Finish

#### Figure 20. OpenManage Essentials discovery range configuration wizard

# Configure service desk and service queue in KACE

The next step is to create your K1000 service desk queue so it can receive emails from OME. We'll set this up before configuring the email alert in OME since we need the email address for the service desk queue to complete the OME configuration. To simplify this task you can download a sample queue as a kpkg  $here^2$  and upload it to your K1000 Appliance as follows:

- Connect to the clientdrop network share on your K1000 and navigate to \\<your\_K1000\_host>\clientdrop and log into the share using the credentials configured in the K1000 Appliance for the network share.
- 2. Copy the downloaded **Queue-110.kpkg** file to the clientdrop share.
- 3. Log into your K1000 Appliance and go to Settings → Resources → Import K1000 Resources.
- 4. From the dropdown field on the left, select Choose Action → Import Resources(s) from SAMBA Share.

<sup>&</sup>lt;sup>2</sup> If the sample queue package becomes unavailable for download, Google search for *Queue-110.kpkg*.

😤 Home 🔲 Inven	tory 🙆 Asset	Ostribution	the scripting	A Security	Service Desk	Reporting	🛞 Settin
Control Panel Log	Server Mainter	Nance K1000 /	Agent Resou	rces Support		5	
Import Resou	rces From	SAMBA Di	rectory				
Select File(s) for Impor							
Fées In SAMBA Share:	Report-341.kpkj .05_Store Managed-Instal-1 Managed-Instal-1	9 663.kpkg 061.kpkg		ì			
	Queue-2.Apkg Report-341.kpkg Report-353.kpkg Report-353.kpkg Report-354.kpkg Report-355.kpkg Report-355.kpkg Report-356.kpkg Report-364.kpkg Report-406.kpkg Script-1075.kpkg Script-1075.kpkg Script-35.kpkg Script-35.kpkg						

#### Figure 21. Import resources from SAMBA share directory

1. Select Queue-110.kpkg from the list of files, and then select Import Resources.

You'll now see a queue resource listed called OME that is imported into your K1000 Appliance.

2. Navigate to Service Desk  $\rightarrow$  Configuration  $\rightarrow$  Queues. Click on the OME queue.

KACE Ma	nagement Cent	er					Irganization:
🚰 rome 🚇 Inventory 🙆	BAsset ODstrit	uton (	() scripting	Security	Service Desk	Reporting	Rettings
Tickets Software Library	Knowledge Base	Users	Roles	Configuration			
Edit Mode Fame: (mail Address: Vt. Email Address:				CHE Inte	gK1000DemoS.A	ace.com	
customize Freids and Layout							
Sustemize Pields and Layout				Ø			
Lostomize Preizas and Layout Mow all users as submitters: Mow all users as approvers:							

Figure 22. Service desk configuration

Note the email address of the queue. This is the email address that will be recognized within the K1000 Appliance as the queue to receive email tickets from OME. If you wish to use a different email address that is first externally defined in your email environment and then forwarded to this address, you may specify that in the Alt. Email Address field. Here, though, we'll assume that the queues Email Address is being used. When you configure the email alert in OME, this email address will be the TO: address in the OME Email alert action.

Also note that there is no specification for **Ticket Owners by Label**. This is simply because user labels and the assigned users will be specific to your environment and cannot be assumed for the imported queue. Everything within the imported queue may be customized to meet your requirements.

From the Ticket Layout section of the Service Desk Customization page you can customize the way tickets are displayed in the Tickets tab for each queue. For example, you

- can create different ticket views and set read/write access for users, ticket owners, and administrators.
- Refer to <u>KACE K1000 Service Desk Administrator Guide</u> for more information on customizing service desk tickets.

#### Customizing service desk ticket related parameters

- 1. Select Service Desk  $\rightarrow$  Configuration  $\rightarrow$  Queues  $\rightarrow$  <Queue name>  $\rightarrow$  Customize Fields and Layout link.
- 2. Select the **Name** you want to customize and set the label and permissions from the dropdown list.

Example: Name: CUSTOM\_2 Label: Service Tag Required: Not Required Permissions: User Create

3. You can also define the Name type, assign default value to a Name, and etc. under the Custom Fields section.

Example: Name: CUSTOM\_2 Type: Text Default: Unknown

Impact Values ()						
Name 0				•		
Many people can't work				3 3		
Many people inconvenier	nced			302		
1 person can't work				10 2		
1 person inconvenienced	C			3748		
Ticket Layout 3						
Hane #	Label 0	Required #	Permissione *			
SAT_SURVEY	Please tell us about your recent help desk experience	Not Required	Hidden			
TITLE	Tide .	Always Required	User Create			
INPACT	Imped	Not Required	Uzer Cieate			
CATEGORY	Category	Not Required	Urer Create			
STATUS	Status	Not Required	Owners Only - Visible to Users			
PRICAITY	Poorty	Not Required	Urer Create			
OWNER	Ovner	Not Required	Owners Only - Visible to Users			
MACHINE	Madvine	Hot Required	User Create			
ASSET	Acout	Not Required	User Create			
CUSTOM_1	Device Name	Not Required	User Create			
CUSTOM_2	Service Tag	Not Required	· User Create	. Save Cancel		
CUSTOM 3	10.4	Not Required	Hidden			
CUSTOM 4	5004	Not Required	Hidden			
CUSTOM 5	Porte	Not Required	Hidden			
CUSTOM_6	None I	Not Required	midden			
CUSTOM_7	None	Not Required	Hidden			
CUSTOM_8	none	ot Required	Hidden			
CUSTOM_9	Pone .	Noticeguired	Hidden			
CUSTOM_10	None	Not Reward	Hidden			
CUSTOM_11	1014	Not Required	Hidden			
CUSTOM_12	none	Not Required	Hidden			
CUSTOM_13	none -	Hot Required	Hidden			
CUSTOM_14	sone .	Not Required	Hidden			
CUSTOM_15	none	Not Required	Hidden			
DUE_DATE	Due Date	Not Required	Coners Only - Hidden from Users			
CC_LIST	CC Lut	Not Required	Objers Only - Hidden from Users			
CREATED	Created	Not Required	Owner Only - Visible to Users			
MODEFIED	ModFiel	Not Required	Owners Only - Visible to Users			
SUBMETTER.	Eulernitter	Not Required	User Create			
APPROVAL_INFO	Approver	Not Required	Hidden			
PARENT_INFO	Parant Ticket	Not Required	Hidden			
SEE_ALSO	See Also	Not Required	Owners Only - Hidden from Users			
REFERRERS	Referrers	Not Required	Owners Only - Hidden from Vers			
RESOLUTION	Resolution	Not Required	Owners Only - Visible to Users			
MACHINE	Machine			Not Required	User Create	
ASSET	Asset			Not Required	User Create	
CUSTOM_	1 Device Name	Device Name Service Tag		Not Required	User Create	
CUSTOM	2 Service Tag			Not Required	User Create	Save Cancel
CUSTOM	3 none			Not Required	Hidden	
CUSTOM	4 none			Not Required	Hidden	
CUSTOM_	5 none			Not Required	Hidden	

Figure 23. Define custom fields and parameters on the service desk configuration page

You can configure a new Alert Category in K1000 to match alert categories supported by OME. *Alert category* identifies the type of device, component, or application that generated the alert. For example, temperature-related alerts will be under the Environmental alert category.

- To configure the Alert Category, select Service Desk → Configuration → Queues → <Queue name> → Ticket. Defaults: Customize These Values link.
- To add a new alert category, select the + icon on the top right under the Category Values section, then provide the Name and Label properties, and set the Default Owner, User Settable properties.
  - Example: Name: Environmental Label: Environmental Default Owner: OMEAdmin User Settable: True

# Create an e-mail alert action in OME

- 1. Launch the OME console and select Manage  $\rightarrow$  Alerts then in the left pane, select Alert Actions  $\rightarrow$  Email
- 2. Right-click on Email and select New Email Alert Action OR right-click a pre-canned sample alert action and select Clone then provide a new name and select Edit from the right-click menu of the cloned alert action.



DEVEL OPENMANAGE ESSENTIALS								
Home Manage Reports Preferences Logs Tutorials Extensions Devices Device Search Discovery and Inventory Alerts System Update Remote Tasks								
Common Tasks Alert Logs	Email							
Alert Actions	Action Enabled	Name	Descriptio					
- Alert Actions	0	Sample - Email Alerts to Service Desk	This samp					
+ - Application Launch	0	Sample - Email Critical Server Alerts to Admin	This samp					
<ul> <li>Email</li> <li>Sample - Email Alerts to</li> <li>Sample - Email Critical Serve</li> <li>Ignore</li> </ul>	New Alert Email	Action						

#### Figure 25. Clone a pre-canned sample e-mail alert action

DEVEL OPENMANAGE ESSENTIALS						
Home Manage Reports Preferences Logs Tutorials Extensions						
Devices Device Search Discovery and Inventory Alerts System Update Remote Tasks						
Common Tasks	Sample - Email Cri	itical Server Alerts to Admin				
Alert Logs						
Alert Actions	Name	Value				
Alert Actions	Name	Sample - Email Critical Server Alerts to A				
Application Launch	Action Enabled	Disabled				
=- Email	Туре	Email				
- 🗑 Sample - Email Alerts to Serv	Description	This sample shows how to send an email				
Sample - Email Critical Serve		your_admin@yourdomain.com				
+ - Ignore	Clone	vour ome admin@vourdomain.com				

# Figure 26. Enter and edit a new name for the cloned e-mail alert action

Clone Alert Action	1	23				
Enter a new name	for the Alert Action.					
Sample - Email C	o Admin					
	Ok	Cancel				
Home Manage Reports Preferences Logs Tutorials Extensions						
Common Tasks Alert Logs	Cloned - Email Crit	tical Server Alerts to Admin				
Alert Actions	Name	Value				
Alert Actions	Name	Cloned - Email Critical Server Alerts to a				
- Application Launch	Action Enabled	Disabled				
– Email	Туре	Email				
— 🗑 Sample - Email Alerts to Serv	Description	This sample shows how to send an ema				
— 👩 Sample - Email Critical Serve	То	your_admin@yourdomain.com				
Cloned - Email Critical Server		your_ome_admin@yourdomain.com				
+- Ignore						

- 3. In Name and Description, provide e-mail alert action name and description.
- 4. Check Enabled checkbox and Click Next.

#### Figure 27. Name and description in e-mail alert action wizard

		23
Alert Email Action	Name and Description	1/7
Enter the name, de	escription, and enabled state for this	s alert action.
Name:		
Email Alert Action for k	ACE	]
Description:		
This email alert action Critical alert is received	will send an alert email to KACE when a I from a managed node.	
🖌 Enabled		

5. In the e-mail configuration screen, provide the recipients of this e-mail and sender in To: and **From:** address fields.

**NOTE:** Make sure the **To** e-mail address in OME matches the e-mail address in KACE Service Desk configuration.

**NOTE:** Verify that the e-mail address in the **From** field in OME (user sending the ticket into the K1000 service queue) matches exactly the e-mail address defined for that user in the KACE appliance.

NOTE: Separate each recipient or distribution list with a semi-colon.

- 6. Provide a Subject.
- 7. In the **Message** field, create a map of the KACE service desk and OME pre-defined alert substitution parameters. For each of the supported parameters the e-mail alert action fetches alert data and assigns it to the corresponding parameters on the KACE service desk trouble ticket.
- 8. Refer to the <u>KACE K1000 Service Desk Administrator Guide</u> for more information on customizing service desk tickets.

#### Example:

```
@machine=$n
@custom_1=$st
@create_date=$d $t
@priority=$sev
@category=$cn
```

NOTE: Parameters prefixed with "@" are defined in the KACE service desk.

**NOTE:** Parameters prefixed with "@" must be defined first in the message section of the Alert Email Action wizard and each parameter has to be in a new line.

**NOTE:** Parameters prefixed with "\$" are defined in OME and are substituted with actual value when E-mail alert action is triggered.

9. Click Email Settings and provide an SMTP server name or IP Address.

NOTE: Make sure KBOX and OME are using the same SMTP server name/address.

10. Validate the configuration using the **Test Action** button. This should send a sample e-mail to the all the recipients. Click **Next**.

# Figure 28. E-mail configuration in e-mail alert action wizard

	_					Σ
Alert Email A	ction	E-mail Configurati	on			2 of 7
Configure th	ne e-mai	l parameters for	this aler	t action.		
To:	ome@kb	ox.kace.com				
From:	ome@ba	nderadev4qa05.kac	e.com			
Subject:						
Device:\$n \$ip;	; Severity:	\$sev				
Message:						
@machine=\$n @custom 1=\$	n Sm					
@custom_2=\$	st - td tt					
@priority=\$se	v V					
You may use th	ne followin	n parameters for sul	hstitution:			
\$n = Dev	vice	\$e = Enterprise	OID			
\$ip = Dev	vice IP	\$sp = Specific Tra	ap OID			
\$d = Dat	e	\$cn = Alert Cated	ory Name			
\$t = Tim	e	\$sn = Alert Source	e Name			
\$sev = Sev	erity	\$pkn = Package Na	ame			
\$st = Ser	vice Tag	\$at = Asset Tag				
				Email Settir	ngs Test	Action
Hele						

**Note:** The address in the **To:** field will be the e-mail address of the service queue in the K1000 Appliance where the service desk tickets will be logged.

Email Settings
SMTP Server Name or IP Address:
10.0.099
✓ Use Credentials
Domain \ Username:
domain\administrator
Password:
•••••
Port: 🖌 Use Default 25
Use SSL
Logging: <ul> <li>Disabled</li> <li>Errors Only</li> <li>Everything</li> </ul>
Note: The SMTP server setting applies to all alert email actions and can also be modified from the main Preferences page.
Ok Cancel

# Figure 29. Email settings

Figure 30. Test email confirmation dialog box



11. In **Severity Association**, assign the alert severity to which you want to associate this e-mail alert and then click **Next**.

Figure 31. Select sevierty association	n in e-mail alert ac	tion wizard
		٤
Alert Email Action Severity Association	pn	3 of 7
Select the severity to associate with The alert action will take place when following pages matches an incomin	this action. hthe criteria spe ng alert.	cified in the
Severity: All Unknown Normal Warning Critical		
Help	Cancel	Back Next

12. In **Categories and Sources Association**, assign the alert categories source to which you want to associate this e-mail alert and then click **Next**.

Figure 32. Select alert categories in e-mail alert action wizard

		23
Alert Email Action Category and Sour	ces Association	4 of 7
Select one or more alert categories of action.	or sources to associate w	ith this
- 🛛 Alert Categories		•
🕒 🔽 Brocade-Switch		
+ 🔽 Environmental		
🛨 🔽 EqualLogic Storage		
🛨 🔽 FC-Switch		=
🛨 🔽 General Redundancy		
+ 🔽 HyperV Server		
🛨 🔽 iDRAC-Server-Traps		
🛨 🔽 Juniper-Switch		_
🛨 🔽 Keyboard-Video-Mouse (KVM)		
+ 🖉 Memory		
+ 🔽 Network		
+ 🔽 Other		
₽ PDU		
Performance Monitoring		
+ 🔽 Physical Disk		
+ 🖉 Power		-
Help	Cancel Back	Next

13. In **Device Association**, assign the device or device groups to which you want to associate this email alert and then click **Next**.

Figure 33. Select devices in e-mail alert action wizard
X.
Alert Email Action Device Association 5 of 7
Select the device(s) or device group(s) to associate with this action.
Select a query
Select the devices/groups from the tree below:
All Devices
- 🔲 HA Clusters
- C KVM
— 🔲 Microsoft Virtualization Servers
+ Modular Systems
+ 🖸 Network Devices
+ OOB Unclassified Devices
Printers
+ 🗆 RAC
- 🔽 Servers
☑ 10.35.0.220
■ M80504-W2K8
PE1950W2K8-SK1
PE1950-DAVID
Storage Devices
Help Cancel Back Next

14. In **Date Time Association**, enter the date or time range on when this e-mail alert action is active, and then click **Next**.

By default, the e-mail alert action created is active at all times.

🔲 Limit Date Range	From:	11/4/2011		
	To:	11/4/2011	I	
🔲 Limit Time Range	From:	4:26 PM	I	
	To:	4:26 PM		
		Wednesday Thursday Friday Saturday Sunday		

15. In the **Summary** window, review inputs and click **Finish**.

# Figure 35. Review configuration in e-mail alert action summary

Alert Email Action Sur	nmary			2 7 of 7
Review your inputs and	click Finish to continue or click Back to change your inputs.			
Attribute	Value			
Name	Email Alert Action for KACE			
Action Enabled	Enabled			
Description	This email alert action will send an email to KACE when a Critical alert is receiv	red from a ma	naged node.	
То	ome@kbox.kace.com			
From	ome@banderadev4qa05.kace.com			
Subject	Device:\$n \$ip; Severity:\$sev			
Message	@machine=\$n @custom_1=\$n @custom_2=\$st @create_date=\$d \$t @priority=\$sev @category=\$cn Device:\$n \$ip, Service Tag:\$st, Asset Tag:\$at, Date:\$d, Time:\$t, Severity:\$se	v, Message:\$r	n, Alert: \$cn, \$	sn
Command Line	-t "ome@kbox.kace.com" -f "ome@banderadev4qa05.kace.com" -s "Device:\$r @custom_1=\$n @custom_2=\$st @create_date=\$d \$t @priority=\$sev @category=\$cn Device:\$n \$ip, Service Tag:\$st, Asset Tag:\$at, Date:\$d, Time:\$t, Severity:\$se	n \$ip; Severity	r:\$sev" -b "@m n, Alert: \$cn, \$	achine=\$n
Associated Severity	Critical			
Associated Alert Categories	All			
Associated Alert Sources	All			
Associated Device Groups	Servers			
Associated Devices	All devices for associated device groups.			
Associated Date Range	All			
Associated Time Range	All			
Associated Days	All			
Help		Cancel	Back	Finish

# Sample workflow of OME/KACE integration

1. OME receives a critical alert from a monitored server and triggers the E-mail alert action, which in turn collects alert data and sends an e-mail to KACE service desk.

DELL OPENMANAG	E ESSENTIALS							Del TechCenter   S	upport   Help	About	Admini	atrator				
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			• 11/4	2011 5:02:05 PM	PE1950W2K8-5K1	Power Senso Chass Previo Power Power	supply detected a failure r location: PS 1 Status is location: Main System Chassie rus state was: OK (Normal) Supply type: AC Supply tate: Presence detectec	Power	alertPowerS	upplyfeilu						
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Filter by: All	•		11/4/	2011 4:25:03 PM	PE1950W2KB-5K1	LinkU	p Port or number: 18	Network	linkup			_				
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Figure 36. Alerts received in OME Home Portal dashboard

2. The E-mail received is parsed by KACE Service Desk. It then creates a Service Desk ticket under OME service queue based on the criteria set.

# Figure 37. List of service desk tickets in K1000 Appliance

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Г	2m	Device:PE	1950W2K8-SK1 10.36.1.79; Severity:Critical	Critical		Nev	ome@l	anderadev4qa0	5.kace.com
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	38m	Device:PE	1950W2K8-SK1 10.36.1.79; Severity:Normal	Normal		Nev	ome@l	anderadev4qa0	5.kace.com
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	3h 57m	Device:0	MEDEV02-PAVANA 10.35.0.201; Severity:Normal	Normal		New	ome@l	anderadev4qa0	5.kace.com
	4h 57m	Device:W	N7-F2GNZK1 10.35.0.192; Severity:Normal	Normal		New	ome@l	anderadev4qa0	5.kace.com
	4h 57m	Device:10	0.35.0.204 10.35.0.204; Severity:Normal	Normal		New	ome@l	anderadev4ga0	5.kace.com

3. Click on the service desk ticket to view the details.

# Figure 38. Details of a service desk ticket in K1000 Appliance

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ome@banderadev4qa05.kace.com - 2011/11/04 12:02:28 (via email)

Ticket Created

Device:PEI950W2K8-SK1 10.36.1.79, Service Tag:1B6DPH1, Asset Tag:, Date:11/04/11, Time:17:02:05:000, Severity:Critical, Hessage:Power supply detected a failure Sensor Jocation: PS 1 Status Chassis Jocation: Main System Chassis Previous state was: OK (Mormal) Power Supply type: AC Power Supply state: Presence detected, Failure detected, AC lost, Alert: Power, alertPowerSupplyFailure

# Conclusion

Users can have both OME and the KACE K1000 Appliance running on the same physical machine. This can be achieved by having multiple virtual machines (VMs) on the same physical hypervisor system, where one of the VMs will have OME installed and the other VM houses the K1000 virtual appliance. By adding OME—a simple free solution to your environment—you can provide hardware monitoring within your KACE environment without impacting your budget.

The Dell|KACE K1000 System Management Appliance, combined with OpenManage Essentials and OpenManage Server Administrator, provide a simple, cost-effective solution, for managing your data center assets. Deployment can be completed quickly and with existing staff so the return on investment is quickly realized. With the combined solution in place, your staff will be able to review all aspects of the hardware and software you have deployed in your data center and their update status. They will be able to track changes that have taken place over time and by whom they have been implemented. When vulnerabilities are identified, service contracts are nearing expiration, or components fail, your staff will be in a position to address these concerns quickly and proactively. Most importantly, the organization as a whole will harvest the benefits of reliable IT services to achieve overall business objectives.

# Additional resources

#### Dell OpenManage Essentials

For more information on Dell OpenMange Essentials visit <u>www.dell.com/ome</u> or <u>www.delltechcenter.com/ome</u>

#### Dell OpenManage Administrator

Dell OpenManage is a collection of software tools developed by Dell that helps you discover, monitor, manage, and update Dell servers.

Documentation and downloads for OpenManage Server Administrator may be found at <a href="http://en.community.dell.com/techcenter/systems-management/w/wiki/1760.aspx">http://en.community.dell.com/techcenter/systems-management/w/wiki/1760.aspx</a>

Helpful Links: KACE Systems Management Appliances KACE Systems Deployment Appliances