

INTEGRATION ANALYSIS AND GUIDE: LENOVO THINKSERVER TS430 IN AN HP ENVIRONMENT

NEW LENOVO SERVER, SAME MANAGEMENT FRAMEWORK.



You are expanding your IT infrastructure and it's time to select new server hardware. You've heard about the new Lenovo servers that can deliver everything you need for an excellent price; same rack and tower form factors, same memory, drives, and processors running the same operating systems. You'd like to take advantage of the price/performance advantages of these Lenovo servers but you're concerned they might not easily fit into your existing management environment. The great news is that these servers will fit right in.

As an example, we looked at placing a Lenovo ThinkServer TS430, equipped with the Lenovo Remote Management Module (RMM), into a representative HP Systems Insight Manager (HP SIM) environment.

Our findings? The Lenovo ThinkServer TS430 offers the management capabilities an IT administrator needs to effectively co-exist in an HP SIM environment. There was no need to replace or augment the pre-existing management software. The TS430 joined the HP SIM-managed group easily, and the IT administrator could access many of the same management features directly through HP SIM, or through the advanced Lenovo Remote Management Module.

In this report, we demonstrate the use of HP SIM managing the TS430. We show you how to easily integrate the Lenovo ThinkServer platform into your existing HP environment. We also show you the key management features that are available, and provide a step-by-step guide to accessing the available management features of the server.



A DAY IN THE LIFE OF AN IT ADMINISTRATOR

As a busy IT administrator, you juggle a wide range of tasks, from keeping up with server maintenance to handling emergencies to planning new upgrades. You use systems management software tools to remotely manage and monitor your servers. You also rely on email alerting features to notify you in the event of a server malfunction or sub-optimal operating conditions. You have spent numerous hours learning the features and operation of your specific management tool and the last thing you want is to have to learn another.

You already know that Lenovo servers are a great option for your environment but you cannot afford the time to install and learn to use new management tools. Lenovo make this part simple: You can easily add the Lenovo servers to your existing HP SIM environment and still get the monitoring, alerts, and remote access features you need, without spending any extra money on additional management software or spending any extra time learning a new server management infrastructure.

LENOVO THINKSERVER TS430 INTEGRATED EASILY

In our tests, the Lenovo ThinkServer TS430 integrated easily into the HP-managed environment. We used HP SIM's most commonly used features—auto discovery, health monitoring, fault management and event triggering, and inventory—to evaluate the ease of manageability of the TS430.

We successfully used our existing HP SIM environment to discover and manage the TS430. The normal steps and wizards associated with discovering an HP server worked equally well with the TS430. We did note that some management features such as fan monitoring were not readily available through HP SIM, but we demonstrate the functionality is still there and provide an alternate approach by leveraging the management capability provided by the RMM in the TS430, which is accessible through the HP SIM interface.

In conjunction with HP SIM, the functions available through the Remote Management Module of the Lenovo ThinkServer TS430 offer you a complete server management solution without any licensing cost associated with HP Insight Control. These features, including the optional virtual media and KVM console available with RMM Premium, allow hardware monitoring that can alert you to a faltering component, let you carry out many maintenance and repair operations remotely, and provide KVM access that lets you work on the server remotely as if you were right beside it.

HOW WE TESTED

Our test bed consisted of three HP ProLiant servers and a single Lenovo ThinkServer TS430. We used an HP server as the central management server running the HP SIM management software. The HP servers had a mix of iLO2 and iLO3 for remote management and the Lenovo ThinkServer TS430 had the Remote Management Module Premium. All servers in our test bed ran Windows Server 2008 R2 SP1 with the latest available updates. See [Appendix A](#) for detailed hardware information.

Below is an overview of the use cases we performed on the Lenovo ThinkServer TS430 in the HP SIM environment:

- **Discovery and configuration.** We demonstrated successful discovery of the Lenovo ThinkServer TS430 in HP SIM, and walk you through the additional steps to configure your Lenovo server for the HP SIM environment.
- **Health monitoring.** We viewed the basic health status, including network connectivity, memory utilization and drive information on the Lenovo TS430 from HP SIM. We also show you additional monitoring features from RMM.
- **Inventory.** We completed an inventory data collection of the Lenovo ThinkServer TS430 in HP SIM and present the information it reported.
- **System events.** We simulated loss of connectivity, fan malfunction, and temperature warnings on the Lenovo ThinkServer TS430 and show how these alerts display directly in HP SIM.
- **Email alerts.** In addition to email alerting inherent to HP SIM, we configured the Lenovo RMM to trigger email alerts for available platform events.
- **Remote functions.** We accessed power cycling options from HP SIM and RMM, as well as remote BIOS/BMC upgrade features from the RMM.
- **KVM console and virtual media.** We used the KVM console and virtual media features of the Lenovo RMM to access BIOS settings, configure a new virtual drive in the RAID controller, access the LSI MSM tool for drive and RAID controller email alerts, and show you how to complete additional firmware upgrades.

The following sections cover each of these use cases in detail.

ABOUT THE LENOVO THINKSERVER TS430

The Lenovo ThinkServer TS430 server provides businesses with the superior performance of the latest Intel® Xeon® processors, ample storage capacity of up to 16 TB, and 24/7 uptime reliability. It also provides a combination of powerful manageability and hardware at a very attractive price.

- **Performance and storage capacity.** The Intel Xeon processor E3-1200 family that powers the ThinkServer TS430 provides a performance improvement of

up to 30 percent over previous-generation Intel processors. Features such as Turbo Boost 2.0 further increase processor performance when you need it most. A storage capacity of 16TB SATA or 4.8TB NL SAS and eight hot-swap drives provide you with plenty of room to grow.

- **Reliability.** Optional redundant power supplies and a selection of RAID adapters protect you from data loss.
- **Power efficiency and quiet operation.** Intel Xeon E3-1200 family processors, rated at only 80 watts, are more energy efficient than previous generations. The ThinkServer TS430 is also certified with Energy Star 1.0, and Climate Savers. Because Lenovo designed the ThinkServer TS430 to perform at “whisper-quiet” noise levels, you can use your TS430 in a front office without introducing an unacceptable level of noise.
- **Ease of use.** ThinkServer EasyStartup is a convenient software solution that enables you to easily install, maintain, and manage your ThinkServer TS430. Its intuitive design makes it suitable for businesses with minimal IT staff. Lenovo ThinkPlus® Productivity and ThinkPlus Priority Support further assist you in installation and IT support, and the ThinkServer Management Module (an industry standards-based management subsystem) makes remote management easy.

For detailed information about the Lenovo ThinkServer TS430, visit the [Lenovo server site at Lenovo.com](http://Lenovo.com).

The Lenovo Remote Management Module

The Lenovo Remote Management Module (RMM), standard in Lenovo servers, helps your IT staff manage your ThinkServer TS430 remotely while keeping your server secure.¹ The RMM allows proactive server management by helping you catch possible failures before they occur, which minimizes downtime. Should a failure occur, the Lenovo RMM lets you access and repair your server from any location.

This module, accessible from within HP Systems Insight Manager, allows you to access convenient Lenovo management features, including the following:

- Additional hardware monitoring
- Updating the BIOS/BMC remotely
- Power cycling the server remotely
- KVM console (optional upgrade)
- Remote virtual media (optional upgrade)

¹ Note: On March 16, 2012, Lenovo released an update to the BMC firmware (ver. 2.60) that renamed the RMM to ThinkServer Management Module (TMM) and TMM Premium for the optional remote KVM and media upgrade.

DISCOVERY AND CONFIGURATION

Discovery of the Lenovo ThinkServer TS430 with RMM in HP Systems Insight Manager is as easy as connecting the new server into your existing network infrastructure. Once DHCP assigned an IP address (or you have assigned a static IP address), HP SIM can discover the new server in the same way that it would an HP server. In our study, we did not have to do anything specific to the Lenovo ThinkServer TS430 to make it discoverable for HP SIM. Because WMI is native to Windows, you will need to have a Windows-based OS running on your Lenovo ThinkServer TS430 to see the WMI-based information.

To discover a system manually, which we did in our test environment, click the Options menu on the home screen, and select Discovery. (See Figure 1.)

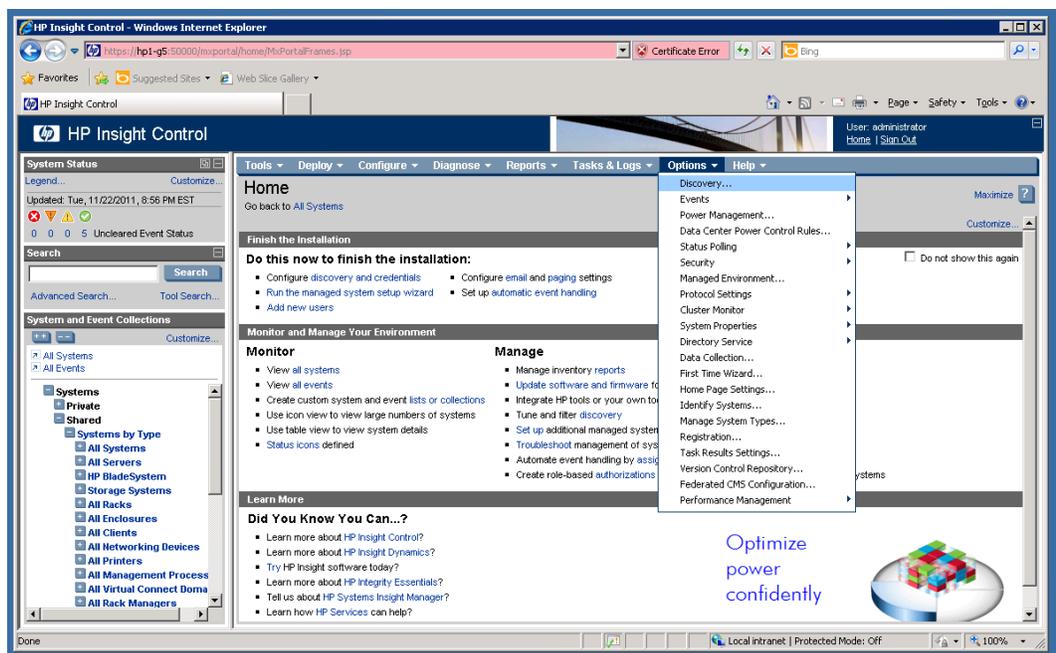


Figure 1. Select Discovery from the Options menu item.

From the Discovery screen, you can configure the general settings and run the discovery immediately or enable it to run on a schedule. (See Figure 2.)

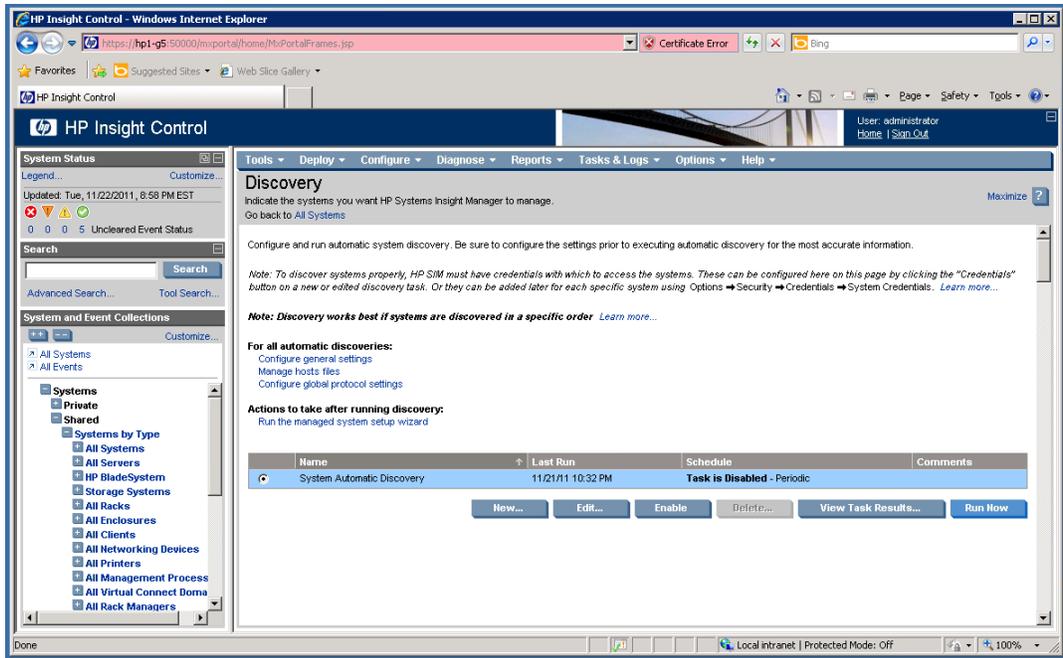


Figure 2. Configure Settings, run manual discovery, or enable schedule for auto-discovery.

Once the discovery is complete, you can select the newly discovered system and run the Managed System Setup Wizard to install the monitoring and remote command features. (See Figure 3.) When completing discovery on the Lenovo ThinkServer TS430, some of the agent-based features were not available because they are inherent to HP-specific hardware. However, this did not affect our configuration process.

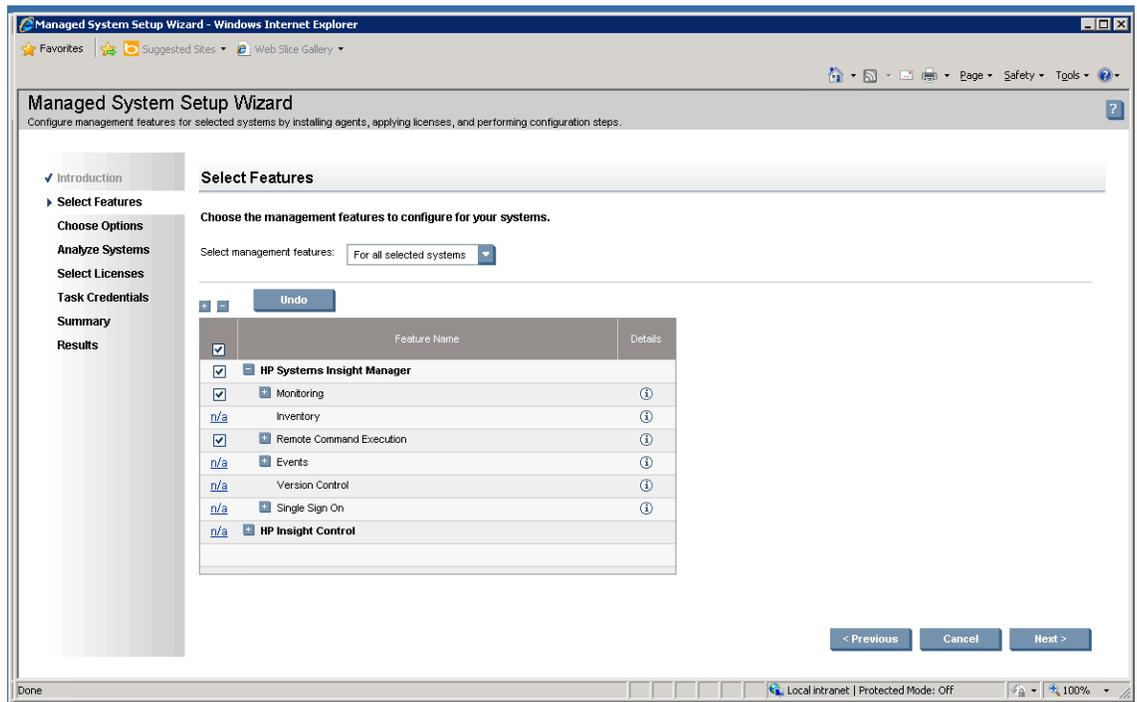


Figure 3. Completing server discovery.

The main HP Insight Control console now displays the TS430 under Systems and Events Collection in the All Systems group. You should see an entry for the server itself and a separate entry for the Remote Management Module (RMM) with the description of Baseboard Management Controller. When discovered by HP SIM, HP Servers will automatically link the server and the management processor together. For the Lenovo ThinkServer TS430, HP SIM is able to recognize the server and management processor IP addresses but is unable to link them to each other, instead generating a third ghost entry without an IP address listed. To organize our newly discovered server, we created a collection in HP SIM for the Lenovo ThinkServer TS430 by right-clicking the server or RMM and selecting Create new collection.

Compiling and registering the management information base (MIB)

To complete the discovery and configuration process, you need to compile and add a MIB, which requires being able to access the Lenovo Remote Management Module. The Lenovo RMM is accessible by using the following steps:

1. In the System and Event Collections pane in the HP Insight Control system screen, expand All Systems, and click the management IP address of the Lenovo system.
2. Click Tools & Links.
3. Click Remote Management Module.
4. Enter the appropriate credentials (default username and password are lenovo/lenovo).

Adding the bmclanpet MIB to HP Systems Insight Manager enhances the integration of the Lenovo ThinkServer TS430 baseboard management controller (BMC) into HP Systems Insight Manager by enabling Simple Network Management Protocol (SNMP) trapping. This allows additional warnings and hardware status messages to be visible directly within the HP SIM. To compile and add the MIB, complete the following steps:

1. Collect the following files from their respective locations onto the HP SIM server:
 - a. `bmclanpet.mib`, from <http://ipmiutil.sourceforge.net/docs/bmclanpet.mib>
 - b. `mcompile.exe`, from `C:\Program Files\HP\System Insight Manager\bin`
 - c. `mxmib.exe`, from `C:\Program Files\HP\System Insight Manager\bin`
2. Copy `mcompile.exe`, `mxmib.exe`, and `bmclanpet.mib` files from their respective locations into `C:\Program Files\HP\System Insight Manager\mibs`.
3. Open a command prompt window, and navigate to the `\mibs` folder.
4. Type `mcompile bmclanpet.mib` and press Enter. This generates the file `bmclanpet.cfg`.
5. Using the same command prompt window, register the MIB into the HP Systems Insight Manager database. To do so, type `mxmib bmclanpet.cfg` and press Enter.

6. Restart HP Systems Insight Manager and you should be able to see the newly added MIB under Options→Events→SNMP Trap Settings...
7. Go into the Lenovo Remote Management Module Web GUI (accessible within HP SIM from the Tools & Links tab for the BMC IP address of the discovered Lenovo ThinkServer TS430), and under Trap Settings, enter the IP address of the management server running HP SIM and apply the changes.

HEALTH MONITORING

Using the HP SIM environment, we were able to monitor a range of the Lenovo ThinkServer TS430 hardware. This included health statuses on components such as network connectivity, memory utilization, and drive information among others.

In HP SIM, the default table view of the servers shows the status of components and events being monitored. A green checkmark indicates normal functioning. The line above the table defines the various symbols used to indicate status. The collection we created for the Lenovo server, shown in Figure 4, displays our server by its OS-based IP address and the Management Processor, which is the listing for the RMM. The legend at the top of the table depicts what each symbol stands for. For example, the question mark means Unknown status. An “i” in the Software status column indicates the presence of informational messages. As for the abbreviated column names, HS stands for Health Status, MP stands for Management Point, SW stands for Software status, PF stands for ProLiant Essentials Performance Management Pack status, and ES stands for Event Status.

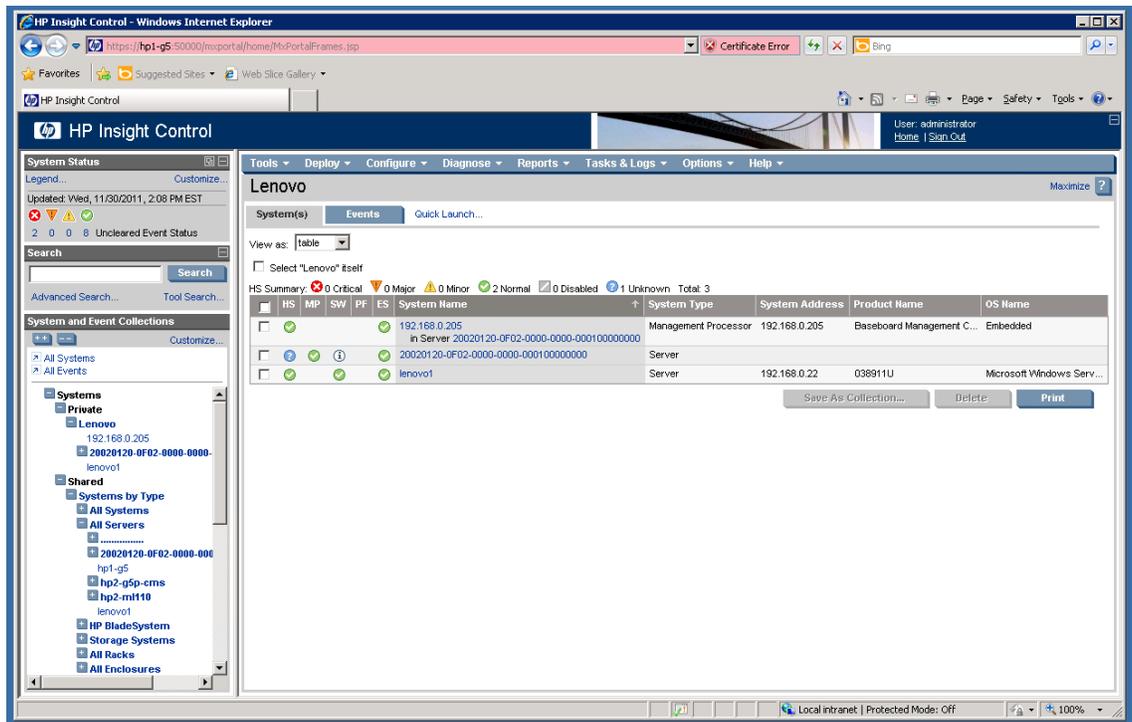


Figure 4. The System(s) screen showing normal status.

For this guide, we made changes to the Lenovo system in order to show how these events would change on the status monitor. We simulated a loss of connectivity by unplugging the Ethernet cable. Figure 5 shows the change in status when HP SIM could no longer establish connectivity with the Lenovo ThinkServer TS430.

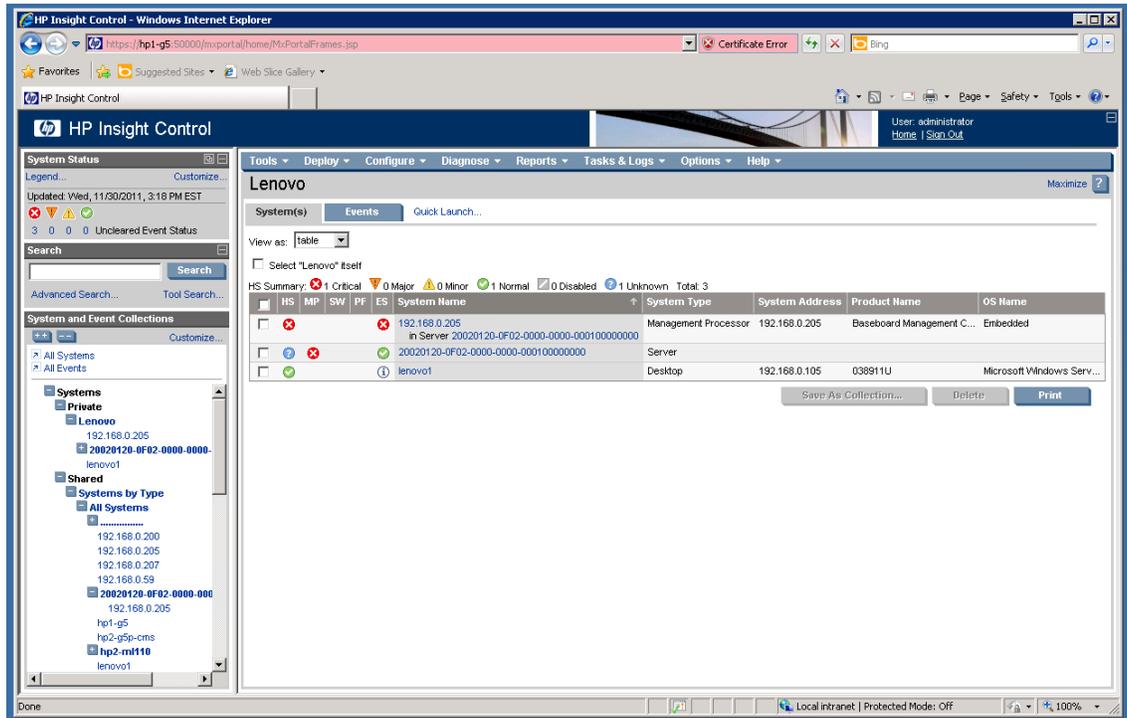


Figure 5. The Systems screen showing the loss of network connection.

See that the Management Processor is marked Critical and the Lenovo Server is showing an informational sign. By clicking the “i” or Event tab, HP SIM displays the events for the system and shows that the link is down. (See Figure 6.)

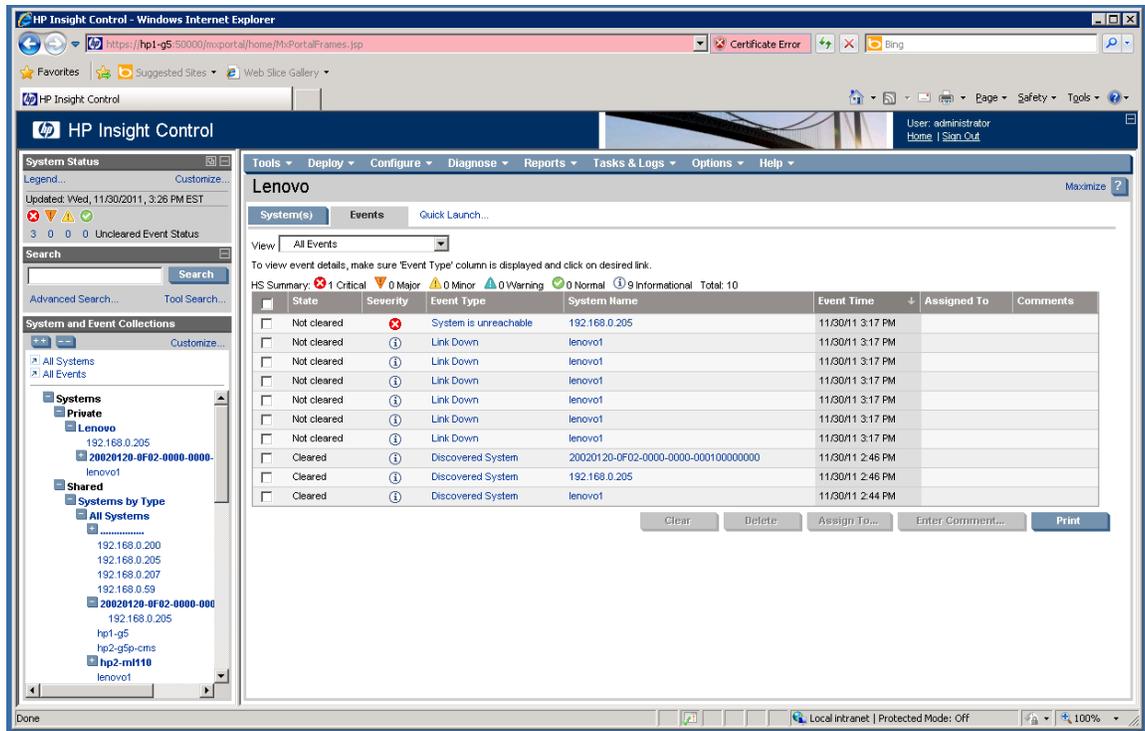


Figure 6. The Events tab showing that the network link is down.

To view the system status in more detail, launch the Properties window for more views into the system. The Properties window displays Identity, Status, and Configuration tabs, which allow a more in-depth analysis of the system components and status. From within the Status tab, you will see a list of options of components for which you can check the status.

For example, you can check the available capacity and general status of the disk drives, which is accomplished through WMI, by selecting Disk(s) as Figure 7 shows.

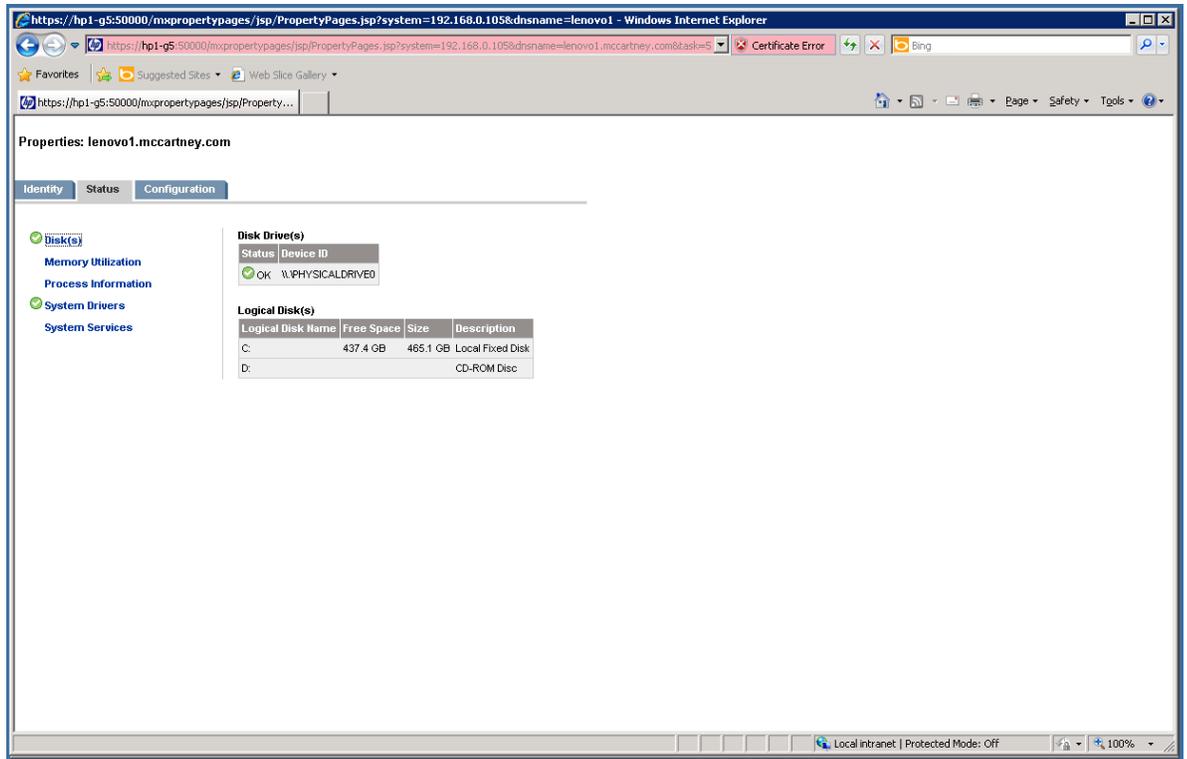


Figure 7. Disk Drive(s) Status screen based on WMI.

You can also see Memory Utilization, Process Information, System Drivers with Status and System Services running on the Lenovo system.

In the Properties window, click the Configuration Tab for details about the BIOS, Disk(s), Motherboard, Network, Operating System, Physical Memory, and Processors. Select one of the options for further detail about the component. For example, selecting Disk(s) shows more detail about the partitions and device. (See Figure 8.)

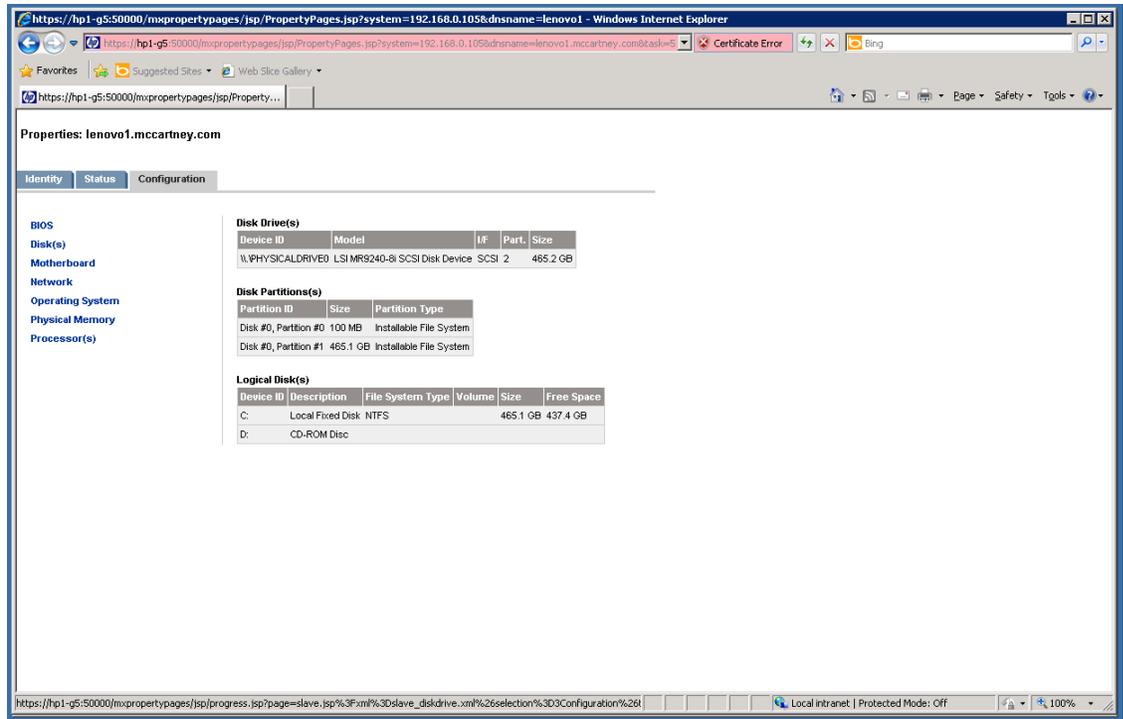


Figure 8. The Disk(s) Configuration screen.

Monitoring features of the RMM

The Lenovo RMM provides additional hardware monitoring features, including more detailed information on temperature, power readings, and fan operation. To view the monitoring information on temperature, fans, and power, complete the steps below.

Temperature

To manually monitor temperature, follow these steps:

1. In the left pane, select Thermal.
2. Select Temperatures to display current readings.

Fans

To manually monitor fans, follow these steps:

1. In the left pane, select Thermal.
2. Select Fans to display current readings.

Power

To manually monitor current voltage readings, follow these steps:

1. In the left pane, expand Server Information → Power.
2. Select Voltages to display current voltage readings.

INVENTORY

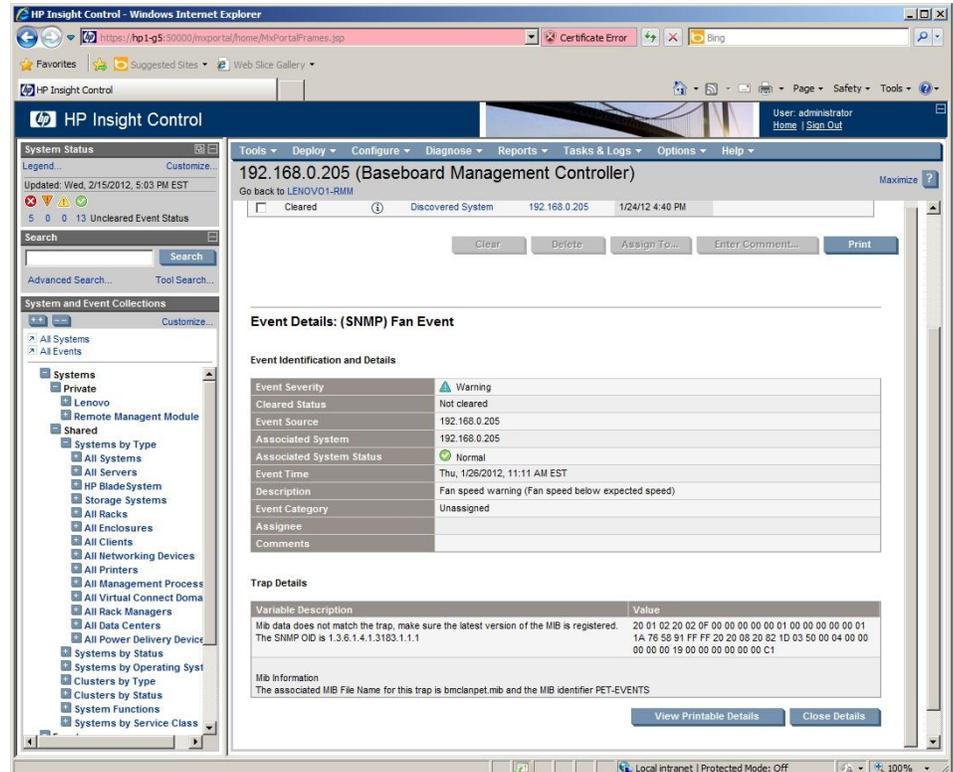
In our study, we looked at inventory reports for the Lenovo ThinkServer TS430 in HP SIM. The inventory report shows information such as OS version, CPU information, physical disk drive and logical disk drive information, as well as information on the network interfaces, DIMM slots, and processes running for the Lenovo ThinkServer TS430 in the same way as it would for an HP server. However, it does not show information on the controller, power supplies, temperature sensors, and fans that you would see for an HP server.

From the HP Insight Control application, you can look at the inventory of the selected system by launching the Data Collection Report:

1. In the left menu, select Lenovo system.
2. In the right pane, select the Tools & Links tab.
3. Click Data Collection Report.

SYSTEM EVENTS

In our tests, we were able to see system events in HP SIM for the Lenovo ThinkServer TS430 when we simulated a loss of network connectivity causing the system to be unreachable, simulated a fan malfunction, and triggered a temperature sensor to send a high temperature warning. Figure 9 shows a sample warning that we generated by intentionally preventing a fan from spinning at the correct RPM.



The screenshot displays the HP Insight Control web interface in Internet Explorer. The main content area shows details for a warning event titled "Event Details: (SNMP) Fan Event". The event occurred on 1/24/12 at 4:40 PM. The event severity is "Warning" and it has not been cleared. The event source is 192.168.0.205, which is the Baseboard Management Controller (BMC) for system 192.168.0.205. The event description is "Fan speed warning (Fan speed below expected speed)".

Variable Description	Value
Mib data does not match the trap, make sure the latest version of the MIB is registered.	20 01 02 20 02 0F 00 00 00 00 01 00 00 00 00 01
The SNMP OID is 1.3.6.1.4.1.3163.1.1.1	1A 76 58 91 FF FF 20 08 20 82 1D 03 50 00 04 00 00
	00 00 00 19 00 00 00 00 00 00 C1

Mib information: The associated MIB File Name for this trap is bmclanpet.mib and the MIB identifier PET-EVENTS.

Figure 9. Sample warning showing reduced fan speed when we simulated the fan malfunctioning.

Similar to what Figure 9 shows, HP SIM not only displays critical warnings if a fan functions incorrectly, but also reports when temperature sensors on the Lenovo TS430 detect an abnormal increase in system temperature.

EMAIL ALERTS

HP SIM has built-in email alerts, allowing you to receive notifications when something is wrong so you can take appropriate action. Therefore, system events from the Lenovo ThinkServer TS430 that display in HP SIM can also be configured to generate an email alert from HP SIM. You can receive more detailed alerts about voltage, temperature, processor and memory directly from the Lenovo RMM. LSI™ MegaRAID® Storage Manager (MSM) can provide details about the hard drives and storage controller. In the sections below, we show you how to configure these additional email alerts from RMM and from MSM.

Configuring SMTP mail alerting using the Lenovo RMM

The Lenovo Remote Management Module comes equipped with the ability to generate and send out email alerts using an SMTP mail server. This feature brings certain warnings and critical errors to the immediate attention of IT administrators so they can log into the management server and identify the issue in HP SIM or the Lenovo RMM. There is no need to wait for an alert message to appear on a management dashboard. You can set the RMM to generate an email alert for platform events, including abnormalities in voltage, temperature, and fan operation. To configure this feature, complete the following steps:

1. In the Lenovo Remote Management Module, click Platform Events under Event Management in the left pane. Ensure that the Global Alerting Enable check box is checked, and then check the Generate PET checkbox for any of the platform events for which you want to enable alerts.
2. After making your selections, click Apply Changes to save your settings.
3. Next, click Email Settings under Event Management in the left pane. Enter up to four destination email addresses and modify the email description (subject) as needed.
4. Enter the IP address of the SMTP or mail server. If your SMTP server requires authentication, enter the appropriate credentials and check the Enable check box. (See Figure 10.)

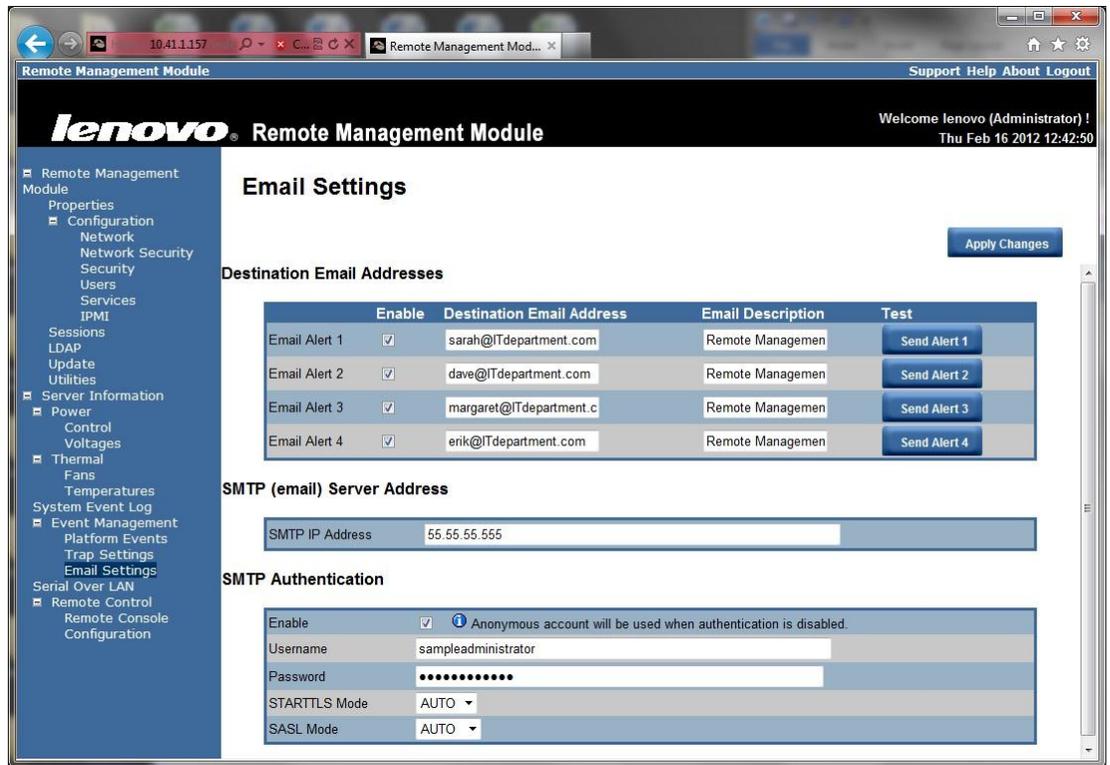


Figure 10. Configuring email alert settings on the Lenovo Remote Management Module.

- To save your email settings, click Apply Changes. To ensure that you entered the configuration information correctly, click the Send Alert button for any of the destination email addresses. You will receive a confirmation pop-up window if the test alert succeeds as well as a test email at the specified email destination.

Configuring storage email alerts using the LSI MSM

The LSI MSM, which numerous OS platforms support, is a software application that allows you to view and make configuration changes to any hard drives connected to the storage controller. Additionally, you can change the built-in monitor alerts to notify you by email of events or event categories you wish to capture. For example, if you want to be notified via email if the virtual disk state becomes degraded, you can modify the settings to send you an email alert should that specific event occur. For our testing purposes, we completed this setup on a Windows OS. For information on using the MSM utility with other operating systems, as well as downloads, go to Lenovo's support Web site at <http://support.lenovo.com>, or the LSI support Web site at <http://www.lsi.com/support>.

To set up email alerting using the LSI MSM, follow these steps:

- Launch MSM from the desktop.
- Click the local server IP and log into the management console using the appropriate credentials to log into management console. (See Figure 11.)

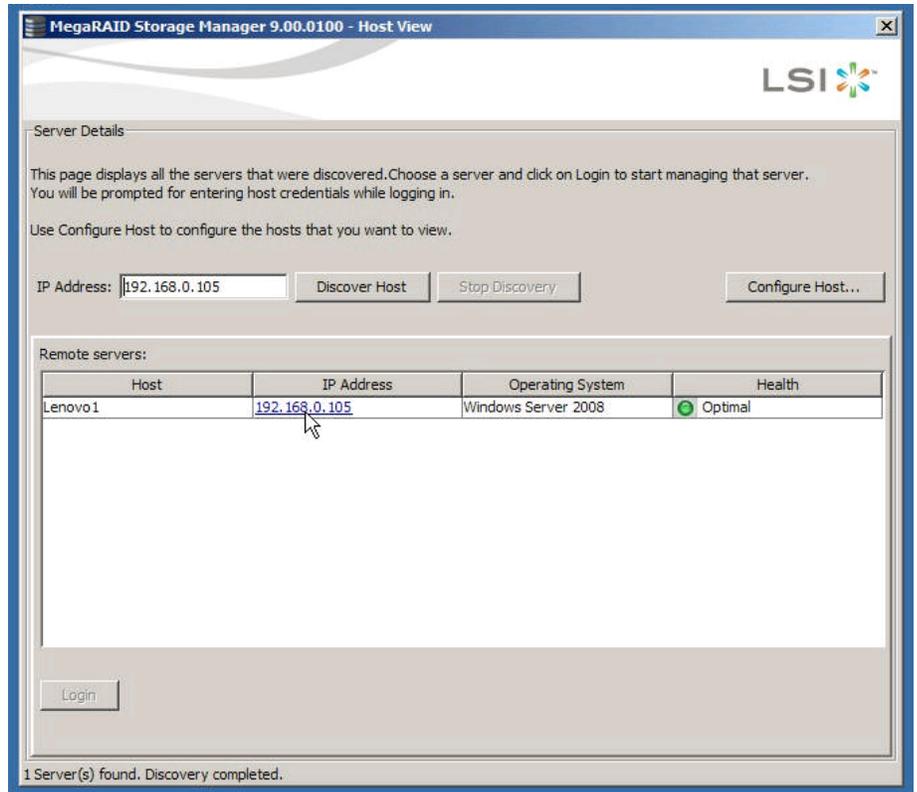


Figure 11. Selecting the local server IP address.

3. In the menu bar, select Tools→Configure Alerts.
4. In the Alert Settings tab, you can set email alerts for all events based on severity level, or you can modify an alert setting for an individual event. (See Figure 12.)

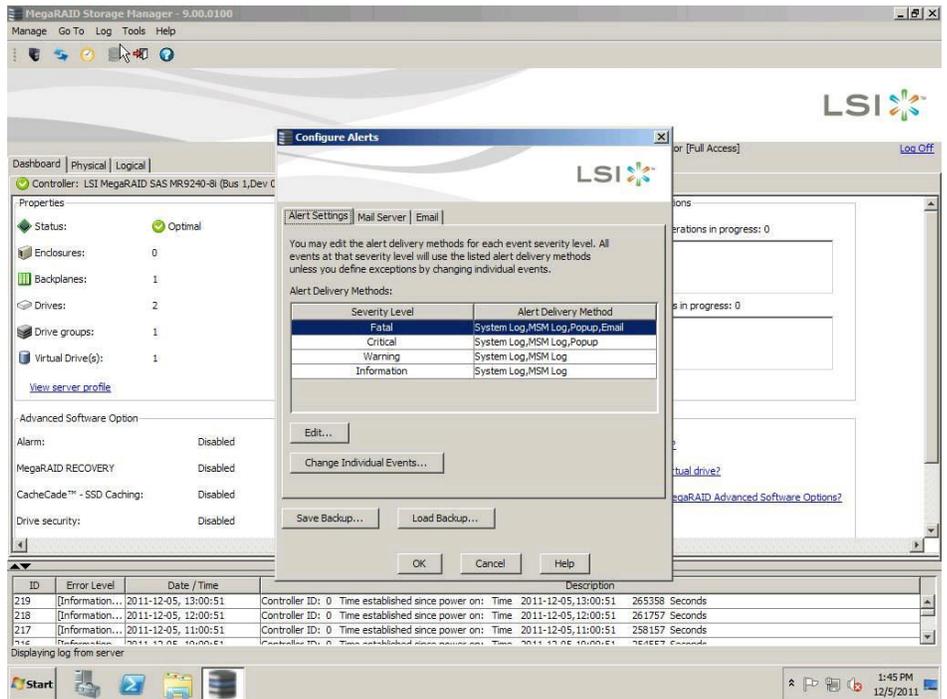


Figure 12. Displaying all events.

- a. To enable email alerts for all events within a specific severity level, select the appropriate severity level, click Edit..., select email as the alert delivery method, and click OK.
- b. To enable email alerts for an individual event, click Change Individual Events... to display all events. In our tests, we generated an email alert for when a virtual drive becomes degraded (Event ID 251). To enable email alerts for an event, select that event ID, check the Email check box, and click OK. (See Figure 13.)

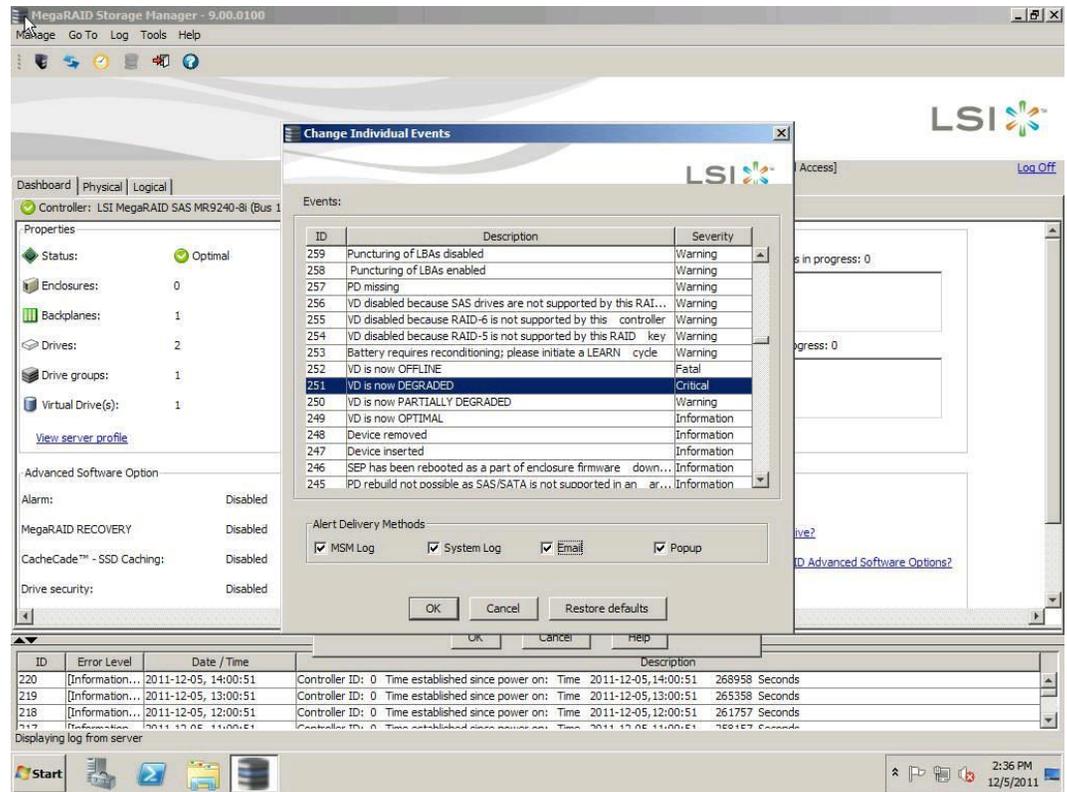


Figure 13. Enabling email alerts for an event.

5. Next, select the Mail Server tab, and enter your mail server information as well as authentication credentials for SMTP if applicable. (See Figure 14.)

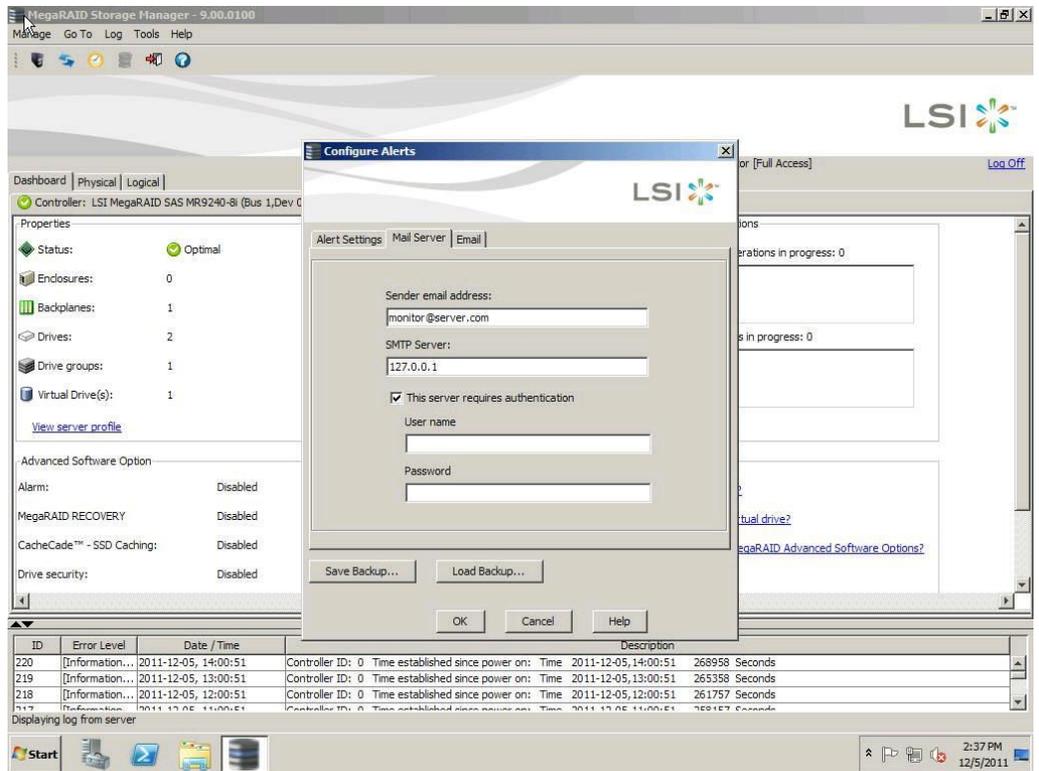


Figure 14. Entering your mail server information to configure alerts.

6. Select the Email tab and enter the desired recipient email address that will receive the alert. Press Add... to add each email address. You can also perform a test to verify that the configuration information is correct by pressing the Test button.
7. Press OK to close the Configure Alerts window.

REMOTE FUNCTIONS

HP SIM and the RMM interface allow you to perform power cycling and BIOS/BMC updates on the Lenovo ThinkServer TS430. In the following section, we show you how to perform these tasks.

Using the Intelligent Platform Management Interface (IPMI) to power cycle your server from within HP SIM

You can power cycle or power on/off your Lenovo ThinkServer TS430 directly from HP SIM. To do this, select the Lenovo BMC IP address from the list of discovered systems in HP SIM, and complete the following steps:

1. Click the Lenovo BMC IP address from the list of discovered systems in the System and Event Collections pane in HP SIM.
2. Click Tools→Management Processor→IPMI and select one of the three power options (Power Cycle, Power On, Power Off).
3. Click Run Now to execute the task. A screen appears, indicating that the task status is complete.

The Lenovo ThinkServer Remote Management Module also allows for upgrading the BIOS or BMC, as well as starting, shutting down, or power cycling the TS430.

Updating BIOS/BMC from the RMM

In addition to updating the BIOS, you can also use this menu to update the BMC by leaving BMC selected in step 2 below.

1. In the left menu, click Update.
2. Change the drop-down selection from BMC to BIOS.
3. Browse to the file that you downloaded from the Lenovo's Web site for the particular model server you are updating.
4. Click Upload to apply the update.

Power options from within the RMM

In the Power section under Server Information, you can choose to power on, power off, power cycle, or perform a hard reset on the system. The following steps demonstrate a hard reset or restart of the system:

1. Expand Server Information.
2. Expand Power, and click Control.
3. Select Hard Reset (Restart), and click Apply Changes.

KVM CONSOLE AND VIRTUAL MEDIA

Accessing the KVM console and applying virtual media to the TS430 via the premium features of the Lenovo RMM, are also quick, straightforward tasks. These features provide more control and the ability to further utilize the features of the Lenovo RMM and connect directly to the server. In the sections below, we show you how to:

- Connect to virtual media
- Access the KVM console
- Power cycle your server from the KVM
- Access and change BIOS settings
- Access the RAID controller and bring a drive online or create a new RAID group
- Perform additional firmware upgrades

Connecting to virtual media

Through the RMM, you can create an image to map virtual media, such as a CD or USB key, from your management server to your Lenovo ThinkServer TS430 for remote software installation or data copy. To perform this task, complete the following steps:

1. Launch RMM from HP Insight Control, and log in.
2. Expand Server Information → Remote Control, and select Remote Console.
3. Click Launch Java VM Client.

4. Click Create Image.
5. Browse to the location of the files that need to be copied or the application installation directory you would like to access.
6. Click Open to select the directory.
7. Click Yes to create the image.
8. Select the checkbox for the image location you just created to make it available to target the Lenovo system.
9. Minimize, but do not close the Virtual Media Session.
10. Click Launch Java KVM Client if you do not already have a remote console open.
11. Click Open folder to view the files.
12. Copy the installation file to the location on the local server, and deploy it as you would normally.

Remote access using the KVM console feature

The Lenovo ThinkServer Remote Management Module has a KVM console feature that allows complete remote access to the server, including access to pre-OS menus, such as the BIOS and RAID controller BIOS. This includes changing BIOS settings and granting access to the KVM console. Select the iLO connection from the HP Insight Control system screen, and click Tools & Links. (See Figure 15.)

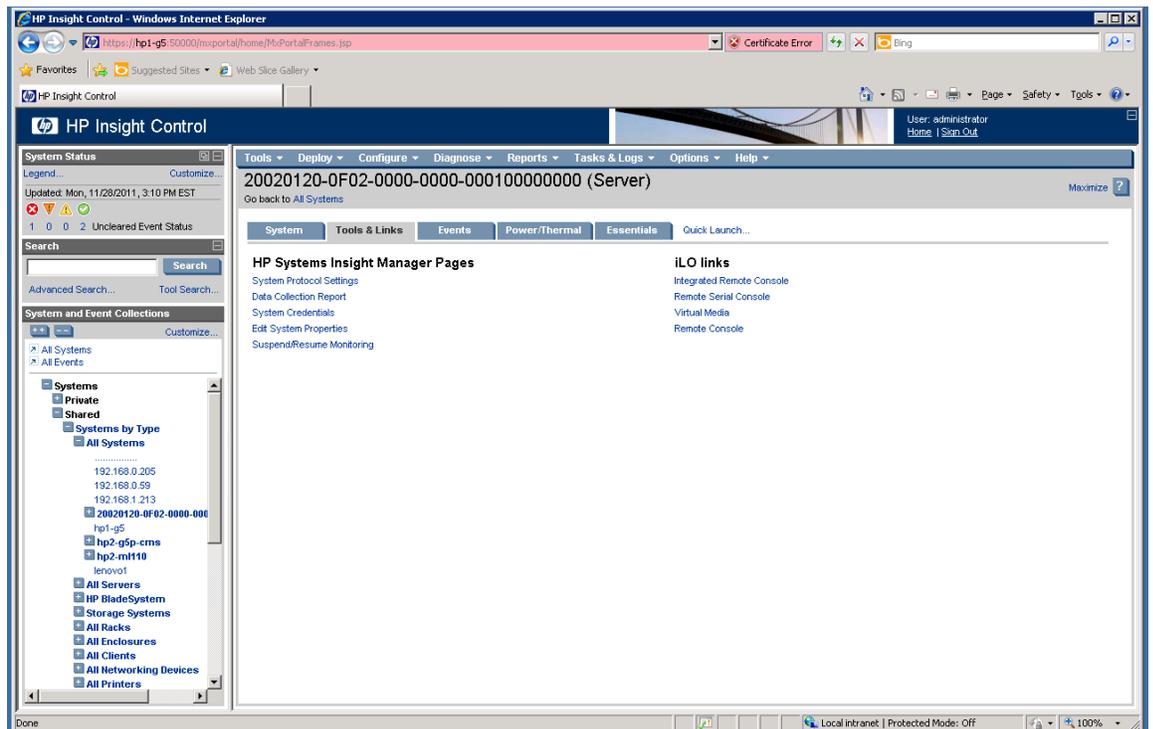


Figure 15. The HP Insight Control system screen.

You can then log into the Remote Management Module to perform tasks, including launching the KVM using the following steps:

1. In the System and Event Collections pane, expand All Systems, and click the desired IP address for iLO of the Lenovo system.
2. Click Tools & Links.
3. Click Remote Management Module.
4. For the username and password, type `lenovo` if using the default username and password, or enter the appropriate credentials.
5. In the left menu tree, click Remote Console.
6. To launch the console, click Launch Java KVM Client.

From this Video Viewer, you can perform several tasks on the target Lenovo system.

Power options from the KVM

The KVM console offers a few additional power options when compared with HP SIM, including graceful shutdown and reset system (warm boot) options in addition to powering the system on and off and power cycling the system as a cold boot. (See Figure 16.)

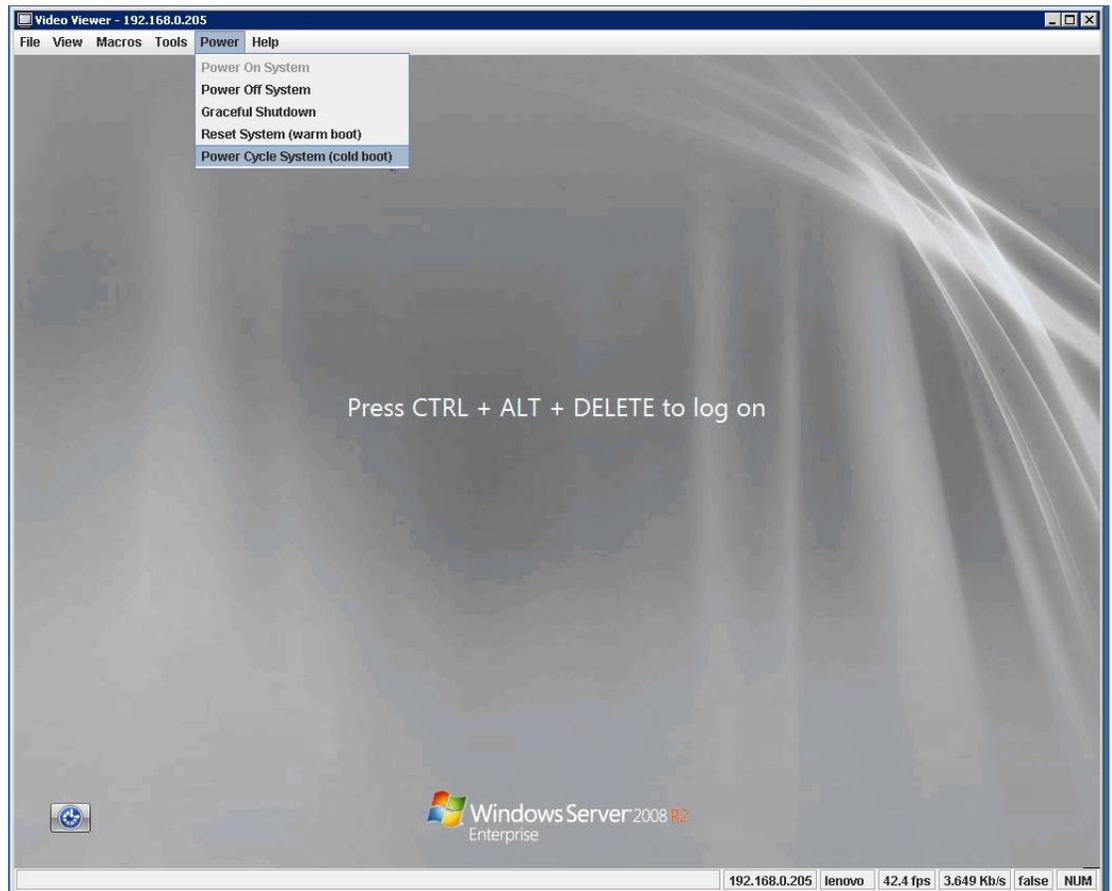


Figure 16. The Video Viewer Power options.

These boot options are available from the viewer menu bar on the KVM console, under Power.

Accessing and changing BIOS settings

Using the KVM remote console, you can reboot the machine and press F1 when prompted to access the BIOS. This allows for the remote modification of any BIOS settings as if you were connecting directly to the server using a monitor and keyboard.

Bringing new drives online and creating a new virtual drive

To add drives and a virtual drive, complete the following steps through the Remote KVM console.

1. Reboot the server.
2. Press CTRL+H when prompted to launch WEBBIOS configuration GUI.
3. Press Start to select a controller adapter.
4. Select Physical view to show drives.
5. Select the new unconfigured drive(s).
6. Select Make Unconf Good, and click Go.
7. Click Home, and select Configuration Wizard.
8. Select Add Configuration, and click Next.
9. Select Manual Configuration, and click Next.
10. When you have added all the appropriate drives, click Accept DG in the Drive Groups pane. Click Next.
11. In the Span Definition window, select the appropriate drive group in the Array With Free Space pane, and click Add to Span. Repeat this with other drive groups if necessary. Click Next.
12. In the Virtual Drive Definition window, select the appropriate RAID Level, read and write policies, and volume size, and click Accept.
13. At the Confirm the selected write policy prompt, click Yes.
14. Click Next.
15. In the Configuration Preview window, click Accept.
16. At the Save this Configuration? prompt, click Yes.
17. At the Do you want to Initialize prompt, click Yes.
18. Click Home, and click Exit.
19. Click Yes to exit the application.
20. In the menu bar, click Power, and select Power Cycle System (cold boot).
21. Click Yes to confirm reboot.
22. Log into Windows.
23. Select Start, right-click Computer, and select Manage.
24. Expand Storage, and select Disk Management.
25. Click to accept initialization of new disk.
26. Right-click the disk, and select New Simple Volume.
27. Click Next.
28. On the Specify Volume Size screen, click Next.
29. Assign a drive letter, and click Next.
30. Select your desired Format options, and click Next.
31. Click Finish, and close Server Manager.

Upgrading additional firmware

Download the Firmware Updater for ThinkServer EasyUpdate 1.6 from the Lenovo Web site (http://support.lenovo.com/en_US/downloads/default.page) and create a CD. Apply the updates from the CD using the following steps:

1. Download the updater from the Web site and burn it to a CD.
2. Reboot using the CD image, and let the Updater execute.
3. Select Language, and click OK.
4. Click Next.

When the check completes, it will inform you if firmware updates are available for your server.

CONCLUSION

As we have shown, integrating the Lenovo ThinkServer TS430 into an existing HP environment is not only possible – it's easy. The Lenovo server fits right into the HP environment, and you or your IT administrator can access key management features and alerting capabilities. Setting up and configuring your Lenovo ThinkServer TS430 for operation in an HP-managed environment is a simple, straightforward process that allows you to bring the benefits of the Lenovo ThinkServer TS430 into your existing environment.

APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figures 17 and 18 provide detailed configuration information about the test servers.

System	Lenovo ThinkServer TS430	HP ProLiant ML350 G5
Power supplies		
Total number	1	1
Vendor and model number	Delta Electronics® GPS-400CB	HP DPS-410DB C
Wattage of each (W)	400	410
Cooling fan 1		
Total number	1	1
Vendor and model number	AVC® DS09225R23HP235	Sunon® PMD1209PTB1-A
Dimensions (h x w) of each	4" x 1"	4" x 1-1/2"
Volts	12	12
Amps	0.41	0.46
Cooling fan 2		
Total number	1	1
Vendor and model number	AVC DS12025B12H	Sunon PMD1209PTB1-A
Dimensions (h x w) of each	5" x 1"	4" x 1-1/2"
Volts	12	12
Amps	0.75	0.46
General		
Number of processor packages	1	1
Number of cores per processor	4	4
Number of hardware threads per core	2	1
System power management policy	Balanced	Balanced
CPU		
Vendor	Intel	Intel
Name	Xeon	Xeon
Model number	E3-1240	E5410
Stepping	D2	C0
Socket type	1155 LGA	771 LGA
Core frequency (GHz)	3.30	2.33
L1 cache	32 KB + 32 KB (per core)	32 KB + 32 KB (per core)
L2 cache	256 KB (per core)	12 MB (shared)
L3 cache	8 MB (shared)	N/A
Platform		
Vendor and model number	Lenovo GA-6UASV2	HP ProLiant ML350 G5
Motherboard model number	038911U	459264-005
Motherboard chipset	Intel ID0108	Intel 5000Z
BIOS name and version	American Megatrends® Inc. 2.10 (09/01/2011)	HP BIOS D21 (05/2/2008)
BIOS settings	Default	Default

System	Lenovo ThinkServer TS430	HP ProLiant ML350 G5
Memory module(s)		
Total RAM in system (GB)	16	8
Vendor and model number	Hynix™ HMT351U7BFR8C	Samsung M395T5750EZ4-CE66
Type	PC3-10600E	PC2-5300
Speed (MHz)	1,333	667
Speed running in the system (MHz)	1,333	667
Timing/Latency (tCL-tRCD-tRP-tRASmin)	9-9-9-24	5-5-5-15
Size (GB)	4	2
Number of RAM module(s)	4	4
Chip organization	Double-sided	Double-sided
Rank	Dual	Dual
Hard disk		
Vendor and model number	Seagate® ST3500514NS	Seagate ST380815AS
Number of disks in system	2	4
Size (GB)	500	80
Buffer size (MB)	32	8
RPM	7,200	7,200
Type	SATA	SATA
Disk controller		
Vendor and model	LSI MegaRaid SAS MR9240-8i	HP Smart Array P600 Controller
Controller cache	N/A	256 MB
Controller driver	LSI 5.1.110.64 (5/12/2011)	HP 6.20.2.64 (8/10/2010)
Controller firmware	20.7.1-0020	1.98
RAID configuration	RAID 1	RAID 5
Operating system		
Name	Windows Server 2008 R2 Enterprise	Windows Server 2008 R2 Enterprise
Build number	7601	7601
Service pack	SP1	SP1
File system	NTFS	NTFS
Kernel	ACPI x64-based PC	ACPI x64-based PC
Language	English	English
Ethernet 1		
Number of ports	1	1
Vendor and model number	Intel 82579LM	HP NC373i Gigabit Server Adapter
Type	Integrated	Integrated
Driver	Intel 11.8.74.0 (9/21/2010)	HP 6.2.9.0 (2/4/2011)
Ethernet 2		
Number of ports	1	N/A
Vendor and model number	Intel 82574L	N/A
Type	Integrated	N/A
Driver	Intel 11.7.32.0 (8/5/2010)	N/A

System	Lenovo ThinkServer TS430	HP ProLiant ML350 G5
Optical drive(s)		
Vendor and model number	TSSTcorp TS-H353C	HL-DT-ST DVD-RAM-H60L
Type	SATA	DVD+R DL
USB ports		
Number	6	4
Type	2.0	2.0

Figure 17. Configuration information for two of the four test servers.

System	HP ProLiant ML110 G7	HP ProLiant ML310 G5p
Power supplies		
Total number	1	1
Vendor and model number	HP 629015-001	HP 460422-001
Wattage of each (W)	350	410
Cooling fan 1		
Total number	1	1
Vendor and model number	Brushless AFC0912DF	AVC DS12025B12U
Dimensions (h x w) of each	3-1/2 " x 1-1/2 "	4-3/4" x 1"
Volts	12	12
Amps	1.43	1.05
Cooling fan 2		
Total number	1	N/A
Vendor and model number	DC Brushless PFB0812GHE	N/A
Dimensions (h x w) of each	3" x 1-3/4"	N/A
Volts	12	N/A
Amps	1.02	N/A
General		
Number of processor packages	1	1
Number of cores per processor	4	2
Number of hardware threads per core	2	1
System power management policy	Balanced	Balanced
CPU		
Vendor	Intel	Intel
Name	Xeon	Xeon
Model number	E3-1240	E3120
Stepping	D2	E0
Socket type	1155 LGA	775 LGA
Core frequency (GHz)	3.30	3.16
L1 cache	32 KB + 32 KB (per core)	32 KB + 32 KB (per core)
L2 cache	256 KB (per core)	6 MB (shared)
L3 cache	8 MB (shared)	N/A
Platform		
Vendor and model number	HP ProLiant ML110 G7	HP ProLiant ML310 G5p
Motherboard model number	647337-B21	445343-B22
Motherboard chipset	Intel ID0108	Intel S3200/S3210

System	HP ProLiant ML110 G7	HP ProLiant ML310 G5p
BIOS name and version	HP J01 (04/21/2011)	HP BIOS W08 (10/25/2010)
BIOS settings	Default	Default
Memory module(s)		
Total RAM in system (GB)	16	8
Vendor and model number	Nanya NT4GC72B8PB0NF-CG	Micron 18HTF25672AZ-80EH1
Type	PC3-10600E	PC2-6400
Speed (MHz)	1,333	800
Speed running in the system (MHz)	1,333	800
Timing/Latency (tCL-tRCD-tRP-tRASmin)	9-9-9-24	5-5-5-18
Size (GB)	4	2
Number of RAM module(s)	4	4
Chip organization	Double-sided	Double-sided
Rank	Dual	Dual
Hard disk		
Vendor and model number	Western Digital® WD5003ABYX	Western Digital WD5003ABYX
Number of disks in system	2	2
Size (GB)	500	500
Buffer size (MB)	64	64
RPM	7,200	7,200
Type	SATA	SATA
Disk controller		
Vendor and model	HP Smart Array P410 Controller	HP Smart Array P410 Controller
Controller cache	N/A	N/A
Controller driver	HP 6.20.2.64 (8/10/2010)	HP 6.20.2.64 (8/10/2010)
Controller firmware	5.12	5.12
RAID configuration	RAID 1	RAID 1
Operating system		
Name	Windows Server 2008 R2 Enterprise	Windows Server 2008 R2 Enterprise
Build number	7601	7601
Service pack	SP1	SP1
File system	NTFS	NTFS
Kernel	ACPI x64-based PC	ACPI x64-based PC
Language	English	English
Ethernet		
Number of ports	2	2
Vendor and model number	HP NC112i Ethernet Server Adapter	HP NC326i Gigabit Server Adapter
Type	Integrated	Integrated
Driver	Intel 11.7.32.0 (9/29/2010)	HP 14.2.05 (5/21/2010)

System	HP ProLiant ML110 G7	HP ProLiant ML310 G5p
Optical drive(s)		
Vendor and model number	N/A	N/A
Type	N/A	N/A
USB ports		
Number	8	4
Type	2.0	2.0

Figure 18. Configuration information for the remaining two test servers.

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