How to install software on VMware ESXi 4.0/4.1

This section describes the installation and configuration of the Software on VMware ESXi 4.0/4.1 Server. **Notice: the version of VMware ESXi 4.0/4.1 should be purchased, because of free of charge version without some function, software can't be used normally on free of charge version OS.**

The software agent can't be installed on the hypervisor system, because VMware ESXi doesn't have an administrative console for hypervisor. However, the software can be installed on VMware Infrastructure Management Assistant (VIMA) 1.0 or on vSphere Management Assistant (vMA) 4.0/4.1 to manage the shutdown of VMware ESXi hosts. You can suspend or shutdown guest operating systems safely and orderly by configuring the ESXi hypervisor. This allows one software agent on one guest operating system (VIMA/vMA). The software installed on VIMA or vMA should be configured to be shut down by another software agent communicating with UPS by RS232 or USB. Another software agent should be installed on operating system with GUI.

The software notifies the VMware server of important message with pop-up broadcast information on the console. It also safely shuts down the VMware ESXi server and the guest operating system. Before the VMware ESXi system shuts down, the guest operating systems will be shut down by the local agent.

All operations are tested on VMware ESXi server with two guest operating systems (SBS 2003 and Red Hat). Tested operations include:
● Safe shut down of the VMware server
● Safe shut down of the guest operating system

Installation and Configuration

This section provides information about installing and configuring the Software on a VMware ESXi server and installing VMware Tools and vMA 4.0/4.1 on a guest operating system.

Prerequisites
● VMware ESXi server machine
● VIMA 1.0 or vMA 4.0/4.1 installed as guest
● VMware Infrastructure client installed on a different machine for VMware ESXi Server configuration
● Secure Copy Protocol (SCP) client like WinSCP to upload packages to the VMware ESXi server
● The Software installed on the vMA

vMA Installation

To install the vMA application:
1. Go to http://www.vmware.com/support/developer/vima/ to download the software from the VMware Web site or download from www.riello-ups.com a preconfigured version with the PowerShield[3] already installed.
2. Unzip the vMA virtual application package.
3. Start the VMware Infrastructure client:
● Select **File > Deploy OVF Template**.
● Click **Browse**.
● Select the Open Virtualization Format (OVF) and click Next

vMA Configuration

To configure the vMA software:
1. Enter the following command to add Target Servers to vMA:
sudo vifp addserver <servername>
Example command: **sudo vifp addserver 10.1.10.121**
2. Enter the following command to enable seamless authentication for remote CLI and VI Perl Toolkit:
Example command: **sudo vifpinit 10.1.10.121**
3. Verify that the target server has been added. Enter the following command to display target servers:
sudo vifp listservers
Example response: 10.1.10.121 ESXi

VMware ESXi Server Configuration

To allow interactions between physical and virtual machines, VMware tools must be installed on each virtual machine. Go to http://www.vmware.com/pdf/osp_install_guide.pdf to download the VMware Tools Installation Guide Operating System Specific Packages on the VMware Web site for further information.

Installing VMware Tools on a Microsoft Windows Guest Operating System

To install the VMware Tools for a Microsoft Windows guest operating system:
1. On the VM Templates page, select the virtual machine template name and then select the **Console** tab. The Console window opens (see diagram 4-17-1).
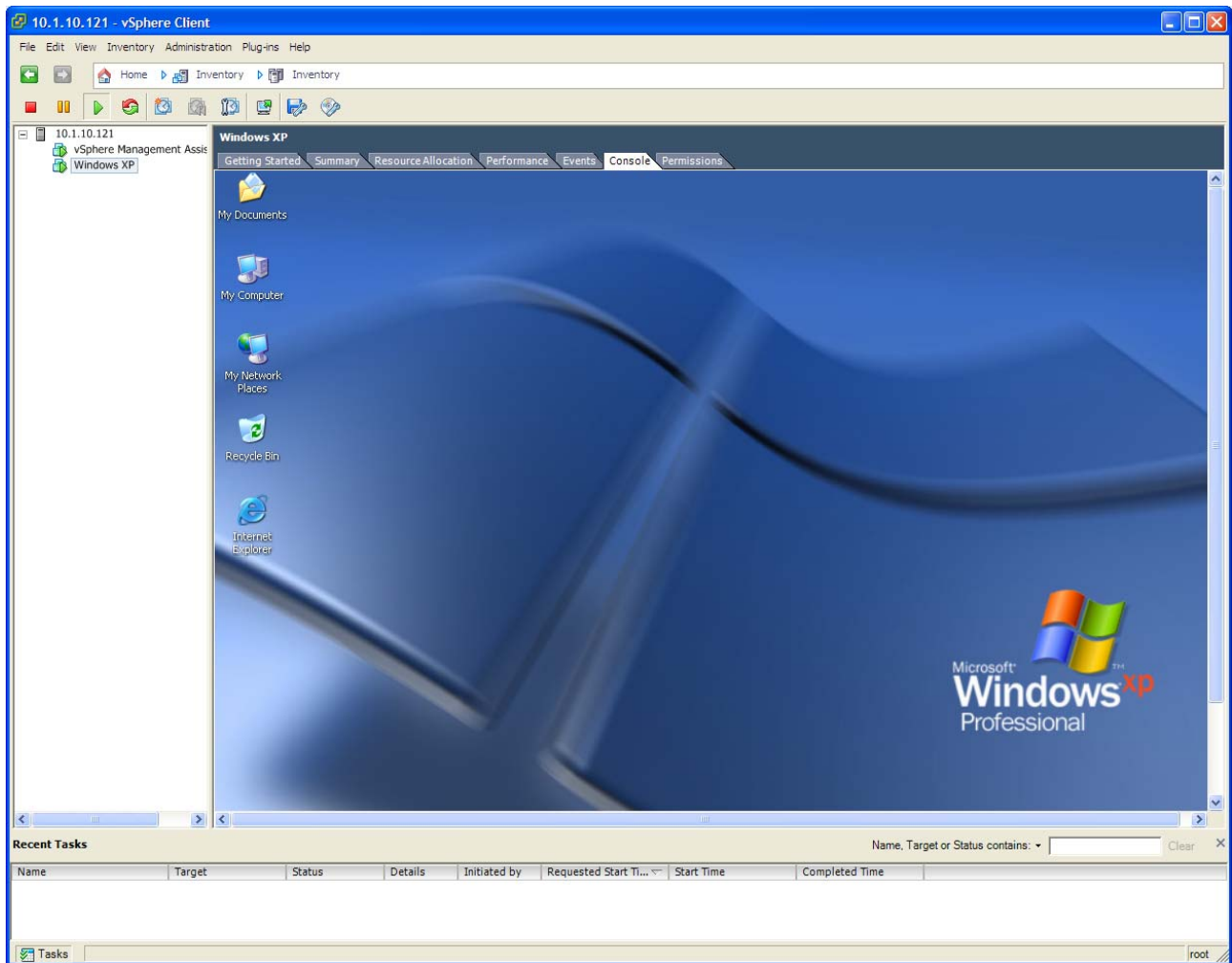
Diagram 4-17-1

2. Insert and start the Microsoft Windows operating system installation CD.
3. Log in to the guest operating system from the virtual machine console.
4. Select the template name and then right-click and select **Guest>Install/Upgrade VMware Tools** from the menu. (see Diagram 4-17-2.)
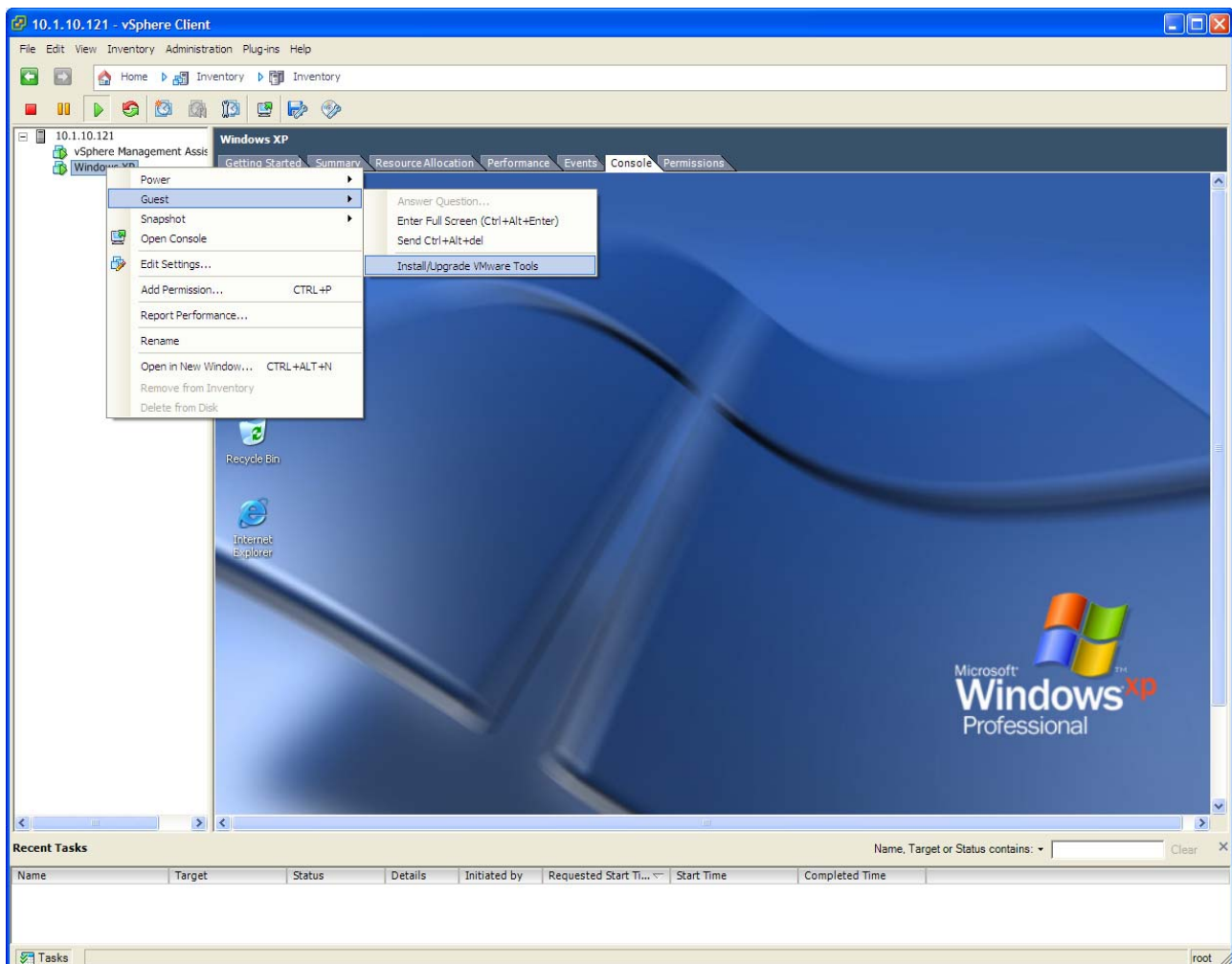
Diagram 4-17-2

5. From within the guest operating system, click **OK** to confirm that you want to install VMware Tools and launch the Install Shield wizard.

● If auto run is enabled in the guest operating system (the default setting for Microsoft Windows operating systems), a window opens

● If auto run is not enabled, run the VMware Tools installer. Click **Start > Run** and enter **D:\setup.exe**, where D: is the first virtual CD ROM drive.

6. Follow the on-screen instructions.

● On Microsoft Windows Server 2003, the SVGA driver is installed automatically, and the guest operating system uses it after it reboots.

● After you install VMware Tools, Microsoft Windows 2000 and Microsoft Windows XP guest operating systems must be rebooted to use the new driver.

Installing VMware Tools on a Linux Guest Operating System

To install the VMware Tools for a Linux guest operating system:
1. On the VM Templates page, select the virtual machine template name and then select the
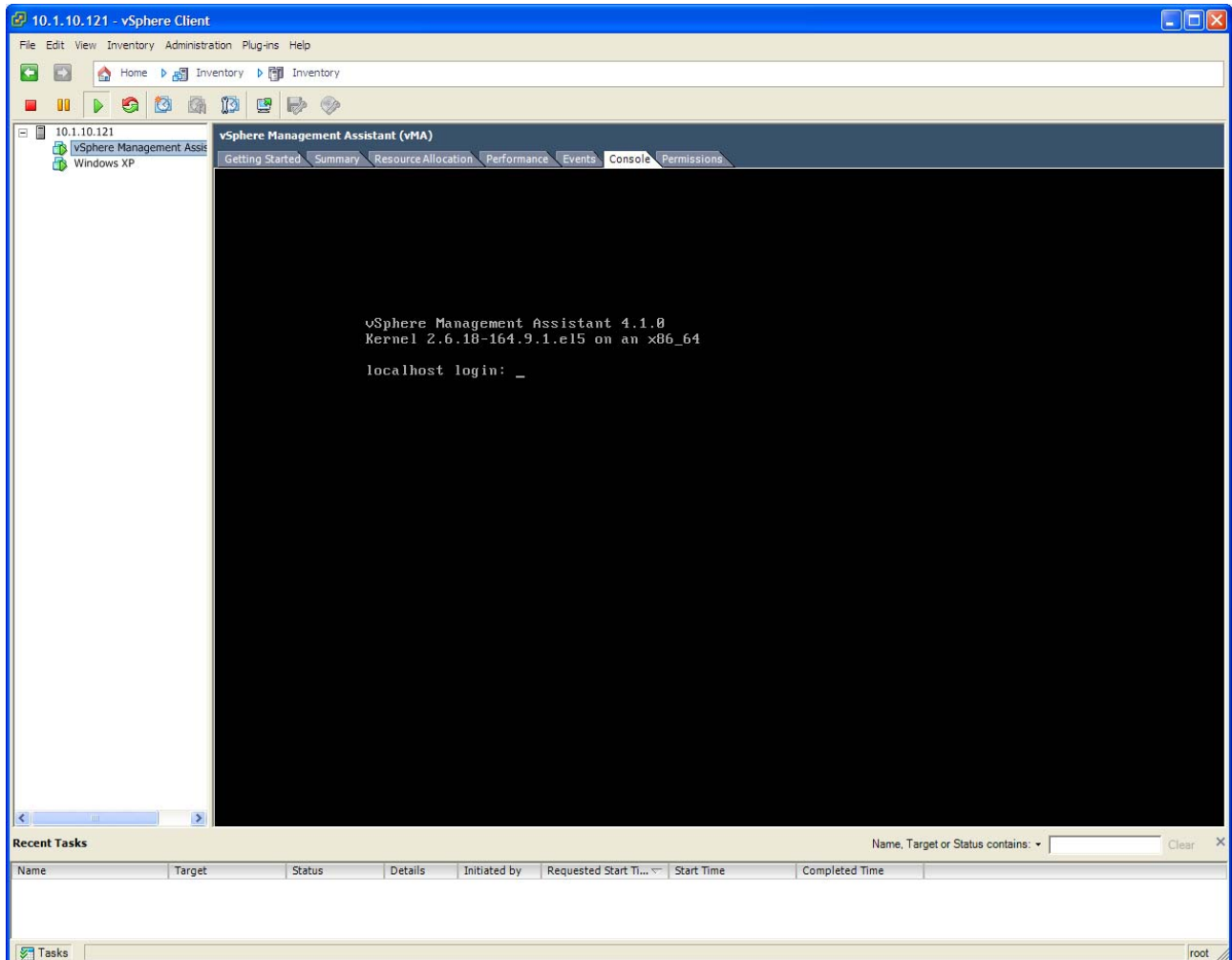**Console** tab. The Console window opens (see diagram 4-17-3).

Diagram 4-17-3

2. Insert the VMware server installation CD.
Go to **\VMware\RPMS** to locate the VMware Tools installation package.
3. Log in to the guest operating system from the virtual machine console (see diagram 4-17-4).
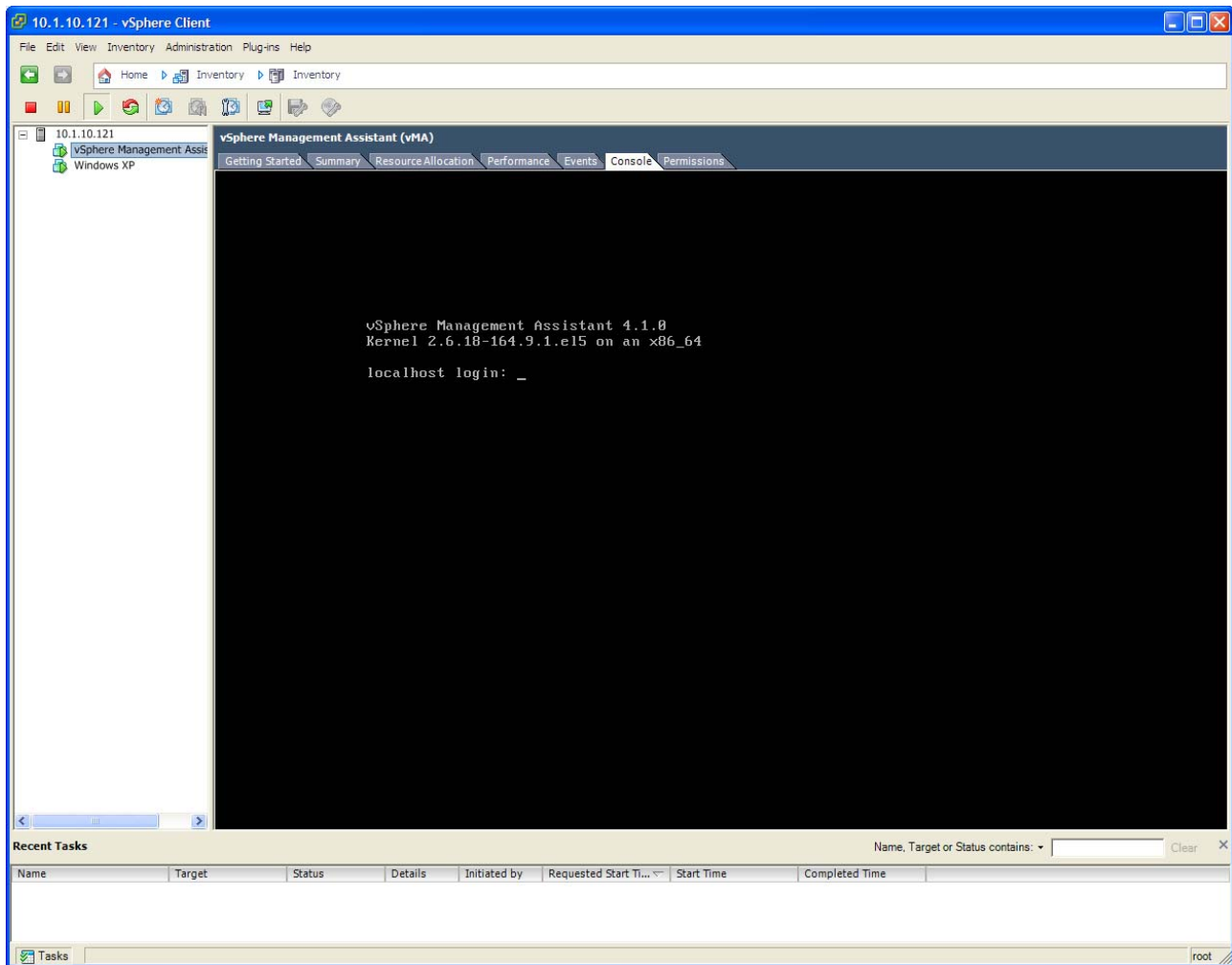
Diagram 4-17-4

4. Select the template name and then right-click and select **Install/Upgrade VMware Tools** from the menu. (see diagram 4-17-2.)

5. Mount the CD with the command: **mount /dev/cdrom /mnt**

6. Install the package with the command:

cd /mnt/VMware/RPMS

rpm –Uvh VMware esx*.rpm

NOTE: The package name is likely to be different.

7. Configure the VMware Tools with the command:

vmware config tools.pl

8. Enter number: **1**

9. Start the VMware Tools with the command:

vmware toolbox &

VMware Tools on the summary page displays **OK** if the tools are available (see diagram 4-17-5).
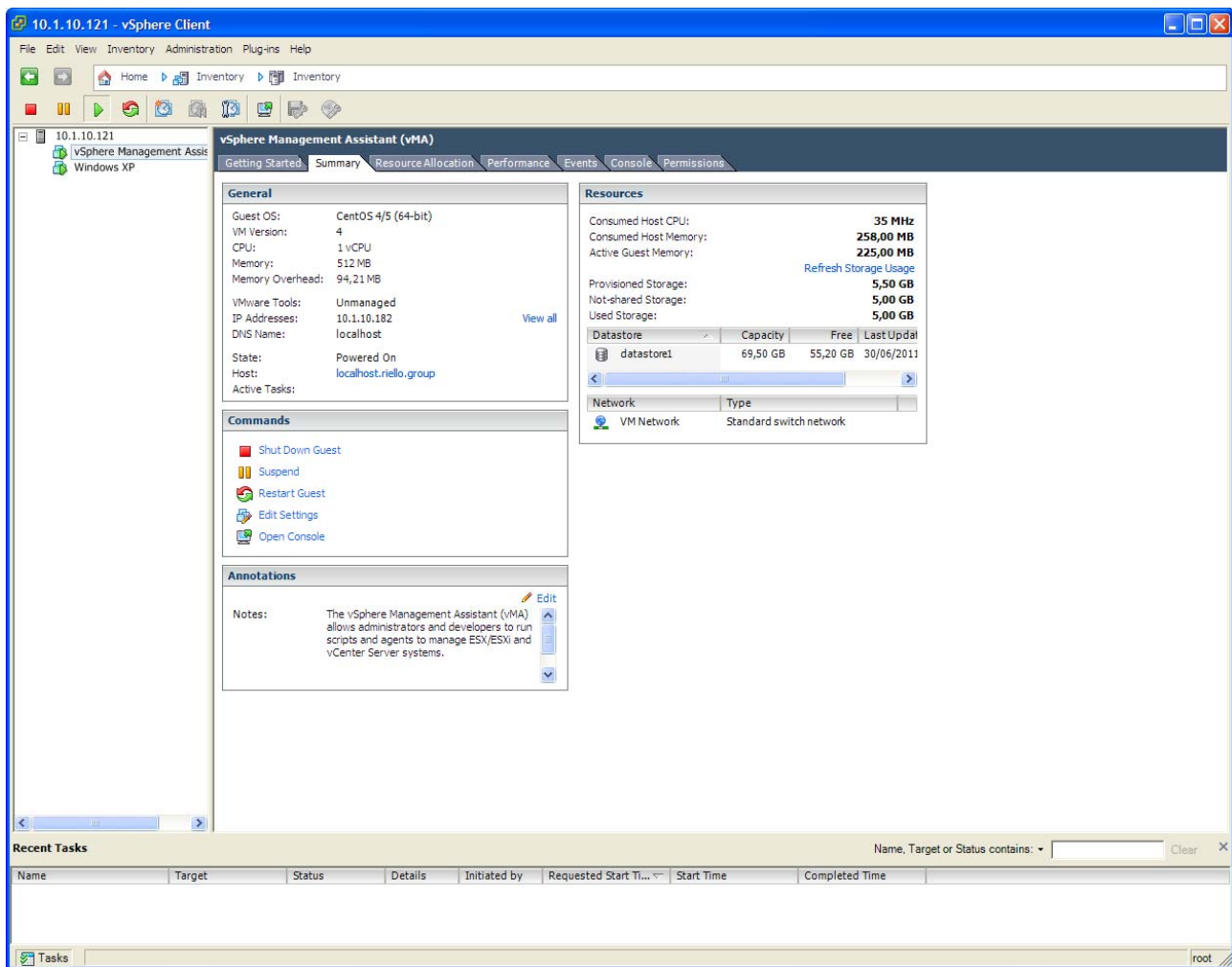
Diagram 4-17-5

VIMA/vMA Shutdown and Startup Configuration

NOTE: You can configure the physical machine to boot the automatic operating system on startup. This setting is located in your machine's basic input/output system (BIOS). For further information, refer to your specific technical hardware documentation.

NOTE: You can configure the automatic startup and shutdown properties of guest operating systems as suspended.

● Automatic Shutdown of guest (VIMA/vMA) when ESXi host is shutting down

● Automatic Startup of guest (VIMA/vMA) when ESXi host is starting

To configure VIMA/vMA shutdown and startup:

1. Choose the host server from the left pane tree hierarchy by the Virtual Infrastructure Client interface and then select the Configuration tab.

2. Select **Virtual Machine Startup/Shutdown**" from the Software list and click **Properties**. The Virtual Machine Startup and Shutdown window opens (see diagram 4-17-6).

3. Enter the settings as shown on the Virtual Machine Startup and Shutdown window:

● For each virtual machine, set delay startup for 10 seconds

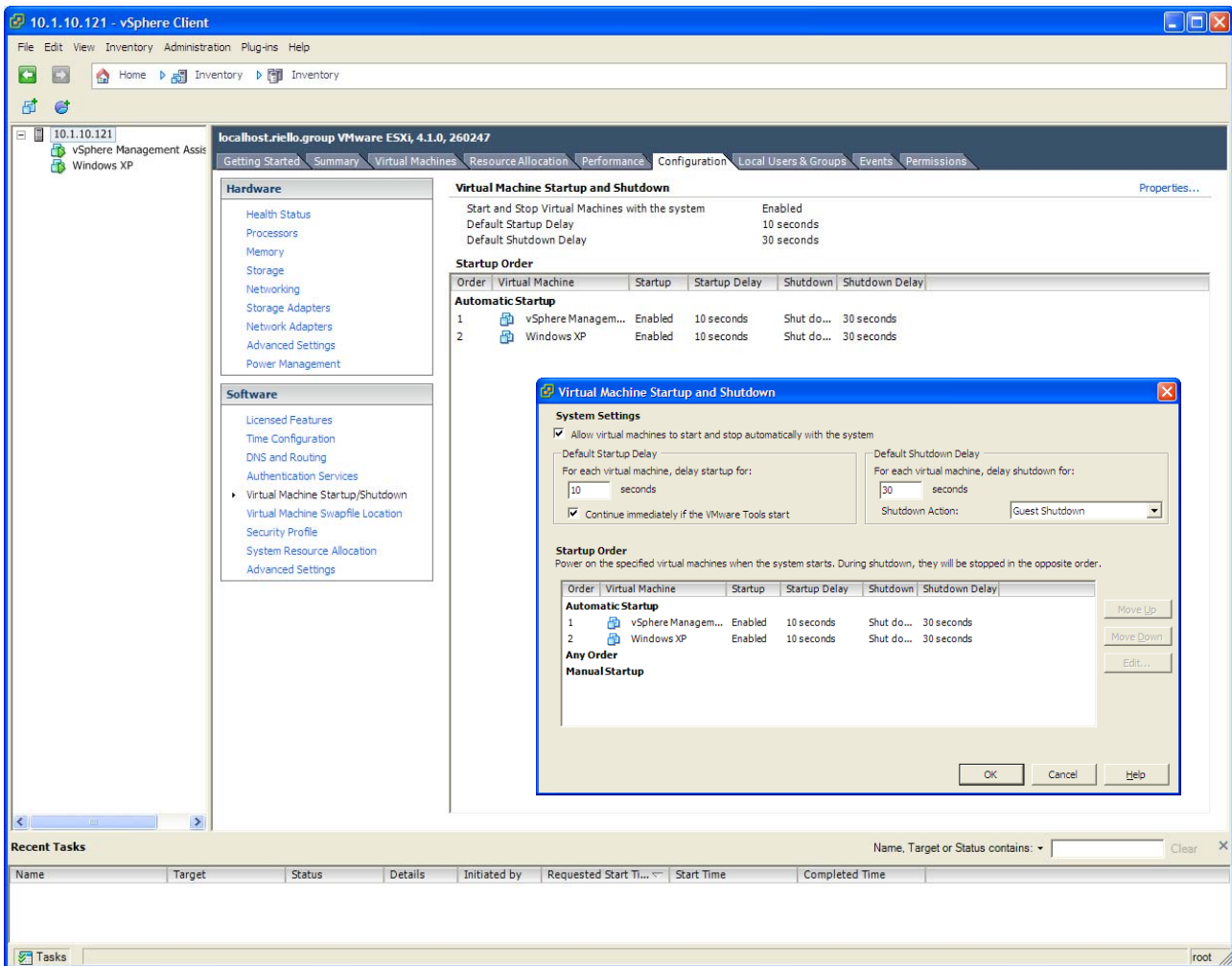● For each virtual machine, set delay shutdown for 30 seconds

Diagram 4-17-6

NOTE: All hardware elements must have an operational network configuration that allows them to communicate freely with each other. The Software uses UDP for communication with UPS.

4. Confirm that the following UDP ports are enabled on the VIMA/vMA firewall: **33000**, **33002**.
Example commands:
```
sudo iptables -I INPUT -p udp dport 33000 -j ACCEPT
sudo iptables -I OUTPUT -p udp dport 33000 -j ACCEPT
sudo iptables -I INPUT -p udp dport 33002 -j ACCEPT
sudo iptables -I OUTPUT -p udp dport 33002 -j ACCEPT
```

The Software Installation and configuration

NOTE: The "vi-admin" is default user name of vMA 4.0/4.1 without the administrator privilege. If you can't install or start software normally, please add "sudo" before every command to act as the administrator privilege.
To install the software:
1. Start the vMA 4.0/4.1 guest operating system.
2. Download the software from the Riello UPS Web site"PowerShield³ v.5.1 (Build: 001) for VMWare ESXi" called upsmon-5.1.0-linux-2.6-x86_64.rpm .
3. Upload the software from Windows to vMA 4.0/4.1 using WinSCP tools.
4. Install the Riello UPS PowerShield3 Network Shutdown agent
copy the file to the ESX service console and run the following command

```
sudo rpm -ihv upsmon-5.1.0-linux-2.6-x86_64.rpm
```
5. Configure the Riello UPS PowerShield3 Network Shutdown agent
Run the configuration program:
```
sudo ./upsetup
```

Now configure the agent follow the instructions on the User's manual for Unix.

6. Edit the shutdown script "ups_shut.bat". Add the line:
```
perl ghettoHostShutdown.pl --host_operation shutdown --vm_operation
shutdown --timeout 2 --ups_vm VMA
```

Modify the **.pl** file name and the parameters value of **timeout** and **vma_name**.
If the VMware server is VMware ESXi 4.0, the **.pl** file name should be **ghettoHostShutdown.pl**, **vma_name**
should be **VMA4.0**. For example: `perl ghettoHostShutdown.pl --host_operation`
`shutdown --vm_operation shutdown --timeout 2 --ups_vm VMA4.0`

If the VMware server is VMware ESXi 4.1, the **.pl** file name should be **ghettoHostShutdown41.pl**,
vam_name should be **VMA4.1**. For example: `perl ghettoHostShutdown41.pl --`
`host_operation shutdown --vm_operation shutdown --timeout 2 --vma_name`
`VMA4.1`

One required variable is **timeout** that specifies how long the system will wait for all VMs to shutdown
before initiating the host shutdown operation. Each guest operating system requires a minimum of 30
seconds to shutdown.
Notice: if you are not sure the accurate time, you can use --host_operation **autoquery** in conjunction with -
-vm_operation **auto** to view what is the current amount of time that's been configured and help you select
a **timeout** value.

For Example:
```
perl ghettoHostShutdown41.pl --host_operation autoquery --vm_operation
auto --timeout 2 --vma_name vMA4.1
```
After running the script of "`ups_shut.bat`", The required timeout will be
list as blow:
07-29-2010 19:00:02 -- info: RECOMMENDED_TIMEOUT_VALUE = > **2 minutes**.

7. Start the Agent. From the program path, enter the command:
sudo ./upsstart

8. Configure the shutdown parameter of the software agent installed on vMA 4.0/4.1 to shut down
the VMware ESXi server safely.
● The software agent installed on vMA 4.0/4.1 should select the type of connection RS232,USB or TCP/IP
For example: the UPS has the Netman 102 plus card with IP 10.1.10.100 you must specify this IP on the UPS
configuration.

9. For the other Guest Operating systems follow the installation's instructions on the PowerShield[3] User's
manual.

Uninstall the software on vMA 4.0/4.1

To uninstall, type:
 sudo rpm -e upsmon

NOTE

For the guest operating systems follow the instructions on the user's manual in the specific session.

MOST IMPORTANT SETTINGS OF ALL!!!

On the guest operating system don't enable the UPS Shutdown because you will turn off the UPS BEFORE shutdown the ESXi operating system. The UPS shutdown must be specified ONLY on the vMA 4.0/4.1 console.