

# Using ESXi with PowerChute Business Edition

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This document describes how to:

- [Install vMA for an ESXi Host Server](#)
- [Configure and Run ESXi](#)



PowerChute™ Business Edition does not support the HA environment.

# Install vMA for an ESXi Host Server

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vSphere Management Assistant (vMA), from the VMware® company, enables you to manage your ESXi host servers.

You need to install it in order to use PowerChute Business Edition with an ESXi host, as that OS does not allow a direct installation.

The installation steps below assume that you have:

- **A supported version of vMA – version 5.5+.** See [the VMware website](#) for more information.



PowerChute Business Edition does not support ESXi v6.7.

For up-to-date information on supported versions, see the APC website at <http://www.apc.com/wp/?um=100>.

- **An operational ESXi host server.**
- **An operational vSphere Client in order to log on to the host server.**

You can download the vSphere Client from [www.vmware.com](http://www.vmware.com) or by browsing to `https://<ESXi Host IP Address>` and clicking on the **Download vSphere Client** option. The Client requires AMD Opteron, rev E or higher CPU or Intel processors, with EM64T and VT support.

**NOTE:** The desktop client for vMA is not included in the 6.5 release. This is replaced by the web client which can be accessed by browsing to `https://<ESXi Host IP Address>`.

To perform the vMA installation, you should be an administrator with basic knowledge of Linux. The web page **vSphere Management Assistant** has in-depth background information on the topics mentioned above. Alternatively, you can call VMware customer support.

The APC by Schneider Electric Knowledge Base (<http://www.apc.com/us/en/faqs/home/>), has some information on installing the Client also. Type a search query like “vMA ESXi” to display the relevant articles.



vSphere Management Assistant (vMA) was previously known as VMware Infrastructure Management Assistant (VIMA).

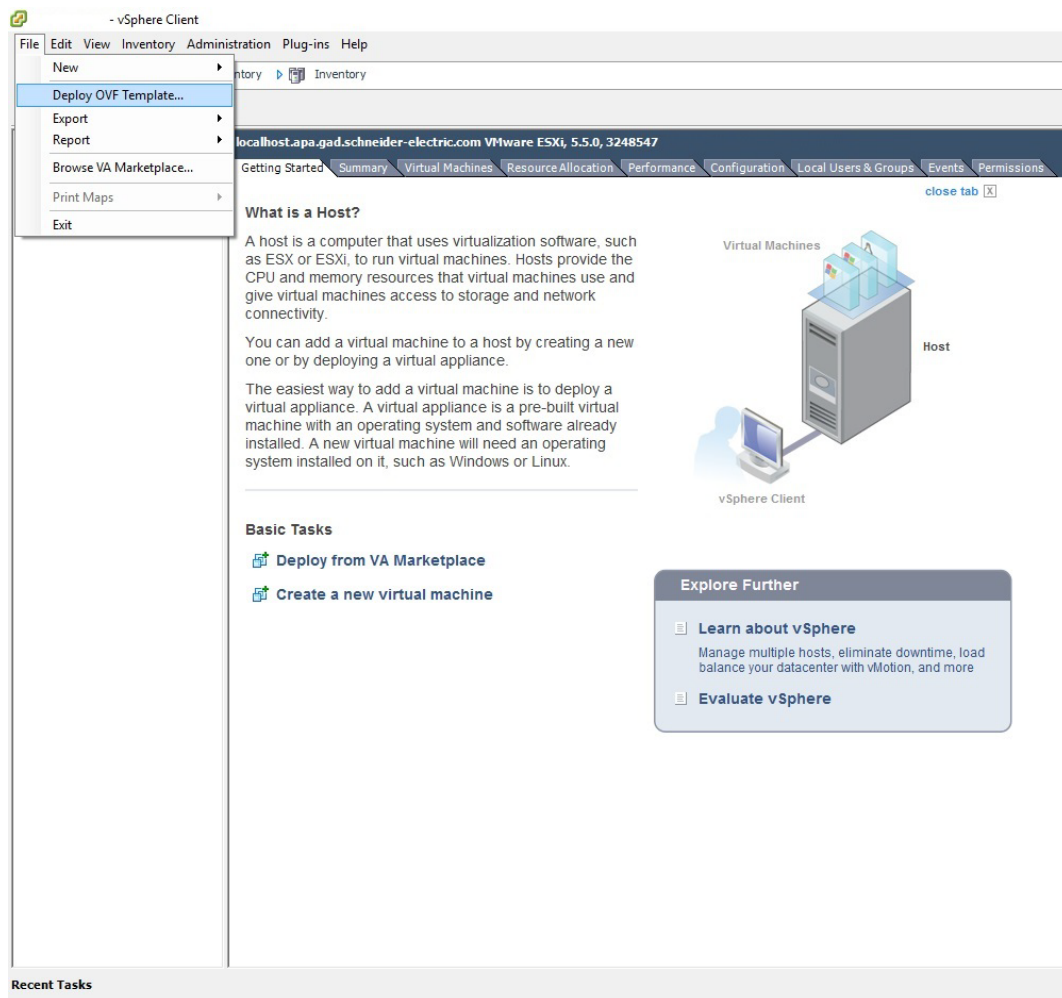
## Install vMA

**NOTE:** VMware uses the term *deploy* with vMA and other applications, meaning to install, configure, test, and use the application. See: [versions 6.0 and earlier](#) and [version 6.5](#).

For **versions 6.0 and earlier**:

1. Download the vMA installation files from **vSphere Management Assistant**, and extract the files.
2. Log on to the ESXi host or vCenter server using your vSphere Client.

3. You need the URL of the host server, its user name, and password, in order to do this. Select **File - Deploy OVF Template** from the menu.



4. At the **Deploy from a file or URL** field, enter the path to the OVF file you extracted at step 1 above.

Deploy OVF Template

**Source**  
Select the source location.

**Source**  
OVF Template Details  
Name and Location  
Disk Format  
Ready to Complete

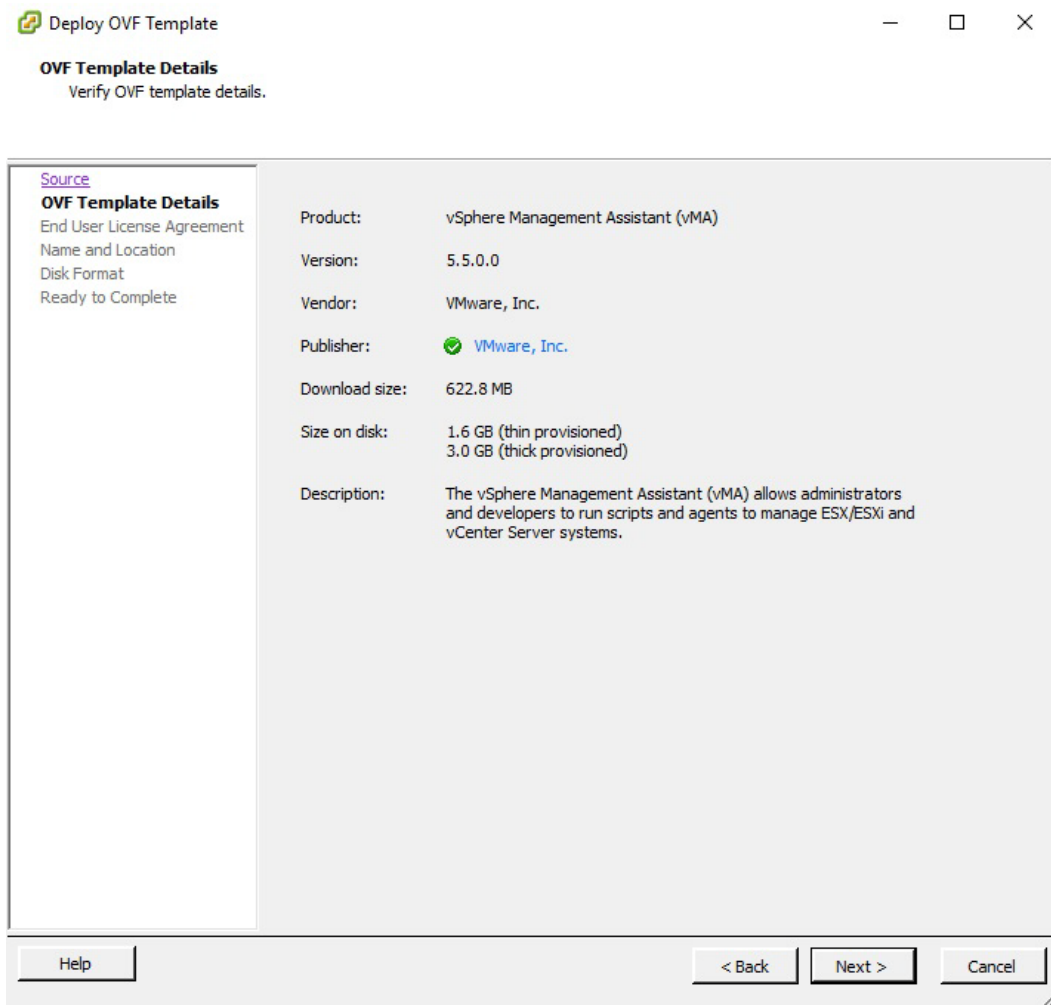
Deploy from a file or URL

C:\Users\ Downloads\vmA-5.5.0.0-1387931\vm Browse...

Enter a URL to download and install the OVF package from the Internet, or specify a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

Help < Back Next > Cancel

5. The vMA and OVF details are displayed. Click the Next button.



6. When the End User License Agreement (EULA) is displayed, click **Accept** and then Next.

7. Accept the default vMA name (and location) or enter alternatives, and click Next.

Deploy OVF Template

**Name and Location**  
Specify a name and location for the deployed template

[Source](#)  
[OVF Template Details](#)  
[End User License Agreement](#)  
**Name and Location**  
Disk Format  
Ready to Complete

Name:  
vSphere Management Assistant (vMA)  
The name can contain up to 80 characters and it must be unique within the inventory folder.

Help < Back Next > Cancel

8. At **Disk Format**, choose the default disk layout option by clicking Next.

Deploy OVF Template

**Disk Format**  
In which format do you want to store the virtual disks?

[Source](#)  
[OVF Template Details](#)  
[End User License Agreement](#)  
[Name and Location](#)  
**Disk Format**  
Ready to Complete

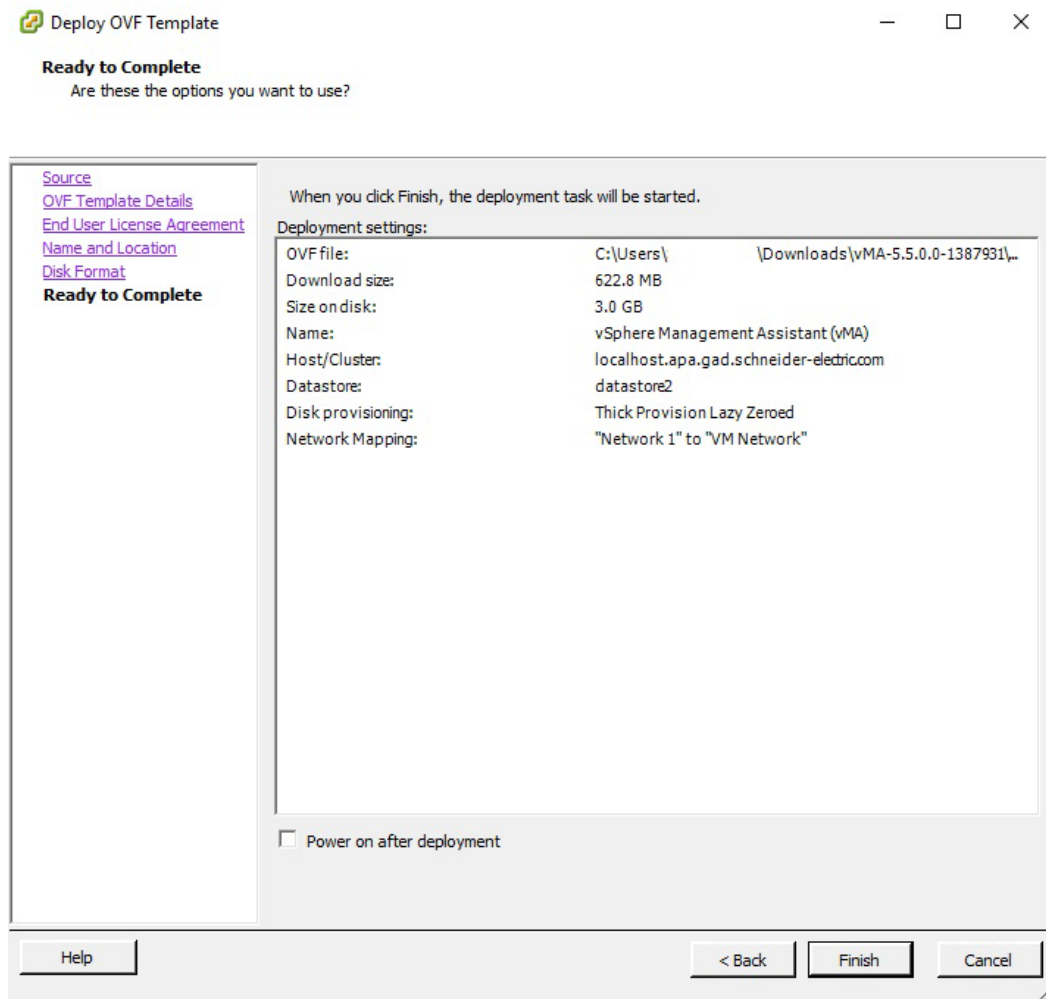
Datastore: datastore2

Available space (GB): 513.7

☒ Thick Provision Lazy Zeroed  
☐ Thick Provision Eager Zeroed  
☐ Thin Provision

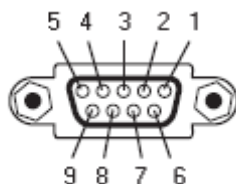
Help < Back Next > Cancel

9. The options you have chosen display again, click **Finish**.



The vMA software is now installed, and it should be displaying in the left-hand pane.

10. Select the installed vMA in the left-hand pane.
11. Click on the **Getting Started** tab along the top of the screen and choose **Edit Virtual Machine Settings** in the right-hand pane.
12. In the Virtual Machine dialog, click the **Add** button on the hardware tab.  
This launches the **Add Hardware** wizard.
13. Select **Serial Port**, as the type of device to add and click Next.





14. Under **Serial Port Type**, select **Use physical serial port on the host** and click Next.

Add Hardware ✕

**Serial Port Type**  
What media should this virtual serial port access?

[Device Type](#)  
**Select Port Type**  
Select Physical Port  
Ready to Complete

Select the type of media you would like the virtual serial port to access.

Serial Port Output

☒ Use physical serial port on the host

☐ Output to file

☐ Connect to named pipe

☐ Connect via Network

Help < Back   Next >   Cancel

15. Select your physical serial port from the drop down list, enable the option **Connect at power on** and enable the option **Yield CPU on poll**. Click Next.

Add Hardware ✕

**Select a Physical Serial Port**  
Which physical drive should this serial port connect to?

[Device Type](#)  
[Select Port Type](#)  
**Select Physical Port**  
Ready to Complete

Select the physical port you would like to connect to this virtual serial port.

Physical Serial Port

Port

Device Status

☒ Connect at power on

I/O Mode

☒ Yield CPU on poll  
Allow the guest operating system to use this serial port in polled mode rather than in interrupt mode.

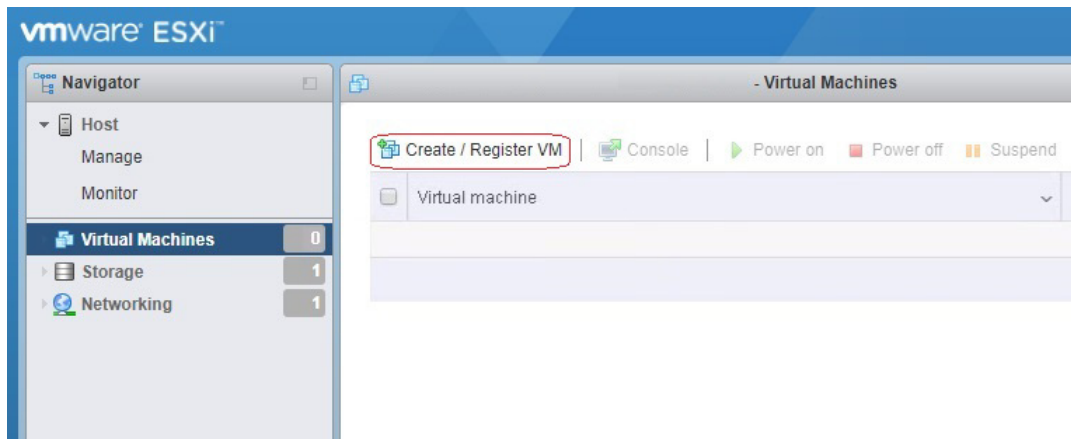
Help < Back   Next >   Cancel

16. Click **Finish** and then click OK to finish adding the new serial port.

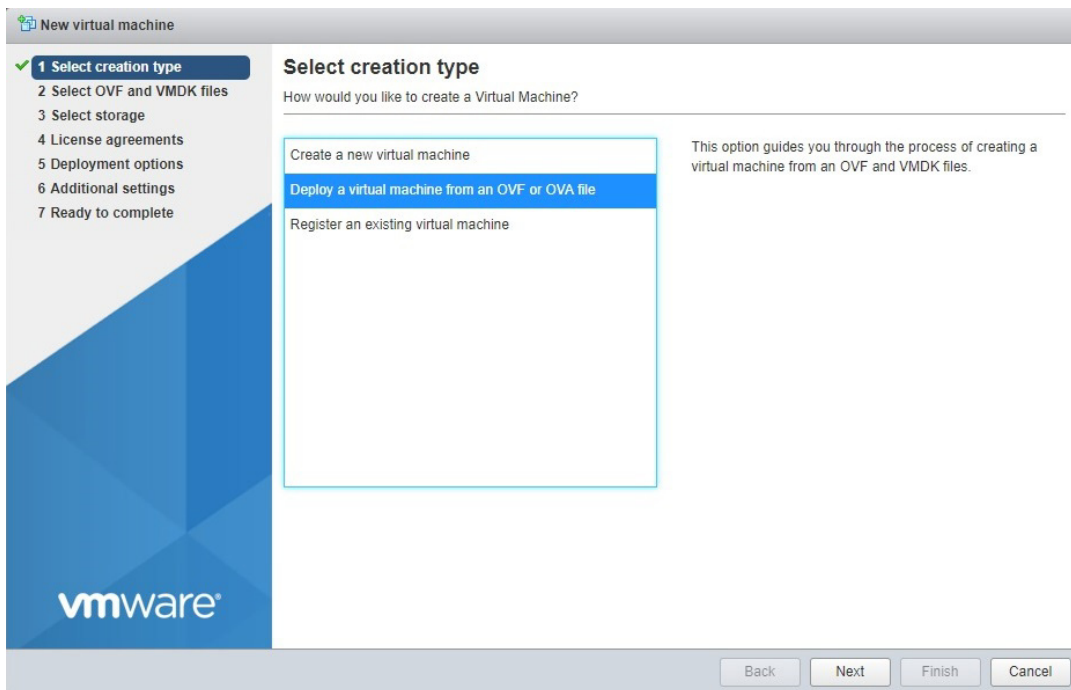
17. Power on the vMA virtual machine – follow the instructions on configuring IP address, setting vi-admin password etc.

**For version 6.5:**

1. Download the vMA installation files from [vSphere Management Assistant](#), and extract the files.
2. Log on to the ESXi host using your vSphere web Client.
3. Create a virtual machine by selecting **Virtual Machines - Create / Register VM** from the menu.



4. In **Select creation type**, select the **Deploy a virtual machine from an OVF or OVA file** option.



5. Insert a name into the **Enter a name for the virtual machine** field and select the OVF and VMDK files you extracted at step 1 above.

The screenshot shows the 'New virtual machine - vMA\_6.5\_VM' wizard. On the left, a progress bar indicates the steps: 1. Select creation type (checked), 2. Select OVF and VMDK files (active), 3. Select storage, 4. License agreements, 5. Deployment options, 6. Additional settings, and 7. Ready to complete. The main area is titled 'Select OVF and VMDK files' and contains the instruction 'Select the OVF and VMDK files or OVA for the VM you would like to deploy'. Below this, there is a text field 'Enter a name for the virtual machine.' with the value 'vMA\_6.5\_VM' entered. A note states: 'Virtual machine names can contain up to 80 characters and they must be unique within each ESXi instance.' Below the text field, two files are listed with selection icons: 'vMA-6.5.0.0-4569350\_OVF10.ovf' and 'vMA-6.5.0.0-4569350-system.vmdk'. At the bottom right, there are buttons for 'Back', 'Next', 'Finish', and 'Cancel'.

6. Select a datastore to store the configuration and disk files for your virtual machine.

The screenshot shows the 'New virtual machine - vMA\_6.5\_VM' wizard at Step 3: 'Select storage'. The progress bar on the left shows steps 1 through 3 as completed. The main area is titled 'Select storage' and contains the instruction 'Select the datastore in which to store the configuration and disk files.' Below this, a message states: 'The following datastores are accessible from the destination resource that you selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.' A table lists the available datastores:

Name	Capacity	Free	Type	Thin pro...	Access
datastore1 (1)	227.75 GB	100.74 GB	VMFS5	Supported	Single

At the bottom right, there are buttons for 'Back', 'Next', 'Finish', and 'Cancel'.

7. When the End User License Agreement (EULA) is displayed, click **Accept** and then Next.

8. Choose your **Deployment options** and click Next.

The screenshot shows the 'New virtual machine - vMA\_6.5\_VM' wizard. On the left, a progress bar lists seven steps: 1 Select creation type, 2 Select OVF and VMDK files, 3 Select storage, 4 License agreements, 5 Deployment options (highlighted), 6 Additional settings, and 7 Ready to complete. The main area is titled 'Deployment options' with the subtitle 'Select deployment options'. It contains three rows of settings: 'Network mappings' with 'Network 1' set to 'VM Network' via a dropdown; 'Disk provisioning' with 'Thin' and 'Thick' radio buttons, where 'Thick' is selected; and 'Power on automatically' with a checked checkbox. At the bottom right are buttons for 'Back', 'Next', 'Finish', and 'Cancel'.

Deployment options		
Select deployment options		
Network mappings	Network 1	VM Network
Disk provisioning	<input type="radio"/> Thin <input checked="" type="radio"/> Thick	
Power on automatically	<input checked="" type="checkbox"/>	

9. In **Additional settings**, enter the network details or leave blank if vMA needs to use DHCP. Click Next.

The screenshot shows the 'New virtual machine - vMA\_6.5\_VM' wizard at Step 6: 'Additional settings'. The left progress bar is identical to the previous step, with '6 Additional settings' highlighted. The main area is titled 'Additional settings' with the subtitle 'Additional properties for the VM'. It features a section for 'Networking Properties' with four input fields: 'Network 1 IP Address', 'Network 1 Netmask', 'Network 1 Default Gateway', and 'Network 1 DNS'. Each field has an information icon (i) to its right. At the bottom right are buttons for 'Back', 'Next', 'Finish', and 'Cancel'.

Additional settings	
Additional properties for the VM	
▼ Networking Properties	
Network 1 IP Address	<input type="text"/>
Network 1 Netmask	<input type="text"/>
Network 1 Default Gateway	<input type="text"/>
Network 1 DNS	<input type="text"/>

10. The options you have chosen display, verify them and click **Finish**.

Ready to complete	
Review your settings selection before finishing the wizard	
Product	vSphere Management Assistant (vMA)
VM Name	vMA_6.5_VM
Disks	vMA-6.5.0.0-4569350-system.vmdk
Datastore	datastore1 (1)
Provisioning type	Thick
Network mappings	Network 1: VM Network
Guest OS Name	SUSE Linux Enterprise Server 11.3 64bit
Properties	Click to expand

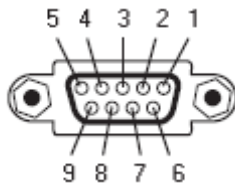
Do not refresh your browser while this VM is being deployed.

The vMA software is now installed, and it should be displaying in the left-hand pane.

11. Select the installed vMA in the left-hand pane. Right-click the vMA and select **Edit settings**.

12. Under **Virtual Hardware** click **Add Another Device**.

13. Select **Serial Port**, as the type of device to add and click Next.



**NOTE:** You cannot configure PowerChute to communicate over USB using vMA 6.5 due to the SUSE kernel used. The minimum SUSE kernel to support USB in PowerChute is 3.0.101-63. However, vMA 6.5 uses 3.0.101-0.47.79.1.11283.0.PTF-default.

14. Select **Use physical serial port** from the drop down list and select your physical serial port under **Connection**. Enable the option **Connect at power on**.

Edit settings - vMA\_6.5\_VM (ESX/ESXi 4.x virtual machine)

Virtual Hardware VM Options

Add hard disk Add network adapter Add other device

CPU	1	
Memory	600	MB
Hard disk 1	9	GB
SCSI Controller 0	LSI Logic Parallel	
New Serial Port	Use physical serial port	
Status	<input checked="" type="checkbox"/> Connect at power on	
Connection	/dev/char/serial/uart0	
Network Adapter 1	VM Network	<input checked="" type="checkbox"/> Connect
CD/DVD Drive 1	Host device	<input type="checkbox"/> Connect
Video Card	Specify custom settings	

Save Cancel

15. Click **Save** to finish adding the new serial port.

16. Power on the vMA virtual machine – follow the instructions on configuring IP address, setting vi-admin password etc.

## Copy PowerChute to vMA

Use WinSCP (Windows Secure CoPy) to copy the PowerChute Business Edition Agent installation directory to vMA. (WinSCP is **available for free** on the Internet).

You have two alternatives to using the WinSCP software.

- i. You can **map a network drive** by first creating a new folder, e.g. “share” where the network drive will be mapped:

```
sudo mkdir /mnt/share
```

then mounting the network share:

```
sudo mount -t cifs //<server name or share name> /mnt/share -o  
username=<user name>,password=<password>
```

For example:

```
sudo mount -t cifs //11.111.111.111/public /mnt/share -o  
username=mmmftp,password=rrrftp
```

- ii. Or you can **mount the CD**: \* first create the directory if it does not already exist, then mount it.

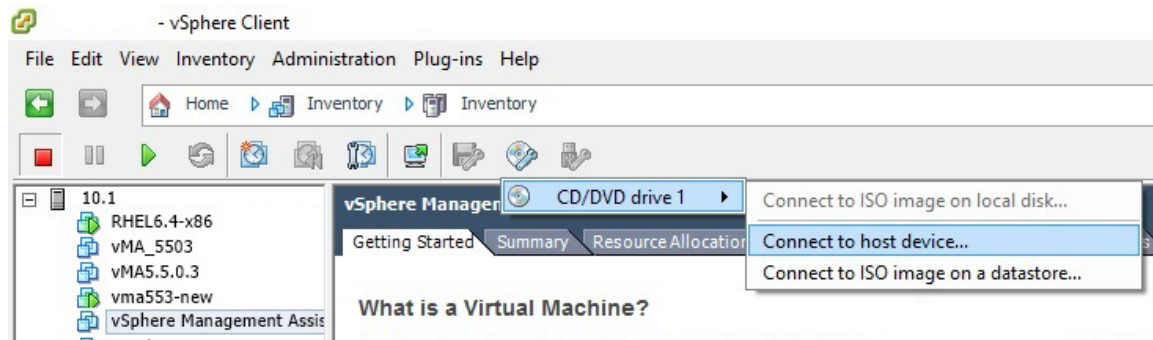
```
sudo mkdir /mnt/cdrom  
sudo mount -o ro /dev/cdrom /mnt/cdrom
```

\* Prior to mounting the CD, you must edit the **CD/DVD Drive** (specifically its **Device Status** and **Device Type**) in the VM settings.

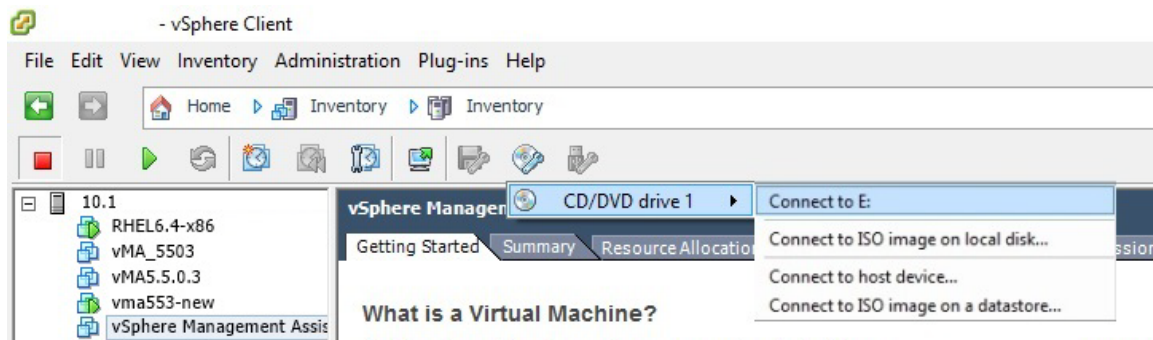
See: **versions 6.0 and earlier** and **version 6.5**.

For versions 6.0 and earlier:

If you're inserting the CD in the host drive, select the relevant vMA in the left pane of vSphere Client, and click on the CD icon on the toolbar and select **Connect to host device**.

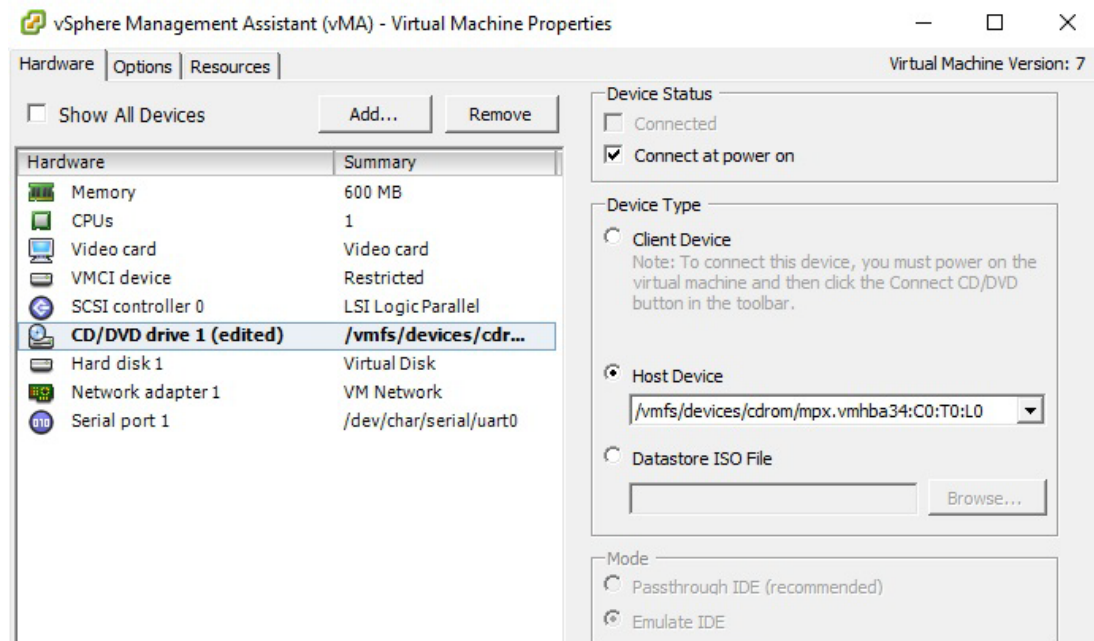


If you're inserting the CD in the client drive, select the relevant vMA in the left pane of vSphere Client, and click on the CD icon on the toolbar and select **Connect to <drive>**, e.g. **Connect to E:**.

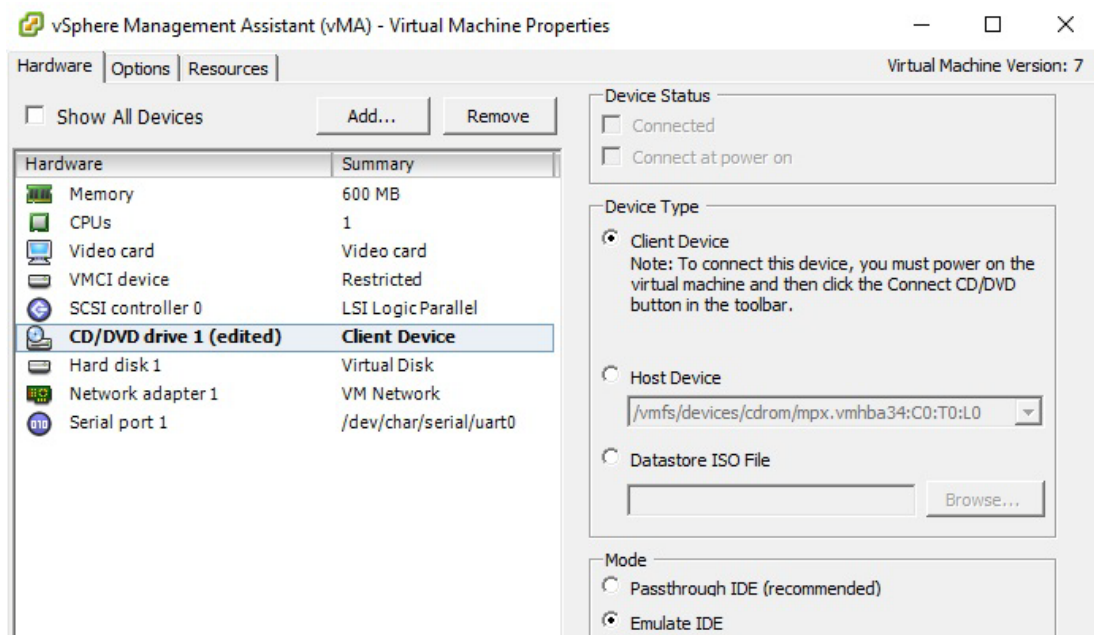




CD placed in the CD/DVD drive of the ESXi host:



CD inserted in the CD/DVD drive of Windows/Linux server running vSphere Client:



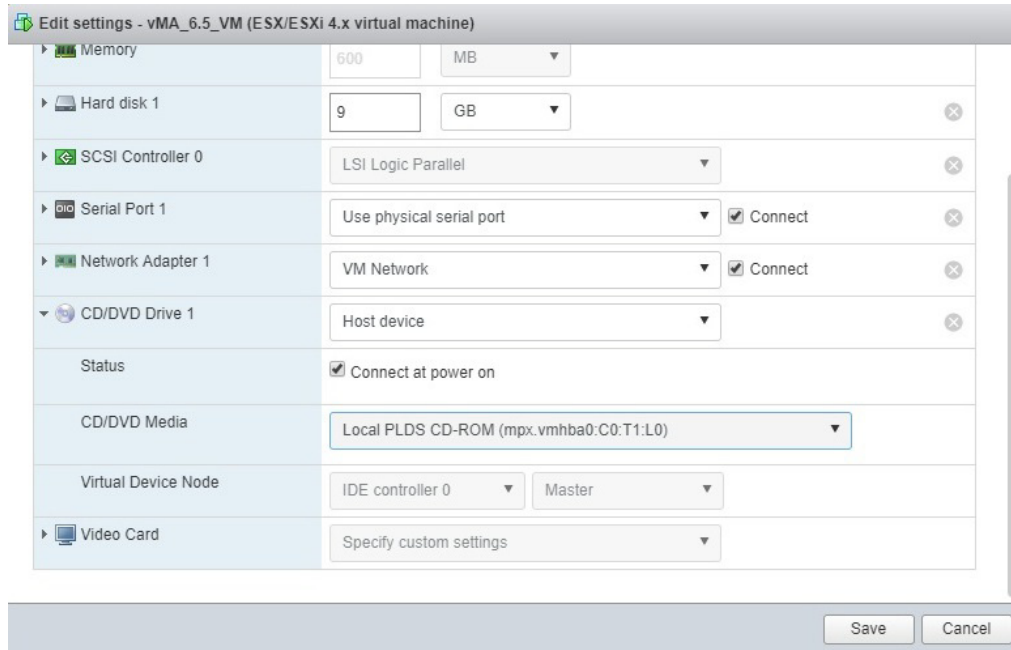


For **version 6.5**:

If you're inserting the CD in the host drive, select the relevant vMA in the left pane of vSphere Client, and click on **Edit** on the toolbar.

Under **CD/DVD Drive 1** select **Host device** and enable the option **Connect at power on**.

Select the **CD ROM** under **CD/DVD Media** and click **Save**.



## Install PowerChute

To start the PowerChute installation, select the installation package suitable for your system which is located in the `/Linux/` directory:

32-bit Linux: `pcbeagent-9.X.X-301.i386.tar.gz`

64-bit Linux: `pcbeagent-X.X.X-301-XX.x86_64.tar.gz`

**NOTE:** PowerChute v10.0+ is a 64-bit only application.

1. Change the locale of your system.

i. Open the profile file using the following command:

```
vi /etc/profile
```

ii. Add one of the following to the end of the profile file:

```
#English
export LC_ALL=en_US.utf8
export LANG=en_US.utf8
export LANGUAGE=en_US.utf8
```

```
#Chinese
export LC_ALL=zh_CN.utf8
export LANG=zh_CN.utf8
export LANGUAGE=zh_CN.utf8
```

```
#Japanese
export LC_ALL=ja_JP.utf8
export LANG=ja_JP.utf8
export LANGUAGE=ja_JP.utf8
```

iii. Remove any lines in the profile file that contain `"export LANG=C.utf8"`.

- iv. Reboot your operating system.
  - v. Confirm that your system locale successfully changed by executing the `locale` command.
2. Use the `tar` command to extract and decompress the contents of the file:  

```
tar -xzf pcbeagent-X.X.X-301.XX.tar.gz
```
3. Execute the `rpm` command to begin installation:  

```
sudo rpm -ivh pbeagent.X.X.X-301.XX.rpm
```
4. Once the `rpm` command completes installation, you are prompted to configure PowerChute using the configuration script `config.sh`, which is located in the **installation directory**:  

```
/opt/APC/PowerChuteBusinessEdition/Agent/config.sh
```
5. Run `config.sh` and enter a username, a password, the UPS model and a communications port.  
**NOTE:** You cannot configure PowerChute to communicate over USB using vMA 6.5 due to the SUSE kernel used. The minimum SUSE kernel to support USB in PowerChute is 3.0.101-63. However, vMA 6.5 uses 3.0.101-0.47.79.1.11283.0.PTF-default.
6. Your selected configuration settings are then displayed which you have the option to change if incorrect.
7. In order to shut down the ESXi host using vMA, it must be added as a fastpass target. To do this, add the ESXi Host IP when prompted.
8. Choose whether to start the Agent immediately. Your installation is complete.
9. Confirm that the ESXi host has been added as a target server using the following command:  

```
sudo vifp listservers
```

  
**NOTE:** To launch the Agent after installation, type one of the following in your browser:  

```
https://<vMA IP address>:6547
```
10. In order to ensure graceful shutdown of the VMs running on the ESXi server you need to install VMWare tools on each VM. See **VMware Tools**.
11. Additionally you need to set Virtual Machine shut down options. See **VM Shutdown Options**.

# Configure and Run ESXi

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See the sections below to fully configure ESXi to facilitate using PowerChute Business Edition.

## Fastpass Target

In order to shut down an ESXi host using vMA, you must add the ESXi server as a fastpass target for that vMA.

1. Use the command:  
`vifp addserver <hostname/ IP address of ESXi host>`
2. When prompted, enter the root password for the ESXi host.
3. Confirm that the ESXi host has been added as a target server with this command:  
`vifp listservers`

**NOTE:** You are prompted to add the ESXi server during the installation. If you skipped this step, you must manually add the ESXi server as a target host after the installation completes.



You can add additional ESXi hosts for shutdown if required by using the `sudo vifp addserver` command.

See **vSphere Management Assistant** for further information on adding a target server to VIMA.

## VMware Tools

You must have an installation of VMware Tools for each guest operating system on VMware. This ensures graceful shutdown of the virtual machines (VM) running on the ESXi server.

To install the VMware Tools:

- **For versions 6.0 and earlier:** right-click on the VM in vSphere Client, and select **Guest - Install/Upgrade VMWare Tools**.
- **For version 6.5:** right-click on the VM in vSphere Client, and select **Guest OS - Install VMWare Tools**.

For additional information, consult your ESXi documentation.

## VM Shutdown Options

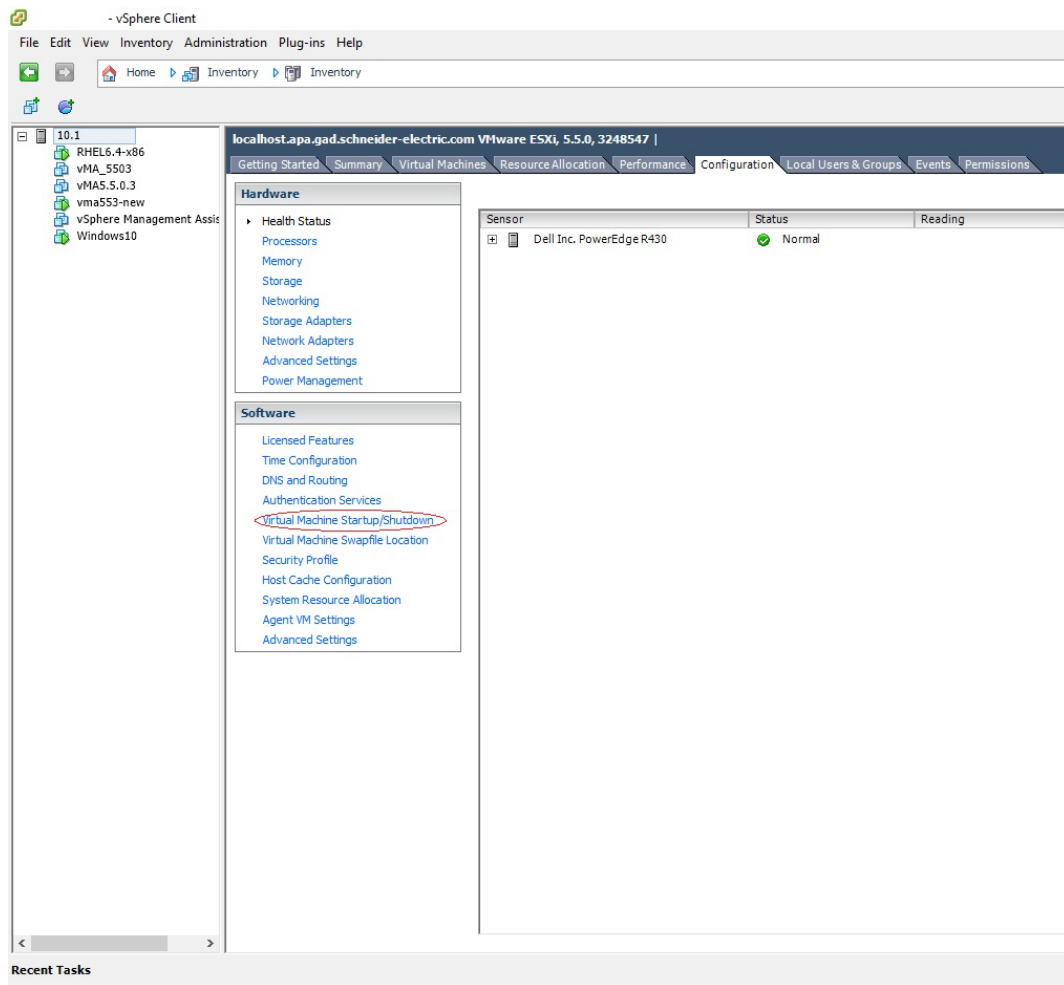
You need to set the virtual machine (VM) shutdown options. See: **versions 6.0 and earlier** and **version 6.5**.



It is possible that your virtual machine might not shutdown or might not shutdown gracefully. This issue is recognized by the VMware company. Please refer to the workaround published by VMware (Knowledge Base article 1008182) on their [website](#).

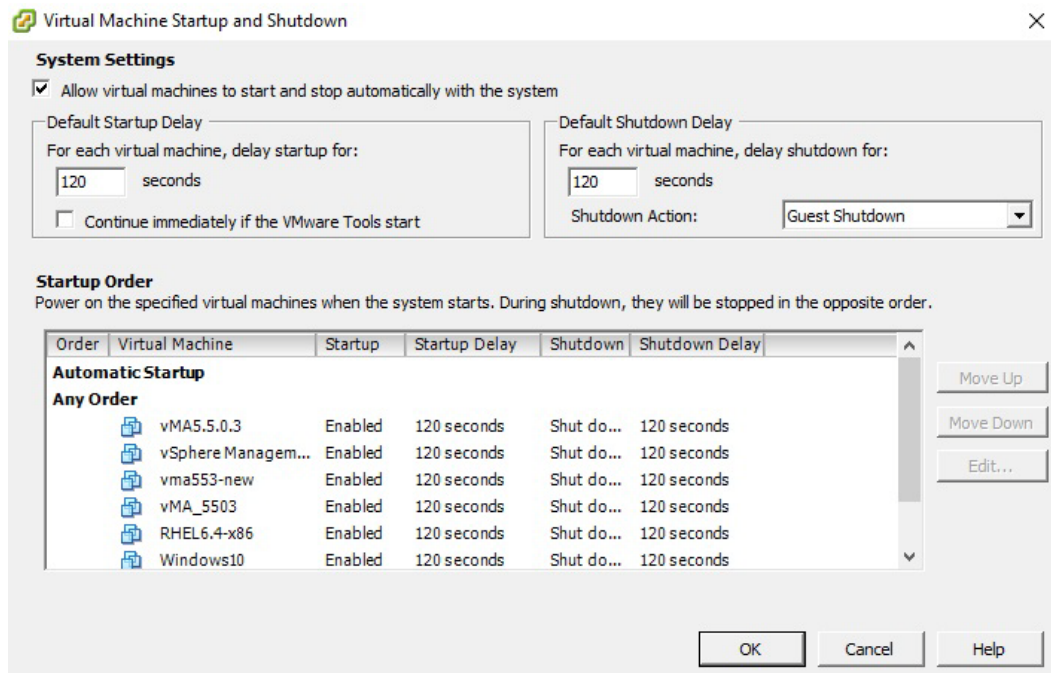
For **versions 6.0 and earlier**:

1. Select the ESXi host in vSphere Client and choose the **Configuration** tab.
2. In the **Software** pane, select **Virtual Machine Startup/Shutdown**.



3. Click on **Properties** in the top-right corner.
4. Select the check box **Allow virtual machines to start and stop automatically with the system**.
5. Set the **Default Start Delay** and **Default Shutdown Delay** (which both have a default of 30 seconds). It is recommended you provide higher delays (e.g. 120 seconds) so that the virtual machines can shutdown gracefully.

- Set the **Shutdown Action** to **Guest Shutdown**.

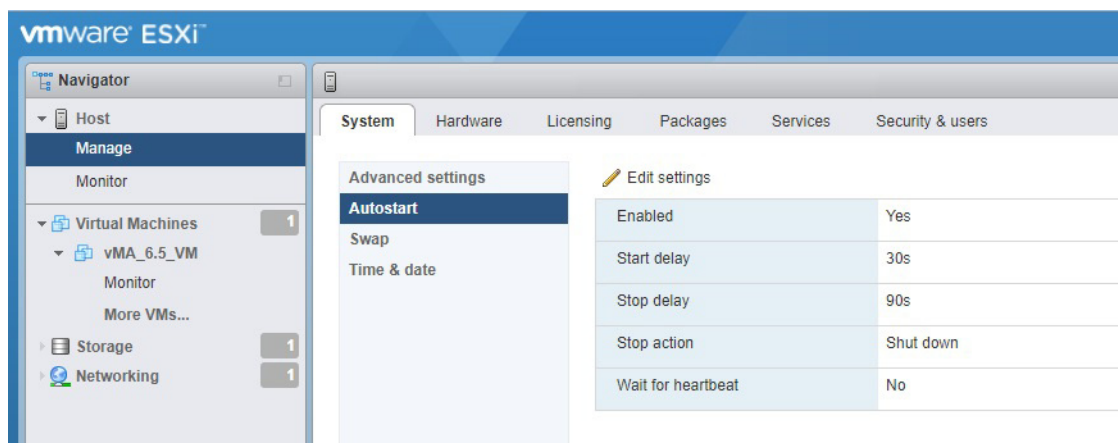


- You can move VMs from **Manual Startup** to **Any Order** or **Automatic Startup**, by selecting the VM and using the **Move Up** button.

To prevent machines from starting up automatically, move them under **Manual Startup** by using the **Move Down** button.

For **version 6.5**:

- Select the ESXi host in vSphere Client and choose the **Manage** option underneath.
- In the **System** pane, select **Autostart**.



- Click on **Edit settings** above the table.
- Ensure the **Yes** radio button is selected to enable autostart.
- Set the **Start delay** (default 30 seconds) and the **Stop delay** (default 90 seconds). It is recommended you provide higher delays (e.g. 120 seconds) so that the virtual machines can shutdown gracefully.

6. Set the **Stop action** to **Shut down**.

Enabled	<input checked="" type="radio"/> Yes <input type="radio"/> No
Start delay	<input type="text" value="120"/> seconds
Stop delay	<input type="text" value="120"/> seconds
Stop action	<div>Shut down ▼</div>
Wait for heartbeat	<input type="radio"/> Yes <input checked="" type="radio"/> No

Save Cancel

7. Click **Save** to finish.

## Start and Stop PowerChute

Use the commands below to stop and start PowerChute Business Edition on ESXi.

To stop PowerChute, type the following at the command line:

```
sudo /etc/init.d/PBEAgent stop
```

To start PowerChute manually, type the following at the command line:

```
sudo /etc/init.d/PBEAgent start
```

## Uninstall PowerChute

To uninstall, type the following command:

```
sudo rpm -e pbeagent
```

## Remove Target Server

Targets previously added with the `vifp addserver` command need to manually be removed after uninstalling PowerChute Business Edition.

To remove an ESXi host, type the following command:

```
sudo vifp removeserver <esxi_Address>
```

See [the VMware website](#) for more information.

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

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