

IBM UPS Power Protector



# Installation and Configuration Guide for VMware ESX 4.0 and ESX 4.1 Virtualization Architecture



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**Note:** Before using this information and the product it supports, read the general information in Appendix B, “Notices,” on page 15.

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## Chapter 1. Introduction

This document provides installation and configuration information for installing IBM® UPS Power Protector on VMware ESX 4.0 and ESX 4.1 platforms.

You can use IBM UPS Power Protector to automate various data security functions. UPS Protector performs the following functions:

- Continuously waits for information from the management proxy or network management card that is connected to the IBM UPS.
- Warns administrators and users if ac power fails.
- Performs a system shutdown before the end of battery backup power is reached.
- Restarts machines when ac power restarts.

VMware ESX controls shutdown and restart functions directly from the administration console, or from an application hosted on the ESX layer. Install the protection server component, IBM UPS Power Protector, in the VMware layer. Installing the protection software into the VMware layer offers the following advantages:

- Only one deployment of IBM UPS Power Protector on a physical machine is required to manage all virtual machines.
- Silent and personalized deployment using the command-line interface of IBM UPS Power Protector.
- Dynamic management of virtual machines configuration with a personalized script.

For more information about using UPS Power Protector, see the *IBM UPS Power Protector User's Guide* at <http://www.ibm.com/support/entry/portal/docdisplay?Indocid=EATN-UPPWIN>.

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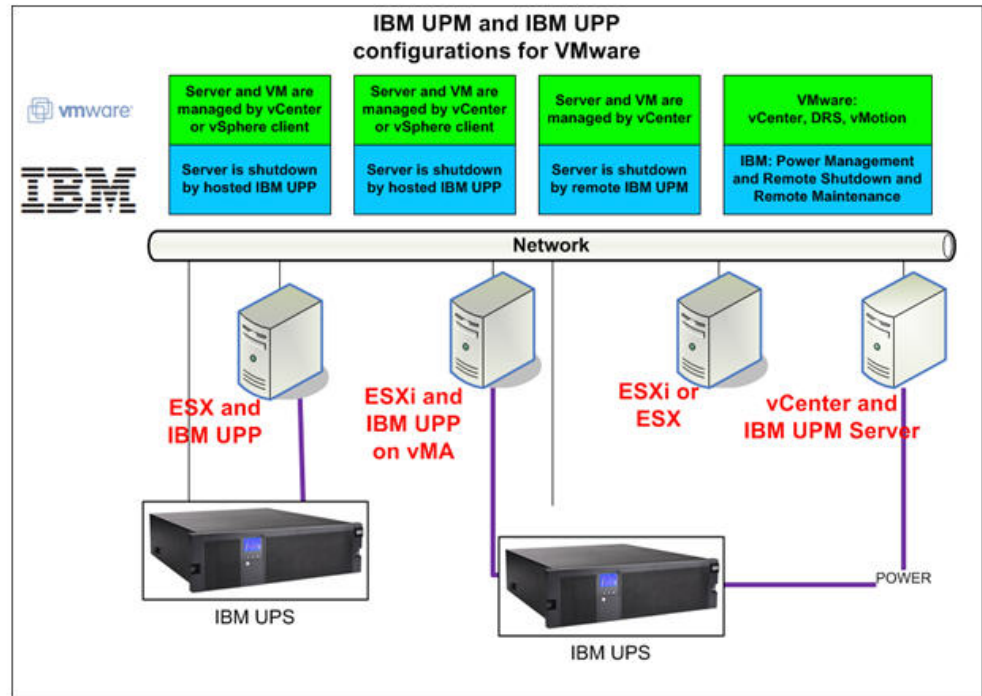
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- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage might occur.





## Chapter 2. IBM offering for VMware

IBM provides three solutions for VMware that are shown in the following architecture diagram.



- The first solution provides ESX server graceful shutdown. UPS Power Protector is installed on each ESX operating system.  
Use this solution when:
  - vCenter Server is not available for the management of hosts.
  - Number of ESX is limited.
- The second solution provides ESXi server graceful shutdown (paid ESXi version only). The free version cannot be shut down because of VMware restrictions. UPS Power Protector is installed on a VIMA/vMA (one instance of UPS Power Protector per ESXi).  
Use this solution when:
  - vCenter Server is not available for the management of hosts.
  - Number of ESXi is limited.
- The third solution is for multiple ESX and ESXi servers (paid version only). It provides the following features:
  - Remote graceful shutdown of multiple ESX/ESXi servers and hosted VMs
  - ESX/ESXi remote maintenance (vMotion)
  - An IBM UPS Power Manager plug-in is created in vCenter
  - UPS events are accessible through vCenter

Use this solution for large infrastructures that are working through a vCenter server. For more information, see the *IBM UPS Power Protector User's Guide*.



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## Chapter 3. Installing UPS Power Protector on VMware ESX architecture

This chapter provides information about installing UPS Power Protector on VMware ESX architecture.

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### Prerequisites

Before you install UPS Power Protector, read the following guidelines:

- ESX Server 3.5 is not compatible with IBM UPS Power Protector.
- Through the network connection and the RS232 connection, the IBM UPSs are compatible with IBM UPS Power Protector on ESX.
- To enable a graceful shutdown of the virtual machines, you have to install VMware tools on each virtual machine.

### VMware ESX server 4.0 configuration

For the operating system to start automatically, you must configure the physical machine to allow automatic operating system boot on startup. This setting is in the system BIOS. For more information, see the documentation that comes with the system.

To allow interactions between physical virtual machines, VMware tools have to be installed on each virtual machine. For more information, see the VMware ESX Server documentation.

For the automatic virtual machine boot on VMware ESX startup, complete the following steps:

1. From the Virtual Infrastructure Client interface, go to the **Virtual machine startup/shutdown** menu.
2. Select **Configuration→Properties→Start and stop VMs with the system**.
3. Choose **Enable**.

**Note:** On the Properties page, you can also define the startup order of your virtual machines:

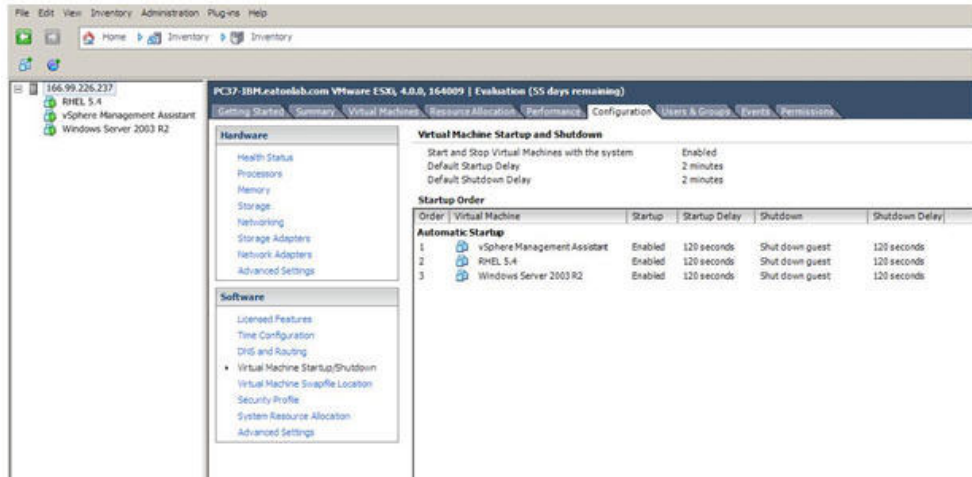
Start and Stop VMs with the system: Enabled

Default Startup Delay: x Seconds

Default Shutdown Delay: x Seconds

Startup Order: Automatic Startup

This configuration is shown in the following figure.



## IBM hardware architecture

The prerequisites for IBM UPS Power Protector installation are described in the *IBM UPS Power Protector User's Guide*. For UPS systems compatibility, see the "Compatibility list" section.

## Network architecture

All hardware elements must have an operational network configuration that allows them to communicate with each other. Make sure that the ESX firewall authorizes the following connections:

- Connections on TCP ports 4679 and 4680 to enable remote access for supervision and configuration through a web browser. These ports are reserved at IANA <http://www.iana.org>.
- Connections through TCP port 80. TCP port 80 must be opened as a destination port (for output) on the machine hosting IBM UPS Power Protector.

To enable communication between IBM UPS Power Protector and the network management card, type the following commands:

```
esxcfg-firewall -o 4679,tcp, in,IBMhttp
esxcfg-firewall -o 4680,tcp, in,IBMhttps
esxcfg-firewall -o 80,tcp,out,http
esxcfg-firewall -o 5000,tcp,out,IBMinit
esxcfg-firewall -o 4679,udp, in,IBMhttpU
esxcfg-firewall -o 4680,udp, in,IBMhttpsU
```

To configure your VMware ESX Server for the network, see the *IBM UPS Power Protector User's Guide*.

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## Installing UPS Power Protector on VMware ESX Server 4.0 or 4.1

To install UPS Power Protector on VMware ESX Server 4.0 or 4.1, complete the following steps:

1. Go to <http://www.ibm.com/support/entry/portal/docdisplay?Indocid=EATN-UPPLNX> and download the software package for your Linux operating system.

### Notes:

- a. The UPS Power Protector software will automatically detect an ESX Server, and will generate a shutdown command script. This shutdown.sh script will be installed in *installation-folder/bin/tools*, by default */usr/local/IBM/NetworkShutdownModule/bin/tools*.
  - b. It is possible to install IBM UPS Power Protector with the .rpm package. Choose the best package on the web page for your implementation. For example, the only installation command required for the rpm package is:  

```
rpm -ivh upp-linux-xx.xx.xxxx-1.i386.rpm.
```
2. Upload the package on your VMware ESX environment, with an SCP client (for example, under the Windows environment: WinSCP).
  3. Connect with SSH to the VMware server (for example, under the Windows environment: Putty). You must have corresponding rights to execute and install programs on VMware ESX. See the VMware ESX documentation for more information.
  4. In the upload folder, add execution rights to the package, by typing:  

```
chmod 755 upp-linux-xx.xx.xxxx-1.i386.
```

**Note:** If you store the installation file on the shared vmfs resources in a SAN, when you start the installer you might have an error message  
`./upp-linux-xx.xx.xxxx-1.i386: cannot execute binary file`. Copy the installation source onto the local drive of the ESX server to resolve this message.

5. Install IBM UPS Power Protector by typing the following command:

```
./upp-linux-xx.xx.xxxx-1.i386.run -install -silent
```

To configure a personalized package, see the *IBM UPS Power Protector User's Guide*.

6. Connect to IBM UPS Power Protector by typing one of the following addresses in your web browser:

```
http://<@IP-or-name-of-ESX>:4679/(for HTTP access)
```

```
https://<@ IP-or-name-of-ESX>:4680/(for HTTPS access)
```



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## Chapter 4. Using UPS Power Protector

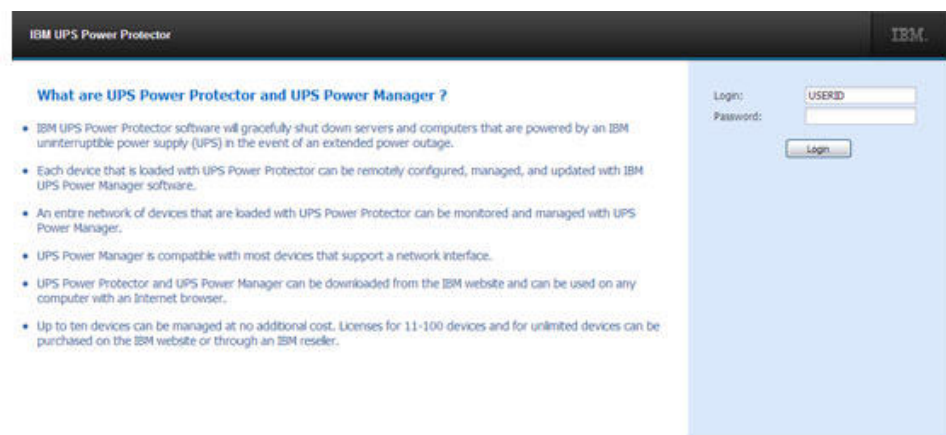
After installing UPS Power Protector, complete the steps in this chapter to use UPS Power Protector, or see the *IBM UPS Power Protector User's Guide*.

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### Step 1 (access)

For remote access, complete the following steps:

1. Type one of the following URLs in a web browser:  
`https://<name or IP address of Server hosting IBM UPP>:4680/`  
`http://<name or IP address of Server hosting IBM UPP>:4679/`
2. In SSL mode, accept the certificate by clicking **Yes**.
3. Enter USERID as **Login** and passw0rd as the **Password** and click on **Login**.




---

### Step 2 (configuration)

The following are the two types of scans that can be performed:

- Using the Quick scan operation, you will discover the following:
  - Serial line connected UPSs (RS232 or USB) - The discovered UPS connected through RS232 or USB is automatically assigned as the power source. (The

Status icon is green  .)

**Note:** When started, the application automatically performs a Quick scan.

- Networked UPSs through broadcast within a few seconds (network management cards). The discovered UPSs connected through the network are not automatically assigned as the power source. (You have to select the

node and click **Set as Power Source**. The icon becomes green  .)

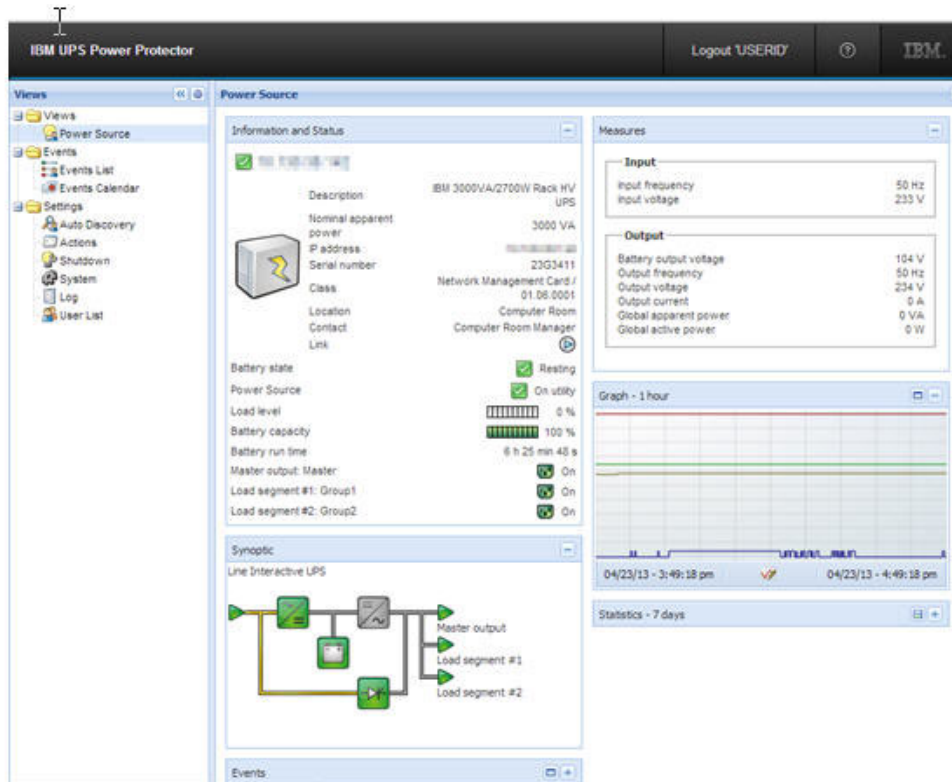
The discovered nodes are displayed by selecting **Settings → Auto Discovery**.

- Range scan: The Range scan operation discovers the nodes that are outside of the network segment and nodes that are not compatible with the Quick scan feature. In the **Settings → Shutdown** page, assign the IP address of the UPS that powers the local computer. In the **Settings → User List** page, assign the access rights through the login and password.

## Step 3 (operation)

Click **Views** → **Power Source** to monitor the current state of the UPS that powers the server that is running IBM UPS Power Protector.

Click **Events** → **Event List** to view the device events.





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## Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. Use this information to obtain additional information about IBM and IBM products, determine what to do if you experience a problem with your IBM system or optional device, and determine whom to call for service, if it is necessary.

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### Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Check for updated firmware and operating-system device drivers for your IBM product. The IBM Warranty terms and conditions state that you, the owner of the IBM product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your IBM service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
- If you have installed new hardware or software in your environment, check <http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/> to make sure that the hardware and software is supported by your IBM product.
- Go to <http://www.ibm.com/supportportal/> to check for information to help you solve the problem.
- Gather the following information to provide to IBM Support. This data will help IBM Support quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.
  - Hardware and Software Maintenance agreement contract numbers, if applicable
  - Machine type number (IBM 4-digit machine identifier)
  - Model number
  - Serial number
  - Current system UEFI and firmware levels
  - Other pertinent information such as error messages and logs
- Go to [http://www.ibm.com/support/entry/portal/Open\\_service\\_request/](http://www.ibm.com/support/entry/portal/Open_service_request/) to submit an Electronic Service Request. Submitting an Electronic Service Request will start the process of determining a solution to your problem by making the pertinent information available to IBM Support quickly and efficiently. IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that

contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

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## Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/supportportal/>. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

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## Getting help and information from the World Wide Web

On the World Wide Web, up-to-date information about IBM systems, optional devices, services, and support is available at <http://www.ibm.com/supportportal/>. The address for IBM System x<sup>®</sup> information is <http://www.ibm.com/systems/x/>. The address for IBM BladeCenter<sup>®</sup> information is <http://www.ibm.com/systems/bladecenter/>. The address for IBM IntelliStation<sup>®</sup> information is <http://www.ibm.com/systems/intellistation/>.

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## How to send Dynamic System Analysis data to IBM

Use the IBM Enhanced Customer Data Repository to send diagnostic data to IBM. Before you send diagnostic data to IBM, read the terms of use at <http://www.ibm.com/de/support/ecurep/terms.html>.

You can use any of the following methods to send diagnostic data to IBM:

- **Standard upload:** [http://www.ibm.com/de/support/ecurep/send\\_http.html](http://www.ibm.com/de/support/ecurep/send_http.html)
- **Standard upload with the system serial number:** [http://www.ecurep.ibm.com/app/upload\\_hw](http://www.ecurep.ibm.com/app/upload_hw)
- **Secure upload:** [http://www.ibm.com/de/support/ecurep/send\\_http.html#secure](http://www.ibm.com/de/support/ecurep/send_http.html#secure)
- **Secure upload with the system serial number:** [https://www.ecurep.ibm.com/app/upload\\_hw](https://www.ecurep.ibm.com/app/upload_hw)

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## Creating a personalized support web page

At <http://www.ibm.com/support/mynotifications/>, you can create a personalized support web page by identifying IBM products that are of interest to you. From this personalized page, you can subscribe to weekly email notifications about new technical documents, search for information and downloads, and access various administrative services.

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## Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with your IBM products. For information about which products are supported by Support Line in your country or region, see <http://www.ibm.com/services/supline/products/>.

For more information about Support Line and other IBM services, see <http://www.ibm.com/services/>, or see <http://www.ibm.com/planetwide/> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

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## Hardware service and support

You can receive hardware service through your IBM reseller or IBM Services. To locate a reseller authorized by IBM to provide warranty service, go to <http://www.ibm.com/partnerworld/> and click **Find Business Partners** on the right side of the page. For IBM support telephone numbers, see <http://www.ibm.com/planetwide/>. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

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## IBM Taiwan product service

台灣 IBM 產品服務聯絡方式：  
台灣國際商業機器股份有限公司  
台北市松仁路 7 號 3 樓  
電話：0800-016-888

IBM Taiwan product service contact information:

IBM Taiwan Corporation  
3F, No 7, Song Ren Rd.  
Taipei, Taiwan  
Telephone: 0800-016-888



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## Important notes

Processor speeds indicate the internal clock speed of the microprocessor; other factors also affect application performance.

CD drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity may vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives available from IBM.

Maximum memory might require replacement of the standard memory with an optional memory module.

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