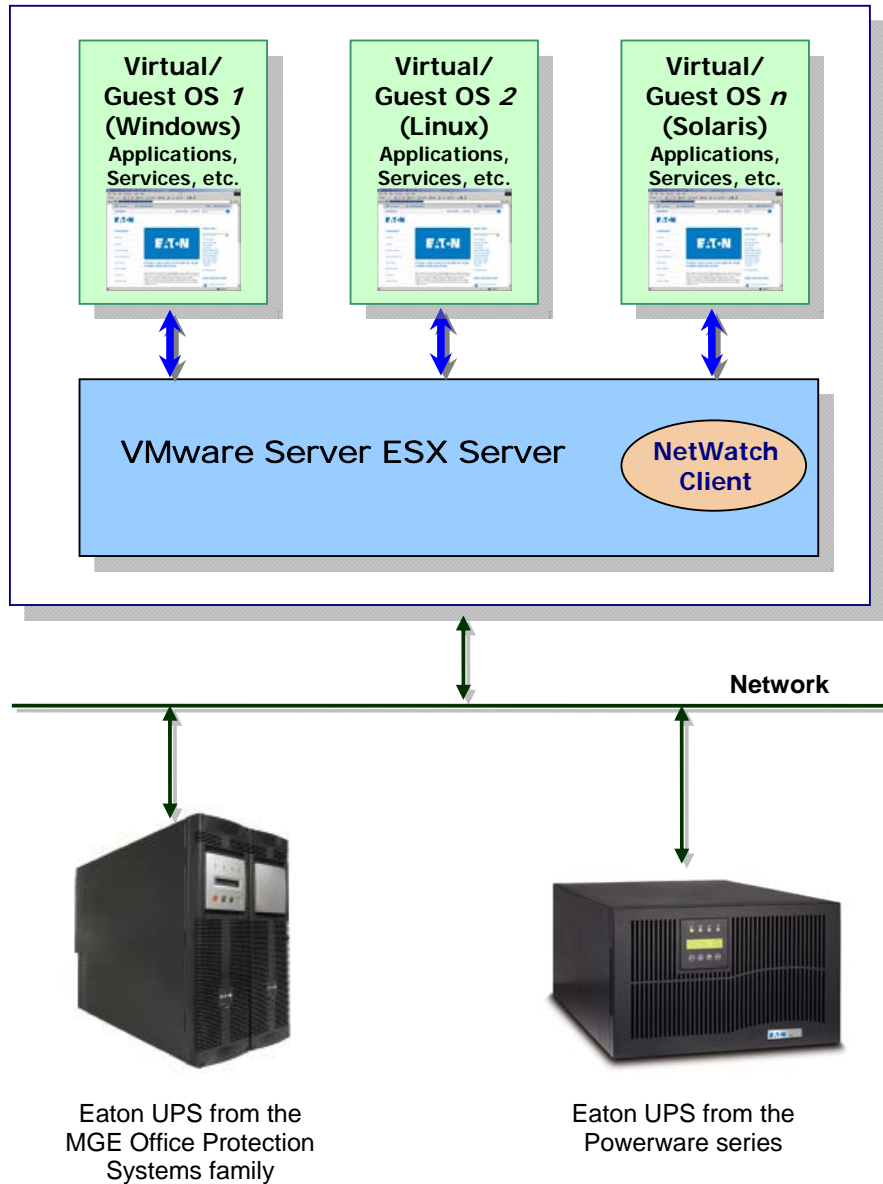


VMware ESX server host and guest operating systems architecture



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1 Introduction

This guide provides information about installing and configuring NetWatch client on a VMware® server. This section will give you brief introduction to the NetWatch software. For more detailed information about NetWatch, please refer the release notes and help documents.

Eaton® NetWatch allows you to connect to a server or workstation via network connection cards—ConnectUPS SNMP/Web adapter or MGE Network Management Card (NMC)—via a UDP network connection. The server or workstation on which NetWatch is installed will become a client of the SNMP/WEB adapter or the Network Management Card. The NetWatch client will be notified of power events or UPS alerts. The NetWatch client can be configured either to allow messaging for information purposes or to begin an orderly shutdown of the client computer to avoid a crash in the event of power failures which could extend beyond the normal runtime of the UPS batteries.

VMware ESX controls shutdown and restart functions directly from the administration console, or from an application hosted on the ESX layer. To properly function with VMware ESX, install Eaton NetWatch Client only on host operating system. Shutdown of the guest and host machines will be controlled accordingly.

The benefits to installing NetWatch client on the VMware layer instead of each client machine include:

1. Only one copy of binary code of NetWatch client is required on the physical machine to manage all virtual machines.
2. Dynamic management of virtual machines will be configured, sequential shutdown of virtual machines results in a catastrophic power disruption.

This guide will help to install and configure NetWatch client on VMware ESX Server.

NetWatch client is tested on VMware virtualization server with two guest operating systems for electrical power events, shutdown, low battery and reboot.

2 Installation

The following sections will guide you through the installation process of NetWatch VMware ESX architecture to allow electric continuity.

2.1 Prerequisites

The following are prerequisites:

1. VMware ESX Server Machine with Host having 20 MB free space
2. VMware Infrastructure client installed on different machine.
3. NetWatch 5.0 Installer
4. SSH client like putty for installation and configuration
5. SCP Client like WinSCP to upload packages to VMware ESX server

2.1.1 VMware ESX Server configuration

- For the automatic OS boot on startup:
- Configure the physical machine to allow automatic OS boot on startup using your machine's BIOS. For further information, see specific technical hardware documentation.

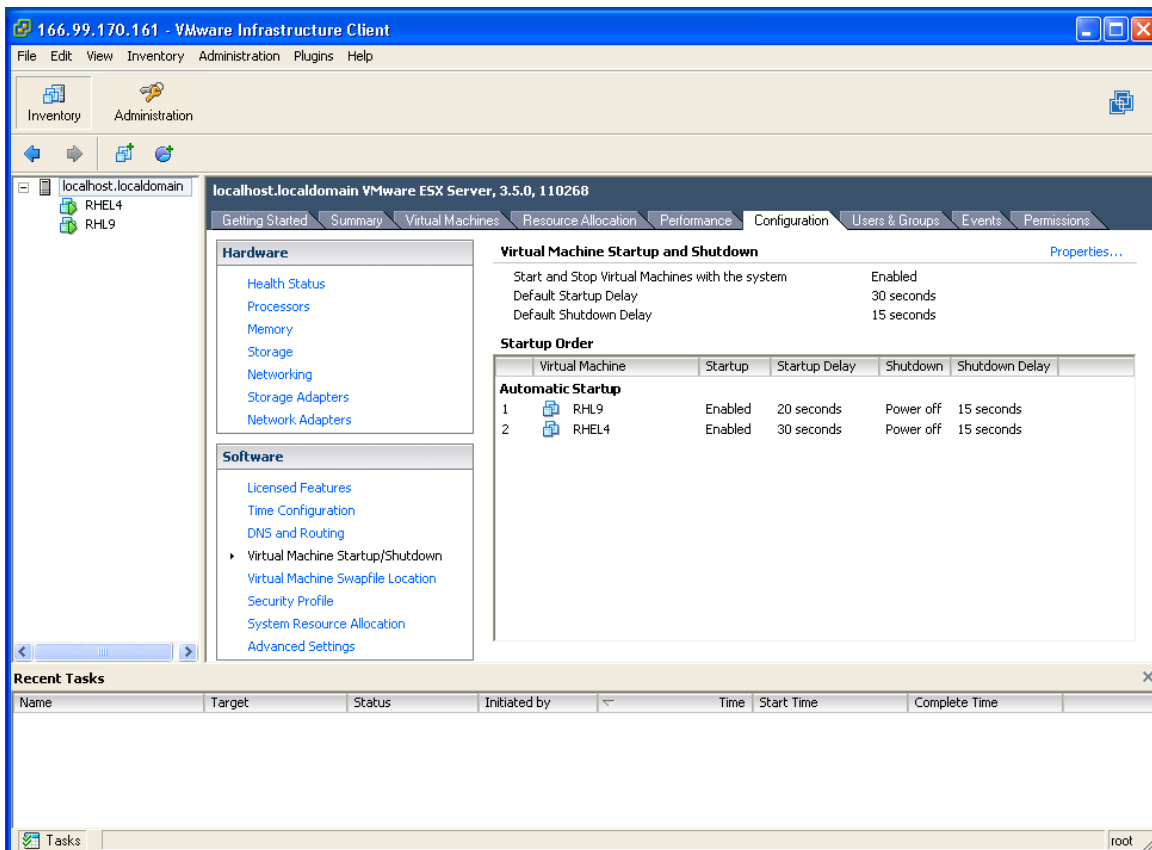
- To allow interactions between physical and virtual machines, VMware tools have to be installed on each virtual machine. For further information, see VMware ESX Server documentation.

- For the automatic virtual machine boot on VMware ESX startup:
From the Virtual Infrastructure Client interface, go in the "Virtual machine startup / shutdown" menu → "Configuration" → "Properties" → "Start and stop VMs with the system", and tick "enable."

Note: In the « Properties... » page, you also have the possibility to 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 illustrated on the following screenshot:



2.1.2 Network architecture

All hardware elements must have an operational network configuration that allows them to dialog freely with each other. NetWatch client use UDP for communication with UPS.

Enable the following UDP ports on the ESX server Firewall

- For Eaton UPSs from the Powerware® series, open ports 200, 2844 if you want to go with default Eaton Port or Port. For more information see the Advanced Port Setting option in the NetWatch help file
- For Eaton UPSs from the MGE Office Protection Systems™ family, UPS Connections on UDP port 4679 and 4680 need to be to open for NetWatch communication with UPS
- Example:

For NMC Cards

```
esxcfg-firewall -o 4679,udp,in,NetWatch
```

```
esxcfg-firewall -o 4680,udp,in,NetWatch
```

For ConnectUPS SNMP Cards

```
esxcfg-firewall -o 200,udp,in,NetWatch
```

```
esxcfg-firewall -o 2844,udp,in,NetWatch
```

```
esxcfg-firewall -o 2845,udp,in,NetWatch
```

```
esxcfg-firewall -o 200,udp,out,NetWatch
```

```
esxcfg-firewall -o 2844,udp,out,NetWatch
```

```
esxcfg-firewall -o 2845,udp,out,NetWatch
```

To configure your **VMware ESX Server** for the network, please refer to the user manual.

2.2 Installation

Follow the steps below to obtain the latest version of NetWatch from the Eaton Web site and then to properly install it on your VMware ESX host environment.

1. Access Eaton software downloads.
2. From the www.powerware.com/software/downloads.asp, click on Powerware NetWatch Software Version 5.0.0.
3. A screen will appear showing Eaton Corporation End User License; read and accept the license agreement.
4. A registration screen appears after the license agreement is accepted. Fill in the details and click Save and continue.
5. The download NetWatch Client Shutdown software screen appears next. Locate and download the .tar file for the Linux operating system.
6. Upload the package on your VMware ESX host environment, with an SCP Client (Example under windows environment : WinSCP)
7. Connect with SSH to the VMware server (Example under Windows environment: Putty). You must have corresponding rights to execute and install programs on VMware ESX. Refer to VMware ESX for further information.
8. In the upload folder, add execution right to the package, by typing:

```
chmod 755 NetWatch_500.tar.
```
9. Untar install script by following command

```
./tar xvf NetWatch_500.tar install.sh
```
10. Install NetWatch by typing :

```
./install.sh
```

Select appropriate installation options. NetWatch will install on the system.

3 Appendix

3.1 References

- For installation of NetWatch please refer to the following link:
http://www.powerware.com/software/NetWatch_help/index.htm
- References documents for VMware ESX Server are available on VMware Web site:
http://www.VMware.com/support/pubs/vi_pubs.html
- References documents for VMware tools are available in Installation des VMware tools : « Basic System Administration ESX Server 3.0.1 and Virtual Center 2.0.1 » manual, chapter « Installing and Upgrading VMWare Tools”

3.2 Complementary information

VMware ESX server 3.5 Configuration

In the event of a power disruption reaching a critical battery backup level, NetWatch will start to execute the shutdown.sh script file. The script file will execute with the following steps.

1. It will check number of guest operating systems running on that server.
2. Start sequential shutdown of guest operating systems, with 2 seconds duration between each guest operating system shutdown.
3. After all guest operating systems are down start shutdown of the host server.

Modification of shutdown.sh may be required to configure proper guest operating system and host shutdown using NetWatch.

The following script will get installed which is present where NetWatch (default directory is /usr/Powerware/NetWatch) directory with shutdown.sh file. To shutdown virtual machines in the order detailed in VIC, you have to edit and customize shutdown.sh and the “stopVMware” function:

```
# Customisable VMware ESX shutdown
stopVMware()
{
  # Test if we have a VMware ESX v3 setup
  if [ -x /usr/bin/VMware ]
  then
    ESXV3=`/usr/bin/VMware -v | grep "ESX Server 3" `
    if [ -n "$ESXV3" ]
    then
      # Get the VM list
      VMLIST=`/usr/bin/VMware-cmd -l`

      for VM in $VMLIST
      do
        # Get the VM state
        VMSTATE=`/usr/bin/VMware-cmd "$VM" getstate -q`

        # Guest OS shutdown if VMSTATE is equal to "on"
        if [ "$VMSTATE" == "on" ]
        then
```

```
        /usr/bin/VMware-cmd $VM stop trysoft
        # delay a bit the next sequence
        sleep 2
    fi
done
# Delay for 1 minute to give the VMs more time
# to cleanly shutdown
sleep 60
fi
fi
}
```

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