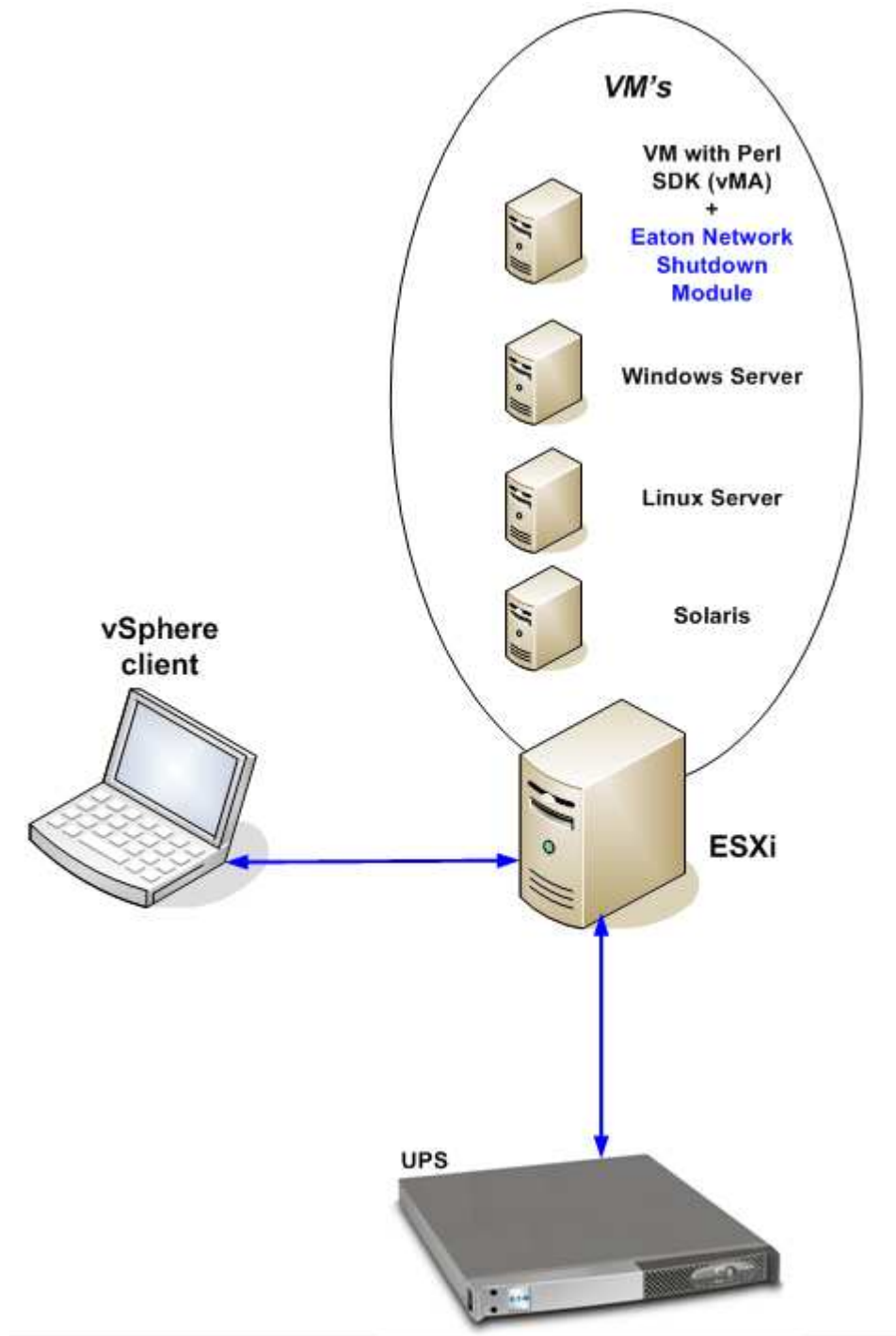


# Network Shutdown Module V3

User manual extension for VMware ESXi virtual architecture



## Revision History

Revision	Description
24FEV2010	Change Shutdown Script

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# 1 Introduction

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EATON is a world first class supplier of hardware and software to optimize business continuity on your VMware virtual platforms. It means controlling proper boot and shutdown of the virtual machines hosted on a same physical machine, assuring data integrity on each virtual machine.

Network Shutdown Module is EATON' solution to automate various data security functions. It:

- Continuously waits for information from the Mgt. Proxy or Mgt. Card connected to the EATON UPS.
- Warns administrators and users if AC power fails
- Proceeds system shutdown before the end of battery backup power is reached.
- Restarts machines when AC power restarts.

VMware® ESXi does not have administrative console and hence we cannot install Network Shutdown Module (NSM) on that machine. However We can install NSM on VMware Infrastructure Management Assistant VIMA 1.0 or on vSphere Management Assistant(vMA 4.0). Using that we can manage and shutdown the VMware ESXi in case of UPS and power anomalies. We can also configure ESXi to safely suspend or shutdown guest operating system. This way we can have only one NSM shutdown agent on only one guest operating system (VIMA, vMA).

There are various benefits to install NSM client on the VIMA, vMA instead of each Virtual Machine:

- Only one binary of NSM client on the VIMA/ vMA to manage all Virtual Machines.
- Dynamic management of virtual machines configuration with a personalized script.

This guide will help to install and configure NSM client on VIMA, vMA.

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

EATON tested virtualization security in a standalone power supply configuration, for system shutdown, electrical shutdown, and reboot.

## 2 Installation

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This guide provides information about installing and configuring NSM on VIMA or vMA. These recommendations guide you through the installation process of NSM as a shutdown agent for VMware ESXi architecture to allow electric continuity.

### 2.1 Prerequisites

The following are prerequisites:

1. VMware ESX/ESXi Server Machine
2. Virtual Machine with vSphere SDK for Perl (vSphere Management Assistant , or other Linux or Windows Platforms supported by VMware)
3. vSphere Client
4. NSM Package
5. SSH client like putty for installation and configuration
6. SCP Client like WinSCP to upload packages to VIMA/vMA.

#### 2.1.1 vSphere SDK for Perl

Please visit <http://www.vmware.com/support/developer/viperltoolkit/> for more information about download and installation of vSphere SDK for Perl.

#### 2.1.2 VIMA/vMA installation

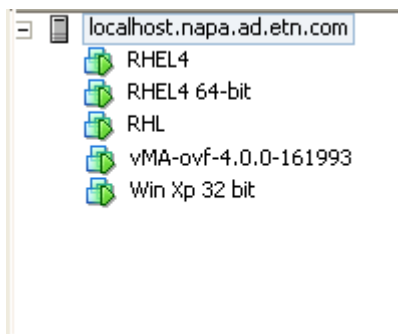
Please visit <http://www.vmware.com/support/developer/vima/> for more information about download and installation of VIMA or vMA on ESXi host machines.

#### 2.1.3 VMware ESXi configuration

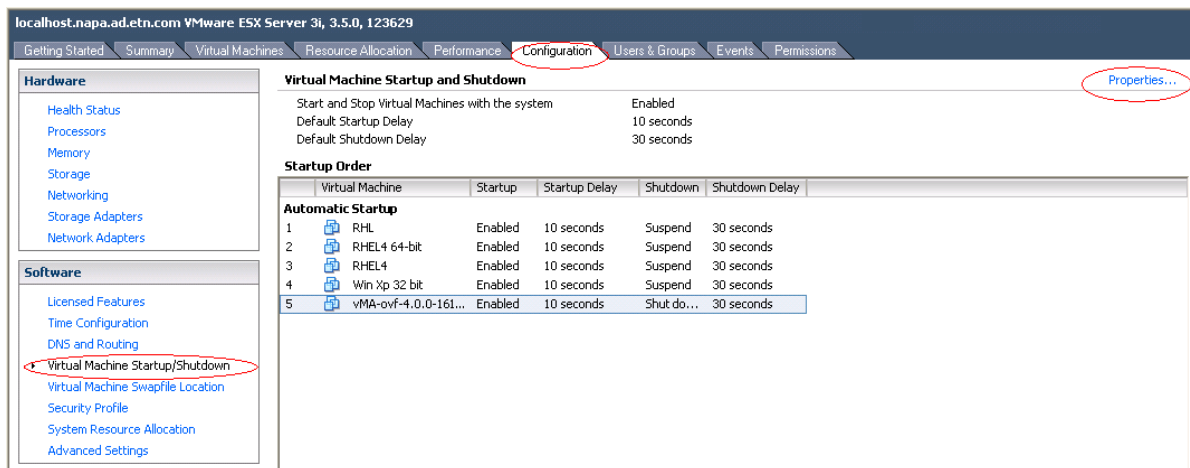
- For the automatic OS boot on startup: you must configure the physical machine to allow automatic OS boot on startup. This setting is present in your machine's BIOS. For further information, see specific technical hardware documentation.
- To allow interactions between physical and virtual machines, VMware tools have to be installed on each virtual machine. For further information, see VMware ESXi Server documentation.
- You can configure the automatic startup and shutdown properties of guests operating systems as per requirement. **But to work NSM properly, VIMA/vMA needs to be configured as**
  - Automatic Shutdown of VIMA/vMA when ESXi host is going down and
  - Automatic Startup of VIMA/vMA when ESXi host is starting

**Following procedure will explain about configuration of VIMA/vMA shutdown and startup properties**

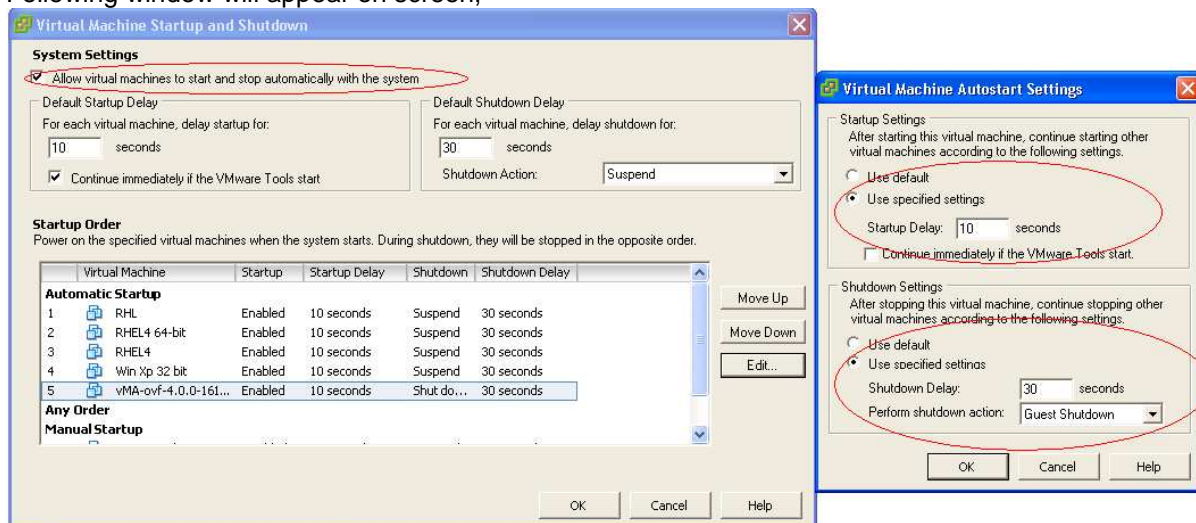
From the Virtual Infrastructure Client interface select topmost item ESXi host server from left hand side tree hierarchy, go in the



1. Select "Configuration" tab
2. Select "Virtual machine startup / shutdown" menu -> Click "Properties" present in right hand corner



Following window will appear on screen,



Select VIMA/vMA guest machine and click on edit button and configure as shown above

Startup Settings  
 Click Use specified settings  
 Startup delay – 10 Seconds

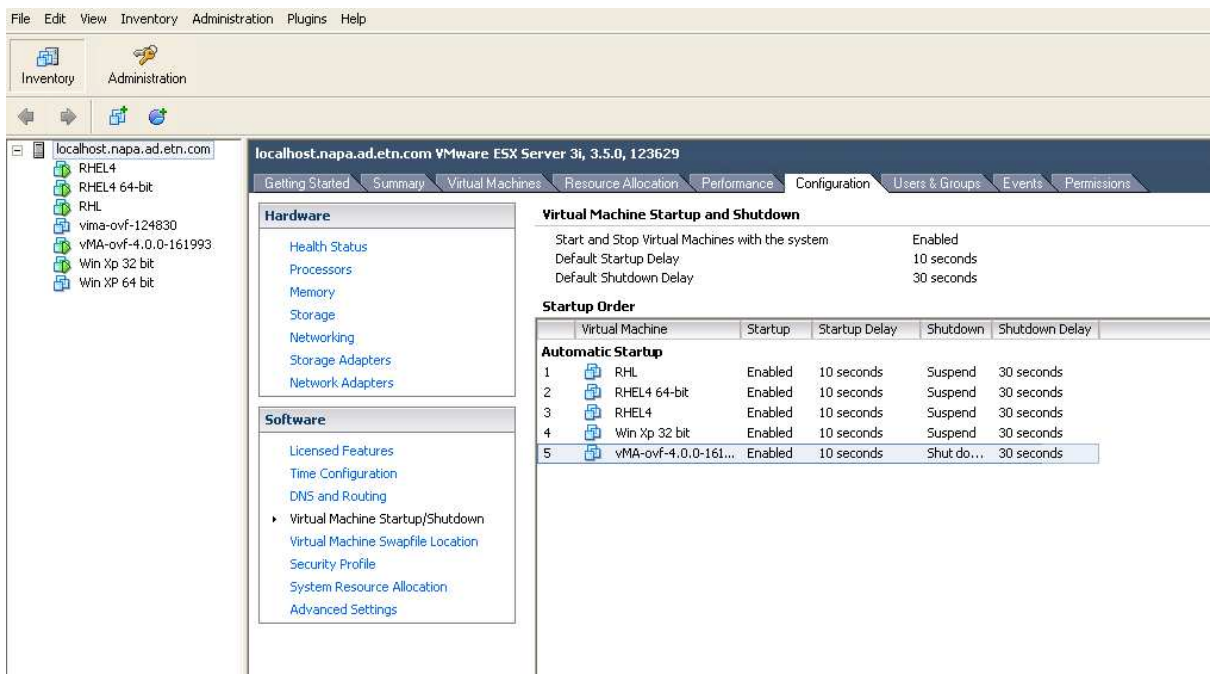
Shutdown Settings  
 Click Use specified settings  
 Shutdown delay – 30 seconds

- For the automatic virtual machine boot of other guest machines on VMware ESXi start-up: 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:



## 2.1.4 Eaton hardware architecture

The prerequisites for Network Shutdown Module V3 installation are described in the "Network Shutdown Module V3 – User Manual" chapter: "Installation Prerequisites". (<http://download.mgeops.com/>) For UPS systems compatibility, please refer to the chapter "Appendix -> Compatibility List"

### 2.1.5 Network architecture

All hardware elements must have an operational network configuration that allows them to dialog freely with each other.

**Make sure in particular that the Virtual Machine firewall with NSM software authorises:**

- connections on tcp port **4679** and **4680** to enable a remote access for supervision and configuration through Web Browser. These ports are reserved at IANA (<http://www.iana.org>).
- Connections through TCP port **80**. It must be opened as a destination port (for output) on the machine hosting Network Shutdown Module. (To enable communication between Network Shutdown Module and Network Management Card)
- Example on the vMA:  
iptables -I OUTPUT -p tcp --dport 80 -j ACCEPT  
iptables -I OUTPUT -p tcp --dport 5000 -j ACCEPT  
iptables -I INPUT -p tcp --dport 4679 -j ACCEPT  
iptables -I INPUT -p tcp --dport 4680 -j ACCEPT  
iptables -I INPUT -p udp --dport 4679 -j ACCEPT  
iptables -I INPUT -p udp --dport 4680 -j ACCEPT
- Save firewall settings using following command  
service iptables save

To configure your **VMWare ESXi Server** for the network, please refer to the user manual.

## 2.1.6 Installation

Download on EATON's website the latest version of Network Shutdown Module Console version. This shutdownESXi.pl script will be installed at <installation folder>/bin/tools, by default /usr/local/EATON/NetworkShutdownModule/bin/tools , this script use the VMware API and must have the vSphere SDK for Perl to work.

- Download the latest version of Network Shutdown Module v3, available on EATON's website, in downloads section "EATON Power Management Software Suite (Solution-Pac 2)":  
<http://powerquality.eaton.com/Support/Software-Drivers/default.asp>

Then:

```
> select "Network solution".
> select Linux as Operating System
> download Linux version for ESXi, known as: « Network Shutdown Module Linux x86 Console «Network Shutdown Module Linux x86_64 Console», named « nsm_linux_x86_64_cli_3_xx_xx.run».
```

- Upload the package on your VIMA/vMA environment, with a SCP Client (Example under windows environment : WinSCP)
- Connect with SSH to the VMware server (Example under Windows environment: Putty). You must have corresponding rights to execute and install programs on VIMA/vMA. Refer to VMware ESXi for further information.
- In the upload folder, add execution right to the package, by typing:  

```
chmod 755 nsm_linux_x86_64_cli_3_xx_xx.run
```

**Note:** If you store the installation file on the shared vmfs resources in a SAN.

When you start the installer you could have an error messages

```
"/nsm_linux_x86_64_cli_3_xx_xx.run: cannot execute binary file".
```

Solution: copy the installation source onto the local drive of the ESX server

- Note: If you are not the root user when you start the installer you will be asked for a password:  

```
./nsm_linux_x86_64_cli_3_xx_xx.run
```

Password:

**Solution:** Enter "sudo -s" to get a root console and run the installer again.
- Install Network Shutdown Module by typing:  

```
./nsm_linux_x86_64_cli_3_xx_xx.run -install -silent
```

To configure a personalized package, please refer to Network Shutdown Module v3 manual.

- At the end, connect to Network Shutdown Module using your web browser by typing :  

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

```
https://<@ IP-or-name-of-vMA>:4680/eaton/ (For a HTTPS access)
```
- You are now in front of Network Shutdown Module v3 interface:



**Supervision**

- Status
- Log

**Configuration**

- Power devices
- Users
- System
- Shutdown
- Actions (advanced)

**Other**

- Packaging
- Upgrade

**About**

- Network Shutdown Module

**Information on the protected server**

Server name / IP address	localhost / 127.0.0.1
Operating system	Linux
Contact / Location	

**Information on the power device supplying the protected server**

- In the menu, click on the **Configuration → Power devices** item, Enter the default Login «admin» and default Password «admin»
- Then click on the Add button and Enter the IP address of the Network Management Card (or Proxy).
- Save your configuration
- Configure your password (recommended)
- In **Configuration -> System**, select the option: **Enable only TCP mode**
- Save your configuration
- For the multi ups configurations, please refer Network Shutdown Module manual.

### 2.1.7 NSM configuration for VMware ESXi

- In the menu, click on the **Configuration → Access(advanced)** item, Enter the default Login «admin» and default Password «admin»
- Click on System shutdown from Action list and then click on Settings.
- In action parameters provide the following values

```
../bin/tools/shutdownESXi.pl --server $@IPorName --username $USERNAME --password $PASSWORD
```

1. \$@IPorName : is the IP or the name of the ESXi that you will shutdown
  2. \$USERNAME: is the username of an administrator's user on the ESXi that have the right to shutdown the server
  3. \$PASSWORD: is the password of the administrator's user
- Save your configuration using Save changes(s) button

## 3 Appendix

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### 3.1 References

- « Network Shutdown Module v3 user manual » : downloadable from [www.download.mgeops.com](http://www.download.mgeops.com), « download » section → « Software » → « Solution-Pac 2 » → « Network solution »
- References documents for VMware ESX Server are available on VMware website : <http://www.vmware.com/support/>
- Please visit <http://www.vmware.com/support/developer/viperltoolkit/> for more information about download and installation of vSphere SDK for Perl.
- Please visit <http://www.vmware.com/support/developer/vima/> for more information about download and installation of VIMA or vMA on ESX/ESXi host machines.