



## Purpose

This document describes how to use Nagios XI to monitor VMware ESX, ESXi, vSphere, and vCenter Server with the VMware monitoring wizard. This document will show you how to set up your Nagios XI system to monitor virtual machines (VMs) deployed on these products.

## Target Audience

This document is intended for use by Nagios XI administrators who are familiar with VMware's virtualization products and know how to install and configure software on Linux servers.

## Installation Overview

In order to monitor VMware with Nagios XI, you will need to:

- Install the prerequisites for the VMware SDK
- Install the VMware Perl SDK on the Nagios XI server

**Warning:** The Perl SDK has ceased to be maintained by VMware. Therefore, newer operating system versions (i.e. CentOS Stream 9) are not compatible with this procedure. We are working on a replacement wizard which will be available soon.

**Important Note:** You must download and install VMware SDK version 7.0 if you are installing on a RHEL/CentOS 8 system. For all other supported OS distributions, we recommend downloading and installing VMware SDK version 6.5.

## Install SDK Prerequisites

The VMware Perl SDK requires installation of Perl modules and defining relevant environment variables. Some of the Perl modules are installed using CPAN. This command may ask you questions to proceed; normally pressing enter is enough to accept the default response.

Establish a terminal session to your Nagios XI server as the root user and execute the following commands:

**RHEL 7.x | CentOS 7.x | Oracle Linux 7.x**

```

yum install -y libxml2-devel xml2 libuuid-devel perl-XML-LibXML perl-Env
export PERL_MM_USE_DEFAULT=1
cpan -i App::cpanminus
cpanm --notest Module::Build Crypt::SSLeay
cpan -i Nagios::Monitoring::Plugin Nagios::Monitoring::Plugin::Functions

```

You can now proceed to the [Installing VMware SDK](#) section.

## RHEL 8.x+ | CentOS Stream | Oracle Linux 8.x+

```

yum install -y libxml2-devel libxml2 libuuid-devel perl-XML-LibXML perl-Env
export PERL_MM_USE_DEFAULT=1
cpan -i App::cpanminus
cpanm Crypt::SSLeay --dev
cpan -i Nagios::Monitoring::Plugin Nagios::Monitoring::Plugin::Functions

```

You can now proceed to the [Installing VMware SDK](#) section.

## Ubuntu

```

apt-get update
apt-get install -y libxml-libxml-perl libxml2-dev xml2 uuid-dev perl-doc rpm libsoap-lite-perl

```

You can now proceed to the [Installing VMware SDK](#) section.

## Debian

Debian is not officially supported by the VMware Perl SDK, however there is a work-around. Simply creating a `fake-release` file fools the installer into thinking it is Ubuntu (first step below).

```
echo ubuntu > /etc/fake-release
```

```
apt-get update
apt-get install -y libxml-libxml-perl libxml2-dev xml2 uuid-dev perl-doc rpm libsoap-lite-perl
```

You can now proceed to the [Installing VMware SDK](#) section.

## Installing VMware SDK

Nagios XI is not able to pre-bundle the VMware Perl SDK due to license terms, so you will need to download and install the SDK on the Nagios XI server yourself. You can download the VMware Perl SDK from VMware's website at the following address:

<https://code.vmware.com/web/sdk/7.0/vsphere-perl>

Download the .tar.gz SDK file that is appropriate for your Nagios XI server, either i386 or x86\_64. Once downloaded, transfer it to the Nagios XI server via SFTP. You can use Putty(sftp), Filezilla, or your desired transfer program. This guide assumes the file is transferred to the /tmp directory on the Nagios XI server.

**Important:** There have been some issues with SDK 6.7. For all non-RHEL/CentOS 8 systems, we recommend downloading SDK 6.5 instead. If you are installing on a RHEL/CentOS 8/Oracle Linux 8 system, you must download SDK 7.0.

### Extract Installer

Execute the following commands to extract the SDK on your Nagios XI server:

```
cd /tmp
tar xzf VMware-vSphere*SDK*.tar.gz
cd vmware-vsphere-cli-distrib/
```

### Install SDK

Execute the following commands to install the SDK on your Nagios XI server:

```
./vmware-install.pl EULA_AGREED=yes
```

The installation may require some Perl modules to be installed using CPAN and you will need to answer `yes` to proceed. Any other prompts such as the location for the executable files will accept the default location by pressing **Enter**.

The install shouldn't take very long. It will be complete when you see the "Enjoy, --the VMware team" message. You can ignore any messages about Perl modules being too old, normally they do not cause an issue.

**NOTE:** If you are installing the SDK on RHEL 9 / CentOS Stream 9, you will need to run the following command after installing the SDK:

```
ln -s /usr/lib/vmware-vcli/VMware/share/VMware /usr/share/perl5/VMware
```

### Additional Steps For RHEL 8+/CentOS Stream and Debian

Run the following command to fix an SDK issue:

```
mv /usr/bin/six.pyc /usr/bin/six.pyc.bak
```

Update the following file : `/usr/share/perl5/VMware/VICCommon.pm` (El 8) or `/usr/share/perl/<perl version number>VMware/VICCommon.pm` (Debian 10)

Change this line:

```
#To remove SSL Warning, switching from IO::Socket::SSL to Net::SSL
# $ENV{PERL_NET_HTTPS_SSL_SOCKET_CLASS} = "Net::SSL";
```

To the below to fix an issue with invalid certificates:

```
#To remove SSL Warning, switching from IO::Socket::SSL to Net::SSL
$ENV{PERL_NET_HTTPS_SSL_SOCKET_CLASS} = "Net::SSL";
```

Now that the VMware SDK is installed, you can proceed to run the VMware wizard.

## Using The VMware Wizard

To begin using the VMware wizard navigate via the top menu bar to **Configure > Run a configuring wizard**, and select the **VMware** wizard. In the following screenshot you can see how the search field allows you to quickly find a wizard.

**Nagios XI** Home Views Dashboards Reports **Configure** Tools Help Admin

**Configuration Wizards - Select a Wizard**

Start monitoring your infrastructure in minutes. Configuration wizards guide you through the process of setting up your devices, servers, applications, services, and more in Nagios XI. Select the appropriate wizard below to get started.

Show: VMware

**VMware**  
Monitor a VMware host or guest VM.

Get More Wizards

On Step 1 you will need to select the **Monitoring Mode**:

### Monitor the VMware host

- This allows you to monitor the ESX / ESXi host.
- On step 1 you will need to provide the address, username and password for the ESX / ESXi host.
- The options on step 2 will allow you to monitor the CPU Usage, Datastore Usage, Input/Output, Memory, Networking, Services and VM Status.

### Monitor a guest VM on the VMware host

- This is for monitoring the virtual machines (VM or also called guests).
- The options on step 2 will allow you to select which VMs you want to monitor. You will have the choice of monitoring the the CPU Usage, Input/Output, Memory, Networking and VM Status for all the VMs you choose to monitor.
- On Step 2 you will need to provide the address, username and password for the ESX / ESXi host OR the vCenter server (if you have one).
- ESX(i) host vs vCenter Server:
  - When you have a vCenter server, it provides the ability to communicate to all the VM's in the environment
  - Providing credentials for a vCenter server on step 1 will allow you to monitor ALL of the VMs in the

environment. This means that you don't need to provide credentials for each ESX(i) host (you don't need to run the wizard for each ESX(i) host). In addition to this, if a VM is migrated from one ESX(i) host to another there is no configuration steps required, vCenter knows which ESX(i) host the VM is running on.

- Providing credentials for an ESX(i) host on step 1 will allow you to monitor ALL of the VMs on that specific ESX(i) host. This means that you will need to run the wizard for each ESX(i) host in your environment. In addition to this, if a VM is migrated from this ESX(i) host to another, you will need to go into Core Configuration Manager update the service definitions for that VM. If the ESX(i) host is a member of a vCenter DRS cluster, it is recommended to monitor the VM's using the vCenter address and credentials.

Because the wizard has two different monitoring modes, you will be shown the different options available when running the wizard.

## Monitor the VMware host

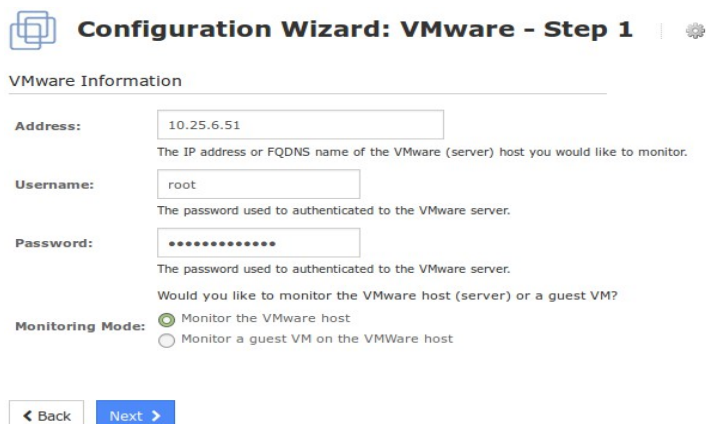
Enter the **Address**, **Username** and **Password** of your ESX / ESXi host.

Select **Monitor the VMware Host**.

Click **Next** to go to Step 2.

On step 2 you will configure all of the options for monitoring.

Make sure a valid **Host Name** has been



**Configuration Wizard: VMware - Step 1**

VMware Information

**Address:** 10.25.6.51  
The IP address or FQDNS name of the VMware (server) host you would like to monitor.

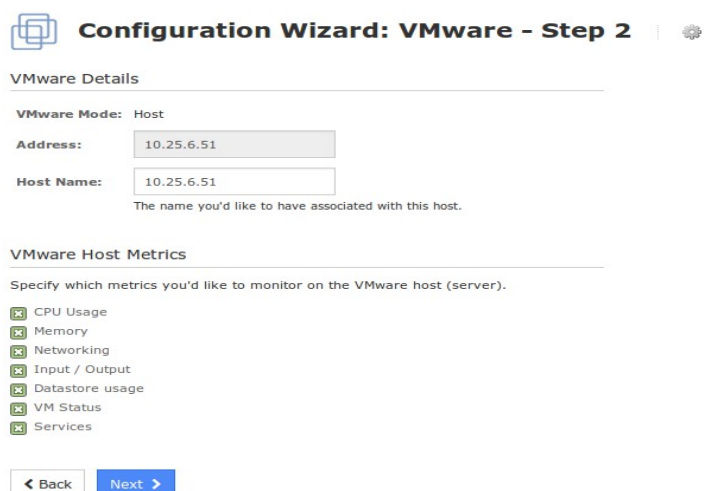
**Username:** root  
The password used to authenticated to the VMware server.

**Password:** .....  
The password used to authenticated to the VMware server.

Would you like to monitor the VMware host (server) or a guest VM?

**Monitoring Mode:** ☒ Monitor the VMware host  
☐ Monitor a guest VM on the VMWare host

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**Configuration Wizard: VMware - Step 2**

VMware Details

**VMware Mode:** Host

**Address:** 10.25.6.51

**Host Name:** 10.25.6.51  
The name you'd like to have associated with this host.

VMware Host Metrics

Specify which metrics you'd like to monitor on the VMware host (server).

- ☒ CPU Usage
- ☒ Memory
- ☒ Networking
- ☒ Input / Output
- ☒ Datastore usage
- ☒ VM Status
- ☒ Services

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entered.

Then select the VMware Host Metrics from the available list.

Once you've finished selecting the metrics, click Next and then complete the wizard by choosing the required options in Step 3 – Step 5.

To finish up, click on Finish in the final step of the wizard.

This will create the new hosts and services and begin monitoring.

Once the wizard applies the configuration, click the **View status details for xxxxx** link to see the new host and services that were created.

Host	Service	Status	Duration	Attempt	Last Check	Status Information
10.25.6.51	CPU Usage for VMHost	Ok	2h 31m 39s	1/5	2016-12-06 16:55:09	ESX3 OK - cpu usage=3019.00 MHz (14.41%)
	Datastore usage for VMHost	Ok	2h 29m 39s	1/5	2016-12-06 16:57:09	ESX3 OK - storages : Q02SP02T01L01=190499.00 MB (20.27%), Q02SP01T01L01=502915.00 MB (60.06%), Q01SP04T01L01=2040170.00 MB (72.71%), Q01SP03T01L01=1053760.00 MB (37.56%), Q01SP02T01L01=1155703.00 MB (62.09%), Q01SP01T01L01=651663.00 MB (79.97%)
	Input / Output for VMHost	Ok	2h 31m 4s	1/5	2016-12-06 16:55:51	ESX3 OK - io commands aborted=0, io bus resets=0, io read latency=0 ms, write latency=1 ms, kernel latency=0 ms, device latency=1 ms, queue latency=0 ms
	Memory for VMHost	Ok	2h 30m 45s	1/5	2016-12-06 16:56:12	ESX3 OK - mem usage=81867.98 MB (62.52%), overhead=0.00 MB, swapped=0.00 MB
	Networking for VMHost	Ok	2h 29m 27s	1/5	2016-12-06 16:57:18	ESX3 OK - net receive=5.00 KB/s, send=781.00 KB/s, 2/7 NICs are disconnected
	Services for VMHost	Ok	2h 31m 26s	1/5	2016-12-06 16:55:27	ESX3 OK - services : DCUI (up), TSM (up), TSM-SSH (up), lbtld (up), lwsmd (down), ntpd (up), pcscd (down), sfcdb-watchdog (up), snmpd (down), vmsyslogd (up), vprobed (down), vpxa (up), xorg (down)
	VM Status for VMHost	Ok	2h 29m 31s	1/5	2016-12-06 16:57:15	ESX3 OK - 26/180 VMs up, overall status=green, connection state=connected, maintenance=no, 105 health issue(s), 2 config issue(s)

## Monitor a guest VM on the VMware host

Enter the **Address**, **Username** and **Password** of your ESX / ESXi host **OR** vCenter Server. This example is using a vCenter Server.

Select **Monitor a guest VM on the VMware host**.


**Configuration Wizard: VMware - Step 1**

---

VMware Information

Address:   
 The IP address or FQDNS name of the VMware (server) host you would like to monitor.

Username:   
 The password used to authenticated to the VMware server.

Password:   
 The password used to authenticated to the VMware server.

Would you like to monitor the VMware host (server) or a guest VM?

Monitoring Mode: ☐ Monitor the VMware host ☒ Monitor a guest VM on the VMWare host

Click **Next** to go to Step 2.

On step 2 make sure a valid **Host Name** has been entered.

There are two tabs you need to select options on.

The **Monitored Metrics** tab is selected by default. Select the VMware Guest Metrics from the available list. A service for each metric will be created for each guest selected on the **Guest Selection** tab.

After selecting the required metrics click the **Guest Selection** tab.

On the Guest Selection tab a list of all the available guests on the ESX(i) host or vCenter server will be displayed.

Select which guests you want to monitor by checking the left hand check box. The **powered on** guests will automatically have the checkbox selected. Once you've finished selecting the metrics click Next and then complete the wizard by choosing the required options in Step 3 – Step 5.

To finish up, click on Finish in the final step of the wizard. This will create the new host and services and begin

**Configuration Wizard: VMware - Step 2**

VMware Details

VMware Mode: Guest

Address: 10.25.6.1

Host Name: 10.25.6.1  
The name you'd like to have associated with this host.

Monitored Metrics | Guest Selection

**VMware Monitored Metrics**

Select the metrics you'd like to monitor on each of the guests you select.

- ☒ CPU Usage
- ☒ Memory
- ☒ Networking
- ☒ Input / Output
- ☒ VM Status

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**Configuration Wizard: VMware - Step 2**

VMware Details

VMware Mode: Guest

Address: 10.25.6.1

Host Name: 10.25.6.1  
The name you'd like to have associated with this host.

Monitored Metrics | Guest Selection

**VMware Guest Selection**

Specify which guests you'd like to monitor on the VMware host (server).


<input type="checkbox"/> VM Name	IP Address	Current Status
<input type="checkbox"/> suse01	None Defined	Powered Off
<input checked="" type="checkbox"/> Windows 10 Development	10.25.14.10	Powered On
<input checked="" type="checkbox"/> dc01	10.25.14.51	Powered On
<input checked="" type="checkbox"/> dc02	10.25.14.52	Powered On
<input type="checkbox"/> ol01	None Defined	Powered Off

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monitoring.

Once the wizard applies the configuration, click the **View status details for xxxxx** link to see the new host and services that were created.

Host	Service	Status	Duration	Attempt	Last Check	Status Information
10.25.6.1 	dc01 CPU Usage	Ok	2h 48m 56s	1/5	2016-12-06 17:22:48	ESX3 OK - "dc01" cpu usage=95.00 MHz(2.72%) wait=19354.00 ms
	dc01 Input / Output	Ok	2h 47m 27s	1/5	2016-12-06 17:22:50	ESX3 OK - "dc01" io usage=0.04 MB, read=0.00 MB/s, write=0.04 MB/s
	dc01 Memory	Ok	2h 47m 16s	1/5	2016-12-06 17:22:54	ESX3 OK - "dc01" mem usage=3030.00 MB(3.99%), overhead=36.14 MB, active=122.88 MB, swapped=0.00 MB, swpin=0.00 MB, swapout=0.00 MB
	dc01 Networking	Ok	2h 48m 18s	1/5	2016-12-06 17:22:57	ESX3 OK - "dc01" net receive=0.00 KB/s, send=0.00 KB/s
	dc01 VM Status	Ok	2h 47m 30s	1/5	2016-12-06 17:23:00	ESX3 OK - "dc01" status=green, run state=UP, guest state=Running, max cpu=3491 MHz, max mem=3072 MB, console connections=0, tools status=Old, has no config issues
	dc02 CPU Usage	Ok	2h 49m 44s	1/5	2016-12-06 17:23:03	ESX3 OK - "dc02" cpu usage=92.00 MHz(2.63%) wait=19338.00 ms
	dc02 Input / Output	Ok	2h 48m 46s	1/5	2016-12-06 17:23:06	ESX3 OK - "dc02" io usage=0.07 MB, read=0.00 MB/s, write=0.07 MB/s
	dc02 Memory	Ok	2h 47m 19s	1/5	2016-12-06 17:23:09	ESX3 OK - "dc02" mem usage=3032.00 MB(6.99%), overhead=36.19 MB, active=215.04 MB, swapped=0.00 MB, swpin=0.00 MB, swapout=0.00 MB
	dc02 Networking	Ok	2h 47m 16s	1/5	2016-12-06 17:23:12	ESX3 OK - "dc02" net receive=0.00 KB/s, send=0.00 KB/s
	dc02 VM Status	Ok	2h 47m 16s	1/5	2016-12-06 17:23:15	ESX3 OK - "dc02" status=green, run state=UP, guest state=Running, max cpu=3491 MHz, max mem=3072 MB, console connections=0, tools status=Old, has no config issues
	Windows 10 Development CPU Usage	Ok	2h 47m 36s	1/5	2016-12-06 17:22:33	ESX3 OK - "Windows 10 Development" cpu usage=515.00 MHz(7.38%) wait=18772.00 ms
	Windows 10 Development Input / Output	Ok	2h 47m 16s	1/5	2016-12-06 17:22:36	ESX3 OK - "Windows 10 Development" io usage=0.00 MB, read=0.00 MB/s, write=0.00 MB/s
	Windows 10 Development Memory	Ok	2h 49m 54s	1/5	2016-12-06 17:22:39	ESX3 OK - "Windows 10 Development" mem usage=6144.00 MB(12.99%), overhead=91.02 MB, active=798.72 MB, swapped=0.00 MB, swpin=0.00 MB, swapout=0.00 MB
	Windows 10 Development Networking	Ok	2h 47m 16s	1/5	2016-12-06 17:22:41	ESX3 OK - "Windows 10 Development" net receive=0.00 KB/s, send=0.00 KB/s
	Windows 10 Development VM Status	Ok	2h 48m 48s	1/5	2016-12-06 17:22:45	ESX3 OK - "Windows 10 Development" status=green, run state=UP, guest state=Running, max cpu=6982 MHz, max mem=6144 MB, console connections=1, tools status=OK, has no config issues

## Common Problems

Below are some common problems encountered when using the VMware wizard.

### Your VMWare checks are timing out or running very slowly.

If your VMWare checks experience timeouts or are unusually slow, you may be running out of available entropy (available random numbers) on the XI server. See this [troubleshooting article](#) for more information.

### The wizard shows a big red box that says the VMware SDK isn't installed. I installed it, so what's causing this?

Reinstall the VMware SDK. It's very easy to pass over an error in that install script. If you don't see *"Enjoy --the VMware team"* at the end of the install, then it did not install properly. The other thing that can cause this is that the `check_esx3.pl` does not exist in `/usr/local/nagios/libexec/`. If this error persists past VMware SDK reinstall, then reinstall the wizard. If it persists past the wizard install, then manually place `check_esx3.pl` into `/usr/local/nagios/libexec/` directory.

### When I try to monitor guests on an ESX host, it populates the check-boxes properly, but under the "Guest Selection" tab it simply says:

*"It appears as though the VMware SDK has not yet been installed on your Nagios XI server. You must install the SDK before you are able to use this wizard."*

As you can guess, this can happen when you haven't installed the SDK. However, if you've installed the SDK, make sure you've properly set the permissions for

`/usr/local/nagiosxi/html/includes/configwizards/vmware/scripts/getguests.pl` as this has been an issue for some users (`nagios:root 755`).

### All of my service names are slightly different. The quotes are gone!

Nagios service and host names cannot contain special characters and, as such, they were removed automatically to eliminate "Error In Configuration" messages and show-stoppers. If you wish to have absolute control over your service names, make sure they do not involve any shell characters or Nagios illegal

characters.

Sometimes on RHEL/CentOS 7 you will need to make a change to one of the Perl files using the following command:

```
sed -i 's/length(/scalar(/g' /usr/lib64/perl5/IO/Compress/Zlib/Extra.pm
```

This appears to be fixed in newer versions of this file however it is included here in case you get errors that reference that file.

**When I try to monitor guests on an ESX host, I see a blank page in Step 2 of the wizard or I see an error similar to this one:**

*"Server version unavailable at 'https://192.168.0.100:443/sdk/vimService.wsdl' at /usr/share/perl/5.18/VMware/VICommon.pm line 734."*

Try downgrading the LWP perl module by running the following commands:

```
cd /tmp
wget https://www.cpan.org/modules/by-module/LWP/GAAS/libwww-perl-5.837.tar.gz
tar xvf libwww-perl-5.837.tar.gz
cd libwww-perl-5.837/
perl Makefile.PL
make
make test
make install
```

Rerun the vmware monitoring wizard to see if the issue has been resolved.

**Note:** When the Monitor a guest VM on the VMWare host option is selected in Step 1 of the wizard, loading the next page may take a really long time. Please be patient.

## Finishing Up

This completes the documentation on how to monitor VMware with Nagios XI. If you have additional questions or other support related questions, please visit us at our Nagios Support Forums:

<https://support.nagios.com/forum>

The Nagios Support Knowledgebase is also a great support resource:

<https://support.nagios.com/kb>