

How To Monitor Linux with SNMP in Nagios XI 5

Purpose

This document describes how to monitor Linux machines with Nagios XI using SNMP. SNMP is an “agentless” method of monitoring network devices and servers and is often preferable to installing dedicated agents on target machines.

Note: If you are using **Nagios XI 2024**, please refer to the [updated document](#).

Target Audience

This document is intended for use by Nagios XI Administrators.

Install SNMP On The Remote Linux Machine

Before you can monitor a Linux machine using SNMP, you'll need to install and configure the necessary. First, you'll need to install the net-snmp package on the Linux machine. Login to the Linux machine as the root user to complete the next steps.

On RHEL / CentOS / Oracle systems use the following command:

```
yum install net-snmp
```

On Debian / Ubuntu based systems use the following command:

```
sudo apt-get install snmpd libsnmp-dev
```

Configure SNMP Access On The Remote Linux Machine

Now you must configure access permissions for SNMP on the Linux machine. This guide will focus on SNMP v2c and SNMP v3.

- **SNMP v2c**
 - Access is granted using a permission, community string and address
 - This documentation will use the following values:
 - Permission: rocommunity
 - Community String: Str0ngC0mmunity
 - Address: 10.25.5.12
 - This address is the Nagios XI server address

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- **SNMP v3**

- Access is granted with a username, permission, security level, authentication and privacy passphrases
- More complicated but also more secure
- This documentation will use the following values:
 - Username: nagios
 - Permission: rouser
 - Security Level: authPriv
 - Authentication Protocol: SHA
 - Authentication Pass-phrase: Str0ng@uth3ntic@ti0n
 - Privacy Protocol: AES
 - Privacy Pass-phrase: Str0ngPriv@cy

SNMP v2c

Using the values defined earlier, the following line will be added to the `/etc/snmp/snmpd.conf` file:

```
rocommunity Str0ngC0mmunity 10.25.5.12
```

The following commands will create a backup of the original file and create a new config file with that line.

On RHEL / CentOS / Oracle Linux systems execute the following commands:

```
cp /etc/snmp/snmpd.conf /etc/snmp/snmpd.bak
echo 'rocommunity Str0ngC0mmunity 10.25.5.12' > /etc/snmp/snmpd.conf
```

On Debian / Ubuntu systems execute the following commands:

```
sudo cp /etc/snmp/snmpd.conf /etc/snmp/snmpd.bak
sudo sh -c "echo 'rocommunity Str0ngC0mmunity 10.25.5.12' >
/etc/snmp/snmpd.conf"
```

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Now restart the `snmpd` service using one of the following commands.

On RHEL / CentOS / Oracle Linux systems execute the following commands:

```
systemctl restart snmpd.service
```

On Debian and Ubuntu systems execute the following commands:

```
sudo systemctl restart snmpd.service
```

SNMP v3

Using the values defined earlier, the following command will create the SNMP v3 user and be added to the `/etc/snmp/snmpd.conf` file AND the `/var/lib/net-snmp/snmpd.conf` file. The following commands will create a backup of the original files, create a new config file with that line, add the SNMP v3 user and then restart the service.

On RHEL / CentOS / Oracle Linux systems execute the following commands:

```
cp /etc/snmp/snmpd.conf /etc/snmp/snmpd.bak
systemctl stop snmpd.service
echo '' > /etc/snmp/snmpd.conf
net-snmp-create-v3-user -ro -a SHA -A Str0ng@uth3ntic@ti0n -x AES -X Str0ngPriv@cy nagios
sudo systemctl start snmpd.service
```

On Debian and Ubuntu systems execute the following commands:

```
sudo cp /etc/snmp/snmpd.conf /etc/snmp/snmpd.bak
sudo systemctl stop snmpd.service
sudo sh -c "echo '' > /etc/snmp/snmpd.conf"
sudo net-snmp-create-v3-user -ro -a SHA -A Str0ng@uth3ntic@ti0n -x AES -X Str0ngPriv@cy nagios
sudo systemctl start snmpd.service
```

Configure Inbound Firewall Rules On The Remote Linux Machine

If you have the operating system firewall enabled you'll need to allow UDP port 161 inbound. The commands for this vary depending on your operating system.

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On RHEL / CentOS / Oracle Linux systems execute the following commands:

```
firewall-cmd --zone=public --add-port=161/udp
firewall-cmd --zone=public --add-port=161/udp --permanent
```

On Ubuntu systems execute the following commands:

```
sudo ufw allow snmp
sudo ufw reload
```

On Debian systems execute the following commands:

```
iptables -I INPUT -p udp --destination-port 161 -j ACCEPT
apt-get install iptables-persistent
Answer yes to saving existing rules.
```

Note: On some systems you may need to add the address of your Nagios server to the allowed hosts file `/etc/hosts.allow`.

Configure The SNMP Daemon To Start On Boot

Configure the SNMP daemon to automatically start when the Linux machine reboots.

On RHEL / CentOS / Oracle Linux systems execute the following commands:

```
systemctl enable snmpd.service
```

On Debian and Ubuntu systems execute the following commands:

```
sudo systemctl enable snmpd.service
```

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Testing SNMP Communication

Before you continue, you'll need to make sure that the Nagios XI server can communicate with the remote Linux server using SNMP.

To do this, establish a terminal session to your Nagios XI server and execute the following commands to run a test query. The examples here are targeting the Linux server `10.25.13.38` and they are using the values defined above:

```
cd /usr/local/nagios/libexec
```

SNMP v2c

```
./check_snmp_storage.pl -H 10.25.13.37 -C Str0ngC0mmunity -m "^/$" -w 2 -c 4
```

SNMP v3 (note that this is a single long command) :

```
./check_snmp_storage.pl -H 10.25.13.37 -l nagios -x Str0ng@uth3ntic@ti0n -X Str0ngPriv@cy -L SHA,AES -m "^/$" -w 2 -c 4
```

This check should return disk usage information from the remote Linux server, something like:

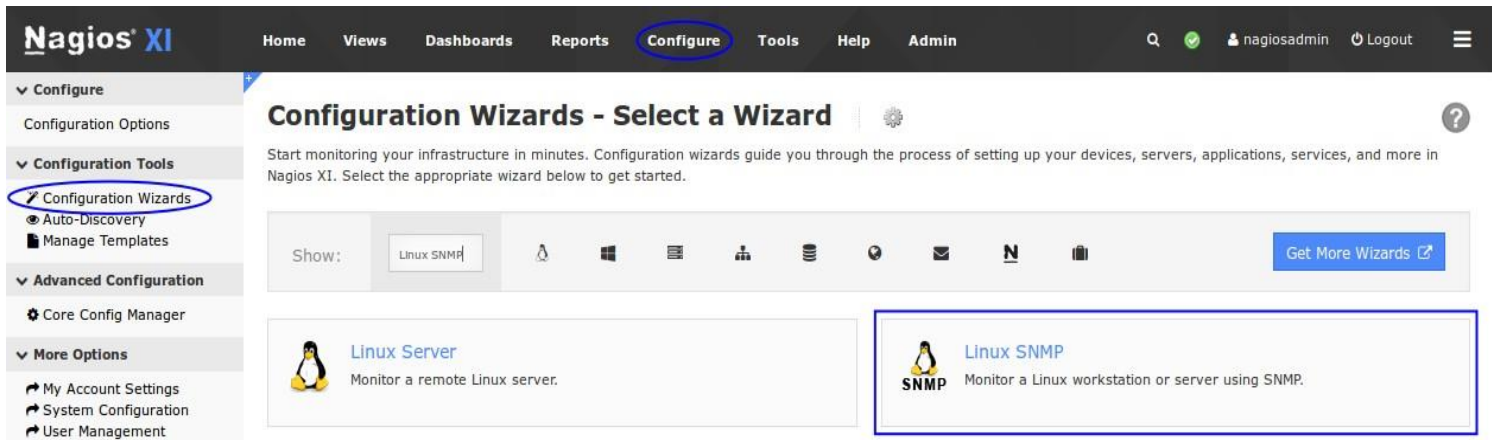
```
/: 11%used(1550MB/13892MB) (>4%) : CRITICAL
```

Important: If the command doesn't return data, it likely means that SNMP is not configured properly, or that a firewall issue exists on the remote server. In that case, go through the steps in the previous section to ensure everything is configured properly.

Using The Linux SNMP Wizard

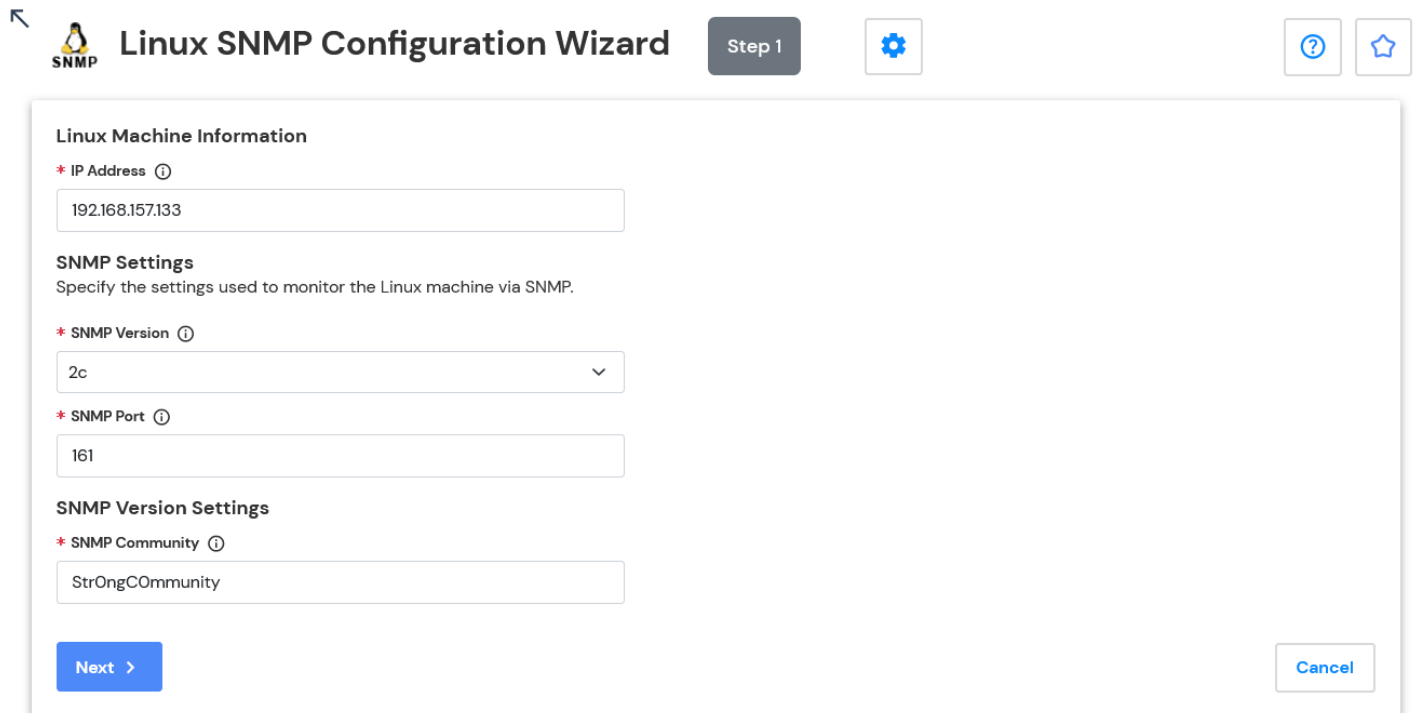
To begin using the Linux SNMP wizard navigate via the top menu bar to **Configure > Run a configuring wizard**, and select the **Linux SNMP** wizard. In the following screenshot you can see how the search field allows you to quickly find a wizard.

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The screenshot shows the Nagios XI interface. The top navigation bar includes Home, Views, Dashboards, Reports, **Configure**, Tools, Help, and Admin. The left sidebar has a 'Configure' section with 'Configuration Wizards' highlighted. The main content area is titled 'Configuration Wizards - Select a Wizard'. It features a search bar with 'Linux SNMP' entered and a 'Get More Wizards' button. Two wizard options are displayed: 'Linux Server' (Monitor a remote Linux server) and 'Linux SNMP' (Monitor a Linux workstation or server using SNMP), with the latter highlighted by a red box.

On **Step 1** you will be asked to supply the **address** of the server you will monitor via SNMP.



The screenshot shows the 'Linux SNMP Configuration Wizard' at Step 1. The form is titled 'Linux Machine Information' and contains the following fields:

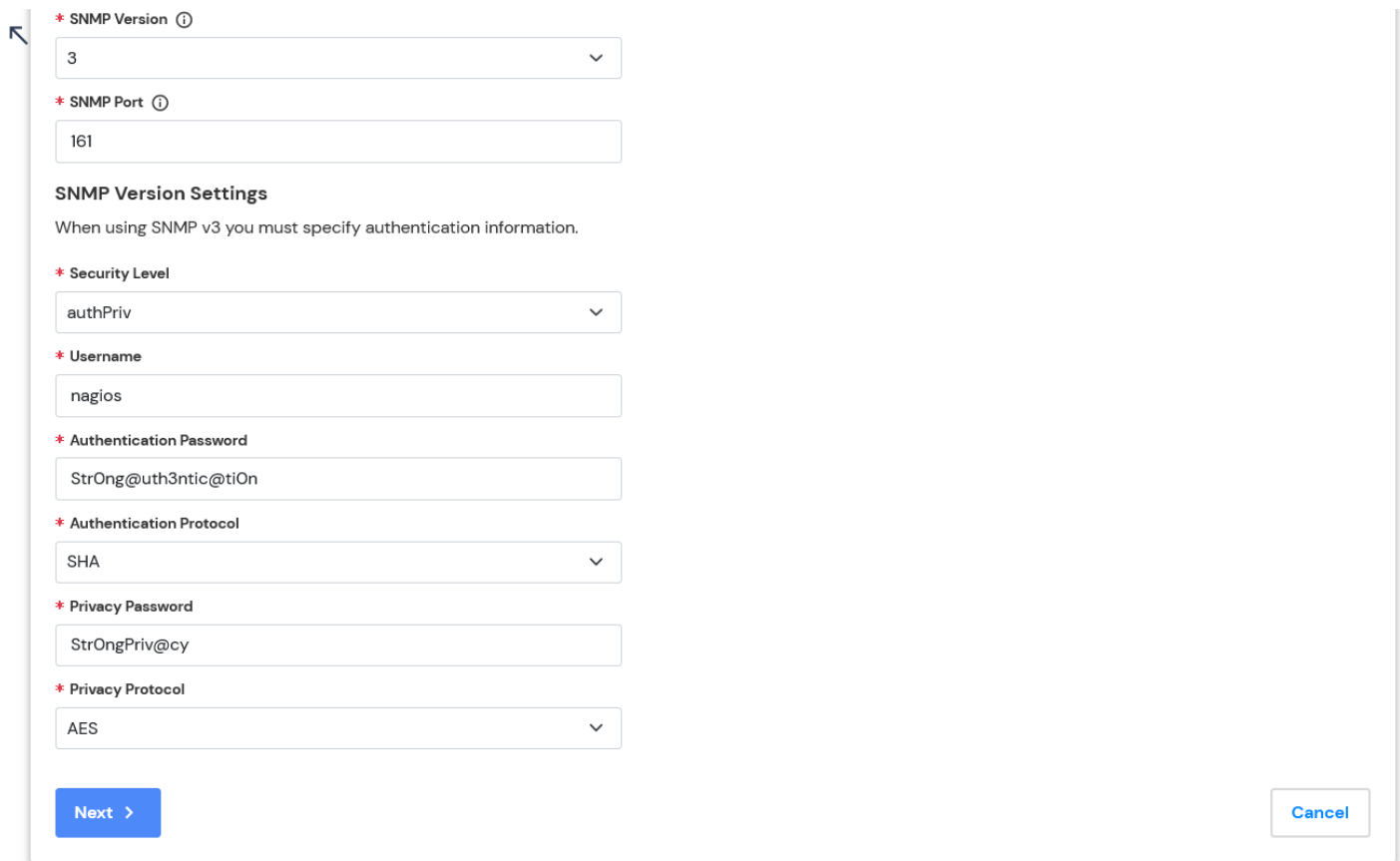
- * IP Address**: 192.168.157.133
- SNMP Settings**: Specify the settings used to monitor the Linux machine via SNMP.
 - * SNMP Version**: 2c
 - * SNMP Port**: 161
- SNMP Version Settings**
 - * SNMP Community**: StrOngCOmmunity

Buttons for 'Next >' and 'Cancel' are located at the bottom of the form.

You will also have to provide the appropriate **SNMP Settings**.

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This screenshot shows SNMP v3 settings.




The screenshot displays the SNMP v3 configuration interface in Nagios XI 5. It features several input fields and dropdown menus, all marked with a red asterisk to indicate they are required. The fields are: 'SNMP Version' (set to 3), 'SNMP Port' (set to 161), 'Security Level' (set to authPriv), 'Username' (set to nagios), 'Authentication Password' (set to StrOng@uth3ntic@tiOn), 'Authentication Protocol' (set to SHA), 'Privacy Password' (set to StrOngPriv@cy), and 'Privacy Protocol' (set to AES). A 'Next >' button is located at the bottom left, and a 'Cancel' button is at the bottom right. A section titled 'SNMP Version Settings' includes a note: 'When using SNMP v3 you must specify authentication information.'

Click Next to progress to **Step 2**.



When you proceed to **Step 2**, the wizard will perform an SNMP query against the Linux server to get a list of the available disks and processes.

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Select the server metrics you wish to monitor and adjust the thresholds as required.





Linux SNMP Configuration Wizard

Step 2

Linux Machine Details


IP Address




Host Name 




Legacy Performance Data Order 




Server Metrics


Specify which services you would like to monitor for the Linux machine.

Ping 







CPU  Warning:  80 % Critical:  90 %

Physical Memory Usage  Warning:  80 % Critical:  90 %

Swap Usage  Warning:  5 % Critical:  10 %

Disk Usage 

The SNMP wizard detected 8 disks and mounts on 192.168.157.129















Drive	Warning	Critical	Scanned Disk List (double click to add)
<input type="text" value="/"/>	 80 %	 95 %	<input type="text" value="/boot"/> <input type="text" value="/dev/shm"/> <input type="text" value="/run"/> <input type="text" value="/run/lock"/> <input type="text" value="/run/snaps/ns"/> <input type="text" value="/run/udev"/>
<input type="text"/>	 80 %	 95 %	
<input type="text"/>	 80 %	 95 %	

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With the **Disk Usage** checks, double click a disk in the **Scanned Disk List** to add it to the Drive field. Adjust the thresholds as required.

Disk Usage ⓘ

The SNMP wizard detected 8 disks and mounts on 192.168.157.129

Drive	Warning	Critical	Scanned Disk List (double click to add)
/	 80 %	 95 %	/boot
	 80 %	 95 %	/dev/shm
	 80 %	 95 %	/run
	 80 %	 95 %	/run/lock
	 80 %	 95 %	/run/snapd/ns
	 80 %	 95 %	/run/user/0
	 80 %	 95 %	/run/user/1001

[Add Row](#) | [Delete Row](#)

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With the **Processes** checks, double click a process in the Scanned Process List to add it to the Linux Process field. Adjust the thresholds as required.

Processes

Specify any processes that should be monitored to ensure they're running.

Note: Process names are case-sensitive. Click on Tips for more information about creating a process service

[Tips](#) ^

The SNMP wizard detected 263 processes on 192.168.157.129

Linux Process	Display Name	Warning Count	Critical Count	Scanned Process List
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<pre>(sd-pam) apache2 bash cpuhp/0 cpuhp/1 cpuhp/2 cpuhp/3</pre>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	

[Add Row](#) | [Delete Row](#)

[Add Selected](#) | [Select All](#)

When you enter one number in each of the Warning and Critical fields, a WARNING alert will be generated when the amount of processes is below the number specified in the Warning field. A CRITICAL alert will be generated when the number of processes is equal to or below the number specified in the Critical field.

Tip: When you enter two numbers (delimited by a comma), you are specifying a range that is acceptable for the number of processes to be running. In the instance of the *sshd* in the example screenshot, a WARNING alert will be generated if there are (1 or less) **or** (3 or more) instances of *sshd* running. A CRITICAL alert will be generated if there is (1 or less) **or** (4 or more) instances running.

Once you've finished selecting all the items you wish to monitor click Next and then complete the wizard by choosing the required options in **Step 3 - Step 5**.

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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.

Showing 1-6 of 6 total records

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Host	Service	Status	Duration	Attempt	Last Check	Status Information
192.168.157.129	/ Disk Usage	Ok	6m 24s	1/5	2024-11-24 02:49:34	/: 27%used(13483MB/49077MB) (<80%) : OK
	CPU Usage	Ok	5m 31s	1/5	2024-11-24 02:50:31	8 CPU, average load 9.2% < 80% : OK
	Memory Usage	Ok	N/A	1/5	2024-11-24 02:46:22	Memory buffers: 6%used(448MB/7894MB) (<80%) : OK
	Ping	Ok	N/A	1/5	2024-11-24 02:47:12	OK - 192.168.157.129: rta 0.364ms lost 0%
	SSH	Warning	2m 58s	4/5	2024-11-24 02:50:57	3 process named sshd (> 1) (> 2 : WARNING)
	Swap Usage	Ok	N/A	1/5	2024-11-24 02:48:44	Swap space: 0%used(1MB/4096MB) (<5%) : OK

Last Updated: 2024-11-24 02:51:00

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More Information

[Using Configuration Wizards](#)

Finishing Up

This completes the documentation on monitoring Linux using SNMP with Nagios XI. If you have additional questions or other support-related questions, please visit us at our Nagios Support Forum, Nagios Knowledge Base, or Nagios Library:

[Visit Nagios Support Forum](#)

[Visit Nagios Knowledge Base](#)

[Visit Nagios Library](#)