

VIETNAM NATIONAL UNIVERSITY HO CHI MINH CITY
UNIVERSITY OF INFORMATION TECHNOLOGY



FINAL REPORT
NETWORKS AND SYSTEMS ADMINISTRATION
Topic: PERFORMING CONFIGURATION ON THE SERVER WITH NAGIOS TO MONITOR THE ACTIVITIES OF HOSTS

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Class : NT132.O11.ATCL

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THU DUC CITY – January 6th, 2024

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A. INTRODUCTION

A.1. GENERAL INFORMATION



Originally released in 1999 as NetSaint, Nagios was developed by Ethan Galstad and subsequently refined by numerous contributors as an open source project. Nagios is an open source IT system monitoring tool. It was designed to run on the Linux operating system and can monitor devices running Linux, Windows and Unix OSes.

Nagios Core: The service that was originally known as Nagios is now referred to as Nagios Core. Core is freely available as an open source monitoring software for IT systems, networks and infrastructure. Core contains a wide array of infrastructure monitoring through allowing plugins to extend its monitoring capabilities. It is the base for paid Nagios monitoring systems.

Nagios XI: Nagios XI is an extended interface of Nagios Core, intended as the enterprise-level version of the monitoring tool. XI acts as monitoring software, configuration manager and toolkit. Atop the same features as Core, XI adds preconfigured virtual machines (VMs), a web configuration user interface, performance graphing, a mobile application, dashboards, scheduled reporting and technical support through email.

(Because we use Nagios XI for our project, so we will only clarify the content of Nagios XI)

A.2. COMPONENT

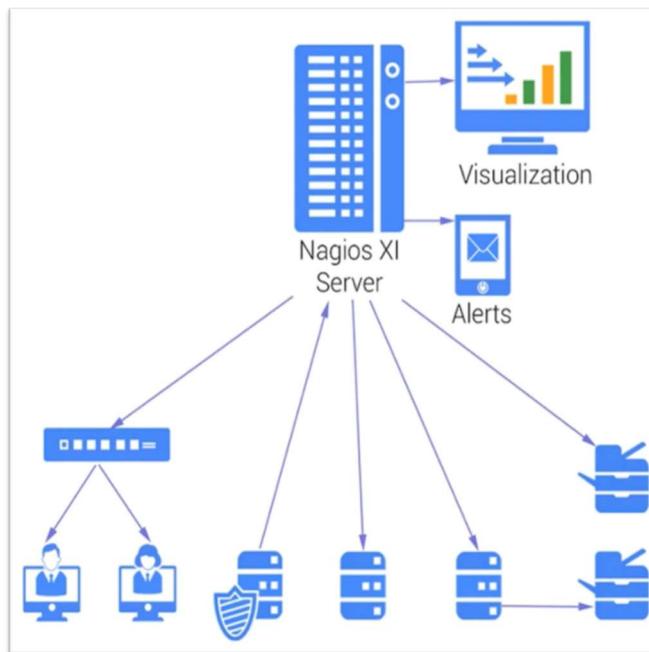


Nagios consists of several key components that work together to provide a comprehensive monitoring solution. Here are the main components of Nagios:

1. Powerful Monitoring Engine: Nagios XI uses the powerful Nagios Core 4 monitoring engine to provide users with efficient, scalable monitoring.
2. Updated Web Interface: Client's new dashboard provides a customizable high-level overview of hosts, services, and network devices.

3. Capacity Planning: Automated, integrated trending and capacity planning graphs allow organizations to plan for upgrades.
4. Advanced Graphs & More: Administrators can easily view network incidents and resolve them before they become major catastrophes.
5. Configuration Wizards: Fast Wizards! Simply enter the required information, and clients are up and monitoring with a few simple clicks.
6. Infrastructure Management: Improved Bulk Host Import, Autodiscovery, Auto Decommissioning, Mass Acknowledgment & much more!
7. Configuration Snapshot: Save clients' most recent configurations. Archive it. Revert back whenever clients like. Never lose it again. Relax.
8. Advanced User Management: Easily setup and manage user accounts with only a few clicks then assign custom roles to ensure a secure environment.

A.3. OPERATION



Nagios XI server actively monitors things in the network, and it does it through either of two methods: Agent and Native protocol.

- **Agent:**

An agent lives on a network element, like a Linux server. Nagios reaches out to the agent to check various stats (e.g., drive space, RAM, CPU usage, etc.). The agent collects the requested information and responds back to Nagios XI. Nagios first stores the information for later reports, historical charts, and graphing, and then the other action it can take is to generate an alert. With the alert, the stats the agent returns may represent a drive that's too full or some other state, and the generated alert is how

client will know about the potential issue. (That's a very generalized overview of an incredibly powerful and customizable piece of software.)

- **Native Protocol:**

Another way to monitor devices is through a native protocol. There are two native protocols that Nagios uses: one is Simple Network Management Protocol (SNMP), and the other is Windows Management Instrumentation (WMI), which is specific to Windows environments. For example, if client has a network switch with SNMP enabled and configured, Nagios XI can reach out to see how the switch is doing. The switch will then respond with its state (e.g., all good, a port down, or anything else that may be going on).

The above are examples of active monitoring, where Nagios asks a question and receives an answer back.

There is yet another way to monitor, which is through passive monitoring. An example of passive monitoring is when the Nagios box never reaches out to devices; agents instead send a notification to Nagios, either regularly or just when a triggering event occurs.

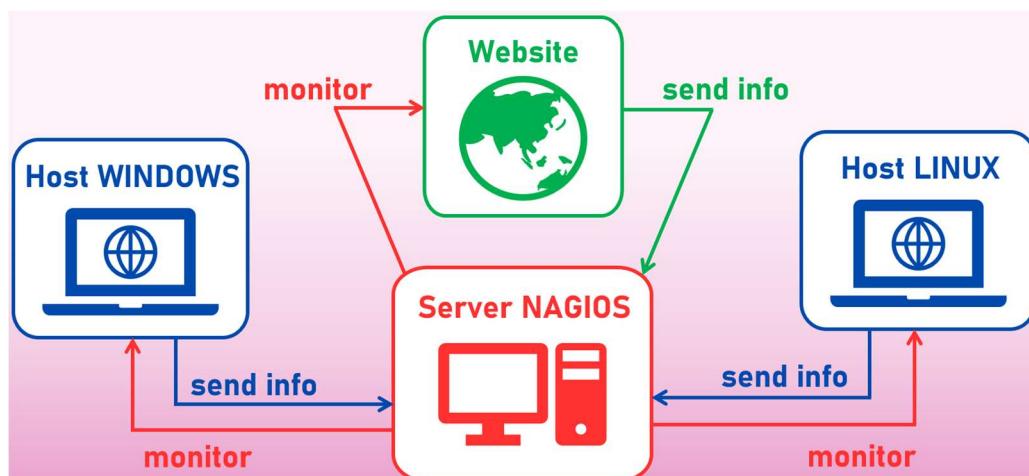
B. IMPLEMENTATION

B.1. SCRIPT

The required content to be achieved:

- Basic: Nagios can monitor the operation of Windows and Linux.
- Advanced: Nagios can monitor the operation of Windows and Linux and Web server/Website.

Topology:



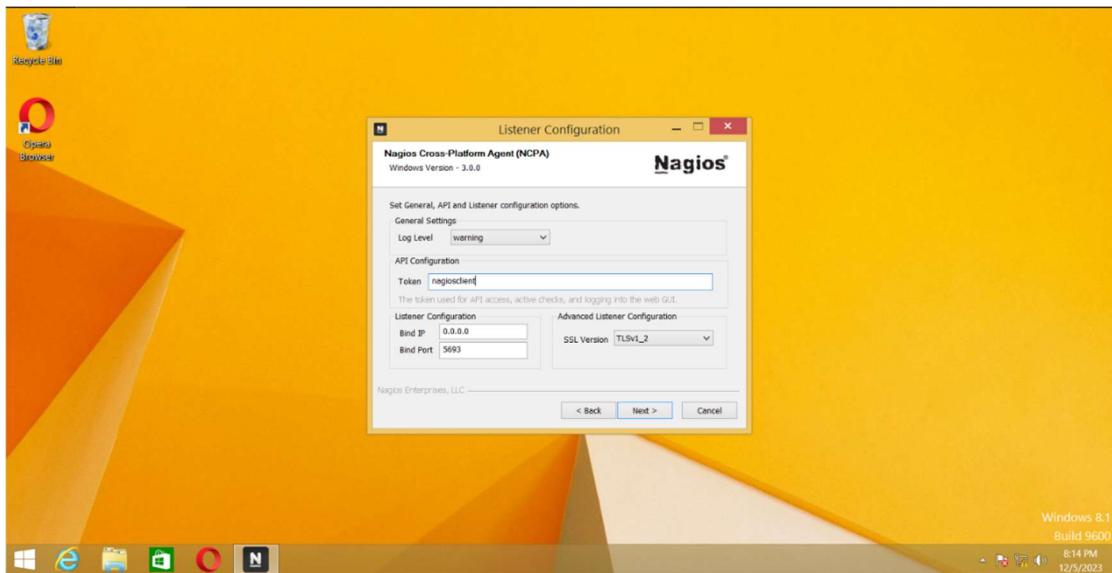
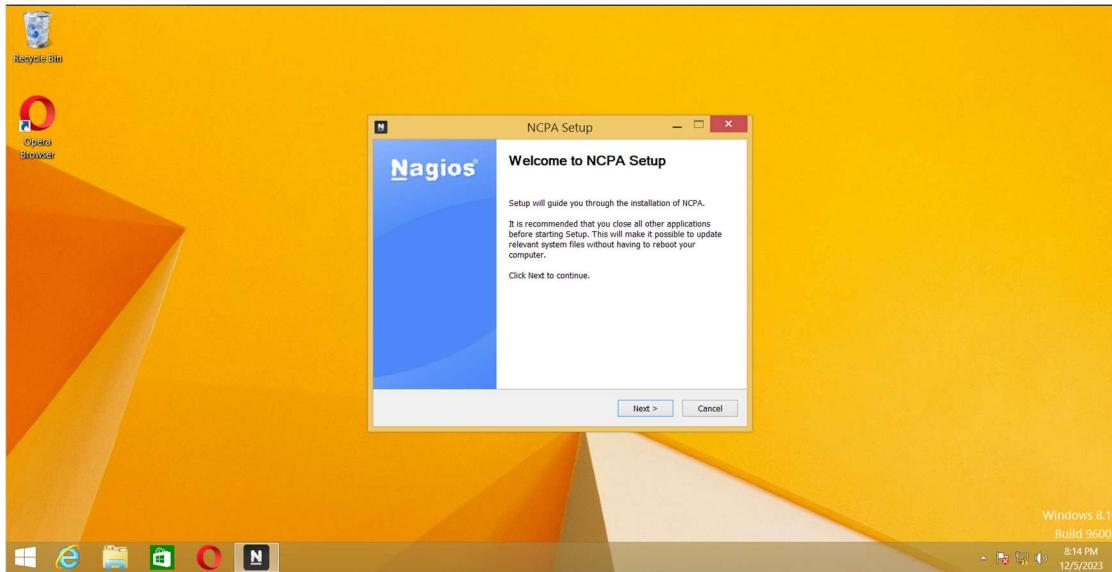
IP address table:

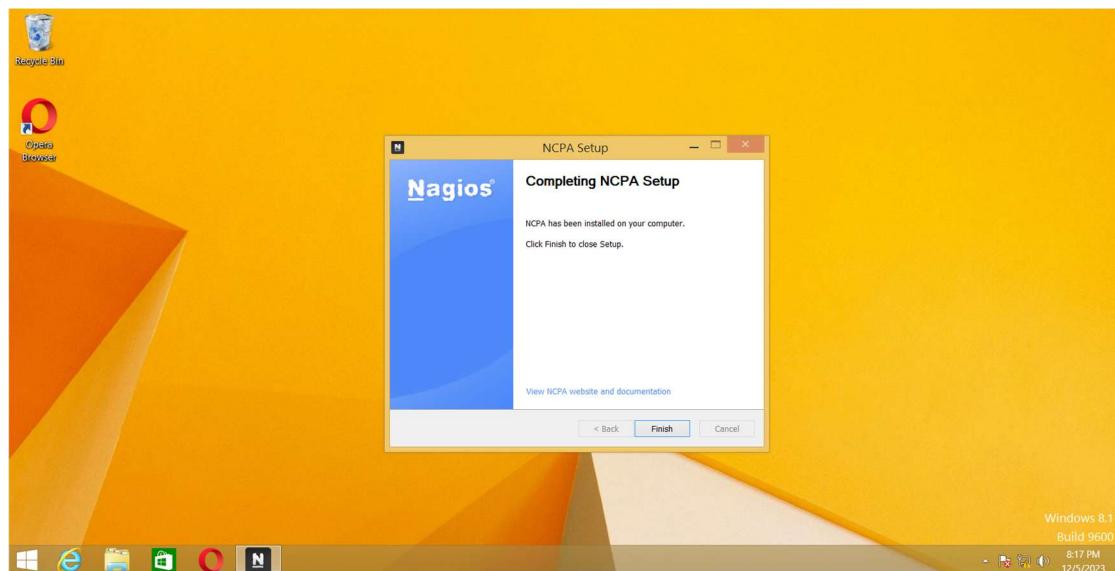
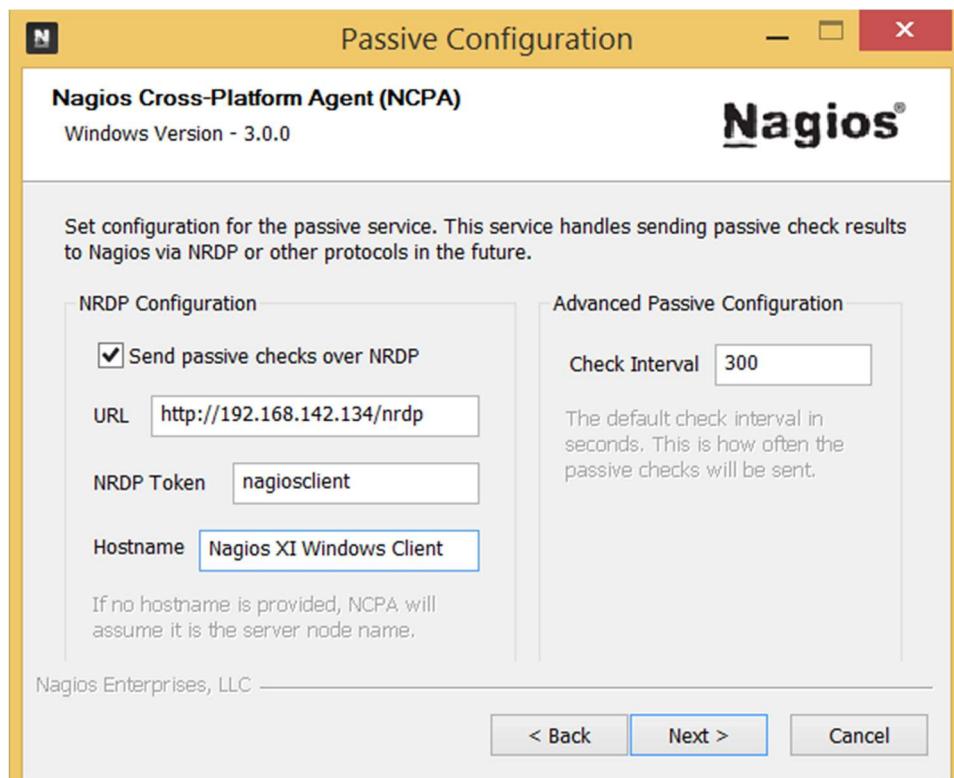
Devices	IP address	Installation	OS
Server Nagios XI	192.168.142.148	check_ncpa	CentOS Stream 9
Host Windows	192.168.142.134	NCPA	Windows 8
Host Linux	192.168.142.152	NCPA	Ubuntu 23.10
Website	192.58.120.98		https://nagios.com

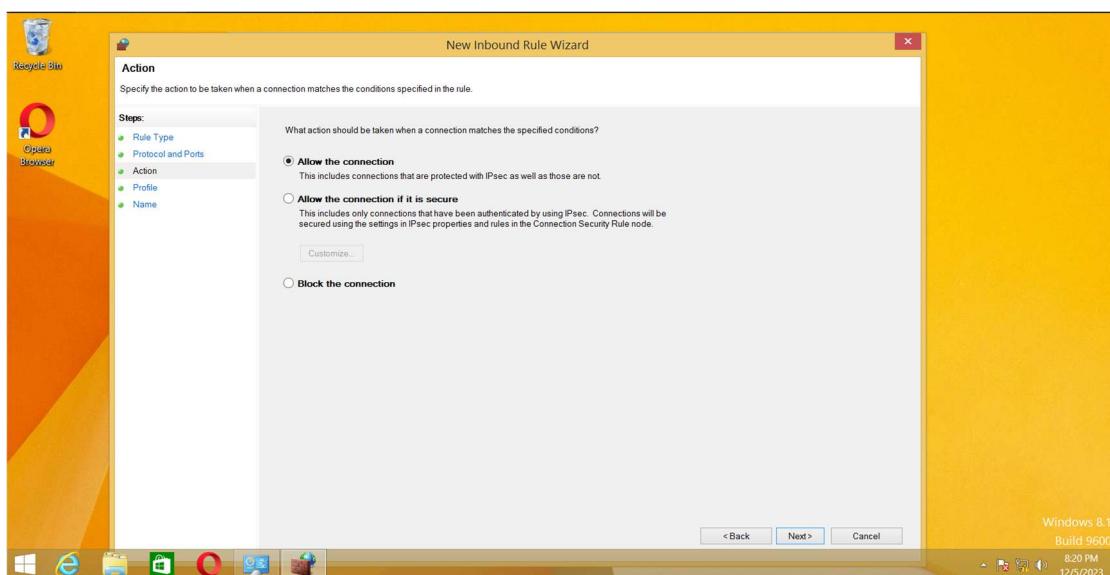
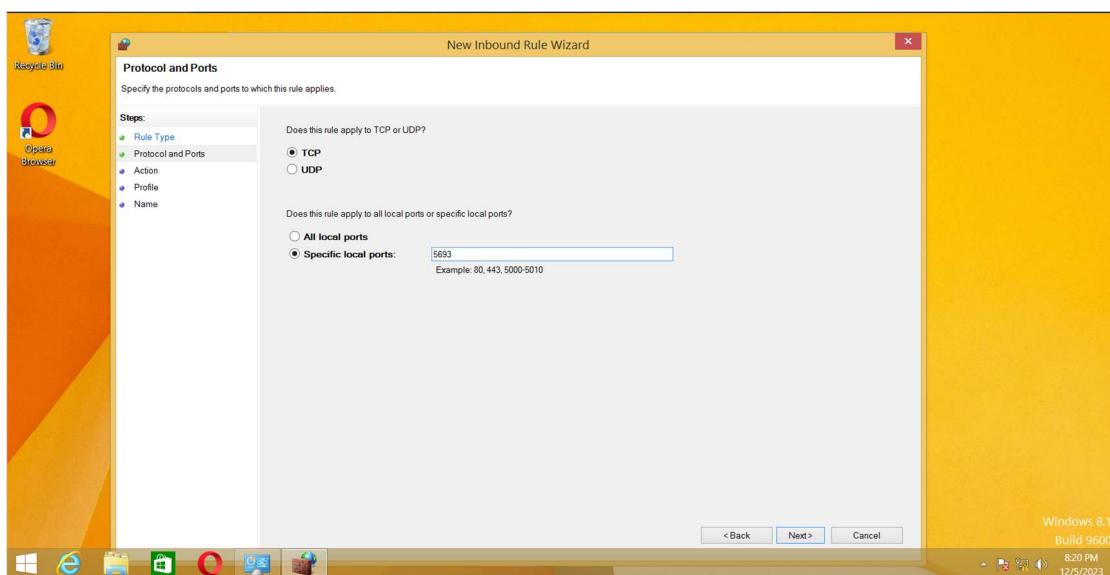
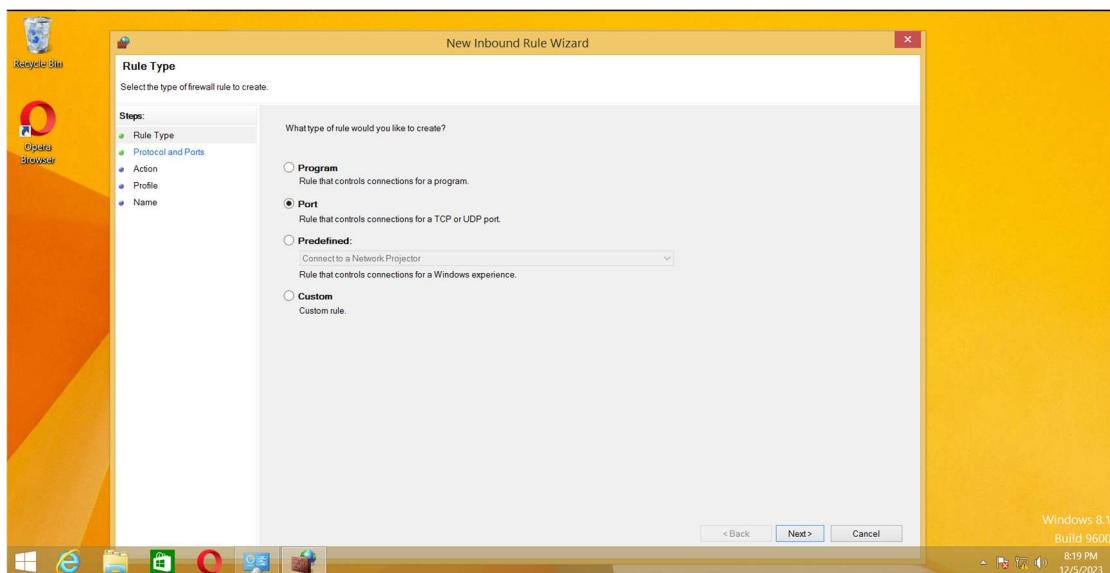
B.2. INSTALLATION

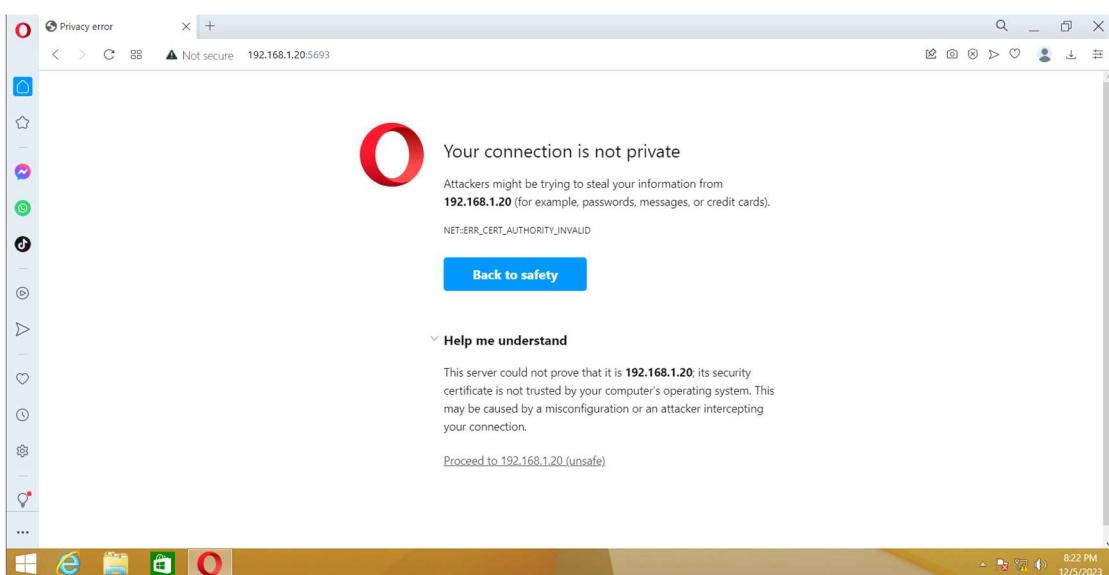
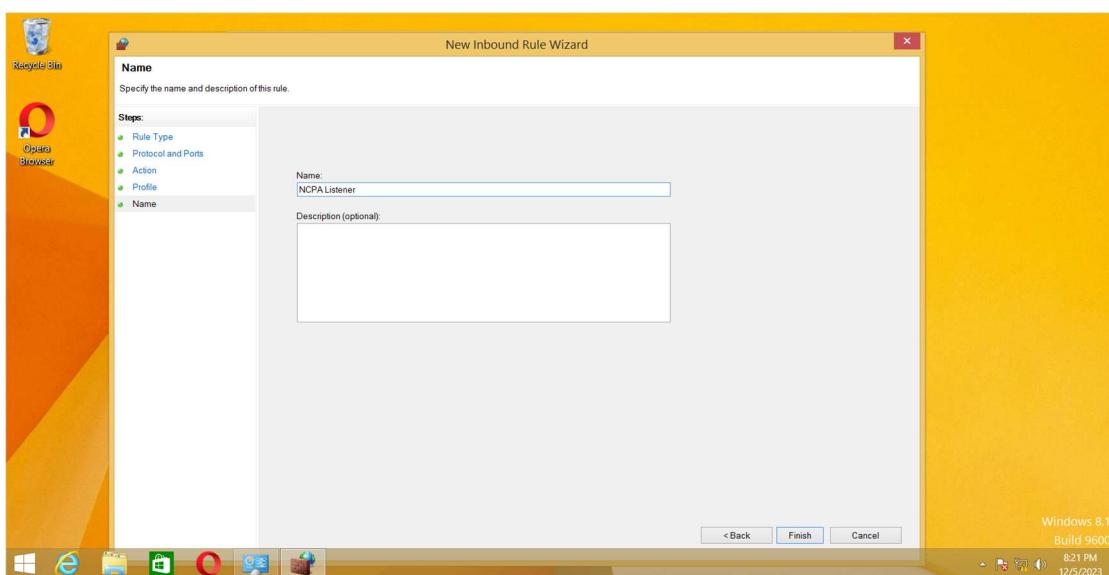
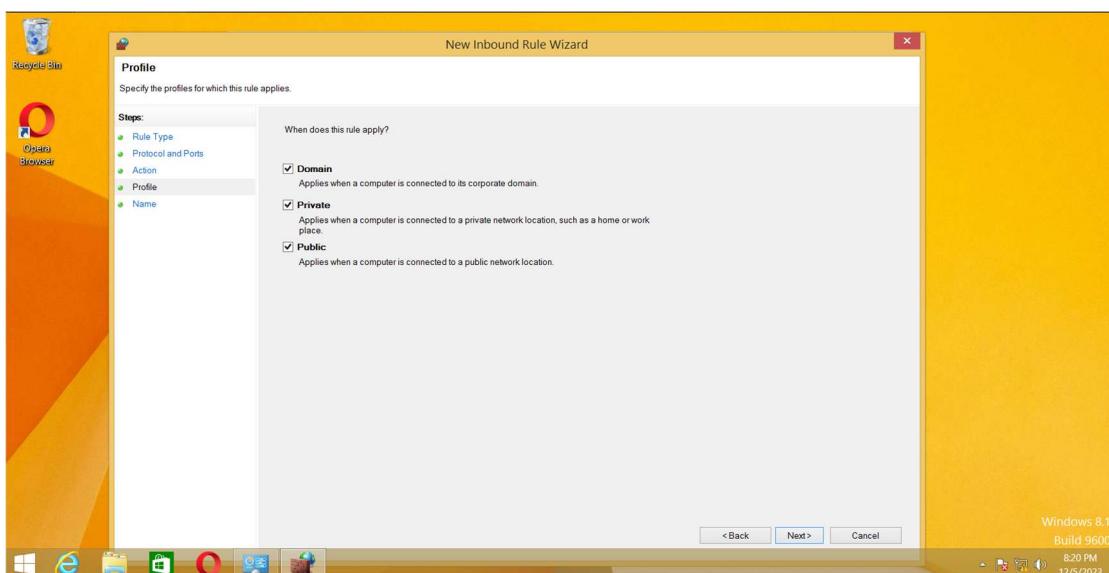
B.2.1. At Windows 8

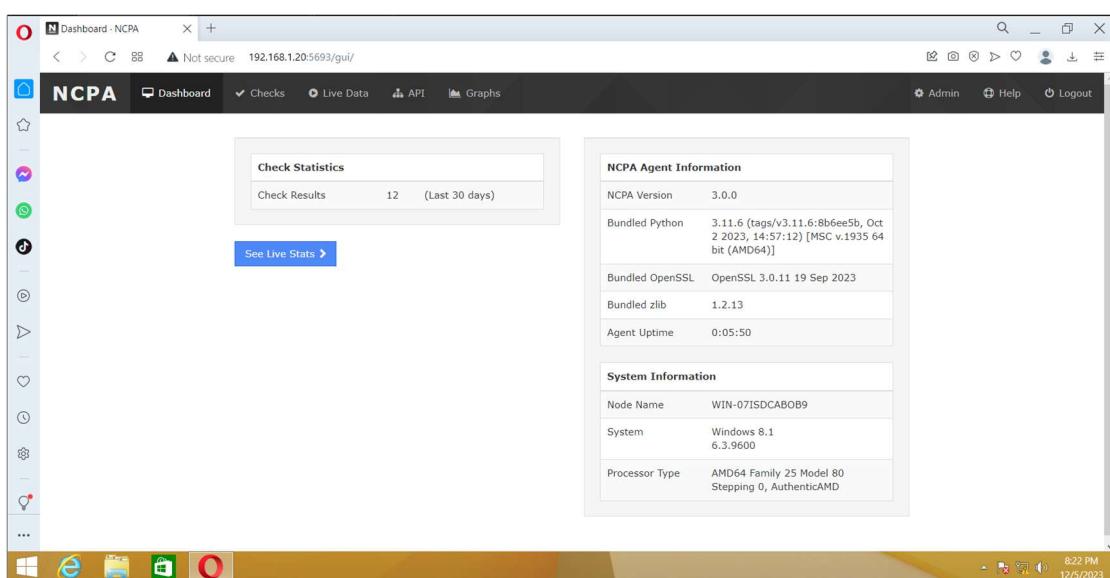
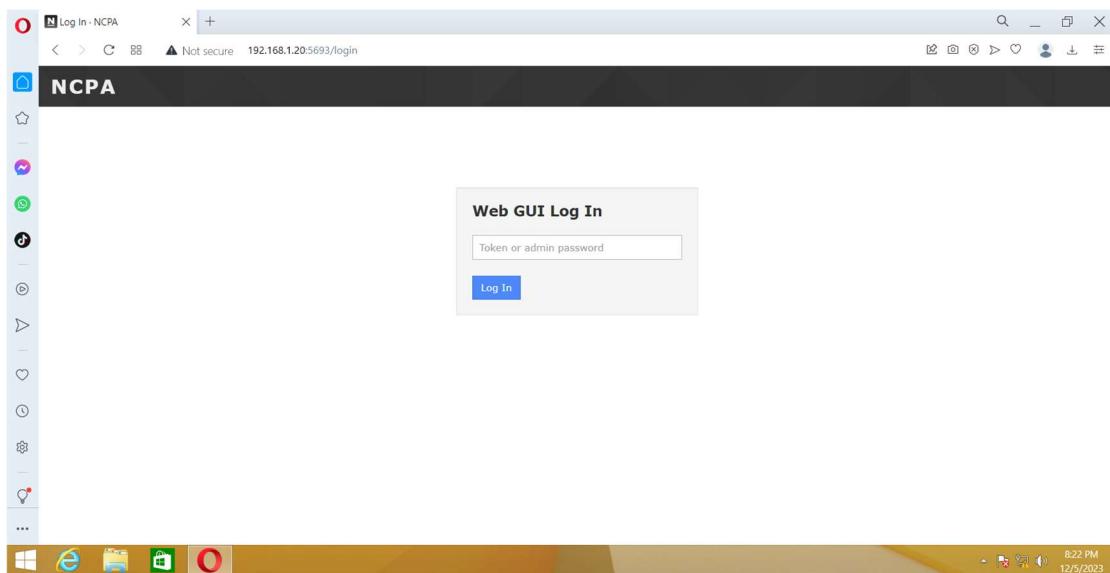
We have taken the steps as the following photos:





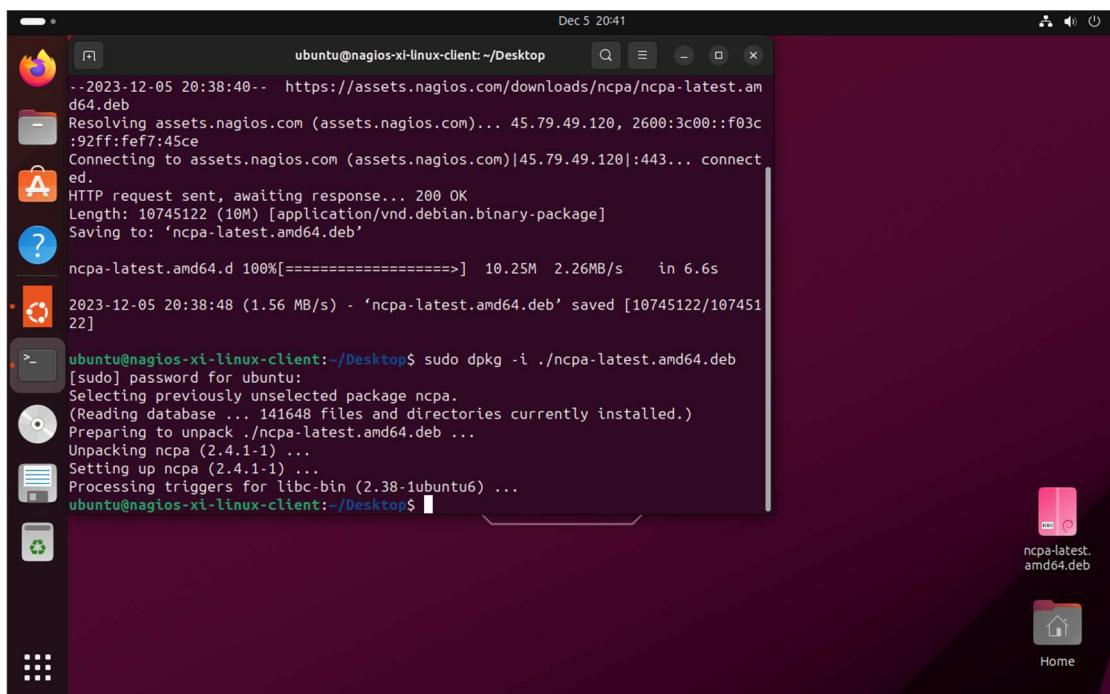
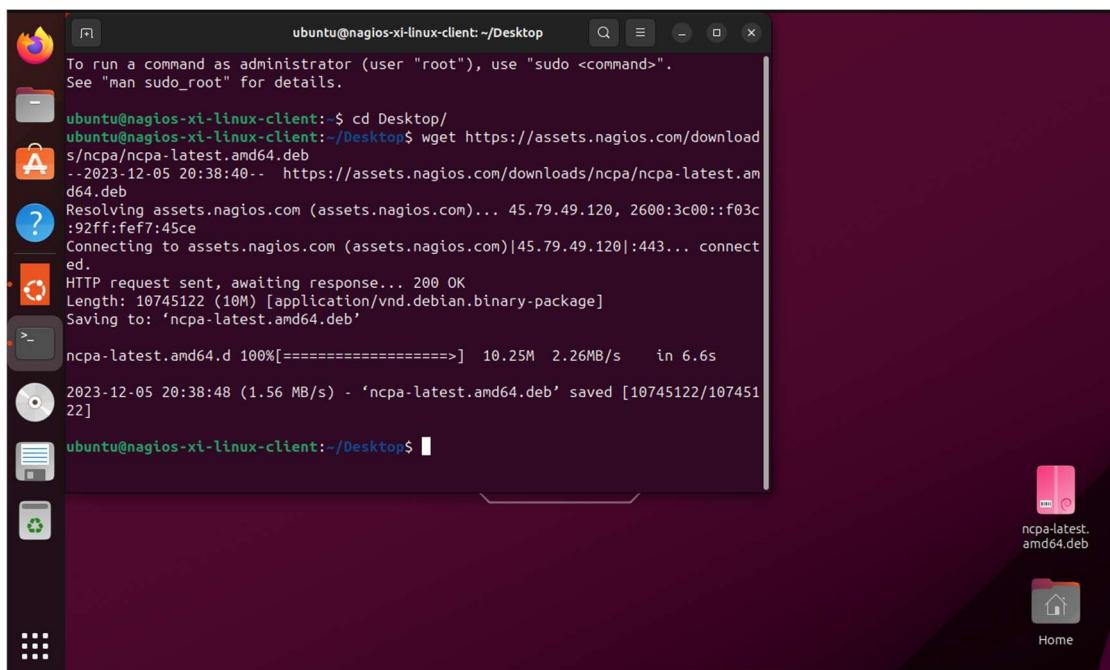


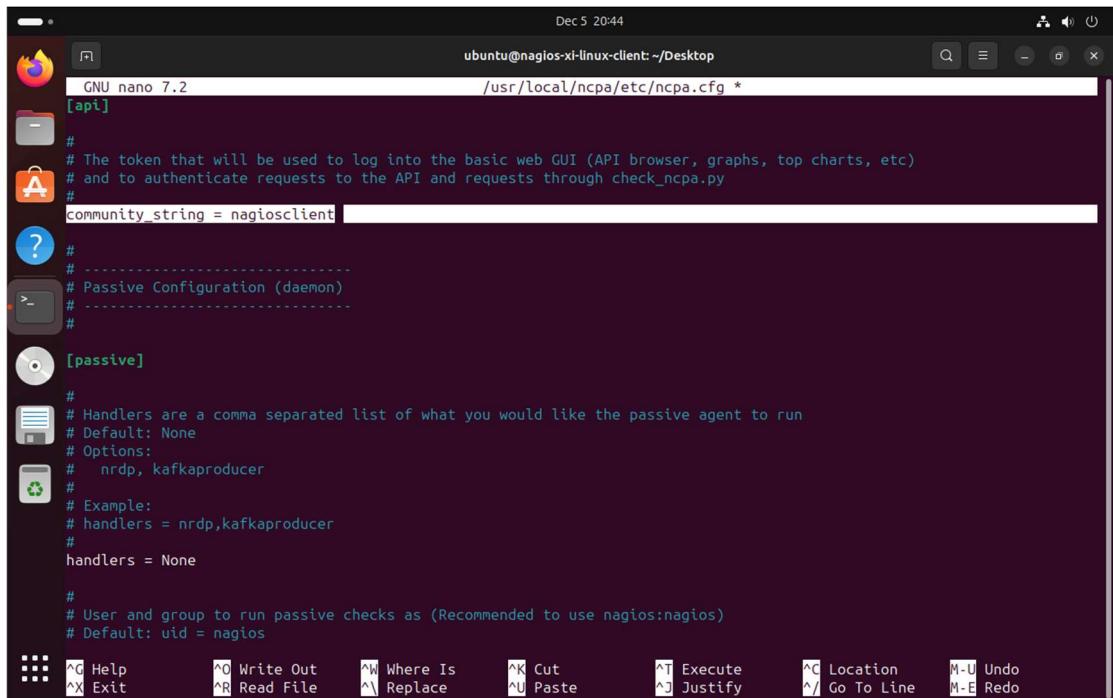




B.2.2. At Linux (Ubuntu 23.10)

We have taken the steps as the following photos:

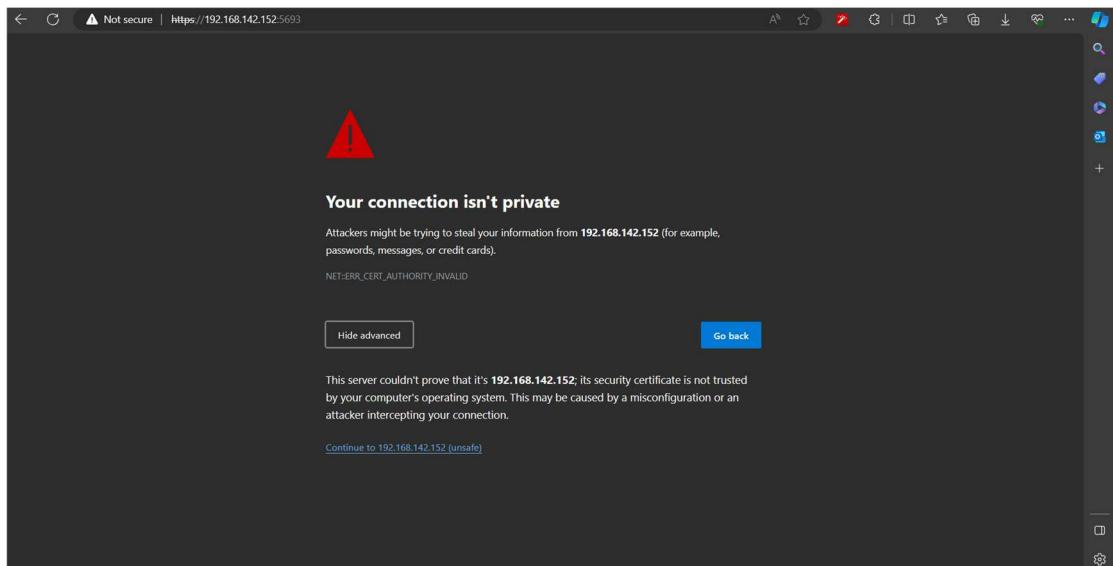


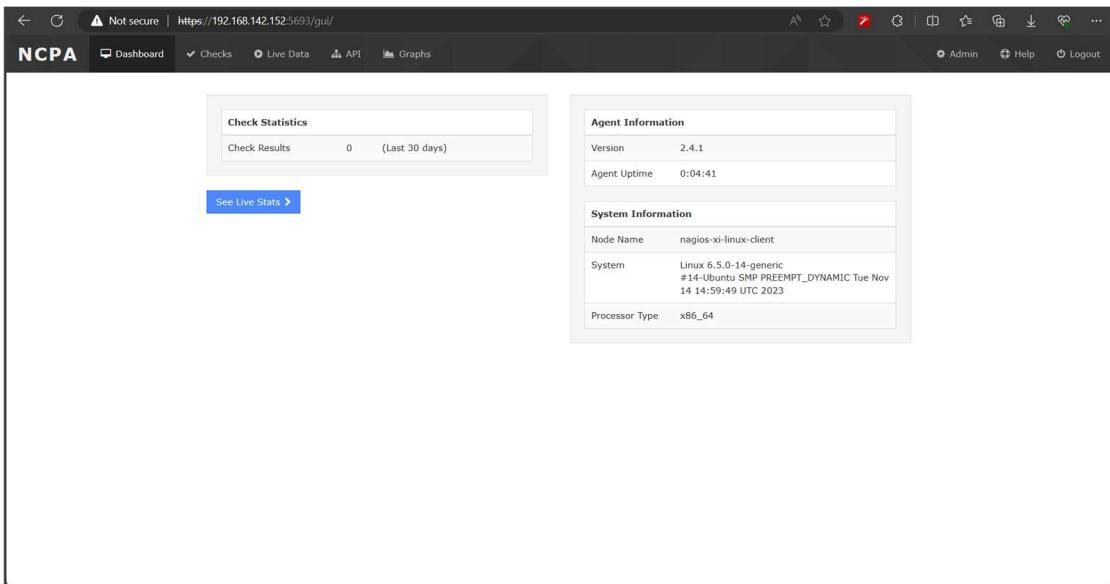
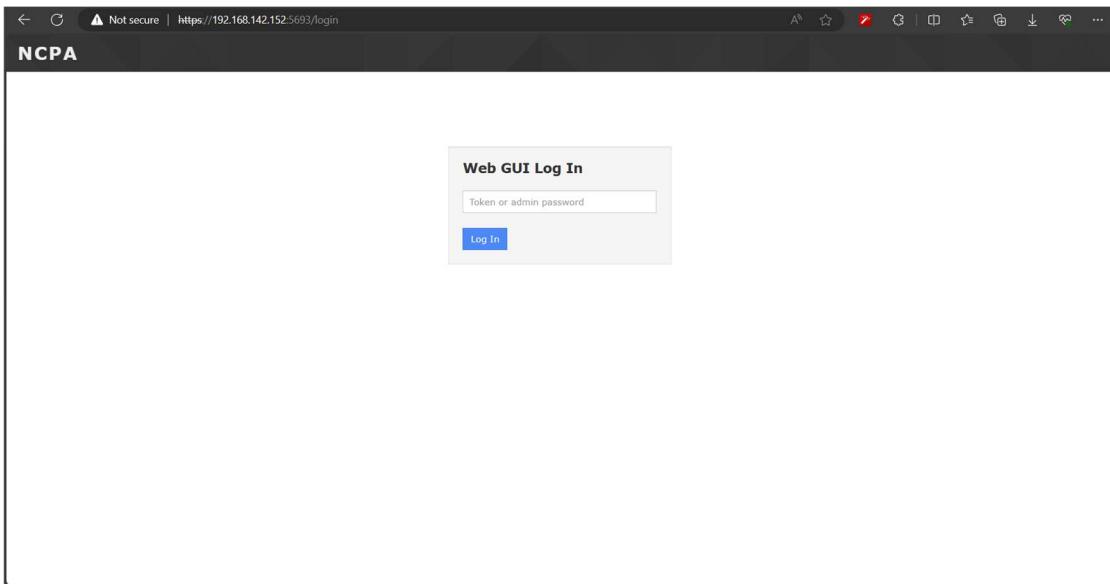


```
Dec 5 20:44
ubuntu@nagios-xi-linux-client:~/Desktop
GNU nano 7.2
[api]
#
# The token that will be used to log into the basic web GUI (API browser, graphs, top charts, etc)
# and to authenticate requests to the API and requests through check_ncpa.py
#
community_string = nagiosclient
#
# -----
# Passive Configuration (daemon)
# -----
#
[passive]
#
# Handlers are a comma separated list of what you would like the passive agent to run
# Default: None
# Options:
#   nrdp, kafkaproducer
#
# Example:
# handlers = nrdp,kafkaproducer
#
handlers = None
#
# User and group to run passive checks as (Recommended to use nagios:nagios)
# Default: uid = nagios
```

```
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo systemctl restart ncpa_listener.service
```

```
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo mkdir -p /etc/ufw/applications.d
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo sh -c "echo '[NCPA]' > /etc/ufw/applications.d/ncpa"
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo sh -c "echo 'title=Nagios Cross Platform Agent' >> /etc/ufw/applications.d/ncpa"
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo sh -c "echo 'description=Nagios Monitoring Agent' >> /etc/ufw/applications.d/ncpa"
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo sh -c "echo 'ports=5693/tcp' >> /etc/ufw/applications.d/ncpa"
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo ufw allow NCPA
Rules updated
Rules updated (v6)
ubuntu@nagios-xi-linux-client:~/Desktop$ sudo ufw reload
```





Nagios
The Industry Standard in IT Infrastructure Monitoring

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Microsoft VMware Linux

Note: Nagios XI was built to run natively on CentOS and Red Hat versions of Linux. You can use our prepackaged VM and install in VMWare. We offer this pre-installed OVA to quickly install Nagios XI. **Maintenance and support of underlying operating system or virtual machine architecture is the responsibility of the customer. Our OVA packages are not intended for offline environments.**

Workstation Pro/Player 64-bit .ova

This is the quickest way to start using Nagios XI.
Works with: VMware Workstation Pro/Player, VirtualBox, and anything that can use OVF. [View Installation Guide](#) Download

A screenshot of a web browser window. The address bar shows "Not secure | 192.168.142.148" and the title "Nagios XI". The main content area is titled "Welcome" and contains instructions: "Click the link below to get started using Nagios XI." Below this is a button labeled "Access Nagios XI". At the bottom of the page, there is footer text: "Check for tutorials and updates by visiting the Nagios Library at [library.nagios.com](#). Problems, comments, etc, should be directed to our support forum at [support.nagios.com/forum/](#)." The footer also includes links for "About", "Legal", and "Copyright © 2008-2023 Nagios Enterprises, LLC".

Not secure | 192.168.142.148/nagiosxi/install.php

Nagios XI Installation

Finalize your Nagios XI installation and step the initial configuration. These settings can be changed later.

General System Settings

Program URL: http://192.168.142.148/nagiosxi/

Timezone: (UTC+07:00) Hanoi

Language: English (English)

User Interface Theme: Modern

Use HTTPS only (all HTTP requests will be redirected to HTTPS)

License Settings

License Type: Trial Licensed Free (Limited)

Free license is limited to 7 nodes and up to a total of 100 host/service checks.
This option is self-supported only.

Nagios XI | Install

Nagios XI Installation

Finalize your Nagios XI installation and step the initial configuration. These settings can be changed later.

Admin Account Settings

Username: nagiosadmin

Password: nagiosadmin

Full Name: Nagios Administrator

Email Address: root@localhost

Admin Notification Settings

Send this account email notifications Advanced email notification settings

Nagios XI | Login

Login

nagiosadmin

Forgot your password?

Select Language:

Nagios Products

XI F LS NA

Nagios XI

Provides monitoring of all mission-critical infrastructure components including applications, services, operating systems, network protocols, systems metrics, and network infrastructure. Hundreds of third-party addons provide for monitoring of virtually all in-house applications, services, and systems.

Contact Us

Looking for more information? Have a technical or sales question?

Sales: Phone: (651) 204-9102 Email: sales@nagios.com

Web: Nagios Website Nagios Exchange

Support: Support Forum Knowledgebase

B.3. CONFIGURATION

B.3.1. At Windows 8

We have taken the steps as the following photos:

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: A W D N E M [Get More Wizards](#)

 Apache Tomcat Monitor Apache Tomcat JVMs through JMX (uses NCPA or requires Java)	 Docker Monitor Docker containers via NCPA or through the CURL API.	 GlassFish Monitor GlassFish JVMs through JMX (uses NCPA or requires Java)
 Google Cloud Monitor a Google Cloud VM (Windows, RHEL/CentOS, Debian/Ubuntu, or SLES) using NCPA.	 Hyper-V Monitor your Hyper-V server via NCPA.	 JBoss/WildFly Monitor JBoss/WildFly JVMs through JMX (uses NCPA or requires Java)
 Jetty Monitor Jetty JVMs through JMX (uses NCPA or requires Java)	 Linux Server Monitor a remote Linux server, with NCPA.	 Microsoft Azure Cloud Monitor a Microsoft Azure Cloud VM (Windows, RHEL, CentOS, or Ubuntu) using NCPA.
 NCPA Monitor a host (Windows, Linux, OS X, Solaris, or AIX) using the Nagios Cross-Platform Agent.	 Windows Event Log Monitor Windows event logs via NCPA.	

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Nagios XI

Home Views Dashboards Reports Configure Tools Help Admin

Configuration Wizard: NCPA - Step 1

Setup NCPA

The agent should be installed before you continue running this wizard.

- Download the latest version of NCPA for the system you would like to monitor
- Follow the installation instructions ([PDF version](#)) and configure the token for the agent

Connect to NCPA

Address: The IP address or FQDN name used to connect to NCPA.

Port: Port used to connect to NCPA. Defaults to port 5693.

Do not verify SSL certificate

Token: Authentication token used to connect to NCPA.

System: Used to set the icon for the host.

[Back](#) [Next >](#)

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Nagios XI

Home Views Dashboards Reports Configure Tools Help Admin

Configuration Wizard: NCPA - Step 2

Host Information

Address:
Host Name: The hostname you'd like to have associated with this host.

Port:

System: 

System Metrics

Specify the metrics you'd like to monitor on the NCPA Agent.

CPU Usage
Check the CPU usage of the system.
 20 % | 40 % Show average CPU usage instead of per cpu core

User Count
Check the number of users currently logged into the system.
 2 # | 4 *

Memory Metrics

Default units to use for memory metric output:

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System Metrics

Specify the metrics you'd like to monitor on the NCPA Agent.

CPU Usage

Check the CPU usage of the system.

⚠ 20 % ❗ 40 %

Current CPU Usage

0 %

Show average CPU usage instead of per cpu core

User Count

Check the number of users currently logged into the system.

⚠ 2 # ❗ 4 #

Current User Count

1

Memory Metrics

Memory Metrics

Default units to use for memory metric output: Gi ▼

Main Memory Usage

Monitor memory usage as percentage of memory used.

⚠ 50 % ❗ 80 %

Current Memory Usage

34.3 %

Swap Usage

Monitor the percentage of allocated swap used.

⚠ 5 % ❗ 10 %

Current Swap Usage

22.6 %

Disk Metrics

Disk Metrics

Specify the disks the the warning and critical percentages for disk capacity.

Disk/Mount

Current Usage

Thresholds



C:\

18.8

%



70

%



90

%

Network Interface Metrics

Specify bandwidth limits for your network interfaces. Note that these measurements are per second, not a counter.

Interface Name

Thresholds



Ethernet0



10

MB/s



100

MB/s

[Show all interfaces](#)

Services

Specify which services should be running or stopped. Depending on the selected state you will receive an OK when the process is in the selected state and a CRITICAL if the process is not in the state selected.

Service Description	Service Name	Expected Status
<input checked="" type="checkbox"/> Spooler Service Status	Spooler	<input checked="" type="radio"/> Running <input type="radio"/> Stopped

[Add Another Service Check](#)

Processes

Specify which processes should be running and how many of them there should be.

Service Description	Process Name	Thresholds (Process count) ?
<input type="checkbox"/>		 80  100

[Add Another Process Check](#)



Configuration Wizard: NCPA - Step 3



Monitoring Settings

Define basic parameters that determine how the host and service(s) should be monitored.

Under normal circumstances:

Monitor the host and service(s) every minutes.

When a potential problem is first detected:

Re-check the host and service(s) every minutes up to times before sending a notification.

[◀ Back](#)

[Next ▶](#)

 [Finish](#)

NCPA Monitoring Wizard

 Configuration applied successfully.

Your configuration changes have been successfully applied and the monitoring engine was restarted.

Configuration Request Successful

[Run this monitoring wizard again](#)

[Run another monitoring wizard](#)

Other Options:

- [View status details for 192.168.142.134](#)
- [View the latest configuration snapshots](#)

The screenshot shows the Nagios XI Service Status page. At the top left, it displays 'Service Status' with a star icon and the host '192.168.142.134'. Below this is a table titled 'Host Status Summary' with columns: Up, Down, Unreachable, Pending, Unhandled, Problems, and All. The table shows 1 Up, 0 Down, 0 Unreachable, 0 Pending, 0 Unhandled, 0 Problems, and 1 All. At the bottom of this table is the note 'Last Updated: 2023-12-05 08:12:39'. To the right is another table titled 'Service Status Summary' with columns: Ok, Warning, Unknown, Critical, Pending, Unhandled, Problems, and All. This table shows 0 Ok, 0 Warning, 0 Unknown, 0 Critical, 8 Pending, 0 Unhandled, 0 Problems, and 8 All. At the bottom of this table is the note 'Last Updated: 2023-12-05 08:12:39'. Below these summary tables is a detailed table listing 8 service records. The columns are Host, Service, Status, Duration, Attempt, Last Check, and Status Information. Each row contains a link to the service details. The table is paginated at the top with 'Page 1 of 1' and '15 Per Page'.

B.3.2. At Linux (Ubuntu 23.10)

We have taken the steps as the following photos:

This screenshot shows the 'Configuration Wizard: NCPA - Step 1' page. The left sidebar has sections like Configuration, Configuration Tools, Auto Deployment, and Advanced Configuration. The main area is titled 'Setup NCPA' with instructions: 'The agent should be installed before you continue running this wizard.' It includes fields for 'Address' (192.168.142.152), 'Port' (5693), 'Token' (*****), and 'Systems' (Ubuntu). There are also checkboxes for 'Do not verify SSL certificate' and 'Used to set the icon for the host.' At the bottom are 'Back' and 'Next >' buttons.

This screenshot shows the 'Configuration Wizard: NCPA - Step 2' page. The left sidebar is identical to the previous step. The main area is titled 'Host Information' with fields for 'Address' (192.168.142.152), 'Host Name' (Nagios XI Linux Client), 'Port' (5693), and 'System' (Ubuntu icon). Below this is the 'System Metrics' section with options for 'CPU Usage' and 'User Count'. The 'CPU Usage' section includes a graph showing current CPU usage at 0% with a warning threshold at 20%. The 'User Count' section shows 4 users currently logged in. At the bottom is a 'Memory Metrics' section with a dropdown for default units.

The remaining steps are similar to Windows 8

Service Status

Host: Nagios XI Linux Client

Host Status Summary

Up	Down	Unreachable	Pending
1	0	0	0
Unhandled	Problems	All	
0	0	1	

Last Updated: 2023-12-01 08:15:23

Service Status Summary

OK	Warning	Unknown	Critical	Pending
0	0	0	0	25
Unhandled	Problems	All		
0	0	25		

Last Updated: 2023-12-05 08:15:23

Showing 1-15 of 25 total records

Host	Service	Status	Duration	Attempt	Last Check	Status Information
Nagios XI Linux Client	CPU Usage	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:15:40
	Disk Usage on /	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:16:00
	Disk Usage on /run/credentials/systemd-resolved.service	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:16:20
	Disk Usage on /run/credentials/systemd-syactl.service	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:16:40
	Disk Usage on /run/credentials/systemd-sysusers.service	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:17:00
	Disk Usage on /run/credentials/systemd-tmpfiles-setup-dev.service	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:17:20
	Disk Usage on /run/credentials/systemd-tmpfiles-setup.service	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:17:40
	Disk Usage on /snap	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:18:00
	Disk Usage on /snap/bare/5	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:18:20
	Disk Usage on /snap/core22/864	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:18:40
	Disk Usage on /snap/firefox/5216	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:19:00
	Disk Usage on /snap/firmware-updater/109	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:19:20
	Disk Usage on /snap/gnome-42-2204/141	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:19:40
	Disk Usage on /snap/gtk-common-themes/1535	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:20:00
	Disk Usage on /snap/snappy-store/1046	Pending	19696d 1h 15m 23s	1/5	1970-01-01 07:00:00	Service check is pending... Check is scheduled for 2023-12-05 21:20:20

Last Updated: 2023-12-05 08:15:23

B.3.3. At Website

We have taken the steps as the following photos:

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: web

Esonsors Websensor Monitor temperature, humidity, and light levels on a Esonsors Websensor.

Web Transaction (Legacy) Monitor a synthetic web transaction. (Deprecated)

WebLogic Monitor a WebLogic instance via JMX.

Website Monitor a website.

Website Defacement Monitor a website for defacement.

Website URL Monitor a specific web URL.

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Configuration Wizard: Website URL - Step 1

URL Information

URL:

Enter the full URL you'd like to monitor.

Back **Next >**

Configuration Wizard: Website - Step 2

Website Details

Website URL:

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

IP Address:
The IP address associated with the website fully qualified domain name (FQDN).

Website Options

Use SSL: Monitor the website using SSL/HTTPS.

Port:
The port to use when contacting the website.

On Redirect:
How to handle redirected pages. sticky is like follow but will stick to the specified IP address. stickyport ensures the port stays the same.

Credentials:
Basic authentication only. The username and password to use to authenticate to the website (optional)

Website Services

Specify which services you'd like to monitor for the website.

- HTTP** Includes basic monitoring of the website to ensure the web server responds with a valid HTTP response.
- Ping** Monitors the website server with an ICMP ping. Useful for watching network latency and general uptime of your web server. Not all web servers support this.
- DNS Resolution** Monitors the website DNS name to ensure it resolves to a valid IP address.
- DNS IP Match** Monitors the website DNS name to ensure it resolves to the current known IP address. Helps ensure your DNS doesn't change unexpectedly, which may mean a security breach has occurred.
- Web Page Content** Monitors the website to ensure the specified string is found in the content of the web page. A content mismatch may indicate that your website has experienced a security breach or is not functioning correctly.
Content String To Expect:
- Web Page Regular Expression Match** Monitors the website to ensure the specified regular expression is found in the content of the web page. A content mismatch may indicate that your website has experienced a security breach or is not functioning correctly.
Regular Expression To Expect:

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Service Status

Host: nagios.com

Service Status		Host Status Summary				Service Status Summary								
Host	Service	Status	Duration	Attempt	Last Check	Up	Down	Unreachable	Pending	Ok	Warning	Unknown	Critical	Pending
nagios.com	DNS IP Match	Pending	10000d 1h 23m 34s	1/5	1970-01-01 07:00:00	0	0	0	0	0	0	0	0	0
	DNS Resolution	Pending	10000d 1h 23m 34s	1/5	1970-01-01 07:00:00	0	0	0	0	0	0	0	0	0
	HTTP	Pending	10000d 1h 23m 34s	1/5	1970-01-01 07:00:00	0	0	0	0	0	0	0	0	0
	Ping	Pending	10000d 1h 23m 34s	1/5	1970-01-01 07:00:00	0	0	0	0	0	0	0	0	0
	SSL Certificate	Pending	10000d 1h 23m 34s	1/5	1970-01-01 07:00:00	0	0	0	0	0	0	0	0	0



Last Updated: 2023-12-01 08:23:34

Last Updated: 2023-12-01 08:23:34

Search...

Showing 1-5 of 5 total records

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Status Information

Service check is pending... Check is scheduled for 2023-12-01 21:23:55
Service check is pending... Check is scheduled for 2023-12-01 21:24:20
Service check is pending... Check is scheduled for 2023-12-01 21:24:44
Service check is pending... Check is scheduled for 2023-12-01 21:25:08
Service check is pending... Check is scheduled for 2023-12-01 21:25:32

Last Updated: 2023-12-01 08:23:34

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C. SUMMARY

C.1. RESULT

C.1.1. For Windows

Host Status Detail						Last updated: 2023-12-05 08:26:01
Service Status for this Host						
Service	Status	Duration	Attempt	Last Check	Status Information	
User Count	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:22:35	OK: Count was 1 users	
Swap Usage	red Critical	-9s	2/5	2023-12-05 21:23:13	CRITICAL: Swap usage was 22.60 % (Total: 0.62 GB, Free: 0.48 GB, Used: 0.14 GB)	
Spooler Service Status	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:21:48	OK: Spooler is running	
Ethernet Bandwidth - Inbound	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:20:47	OK: Bytes_recv was 0.00 MB/s	
Memory Usage	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:21:32	OK: Memory usage was 32.80 % (Total: 2.00 GB, Available: 1.34 GB, Free: 1.34 GB, Used: 0.66 GB)	
CPU Usage	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:20:11	OK: Percent was 0.00 %	
Ethernet Bandwidth - Outbound	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:21:06	OK: Bytes_sent was 0.00 MB/s	
Disk Usage on C:/	green OK	19696d 1h 24m 1s	1/5	2023-12-05 21:20:27	OK: Used disk space was 18.80 % (Total: 60.60 GB, Used: 11.28 GB, Free: 48.72 GB)	

C.1.2. For Linux

Host Status Detail						Last updated: 2023-12-05 08:20:58
Service Status for this Host						
Service	Status	Duration	Attempt	Last Check	Status Information	
CPU Usage	green OK	-4s	1/5	2023-12-05 21:20:39	OK: Percent was 0.00 %	
Disk Usage on /	green OK	-5s	1/5	2023-12-05 21:20:57	OK: Used disk space was 45.30 % (Used: 6.38 GB, Free: 10.12 GB, Total: 19.52 GB)	
Disk Usage on /run/credentials/systemd-resolved.service	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:16:17	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /run/credentials/systemd-rpc.service	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:16:37	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /run/credentials/systemd-rpc-users.service	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:17:04	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /run/credentials/systemctl-setup-dev.service	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:17:21	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /run/credentials/systemctl-setup-service	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:17:36	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /snap	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:18:02	OK: Used disk space was 45.30 % (Used: 6.38 GB, Free: 10.12 GB, Total: 19.52 GB)	
Disk Usage on /snap/haveged	red Critical	-23s	3/5	2023-12-05 21:20:23	CRITICAL: Used disk space was 100.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /snap/cron@1044	green OK	-39s	3/5	2023-12-05 21:20:31	CRITICAL: Used disk space was 100.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.07 GB)	
Disk Usage on /snap/cron@3216	red Critical	-58s	3/5	2023-12-05 21:20:54	CRITICAL: Used disk space was 100.00 % (Used: 0.23 GB, Free: 0.00 GB, Total: 0.23 GB)	
Disk Usage on /snap/firmware-updater@129	red Critical	-20s	2/5	2023-12-05 21:20:17	CRITICAL: Used disk space was 100.00 % (Used: 0.73 GB, Free: 0.00 GB, Total: 0.73 GB)	
Disk Usage on /snap/gnome@42-2204@141	red Critical	-43s	2/5	2023-12-05 21:20:43	CRITICAL: Used disk space was 100.00 % (Used: 0.49 GB, Free: 0.00 GB, Total: 0.49 GB)	
Disk Usage on /snap/glib-common@name@1535	red Critical	-5s	1/5	2023-12-05 21:20:02	CRITICAL: Used disk space was 100.00 % (Used: 0.09 GB, Free: 0.00 GB, Total: 0.09 GB)	
Disk Usage on /snap/iso-store@1046	red Critical	-23s	1/5	2023-12-05 21:20:20	CRITICAL: Used disk space was 100.00 % (Used: 0.02 GB, Free: 0.00 GB, Total: 0.02 GB)	
Disk Usage on /snap/knoppix/integration@83	red Critical	-47s	5/5	2023-12-05 21:19:44	CRITICAL: Used disk space was 100.00 % (Used: 0.02 GB, Free: 0.00 GB, Total: 0.02 GB)	
Disk Usage on /snap/knoppix@20290	red Critical	-13s	5/5	2023-12-05 21:20:10	CRITICAL: Used disk space was 100.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.04 GB)	
Disk Usage on /sysfs/fuse@0	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:18:27	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /sys/fs/cgroup	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:18:42	OK: Used disk space was 0.00 % (Used: 0.00 GB, Free: 0.00 GB, Total: 0.00 GB)	
Disk Usage on /var/snap/refos/common/host-hunspell	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:17:09	OK: Used disk space was 45.30 % (Used: 6.38 GB, Free: 10.12 GB, Total: 19.52 GB)	
Memory Usage	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:17:55	OK: Memory usage was 33.20 % (Available: 2.52 GB, Total: 3.78 GB, Free: 1.54 GB, Used: 0.98 GB)	
Swap Usage	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:17:41	OK: Swap usage was 0.00 % (Used: 0.00 GB, Free: 3.78 GB, Total: 3.78 GB)	
User Count	Warning	-8s	3/5	2023-12-05 21:20:06	WARNING: Count was 4 users	
ens33 Bandwidth - Inbound	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:18:23	OK: Bytes_recv was 0 MB/s	
ens33 Bandwidth - Outbound	green OK	19696d 1h 20m 57s	1/5	2023-12-05 21:18:44	OK: Bytes_sent was 0 MB/s	

C.1.3. For Website

Host Status Detail						Last updated: 2023-12-05 08:29:51
Service Status for this Host						
Service	Status	Duration	Attempt	Last Check	Status Information	
Ping	green OK	19696d 1h 29m 51s	1/5	2023-12-05 21:24:56	OK - nagios.com rta 610.837ms lost 0%	
HTTP	green OK	-48s	1/5	2023-12-05 21:29:40	HTTP OK HTTP/1.1 201 Moved Permanently - 475 bytes in 1.193 second response time	
DNS IP Match	green OK	-5s	1/5	2023-12-05 21:28:53	DNS OK 0.087 seconds response time, nagios.com returns 198.58.120.98	
DNS Resolution	green OK	-25s	1/5	2023-12-05 21:29:13	DNS OK 0.105 seconds response time, nagios.com returns 198.58.120.98	
SSL Certificate	green OK	19696d 1h 29m 51s	1/5	2023-12-05 21:25:34	SSL OK - Certificate "nagios.com" will expire in 258 days on 2024-08-20 06:39 +0700 (+0700)	

C.2. COMPARE NAGIOS XI, ZABBIX AND WAZUH

Same:

All three of the tools are used to monitor and manage network systems, and are all open source software operating on a client-server architecture. All provide easy-to-use web interfaces for viewing monitoring, configuration, and management information.

Different	Nagios XI	Zabbix	Wazuh
Installation components	Server Nagios: check_ncpa Host Linux: Plugins, NCPA Host Windows: NCPA	Zabbix Server Zabbix Agent Web interface	Wazuh indexer Wazuh server Wazuh Agent Wazuh dashboard
User interface	Web display	Web display	Web display
Operation	It works through two methods: agent and native protocol. An agent lives on a network element, such as a Linux server. Nagios reaches out to the agent to check various statistics. Nagios XI stores information for future reports.	Create and manage monitoring devices, send requests and collect data from devices, process data and alerts according to defined thresholds and rules.	Detect intrusions through log analysis, system and application monitoring, and alerts about suspicious behavior.

C.3. CONCLUSION

Understand the configuration and operation of a server monitoring model using Nagios XI.

Know how to connect the Nagios server to Linux, window and website hosts. How it monitor the status of resources and services on the hosts in the internal network.

C.4. EVALUATE THE IMPLEMENTATION PROCESS

The contents that the group has completed according to the requirements are as follows:

- Monitor resource usage status of hosts
- Monitor service provision status of hosts
- Send alerts via email when there is a problem and also when the problem is resolved

Due to limited in-depth research capabilities for the project, the model has many shortcomings, including:

- Website cannot be fully monitored

- Not fully controlling and mastering the entire monitoring process

C.5. WORK ASSIGNMENT TABLE

Student's ID	Assigned work	Complete
21520202	<p>Leader. Responsible for: submitting assignments, reviewing, completing missing items, writing articles, making presentation slides and demo videos.</p> <p>Presentation of General information section and Script section.</p>	100%
21521386	<p>Find documents to implement the topic and synthesize the implementation part of the report.</p> <p>Carry out implementation and fix errors encountered during the process.</p> <p>Presentation of Components section.</p>	100%
21521404	<p>Build specific implementation models and scenarios.</p> <p>Carry out implementation and fix errors encountered during the process.</p> <p>Main presentation.</p>	100%

C.6. SELF ASSESSMENT

Content rated	Point	Note
Report format	1	Report with sufficient content and consistent format
Presentation	0.75	Presentation is at a good level
Theory	1.75	Present concepts and operating mechanisms according to the group's understanding
Demonstration	4.5	Implement basic content and some advanced content
Total self-assessment score	8	

C.7. ANSWER THE QUESTIONS

Question: "If the website interacts with a database, is there a way to monitor the status and performance of the database?"

Answer: Nagios XI can track the website's database but it is not a extension for the website that needs a separate plugin to track the database that the website uses (ie it tracks the database but it will need a extension Particularly for the database, not combined for the web). MySQL, Postgresql, Oracle, ... are the extensions for the tracking of database.

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THE END./.