



Testing in DevOps

DOu – Certified Tester in DevOps (CTD)
Exercise Solutions

HO-1.6(HO-0)

Exercise - Demonstrate the main monitoring elements in tools, such as Nagios or Grafana

- Use nagios for monitoring the app

HO-1.6(HO-0)

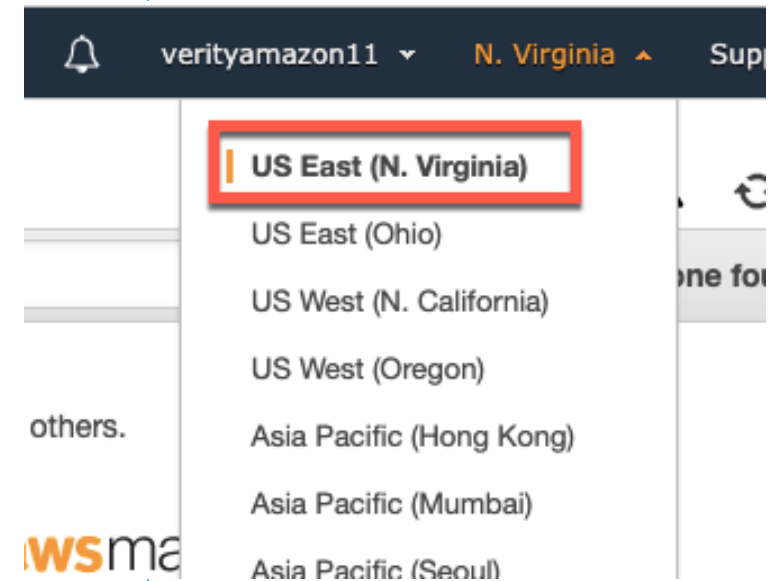
Exercise Solution - Demonstrate the main monitoring elements in tools, such as Nagios or Grafana

- Setup Nagios Server machine on AWS
- Setup Nagios Client(Ubuntu) machine on AWS
- Installing The Linux NRPE Agent on Nagios client
- Configure Nagios Server
- Monitor the Nagios client on Nagios Server
- Install Apache Webserver on Nagios client
- Monitor the Nagios client on Nagios Server
- Stop Apache Webserver on Nagios client
- Monitor the Nagios client
- Start Apache Webserver on Nagios client
- Monitor the Nagios client

HO-1.6(HO-0)

Nagios on AWS

1. Login to AWS and Launch the following link
<https://console.aws.amazon.com/ec2/home?region=us-east-1#s=Images>
2. Ensure **region** is one of the following
 - USEast(N.Virginia&Ohio),USWest(N.California&Oregon)
 - Canada(Central)
 - EU(Frankfurt,Ireland,London)
 - AsiaPacific(Mumbai,Seoul,Singapore,Sydney,Tokyo)
 - S.America(SaoPaulo)



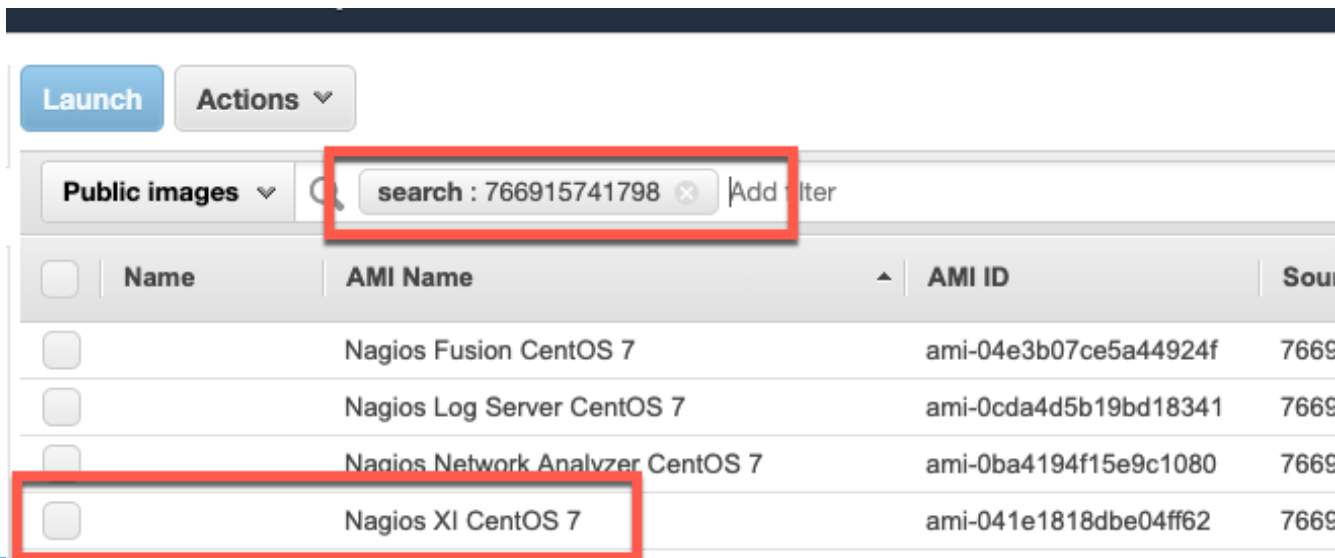
HO-1.6(HO-0)

Nagios on AWS ...

3. Set Filter to **Public Images**

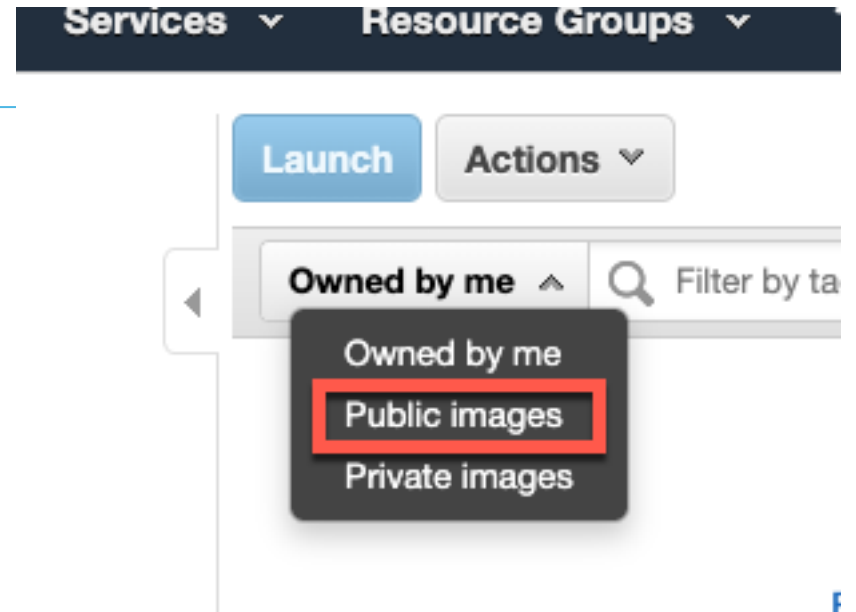
4. Search for **766915741798**

We will see **Nagios XI CentOS 7** in the results



The screenshot shows the AWS IAM console interface. At the top, there are buttons for 'Launch' and 'Actions'. Below them is a filter dropdown set to 'Public images' and a search bar containing 'search : 766915741798'. A table of results is displayed below the search bar. The table has columns for 'Name', 'AMI Name', 'AMI ID', and 'Source'. The first three rows are 'Nagios Fusion CentOS 7', 'Nagios Log Server CentOS 7', and 'Nagios Network Analyzer CentOS 7'. The fourth row, 'Nagios XI CentOS 7', is highlighted with a red box. The source for all images is '766915741798'.

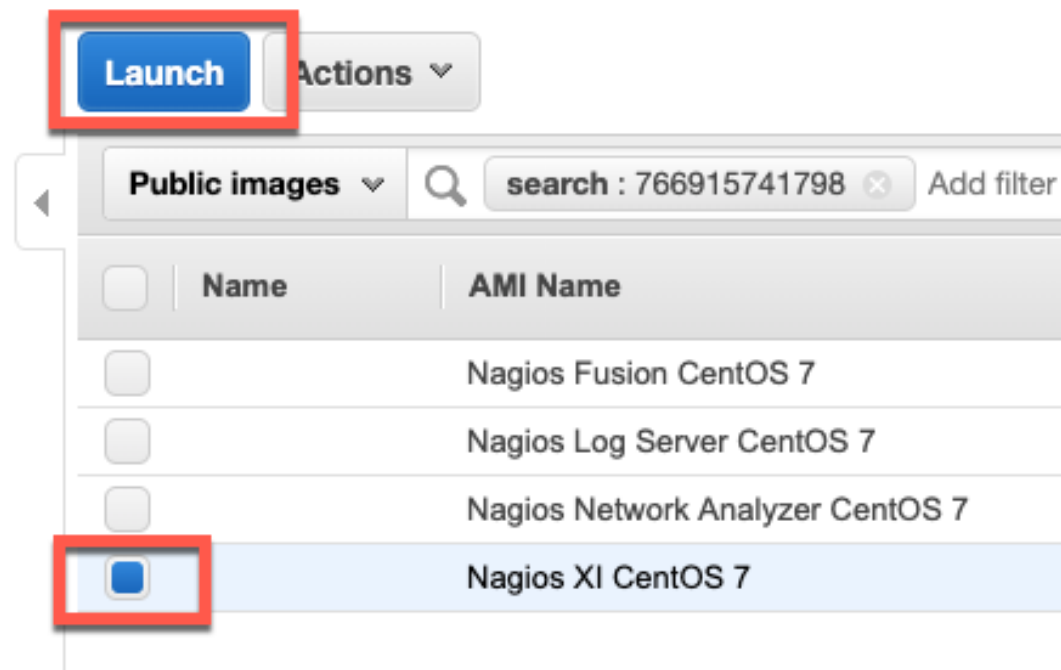
	Name	AMI Name	AMI ID	Source
<input type="checkbox"/>		Nagios Fusion CentOS 7	ami-04e3b07ce5a44924f	766915741798
<input type="checkbox"/>		Nagios Log Server CentOS 7	ami-0cda4d5b19bd18341	766915741798
<input type="checkbox"/>		Nagios Network Analyzer CentOS 7	ami-0ba4194f15e9c1080	766915741798
<input type="checkbox"/>		Nagios XI CentOS 7	ami-041e1818dbe04ff62	766915741798



HO-1.6(HO-0)

Nagios on AWS ...

5. Click on the Check box for **Nagios XI CentOS 7** and click on Launch



HO-1.6(HO-0)

Nagios on AWS ...

6. Take default options (free tier) and click on **Configure Instance Details**
7. Click on **Add Storage**
8. Click on **Add Tags**
9. Click on **Configure Security Groups**
10. Click on **Add Rule**

Step 6: Configure Security Group

A security group is a set of firewall rules that control the Internet traffic to reach your instance, add rules that allow groups.

Assign a security group: ☒ Create

☐ Select

Security group name:

Description:

Type ⓘ

Protocol ⓘ

SSH

TCP

Add Rule

HO-1.6(HO-0)

Nagios on AWS ...

11. In **Port Range** enter **80**, enter 0.0.0.0/0 in **Source** and click on **Review and Launch**

Description: launch-wizard-10 created 2019-06-04T10:19:16.71

Type ⓘ	Protocol ⓘ	Port Range ⓘ
SSH	TCP	22
Custom TCP ⓘ	TCP	80

12. Click on **Launch**

HO-1.6(HO-0)

Nagios on AWS ...

13. We would be prompted to *Select or create a* key pair
14. Click on the dropdown and select **Create a new key pair**
15. In Key Pair name, enter an easy to remember name
16. Click on Download Key pair
17. Save the file on your desktop
18. Launch Instances
19. Go to running instance

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

Key pair name

NagiosAWS

Download Key Pair

You have to download the **private key file** (*.pem file) before you can continue. **Store**

HO-1.6(HO-0)

Launching Nagios

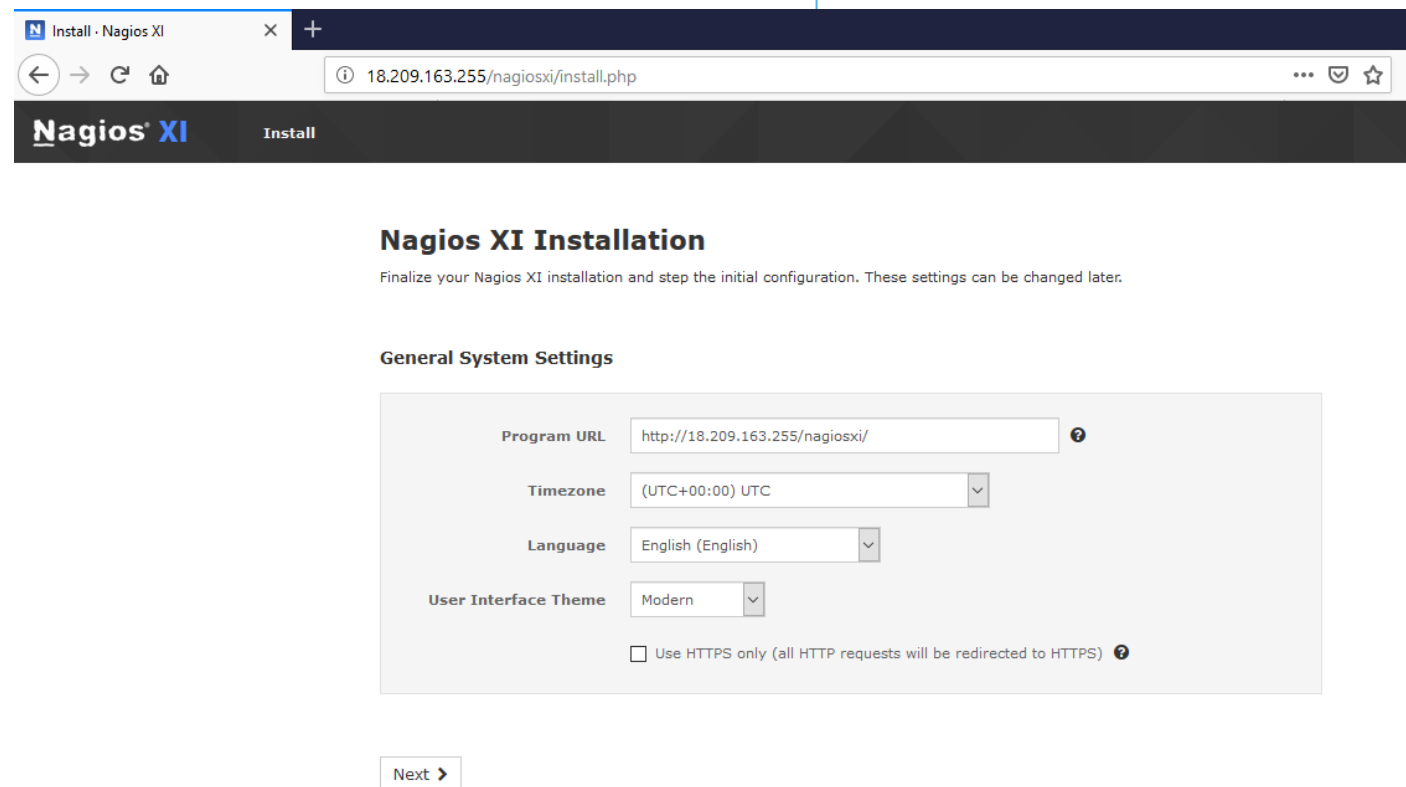
- In the AWS session, we have already learnt how to find the IP address of an instance. Open a new browser and launch the following URL
http://<<IP address>>/nagiosxi/
e.g. http://54.225.58.207/nagiosxi/
- Nagios XI UI may take 10-15 min to be up on browser mean while it will show messages
 - This site can't be reached
 - The requested URL /nagiosxi/ was not found on this server(404)
 - You don't have permission to access /nagiosxi/ on this server(403)



HO-1.6(HO-0)

Setup Nagios XI UI

- Click Next



The screenshot shows a web browser window with the address bar displaying `18.209.163.255/nagiosxi/install.php`. The page title is "Install · Nagios XI". The main heading is "Nagios XI Installation" with a subtext: "Finalize your Nagios XI installation and step the initial configuration. These settings can be changed later." Below this is the "General System Settings" section, which contains four configuration items: "Program URL" set to `http://18.209.163.255/nagiosxi/`, "Timezone" set to "(UTC+00:00) UTC", "Language" set to "English (English)", and "User Interface Theme" set to "Modern". There is an unchecked checkbox for "Use HTTPS only (all HTTP requests will be redirected to HTTPS)". A "Next >" button is located at the bottom of the settings box.

Nagios XI Installation

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

General System Settings

Program URL:

Timezone:

Language:

User Interface Theme:

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

Next >

HO-1.6(HO-0)

Setup Nagios XI UI...

- Click Finish Install

Note: You can change the password here & note it down for future use

Admin Account Settings

Username	<input type="text" value="nagiosadmin"/>
Password	<input type="password" value="L,&SfGVek4S0PaNqe999"/>
Full Name	<input type="text" value="Nagios Administrator"/>
Email Address	<input type="text" value="root@localhost"/>

Admin Notification Settings

☒ Send this account email notifications [Advanced email notification settings](#)

[< Back](#)

[✓ Finish Install](#)

HO-1.6(HO-0)

Setup Nagios XI UI...

- Click Login to Nagios XI
- Login to Nagios XI
- Accept the License
- Click Submit

Installation Complete

Congratulations! You have successfully installed Nagios XI. You may now login to Nagios XI using the following credentials.

Username	nagiosadmin
Password	L,&SfGVek4S0PaNqe99

[Login to Nagios XI >](#)

Login

Login

[Forgot your password?](#)

HO-1.6(HO-0)

Nagios XI Dashboard

The screenshot displays the Nagios XI Home Dashboard. The top navigation bar includes links for Home, Views, Dashboards, Reports, Configure, Tools, Help, and Admin. A search bar and user information (nagiosadmin) are also present. The left sidebar contains a 'Quick View' section with links to various dashboards and a 'Details' section with links to service and host status, hostgroup summaries, and servicegroup summaries. The main content area is titled 'Home Dashboard' and features three primary sections: 'Getting Started Guide', 'Host Status Summary', and 'Service Status Summary'. The 'Getting Started Guide' lists common tasks such as changing account settings, notification settings, and monitoring setup. The 'Host Status Summary' table shows 1 Up, 0 Down, 0 Unreachable, and 0 Pending hosts. The 'Service Status Summary' table shows 12 Ok, 0 Warning, 0 Unknown, 1 Critical, and 0 Pending services. Both status summary tables include a 'Last Updated' timestamp of 2019-06-05 10:09:07. An 'Administrative Tasks' section is partially visible at the bottom.

Nagios XI Home Views Dashboards Reports Configure Tools Help Admin

Quick View

- Home Dashboard
- Tactical Overview
- Birdseye
- Operations Center
- Operations Screen
- Open Service Problems
- Open Host Problems
- All Service Problems
- All Host Problems
- Network Outages

Details

- Service Status
- Host Status
- Hostgroup Summary
- Hostgroup Overview
- Hostgroup Grid
- Servicegroup Summary
- Servicegroup Overview
- Servicegroup Grid
- BPI
- Metrics

Graphs

- Performance Graphs
- Graph Explorer

Maps

Home Dashboard

Getting Started Guide

Common Tasks:

- [Change your account settings](#)
Change your account password and general preferences.
- [Change your notifications settings](#)
Change how and when you receive alert notifications.
- [Configure your monitoring setup](#)
Add or modify items to be monitored with easy-to-use wizards.

Getting Started:

- [Learn about XI](#)
Learn more about XI and its capabilities.
- [Signup for XI news](#)
Stay informed on the latest updates and happenings for XI.

Host Status Summary

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

Last Updated: 2019-06-05 10:09:07

Service Status Summary

Ok	Warning	Unknown	Critical	Pending
12	0	0	1	0
Unhandled		Problems		All
1		1		13

Last Updated: 2019-06-05 10:09:07

Administrative Tasks

HO-1.6(HO-0)

Setup Ubuntu instance on AWS

- Create & Launch AWS Ubuntu 18.04 instance(t2.micro, 8GB HD)
(Refer to “Testing in DevOps_Exercise-Solutions_Pre-requisite_V0.1” slide-deck)
- Setup Security groups as below while setting up the AWS ubuntu machine

Description	Inbound	Outbound	Tags
<div>Edit</div>			
Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ
All traffic	All	All	0.0.0.0/0
SSH	TCP	22	0.0.0.0/0
All ICMP - IPv4	All	N/A	0.0.0.0/0

HO-1.6(HO-0)

Installing The Linux NRPE Agent

- Putty/SSH to AWS Ubuntu
- Download the Linux NRPE agent to the /tmp directory on the Linux server you wish to monitor.

cd /tmp

wget https://assets.nagios.com/downloads/nagiosxi/agents/linux-nrpe-agent.tar.gz

- Unpack the installation archive you just downloaded:

tar xzf linux-nrpe-agent.tar.gz

HO-1.6(HO-0)

Installing The Linux NRPE Agent...

- Enter the newly created agent subdirectory:

cd linux-nrpe-agent

- Run the wrapper script as root:

sudo ./fullinstall

```
#####  
###  
###   Nagios XI Linux Agent Installation Complete!   ###  
###  
#####
```

- It may take few minutes and script will stop to prompt you for the IP address for your monitoring server
- Enter the IP address of the NagiosXI server instance, when **Allow from** section prompts
- Nagios XI Linux Agent Installation will be finished

HO-1.6(HO-0)

Installing The Linux NRPE Agent...

- Go to Nagios XI Web UI
- Click “Configure” at top bar
- Click “Configuration Wizards”
- Click Linux icon
- Click “Linux Server”
- Set the IP address of aws linux instance(nagios client)
- Select Linux Distribution as “Ubuntu”
- Click Next on **Configuration Wizard: Linux Server - Step 1**
- Make sure all Server Metrics options should be selected **Configuration Wizard: Linux Server - Step 2**
- Select **apache2** under Services section on **Configuration Wizard: Linux Server - Step 2**
- Click Next
- Set monitoring frequency to 1 minute **Under normal circumstances** section
- Click Finish
- Click **View status details for <your aws nagios client>** link

Linux Server 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 ec2-54-172-142-48.compute-1.amazonaws.com](#)
- [View the latest configuration snapshots](#)



apache2



Apache Web Server



HO-1.6(HO-0)

Installing The Linux NRPE Agent...

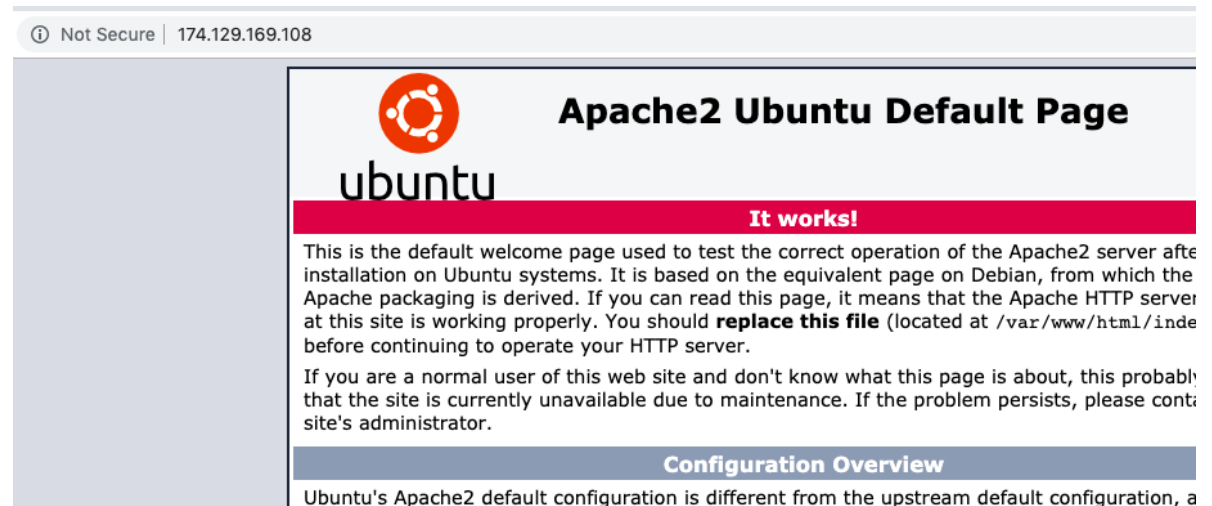
- Verify Apache service status after waiting of one minute on Nagios XI web UI
- Apache Web Server service should be in red(e.g. Critical) as did not setup & run yet on nagios client machine

↓ Host	↑ Service	↑ Status	↑ Duration	↑ Attempt
ec2-35-153-68-119.compute-1.amazonaws.com 	/ Disk Usage 	Ok	4m 30s	1/5
	Apache Web Server	Critical	18s	5/5

HO-1.6(HO-0)

Install Apache on AWS Ubuntu Nagios client

- Go to aws ubuntu nagios client terminal and run below commands
 - **sudo apt update**
 - **sudo apt install apache2**
- Open up the browser
- Launch aws ubuntu nagios client ip address in it



HO-1.6(HO-0)

Install Apache on AWS Ubuntu Nagios client...

- Verify Apache service status after waiting of one minute on Nagios XI web UI
- Apache Web Server service should be in green(e.g. OK)

Service Status

All services



Host Status Summary

Up	Down	Unreachable	Pending
2	0	0	0
Unhandled	Problems	All	
0	0	2	

Last Updated: 2019-08-25 05:43:56



Service Status Summary

Ok	Warning	Unknown	Critical	Pending
23	1	0	2	0
Unhandled	Problems	All		
3	3	26		

Last Updated: 2019-08-25 05:43:56

Search...

Showing 1-15 of 26 total records

Page 1 of 2 15 Per Page Go

Host	Service	Status	Duration	Attempt	Last Check	Status Information
ec2-54-172-142-48.compute-1.amazonaws.com	/ Disk Usage	Ok	1d 15h 9m 26s	1/5	2019-08-25 05:43:06	DISK OK - free space: / 6086 MB (77.42% inode=90%):
	Apache Web Server	Ok	17m 2s	1/5	2019-08-25 05:43:31	active
	APT Updates	Warning	23h 3m 48s	5/5	2019-08-25 05:43:18	APT WARNING: 16 packages available for upgrade (0 critical updates).
	CPU Stats	Ok	1d 15h 9m 4s	1/5	2019-08-25 05:43:25	CPU STATISTICS OK: user=0.00% system=0.00% iowait=0.00% idle=100.00%
	Cron Scheduling Daemon	Ok	1d 15h 9m 0s	1/5	2019-08-25 05:43:34	active
	Load	Ok	1d 15h 9m 8s	1/5	2019-08-25 05:43:22	OK - load average: 0.00, 0.00, 0.00
	Memory Usage	Ok	1d 15h 9m 24s	1/5	2019-08-25 05:43:13	OK - 818 / 983 MB (83%) Free Memory, Used: 120 MB, Shared: 1 MB, Buffers + Cached: 665 MB

HO-1.6(HO-0)

Install Apache on AWS Ubuntu Nagios client...

- To stop Apache 2 web server, launch below command on ubuntu terminal:
sudo /etc/init.d/apache2 stop
- Verify Apache service status after waiting of one minute on Nagios XI web UI
- Apache Web Server service should be in red(e.g. Critical)

Service Status

All services

Search...

Showing 1-15 of 26 total records

Host	Service	Status	Duration	Attempt	Last Check	Status Information
ec2-54-172-142-48.compute-1.amazonaws.com	/ Disk Usage	Ok	1d 15h 17m 52s	1/5	2019-08-25 05:51:55	DISK OK - free space: / 6086 MB (77.42% inode=90%):
	Apache Web Server	Critical	59s	1/5	2019-08-25 05:51:23	inactive
	APT Updates	Warning	23h 12m 14s	5/5	2019-08-25 05:52:08	APT WARNING: 16 packages available for upgrade (0 critical updates).
	CPU Stats	Ok	1d 15h 17m 30s	1/5	2019-08-25 05:52:14	CPU STATISTICS OK: user=0.00% system=0.00% iowait=0.00% idle=100.00%
	Cron Scheduling Daemon	Ok	1d 15h 17m 26s	1/5	2019-08-25 05:51:27	active
	Load	Ok	1d 15h 17m 34s	1/5	2019-08-25 05:52:11	OK - load average: 0.03, 0.02, 0.00
	Memory Usage	Ok	1d 15h 17m 50s	1/5	2019-08-25 05:52:01	OK - 821 / 983 MB (83%) Free Memory, Used: 117 MB, Shared: 0 MB, Buffers + Cached: 665 MB



Host Status Summary

Up	Down	Unreachable	Pending
2	0	0	0
Unhandled	Problems	All	
0	0	2	


Last Updated: 2019-08-25 05:52:22



Service Status Summary

Ok	Warning	Unknown	Critical	Pending
22	1	0	3	0
Unhandled	Problems	All		
4	4	26		

Last Updated: 2019-08-25 05:52:22



HO-1.6(HO-0)

Install Apache on AWS Ubuntu Nagios client

- To start Apache 2 web server, launch below command on ubuntu terminal:

`sudo /etc/init.d/apache2 start`