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theme

Study and Implementation of a Network supervision solution (NAGIOS)

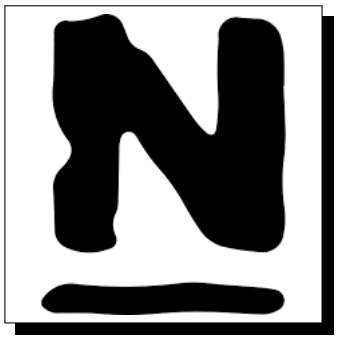

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TABLE DES MATIÈRES

introduction **3**
Mehods **3**
1 Methods **4**
1.1 Material environment 4
1.2 logicial environment 4
1.2.1 VMware 4
1.2.2 Système d'exploitation 5
1.2.3 Supervision tools 5
2 Task I : Installation & configuration of NAGIOS **6**
2.1 Step I : Install and Configure Nagios Core 6
2.1.1 Update the system packages and install all the required packages . 6
2.1.2 Download Nagios Core Setup files and Extract the downloaded files 6
2.1.3 Navigate to the setup directory and Run the Nagios Core configure script 7
2.1.4 Compile the main program and CGIs 7
2.1.5 Make and install group and user 7
2.1.6 Add www-data directories user to the nagios group 7
2.1.7 Install Nagios and initialize all the installation configuration scripts 7
2.1.8 Install and configure permissions on the configs' directory 8
2.1.9 Install sample config files and apache files 8
2.1.10 Enable apache rewrite mode and CGI config 8
2.1.11 Restart the Apache service 8
2.1.12 Create a user and set the password when prompted 8
2.2 Install Nagios Plugins 8
2.2.1 Download the Nagios Core plugin. 9
2.2.2 Extract the downloaded plugin and Navigate to the plugins' directory 9
2.2.3 Run the plugin configure script and Compile Nagios Core plugins . 9
2.2.4 Install the plugins 9
2.3 Verify Nagios Configuration 9
2.3.1 Verify the Nagios Core configuration 9
2.3.2 Start the Nagios service 10
2.3.3 Enable Nagios service to run at system startup 10
2.4 Verify Nagios Configuration 10
3 MONITORING WINDOWS HOST **11**
3.1 Step 1 : Check Hostname and IP of Windows host 11
3.2 Step 2 : Install NSClient++ Agent on host 11

3.3 Step 3 : Check Nagios Server 11
3.3.1 Go to this directory 11
3.3.2 Change permision on "servers" folder 12
3.4 Step 4 : Add Windows Host on Nagios Server 12
3.4.1 Edit nagios.cfg config file and Uncomment this : 12
3.4.2 Go to "server" directory 12
3.4.3 Create a new configuration file called "My hostname.cfg" to monitor Windows host in step 1 12
3.4.4 Open My hostname.cfg file and add new content 12
3.4.5 Change permision on My hostname.cfg file 12
3.4.6 Verify the Nagios configuration files for any erros 13
3.4.7 Restart Nagios service 13
4 MONITORING LINUX HOST 14
4.1 Check Hostname and IP of Linux host 14
4.2 install and Configure NRPE servie and Nagios Plugins on Linux host . . . 14
4.3 Configure Firewall 15
4.4 Add Linux Host on nagios server 16

INTRODUCTION

Nagios is an open-source monitoring system that is widely used to monitor the availability and performance of IT infrastructure, networks, and applications. It was created in 1999 by Ethan Galstad, and it is one of the most popular monitoring systems in use today. Nagios can be used to monitor servers, switches, routers, applications, and other IT resources. It can provide alerts when issues arise and can be configured to take automatic actions to resolve problems. Nagios can monitor server uptime, service or application status, and network performance. It also provides a web-based interface for monitoring and configuration, and it can be integrated with other tools for more comprehensive monitoring and reporting.

CHAPITRE 1

METHODS

1.1 Material environment

Throughout our project, we had at our disposal a laptop with the following following configuration :

— Intel(R) Core ™ i7-7217U (2.9 Ghz)
— 8 Go de RAM
— Disque dur de capacité bonne.
— Système d'exploitation Windows 10
— Système d'exploitation ubuntu 22.04

1.2 logicial environment

After having presented the hardware environment of development, we will recall and briefly justify the technical choices briefly justify the technical choices we have adopted.

1.2.1 VMware

VMware is a company that provides virtualization software and services. Virtualization is a technology that allows multiple operating systems and applications to run on the same physical server, by creating virtual machines (VMs) that emulate the hardware of a physical computer.

1.2.2 Système d'exploitation

In this project we decided to use the iso image of the following 2 operating systems :

— The Ubuntu 22.04 LTS distribution on which Nagios is installed

— Windows 10 as a remote machine to be supervised on which you have installed NSClient++.

1.2.3 Supervision tools

— The nagios-4.4.6 monitoring solution

— The Nagios plugins

CHAPITRE 2

TASK I : INSTALLATION & CONFIGURATION OF NAGIOS

In this task we will install nagios server in ubuntu in order to supervise the different machine (windows, linux, ...) and also switsh and routours .

Note : It is better to work with the lab under a Linux based operating system in order to use some optionsin the deserialization exploitation.

2.1 Step I : Install and Configure Nagios Core

2.1.1 Update the system packages and install all the required packages

```
# sudo apt update
```

```
# sudo apt install wget unzip curl openssl build-essential libgd-dev libssl-dev libapache2-mod-php php-gd php apache2 -y
```

2.1.2 Download Nagios Core Setup files and Extract the downloaded files

To download the latest version, visit the official releases site but it's better to work with an old version.

```
# wget https ://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.6.tar.gz
```

```
# sudo tar -zxvf nagios-4.4.6.tar.gz
```

2.1.3 Navigate to the setup directory and Run the Nagios Core configure script

```
# cd nagios-4.4.6
```

```
# sudo ./configure
```

2.1.4 Compile the main program and CGIs

```
# sudo make all
```

2.1.5 Make and install group and user

```
# sudo make install-groups-users
```

2.1.6 Add www-data directories user to the nagios group

```
# sudo usermod -a -G nagios www-data
```

2.1.7 Install Nagios and initialize all the installation configuration scripts

```
# sudo make install
```

```
# sudo make install-init
```

2.1.8 Install and configure permissions on the configs' directory

```
# sudo make install-commandmode
```

2.1.9 Install sample config files and apache files

```
# sudo make install-config
```

```
# sudo make install-webconf
```

2.1.10 Enable apache rewrite mode and CGI config

```
# sudo a2enmod rewrite
```

```
# sudo a2enmod cgi
```

2.1.11 Restart the Apache service

```
# sudo systemctl restart apache2
```

2.1.12 Create a user and set the password when prompted

Instead of admin you can chose what ever name you want.

```
# sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users admin
```

2.2 Install Nagios Plugins

To download the latest plugins, visit the **plugins download**page.

2.2.1 Download the Nagios Core plugin.

```
# cd  /
```

```
# wget https ://nagios-plugins.org/download/nagios-plugins-2.3.3.tar.gz
```

2.2.2 Extract the downloaded plugin and Navigate to the plugins' directory

```
# sudo tar -zxvf nagios-plugins-2.3.3.tar.gz
```

```
# cd nagios-plugins-2.3.3/
```

2.2.3 Run the plugin configure script and Compile Nagios Core plugins

```
# sudo ./configure –with-nagios-user=nagios –with-nagios-group=nagios
```

```
# sudo make
```

2.2.4 Install the plugins

```
# sudo make install
```

2.3 Verify Nagios Configuration

2.3.1 Verify the Nagios Core configuration

```
# sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
```

2.3.2 Start the Nagios service

```
# sudo systemctl start nagios
```

2.3.3 Enable Nagios service to run at system startup

```
# sudo systemctl enable nagios
```

2.4 Verify Nagios Configuration

Open your web browser and access Nagios web interface via the URL http ://ServerIP/nagios. For example :

```
# sudo systemctl start nagios
```

CHAPITRE 3

MONITORING WINDOWS HOST

3.1 Step 1 : Check Hostname and IP of Windows host

```
# hostname
```

```
# ipconfig
```

3.2 Step 2 : Install NSClient++ Agent on host

— Install NSClient++ Agent
Link Bellow :
https://www.sugarbug.fr/atelier/techniques/monitoring*lan*/*nsclient*

— Ensure NSClient++ service is running

3.3 Step 3 : Check Nagios Server

3.3.1 Go to this directory

```
# cd /usr/local/nagios/etc/
```

3.3.2 Change permision on "servers" folder

```
# sudo chmod 775 servers/
# sudo chown nagios :nagios servers/
```

3.4 Step 4 : Add Windows Host on Nagios Server

3.4.1 Edit nagios.cfg config file and Uncomment this :

```
# cfg_dir = /usr/local/nagios/etc/servers
```

3.4.2 Go to "server" directory

```
# cd servers/
```

3.4.3 Create a new configuration file called "My hostname.cfg" to monitor Windows host in step 1

```
# sudo touch My hostname.cfg/
```

3.4.4 Open My hostname.cfg file and add new content

```
# sudo vim My hostname.cfg/ file discription
```

3.4.5 Change permision on My hostname.cfg file

```
# sudo chown nagios :nagios My hostname.cfg
# sudo chmod 664 My hostname.cfg
```

3.4.6 Verify the Nagios configuration files for any erros

```
# cd /
# sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
sudo systemctl restart nagios
```

3.4.7 Restart Nagios service

```
# sudo systemctl restart nagios
```

— Now,go to Nagios Monitoring Web Interface,check that the Remote Windows Host was added and is being monitored

CHAPITRE 4

MONITORING LINUX HOST

4.1 Check Hostname and IP of Linux host

```
# hostname
```

```
# ifconfig
```

4.2 install and Configure NRPE servie and Nagios Plugins on Linux host

— install NRPE and Nagios Plugins

```
# sudo apt install nagios-nrpe-server nagios-plugins -y
```

— Edit /etc/nagios/nrpe.cfg file to configure the NRPE agent

```
# sudo vim /etc/nagios/nrpe.cfg
```

Ip of Linux host checked in previos step .

```
# Note: The daemon only does rudimentary checking of the client's IP
# address.  I would highly recommend adding entries in your /etc/hosts.allow
# file to allow only the specified host to connect to the port
# you are running this daemon on.
#
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

allowed_hosts=127.0.0.1,192.168.220.130
```

IP of my nagios server .

```
# SERVER ADDRESS
# Address that nrpe should bind to in case there are more than one interface
# and you do not want nrpe to bind on all interfaces.
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

server_address=192.168.137.98
```

finally : save and exit by typing .

```
# Esc –> :x –> Enter
```

— Restart and enable NRPE services to make the changes active

```
# sudo systemctl restart nagios-nrpe-server
```

```
# sudo systemctl enable nagios-nrpe-server
```

4.3 Configure Firewall

— Check UFW Firewall status

```
# sudo ufw status
```

— By default, Nagios NRPE agent listens on port 5666 . YOU need to open 5666 on yourFirewall

```
# sudo ufw allow 5666/tcp
```

— Verify that the port has been allowed

```
# sudo ufw status
```

— Also don't forget to allow port ssh on Firewall to remote access

```
# sudo ufw allow ssh
```

To here , We are successfully installed and configure NRPE agent on Remote Linux Host .

Now , go to Nagios server to add Remote Linux Host.

4.4 Add Linux Host on nagios server

```
# cd /usr/local/nagios/etc
```

— Change Permission on servers folder

```
# sudo chmod 775 servers
```

```
# sudo chown nagios :nagios servers
```

— Go to servers directory

```
# cd servers/
```

— Create a new configuration called "hostname.cfg" for define remote Linux Host

```
# sudo touch hostname.cfg
```

— Now configure it by adding Your one content :
imortant ! ! change your adress IP and your host name.

```
# sudo vim hostname.cfg
```

https://drive.google.com/file/d/1-OXMBfHo0Rwv3-xEaNTvM59Ti4JpEyUf/view

— Change permission on hostname.cfg

```
# sudo chown nagios :nagios hostname.cfg
```

```
# sudo chmod 664 hostname.cfg
```

— Restart Nagios server

```
# sudo systemctl restart nagios
```

CONCLUSION

In conclusion, Nagios is a powerful and flexible open-source monitoring tool that can be used to monitor the availability of various network resources, including servers, switches, applications, and services. It can also be used to monitor environmental factors such as temperature and humidity. It can monitor Windows host using NRPE (Nagios Remote Plugin Executor) which allows you to execute Nagios plugins on remote Windows machines. Nagios can be configured to send notifications via email or other methods when a problem is detected, allowing administrators to take proactive measures to resolve issues before they affect users. However, Nagios is a complex software and it requires some knowledge of Nagios, Windows and some scripting to properly set it up, configure and use it effectively.

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