

Franklin Smith Final Project

CIS 410 Sys Admin Lab

Nagios Monitoring Tool

Nagios is installed on my VM in VirtualBox which is located on my local machine. I have configured it to monitor 3 different and distinct aspects/events for the monitored system and produced proper notifications. Through shell scripts and terminal commands I created the desired events that triggers the notification by nagios.

Since there is not much helpful documentation in my opinion, I installed it using an online tutorial. I mostly installed it using commands in the terminal on ubuntu. (Install commands located at the very bottom of the report.)

Nagios tutorial URL <https://www.digitalocean.com/community/tutorials/how-to-install-nagios-4-and-monitor-your-servers-on-ubuntu-16-04>

Below photo I setup the configuration to be an admin of the service.
You can see I input my email and selected to be notified 24X7 of any alerts and notifications.

The screenshot shows the Nagios configuration interface for managing contacts. At the top, there's a header with 'Object Type: Contacts' and a dropdown menu. Below that is a 'Show Only:' dropdown containing 'nagiosadmin'. There's also an 'Update' button. The main area is titled 'Contact nagiosadmin' and displays a table with one row. The columns are: Contact Name, Alias, Email Address, Pager Address/Number, Minimum Importance, Service Notification Options, Host Notification Options, Service Notification Period, Host Notification Period, and Service Notification Command. The data for the single contact is:

Contact Name	Alias	Email Address	Pager Address/Number	Minimum Importance	Service Notification Options	Host Notification Options	Service Notification Period	Host Notification Period	Service Notification Command
nagiosadmin	Nagios Admin	franklin@fastmodeltechnologies.com		0	Unknown, Warning, Critical, Recovery	Down, Unreachable, Recovery, Flapping, Downtime	24x7	24x7	notify-service-by-email

The way I configured nagios to send out notifications so frequently is that I changed the refresh-time in the cgi.conf file to the following.

Format: refresh_rate=<rate_in_seconds>

Example: refresh_rate=90

Changed it to 5 seconds, so the alerts/notifications are refreshed every 5 seconds

Here are the following commands I used to install nagios on my local machine. It was a long a treturous journey, but I preservered.

To turn on the nagios tool, in the command line I simply type and execute:

```
$ Service nagios start  
To start the tool  
$ Service nagios status  
To check the status of the tool  
$Service nagios stop  
To stop the tool
```

The features, events, and tasks that are being monitored on my VM on my local machine include the following: Current Load, Current Users, HTTP, Ping, Root Partition, SSH, Swap Usage, and total processes.

The features of the system that **I choose to monitor and attack** are SSH, current load, and total processes.

I have configured nagios to report and notify when any of these systems are up, unstable, or down.

The first workload generator I use, pertains to the SSH system. In order for me to break this system, I simply use the command \$ service SSH stop. This breaks the system and immediately sends a red warning to the nagios tool. Immediately after I also get an email about how the system is broken.

I put the ssh commands in to shell scripts that I use to activate the alerts on my VM. Below is the contents of the shells scripts

**Below is the initialization script, which breaks the service of SSH.
This script turns the SSH off.**

```
franklin@franklin-VirtualBox:~/Desktop$ cat SSHOFF.sh  
#!/bin/bash  
echo "Turning off the SSH capabilities"  
echo ""  
service ssh stop
```

Below is the fix script, which turns back on or fixes the service of SSH.

The script turns the SSH on.

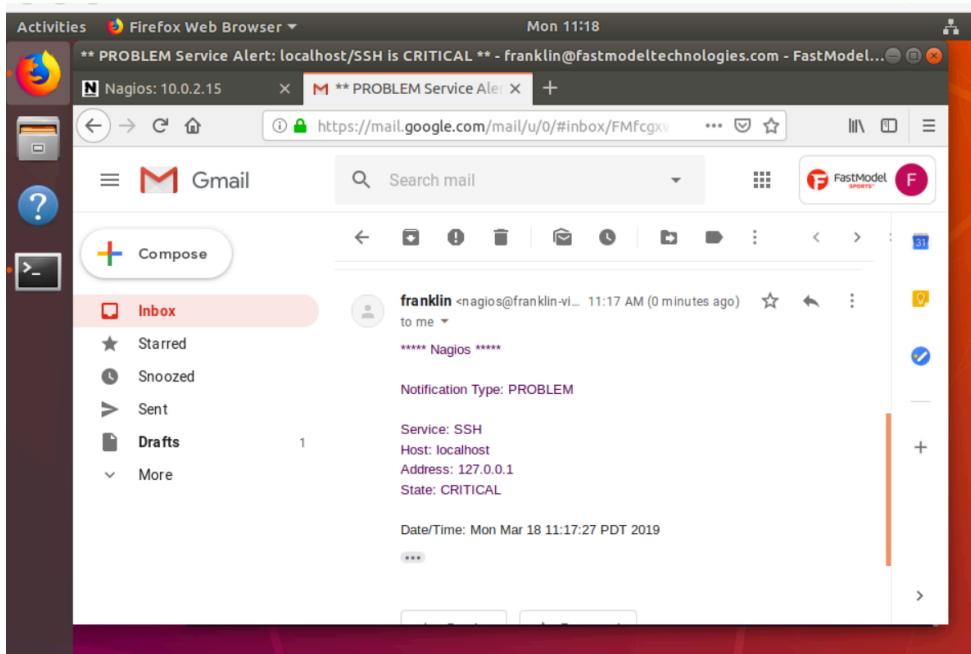
```
franklin@franklin-VirtualBox:~/Desktop$ cat SSHON.sh  
#!/bin/bash  
echo "Turning on the SSH Capabilities"  
echo ""  
service ssh start
```

Here the nagios tools shows us that the SSH feature has been broken and is in critical condition.

The screenshot shows the Nagios web interface running in Mozilla Firefox. The URL is 10.0.2.15/nagios/. The left sidebar has a 'Services' section selected. The main content area displays a table of service status for the host 'localhost'. One service, 'SSH', is shown in red, indicating a CRITICAL state. Other services like 'Current Load', 'Current Users', 'HTTP', 'PING', 'Root Partition', 'Swap Usage', and 'Total Processes' are all in green, indicating OK states. A 'Page Tour' button is visible on the right side of the table.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	03-18-2019 11:17:15	0d 0h 48m 20s	1/4	OK - load average: 0.64, 0.46, 0.54
	Current Users	OK	03-18-2019 11:17:30	0d 13h 6m 47s	1/4	USERS OK - 1 users currently logged in
	HTTP	OK	03-18-2019 11:17:33	0d 13h 6m 10s	1/4	HTTP OK: HTTP/1.1 200 OK - 11192 bytes in 0.000 second response time
	PING	OK	03-18-2019 11:17:11	0d 13h 5m 32s	1/4	PING OK - Packet loss = 0%, RTA = 0.04 ms
	Root Partition	OK	03-18-2019 11:17:15	0d 13h 4m 55s	1/4	DISK OK - free space: / 24015 MB (78.81% inode=91%):
	SSH	CRITICAL	03-18-2019 11:17:27	0d 0h 0m 12s	4/4	connect to address 127.0.0.1 and port 22: Connection refused
	Swap Usage	OK	03-18-2019 11:17:20	0d 13h 3m 40s	1/4	SWAP OK - 100% free (1521 MB out of 1521 MB)
	Total Processes	OK	03-18-2019 11:17:25	0d 13h 3m 2s	1/4	PROCS OK: 43 processes with STATE = RSZDT

Here is an email notification that alerts us that there is a problem with the SSH.



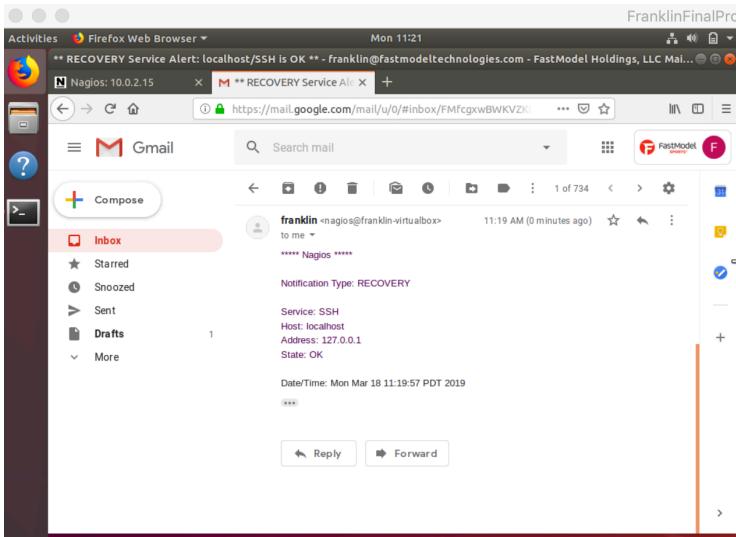
Observed above is what the alerts do when I break the SSH system on the local machine with the command \$ service ssh stop.

After I have done this to the system and observed the nagios command I bring the service back alive. I do this by executing the command \$ service ssh start.

This triggers the following alert and notification:

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	03-18-2019 11:20:10	0d 0h 51m 9s	1/4	OK - load average: 0.41, 0.43, 0.51
localhost	Current Users	OK	03-18-2019 11:20:25	0d 13h 9m 36s	1/4	USEROK - 3 users currently logged in
	HTTP	OK	03-18-2019 11:20:03	0d 13h 8m 59s	1/4	HTTP OK - HTTP/1.1 200 OK - 11192 bytes in 0.000 second response time
	PING	OK	03-18-2019 11:20:06	0d 13h 8m 21s	1/4	PING OK - Packet loss = 0%, RTA = 0.04 ms
	Root Partition	OK	03-18-2019 11:20:10	0d 13h 7m 44s	1/4	DISKOK - free space: / 24014 MB (78.81% inode=31%)
	SSH	OK	03-18-2019 11:20:22	0d 0h 0m 31s	1/4	SSH OK - OpenSSH_7.6p1 Ubuntu-4ubuntu0.3 (protocol 2.0)
	Swap Usage	OK	03-18-2019 11:20:15	0d 13h 6m 29s	1/4	SWAP OK - 100% free (1521 MB out of 1521 MB)
	Total Processes	OK	03-18-2019 11:20:20	0d 13h 5m 51s	1/4	PROCS OK - 40 processes with STATE = RSED

Here the nagios tool shows that the SSH feature is OK , it has been turned back on and recovered.



The following two alerts show and notify that the SSH system has recovered and is back up and running.

The next load I generate is by crashing the system of the Current load. I do this by using the stress tool. The stress tool is a tool that imposes load and stress test on systems. The stress tool imposes certain types of compute stress on your systems. I have put the stress command in a shell script which I activate on the VM. Below is the contents of the shells script which generates the load on my computer.

```
franklin@franklin-VirtualBox:~/Desktop$ cat STRESSCPU.sh
#!/bin/bash
echo "Generating load on the computer with stress command"
echo ""
sudo stress --cpu 50 --io 50 --vm-bytes 1000m --timeout 120s
echo "stress test done"
```

After we execute this stress script, we then observe the following notifications:

The following alert shows and notify's that current load system is critical.

The screenshot shows the Nagios web interface at <http://10.0.2.15/nagios/>. The left sidebar has sections for General, Current Status (selected), and Reports. The main area displays 'Current Network Status' with host and service totals. A table titled 'Service Status Details For All Hosts' lists services for 'localhost'. One service, 'Current Load', is shown as CRITICAL. Other services like HTTP, PING, Root Partition, SSH, Swap Usage, and Total Processes are OK. A red box highlights the 'localhost' row under 'Current Load'.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	CRITICAL	03-18-2019 11:33:15	0d 0h 0m 10s	3/4	CRITICAL - load average: 22.94, 5.33, 2.01
	Current Users	OK	03-18-2019 11:32:55	0d 13h 22m 28s	1/4	USERS OK - 1 users currently logged in
	HTTP	OK	03-18-2019 11:32:58	0d 13h 21m 51s	1/4	HTTP OK: HTTP/1.1 200 OK - 11192 bytes in 0.001 second response time
	PING	OK	03-18-2019 11:33:01	0d 13h 21m 13s	1/4	PING OK - Packet loss = 0%, RTA = 0.05 ms
	Root Partition	OK	03-18-2019 11:33:03	0d 13h 20m 36s	1/4	DISK OK - free space: / 24013 MB (78.81% inode=91%)
	SSH	OK	03-18-2019 11:32:52	0d 0h 13m 23s	1/4	SSH OK - OpenSSH_7.6p1 Ubuntu-4ubuntu0.3 protocol 2.0
	Swap Usage	OK	03-18-2019 11:33:11	0d 13h 19m 21s	1/4	SWAP OK - 100% free (1521 MB out of 1521 MB)
	Total Processes	OK	03-18-2019 11:33:15	0d 13h 18m 43s	1/4	PROCS OK: 43 processes with STATE = RSZDT

The following alert shows and notify's that current load system is critical.

The screenshot shows a Gmail inbox with an alert message from 'franklin <nagios@franklin-virtualbox>'. The subject is '** PROBLEM Service Alert: localhost/Current Load is CRITICAL **'. The message body contains the following text:

```

** PROBLEM Service Alert: localhost/Current Load is CRITICAL ** [Inbox]

franklin <nagios@franklin-virtualbox> 11:33 AM (0 minutes ago) ⚡
to me ⚡

***** Nagios *****

Notification Type: PROBLEM

Service: Current Load
Host: localhost
Address: 127.0.0.1
State: CRITICAL

Date/Time: Mon Mar 18 11:33:20 PDT 2019

Additional Info:

CRITICAL - load average: 29.11, 6.90, 2.54

```

Then I kill the stress test process

The screenshot shows the Nagios web interface at <http://10.0.2.15/nagios/>. The left sidebar includes links for General, Home, Documentation, Current Status (with sub-links like Tactical Overview, Map (Legacy), Hosts, Services, Host Groups, Service Groups, Problems, Reports, Availability, Trends (Legacy), and Alerts), and a Quick Search bar. The main content area displays the "Current Network Status" and "Service Status Details For All Hosts". The "Service Status Details For All Hosts" table lists 8 services, all of which are currently OK. The table columns include Host, Service, Status, Last Check, Duration, Attempt, and Status Information.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	03-18-2019 12:10:58	0d 0h 13m 15s	1/4	OK - load average: 0.40, 0.29, 1.41
localhost	Current Users	OK	03-18-2019 12:11:01	0d 14h 0m 26s	1/4	USERS OK - 1 users currently logged in
localhost	HTTP	OK	03-18-2019 12:11:04	0d 13h 59m 49s	1/4	HTTP OK: HTTP/1.1 200 OK - 11192 bytes in 0.000 second response time
localhost	PING	OK	03-18-2019 12:10:56	0d 13h 59m 11s	1/4	PING OK - Packet loss = 0%, RTA = 0.13 ms
localhost	Root Partition	OK	03-18-2019 12:11:00	0d 13h 58m 34s	1/4	DISK OK - free space: / 24004 MB (78.78% inode=91%)
localhost	SSH	OK	03-18-2019 12:10:57	0d 0h 29m 31s	1/4	SSH OK - OpenSSH_7.6p1 Ubuntu-4ubuntu0.3 (protocol 2.0)
localhost	Swap Usage	OK	03-18-2019 12:11:10	0d 13h 57m 19s	1/4	SWAP OK - 100% free (1521 MB out of 1521 MB)
localhost	Total Processes	OK	03-18-2019 12:11:13	0d 13h 56m 41s	1/4	PROCS OK: 45 processes with STATE = RSZDT

Alert that the system is okay after I kill the stress script

Email notification that the system is okay after I kill the stress

The screenshot shows a Gmail inbox with a message from "franklin <nagios@franklin-virtualbox>" titled "** RECOVERY Service Alert: localhost/Current Load is OK **". The message body contains the following text:

***** Nagios *****
Notification Type: RECOVERY
Service: Current Load
Host: localhost
Address: 127.0.0.1
State: OK
Date/Time: Mon Mar 18 11:58:03 PDT 2019
Additional Info:
OK - load average: 0.19, 0.43, 2.94

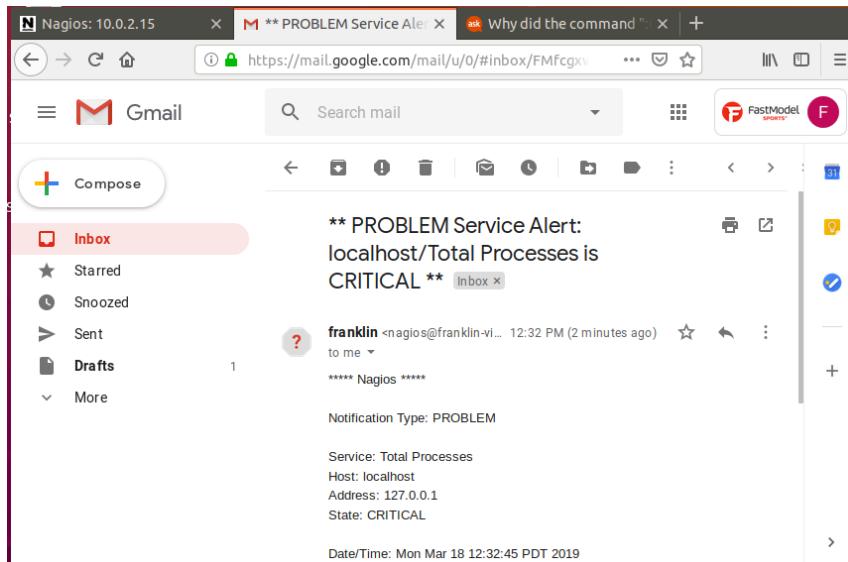
Total Processes kill with the fork bomb

The next load I generate is by crashing the system of the total process. I do this by using the fork bomb in the terminal. A fork bomb is a denial of service attack where a process repeats itself with the goal of depleting available system resources, which slows down the system or crashes the system because of limited resources. Fork bombs take down the system by consuming CPU time in the process of forking, and by saturating the operating systems process table. A basic fork bomb is one that launches new copies of itself.

The fork bomb shell script that I executed in my terminal:

```
franklin@franklin-VirtualBox:~/Desktop$ cat FORKBOMB.sh
#!/bin/bash
:{}{|:&};:
```

After I executed the fork bomb in the computer, alerts were spawned in the nagios system and in my email.

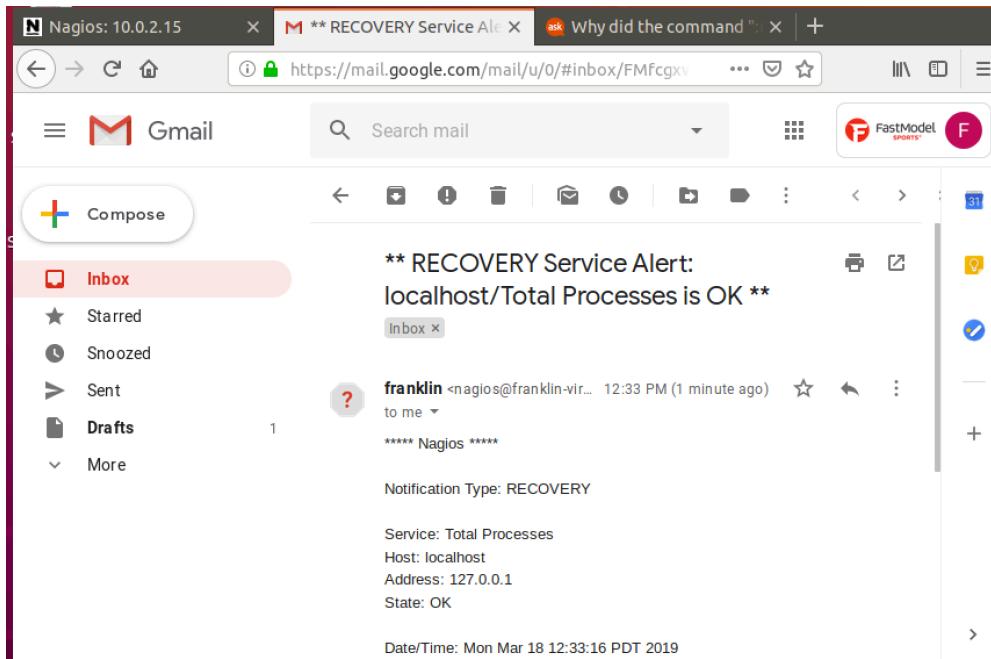


At this point nagios Is alerting that total processes is bad because of fork bomb.

The screenshot shows the Nagios web interface at 10.0.2.15/nagios/. The left sidebar includes links for General, Home Documentation, Current Status (with sub-links for Overview, Map (Legacy), Hosts, Services, Host Groups, Service Groups, Problems, and Reports), Availability, and a Quick Search bar. The main content area displays the 'Current Network Status' with last updated information and Nagios Core version 4.4.3. It features three status summary boxes: 'Host Status Totals' (Up: 1, Down: 0, Unreachable: 0, Pending: 0), 'Service Status Totals' (Ok: 6, Warning: 0, Unknown: 0, Critical: 2, Pending: 0), and 'Service Status Details For All Hosts'. A table lists services with their status, last check, duration, attempts, and status information. The 'Total Processes' service is listed with a status of CRITICAL, last checked at 03-18-2019 12:51:28, duration 0d 0h 0m 24s, and attempt 1/4. The status information notes a plugin timeout. The top navigation bar shows tabs for 'Nagios: 10.0.2.15', '** RECOVERY Service Alert', 'ask Why did the command ...', and a '+' button. The browser toolbar indicates 80% zoom and various icons.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	CRITICAL	03-18-2019 12:51:43	0d 0h 0m 9s	4/4	CRITICAL - load average: 2031.89, 458.87, 150.92
	Current Users	OK	03-18-2019 12:51:28	0d 14h 41m 0s	1/4	USERS OK - 1 users currently logged in
	HTTP	OK	03-18-2019 12:51:28	0d 14h 40m 23s	1/4	HTTP OK: HTTP/1.1 200 OK - 11192 bytes in 0.003 second response time
	PING	OK	03-18-2019 12:51:28	0d 14h 39m 45s	1/4	PING OK - Packet loss = 0%, RTA = 0.07 ms
	Root Partition	OK	03-18-2019 12:51:28	0d 14h 39m 8s	1/4	DISK OK - free space: /23743 MB (77.92% inode=91%):
	SSH	OK	03-18-2019 12:51:28	0d 0h 8m 19s	1/4	SSH OK - OpenSSH_7.6p1 Ubuntu-4ubuntu0.3 (protocol 2.0)
	Swap Usage	OK	03-18-2019 12:51:28	0d 14h 37m 53s	1/4	SWAP OK - 100% free (1521 MB out of 1521 MB)
	Total Processes	CRITICAL	03-18-2019 12:51:28	0d 0h 0m 24s	1/4	CRITICAL - Plugin timed out

After the fork bomb is done and cleaned up nagios alerts that total processes is okay. This sends out a notification and turns green in the tool.

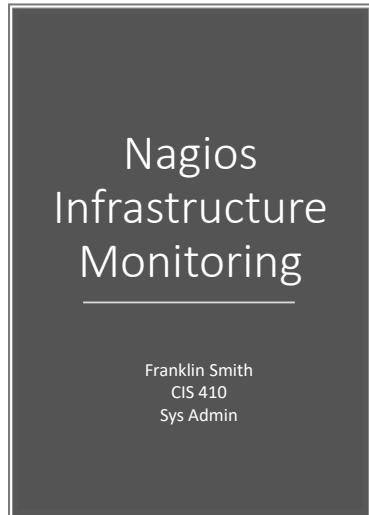


After the fork bomb is done and cleaned up nagios alerts that total processes is okay. This sends out a notification and turns green in the tool.

Host Status Totals		Service Status Totals						
Up	Down	Unreachable	Pending	Ok	Warning	Unknown	Critical	Pending
1	0	0	0	7	0	0	1	0
All Problems All Types				All Problems All Types				
0	1			1	8			

Service Status Details For All Hosts								
Host	Service	Status	Last Check	Duration	Attempt	Status Information		
localhost	Current Load	CRITICAL	03-18-2019 12:58:23	0d 0h 6m 53s	4/4	CRITICAL - load average: 168.99, 1101.85, 692.06		
localhost	Current Users	OK	03-18-2019 12:58:08	0d 14h 47m 44s	1/4	USERS OK - 1 users currently logged in		
localhost	HTTP	OK	03-18-2019 12:58:08	0d 14h 47m 7s	1/4	HTTP OK: HTTP/1.1 200 OK - 11192 bytes in 0.000 second response time		
localhost	PING	OK	03-18-2019 12:58:08	0d 14h 46m 29s	1/4	PING OK - Packet loss = 0%, RTA = 0.06 ms		
localhost	Root Partition	OK	03-18-2019 12:58:08	0d 14h 45m 52s	1/4	DISK OK - free space: /23742 MB (77.92% mode=91%)		
localhost	SSH	OK	03-18-2019 12:58:08	0d 0h 15m 3s	1/4	SSH OK - OpenSSH_7.6p1 Ubuntu-4ubuntu0.3 (protocol 2.0)		
localhost	Swap Usage	OK	03-18-2019 12:58:08	0d 14h 44m 37s	1/4	SWAP OK - 100% free (1521 MB out of 1521 MB)		
localhost	Total Processes	OK	03-18-2019 12:58:25	0d 0h 3m 9s	1/4	PROCS OK: 41 processes with STATE = RSZDT		

Presentation Slide Show:



Nagios Core

- Nagios Core, is a free and open source computer-software application that monitors systems, networks and infrastructure.
- Nagios offers monitoring and alerting services for servers, switches, applications and services.
- It alerts users when things go wrong and alerts them a second time when the problem has been resolved.

Originally released in 2002, 17 years ago.

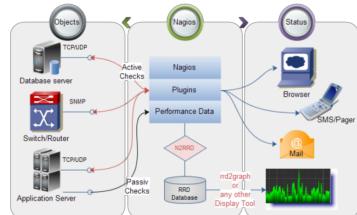
- I am using version 4.4.2 released in august
- Originally designed to run under linux, but runs well on Unix variants

Cons of Nagios (In my opinion)

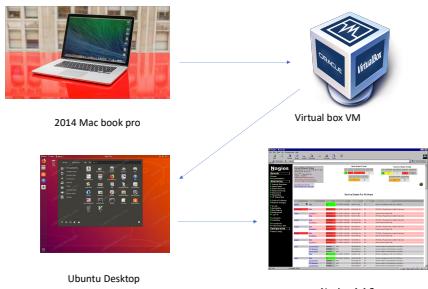
- Takes along to set up if you aren't familiar
- Not a lot of easily helpful documentation on current software release
- Time Consuming
- A lot of configuration files that are challenging to setup and edit in vim, can easily make mistakes this way if something misspelled
- Can't manage the network or computer, just monitors it.

Pros of Nagios

- Free



Graphical Overview of
Common Nagios
Configurations



Notifications and Alerts

- Set up email notifications when system has an alert.
- Very quick
- Capable to notify system administrators of issues



Control of Nagios Tool (Pretty Simple)

- \$ Service nagios start
 - To start the tool
- \$ Service nagios status
 - To check the status of the tool
- \$Service nagios stop
 - To stop the tool

3 Services that I am monitoring with Nagios on the Virtual Machine

- Current Load
- SSH
- Total processes

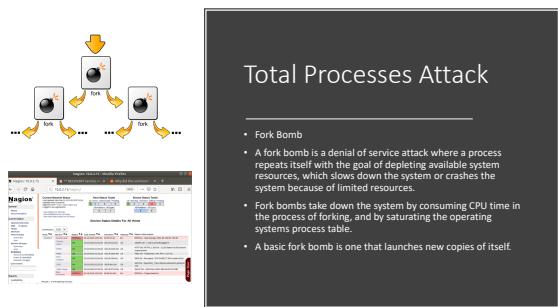
The screenshot displays two instances of the Nagios web interface. The top instance shows a 'Current Load Attack' scenario where the 'Current Load' service is in a CRITICAL state. The bottom instance shows an 'SSH Disabling' scenario where the 'SSH' service is in a CRITICAL state.

Current Load Attack (Top Window):

Service	Status	Last Check	Duration
Current Load	CRITICAL	03-18-2019 11:31:32	9d 13h 2m 26s
HTTP	OK	03-18-2019 11:31:32	9d 13h 2m 51s
PING	OK	03-18-2019 11:31:35	9d 13h 2m 53s
Post	OK	03-18-2019 11:31:36	9d 13h 2m 56s
Sys	OK	03-18-2019 11:32:52	9d 13h 3m 2s
Total	OK	03-18-2019 11:33:15	9d 13h 3m 43s
Processes	OK	03-18-2019 11:33:15	9d 13h 3m 43s

SSH Disabling (Bottom Window):

Service	Status	Last Check	Duration
Current Load	OK	03-18-2019 11:31:35	9d 13h 4m 2s
Current Users	OK	03-18-2019 11:31:30	9d 13h 6m 1s
HTTP	OK	03-18-2019 11:31:33	9d 13h 6m 10s
PING	OK	03-18-2019 11:31:31	9d 13h 5m 52s
Post	OK	03-18-2019 11:31:35	9d 13h 4m 55s
SSH	CRITICAL	03-18-2019 11:31:27	9d 13h 1m 12s
Sys	OK	03-18-2019 11:31:20	9d 13h 3m 40s
Total	OK	03-18-2019 11:31:25	9d 13h 3m 2s
Processes	OK	03-18-2019 11:31:25	9d 13h 3m 43s



Things I learned

- Apache Server
- Nagios Tool
- Nagios Troubleshooting
- Admin setup (notifications, email)
 - Contacts.cfg File
- Configuration (check intervals of service, status intervals) cgi.conf file
- Give virtual machine a lot of memory, so it runs faster

ALL OF THE COMMANDS I FOLLOWED TO SETUP NAGIOS ON MY VIRTUAL MACHINE

Below:

Completed Commands processs I used to setup nagios are below.:

- \$ sudo useradd nagios
- \$ sudo groupadd nagcmd
- \$ sudo usermod -a -G nagcmd Nagios

- \$ sudo apt-get update
- \$ sudo apt-get install build-essential libgd2-xpm-dev openssl libssl-dev unzip
- \$ sudo apt-get install nagios3 nagios3-cgi nagios3-core
- Password: osboxes.org
- \$ wget <https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.2.0.tar.gz>
- \$ tar -xzf nagios*.tar.gz

- \$ tar -xzf nagios*.tar.gz
- \$ nano /etc/hostname
 - Top bar should say GNU nano 2.9.3
 - Deleted the word linux and put in “nagios-server”
 - Pressed enter to get out of the nano editor for the second screen
- \$ bash
 - Enters Nagios server?
- \$ nano /etc/hosts
 - Just looked at it, might go back to hear what he says
- \$ cd nagios-4.2.0

- \$./configure --with-nagios-group=nagios --with-command-group=nagcmd
 - The error was no c compiler available so I had to run
 - \$ sudo apt-get install build-essential
 - then I ran the top level directory command again
- \$ make all
 - Wouldn't work at first because didn't have unzip installed
 - Had to run the following
 - \$ apt-get install unzip
 - Then had success of the make all
- \$ make install-sh

- Same output as video: nothing to be done
- \$ make install
 - All good
- \$ make install-commandmode
 - All good
- \$ make install-init
 - All good
- \$ make install-config
 - All good
- \$ cp -R contrib/eventhandlers/ /usr/local/nagios/libexec/
 - All good
- \$ chown -R nagios:nagios /usr/local/nagios/libexec/eventhandlers
 - All good
- \$ wget https://nagios-plugins.org/download/nagios-plugins-2.1.2.tar.gz
 - All good
- \$ ls
 - Should see the Nagios-plugins-2.1.2.tar.gz file
 - Its there, so All good
- \$ tar -xzf nagios-plugins*.tar.gz
 - All good
- \$ cd nagios-plugins-2.1.2
 - All good
- \$./configure --with-nagios-user=nagios --with-nagios-group=nagios --with-openssl
 - All good
- \$ make
 - All good
- \$ make install
 - not good
 - fixed by running the below commands
 - \$ apt-get install libssl-dev
 - \$./configure --with-nagios-user=nagios --with-nagios-group=nagios
 - \$ make
 - \$ make install
 - After this ALL GOOD
- \$ nano -c /usr/local/nagios/etc/nagios.cfg
 - Open the files goes to line 51, uncomments line 51
 - Uncommented line reads cfg_dir=/usr/local/nagios/etc/printers
 - All good to get out did command x , then Y, then enter
- \$ cd /us
- \$ r/local/nagios/etc
 - All good
- \$ ls
 - All good

- \$ mkdir -p servers
 - All good
- \$ chown nagios:nagios servers/
 - All good
- \$ ls -al
- \$ a2enmod rewrite
 - All good
- \$ a2enmod cgi
 - Says “module already enabled”?
 - All good I guess
- \$ sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
 - All good
- \$ ln -s /etc/apache2/sites-available/nagios.conf /etc/apache2/sites-enabled/
 - All good
- \$ service apache2 restart
 - All good
- \$ service apache2 status
 - Says server is running
- \$ ifconfig
 - Ip address for my machine is 192.168.73.145
 - enter that ip address in url
 - should be like 192.168.73.145/nagios/
 - TROUBLESHOOT ISSUE CANT GET WEBSITE

```
[root@osboxes:/home# curl http://192.168.73.145/nagios
<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">
<html><head>
<title>404 Not Found</title>
</head><body>
<h1>Not Found</h1>
<p>The requested URL /nagios was not found on this server.</p>
<hr>
<address>Apache/2.4.29 (Ubuntu) Server at 192.168.73.145 Port 80</address>
</body></html>
root@osboxes:/home#
```

- \$ cd /etc/init.d/
 - All good
- \$ ls
 - All good
- \$ nano nagios
 - Go into file and paste this at the bottom
 - DESC="Nagios" NAME=nagios DAEMON=/usr/local/nagios/bin/\$NAME
 DAEMON_ARGS="-d /usr/local/nagios/etc/nagios.cfg"
 PIDFILE=/usr/local/nagios/var/\$NAME.lock

- Pasted at the bottom of the file
- \$ chmod +x nagios
 - All good
- \$ cd /etc/systemd/system
 - All good
- \$ ls
 - All good
- \$ nano nagios.service
 - Paste in:
- [Unit] Description=Nagios BindTo=network.target [Install] WantedBy=multi-user.target
[Service] User=nagios Group=nagios Type=simple ExecStart=/usr/local/nagios/bin/nagios /usr/local/nagios/etc/nagios.cfg
 - All good
- \$ systemctl enable nagios.service
 - All good
- \$ service nagios start
 - All good
- \$ service nagios status
 - All good
- \$ the website should be working after this
- Don't forget to install htop to monitor your memory \$ apt install htop