Monitoring with Nagios

DevOps Practitioner

transforming performance
through learning

Outline

- **Monitoring and Performance**
  - Why we monitor servers
  - What to look for
  - AWS monitoring
  - Others

- **Introduction to Nagios**
  - What is Nagios
  - Why use it?
  - Installing NagiosXI
  - Compiling Nagios Core from source

- **Monitoring**
  - NRPE
  - Windows Hosts

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Objective

- **By the end of this module you should be able to:**
  - Install NagiosXI and Core
  - Install NRPE
  - Monitor a server

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Monitoring and Maintenance

- **The final pillar of devops tooling**
  - We have set up a server
  - Is it running properly?
  - One of the most important tools to keep everything running as planned

- **Without proper monitoring we cannot tell when problems are happening**
  - This leads to more downtime than required
  - A good monitoring system should tell you before a problem becomes noticeable to the outside world
  - Intervention by either the Ops staff (physical changes) or automatically (scale out and back where required)

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What to look for

- **Most monitoring tools will offer you a selection of services**
  - Whether your server is responding
  - CPU load
  - Memory
  - Disk Space
  - Network traffic

- **You want to monitor anything that can affect the performance of your machine**

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AWS Monitoring

- **AWS has some build in monitoring available**
  - Cloud watch
  - Automated monitoring for your virtual machines in the cloud

- **Cloud watch alarms can set off actions based on events**
  - Cost going above a certain level
  - CPU / Memory / Requests going above or below set levels
    - Scale out based on requests being high
    - Scale back in when requests go down
  - Send emails or phone alerts

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What is Nagios?

- **"Industry standard" for monitoring IT infrastructure**
  - https://www.nagios.org/

- **Allows you to monitor servers and desktop environments**
  - Scripting for specific monitoring on in-house or bespoke apps

- **Big Visible Charts!**
  - Graphical reports which show problems as they emerge
  - Centralised view of entire infrastructure
  - Automate restarting severs or applications on failure

- **Reporting**
  - Email, text, printed

Nagios®

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Alternatives

- **Sensu**
  - Open source - https://github.com/sensu/sensu
  - Simple, malleable, scalable

- **Mist.io**
  - "Cloud management in your pocket"
  - Allows you to monitor both cloud and physical servers
  - Mobile device friendly

- **Shinken**
  - Nagios reimplementation in python

- **Splunk**
  - Operational intelligence and log monitoring

- **New Relic**
  - Visual dashboards

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Splunk – logs monitoring system (takes all logs of your system and combines them into one place)

How to use Nagios

- **Runs as a webservice**
  - Master Nagios server – Linux based
  - Agents running on the monitored services

- **Options for connecting to many different types of system**
  - Execute nagios commands on remote machines
  - NSClient for windows machines
  - Monitor physical constraints
    - CPU, Memory, Disk space
  - Monitor probes on physical machines
    - Temperature gauges etc.
  - Monitor security threats

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Installing Nagios

- **Package install:**
  - Supported by Centos and RedHat (not Amazon Linux!)

- **Create a Centos Based instance on EC2**
  - You will need to find an AMI through the Community AMI list

```
#!/bin/bash
sudo yum update -y
sudo yum install -y wget

sudo yum-config-manager --enable rhui-REGION-rhel-server-extras
rhui-REGION-rhel-server-optional

wget http://assets.nagios.com/downloads/nagiosxi/xi-latest.tar.gz
tar xzf xi-latest.tar.gz

cd /tmp/nagiosxi
sudo touch installed.firewall
yes | sudo ./fullinstall
```

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sudo yum-config-manager – enable server extras

sudo touch installed.firewall - to escape instalation firewall problems

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Installing from source – Nagios Core

- **You can also install the core parts of Nagios from source**
  - There is a good tutorial at:
    https://geekpeek.net/install-nagios-on-centos-7/
  - You will need to complete all steps
  - Compiles using "make"

- **Nagios Core is the free version**
  - You will need to configure everything yourself
  - Includes a basic UI
    - Pick your own!
    - https://www.nagios.org/downloads/nagios-core-frontends/
  - Plugins available
    - https://www.nagios.org/downloads/nagios-plugins/
    - https://www.nagios.org/downloads/nagios-core-addons/

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We will install nagios core in the exercise so you can compare xi and core for yourselves.

Monitoring other servers - NRPE

- **Install the NRPE agent**
  - Can be installed on any operating system
  - Uses SSH by default
  - Needs to know where the Nagios master is
  - Settings are stored in: /usr/local/nagios/etc/nrpe.cfg
  - Same agent used for both Core and XI

```
sudo yum install -y wget

wget http://assets.nagios.com/downloads/
                nagiosxi/agents/linux-nrpe-agent.tar.gz
tar xzf linux-nrpe-agent.tar.gz
cd linux-nrpe-agent
sudo ./fullinstall
```

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NRPE documentation:
https://assets.nagios.com/downloads/nagioscore/docs/nrpe/NRPE.pdf

Image from: https://exchange.nagios.org/directory/image/93

Monitoring with Nagios XI

- **On the dashboard**
  - Configure
  - Run Monitoring wizard
  - Select your server type
  - Add your IP address
  - Click through the options

Monitoring with Nagios Core

- **We need to add a new object file in the directory:**
  - /usr/local/nagios/etc/objects/
  - Update /usr/local/nagios/etc/nagios.cfg
  - Include the new object file

```
#define an instance of the host
define host{
      use linux-box ; Inherit default values from a template
      host_name remotehost ; The name we're giving to this
server
      alias Fedora Core 6 ; A longer name for the server
      address 52.17.87.166 ; IP address of the server
}

#what we want the host to do!
define service{
use generic-service
host_name remotehost
service_description CPU Load
check_command check_nrpe!check_load
```

Follow the documentation to set everything up:

https://assets.nagios.com/downloads/nagioscore/docs/nrpe/NRPE.pdf

Remember to restart nagios

Your new host will be monitored

https://support.nagios.com/forum/viewtopic.php?f=7&t=27099 has some more explanations about how nagios core works

Monitoring windows servers

- Uses the checknt plugin on the Nagios Server

- Install NSClient++ on Windows

- Core - Add a windows.cfg file in the objects directory
- XI – Use the menu to add a new server

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Image from:
https://assets.nagios.com/downloads/nagioscore/docs/nagioscore/4/en/monitoring-windows.html
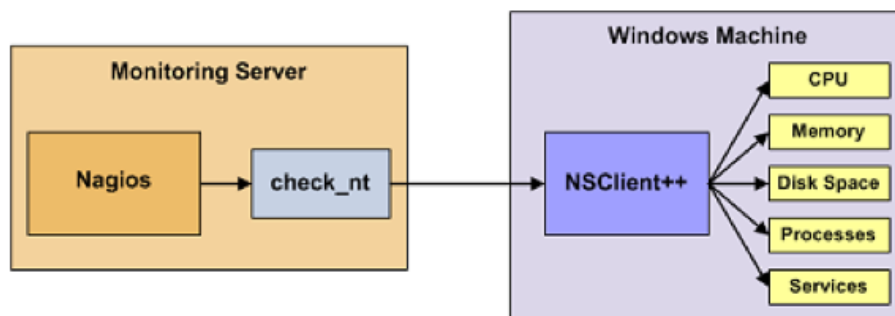
Exercise

- **Set up Nagios core**
  - Monitor some of the servers created over this course

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To read more about Nagios

Articles:

- Nagios books (link: https://www.nagios.org/about/propaganda/books/)
- Best Nagios Books for IT and Network Administrators (link: http://whatpixel.com/best-nagios-books/)

Tutorials:

- https://www.nagios.org/documentation/
- https://exchange.nagios.org/directory/Tutorials/Nagios-Core-Tutorials
- https://library.nagios.com/library/products/nagios-xi/tutorials/

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Summary

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