

Team: 0 Gravity

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HW1 Ansible

- Ansible is a software that self-operates the software provisioning, configures the management and deploys an application.
- In order to deploy a web page to a web server and then accessing it using the IP, we used the EC2 instance by adding the web server to the instance. We used Ansible for this.
- We used the SSH to deploy the playbook via Ansible. And for that we used the “ansible-playbook” command.
- We installed Nginx and deployed the ansible playbook.
- Edit the HTML file, and make it display “Hello World”.
- Connect to the web server using the IP and Deploy “Hello World” on the Web Browser

Commands used

Installation of Ansible

```
mrpuneet@mrpuneet-VirtualBox: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
mrpuneet@mrpuneet-VirtualBox:~$ sudo apt-get install ansible  
[sudo] password for mrpuneet:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  ieee-data python-crypto python-ecdsa python-httpplib2 python-jinja2  
  python-markupsafe python-netaddr python-paramiko python-pkg-resources  
  python-selinux python-six python-yaml  
Suggested packages:  
  LibreOffice Calc python-crypto-dbg python-crypto-doc python-jinja2-doc ipython  
  python-docs python-setuptools  
The following NEW packages will be installed:  
  ansible ieee-data python-crypto python-ecdsa python-httpplib2 python-jinja2  
  python-markupsafe python-netaddr python-paramiko python-pkg-resources  
  python-selinux python-six python-yaml  
0 upgraded, 13 newly installed, 0 to remove and 303 not upgraded.  
Need to get 2,964 kB of archives.  
After this operation, 17.9 MB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 python-crypt
```

Check to see Ansible version installed and install vim

```
mrpuneet@mrpuneet-VirtualBox:~$ ansible --version  
ansible 2.0.0.2  
  config file = /etc/ansible/ansible.cfg  
  configured module search path = Default w/o overrides  
mrpuneet@mrpuneet-VirtualBox:~$ sudo vim /etc/ansible  
sudo: vim: command not found  
mrpuneet@mrpuneet-VirtualBox:~$ sudo apt-get vim  
E: Invalid operation vim  
mrpuneet@mrpuneet-VirtualBox:~$ sudo apt-get install vim  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  vim-runtime  
Suggested packages:  
  ctags vim-doc vim-scripts vim-gnome-py2 | vim-gtk-py2 | vim-gtk3-py2  
  | vim-athena-py2 | vim-nox-py2  
The following NEW packages will be installed:  
  vim vim-runtime  
0 upgraded, 2 newly installed, 0 to remove and 303 not upgraded.  
Need to get 6,199 kB of archives.  
After this operation, 30.0 MB of additional disk space will be used.
```

Install SSH server

```
ssh: Could not resolve hostname apt: Name or service not known
mrpuneet@mrpuneet-VirtualBox:~$ sudo apt install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ncurses-term openssh-sftp-server ssh-import-id
Suggested packages:
  ssh-askpass rssh molly-guard monkeysphere
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
0 upgraded, 4 newly installed, 0 to remove and 302 not upgraded.
Need to get 633 kB of archives.
After this operation, 5,136 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu xenial/main amd64 ncurses-term all 6.0
+20160213-1ubuntu1 [249 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 openssh-sftp
-server amd64 1:7.2p2-4ubuntu2.4 [38.7 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 openssh-serv
er amd64 1:7.2p2-4ubuntu2.4 [335 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu xenial/main amd64 ssh-import-id all 5.
5-0ubuntu1 [10.2 kB]
```

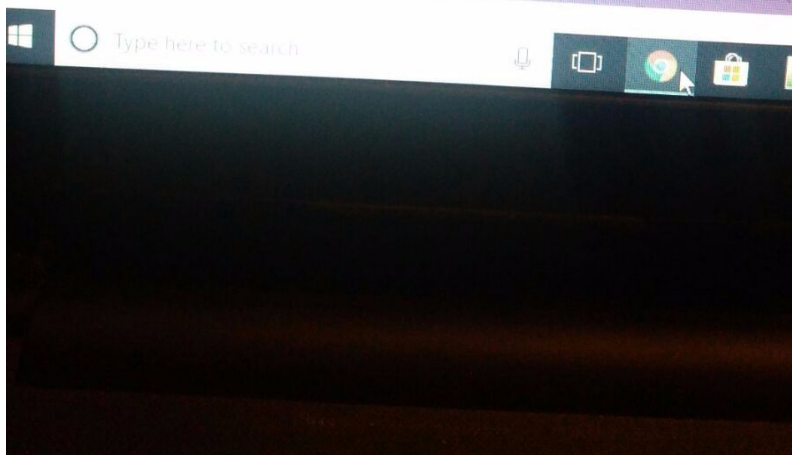
Install SSH client

```
mrpuneet@mrpuneet-VirtualBox:~$ sudo vim /etc/ansible
mrpuneet@mrpuneet-VirtualBox:~$ sudo vim /etc/ansible/hosts
mrpuneet@mrpuneet-VirtualBox:~$ ssh root@127.0.0.1
ssh: connect to host 127.0.0.1 port 22: Connection refused
mrpuneet@mrpuneet-VirtualBox:~$ sudo apt install openssh-client
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  ssh-askpass libpam-ssh keychain monkeysphere
The following packages will be upgraded:
  openssh-client
1 upgraded, 0 newly installed, 0 to remove and 302 not upgraded.
Need to get 589 kB of archives.
After this operation, 3,072 B disk space will be freed.
Get:1 http://us.archive.ubuntu.com/ubuntu xenial-updates/main amd64 openssh-clie
nt amd64 1:7.2p2-4ubuntu2.4 [589 kB]
Fetched 589 kB in 0s (876 kB/s)
(Reading database ... 178169 files and directories currently installed.)
Preparing to unpack .../openssh-client_1%3a7.2p2-4ubuntu2.4_amd64.deb ...
Unpacking openssh-client (1:7.2p2-4ubuntu2.4) over (1:7.2p2-4ubuntu2.2) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up openssh-client (1:7.2p2-4ubuntu2.4) ...
```


Create the hosts file and add localhost to the list

```
nate@nate-VirtualBox: ~  
nate@nate-VirtualBox:~$ sudo vi /etc/ansible/hosts  
[sudo] password for nate:  
nate@nate-VirtualBox:~$
```

```
## green.example.com  
## blue.example.com  
## 192.168.100.1  
## 192.168.100.10  
  
# Ex 2: A collection of hosts belonging to the 'we  
## [webservers]  
## alpha.example.org  
## beta.example.org  
## 192.168.1.100  
## 192.168.1.110  
  
# If you have multiple hosts following a pattern yo  
# them like this:  
## www[001:006].example.com  
  
# Ex 3: A collection of database servers in the 'dbs  
## [dbservers]  
##  
## db01.intranet.mydomain.net  
## db02.intranet.mydomain.net  
## 10.25.1.56  
## 10.25.1.57  
  
# Here's another example of host ranges, this time th  
# leading 0s:  
## db-[99:101]-node.example.com  
[local]  
127.0.0.1
```



Ping Localhost - Success

```
mrpuneet@mrpuneet-VirtualBox:~$ ssh root@127.0.0.1
The authenticity of host '127.0.0.1 (127.0.0.1)' can't be established.
ECDSA key fingerprint is SHA256:VcEJrwZGPV6olxPGqtFnywComJt2Wv2lsOfhuUGdOe0.
Are you sure you want to continue connecting (yes/no)? y
Please type 'yes' or 'no': yes
Warning: Permanently added '127.0.0.1' (ECDSA) to the list of known hosts.
root@127.0.0.1's password:
Permission denied, please try again.
root@127.0.0.1's password:
Permission denied, please try again.
root@127.0.0.1's password:
Permission denied (publickey,password).
mrpuneet@mrpuneet-VirtualBox:~$ ansible -m ping localhost
localhost | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
mrpuneet@mrpuneet-VirtualBox:~$ vim hw1.yml
mrpuneet@mrpuneet-VirtualBox:~$ ansible-playbook -k -K hw1.yml
SSH password:
SUDO password[defaults to SSH password]:
```

Creating and Testing of Ansible Playbook hw1.yml on the localhost

```
Fetches 10.5 kB in 0s (52.7 kB/s)
^[[BSelecting previously unselected package sshpass.
(Reading database ... 180927 files and directories currently installed.)
Preparing to unpack .../sshpas_1.05-1_amd64.deb ...
Unpacking sshpass (1.05-1) ...
Processing triggers for man-db (2.7.5-1) ...
Setting up sshpass (1.05-1) ...
mrpuneet@mrpuneet-VirtualBox:~$ ansible-playbook -k -K hw1.yml
SSH password:
SUDO password[defaults to SSH password]:

PLAY [hw1] *****


TASK [setup] *****
ok: [127.0.0.1]

TASK [Install nginx server] *****
changed: [127.0.0.1]

PLAY RECAP *****
127.0.0.1 : ok=2    changed=1    unreachable=0    failed=0

mrpuneet@mrpuneet-VirtualBox:~$
```


Now that we can run the Playbook on the local server, we set up AWS EC2 instance.

**Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-965e6bf3**

Free tier eligible

Ubuntu Server 16.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root device type: ebs Virtualization type: hvm

Select

64-bit


Create a security key (.PEM file)

- Here, SE172.pem

```
nate@nate-VirtualBox: ~/Downloads
nate@nate-VirtualBox:~/Downloads$ cat SE172.pem
-----BEGIN RSA PRIVATE KEY-----
MIIeowIBAAKCAQEAlkQvACpDUx3UHwFTBbl8u6IMLLPYwgGpw19FxLv+qpBTrBhcxTPMDRLrMwk7
KW59Hlyugw8fsEVAN1/cMYvaAdGH4oFi62TNhhmdJmDdzdmWG4iERlMRZzZWc+Xrt8xAeEqbdHLS
Yrv8pt3Z2xSv7PLA7pUJ7UhsDzcBCuIiVrKhW+u6EEfkH9PNY6jh1sQd4+wRF3nu0nJeCnR0uvZp
ZfADbcJQeJwCEJpXbkbyA3/FGcME0UC8FHzz6J8Dwuiy5QfNyDeLedLzNC8/Yv/d6cti9BqMLJfV
nLXyXiE7L6Pxr+VUL3IEhe0MPH4oE7B3Bfk9/88PbgFoAJJLIwfoywIDAQABaoIBAD7qbYN0Lpwu
ceCalc...lp8T/eqcXZR3hzndDjoyKsVAS2SVJVIQKwnU8cDL2zgcHnMRv1ULwti0cVF74Xt0pJ1A30
...Go8ySiTnnM1RHL4uer03NCIy7h+4t0LP6+5xzoUDTnNoonB7kyvXjZF4Uq+SV4WyPQxh
y1316YLCwHE5bf+Db0Xb+l8rTsB08HDl7c3TT6VPV3Be9BB/M43RkBSTSmQEtbHYo5PN2FF1fEzK
S5W05FQ6MoD8UBfn9azhD4udNixzLF2wT0kk9xIK8gaUR9F1iZISuADl/wbbvL4P3WsefAQUOmYY
mePnzaBG9mupwzEhrjKWQPcs2gECgYEA8iWR9JzngYF+7mHwnmqyp9UcJcKIFrP5pfMbqypcsWnC
uaCeYfD7d5VpgMVn0BT3584Kixn2BAWA1Y+fjLevQz/22ZUox3D0xEIXdZbMLiMTPX11vQfD+zRl
M4jk2pSAEVE2dBGruY1q6ojLTSU716EDGAhF8A51X8tx6g03ajsCgYEAntzz04xKmlvzPuJR4f0u
aat8yY+/Q8/24jA3AvRIejbxJtCKygoZNe69/5fXaBh/FA6b17fXr8N3pvnGHqLLJbXe+z8HmWb8
ZzZjeFtQMgZKPq0RppRMEBSXiVwyFA8sm7iTC7QhCzVCaDX7/4kVrAHNe+wwd1dw3vgIdn35ArEC
gYAxjgbErKekFUBIwLphcSyGtFJCWAFJxCM/FvV+nfjCRgaXvosr0An+exFQTRXlu6TQR5ZDgLic
MhQfoHjib2TqulhmRuRFjJRK5dEBY479kigJ2XcS7FfrPNnJJibPpLxgzuh59vPR0WMkBEK20vvg
MQ9VB7xoWE0LAZmabpBGQKBgCEPhfxanHf8GZpWw6DYqIeGNFYem14cWvx78/+53icksNHZVh82
XGzVmPNxTpV8B4q4Qe+VgIA/3QoNuT1L3fvRKupnDb8HsEgbIkhNR0Ap7/WFStmT5Qy2P6t8gzeM
sz1Yme7c+sJMJB7hE6i3tM4zRvBAZzns7fXLM0Nfp0BAoGBAic0LB0khL4sDwqsh6icGiuaNAhh
1hDVeTjq70rhAHls+Q7IpxqBQaNNdWW1KDN3V46DJvd0sZnPNqNCWtkwhfohIxfv4jzNt045HXX/k
t46PdaP1MHreDr9yTjs1axKhPuhBo9f4VKceDtdpMWxabwNDUFvP81l8XCcL3Tj6nJSA
-----END RSA PRIVATE KEY-----nate@nate-VirtualBox:~/Downloads$
```

The running Instance

ur bookmarks here on the bookmarks bar. [Import bookmarks now...](#)

Resource Groups 

CMPE172 Ohio Support

Launch Instance Connect Actions

Filter by tags and attributes or search by keyword

	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6
<input type="checkbox"/>		i-0aadcb5606462c5b0	t2.micro	us-east-2c	running	2/2 checks ...	None	ec2-18-219-152-90.us-...	18.219.152.90	-

Shows our AWS Inbound ports

Description

Inbound

Outbound

Tags

Edit

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ
HTTP	TCP	80	0.0.0.0/0	
HTTP	TCP	80	:::0	
SSH	TCP	22	0.0.0.0/0	

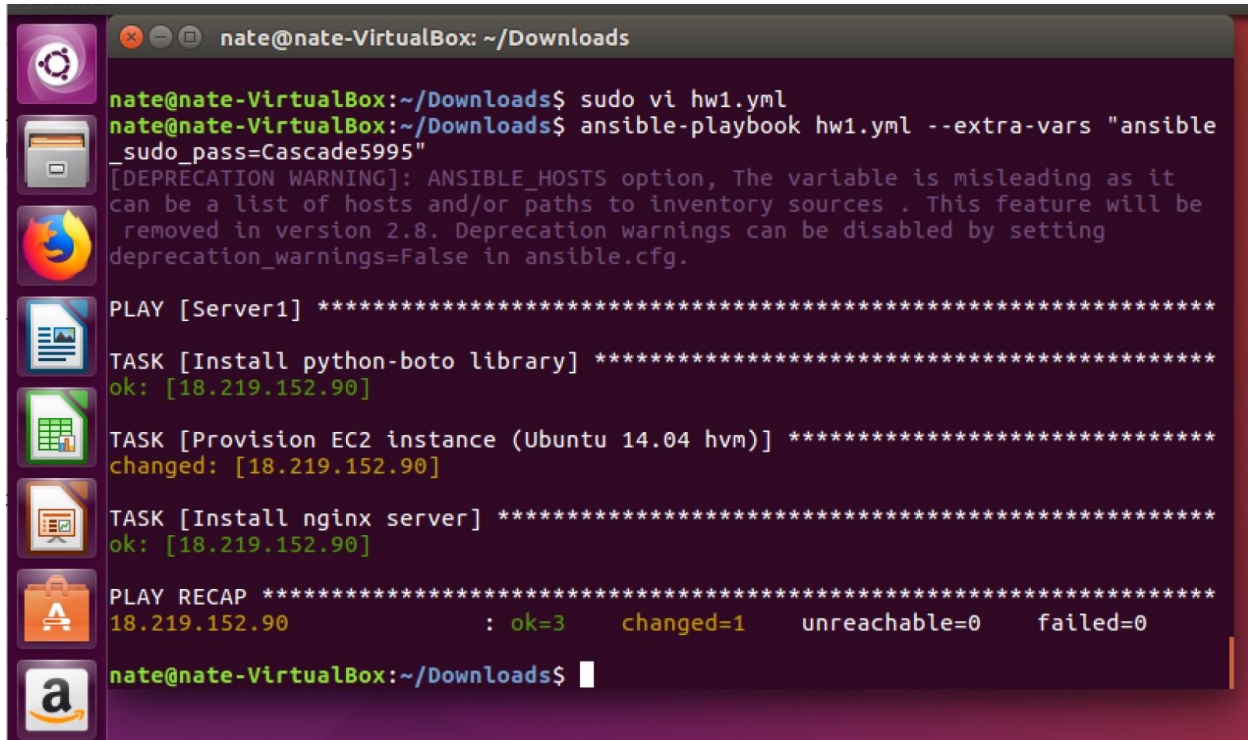
Install Nginx

```
nate@nate-VirtualBox: ~  
nate@nate-VirtualBox:~$ sudo vi /etc/ansible/hosts  
[sudo] password for nate:  
nate@nate-VirtualBox:~$ sudo apt-get install nginx
```

Create Playbook hw1.yml to connect with the EC2 instance

```
--  
- hosts: Server1  
  become: yes  
  become_user: root  
  connection: local  
  gather_facts: false  
  tasks:  
  
  - name: Install python-boto library  
    pip: name=boto  
  
  - name: Provision EC2 instance (Ubuntu 14.04 hvm)  
    ec2:  
      key_name: "SE172"  
      instance_type: "t2.micro"  
      image: "ami-965e6bf3"  
      wait: true  
      count: 1  
      region: "us-east-2"  
      aws_access_key: AKIAJAP27WTD40EPZSDA  
      aws_secret_key: eF7fZEynxUlFDvDM0/1TUAHC1/+J3S+VBvc1hVFG  
  
  - name: Install nginx server  
    apt:  
      name: nginx  
      state: present
```

Launch/Deploy the Playbook hw1.yml

A terminal window titled 'nate@nate-VirtualBox: ~/Downloads' showing the execution of an Ansible playbook. The user runs 'sudo vi hw1.yml' and then 'ansible-playbook hw1.yml --extra-vars "ansible_sudo_pass=Cascade5995"'. The output shows a deprecation warning, followed by a play for 'Server1' with tasks to install python-boto, provision an EC2 instance, and install nginx. The play recap shows 3 OK, 1 changed, 0 unreachable, and 0 failed.

```
nate@nate-VirtualBox:~/Downloads$ sudo vi hw1.yml
nate@nate-VirtualBox:~/Downloads$ ansible-playbook hw1.yml --extra-vars "ansible_sudo_pass=Cascade5995"
[DEPRECATION WARNING]: ANSIBLE_HOSTS option, The variable is misleading as it can be a list of hosts and/or paths to inventory sources . This feature will be removed in version 2.8. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.

PLAY [Server1] *****

TASK [Install python-boto library] *****
ok: [18.219.152.90]

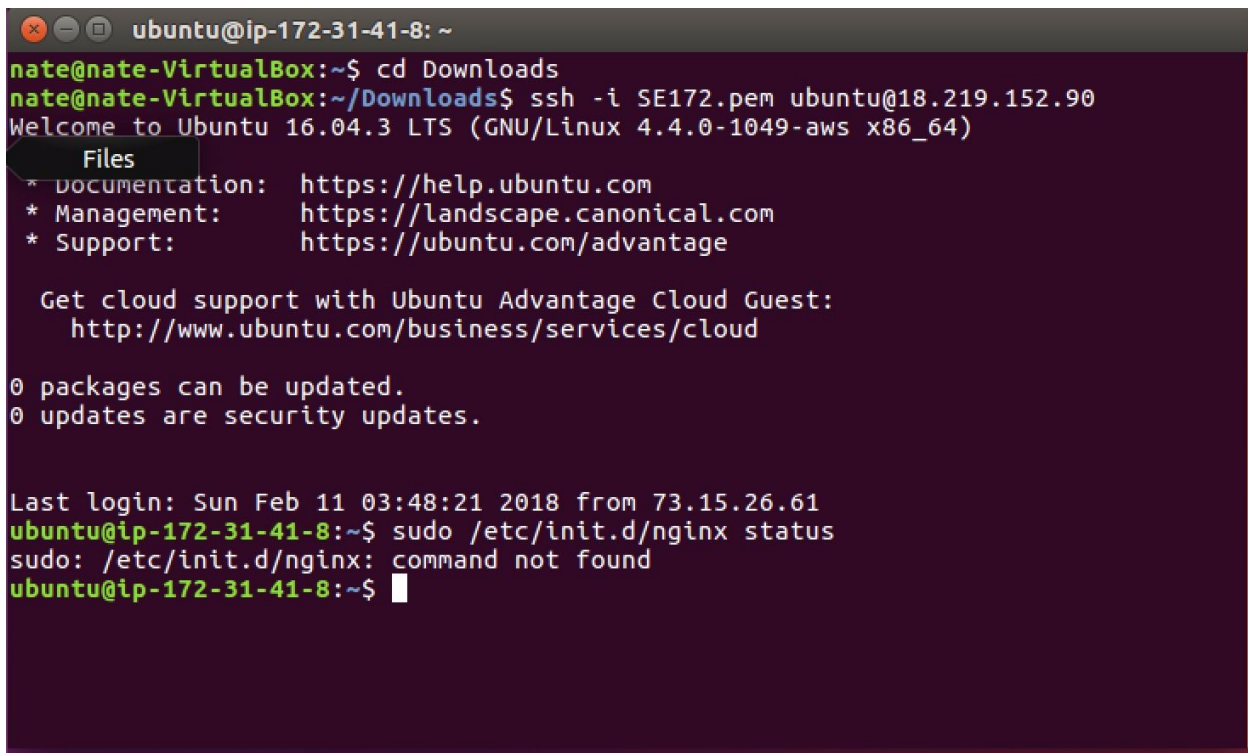
TASK [Provision EC2 instance (Ubuntu 14.04 hvm)] *****
changed: [18.219.152.90]

TASK [Install nginx server] *****
ok: [18.219.152.90]

PLAY RECAP *****
18.219.152.90 : ok=3    changed=1    unreachable=0    failed=0

nate@nate-VirtualBox:~/Downloads$
```

SSH into the AWS EC2 instance

A terminal window titled 'ubuntu@ip-172-31-41-8: ~' showing an SSH session from a VirtualBox. The user runs 'cd Downloads' and 'ssh -i SE172.pem ubuntu@18.219.152.90'. The output shows the Ubuntu welcome message, system information, and a list of links for documentation, management, and support. It also shows that 0 packages can be updated and 0 updates are security updates. Finally, the user runs 'sudo /etc/init.d/nginx status' and the output is 'command not found'.

```
ubuntu@ip-172-31-41-8: ~
nate@nate-VirtualBox:~$ cd Downloads
nate@nate-VirtualBox:~/Downloads$ ssh -i SE172.pem ubuntu@18.219.152.90
Welcome to Ubuntu 16.04.3 LTS (GNU/Linux 4.4.0-1049-aws x86_64)

Files
* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:       https://ubuntu.com/advantage

Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.

Last login: Sun Feb 11 03:48:21 2018 from 73.15.26.61
ubuntu@ip-172-31-41-8:~$ sudo /etc/init.d/nginx status
sudo: /etc/init.d/nginx: command not found
ubuntu@ip-172-31-41-8:~$
```


Install Nginx on the Server

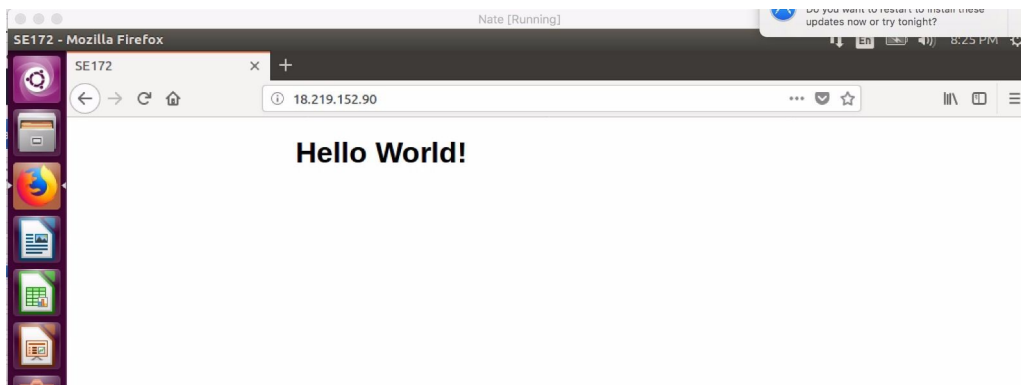
```
updates are security updates.  
Sun Feb 11 04:09:38 2018 from 73.15.26.61  
ubuntu@ip-172-31-41-8:~$ sudo apt-get install nginx
```

Edit the HTML File

```
ubuntu@ip-172-31-41-8:~$ cd /var  
ubuntu@ip-172-31-41-8:/var$ ls  
backups  cache  crash  lib  local  lock  log  mail  opt  run  snap  spool  tmp  www  
ubuntu@ip-172-31-41-8:/var$ cd www  
ubuntu@ip-172-31-41-8:/var/www$ ls  
html  
ubuntu@ip-172-31-41-8:/var/www$ cd html  
ubuntu@ip-172-31-41-8:/var/www/html$ ls  
index.nginx-debian.html  
ubuntu@ip-172-31-41-8:/var/www/html$ sudo vi index.nginx-debian.html  
ubuntu@ip-172-31-41-8:/var/www/html$
```

```
<!-- SE172 -->  
<!DOCTYPE html>  
<html>  
<head>  
<title>SE172</title>  
<style>  
    body {  
        width: 35em;  
        margin: 0 auto;  
        font-family: Tahoma, Verdana, Arial, sans-serif;  
    }  
</style>  
</head>  
<body>  
<h1>Hello World!</h1>  
</body>  
</html>
```

Finally connect to the web server using the IP and Deploy “Hello World” on the Web Browser



Undeploy the Playbook

```
nate@nate-VirtualBox:~/Downloads$ cd Downloads
nate@nate-VirtualBox:~/Downloads$ ansible-playbook undeploy.yml --extra-vars "ansible_sudo_pass=Cascade5995"

PLAY [Terminate instances] *****

TASK [Gathering Facts] *****
ok: [127.0.0.1]

TASK [Terminate EC2 instance (Ubuntu 14.04 hvm)] *****
ok: [127.0.0.1]

PLAY RECAP *****
127.0.0.1 : ok=2    changed=0    unreachable=0    failed=0

nate@nate-VirtualBox:~/Downloads$
```