USAP ASSIGNMENT 2

Report

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Contents

Prepare the environment for this project

1. Login to RMIT titan.csit.rmit.edu.au
2. In the case, I need a SSH key for login to AWS instance, then I create a SSH key by ssh-keygen -t rsa -b 4096 which provide in http://titan.csit.rmit.edu.au/~e20925/usap/AWS/setup1.mp4
3. Go to AWS and import the key that we just generated (I marked the key name as my student id that is s3598797).
4. Launch an instance for the assignment
    a. Instance will be Red Hat Enterprise Linux 7.4.
    b. The instance type is “t2.micro”.
    c. Leave the storage as 10 GB.
    d. Create a security group and expose the port 22, 80,443 to the public.
        i. expose the port 22, 80,443 means that I can access the SSH service, http/web service and https service from any machine in the world.
    e. Launch the instance.
    f. Go to Elastic IP and allocate new address for my instance. The new address is 13.55.201.81, then I associated the address with my instance i-0a6a603ec4d1449ec
5. Modify my SSH host setting by following code

    host usap

        HostName 13.55.201.81
        User ec2-user
        IdentityFile ~/.ssh/s3598797

```
[s3598797@csitprdap01 .ssh]$ nano config
[s3598797@csitprdap01 .ssh]$ ssh usap
The authenticity of host '13.55.201.81 (13.55.201.81)' can't be established.
ECDSA key fingerprint is 87:70:bd:fb:6d:58:40:a6:b8:17:5d:b1:48:9e:2a:cb.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '13.55.201.81' (ECDSA) to the list of known hosts.
[ec2-user@ip-172-31-11-8 ~]$
```

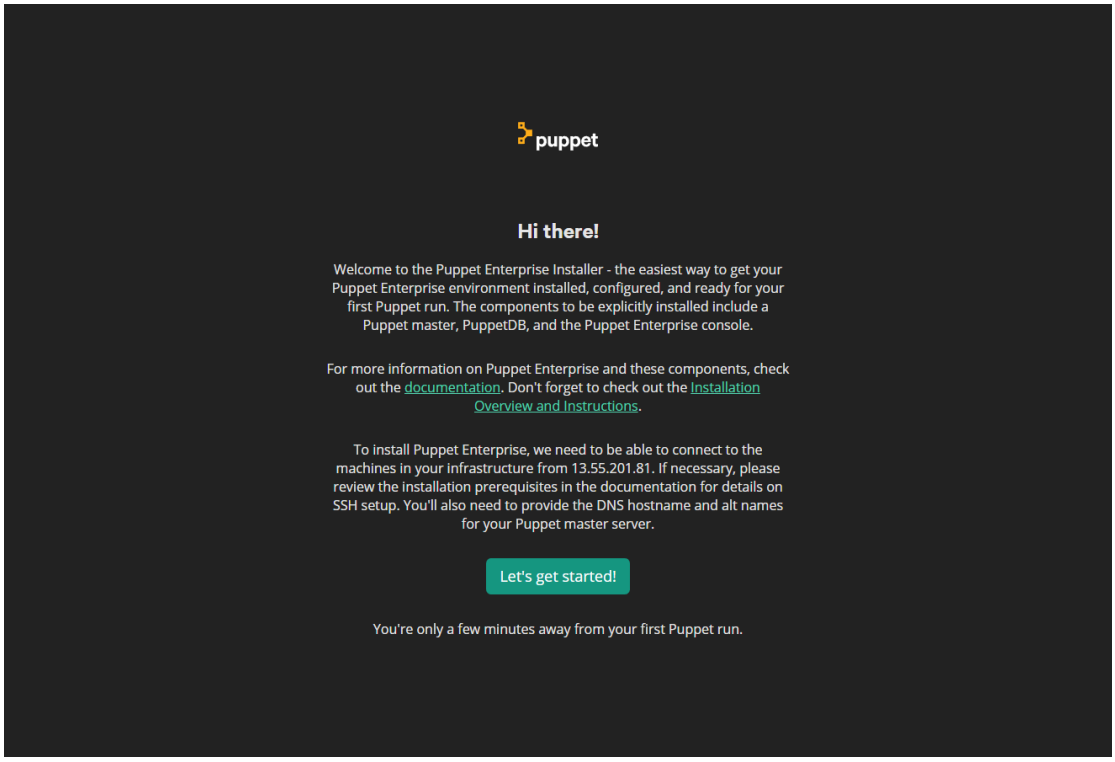
6. SSH to my AWS instance with “ssh usap” command
7. Use “sudo yum -y update”
    a. It will update all current package and installed ‘application’ to latest version.
8. Install wget
    a. I need to download the puppet2017 from RMIT serve, but I get the error from the system. It means that the system does come with wget.
    b. sudo yum install -y wget
    c. It will download and install wget from RHEL server.

```
Running transaction
  Installing : wget-1.14-15.el7.x86_64                                      1/1
  Verifying  : wget-1.14-15.el7.x86_64                                      1/1

Installed:
  wget.x86_64 0:1.14-15.el7

Complete!
```

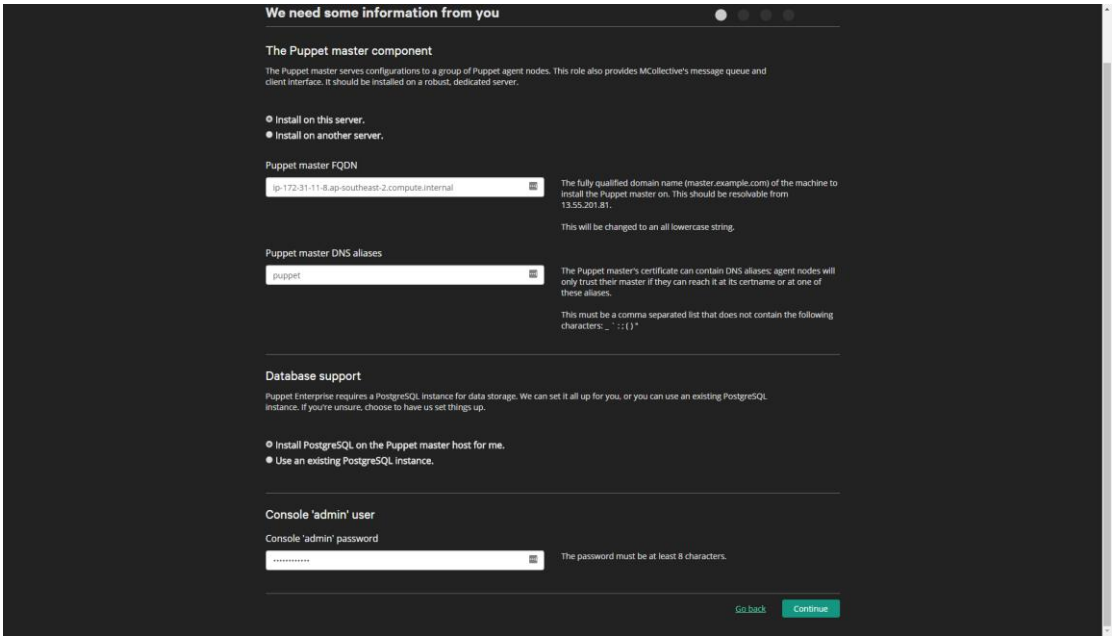
9. Download and install puppet 2017
    a. Download the install package by using “wget http://titan.csit.rmit.edu.au/~e20925/usap/puppet2017.tar.gz” command (in face, RMIT server was too slow, so I download the package from the official server by using “wget https://s3.amazonaws.com/pe-builds/released/2017.2.4/puppet-enterprise-2017.2.4-el-7-x86_64.tar.gz” command)

    b. Use “tar -zxvf puppet-enterprise-2017.2.4-el-7-x86_64.tar.gz” to unzip the installation package.

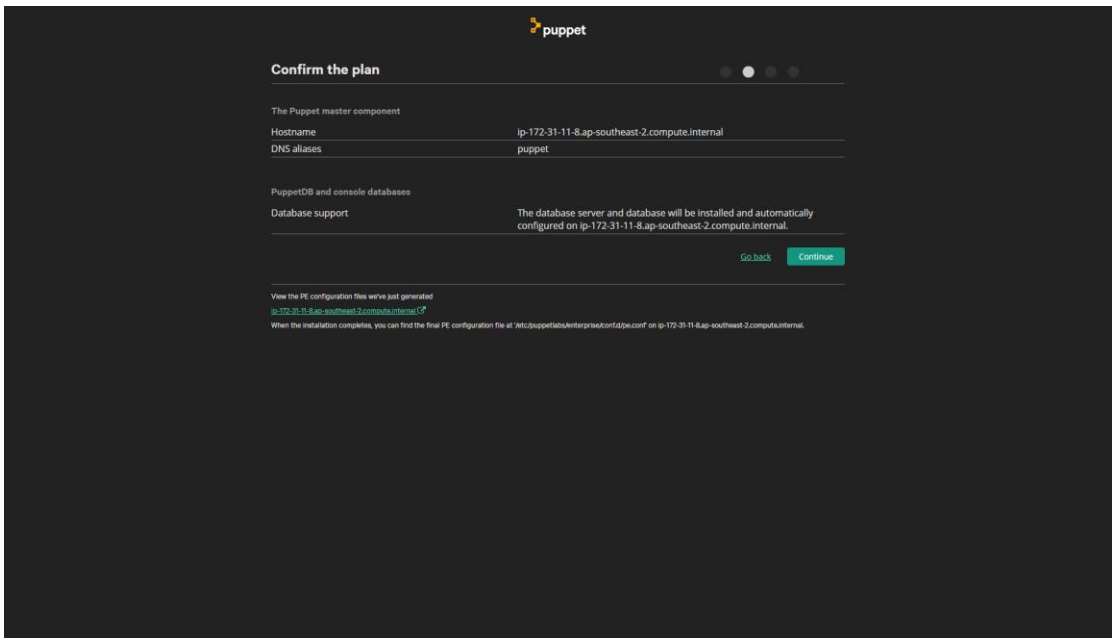
10. Install puppet
    a. cd puppet-enterprise-2017.2.4-el-7-x86_64
    b. sudo ./puppet-enterprise-installer
    c. proceed with “Guided install” mode (I select 1)
    d. go to security groups and expose the port 3000 for guide installation.
    e. Open a web browser and access https://13.55.201.81:3000/



    f. Input all the basic setting
        i. Puppet master FQDN is ip-172-31-14-227.us-west-2.compute.internal
        ii. Puppet master DNS aliases is: puppet
        iii. Console 'admin' password: 2015Love1005!!



g. Confirm the plan



h. Install agent
    i. wget -O - -q --no-check-certificate --secure-protocol=TLSv1 https://35.163.156.5:8140/packages/current/install.bash | sudo bash

Task implements

1. Task 1
    a. Set a config file that name is “users_management.pp”

Before everything start, I need install the csh for Fred, then I created group sysadmin, cars, trucks and ambulances.

```
#groups management
 group { 'sysadmin':
   ensure => present,
 }
 group { 'cars':
   ensure => present,
 }
 group { 'trucks':
   ensure => present,
 }
 group { 'ambulances':
   ensure => present,
 }
```

Just in case, some of the Linux system set the users’ home under ‘/User/’, then I created the Becca, freed and Wilma’s home directory

```
 file { '/home/Becca':
   ensure => directory,
   owner  => becca,
 }
 file { '/home/fred':
   ensure => directory,
   owner  => fred,
 }
 file { '/home/wilma':
   ensure => directory,
   owner  => wilma,
 }
```

    b. Add password for each users
        i. By using openssl -1 to generate the encrypted password (the password is: ‘password’)
        ii. Set password as ‘password => '1fAVb8Rx5$dPRNhLgso7wtdG6b8QaF4/',’
        iii. Set groups and password for each users

```
#users Management
  user { 'becca':
    ensure   => present,
    home     => '/home/becca',
    uid      =>  '10018797',
    shell    => '/bin/bash',
    password => '$1$fAVb8Rx5$dPRNhLgso7wtdG6b8QaF4/',
    groups   => ['sysadmin','cars'], # set groups for becca
  }
  user { 'fred':
    ensure   => present,
    home     => '/home/fred',
    uid      =>  '10028797',
    shell    => '/bin/csh',
    password => '$1$fAVb8Rx5$dPRNhLgso7wtdG6b8QaF4/',
    groups   => ['trucks','cars'], # set groups for fred
  }
  user { 'wilma':
    ensure   => present, # make sure this user will be created by puppet
    home     => '/home/wilma', # set home directory
    uid      =>  '10038797', # default user id 1003+ my last 4 student id
    password => '$1$fAVb8Rx5$dPRNhLgso7wtdG6b8QaF4/', # managed the user's password
    groups   => ['trucks','cars','ambulances'], # set groups for wilma
  }
```

c. set the generated SSH key for wilam
    i. create .ssh folder for Wilma and inserted private key into the

```
file { '/home/wilma/.ssh':
    ensure => directory,
    owner  => wilma,
  }
  ssh_authorized_key{ 'wilma_SSH':
    user => 'wilma',
    type => 'ssh-rsa',
    key  => 'MIIJKgIBAAKCA',

  }
```

First run results:

```
[ec2-user@ip-172-31-24-232 ~]$ sudo /usr/local/bin/puppet agent -t
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for ip-172-31-27-32.us-west-2.compute.internal
Info: Applying configuration version '1507855440'
Notice: /Stage[main]/Runiterval_management/Exec[sudo /usr/local/bin/puppet agent
 --runinterval  1200]/returns: executed successfully
Notice: /Stage[main]/Users_management/Package[csh]/ensure: created
Notice: /Stage[main]/Users_management/Group[sysadmin]/ensure: created
Notice: /Stage[main]/Users_management/Group[cars]/ensure: created
Notice: /Stage[main]/Users_management/Group[trucks]/ensure: created
Notice: /Stage[main]/Users_management/Group[ambulances]/ensure: created
Notice: /Stage[main]/Users_management/User[becca]/ensure: created
Notice: /Stage[main]/Users_management/File[/home/becca]/ensure: created
Notice: /Stage[main]/Users_management/User[fred]/ensure: created
Notice: /Stage[main]/Users_management/File[/home/fred]/ensure: created
Notice: /Stage[main]/Users_management/User[wilma]/ensure: created
Notice: /Stage[main]/Users_management/File[/home/wilma]/ensure: created
Notice: /Stage[main]/Users_management/File[/home/wilma/.ssh]/ensure: created
Notice: /Stage[main]/Users_management/Ssh_authorized_key[wilma_SSH]/ensure: crea
ted
Notice: Applied catalog in 16.84 seconds
```

Result for SSH

```
[ec2-user@ip-172-31-45-132 home]$ cd wilma/.ssh/
[ec2-user@ip-172-31-45-132 .ssh]$ ls
authorized_keys
[ec2-user@ip-172-31-45-132 .ssh]$ cat authorized_keys
cat: authorized_keys: Permission denied
[ec2-user@ip-172-31-45-132 .ssh]$ sudo cat authorized_keys
# HEADER: This file was autogenerated at 2017-10-12 15:12:47 +0000
# HEADER: by puppet.  While it can still be managed manually, it
# HEADER: is definitely not recommended.
ssh-rsa MIIJKgIBAAKCAgEAw4gdncPEpsQ/DNet8VdhMbWCri/UUZB3G2S6j4IU6PuyBGimAq
PPU6D0LZdaiviI40m27FvfHHyJj9RVfJgILFetMK2jgdlkZPcCZcWXWAJqGfSVw4M3m3XHzYxn
BvwdRoSpOmJHyo1oL8l8S8irSRk0QsEL2GqggXRFTNGrWbzBO2UXPB/auIspV6Q3k7NhaKIkih
YmQGEEZ8bnAe6WYpgynHMzGXH8vIXDnCElBgzazY6ag8A/ya0MC/X0oQz62ZwFFsZjO47ddFkP
```

```
[ec2-user@ip-172-31-27-32 ~]$ sudo /usr/local/bin/puppet agent -t
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for ip-172-31-27-32.us-west-2.compute.internal
Info: Applying configuration version '1507689018'
Notice: /Stage[main]/Usermanagement/User[fred]/ensure: created
Notice: Applied catalog in 0.93 seconds
```

Password change test and result:

```
[ec2-user@ip-172-31-27-32 ~]$ sudo /usr/local/bin/puppet agent -t
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for ip-172-31-27-32.us-west-2.compute.internal
Info: Applying configuration version '1507689707'
Notice: /Stage[main]/Usermanagement/User[becca]/password: changed password
Notice: /Stage[main]/Usermanagement/User[fred]/password: changed password
Notice: /Stage[main]/Usermanagement/User[wilma]/password: changed password
Notice: Applied catalog in 0.96 seconds
```

Test:

Input with correct password for Becca

```
[ec2-user@ip-172-31-27-32 ~]$ su becca
Password:
bash-4.2$
```

Input with incorrect password for Wilma

```
[ec2-user@ip-172-31-27-32 ~]$ su wilma
Password:
su: Authentication failure
```

Group set result:

```
[ec2-user@ip-172-31-45-132 .ssh]$ groups becca
becca : becca sysadmin cars
[ec2-user@ip-172-31-45-132 .ssh]$ groups fred
fred : fred cars trucks
[ec2-user@ip-172-31-45-132 .ssh]$ groups wilma
wilma : wilma cars trucks ambulances
[ec2-user@ip-172-31-45-132 .ssh]$ _
```

User ID and shall result:

```
becca:x:10018797:1005::/home/becca:/bin/bash
fred:x:10028797:1006::/home/fred:/bin/csh
wilma:x:10038797:1007::/home/wilma:/bin/bash
```

2. Task 2 set the check in time to 20 minutes (3 times in a hour)

```
exec { 'sudo /usr/local/bin/puppet agent --runinterval  1200':
  path  => ['/usr/bin', '/usr/sbin','/usr/local/bin'],
```

Result:

```
[ec2-user@ip-172-31-24-232 ~]$ sudo /usr/local/bin/puppet agent -t
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for ip-172-31-27-32.us-west-2.compute.internal
Info: Applying configuration version '1507854473'
Notice: /Stage[main]/Runiterval_management/Exec[sudo /usr/local/bin/puppet agen
 --runinterval  1200]/returns: executed successfully
Notice: Applied catalog in 2.48 seconds
```

3. Task3 install packages and manage the services
    a. Due to the lynx is on optional channel, I need to enable the optional channel for my rest installation before I start.

```
exec{ 'sudo /usr/bin/yum-config-manager --enable rhui-REGION-rhel-server-extras rhui-REGION-rhel-
server-optional && exit':
  path    => ['/usr/bin', '/usr/sbin',],
}
```

    b. start the installation

```
exec { 'sudo /usr/bin/yum update -y':  # command this resource will run
  path    => ['/usr/bin', '/usr/sbin',],
}

#install the shell packages
package { 'openssh':
  ensure => installed,
}
package { 'httpd':
  ensure => installed,
}
package { 'php':
  ensure => installed,
}
package { 'tigervnc-server':
  ensure => installed,
}
package { 'tmux':
  ensure => installed,
}
package { 'lynx':
  ensure => installed,
}
package { 'gcc':
  ensure => installed,
}
package { 'vim':
```

```
  ensure => installed,
 }
 package { 'emacs':
  ensure => installed,
 }
 package { 'git':
  ensure => installed,
 }
 package { 'wget':
  ensure => installed,
 }
```

(Note: the httpd is apache)

c. Install special package the not include in the official repository

Download the package from the web site

```
 #install dia2code
 exec {  'sudo yum install -y libxml2-devel; wget http://prdownloads.sourceforge.net/dia2code/dia2code-0.8.3.tar.gz ; tar -xvf dia2code-0.8.3.tar.gz; cd dia2code-0.8.3;  bash ./configure; sudo make; sudo install; cd ..; rm -rf dia2code-0.8.3; rm dia2code-0.8.3.tar.gz':  # command this resource will run
   path  => ['/usr/bin', '/usr/sbin','/usr/local/bin'],
 }

 # install mysql-server
 exec { 'wget https://dev.mysql.com/get/mysql57-community-release-el7-11.noarch.rpm ; sudo rpm -Uvh mysql57-community-release-el7-11.noarch.rpm ; rm mysql57-community-release-el7-11.noarch.rpm':  # command this resource will run
   path  => ['/usr/bin', '/usr/sbin','/usr/local/bin'],
 }
 package { 'mysql-server':
  ensure => installed,
 }


 #install the epel for cgdb and sshfs
 exec{ 'wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm; rpm -ivh epel-release-latest-7.noarch.rpm; rm epel-release-latest-7.noarch.rpm':
   path    => ['/usr/bin', '/usr/sbin',],
 }

 package { 'cgdb':
  ensure => installed,
 }
 package { 'fuse-sshfs':
  ensure => installed,
 }
```

d. Ensure the services is on boot.

```
# ensure apache2 service is running
 service { 'httpd':
   ensure => running,
   enable => true, # Make sure it will start on boot
 }
 # ensure mysql service is running
 service { 'mysqld':
   ensure => running,
   enable => true, # Make sure it will start on boot

 }

 #ensure openssh is running
 service { 'sshd':
   ensure => running,
   enable => true, # Make sure it will start on boot

 }
```

Results:

```
[ec2-user@ip-172-31-24-232 ~]$ sudo /usr/local/bin/puppet agent -t
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for ip-172-31-27-32.us-west-2.compute.internal
Info: Applying configuration version '1507855552'
Notice: /Stage[main]/Packages_management/Exec[sudo /usr/bin/yum-config-manager --enable rhui-REGION-rhel-server-extras r
hui-REGION-rhel-server-optional && exit]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Exec[sudo /usr/bin/yum update -y]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Package[httpd]/ensure: created
Notice: /Stage[main]/Packages_management/Package[php]/ensure: created
Notice: /Stage[main]/Packages_management/Package[tigervnc-server]/ensure: created
Notice: /Stage[main]/Packages_management/Package[tmux]/ensure: created
Notice: /Stage[main]/Packages_management/Package[lynx]/ensure: created
Notice: /Stage[main]/Packages_management/Package[gcc]/ensure: created
Notice: /Stage[main]/Packages_management/Package[vim]/ensure: created
^@Notice: /Stage[main]/Packages_management/Package[emacs]/ensure: created
Notice: /Stage[main]/Packages_management/Package[git]/ensure: created
Notice: /Stage[main]/Packages_management/Package[wget]/ensure: created

Notice: /Stage[main]/Packages_management/Exec[wget http://prdownloads.sourceforge.net/dia2code/dia2code-0.8.3.tar.gz ; t
ar -xvf dia2code-0.8.3.tar.gz; cd dia2code-0.8.3;  bash ./configure; sudo make; sudo install; cd ..; rm -rf dia2code-0.8
.3; rm dia2code-0.8.3.tar.gz]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Exec[wget https://dev.mysql.com/get/mysql57-community-release-el7-11.noarch.rpm
 ; sudo rpm -Uvh mysql57-community-release-el7-11.noarch.rpm ; rm mysql57-community-release-el7-11.noarch.rpm]/returns:
executed successfully
^@^[[D^[[DNotice: /Stage[main]/Packages_management/Package[mysql-server]/ensure: created
Notice: /Stage[main]/Packages_management/Exec[wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rp
m; rpm -ivh epel-release-latest-7.noarch.rpm; rm epel-release-latest-7.noarch.rpm]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Package[cgdb]/ensure: created
Notice: /Stage[main]/Packages_management/Package[fuse-sshfs]/ensure: created
Notice: /Stage[main]/Packages_management/Service[httpd]/ensure: ensure changed 'stopped' to 'running'
Info: /Stage[main]/Packages_management/Service[httpd]: Unscheduling refresh on Service[httpd]
Notice: /Stage[main]/Packages_management/Service[mysqld]/ensure: ensure changed 'stopped' to 'running'
Info: /Stage[main]/Packages_management/Service[mysqld]: Unscheduling refresh on Service[mysqld]
Info: Class[Packages_management]: Unscheduling all events on Class[Packages_management]
Notice: /Stage[main]/Runiterval_management/Exec[sudo /usr/local/bin/puppet agent --runinterval  1200]/returns: executed
successfully
Info: Stage[main]: Unscheduling all events on Stage[main]
Notice: Applied catalog in 156.85 seconds
```

Check running services results:

sudo nmap -sT -O localhost

```
Nmap scan report for localhost (127.0.0.1)
Host is up (0.00030s latency).
Other addresses for localhost (not scanned): 127.0.0.1
Not shown: 996 closed ports
PORT     STATE SERVICE
22/tcp   open  ssh
25/tcp   open  smtp
80/tcp   open  http
3306/tcp open  mysql
Device type: general purpose
Running: Linux 3.X
OS CPE: cpe:/o:linux:linux_kernel:3
OS details: Linux 3.7 - 3.9
Network Distance: 0 hops
```

4. Task 4.

    a. Off-set the root login

Use Augeas function to locate and change the setting in sshd_config, once the 'PermitRootLogin' is set as no, then root will not allow access by ssh

```
#a. disable root login for ssh
augeas { 'sshd_config':
  context => '/files/etc/ssh/sshd_config',
  changes =>[
  'set PermitRootLogin no',
],
}
```

    b. Change the apache document

First, I need make sure the 's3598797' directory is existing under /var/www/. After that I am using Augeas to change the DocumentRoot from '/var/www/html' to '/var/www/s3598797'.

```
#b. disable root login for ssh
# Make sure the directory is exist

file{'/var/www/s3598797':
   ensure  =>  directory,
}
augeas { 'httpd_conf':
  context => '/files/etc/httpd/conf/httpd.conf',
  changes => [
```

```
    'set directive[.="DocumentRoot"] "DocumentRoot"',
    "set directive[.='DocumentRoot']/arg '/var/www/s3598797'",
  ],
}
```

```
Notice: Augeas[httpd_conf](provider=augeas):
--- /etc/httpd/conf/httpd.conf  2017-09-25 13:11:55.000000000 +0000
+++ /etc/httpd/conf/httpd.conf.augnew   2017-10-12 14:29:09.353017263 +0000
@@ -116,7 +116,7 @@
 # documents. By default, all requests are taken from this directory, but
 # symbolic links and aliases may be used to point to other locations.
 #
-DocumentRoot "/var/www/html"
+DocumentRoot /var/www/s3598797

 #
 # Relax access to content within /var/www.
```

c. Add Ba

d. Add Fred to sudo (wheel) group

Before the script running, I checked the Fred is not in the sudo (wheel) group

```
Last login: Fri Oct 13 00:27:20 2017 from 67.2.168.125.sta.wbroadband.net.au
[ec2-user@ip-172-31-24-232 ~]$ groups fred
fred : fred cars trucks
```

```
exec{ 'sudo useradd -g fred wheel':
  path  => ['/usr/bin', '/usr/sbin','/usr/local/bin'],
}
```

By using the command “sudo usermod -aG wheel fred”, it will put fred into group wheel

Result:

```
[fred@ip-172-31-31-21 ec2-user]$ sudo groups fred
fred : fred wheel cars trucks
```

e. Ensure /usr/local/bin has been set for everyone in system.

Set the path for /bin , /sbin, /usr/bin, /usr/sbin, and /usr/local/bin, In case the system $PATH was fully replaced by the code.

```
Exec { path => [ '/bin/', '/sbin/' , '/usr/bin/', '/usr/sbin/','/usr/local/bin' ] }
```

f. mount

5. Task 5: Manage the hosts record to make a shortcut for ssh login without input full URL like titan.csit.rmit.edu.au

Before I do any change, I checked the /etc/hosts file. It looks like:

```
127.0.0.1   localhost localhost.localdomain localhost4 localhost4.localdomain4
::1         localhost localhost.localdomain localhost6 localhost6.localdomain6
```

```
# create a fully qualified full host entry with an alias
host { 'titan.csit.rmit.edu.au':
  ip           => '131.170.5.131',
  host_aliases => 'titan',
}

host { 'jupiter.csit.rmit.edu.au':
  ip           => '131.170.5.135',
  host_aliases => 'jupiter',
}

host { 'saturn.csit.rmit.edu.au':
  ip           => '131.170.5.132',
  host_aliases => 'saturn',
}
```

These operate will create the host and host aliases for each host, after that I will able to access these URL without input full address.

Results:

```
Info: Using configured environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Loading facts
Info: Caching catalog for ip-172-31-27-32.us-west-2.compute.internal
Info: Applying configuration version '1507856643'
Notice: /Stage[main]/Hosts_management/Host[titan.csit.rmit.edu.au]/ensure: created
Info: Computing checksum on file /etc/hosts
Notice: /Stage[main]/Hosts_management/Host[jupiter.csit.rmit.edu.au]/ensure: created
Notice: /Stage[main]/Hosts_management/Host[saturn.csit.rmit.edu.au]/ensure: created
Notice: /Stage[main]/Packages_management/Exec[sudo /usr/bin/yum-config-manager --enable rhui-REGION-rhel-server-extras r
hui-REGION-rhel-server-optional && exit]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Exec[sudo /usr/bin/yum update -y]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Exec[sudo yum install -y libxml2-devel; wget http://prdownloads.sourceforge.net
/dia2code/dia2code-0.8.3.tar.gz ; tar -xvf dia2code-0.8.3.tar.gz; cd dia2code-0.8.3;  bash ./configure; sudo make; sudo
install; cd ..; rm -rf dia2code-0.8.3; rm dia2code-0.8.3.tar.gz]/returns: executed successfully
Notice: /Stage[main]/Packages_management/Exec[wget https://dev.mysql.com/get/mysql57-community-release-el7-11.noarch.rpm
 ; sudo rpm -Uvh mysql57-community-release-el7-11.noarch.rpm ; rm mysql57-community-release-el7-11.noarch.rpm]/returns:
executed successfully
Notice: /Stage[main]/Packages_management/Exec[wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rp
m; rpm -ivh epel-release-latest-7.noarch.rpm; rm epel-release-latest-7.noarch.rpm]/returns: executed successfully
Notice: /Stage[main]/Runiterval_management/Exec[sudo /usr/local/bin/puppet agent --runinterval  1200]/returns: executed
successfully
Notice: Applied catalog in 12.40 seconds
[ec2-user@ip-172-31-24-232 ~]$ _
```

```
# HEADER: This file was autogenerated at 2017-10-13 01:04:05 +0000
# HEADER: by puppet.  While it can still be managed manually, it
# HEADER: is definitely not recommended.
127.0.0.1       localhost       localhost.localdomain localhost4 localhost4.localdomain4
::1     localhost       localhost.localdomain localhost6 localhost6.localdomain6
131.170.5.131   titan.csit.rmit.edu.au  titan
131.170.5.135   jupiter.csit.rmit.edu.au        jupiter
131.170.5.132   saturn.csit.rmit.edu.au saturn
~
```

Successed login in to core teaching via SSH sxxxx@jupiter

```
[ec2-user@ip-172-31-24-232 ~]$ ssh s3598797@jupiter
The authenticity of host 'jupiter (131.170.5.135)' can't be established.
ECDSA key fingerprint is SHA256:ExMXv/FaRrGZyt+BoYC/YAdcmS2PcZr36duvrRU7th8.
ECDSA key fingerprint is MD5:fe:0d:2e:87:6d:db:d8:11:27:04:c1:17:52:c7:9f:5f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'jupiter,131.170.5.135' (ECDSA) to the list of known hosts.
s3598797@jupiter's password:
Last login: Fri Oct 13 10:51:17 2017 from 67.2.168.125.sta.wbroadband.net.au
```

6. Task 6

7. Task 7: Ensure the PTAH environment include /usr/local/bin

Simply put the following code in the class, with will insert the PATH into the environment.

```
Exec { path => '/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/opt/puppetlabs/bin' }
```

Results:

```
[ec2-user@ip-172-31-27-32 conf]$ cat $PATH
cat: /usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:/opt/puppetlabs/bin:/home/ec2-user/.local/bin:/home/ec2-user/bin:
[ec2-user@ip-172-31-27-32 conf]$
```

8. Task 8

```
# add a notify to the file resource
file { '/etc/ssh/sshd_config':
  notify => Service['sshd'],  # this sets up the relationship
  mode   => '0644',
  owner  => 'root',
  group  => 'root',
}
```

```
file { '/etc/httpd/conf/httpd.conf':
  notify => Service['httpd'],  # this sets up the relationship
  mode   => '0644',
  owner  => 'root',
  group  => 'root',
}
```

```
Notice: /Stage[main]/Subscribesmanagement/File[/etc/ssh/sshd_config]/mode: mode changed '0600' to '0644'
Info: /Stage[main]/Subscribesmanagement/File[/etc/ssh/sshd_config]: Scheduling refresh of Service[sshd]
Notice: /Stage[main]/Packagesmanagement/Service[sshd]: Triggered 'refresh' from 1 events
Info: Class[Packagesmanagement]: Unscheduling all events on Class[Packagesmanagement]
Info: Stage[main]: Unscheduling all events on Stage[main]
Notice: Applied catalog in 13.39 seconds
[ec2-user@ip-172-31-27-32 conf]$ sudo nano /etc/httpd/conf/httpd.conf
```