

1. Create 2 EC2 instances on AWS.
 - a. One of them should be master
 - b. The other should be client.

The screenshot shows the AWS Management Console 'Instances' page. Two instances are listed: 'puppet-master' (Instance ID: i-08f73021076782fad) and 'puppet-client' (Instance ID: i-00572066ce0950bfd). Both are t2.micro instances in the 'Running' state, located in the 'ap-south-1a' availability zone. The 'puppet-master' has a public IPv4 address of ec2-3-6-87-208.z and the 'puppet-client' has ec2-3-109-152-1.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
puppet-master	i-08f73021076782fad	Running	t2.micro	Initializing	No alarms	ap-south-1a	ec2-3-6-87-208.z
puppet-client	i-00572066ce0950bfd	Running	t2.micro	Initializing	No alarms	ap-south-1a	ec2-3-109-152-1

2. Make sure the following inbound rules are set in the security groups.

Use the same security group for both the instances.

The screenshot shows the 'Inbound rules' section of the AWS Management Console. Two rules are listed for the security group 'sgr-0c5be67b75cb309eb'. The first rule is 'All TCP' on port range '0 - 65535' with source '0.0.0.0/0'. The second rule is 'SSH' on port '22' with source '0.0.0.0/0'. Both rules have a 'Delete' button next to them.

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-0c5be67b75cb309eb	All TCP	TCP	0 - 65535	0.0.0.0/0	
sgr-03bae8e9525ab4355	SSH	TCP	22	0.0.0.0/0	

3. Enter the following command in both master and client to update the package:


```
sudo apt-get update -y
```

master

```
ubuntu@ip-172-31-42-144:~$ sudo apt-get update -y
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Get:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Pac
```

client

```
ubuntu@ip-172-31-41-29:~$ sudo apt-get update -y
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:4 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB]
Get:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [800 kB]
Get:7 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [156 kB]
```

4. On both master and client instances, set up the hostname

Go to → `sudo nano /etc/hosts`.

3.6.87.208 puppetmaster puppet

3.109.152.166 puppetclient

Here, we have to mention respective IPv4 public address of the respective instances.

```

GNU nano 6.2
127.0.0.1 localhost

# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
ff02::3 ip6-allhosts

3.6.87.208 puppetmaster puppet
3.109.152.166 puppetclient

```

Run the following commands on Master Instance only.

5. Get the latest puppet version
`wget https://apt.puppetlabs.com/puppet6-release-focal.deb`

```

ubuntu@ip-172-31-42-144:~$ wget https://apt.puppetlabs.com/puppet6-release-focal.deb
--2023-05-01 14:33:57-- https://apt.puppetlabs.com/puppet6-release-focal.deb
Resolving apt.puppetlabs.com (apt.puppetlabs.com)... 108.159.80.20, 108.159.80.32, 108.159.80.39, ...
Connecting to apt.puppetlabs.com (apt.puppetlabs.com)|108.159.80.20|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 11696 (11K) [application/x-debian-package]
Saving to: 'puppet6-release-focal.deb'

puppet6-release-focal.deb      100%[=====]
2023-05-01 14:33:57 (270 MB/s) - 'puppet6-release-focal.deb' saved [11696/11696]

```

6. After downloading, install the package by using dpkg
`sudo dpkg -i puppet6-release-focal.deb`

```

ubuntu@ip-172-31-42-144:~$ sudo dpkg -i puppet6-release-focal.deb
Selecting previously unselected package puppet6-release.
(Reading database ... 63657 files and directories currently installed.)
Preparing to unpack puppet6-release-focal.deb ...
Unpacking puppet6-release (6.0.0-23focal) ...
Setting up puppet6-release (6.0.0-23focal) ...

```

7. Update the package repo with → `sudo apt-get update-y`
8. Then install the puppet server with → `sudo apt-get install puppetserver -y`

```

ubuntu@ip-172-31-42-144:~$ sudo apt-get install puppetserver -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  ca-certificates-java fontconfig-config fonts-dejavu-core java-
  libjpeg8 liblcms2-2 libpcsclite1 libxi6 libxrender1 libxtst6 n
Suggested packages:
  default-jre cups-common liblcms2-utils pcsd libnss-mdns fonts
The following NEW packages will be installed:

```

9. Open the puppetserver file, and lessen the memory size. This prevents the overloading of our instance.

```
sudo nano /etc/default/puppetserver
```

```
#####
# Init settings for puppetserver
#####

# Location of your Java binary (version 8)
JAVA_BIN="/usr/bin/java"

# Modify this if you'd like to change the memory allocation, enable JMX, etc
JAVA_ARGS="-Xms300m -Xmx300m -Djruby.logger.class=com.puppetlabs.jruby_utils.jruby.Slf4jLogger"

# Modify this as you would JAVA_ARGS but for non-service related subcommands
JAVA_ARGS_CLI="${JAVA_ARGS_CLI:-}"

# Modify this if you'd like TrapperKeeper specific arguments
TK_ARGS=""

# These normally shouldn't need to be edited if using OS packages
USER="puppet"
GROUP="puppet"
INSTALL_DIR="/opt/puppetlabs/server/apps/puppetserver"
CONFIG="/etc/puppetlabs/puppetserver/conf.d"
```

10. Restart and enable the Puppet Service
 - a. sudo systemctl restart puppetserver
 - b. sudo systemctl enable puppetserver

```
ubuntu@ip-172-31-42-144:~$ sudo nano /etc/default/puppetserver
ubuntu@ip-172-31-42-144:~$ sudo systemctl restart puppetserver

sudo systemctl enable puppetserver
```

11. Verify the status of the service → sudo systemctl status puppetserver

```
ubuntu@ip-172-31-42-144:~$ sudo systemctl status puppetserver
● puppetserver.service - puppetserver Service
   Loaded: loaded (/lib/systemd/system/puppetserver.service; disabled; vendor
   Active: active (running) since Mon 2023-05-01 14:38:47 UTC; 1min 5s ago
   Process: 4975 ExecStart=/opt/puppetlabs/server/apps/puppetserver/bin/puppets
   Main PID: 5000 (java)
     Tasks: 39 (limit: 4915)
    Memory: 489.7M
       CPU: 38.195s
    CGroup: /system.slice/puppetserver.service
           └─5000 /usr/bin/java -Xms300m -Xmx300m -Djruby.logger.class=com.pup

May 01 14:38:08 ip-172-31-42-144 systemd[1]: Starting puppetserver Service...
May 01 14:38:47 ip-172-31-42-144 systemd[1]: Started puppetserver Service.
lines 1-13/13 (END)
```

If the output is such as the above, this means that the master or the server has been configured and is running successfully.

Now, on the client machine→

12. Download latest version of Puppet as done before.

wget https://apt.puppetlabs.com/puppet6-release-focal.deb

```
ubuntu@ip-172-31-41-29:~$ wget https://apt.puppetlabs.com/puppet6-release-focal.deb
--2023-05-01 14:40:34-- https://apt.puppetlabs.com/puppet6-release-focal.deb
Resolving apt.puppetlabs.com (apt.puppetlabs.com)... 108.159.80.20, 108.159.80.32, 108.159.80.34
Connecting to apt.puppetlabs.com (apt.puppetlabs.com)|108.159.80.20|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 11696 (11K) [application/x-debian-package]
Saving to: 'puppet6-release-focal.deb'

puppet6-release-focal.deb      100%[=====]
2023-05-01 14:40:34 (235 MB/s) - 'puppet6-release-focal.deb' saved [11696/11696]
```

13. Use dpkg to install the package after this.

sudo dpkg -i puppet6-release-focal.deb

```
ubuntu@ip-172-31-41-29:~$ sudo dpkg -i puppet6-release-focal.deb
Selecting previously unselected package puppet6-release.
(Reading database ... 63657 files and directories currently installed.)
Preparing to unpack puppet6-release-focal.deb ...
Unpacking puppet6-release (6.0.0-23focal) ...
Setting up puppet6-release (6.0.0-23focal) ...
```

14. Update the package repo with → sudo apt-get update-y

15. Then install the puppet server with → sudo apt-get install puppetserver

```
ubuntu@ip-172-31-41-29:~$ sudo apt-get install puppet-agent -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  puppet-agent
0 upgraded, 1 newly installed, 0 to remove and 40 not upgraded.
Need to get 38.0 MB of archives.
After this operation, 144 MB of additional disk space will be used.
Get:1 http://apt.puppetlabs.com focal/puppet6 amd64 puppet-agent amd64 6.28.0-1 [38.0 MB]
Fetched 38.0 MB in 1s (54.3 MB/s)
```

16. Restart and enable the Puppet Service

a. sudo systemctl restart puppetserver

b. sudo systemctl enable puppetserver

```
ubuntu@ip-172-31-41-29:~$ sudo systemctl start puppet
sudo systemctl enable puppet
ubuntu@ip-172-31-41-29:~$ sudo systemctl status puppet
● puppet.service - Puppet agent
   Loaded: loaded (/lib/systemd/system/puppet.service; enabled; vendor preset: enabled)
   Active: active (running) since Mon 2023-05-01 14:42:11 UTC; 12s ago
     Main PID: 2942 (puppet)
       Tasks: 3 (limit: 1141)
      Memory: 71.0M
         CPU: 1.483s
        CGroup: /system.slice/puppet.service
                └─2942 /opt/puppetlabs/puppet/bin/ruby /opt/puppetlabs/puppet/bin/puppet agent --no-daemonize

May 01 14:42:11 ip-172-31-41-29 systemd[1]: Started Puppet agent.
May 01 14:42:13 ip-172-31-41-29 puppet-agent[2942]: Starting Puppet client version 6.28.0
```

Thus, the Puppet agent has been started too.

We can **Configure the Agent Certificate** on the Master Machine.

17. Go to the Master node and list the requested certificates.

```
sudo /opt/puppetlabs/bin/puppetserver ca list
```

```
ubuntu@ip-172-31-44-174:~$ sudo /opt/puppetlabs/bin/puppetserver ca list
Requested Certificates:
  ip-172-31-47-90.ap-south-1.compute.internal    (SHA256)  E0:5C:C0:3D:FB:8B:22:CE:7B:28:48:7C:D5:11:42:93:12:27:8A:0C:21:7C:76:54:83:90:3F:F4:7E:34:75:9D
ubuntu@ip-172-31-44-174:~$
```

18. Sign all the requested certificates

```
sudo /opt/puppetlabs/bin/puppetserver ca sign --all
```

```
ubuntu@ip-172-31-44-174:~$ sudo /opt/puppetlabs/bin/puppetserver ca sign --all
Successfully signed certificate request for ip-172-31-47-90.ap-south-1.compute.internal
ubuntu@ip-172-31-44-174:~$
```

19. To test the connection and working of the cluster use →

```
sudo /opt/puppetlabs/bin/puppet agent --test
```

```
ubuntu@ip-172-31-44-174:~$ sudo /opt/puppetlabs/bin/puppet agent --test
Info: Using environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Info: Retrieving locales
Info: Caching catalog for ip-172-31-44-174.ap-south-1.compute.internal
Info: Applying configuration version '1682961796'
Info: Creating state file /opt/puppetlabs/puppet/cache/state/state.yaml
Notice: Applied catalog in 0.01 seconds
```

The “**Applied catalog**” dialogue means that puppet was configured successfully on both-Master and Client Machines.