Semester	S.E. Semester IV – Information Technology Engineering
Subject	DevOps Lab
Subject Professor In-charge	Unnati Gohil
Assisting Teachers	-
Laboratory	MS Teams

Student Name	Sanika Kate
Roll Number	22101A2005
Grade and Subject Teacher's Signature		

Experiment Number	5
Experiment Title	Puppet (Master , Client)
Resources / Apparatus Required	Hardware: Basic Desktop with Windows or Linux.	Software: Java/ Python/Wireshark/Docker
Objectives (Skill Set / Knowledge Tested / Imparted)	
Theory:	**Puppet**: Puppet is a popular open-source configuration management and automation tool used to manage and control the configuration of IT infrastructure. It employs a client-server architecture where you have Puppet "masters" and Puppet "clients" (also known as Puppet agents

Puppet Master:

Definition: The Puppet master is the central server or controller in a Puppet infrastructure.

Responsibilities:

Catalog Compilation: The Puppet master compiles configuration catalogs for managed nodes (clients) based on the desired state defined in Puppet manifests.

Distribution: It distributes these catalogs to Puppet clients (agents).

Certificate Authority (CA): Puppet master acts as a Certificate Authority (CA) to authenticate and secure communications between the master and clients.

Puppet Client (Agent):

Definition: Puppet clients, also known as agents, are systems or nodes that are managed by Puppet. They run the Puppet agent software.

Responsibilities:

Catalog Application: Puppet clients apply the configuration catalogs received from the master to ensure that their system configurations match the desired state.

Facts Gathering: Clients collect system information, known as "facts," and send them to the Puppet master. These facts can be used in Puppet manifests to make decisions.

Reporting: Clients send reports back to the Puppet master, providing information on the changes made during the Puppet run.

Puppet Manifests:

Definition: Puppet manifests are files written in Puppet's declarative language (Puppet DSL) that describe the desired state of a system or node.

Responsibilities: Manifests contain resource definitions, including files, packages, services, and other configuration items. The Puppet master

compiles manifests into catalogs for distribution to clients.

Commands:

MASTER-SLAVE:-

2 CMDS:- 1 cmd me master another me root

sudo su

docker run -it -d --name M1 ubuntu

docker ps

docker exec -it containerid bash

execute each containers

apt update in both

go to apt.puppetlabs.com and copy link address of bionic.deb

apt install wget: this is used to download something from the web in our container -both sides

now run: wget link

wget http://apt.puppetlabs.com/puppet-release-bionic.deb

Now we have to unzip the downloaded folder

dpkg -i puppet-release-bionic.deb

Till here, both master and slave commands were same

Now we need to let the system know which is master and which is slave

so on master: apt-get install puppetmaster

on slave: apt-get install puppet

ON Master:-

apt install systemctl

systemctl start puppetmaster.service

need to check ip address

cd /etc

cat hosts

now here u can see ip address

copy the ip address

for slave:

open the hosts file of etc in host and put the ip of master here before last line

eg:on second last line

how to do it..written niche

cd /etc

apt install nano

nano hosts

<ipaddress> puppet

172.10.0.5 puppet

ctrl x ..save? y..then press enter

in master: systemctl restart puppet-master.service

(you might need to restart the service..just in case)

in slave: puppet agent -t --debug

the use of this command is that master receives a certificate from slave with its info and address and all

on master:

puppet cert list
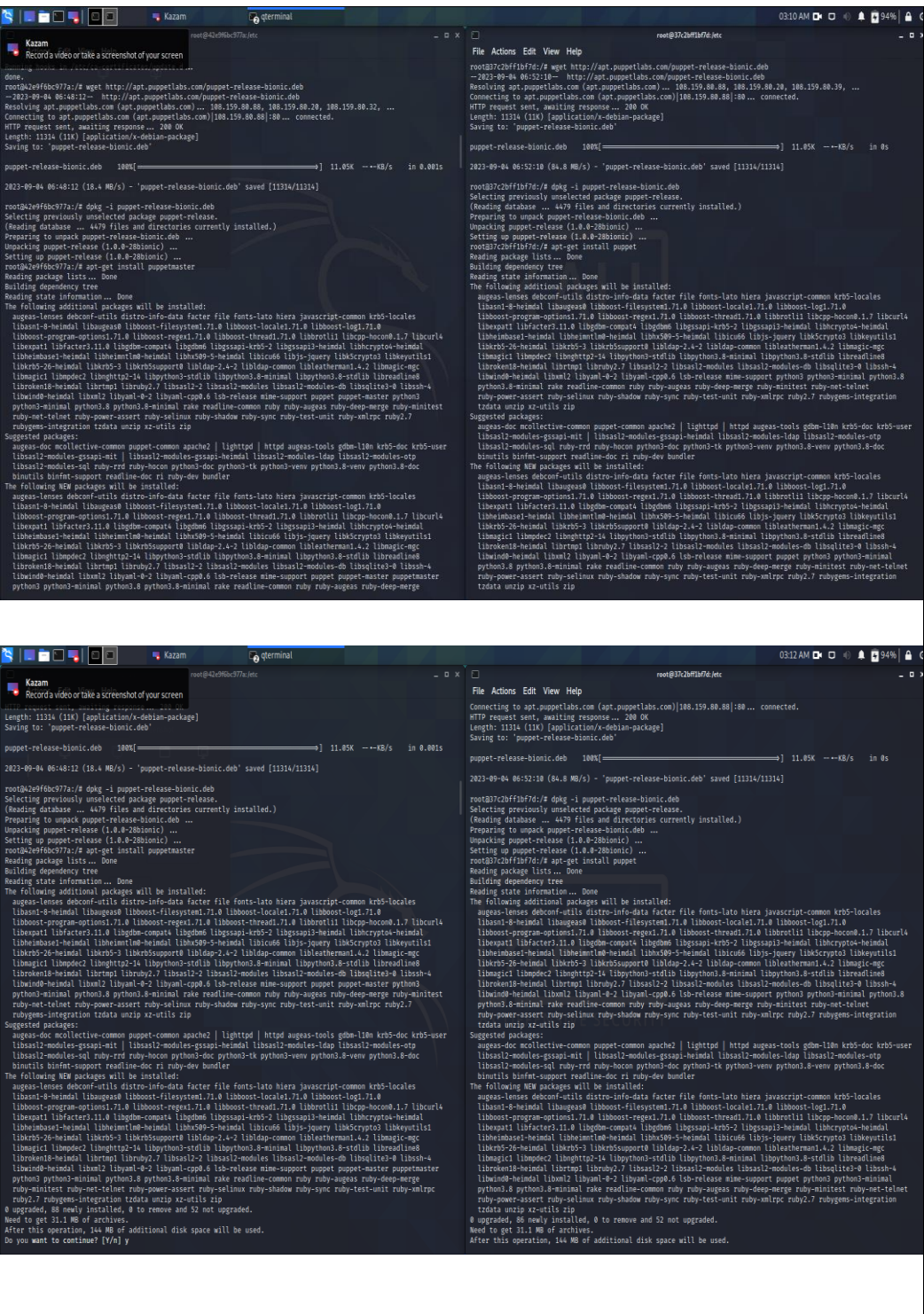
(after this you can see a certificate on the master side with the container id of the slave)

you can sign this certificate on the master side now

	on master: puppet cert sign container_id or puppet cert sign -all **NOW THIS ENTIRE PROCESS IS REQUIRED FOR SETTING UP THE COMMUNICATION BETWEEN MASTER AND SLAVE**
Output	

Top-left terminal (root@42e9f6bc977a:/etc)

```
Setting up libkrb5support0:amd64 (1.17-6ubuntu4.3) ...
Setting up libsasl2-modules-db:amd64 (2.1.27+dfsg-2ubuntu0.1) ...
Setting up tzdata (2023c-0ubuntu0.20.04.2) ...
debconf: unable to initialize frontend: Dialog
debconf: (No usable dialog-like program is installed, so the dialog based frontend cannot be used. at /usr/share/per
l5/Debconf/FrontEnd/Dialog.pm line 76.)
debconf: falling back to frontend: Readline
debconf: unable to initialize frontend: Readline
debconf: (Can't locate Term/ReadLine.pm in @INC (you may need to install the Term::ReadLine module) (@INC contains:
/etc/perl /usr/local/lib/x86_64-linux-gnu/perl/5.30.0 /usr/local/share/perl/5.30.0 /usr/lib/x86_64-linux-gnu/perl5/5
.30 /usr/share/perl5 /usr/lib/x86_64-linux-gnu/perl/5.30 /usr/share/perl/5.30 /usr/local/lib/site_perl /usr/lib/x86_
64-linux-gnu/perl-base) at /usr/share/perl5/Debconf/FrontEnd/Readline.pm line 7.)
debconf: falling back to frontend: Teletype
Configuring tzdata
___

Please select the geographic area in which you live. Subsequent configuration questions will narrow this down by
presenting a list of cities, representing the time zones in which they are located.

  1. Africa   3. Antarctica  5. Arctic  7. Atlantic  9. Indian    11. SystemV  13. Etc
  2. America  4. Australia   6. Asia    8. Europe   10. Pacific   12. US
Geographic area: 6

Please select the city or region corresponding to your time zone.

  1. Aden      16. Brunei      31. Hong_Kong   46. Kuala_Lumpur  61. Pyongyang    76. Tehran
  2. Almaty    17. Chita       32. Hovd        47. Kuching       62. Qatar        77. Tel_Aviv
  3. Amman     18. Choibalsan  33. Irkutsk     48. Kuwait        63. Qostanay     78. Thimphu
  4. Anadyr    19. Chongqing   34. Istanbul    49. Macau         64. Qyzylorda    79. Tokyo
  5. Aqtau     20. Colombo     35. Jakarta     50. Magadan       65. Rangoon      80. Tomsk
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 12. Bangkok   27. Gaza        42. Kathmandu   57. Omsk          72. Srednekolymsk 87. Yakutsk
 13. Barnaul   28. Harbin      43. Khandyga    58. Oral          73. Taipei       88. Yangon
 14. Beirut    29. Hebron      44. Kolkata     59. Phnom_Penh    74. Tashkent     89. Yekaterinburg
 15. Bishkek   30. Ho_Chi_Minh 45. Krasnoyarsk 60. Pontianak     75. Tbilisi      90. Yerevan
Time zone: 44


Current default time zone: 'Asia/Kolkata'
Local time is now:      Mon Sep  4 12:24:14 IST 2023.
Universal Time is now:  Mon Sep  4 06:54:14 UTC 2023.
Run 'dpkg-reconfigure tzdata' if you wish to change it.

Setting up ruby-minitest (5.13.0-1) ...
Setting up zip (3.0-11build1) ...
Setting up ruby-test-unit (3.3.5-1) ...
Setting up librtmp1:amd64 (2.4+20151223.gitfa8646d.1-2build1) ...
Setting up ruby-net-telnet (0.1.1-2) ...
```

Top-right terminal (root@37c2bff1bf7d:/etc)

```
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Setting up librtmp1:amd64 (2.4+20151223.gitfa8646d.1-2build1) ...
```

Bottom-left terminal (root@42e9f6bc977a:/etc)

```
0 upgraded, 1 newly installed, 0 to remove and 52 not upgraded.
Need to get 75.5 kB of archives.
After this operation, 275 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu focal/universe amd64 systemctl all 1.4.3424-2 [75.5 kB]
Fetched 75.5 kB in 1s (78.3 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package systemctl.
(Reading database ... 11320 files and directories currently installed.)
Preparing to unpack .../systemctl_1.4.3424-2_all.deb ...
Unpacking systemctl (1.4.3424-2) ...
Setting up systemctl (1.4.3424-2) ...
root@42e9f6bc977a:/# systemctl start puppetmaster.service
root@42e9f6bc977a:/# cd /etc
root@42e9f6bc977a:/etc# cat hosts
127.0.0.1       localhost
::1             localhost ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
172.17.0.4      42e9f6bc977a
root@42e9f6bc977a:/etc#
42e9f6bc977a    ff00::0     ip6-allnodes   ip6-localnet   localhost
::1             ff02::1     ip6-allrouters ip6-loopback
fe00::0         ff02::2     ip6-localhost  ip6-mcastprefix
root@42e9f6bc977a:/etc# systemctl restart puppet-master.service
bash: systemctl: command not found
root@42e9f6bc977a:/etc# ssystemctl restart puppet-master.service
bash: ssystemctl: command not found
root@42e9f6bc977a:/etc# systemctl restart puppet-master.service
/usr/lib/ruby/vendor_ruby/puppet/util.rb:461: warning: URI.escape is obsolete
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/usr/lib/ruby/vendor_ruby/puppet/util.rb:315: warning: deprecated Object#=~ is called on Puppet::Transaction::Report
; it always returns nil
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/usr/lib/ruby/vendor_ruby/puppet/util.rb:315: warning: deprecated Object#=~ is called on Puppet::Transaction::Report
; it always returns nil
root@42e9f6bc977a:/etc# puppet cert list
/usr/lib/ruby/vendor_ruby/puppet/util.rb:461: warning: URI.escape is obsolete
/usr/lib/ruby/vendor_ruby/puppet/util.rb:461: warning: URI.escape is obsolete
/usr/lib/ruby/vendor_ruby/puppet/util.rb:461: warning: URI.escape is obsolete
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.30 /usr/share/perl5 /usr/lib/x86_64-linux-gnu/perl/5.30 /usr/share/perl/5.30 /usr/local/lib/site_perl /usr/lib/x86_
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```

| Conclusion | In this way we installed puppet as well as master and Client. |