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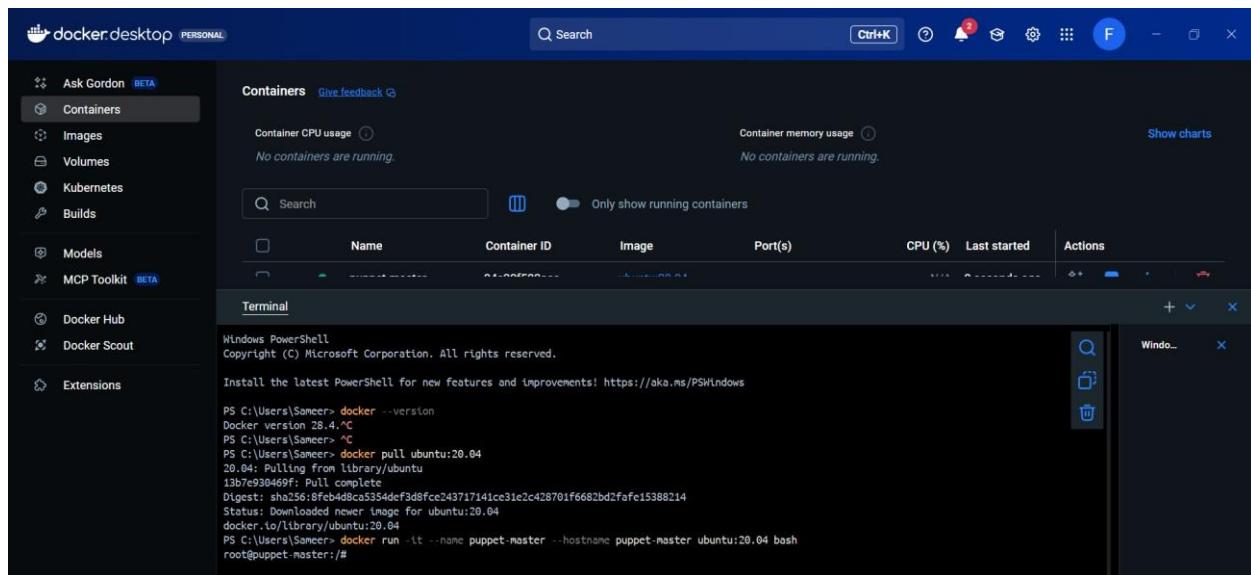
Practical No: 10

Date Of Performance: 03/10/2025

Aim: To Install and Configure, pull based software configuration management using puppet tool.

## Setup Environment

- Install Docker Desktop.
- Pull Ubuntu base image:
- docker pull ubuntu:20.04



```
Windows PowerShell
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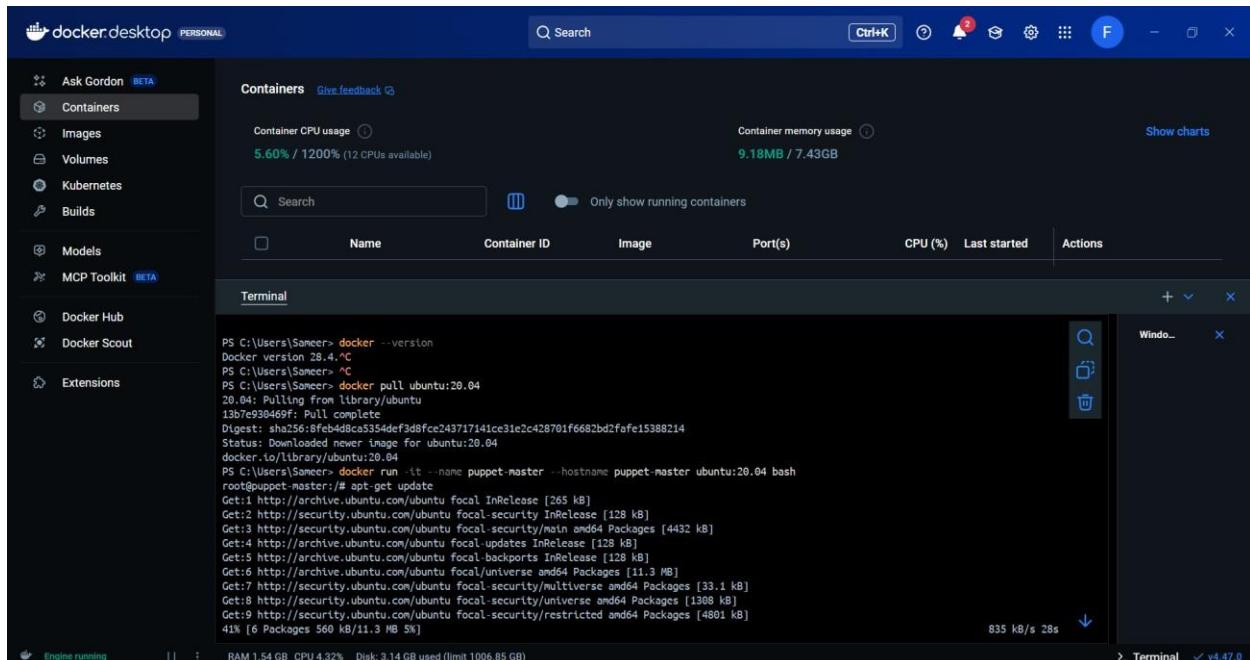
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\Sameer> docker --version
Docker version 20.4.7
PS C:\Users\Sameer>
PS C:\Users\Sameer> docker pull ubuntu:20.04
20.04: Pulling from library/ubuntu
13b7e930469f: Pull complete
Digest: sha256:8fbfd4d8ca5354def3d8fce243717141ce31e2c428701f6682bd2fafc15388214
Status: Downloaded newer image for ubuntu:20.04
docker.io/library/ubuntu:20.04
PS C:\Users\Sameer> docker run -it --name puppet-master --hostname puppet-master ubuntu:20.04 bash
root@puppet-master:/#
```

Pulling Ubuntu image and running the Puppet Master

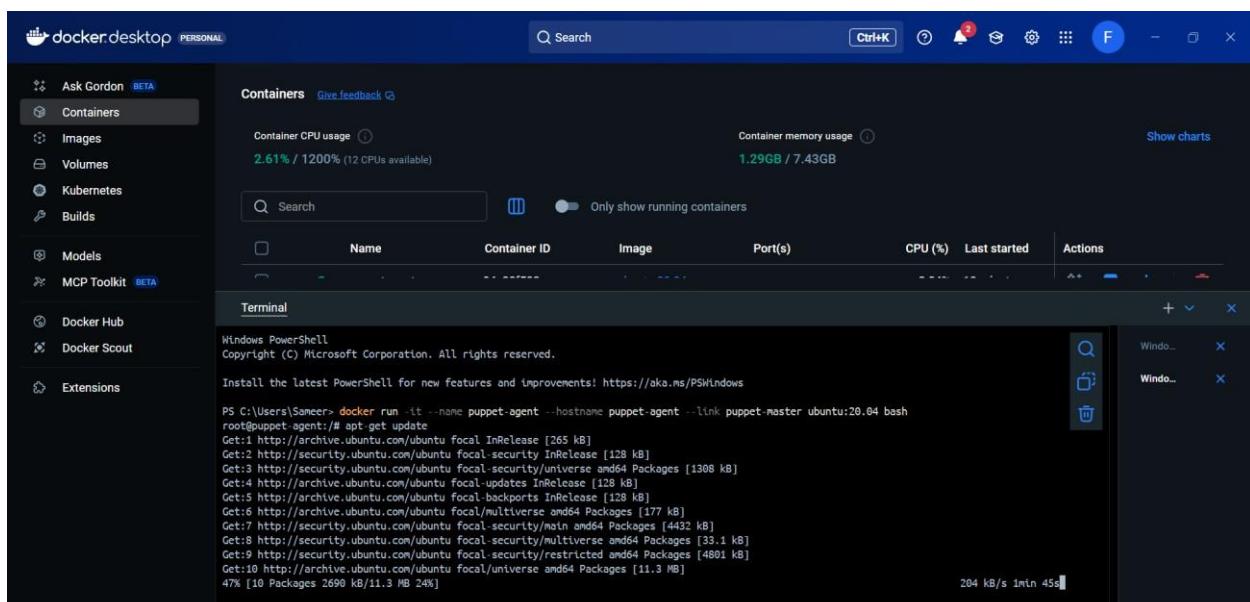
## Launch Containers:

- Start Puppet Master container:
  - docker run -it --name puppet-master --hostname puppet-master ubuntu:20.04 bash
- Start Puppet Agent container:
  - docker run -it --name puppet-agent --hostname puppet-agent --link puppet-master ubuntu:20.04 bash



Docker Desktop interface showing the terminal window for the puppet-master container. The terminal output shows the Docker version, pulling the Ubuntu 20.04 image, and running the command to start the container.

```
PS C:\Users\Sameer> docker --version
Docker version 28.4.0, build 2840
PS C:\Users\Sameer> ^
PS C:\Users\Sameer> docker pull ubuntu:20.04
20.04: Pulling from library/ubuntu
13b7e930469f: Pull complete
Digest: sha256:8feb4d8ca554def3d8fcce243717141ce31e2c428701f6682bd2faf15388214
Status: Downloaded newer image for ubuntu:20.04
docker: /library/ubuntu:20.04
PS C:\Users\Sameer> docker run -it --name puppet-master --hostname puppet-master ubuntu:20.04 bash
root@puppet-master:/# apt-get update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [4432 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [33.1 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [1308 kB]
Get:9 http://archive.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [4801 kB]
41% [6 Packages 560 kB/11.3 MB 5%]
```



Docker Desktop interface showing the terminal window for the puppet-agent container. The terminal output shows the Docker version, pulling the Ubuntu 20.04 image, and running the command to start the container.

```
Windows PowerShell
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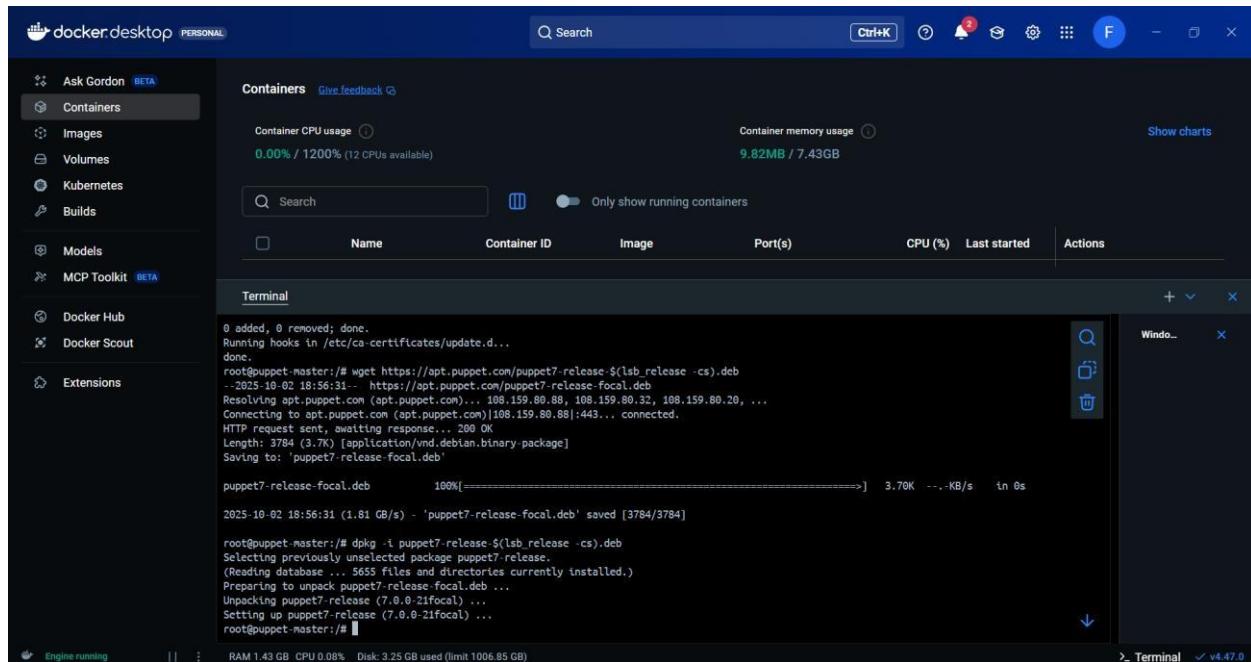
PS C:\Users\Sameer> docker run -it --name puppet-agent --hostname puppet-agent --link puppet-master ubuntu:20.04 bash
root@puppet-agent:/# apt-get update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [1308 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [14432 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [33.1 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [4801 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
47% [10 Packages 2699 kB/11.3 MB 24%]
```

Installing packages

# Install Puppet

Inside both containers:

- apt-get update
- apt-get install -y wget gnupg lsb-release
- wget https://apt.puppet.com/puppet7-release-\$(lsb\_release -cs).deb dpkg -i puppet7-release-\$(lsb\_release -cs).deb
- apt-get update



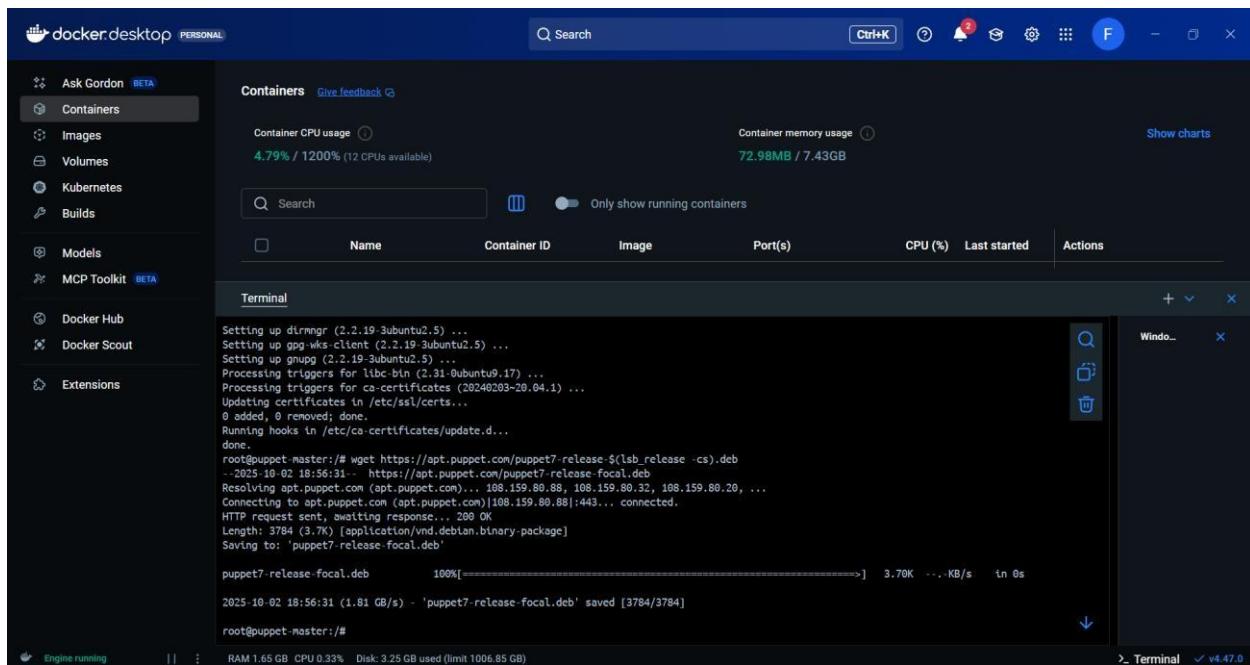
## Installing packages

### On master:

- apt-get install -y puppetserver
- service puppetserver start

## On agent:

- apt-get install -y puppet-agent

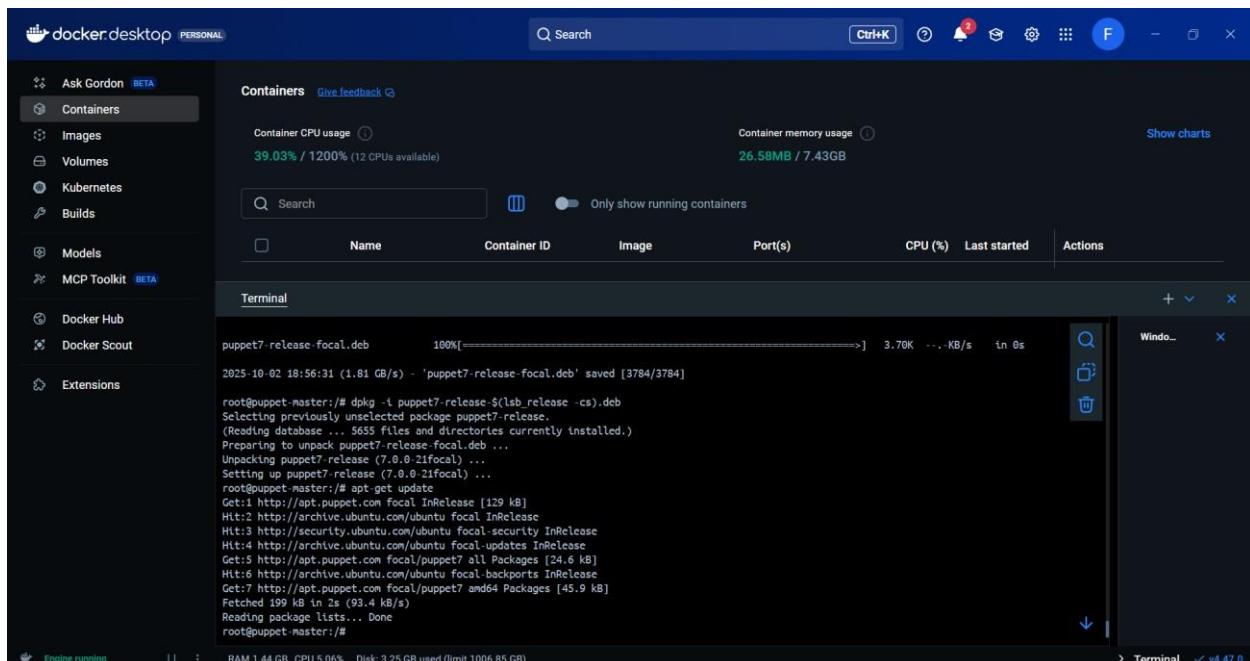


Docker Desktop interface showing the terminal window. The terminal output shows the process of installing the puppet-agent package via apt-get.

```
Setting up dirngr (2.2.19-3ubuntu2.5) ...
Setting up gpg-wks-client (2.2.19-3ubuntu2.5) ...
Setting up gnupg (2.2.19-3ubuntu2.5) ...
Processing triggers for libc-bin (2.31-0ubuntu9.17) ...
Processing triggers for ca-certificates (02048203-28.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done
root@puppet-master:/# wget https://apt.puppet.com/puppet7-release-$lsb_release -cs).deb
2025-10-02 18:56:31-- https://apt.puppet.com/puppet7-release focal.deb
Resolving apt.puppet.com (apt.puppet.com)... 108.159.80.88, 108.159.80.32, 108.159.80.20, ...
Connecting to apt.puppet.com (apt.puppet.com)|108.159.80.88|:443... connected.
HTTP request sent, awaiting response... 208 OK
Length: 3784 (3.7K) [application/vnd.debian.binary-package]
Saving to: 'puppet7-release-focal.deb'

puppet7-release-focal.deb      100%[=====] 3.70K --.- KB/s   in 0s
2025-10-02 18:56:31 (1.81 GB/s) - 'puppet7-release-focal.deb' saved [3784/3784]
root@puppet-master:#
```

## Installing packages



Docker Desktop interface showing the terminal window. The terminal output shows the process of updating the package lists via apt-get.

```
puppet7-release-focal.deb      100%[=====] 3.70K --.- KB/s   in 0s
2025-10-02 18:56:31 (1.81 GB/s) - 'puppet7-release-focal.deb' saved [3784/3784]
root@puppet-master:/# apt-get update
Get:1 http://apt.puppet.com focal InRelease [129 kB]
Hit:2 http://archive.ubuntu.com/ubuntu focal InRelease
Hit:3 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease
Get:5 http://apt.puppet.com focal/puppet7 all Packages [24.6 kB]
Hit:6 http://archive.ubuntu.com/ubuntu focal-backports InRelease
Get:7 http://apt.puppet.com focal/puppet7 amd64 Packages [45.9 kB]
Fetched 199 kB in 2s (93.4 kB/s)
Reading package lists... Done
root@puppet-master:/#
```

## Installing packages

Docker Desktop interface showing the terminal window. The terminal output shows the configuration of Java arguments for a Puppet master service.

```
Adding debian:DigiCert_Assured_ID_Root_G3.pem
Adding debian:Certigna_Root_CA.pem
Adding debian:AffirmTrust_Premium_ECC.pem
Adding debian:QualiSign_Root_CA_1_G3.pem
Adding debian:UCA_Global_C2_Root.pem
Adding debian:BuyPass_Class_3_Root_CA.pem
Adding debian:GlobalSign_Root_E46.pem
done.
Setting up puppetserver (7.17.3-ifocal) ...
usermod: no changes
invoke-rc.d: could not determine current runlevel
invoke-rc.d: policy=rc.d denied execution of try-restart.
Processing triggers for libc-bin (2.31-0ubuntu9.17) ...
Processing triggers for ca-certificates (20240203-26.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...

done.
done.
root@puppet-master:/# echo 'JAVA_ARGS="-Xms512m -Xmx512m"' >> /etc/default/puppetserver
root@puppet-master:/#
```

## Setting Arguments

Docker Desktop interface showing the terminal window. The terminal output shows the start of the Puppet master service.

```
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...

done.
done.
root@puppet-master:/# echo 'JAVA_ARGS="-Xms512m -Xmx512m"' >> /etc/default/puppetserver
root@puppet-master:/# service puppetserver start
root@puppet-master:/# service puppetserver status
* puppetserver is running
root@puppet-master:/#
```

## Starting puppetserver

Docker Desktop interface showing the 'Containers' tab. The terminal window displays the following command and its execution:

```
root@puppet-agent:/# apt-get update
Get:1 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [128 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [1388 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [4432 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [33.1 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [4801 kB]
Get:10 http://archive.ubuntu.com/ubuntu/focal/universe amd64 Packages [11.3 MB]
Get:11 http://archive.ubuntu.com/ubuntu/focal/restricted amd64 Packages [33.4 kB]
Get:12 http://archive.ubuntu.com/ubuntu/focal/main amd64 Packages [1275 kB]
Get:13 http://archive.ubuntu.com/ubuntu/focal-updates/multiverse amd64 Packages [36.8 kB]
Get:14 http://archive.ubuntu.com/ubuntu/focal-updates/universe amd64 Packages [1599 kB]
Get:15 http://archive.ubuntu.com/ubuntu/focal-updates/main amd64 Packages [4920 kB]
Get:16 http://archive.ubuntu.com/ubuntu/focal-updates/restricted amd64 Packages [4998 kB]
Get:17 http://archive.ubuntu.com/ubuntu/focal-backports/universe amd64 Packages [28.6 kB]
Get:18 http://archive.ubuntu.com/ubuntu/focal-backports/main amd64 Packages [55.2 kB]
Fetched 35.7 MB in 2min 10s (275 kB/s)
Reading package lists... Done
root@puppet-agent:/# apt-get install -y wget gnupg lsb-release
```

## Installing packages

Docker Desktop interface showing the 'Containers' tab. The terminal window displays the following command and its execution, including a file download:

```
Setting up dirmngr (2.2.19-3ubuntu2.5) ...
Setting up gpg-wks-client (2.2.19-3ubuntu2.5) ...
Setting up gnupg (2.2.19-3ubuntu2.5) ...
Processing triggers for libc-bin (2.31-0ubuntu9.17) ...
Processing triggers for ca-certificates (20240203-20.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
root@puppet-agent:/# wget https://apt.puppet.com/puppet7-release-$(lsb_release -cs).deb
--2025-10-02 19:05:55-- https://apt.puppet.com/puppet7-release-focal.deb
Resolving apt.puppet.com (apt.puppet.com)... 108.159.80.20, 108.159.80.32, 108.159.80.39, ...
Connecting to apt.puppet.com (apt.puppet.com)|108.159.80.20|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3784 (3.7K) [application/vnd.debian.binary-package]
Saving to: 'puppet7-release-focal.deb'

puppet7-release-focal.deb      100%[=====] 3.70K --.KB/s   in 0s

2025-10-02 19:05:55 (116 MB/s) - 'puppet7-release focal.deb' saved [3784/3784]

root@puppet agent:/#
```

## Installing packages

Docker Desktop interface showing the Container section. The terminal window displays the following command and its execution:

```
root@puppet-agent:/# wget https://apt.puppet.com/puppet7-release-S(lsb_release -cs).deb  
--2025-10-02 19:05:55-- https://apt.puppet.com/puppet7-release-focal.deb  
Resolving apt.puppet.com... 108.159.80.20, 108.159.80.32, 108.159.80.39, ...  
Connecting to apt.puppet.com (apt.puppet.com)|108.159.80.20|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: 3784 (3.7K) [application/vnd.debian.binary-package]  
Saving to: 'puppet7-release-focal.deb'  
  
puppet7-release-focal.deb 100%[=====] 3.70K --.-KB/s in 0s  
  
2025-10-02 19:05:55 (116 MB/s) - 'puppet7-release-focal.deb' saved [3784/3784]  
  
root@puppet-agent:/# dpkg -i puppet7-release-S(lsb_release -cs).deb  
Selecting previously unselected package puppet7-release.  
(Reading database ... 5655 files and directories currently installed.)  
Preparing to unpack puppet7-release-focal.deb ...  
Unpacking puppet7-release (7.0.0-2ifocal) ...  
Setting up puppet7-release (7.0.0-2ifocal) ...  
root@puppet-agent:/#
```

## Configuring puppet

Docker Desktop interface showing the Container section. The terminal window displays the following command:

```
root@puppet-agent:/# apt-get update  
Hit:1 http://security.ubuntu.com/ubuntu focal-security InRelease  
Get:2 http://apt.puppet.com focal InRelease [129 kB]  
Hit:3 http://archive.ubuntu.com/ubuntu focal InRelease  
Hit:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease  
Get:5 http://apt.puppet.com focal/puppet7 amd64 Packages [45.9 kB]  
Hit:6 http://archive.ubuntu.com/ubuntu focal-backports InRelease  
Get:7 http://apt.puppet.com focal/puppet7 all Packages [24.6 kB]  
Fetched 199 kB in 2s (123 kB/s)  
Reading package lists... 3%
```

## Installing packages

```

Setting up puppet7-release (7.0.0-21focal) ...
root@puppet-agent:/# apt-get update
Hit:1 http://security.ubuntu.com/ubuntu focal-security InRelease
Get:2 http://apt.puppet.com focal InRelease [129 kB]
Hit:3 http://archive.ubuntu.com/ubuntu focal InRelease
Hit:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease
Get:5 http://apt.puppet.com focal/puppet7 amd64 Packages [45.9 kB]
Hit:6 http://archive.ubuntu.com/ubuntu focal-backports InRelease
Get:7 http://apt.puppet.com focal/puppet7 all Packages [24.6 kB]
Fetched 199 kB in 2s (123 kB/s)
Reading package lists... Done
root@puppet-agent:/# apt-get install -y puppet-agent
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  puppet-agent
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 32.0 MB of archives.
After this operation, 114 MB of additional disk space will be used.
Get:1 http://apt.puppet.com focal/puppet7 amd64 puppet-agent amd64 7.34.0-1focal [32.0 MB]
0 [1 puppet-agent 7200 B/32.0 MB OK]

```

Engine running | RAM 3.34 GB CPU 0.42% Disk 3.84 GB used (limit 1006.85 GB)

Installing packages

## Configure Hostnames

Add entries in /etc/hosts for both containers (using actual container IPs):

- 172.17.0.2 puppet-master
- 172.17.0.3 puppet-agent

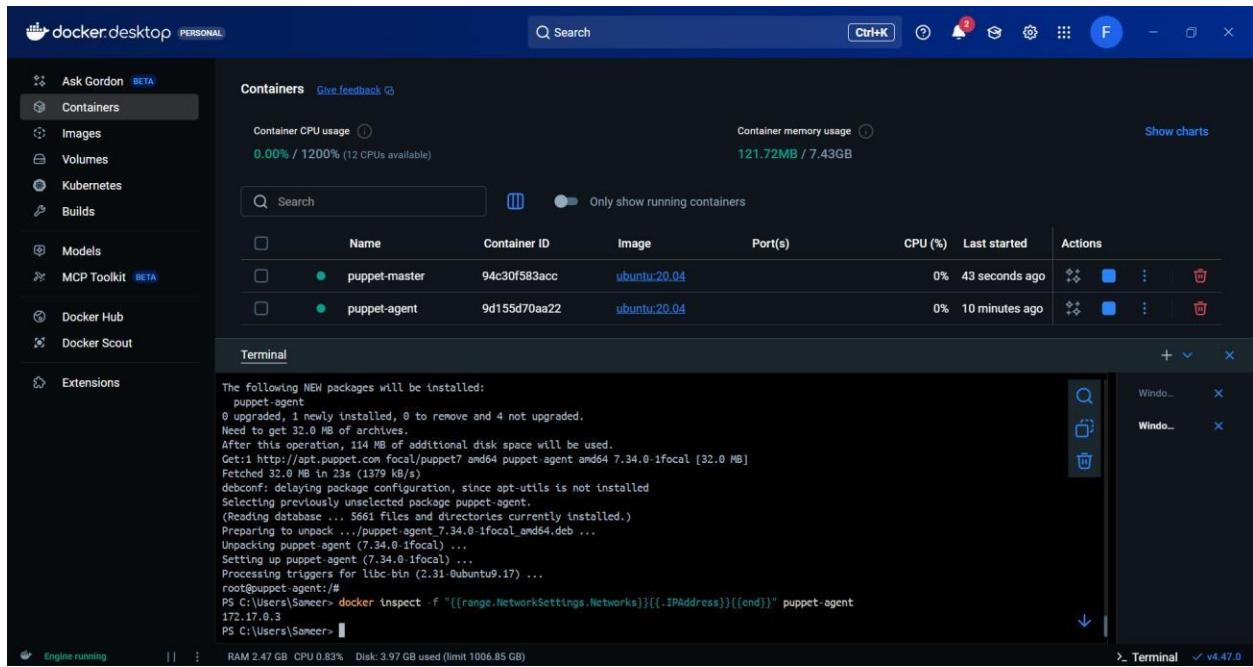
Name	Container ID	Image	Port(s)	CPU (%)	Last started
puppet-master	94c30f583acc	ubuntu:20.04		0%	33 seconds ago
puppet-agent	9d155d70aa22	ubuntu:20.04		0%	10 minutes ago

```

root@puppet-master:/# exit
exit
PS C:\Users\Sameer> docker inspect -f '{{range.NetworkSettings.Networks}}{{.IPAddress}}{{end}}' puppet-master
PS C:\Users\Sameer> docker inspect -f '{{range.NetworkSettings.Networks}}{{.IPAddress}}{{end}}' puppet-master
PS C:\Users\Sameer> ^
PS C:\Users\Sameer> ^
PS C:\Users\Sameer> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
9d155d70aa22 ubuntu:20.04 "bash" 8 minutes ago Up 8 minutes
94c30f583acc ubuntu:20.04 "bash" 17 minutes ago Exited (130) 59 seconds ago
PS C:\Users\Sameer> ^
PS C:\Users\Sameer> docker start -i puppet-master
root@puppet-master:#
PS C:\Users\Sameer> docker inspect -f "{{range.NetworkSettings.Networks}}{{.IPAddress}}{{end}}" puppet-master
172.17.0.2
PS C:\Users\Sameer>

```

Connected to IP Address (Master)



Connected to IP Address (Agent)

## Configure Puppet

Edit /etc/puppetlabs/puppet/puppet.conf

### On Master:

[main]

certname = puppet-master

server = puppet-master environment = production runinterval = 1h

### On Agent:

[main]

certname = puppet-agent server = puppet-master environment = production

runinterval = 1m

Docker Desktop interface showing two running containers:

Name	Container ID	Image	Port(s)	CPU (%)	Last started	Actions
puppet-master	94c30f583acc	ubuntu:20.04		0.05%	4 minutes ago	[Edit, Stop, More, Delete]
puppet-agent	9d155d70aa22	ubuntu:20.04		0%	13 minutes ago	[Edit, Stop, More, Delete]

Terminal output:

```
PS C:\Users\Sameer> docker inspect -f '$(range.NetworkSettings.Networks){{(.IPAddress)}{(.end)}}' puppet-master
PS C:\Users\Sameer> ^C
PS C:\Users\Sameer> docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
9d155d70aa22 ubuntu:20.04 "bash" 8 minutes ago Up 8 minutes
94c30f583acc ubuntu:20.04 "bash" 17 minutes ago Exited (130) 59 seconds ago
PS C:\Users\Sameer> ^C
PS C:\Users\Sameer> docker start -ai puppet-master
root@puppet-master:/#
PS C:\Users\Sameer> docker inspect -f '$(range.NetworkSettings.Networks){{(.IPAddress)}{(.end)}}' puppet-master
172.17.0.2
PS C:\Users\Sameer> docker start -ai puppet-master
^C
root@puppet-master:/# echo "172.17.0.2 puppet-master" >> /etc/hosts
root@puppet-master:/# echo "172.17.0.3 puppet-agent" >> /etc/hosts
root@puppet-master:/#
```

Engine running | RAM 1.50 GB CPU 0.08% Disk: 3.97 GB used (limit 1006.85 GB) | Terminal v4.47.0

## Testing and logging (Master)

Docker Desktop interface showing two running containers:

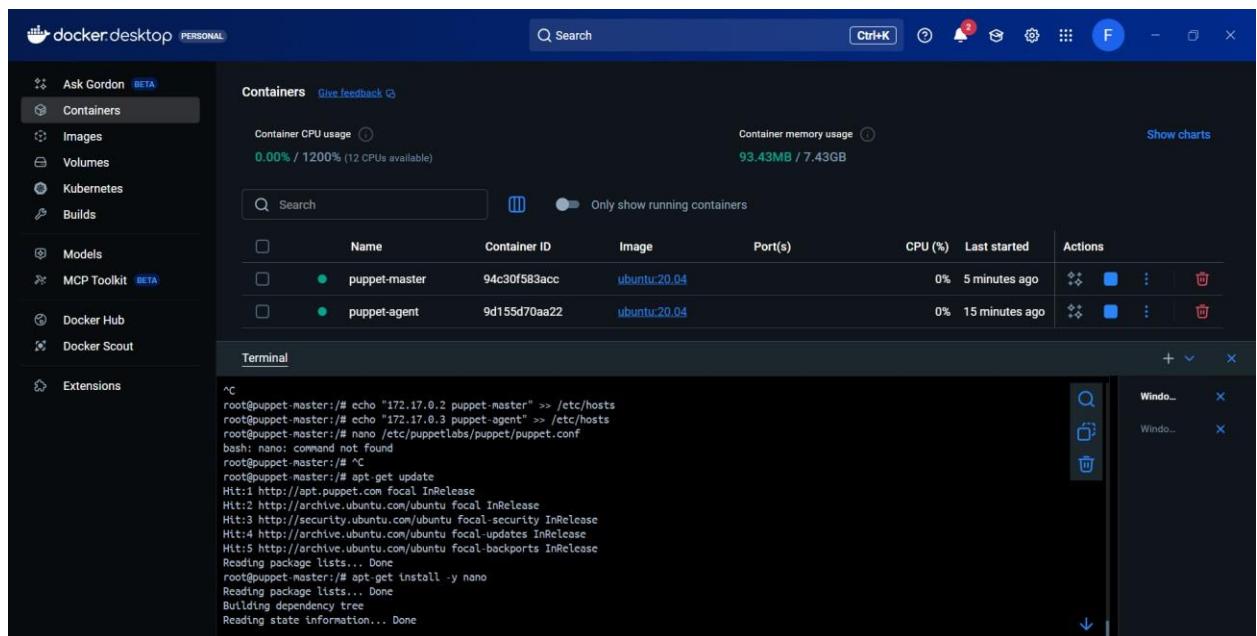
Name	Container ID	Image	Port(s)	CPU (%)	Last started	Actions
puppet-master	94c30f583acc	ubuntu:20.04		0%	4 minutes ago	[Edit, Stop, More, Delete]
puppet-agent	9d155d70aa22	ubuntu:20.04		0.03%	14 minutes ago	[Edit, Stop, More, Delete]

Terminal output:

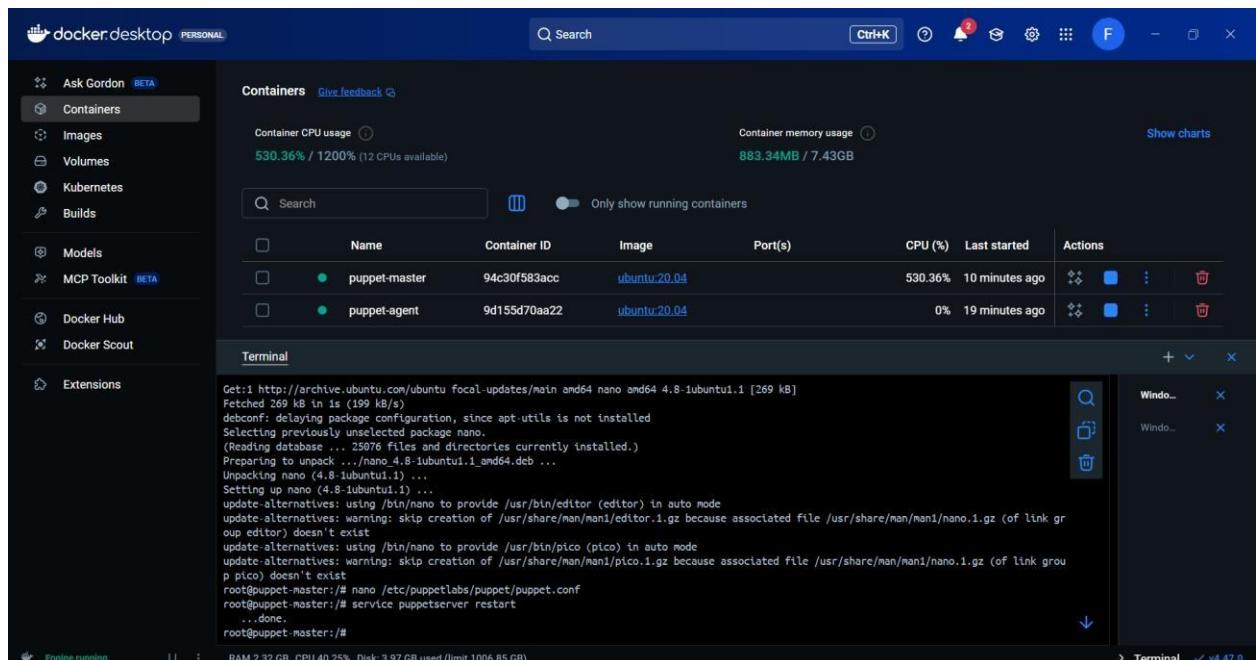
```
Fetched 32.0 MB in 23s (1379 kB/s)
debconf: delaying package configuration, since apt-utils is not installed
Selecting previously unselected package puppet-agent.
(Reading database ... 5661 files and directories currently installed.)
Preparing to unpack .../puppet_agent_7.34.0-1focal_amd64.deb ...
Unpacking puppet-agent (7.34.0-1focal) ...
Setting up puppet-agent (7.34.0-1focal) ...
Processing triggers for libc-bin (2.31-0ubuntu9.17) ...
root@puppet-agent:/#
PS C:\Users\Sameer> docker inspect -f '$(range.NetworkSettings.Networks){{(.IPAddress)}{(.end)}}' puppet-agent
172.17.0.3
PS C:\Users\Sameer> ^C
PS C:\Users\Sameer> docker start -ai puppet-agent
^C
root@puppet-agent:/# echo "172.17.0.2 puppet-master" >> /etc/hosts
root@puppet-agent:/# echo "172.17.0.3 puppet-agent" >> /etc/hosts
root@puppet-agent:/#
```

Engine running | RAM 1.50 GB CPU 0.00% Disk: 3.97 GB used (limit 1006.85 GB) | Terminal v4.47.0

## Testing and logging (Master)



## Updating system



## Puppetserver restarted

```

Unpacking nano (4.8-1ubuntu1.1) ...
Setting up nano (4.8-1ubuntu1.1) ...
update alternatives: using /bin/nano to provide /usr/bin/editor (editor) in auto mode
update alternatives: warning: skip creation of /usr/share/man/man1/editor.1.gz because associated file /usr/share/man/man1/nano.1.gz (of link group editor) doesn't exist
update alternatives: using /bin/nano to provide /usr/bin/pico (pico) in auto mode
update alternatives: warning: skip creation of /usr/share/man/man1/pico.1.gz because associated file /usr/share/man/man1/nano.1.gz (of link group pico) doesn't exist
root@puppet-agent:/# nano /etc/puppetlabs/puppet/puppet.conf
root@puppet-agent:/# puppet agent --test --waitforcert 60
bash: puppet: command not found
root@puppet-agent:/# ^C
root@puppet-agent:/# /opt/puppetlabs/bin/puppet agent --test --waitforcert 60
Info: Creating a new RSA SSL key for puppet-agent
Info: csr_attributes file loading from /etc/puppetlabs/puppet/csr_attributes.yaml
Info: Creating a new SSL certificate request for puppet-agent
Info: Certificate Request fingerprint (SHA256): 36:94:C2:0A:E9:E7:42:DD:D6:CC:CA:03:F2:C3:BF:B4:3E:A7:10:B4:31:C9:B6:AA:3A:55:AF:7B:E3:E5:12:8E

```

Engine running | RAM 2.71 GB CPU 3.99% Disk: 3.98 GB used (limit 1006.85 GB) | Terminal v4.47.0

Sending certificate from Agent

## Certificate Signing on Agent:

/opt/puppetlabs/bin/puppet agent --test --waitforcert 60 (Generates a CSR request)

Master:

- /opt/puppetlabs/bin/puppetserver ca list
- /opt/puppetlabs/bin/puppetserver ca sign --certname puppet-agent

```

Unpacking nano (4.8-1ubuntu1.1) ...
Setting up nano (4.8-1ubuntu1.1) ...
update alternatives: using /bin/nano to provide /usr/bin/editor (editor) in auto mode
update alternatives: warning: skip creation of /usr/share/man/man1/editor.1.gz because associated file /usr/share/man/man1/nano.1.gz (of link group editor) doesn't exist
update alternatives: using /bin/nano to provide /usr/bin/pico (pico) in auto mode
update alternatives: warning: skip creation of /usr/share/man/man1/pico.1.gz because associated file /usr/share/man/man1/nano.1.gz (of link group pico) doesn't exist
root@puppet-master:/# nano /etc/puppetlabs/puppet/puppet.conf
root@puppet-master:/# service puppetserver restart
.
.
.
root@puppet-master:/# puppetserver ca list
bash: puppetserver: command not found
root@puppet-master:/# ^C
root@puppet-master:/# /opt/puppetlabs/bin/puppetserver ca list
Requested Certificates:
  puppet-agent (SHA256) 36:94:C2:0A:E9:E7:42:DD:D6:CC:CA:03:F2:C3:BF:B4:3E:A7:10:B4:31:C9:B6:AA:3A:55:AF:7B:E3:E5:12:8E
root@puppet-master:/#

```

Engine running | RAM 2.78 GB CPU 0.83% Disk: 3.98 GB used (limit 1006.85 GB) | Terminal v4.47.0

Docker Desktop interface showing two containers running:

Name	Container ID	Image	Port(s)	CPU (%)	Last started	Actions
puppet-master	94c30f583acc	ubuntu:20.04		79.6%	14 minutes ago	[Actions]
puppet-agent	9d155d70aa22	ubuntu:20.04		0%	23 minutes ago	[Actions]

Terminal output:

```
update alternatives: using /bin/nano to provide /usr/bin/editor (editor) in auto mode
update alternatives: warning: skip creation of /usr/share/man/man1/editor.1.gz because associated file /usr/share/man/man1/nano.1.gz (of link group editor) doesn't exist
update alternatives: using /bin/nano to provide /usr/bin/pico (pico) in auto mode
update alternatives: warning: skip creation of /usr/share/man/man1/pico.1.gz because associated file /usr/share/man/man1/nano.1.gz (of link group pico) doesn't exist
root@puppet-master:/# nano /etc/puppetlabs/puppet/puppet.conf
root@puppet-master:/# service puppetserver restart
...
root@puppet-master:/# puppetserver ca list
bash: puppetserver: command not found
root@puppet-master:/# ^C
root@puppet-master:/# /opt/puppetlabs/bin/puppetserver ca list
Requested Certificates:
  puppet-agent (SHA256) 36:94:C2:0A:E9:E7:42:0D:D6:CC:CA:03:F2:C3:BF:B4:3E:A7:10:B4:31:C9:B6:AA:3A:55:AF:7B:E3:E5:12:8E
root@puppet-Master:/# /opt/puppetlabs/bin/puppetserver ca sign -certhome puppet-agent
Successfully signed certificate request for puppet-agent
root@puppet master:/#
```

Engine running | RAM 2.78 GB CPU 9.78% Disk: 3.98 GB used (limit 1006.85 GB) > Terminal v4.47.0

## Certificate signed on Master

Docker Desktop interface showing the same two containers. The terminal output shows the agent successfully connecting to the master's SSL port.

Terminal output:

```
Info: Certificate Request fingerprint (SHA256): 36:94:C2:0A:E9:E7:42:0D:D6:CC:CA:03:F2:C3:BF:B4:3E:A7:10:B4:31:C9:B6:AA:3A:55:AF:7B:E3:E5:12:8E
Info: Certificate for puppet-agent has not been signed yet
Couldn't fetch certificate from CA server; you might still need to sign this agent's certificate (puppet-agent).
Info: Will try again in 60 seconds.
Info: csr_attributes file loading from /etc/puppetlabs/puppet/csr_attributes.yaml
Info: Creating a new SSL certificate request for puppet-agent
Info: Certificate Request fingerprint (SHA256): 36:94:C2:0A:E9:E7:42:0D:D6:CC:CA:03:F2:C3:BF:B4:3E:A7:10:B4:31:C9:B6:AA:3A:55:AF:7B:E3:E5:12:8E
Info: Downloaded certificate for puppet-agent from https://puppet-master:8140/puppet-ca/v1
Info: Using environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Notice: Requesting catalog from puppet-master:8140 (172.17.0.2)
Notice: Catalog compiled by puppet-master
Info: Caching catalog for puppet-agent
Info: Applying configuration version '1759433071'
Info: Creating state file /opt/puppetlabs/puppet/cache/state/state.yaml
Notice: Applied catalog in 0.01 seconds
root@puppet-agent:/#
```

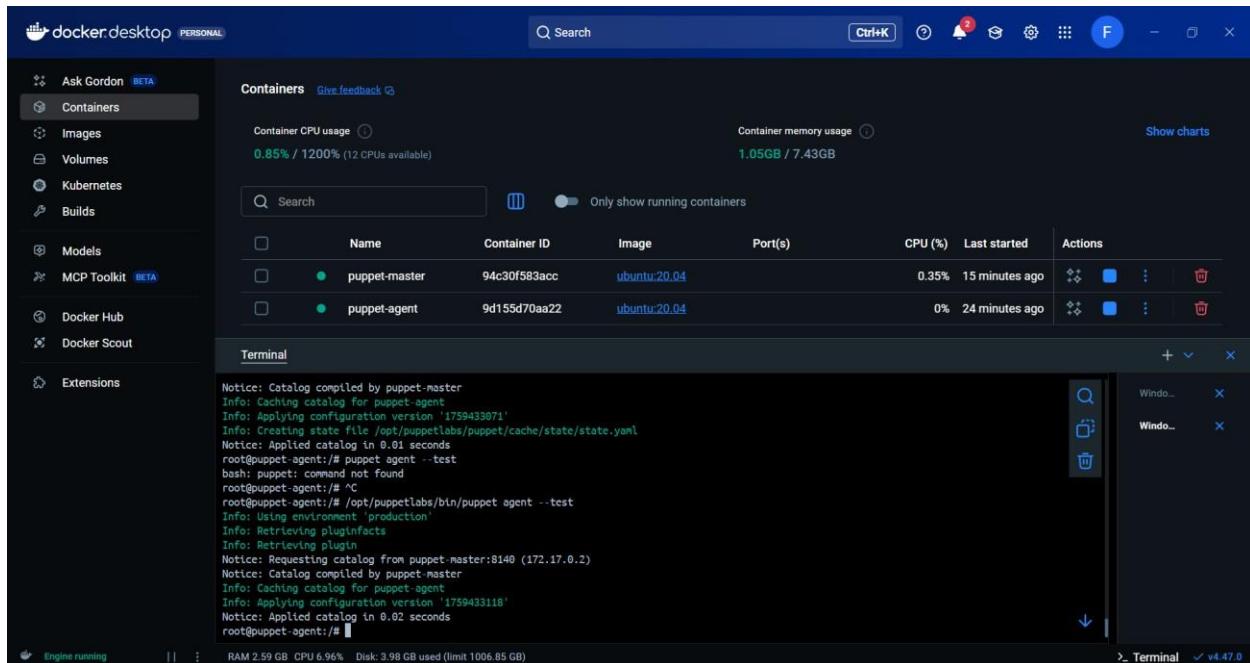
Engine running | RAM 2.77 GB CPU 0.50% Disk: 3.98 GB used (limit 1006.85 GB) > Terminal v4.47.0

## Acknowledgment Received

## Test Communication on Agent:

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

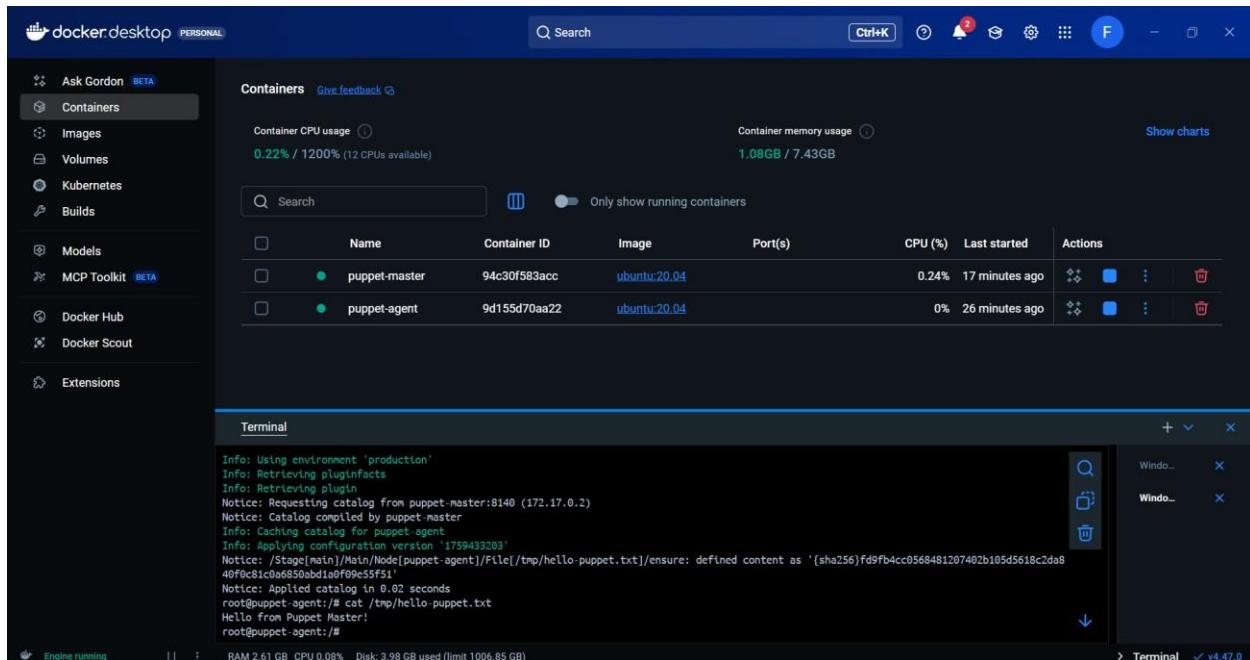
- The agent should now connect successfully.



Docker Desktop interface showing two running containers: `puppet-master` and `puppet-agent`. The `puppet-agent` terminal output shows the following log entries:

```
Notice: Catalog compiled by puppet-master
Info: Caching catalog for puppet-agent
Info: Applying configuration version '1759433071'
Info: Creating state file /opt/puppetlabs/puppet/cache/state/state.yaml
Notice: Applied catalog in 0.01 seconds
root@puppet-agent:/# puppet agent --test
bash: puppet: command not found
root@puppet-agent:/# ^C
root@puppet-agent:/# /opt/puppetlabs/bin/puppet agent --test
Info: Using environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Notice: Requesting catalog from puppet-master:8140 (172.17.0.2)
Notice: Catalog compiled by puppet-master
Info: Caching catalog for puppet-agent
Info: Applying configuration version '1759433118'
Notice: Applied catalog in 0.02 seconds
root@puppet-agent:/#
```

## Final Testing on Agent



Docker Desktop interface showing two running containers: `puppet-master` and `puppet-agent`. The `puppet-agent` terminal output shows the following log entries, indicating a file was created on the master and copied to the agent:

```
Info: Using environment 'production'
Info: Retrieving pluginfacts
Info: Retrieving plugin
Notice: Requesting catalog from puppet-master:8140 (172.17.0.2)
Notice: Catalog compiled by puppet-master
Info: Caching catalog for puppet-agent
Info: Applying configuration version '1759433203'
Notice: /Stage[main]/Main/Node['puppet-agent']/File[/tmp/hello-puppet.txt]/ensure: defined content as '{sha256}fd9fb4cc0568481207402b105d5610c2da840f6c81c0a88560bd10f09e55f51'
Notice: Applied catalog in 0.02 seconds
root@puppet-agent:/# cat /tmp/hello-puppet.txt
Hello From Puppet Master!
root@puppet-agent:/#
```

## Output Received

## Deploy a Sample Manifest

On Master, create a manifest file:

```
nano /etc/puppetlabs/code/environments/production/manifests/site.pp
```

### Add:

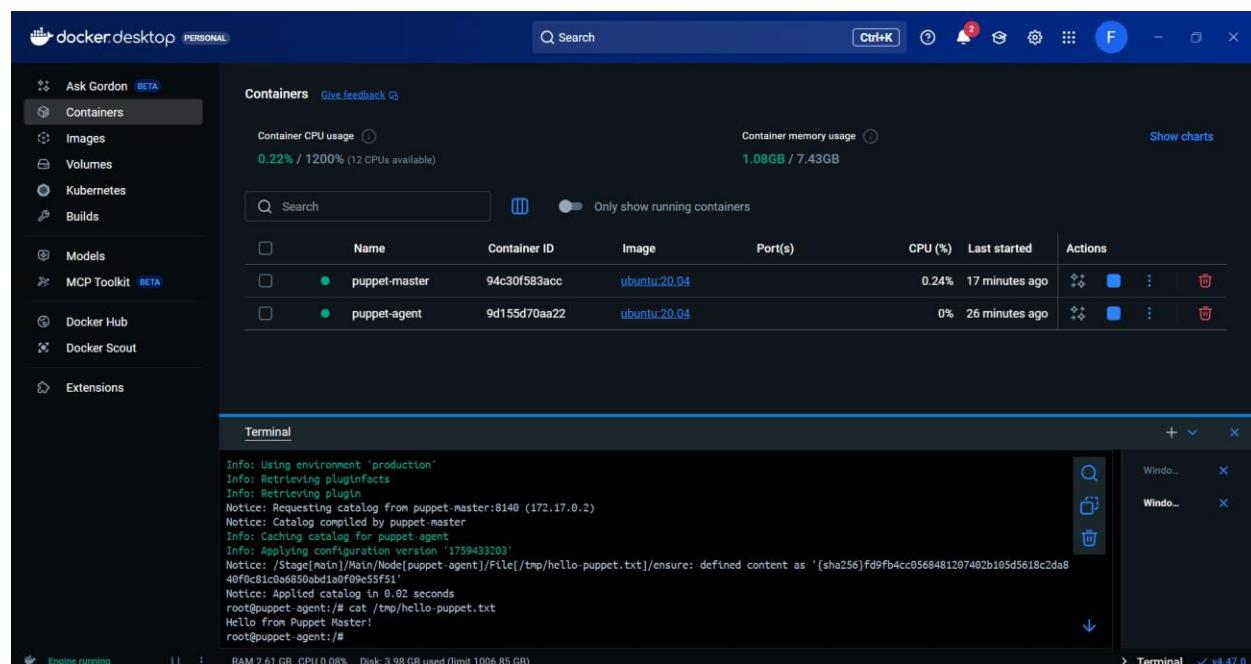
```
node 'puppet-agent' {
  file { '/tmp/hello-puppet.txt':
    ensure => present,
    content => "Hello from Puppet Master!\n",
  }
}
```

On Agent, run: `puppet agent --test`

```
cat /tmp/hello-puppet.txt
```

### Expected output:

Hello from Puppet Master!



Agents securely pulled configurations from the master and applied them automatically