

# 31338 Network Servers

## Assessment 3 – Project

Gongming Shi – 13731654

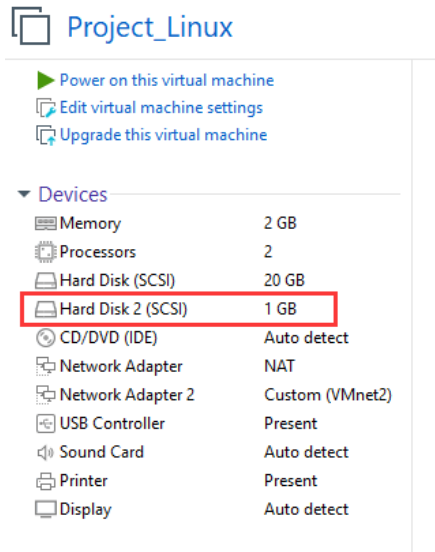
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## Task 1: Create Partitions (10 marks)

Linux:

1. Add second 1GB hard disk on Linux



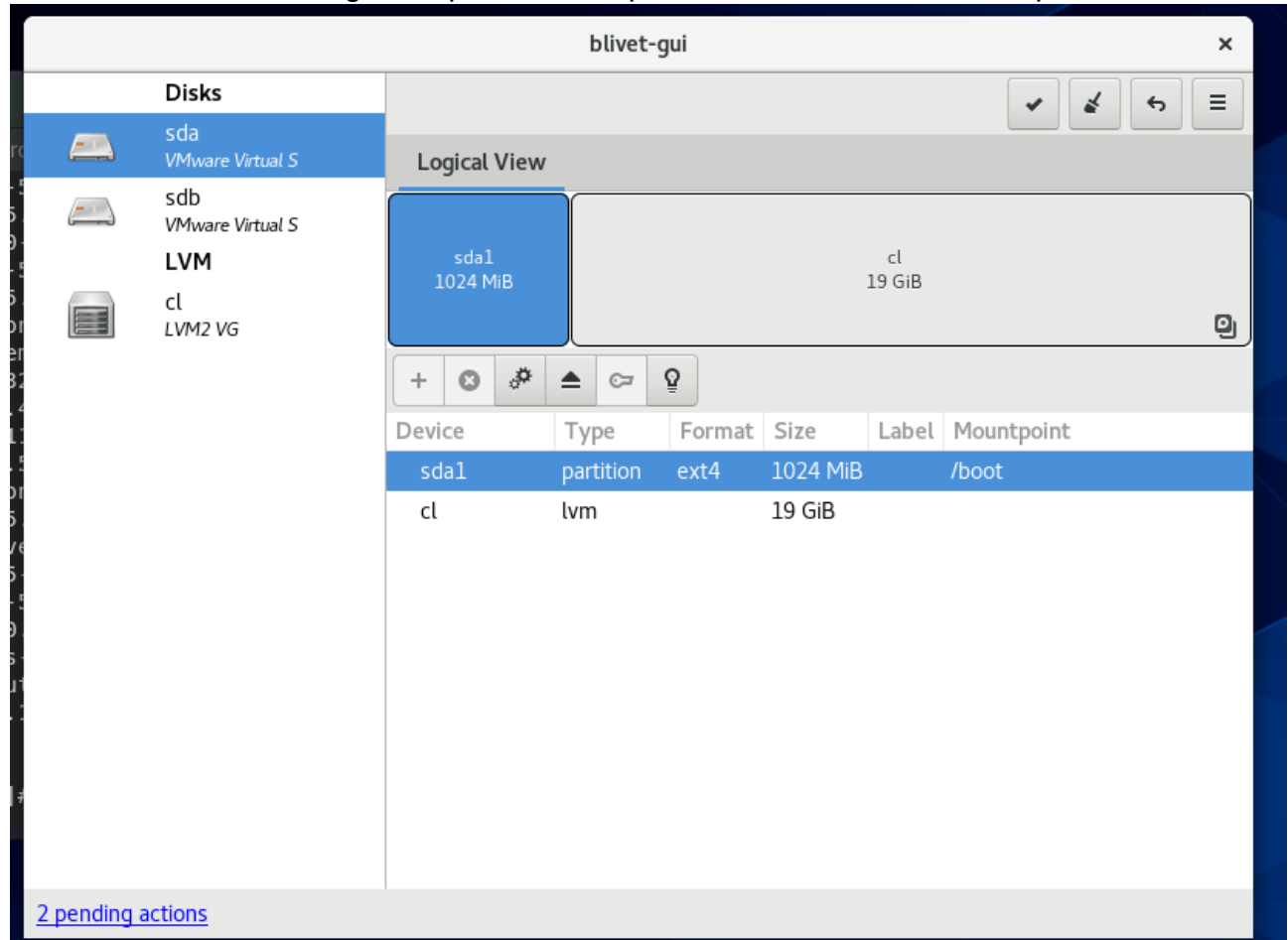
2. Enable and Start NetworkManager, then download and install the epel-release and blivet-gui

```
[root@localhost ~]# systemctl start NetworkManager
[root@localhost ~]# systemctl enable NetworkManager
Created symlink /etc/systemd/system/multi-user.target.wants/NetworkManager.service → /usr/lib/systemd/system/NetworkManager.service.
Created symlink /etc/systemd/system/dbus-org.freedesktop.nm-dispatcher.service → /usr/lib/systemd/system/NetworkManager-dispatcher.service.
Created symlink /etc/systemd/system/network-online.target.wants/NetworkManager-wait-online.service → /usr/lib/systemd/system/NetworkManager-wait-online.service.
[root@localhost ~]# nmcli con up ens33
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/2)
[root@localhost ~]# yum install epel-release
CentOS-8 - AppStream                6.2 kB/s | 4.3 kB      00:00
CentOS-8 - AppStream                4.4 MB/s | 9.3 MB      00:02
CentOS-8 - Base                     6.3 kB/s | 3.9 kB      00:00
CentOS-8 - Base                     1.4 MB/s | 7.5 MB      00:05
CentOS-8 - Extras                   1.1 kB/s | 1.5 kB      00:01
CentOS-8 - Extras                   8.1 kB/s | 10 kB       00:01
Dependencies resolved.

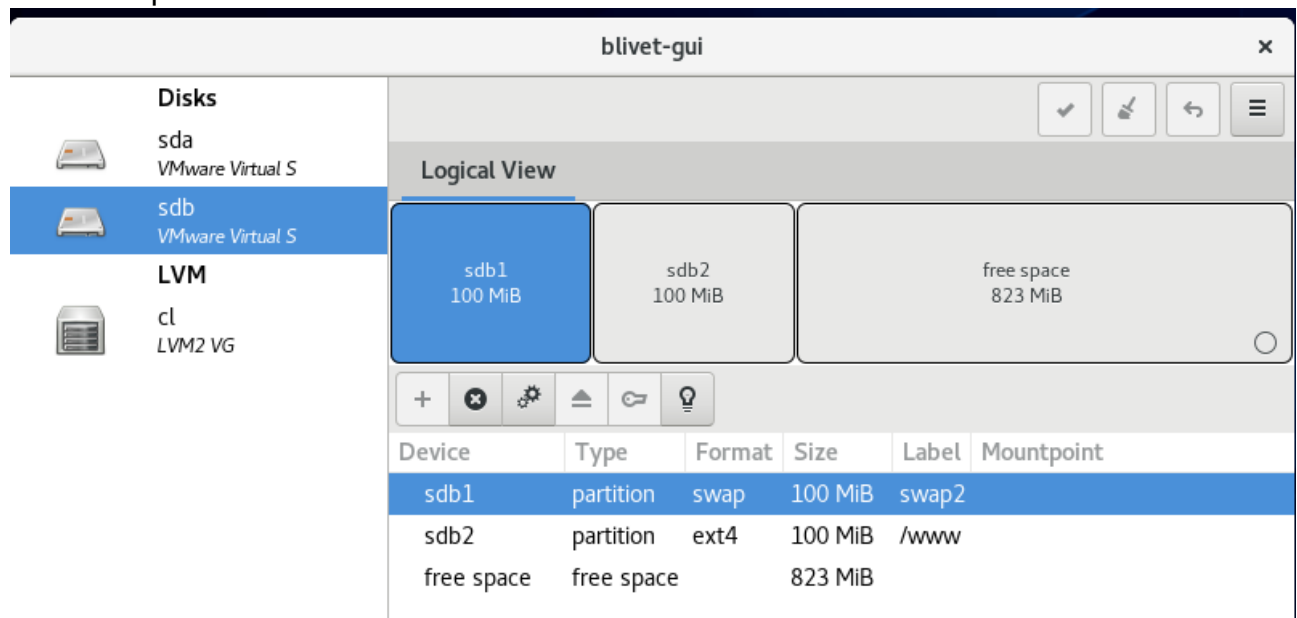
[root@localhost ~]# yum install blivet-gui
Last metadata expiration check: 0:01:30 ago on Fri 08 Oct 2021 12:46:23 AEDT.
Dependencies resolved.

=====
Package                        Arch      Version      Repository      Size
=====
Installing:
blivet-gui                    noarch    2.1.15-1.el8 epel            13 k
```

3. Use command blivet-gui to open the GUI partition interface and check partition in Linux



4. Create partitions



5. mount on swap partition: sdb1

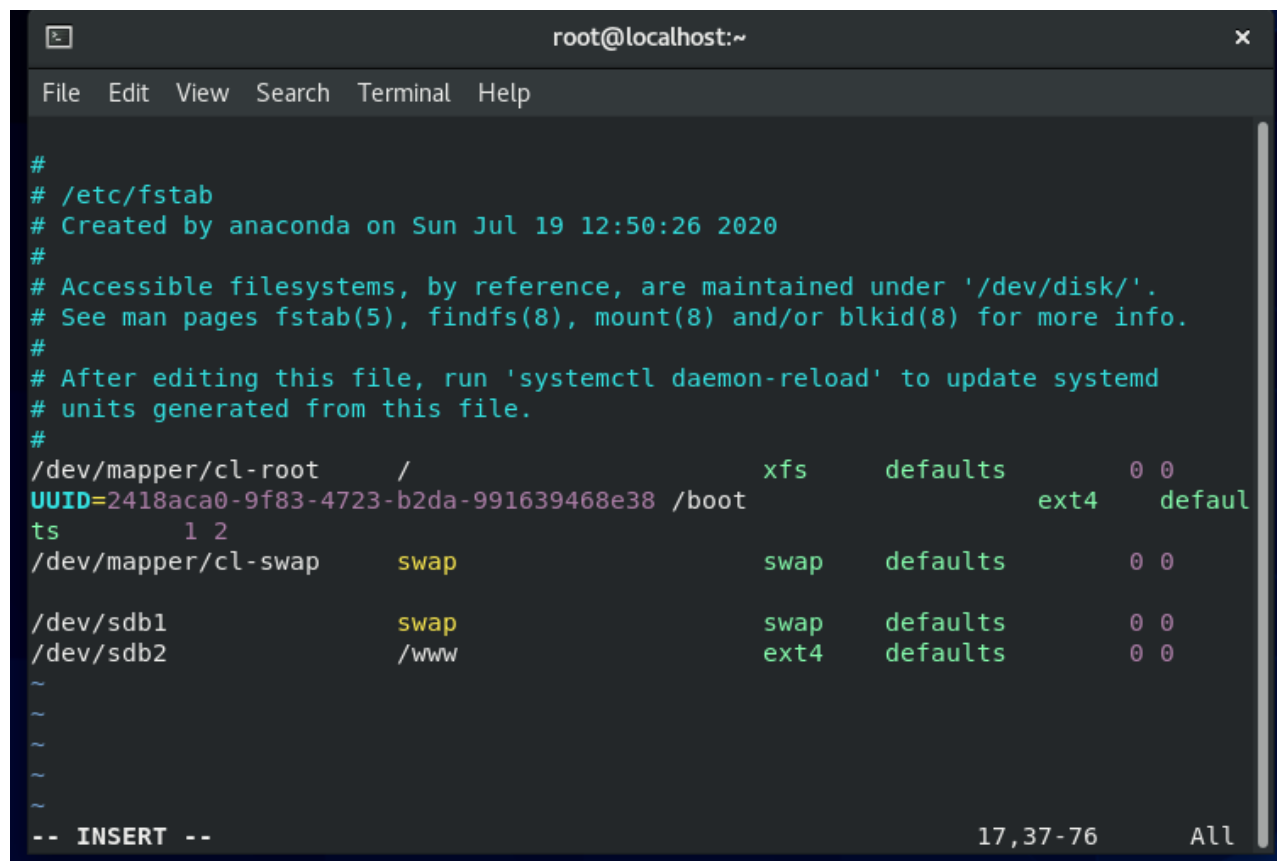
```
[root@localhost ~]# swapon /dev/sdb1
[root@localhost ~]# swapon
NAME      TYPE      SIZE USED  PRIO
/dev/dm-1 partition 2G 2.8M  -2
/dev/sdb1 partition 100M  0B   -3
[root@localhost ~]#
```

#### 6. Mount on sdb2 partition

Create /www directory and touch a file for testing purpose. After mount the sdb2 partition, the txt file disappeared, which mean mount successfully.

```
[root@localhost ~]# mkdir /www
[root@localhost ~]# cd /www
[root@localhost www]# touch beforeMount.txt
[root@localhost www]# ls
beforeMount.txt
[root@localhost www]# mount /dev/sdb2 /www
[root@localhost www]# cd ~
[root@localhost ~]# ls /www
lost+found
```

#### 7. /etc/fstab configuration file



```
root@localhost:~
File Edit View Search Terminal Help

#
# /etc/fstab
# Created by anaconda on Sun Jul 19 12:50:26 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/cl-root    /                    xfs      defaults    0 0
UUID=2418aca0-9f83-4723-b2da-991639468e38 /boot                ext4      default    1 2
ts
/dev/mapper/cl-swap    swap                swap      defaults    0 0
/dev/sdb1              swap                swap      defaults    0 0
/dev/sdb2              /www                ext4      defaults    0 0
~
~
~
~
-- INSERT --
17,37-76 All
```

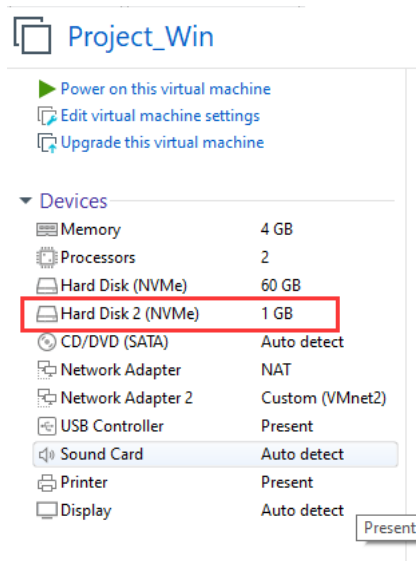
#### 8. Verify after reboot the Linux system

```
[root@localhost ~]# parted /dev/sdb print
Model: VMware, VMware Virtual S (scsi)
Disk /dev/sdb: 1074MB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
Disk Flags:

Number  Start   End     Size    Type     File system  Flags
  1      1049kB  106MB   105MB   primary  linux-swap(v1)
  2      106MB   211MB   105MB   primary  ext4
```

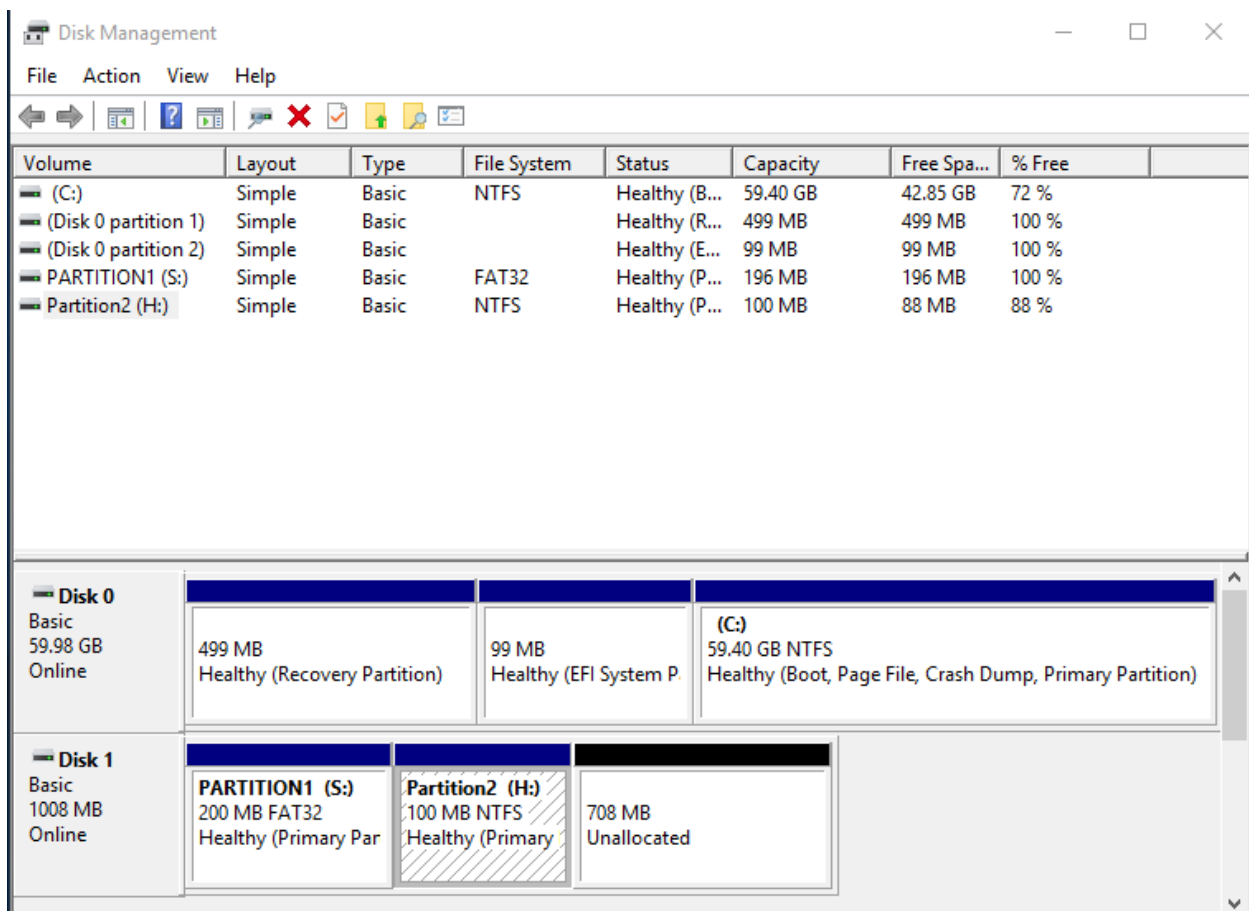
## Windows:

### 1. Add second 1GB hard disk on Windows server

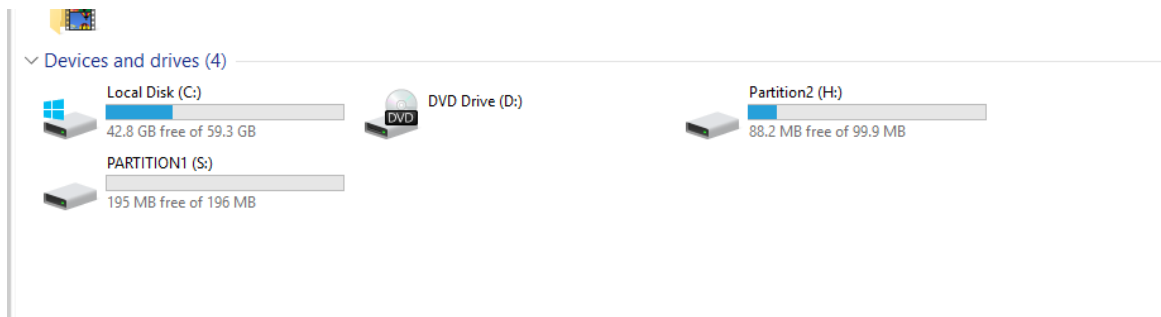


### 2. Create partitions using Disk Management

**Note: the default setting of my VM is Disk 1 for new hard drive and I have completed this before then announcement.**



### 3. Verify



### Task 2: Set up static networking (5 marks)

Linux:

1. Create ens37 configuration file

```
[root@localhost ~]# cp /etc/sysconfig/network-scripts/ifcfg-ens33 /etc/sysconfig/network-scripts/ifcfg-ens37
```

2. Edit ens37 configuration file

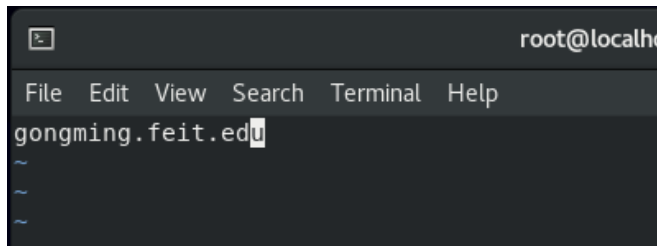
```
root@localhost:~  
File Edit View Search Terminal Help  
TYPE=Ethernet  
PROXY_METHOD=none  
BROWSER_ONLY=no  
BOOTPROTO=none  
DEFROUTE=no  
IPV4_FAILURE_FATAL=no  
IPV6INIT=yes  
IPV6_AUTOCONF=yes  
IPV6_DEFROUTE=yes  
IPV6_FAILURE_FATAL=no  
IPV6_ADDR_GEN_MODE=stable-privacy  
NAME=ens37  
DEVICE=ens37  
ONBOOT=yes  
IPADDR=1.2.3.254  
NETMASK=255.255.255.0
```

3. Verify IP address and subnet mask

```
[root@localhost ~]# nmcli c reload ens37  
[root@localhost ~]# nmcli c up ens37  
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/4)  
[root@localhost ~]# ifconfig ens37  
ens37: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 1.2.3.254 netmask 255.255.255.0 broadcast 1.2.3.255  
    inet6 fe80::dbc6:3151:621:ed84 prefixlen 64 scopeid 0x20<link>  
    ether 00:0c:29:5e:27:1a txqueuelen 1000 (Ethernet)  
    RX packets 44 bytes 10880 (10.6 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 70 bytes 8369 (8.1 KiB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

#### 4. Change host name

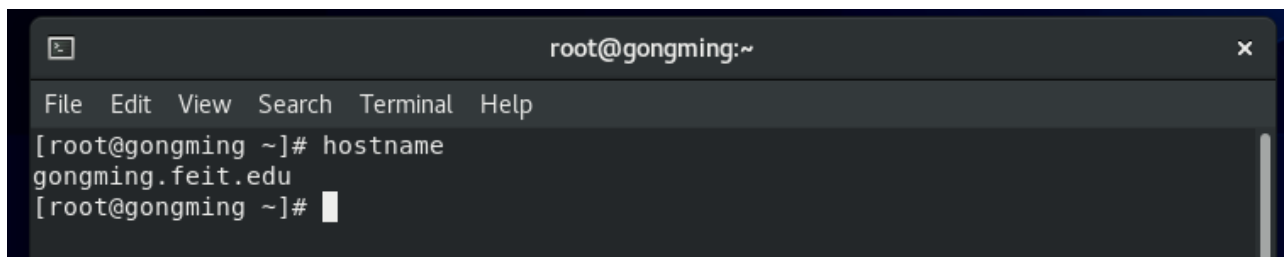
Edit /etc/hostname file



```
root@localhost:~#  
File Edit View Search Terminal Help  
gongming.feit.edu  
~  
~  
~
```

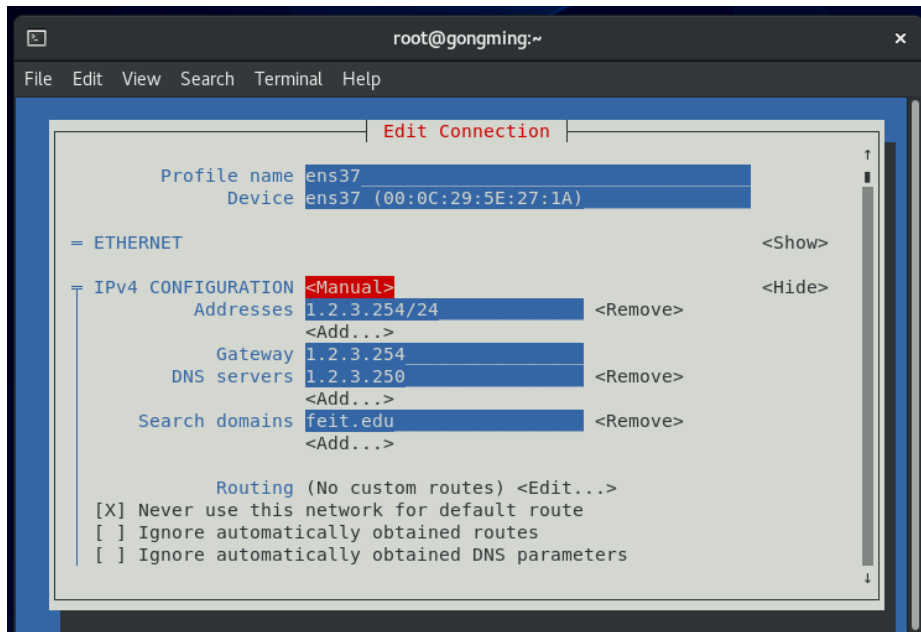
Verify:

After reboot



```
root@gongming:~#  
File Edit View Search Terminal Help  
[root@gongming ~]# hostname  
gongming.feit.edu  
[root@gongming ~]#
```

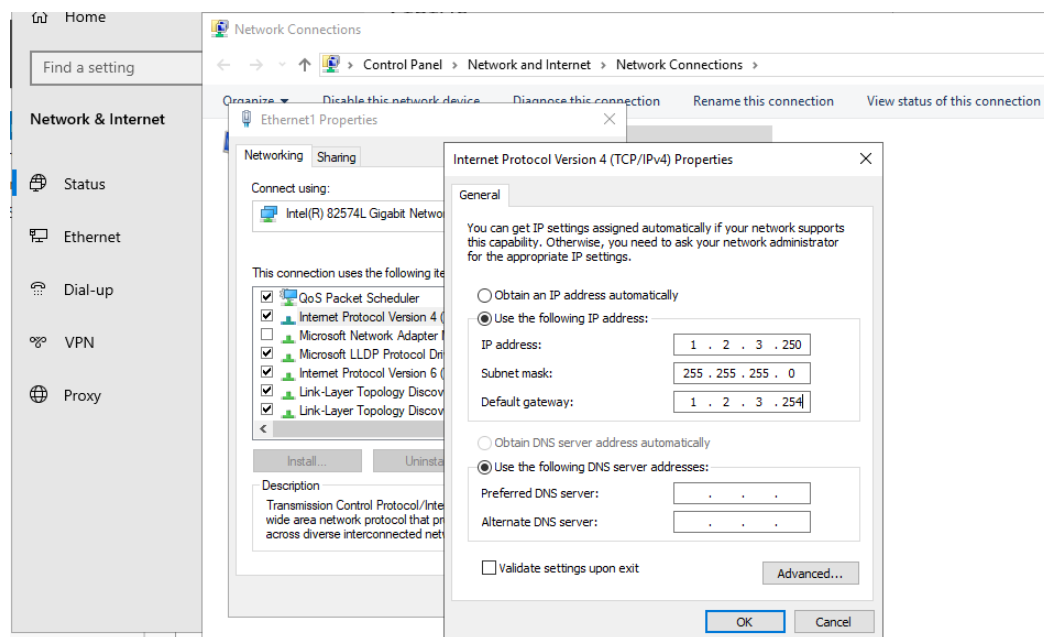
#### 5. Set up default gateway and DNS domain using nmtui



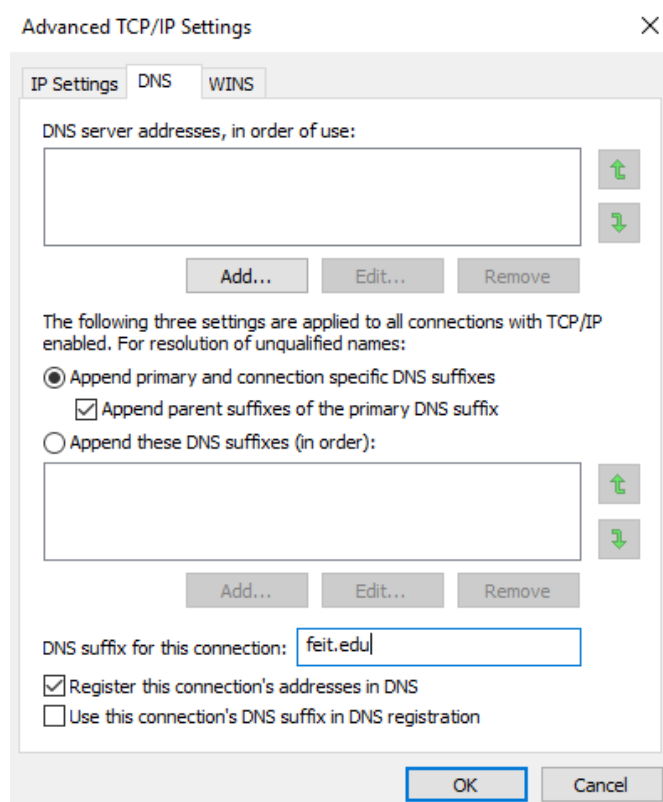


## Windows:

## 1. Set IP address and subnet mask for Ethernet1



## DNS suffix



## 2. Verify IP setting

```

Ethernet adapter Ethernet1:

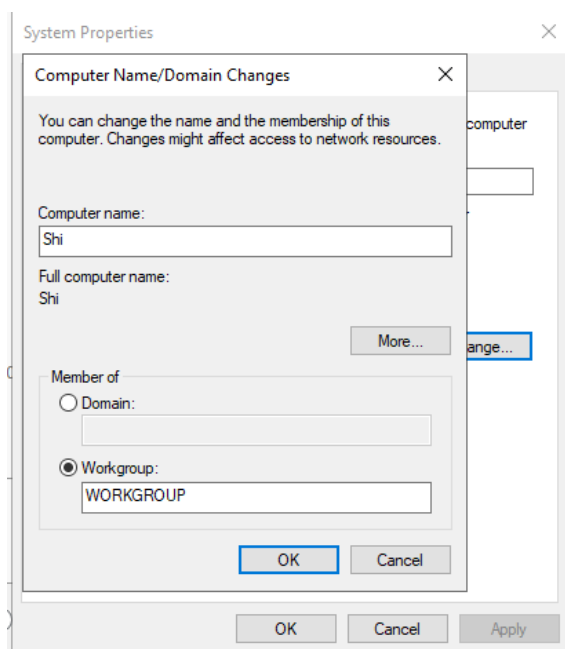
    Connection-specific DNS Suffix  . : feit.edu
    Description . . . . . : Intel(R) 82574L Gigabit Network Connection #2
    Physical Address. . . . . : 00-0C-29-44-F4-D3
    DHCP Enabled. . . . . : No
    Autoconfiguration Enabled . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::a476:9064:a83d:e1d9%16(Preferred)
    IPv4 Address. . . . . : 1.2.3.250(Preferred)
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 1.2.3.254
    DHCPv6 IAID . . . . . : 285215785
    DHCPv6 Client DUID. . . . . : 00-01-00-01-28-F0-A5-A6-00-0C-29-44-F4-C9
    DNS Servers . . . . . : fec0:0:0:ffff::1%1
                           : fec0:0:0:ffff::2%1
                           : fec0:0:0:ffff::3%1

    NetBIOS over Tcpip. . . . . : Enabled

C:\Users\Administrator>

```

### 3. Change hostname



Restart and check hostname





### 4. Disable firewall



## Customize settings for each type of network

You can modify the firewall settings for each type of network that you use.

### Private network settings

-  ☐ Turn on Windows Defender Firewall
- ☐ Block all incoming connections, including those in the list of allowed apps
  - ☐ Notify me when Windows Defender Firewall blocks a new app
-  ☒ Turn off Windows Defender Firewall (not recommended)

### Public network settings

-  ☐ Turn on Windows Defender Firewall
- ☐ Block all incoming connections, including those in the list of allowed apps
  - ☐ Notify me when Windows Defender Firewall blocks a new app
-  ☒ Turn off Windows Defender Firewall (not recommended)

Testing IP connection:

#### 1. Ping Windows from Linux

```
File Edit View Search Terminal Help
[root@gongming ~]# ping 1.2.3.250
PING 1.2.3.250 (1.2.3.250) 56(84) bytes of data.
64 bytes from 1.2.3.250: icmp_seq=1 ttl=128 time=0.391 ms
64 bytes from 1.2.3.250: icmp_seq=2 ttl=128 time=1.10 ms
^C
--- 1.2.3.250 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 22ms
rtt min/avg/max/mdev = 0.391/0.745/1.099/0.354 ms
[root@gongming ~]#
```

#### 2. Ping Linux from Windows

```
C:\Users\Administrator>ping 1.2.3.254

Pinging 1.2.3.254 with 32 bytes of data:
Reply from 1.2.3.254: bytes=32 time<1ms TTL=64
Reply from 1.2.3.254: bytes=32 time<1ms TTL=64
Reply from 1.2.3.254: bytes=32 time=32ms TTL=64
Reply from 1.2.3.254: bytes=32 time=1ms TTL=64

Ping statistics for 1.2.3.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 32ms, Average = 8ms
```

## Task 3: Set up NFS service (5 marks)

1. Create /public directory and change its permission

```
[root@gongming ~]# mkdir /public
[root@gongming ~]# chmod 777 /public
```

|            |   |      |      |               |        |
|------------|---|------|------|---------------|--------|
| drwxrwxrwx | 2 | root | root | 6 Oct 9 03:19 | public |
|------------|---|------|------|---------------|--------|

2. Edit /etc/exports configuration file

```
[root@gongming ~]# vim /etc/exports
[root@gongming ~]# cat /etc/exports
/public 1.2.3.0/24 (rw)
```

Verify:

```
[root@gongming ~]# exportfs -v
/public 1.2.3.0/24(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,r
oot_squash,no_all_squash)
```

3. Start nfs-server and enable

```
[root@gongming ~]# systemctl start rpcbind
[root@gongming ~]# systemctl start nfs-server
[root@gongming ~]# systemctl enable nfs-server
Created symlink /etc/systemd/system/multi-user.target.w
/usr/lib/systemd/system/nfs-server.service.
[root@gongming ~]# systemctl enable rpcbind
```

4. Create a mount point and mount the public directory

```
[root@gongming ~]# mkdir /mnt/public
[root@gongming ~]# mount -t nfs4 1.2.3.254:/public /mnt/public/
[root@gongming ~]#
```

5. Make change in fstab file for persistent setting

```

root@gongming:~
File Edit View Search Terminal Help
#
# /etc/fstab
# Created by anaconda on Sun Jul 19 12:50:26 2020
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/cl-root    /                    xfs      defaults    0 0
UUID=2418aca0-9f83-4723-b2da-991639468e38 /boot                ext4      defaults    0 0
ts                    1 2
/dev/mapper/cl-swap    swap                swap     defaults    0 0
/dev/sdb1              swap                swap     defaults    0 0
/dev/sdb2              /www                ext4     defaults    0 0
1.2.3.254:/public      /mnt/public         nfs      defaults    1 1
~

```

## Testing

1. Create a file in /public directory and check in client's shared directory

```

[root@gongming ~]# touch /public/fromServer.txt
[root@gongming ~]# ls /public
fromServer.txt
[root@gongming ~]# ls /mnt/public/
fromServer.txt
[root@gongming ~]#

```

2. Test that client can create file

```

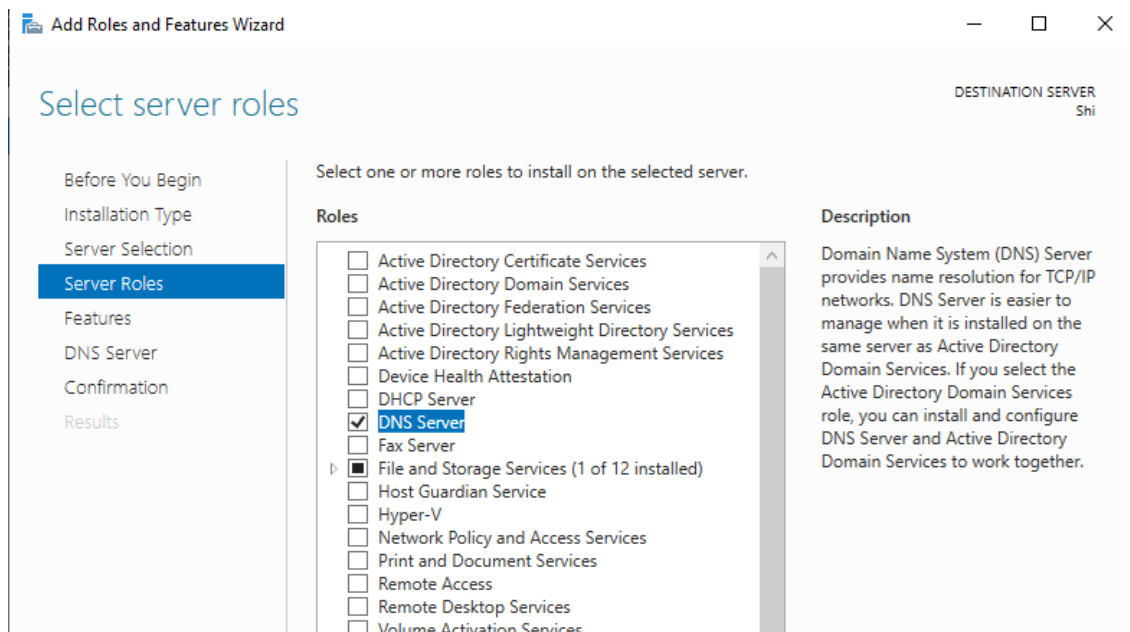
root@gongming:~
File Edit View Search Terminal Help
[root@gongming ~]# touch /mnt/public/fromClient.txt
[root@gongming ~]# ls /public
fromClient.txt fromServer.txt
[root@gongming ~]#

```

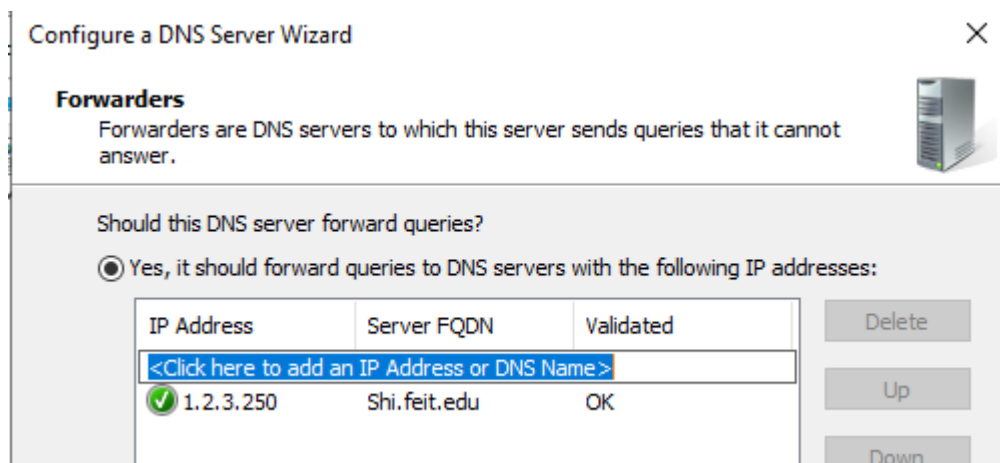
## Task 4: Set up DNS server (10 marks)

Windows:

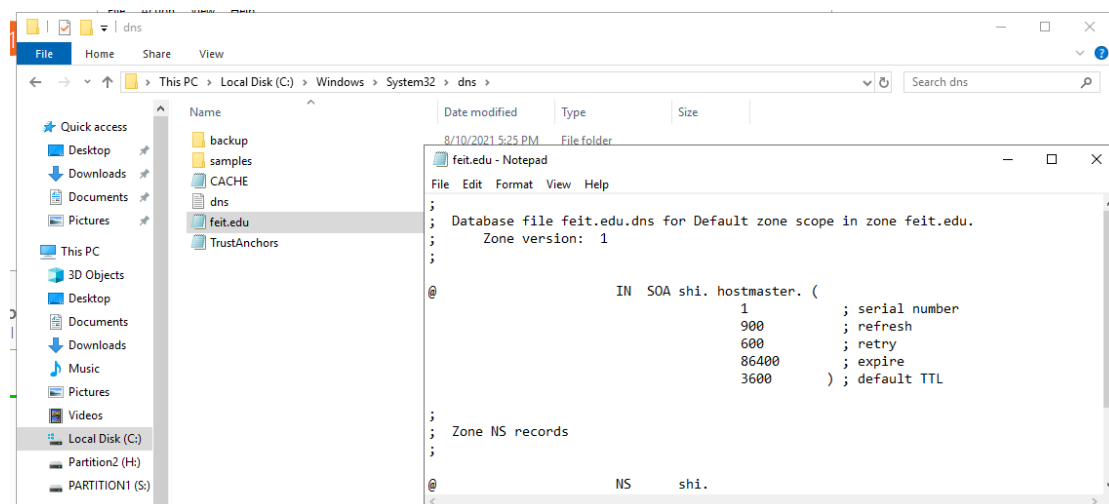
## 1. Install DNS role from the Server Manager



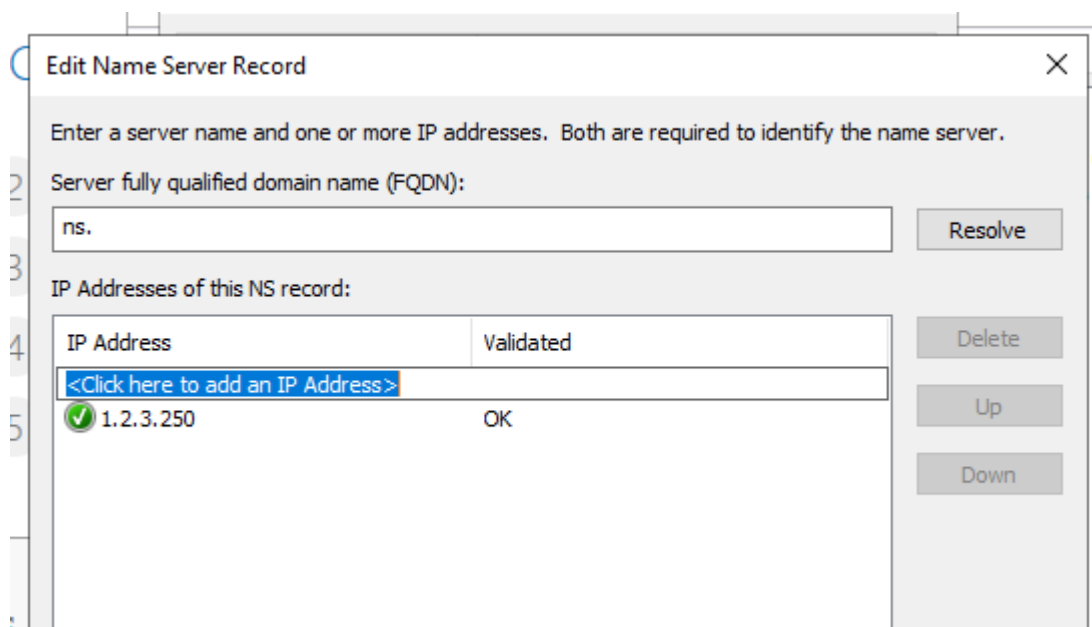
## 2. Set up a zone for the DNS server

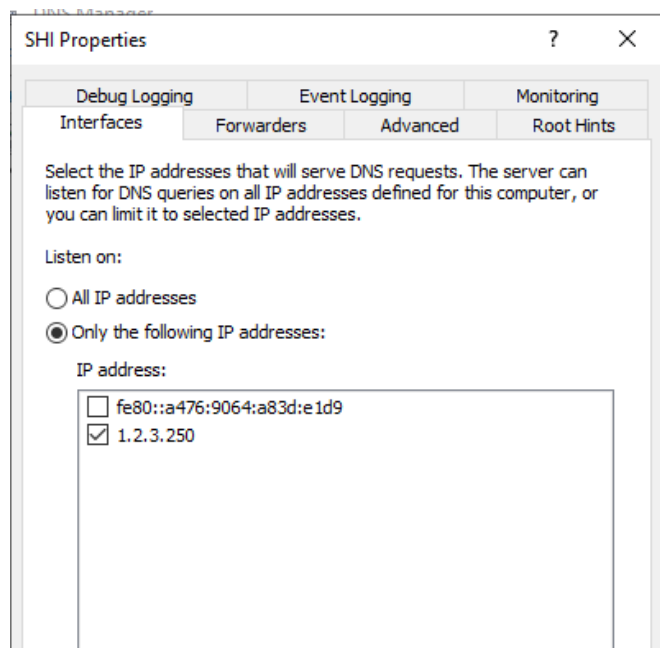


## 3. Check DNS file in C drive

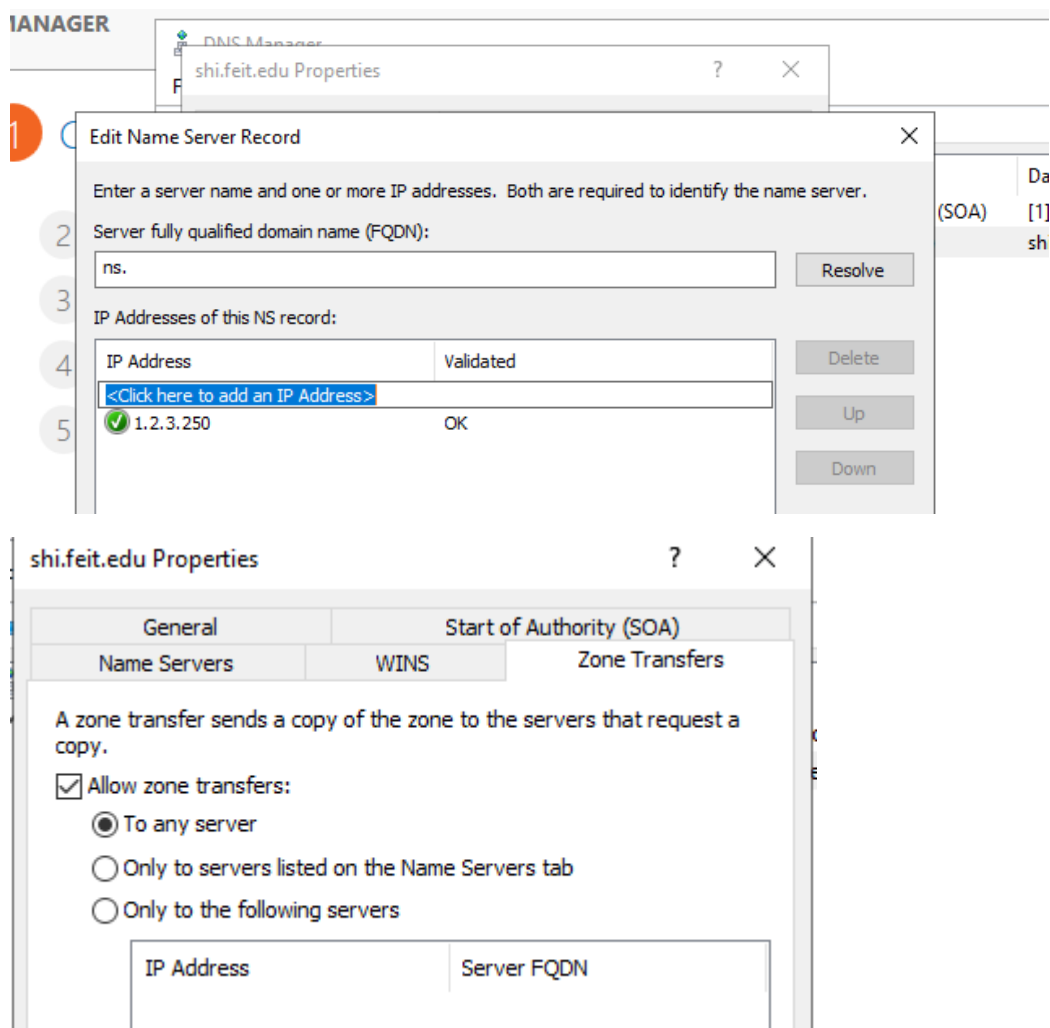


## 4. Set up DNS server properties



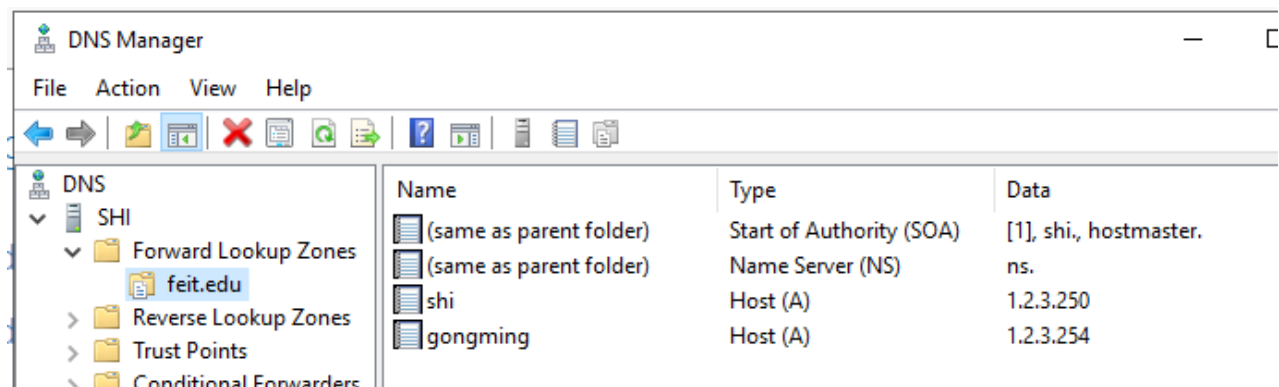


## 5. Change name server and zone transfer

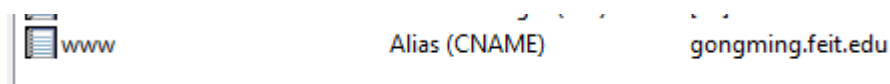


## 6. Add new hosts for Windows and Linux

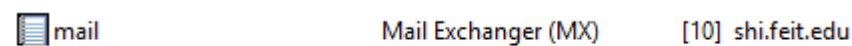




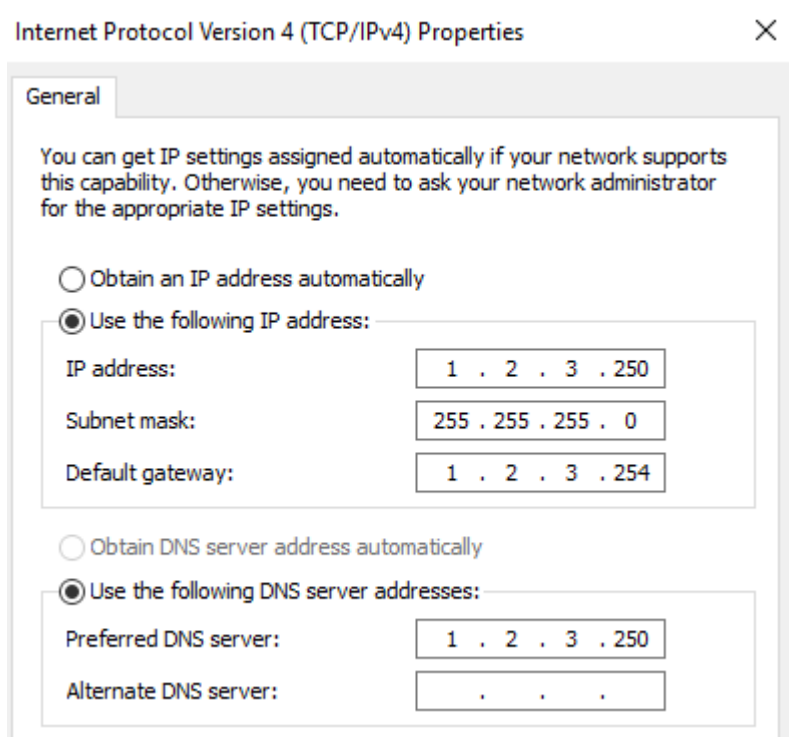
7. Create alias www for [gongming.feit.edu](http://gongming.feit.edu)



8. Add Exchanger



9. Set default DNS server IP address



10. Testing with nslookup in cmd

```

C:\Users\Administrator>nslookup
Default Server:  shi.feit.edu
Address:  1.2.3.250

> www.feit.edu
Server:  shi.feit.edu
Address:  1.2.3.250

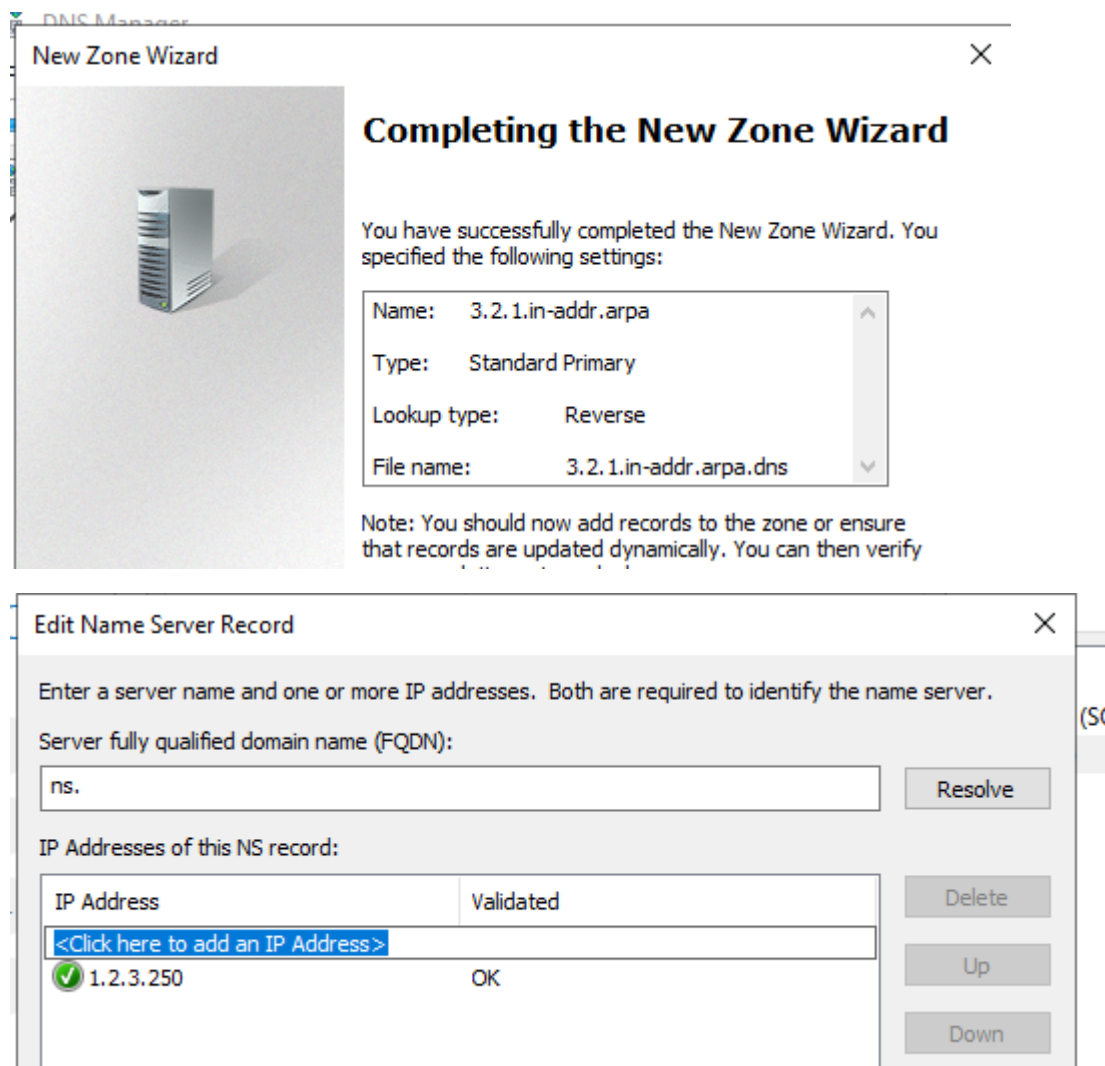
Name:    gongming.feit.edu
Address:  1.2.3.254
Aliases:  www.feit.edu

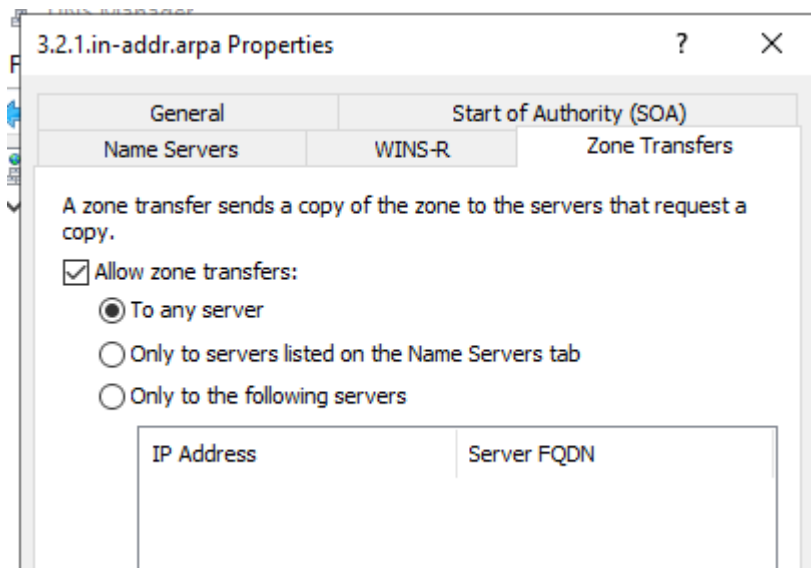
> mail.feit.edu
Server:  shi.feit.edu
Address:  1.2.3.250

Name:    mail.feit.edu

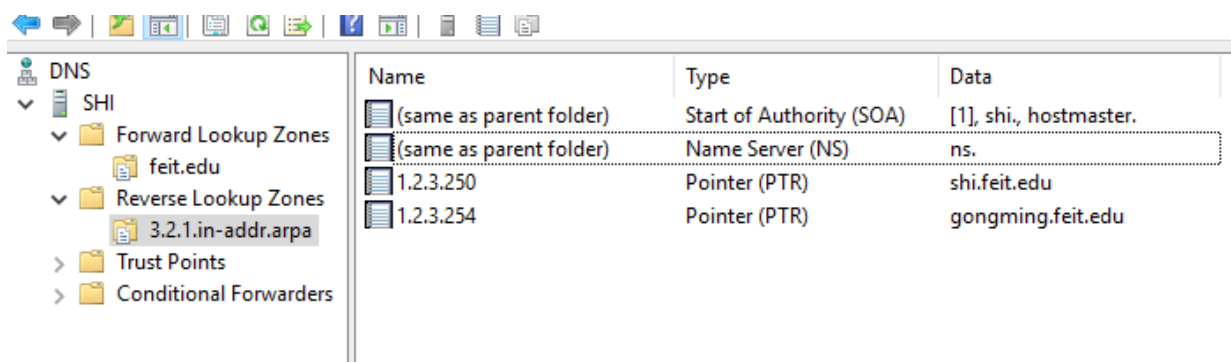
```

## 11. Add a reserve zone





## 12. Add PTRs



## 13. Verify in cmd

```
C:\Users\Administrator>nslookup
Default Server: shi.feit.edu
Address: 1.2.3.250

> set type=PTR
> 250.3.2.1.in-addr.arpa.
Server: shi.feit.edu
Address: 1.2.3.250

250.3.2.1.in-addr.arpa name = shi.feit.edu
> 254.3.2.1.in-addr.arpa.
Server: shi.feit.edu
Address: 1.2.3.250

254.3.2.1.in-addr.arpa name = gongming.feit.edu
>
```

Linux:

## 1. Change network card setting

```

root@gongming:~
File Edit View Search Terminal Help
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
DEFROUTE=no
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens37
DEVICE=ens37
ONBOOT=yes
IPADDR=1.2.3.254
NETMASK=255.255.255.0
DNS1=1.2.3.250
DOMAIN=feit.edu

PREFIX=24
UUID=4a5516a4-dfa4-24af-b1c4-e843e312e2fd

```

## 2. Check resolv.conf file

```

# Generated by NetworkManager
domain feit.edu
search feit.edu
nameserver 1.2.3.250
[root@gongming ~]#

```

## 3. Testing with ping

```

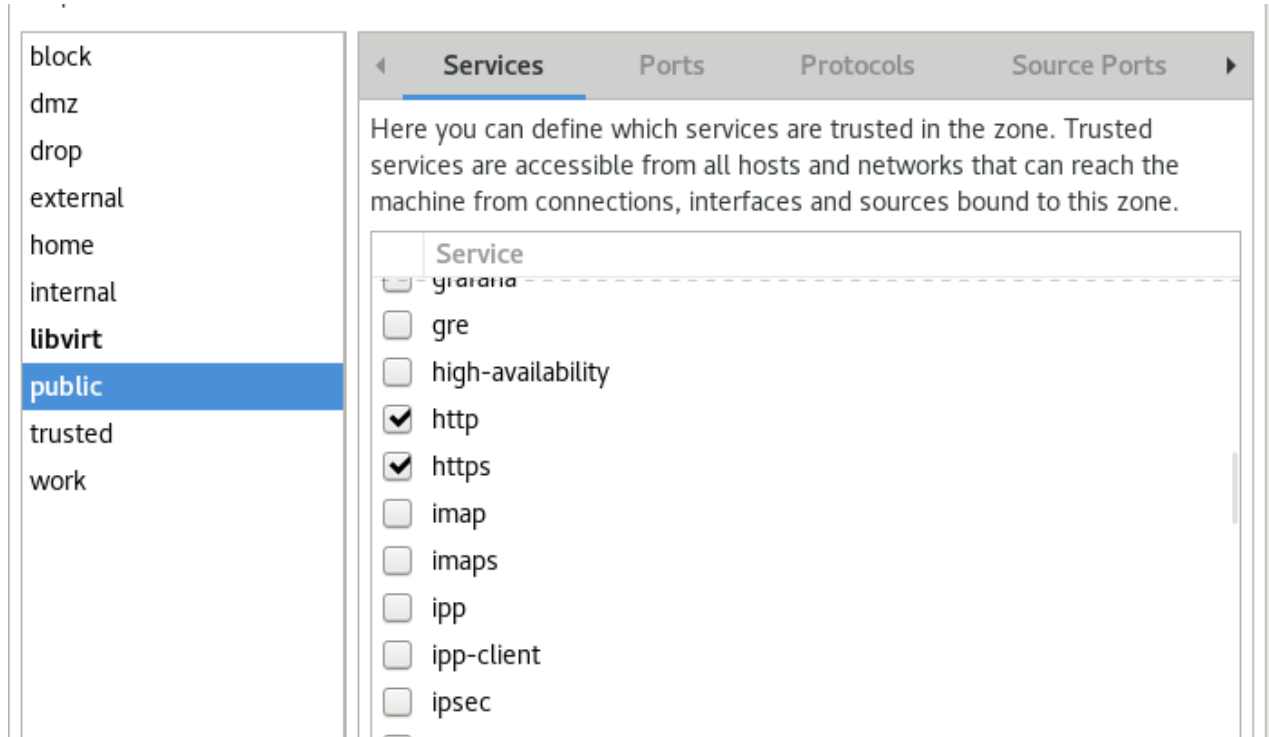
root@gongming:~
File Edit View Search Terminal Help
[root@gongming ~]# ping www.feit.edu
PING shi.feit.edu (1.2.3.250) 56(84) bytes of data.
64 bytes from shi.feit.edu (1.2.3.250): icmp_seq=1 ttl=128 time=0.222 ms
64 bytes from shi.feit.edu (1.2.3.250): icmp_seq=2 ttl=128 time=0.409 ms
^C
--- shi.feit.edu ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 19ms
rtt min/avg/max/mdev = 0.222/0.315/0.409/0.095 ms
[root@gongming ~]# ping shi.feit.edu
PING shi.feit.edu (1.2.3.250) 56(84) bytes of data.
64 bytes from shi.feit.edu (1.2.3.250): icmp_seq=1 ttl=128 time=0.324 ms
64 bytes from shi.feit.edu (1.2.3.250): icmp_seq=2 ttl=128 time=0.454 ms
^C
--- shi.feit.edu ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 3ms
rtt min/avg/max/mdev = 0.324/0.389/0.454/0.065 ms
[root@gongming ~]# ping gongming.feit.edu
PING gongming.feit.edu (1.2.3.254) 56(84) bytes of data.
64 bytes from gongming.feit.edu (1.2.3.254): icmp_seq=1 ttl=64 time=0.030 ms
^C
--- gongming.feit.edu ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.030/0.030/0.030/0.000 ms
[root@gongming ~]#

```

## Task 5: Set up Web server (10 marks)

Linux:

1. Configure firewall to allow http and https for both run time and permanent



2. Start and enable httpd service

```
File Edit View Search Terminal Help
[root@gongming ~]# systemctl start httpd.service
Failed to start service.service: Unit service.service not found.
[root@gongming ~]# systemctl start httpd
[root@gongming ~]# systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
[root@gongming ~]#
```

3. httpd configuration file

```
#
ServerName gongming.feit.edu:80

#
DocumentRoot "/var/www/html"
```

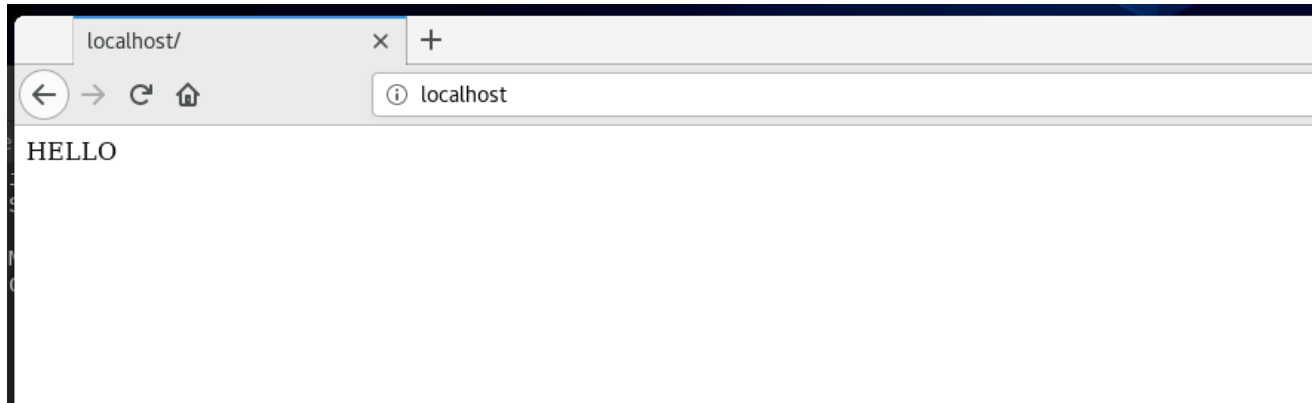
4. Touch index.html file in var/www/ directory

```
[root@gongming ~]# vim /var/www/html/index.html
[root@gongming ~]# cat /var/www/html/index.html
HELLO
```

5. restart httpd service

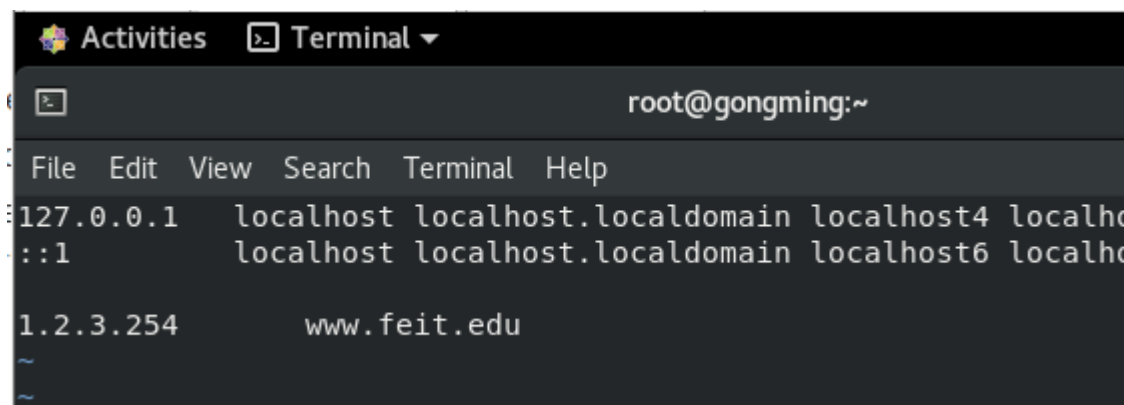
```
[root@gongming ~]# systemctl restart httpd
[root@gongming ~]#
```

## 6. Testing



### Virtual hosting:

#### 1. Add host in hosts file



#### 1. Edit httpd configuration file

```
# Ensure that Apache listens on port 80
<VirtualHost *:80>
DocumentRoot "/var/www/html"
ServerName gongming.feit.edu
# Other directives here
</VirtualHost>
<VirtualHost *:80>
DocumentRoot "/www"
ServerName www.feit.edu
# Other directives here
```

#### 2. Create index.html file for [www.feit.edu](http://www.feit.edu)

```
[root@gongming ~]# vim /www/index.html
[root@gongming ~]# cat /www/index.html
UTS
[root@gongming ~]#
```

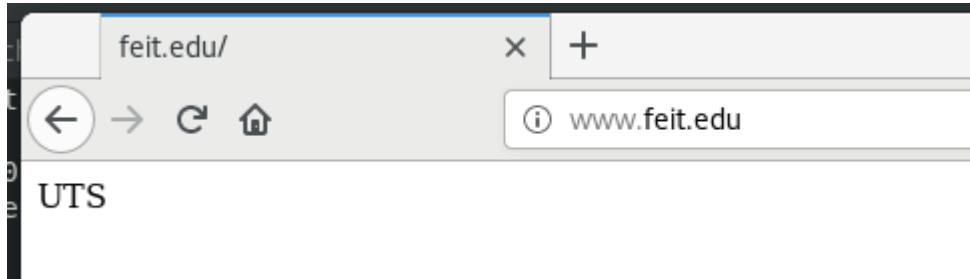
3. Restart httpd service

```
[root@gongming ~]# systemctl restart httpd
```

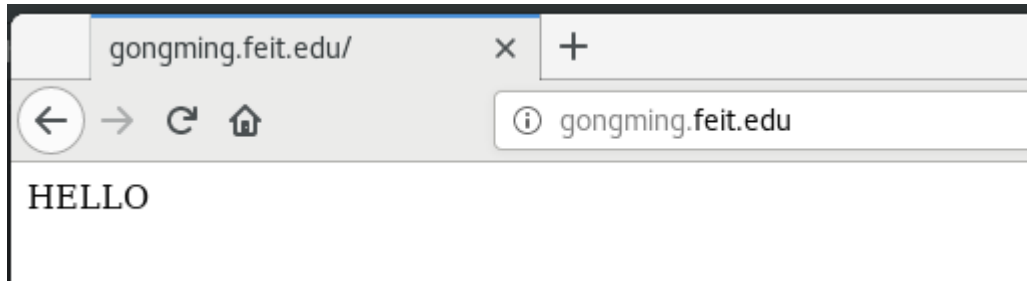
Testing

Linux

1. [www.feit.edu](http://www.feit.edu)

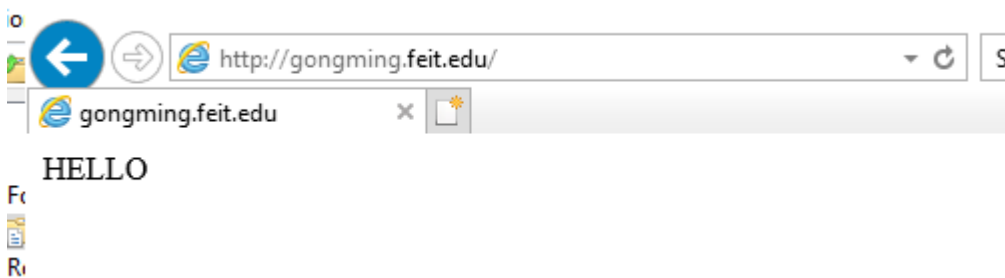


2. [gongming.feit.edu](http://gongming.feit.edu)



Windows

1. [gongming.feit.edu](http://gongming.feit.edu)



2. [www.feit.edu](http://www.feit.edu)

