



THE LINUX OPERATING SYSTEM (MODULE-5)

Report Submitted To: Karnig Sir

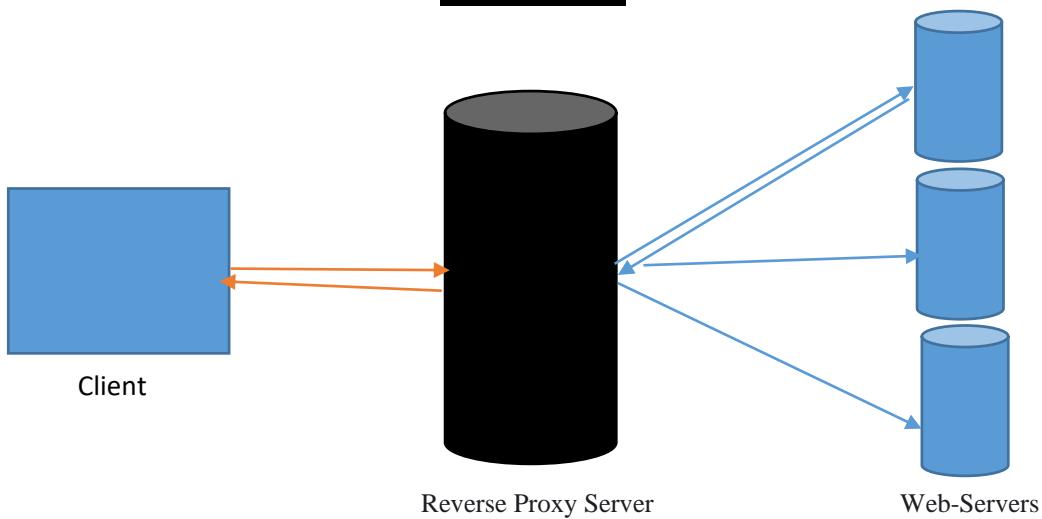
Student Name: Reenaben Kishanbhai Devda

Student Id: 5212123

Task-C: Reverse proxy using squid on CentOS 7.

General overview and objective	(2 points)
Configuration of squid	(2 points)
Configuration of DNS	(2 points)
External client configuration	(1 point)

Task-C



❖ Objective

- Reverse proxies are useful when you have a client running in external network, who is going to access your system and your infrastructure within network and you don't want to expose all the servers you will be exposing only the proxy server to the client and client will hit the proxy server and the requests are redirected to the different servers internally.
- The main objective of reverse proxy is that; Client doesn't know which server it is connecting to. In this case any client which is connecting to web server or destination server have no idea which server is behind the proxy server.

❖ Overview

- In Reverse proxy, Client send request to reverse proxy server then reverse proxy accept the request from client then it will send request to web servers or destination servers in behalf of a client. At this point client requests are handled by reverse proxy server to destination servers, and output from destination servers is handled by the reverse proxy server back to the client. This is completely transparent connection between client and web servers or destination servers.
- Here, in my project my client is sending request to www.devda.com (192.168.100.2) which is reverse proxy server and then reverse proxy is accepting that request and sending it to www.reena.com which is my web server and is running on another network (192.168.0.251), even though client is not aware about the which web server is behind the proxy it is connecting to, it can run the page of www.reena.com.
- They also act as a load balancing servers where it knows that how many requests are handled in this particular server and it can redirect to different servers at the same time.
- These are helpful in protecting all the servers which are inside the intranet.

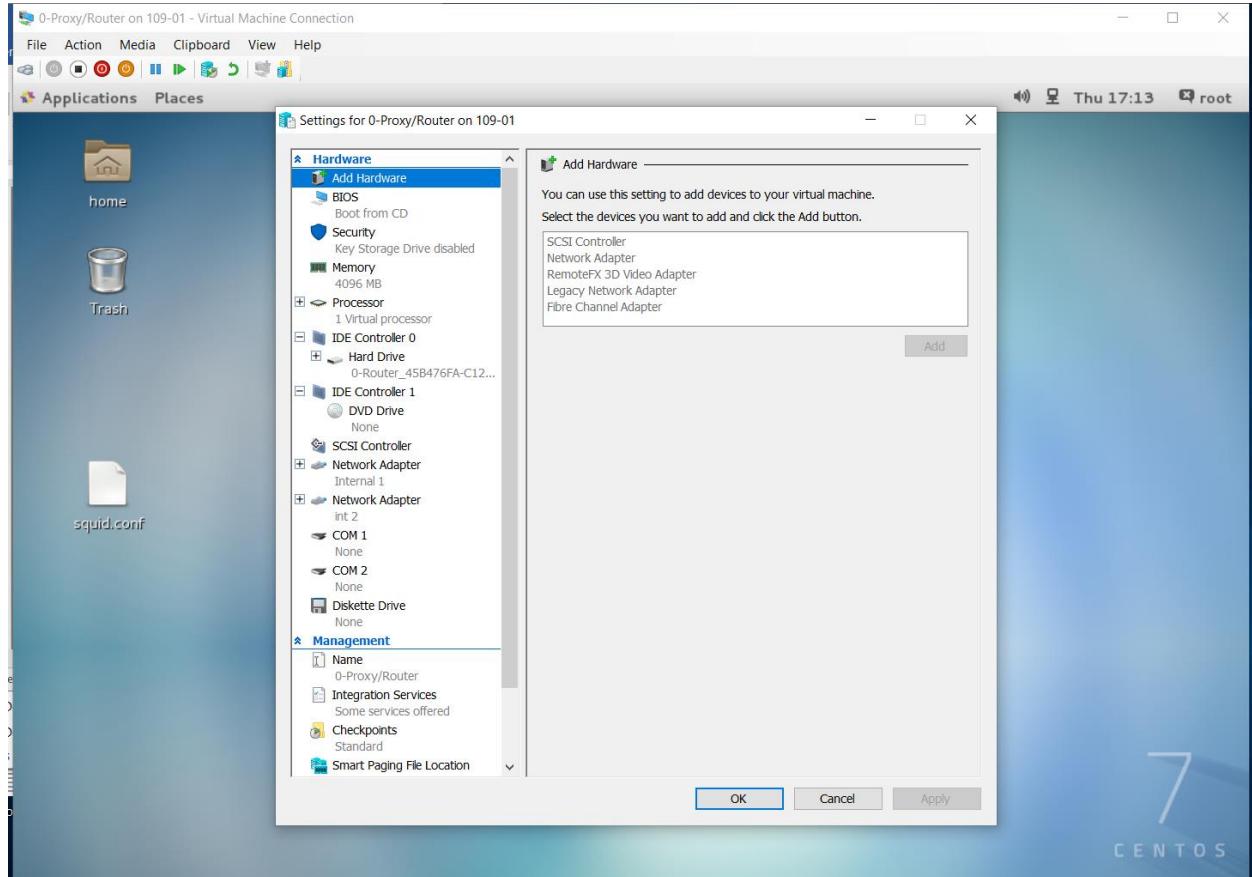
Basic Steps To Setup Reverse Proxy

- Step 1 - Basic Proxy Setup. To setup the reverse mode a functional basic proxy setup is required.
- Step 2 – DNS Configurations. (adding records for hostname of website and making zone in named.conf).
- Step 3 – Web Server Configurations (restart httpd service).
- Step 4 – Creating Slave On Proxy Server (slave configurations on proxy server)
- Step 5 – Squid configurations.
- Step 6– Client Machine Configurations.

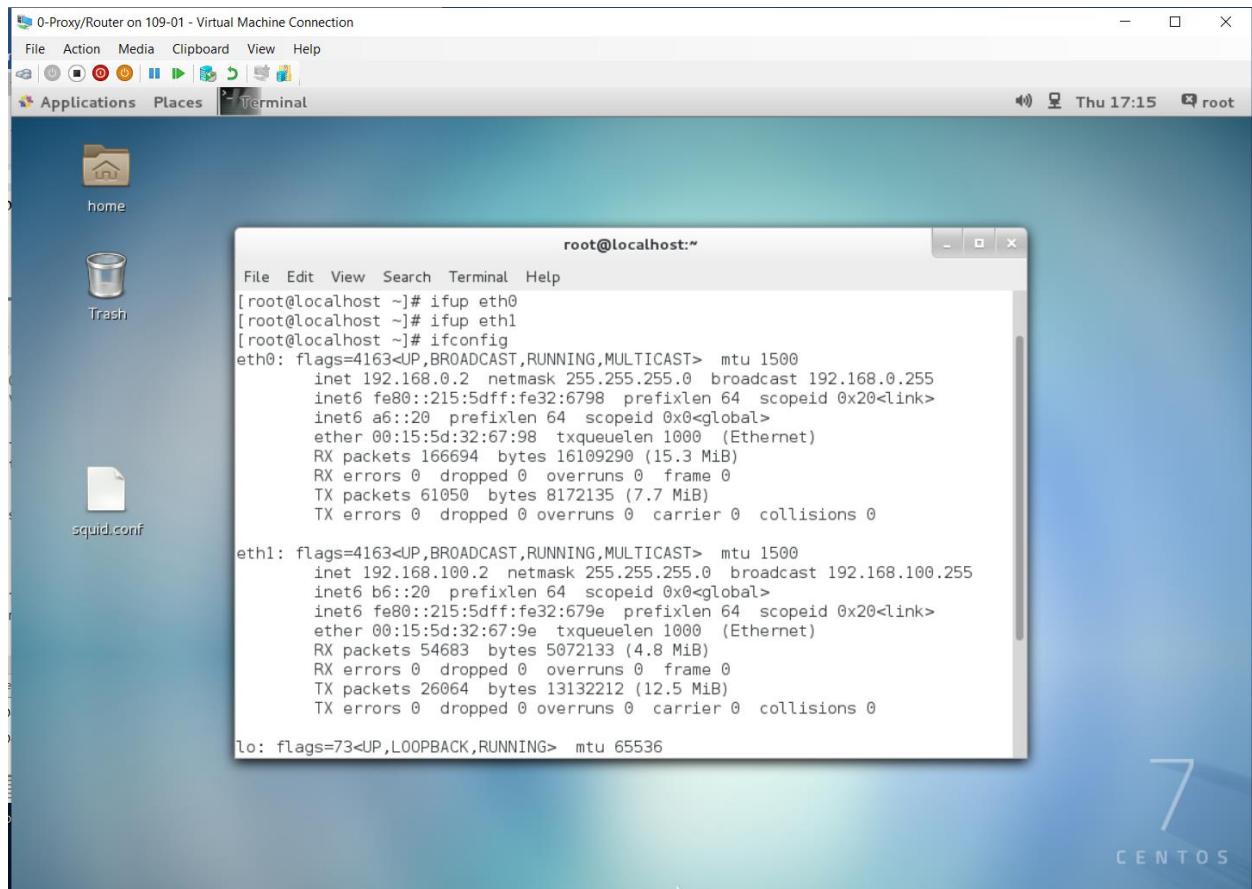
Configurations of Reverse Proxy

- First Of All, In Order To Do Transparent Proxy We Need 4 Machines : 1 Proxy Server, 1 Web Server, 1 DNS server and 1 Windows Machine (Client Machine).
- Here, I Am Configuring IP Addresses: Proxy Server: eth0: 192.168.0.2 and eth1: 192.168.100.2 (www.reena.com),
- Web Server: eth0: 192.168.0.251 (www.reena.com),
- DNS server: 192.168.0.1 and
- Windows Client: 192.168.100.20
- Each Machine's Firewall Should Be Off.
- To Turn Off Firewall, Follow Below Mentioned Commands:
 - Iptables –F
 - Or
 - Systemctl Stop Firewalld
 - Systemctl Disable Firewalld

- First of All, On Proxy Server, add 2 Network Adapters and set 2 different internal switches.
- Here, we can see that, I have added switches internal 1 and int 2

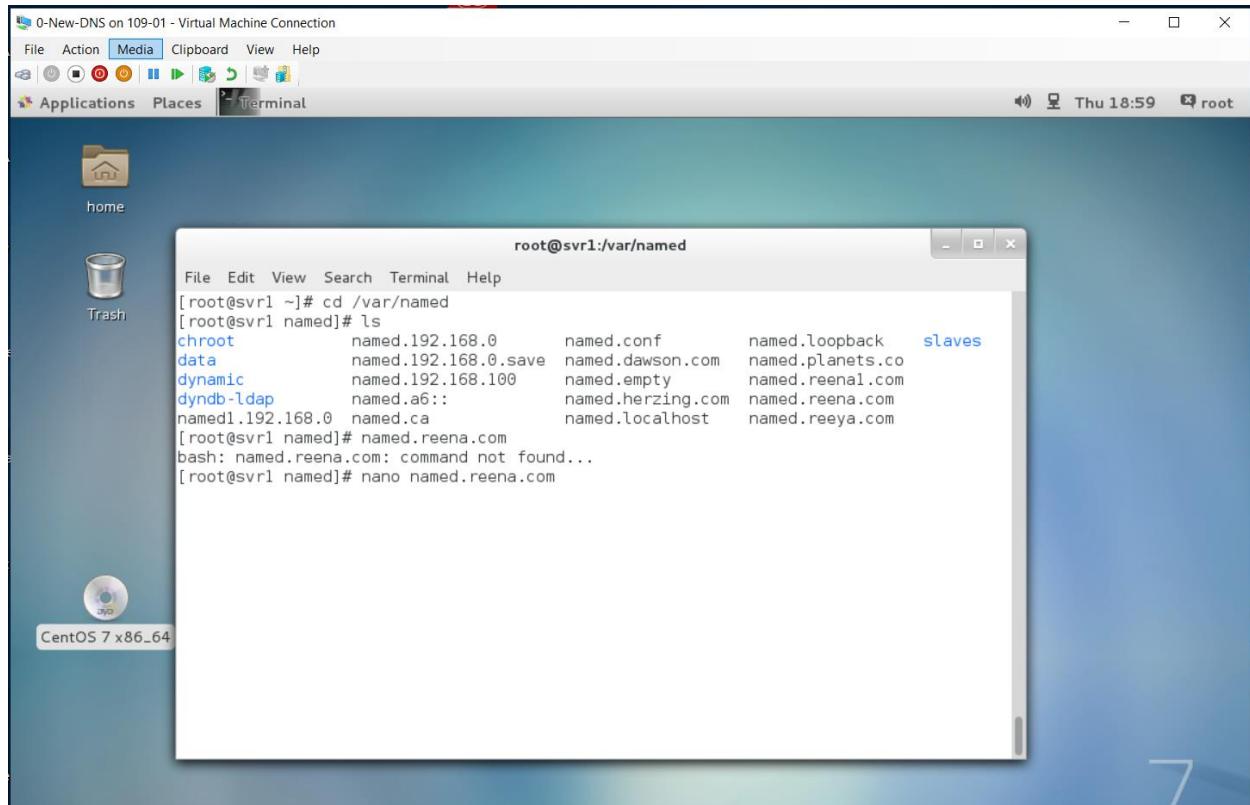


- Now, On Proxy Server, I am doing ifconfig in order to check IP addresses that I have given
- Here, we can see that, both IP addresses have different net id
- 1st id will point to web server and 2nd will point to client.

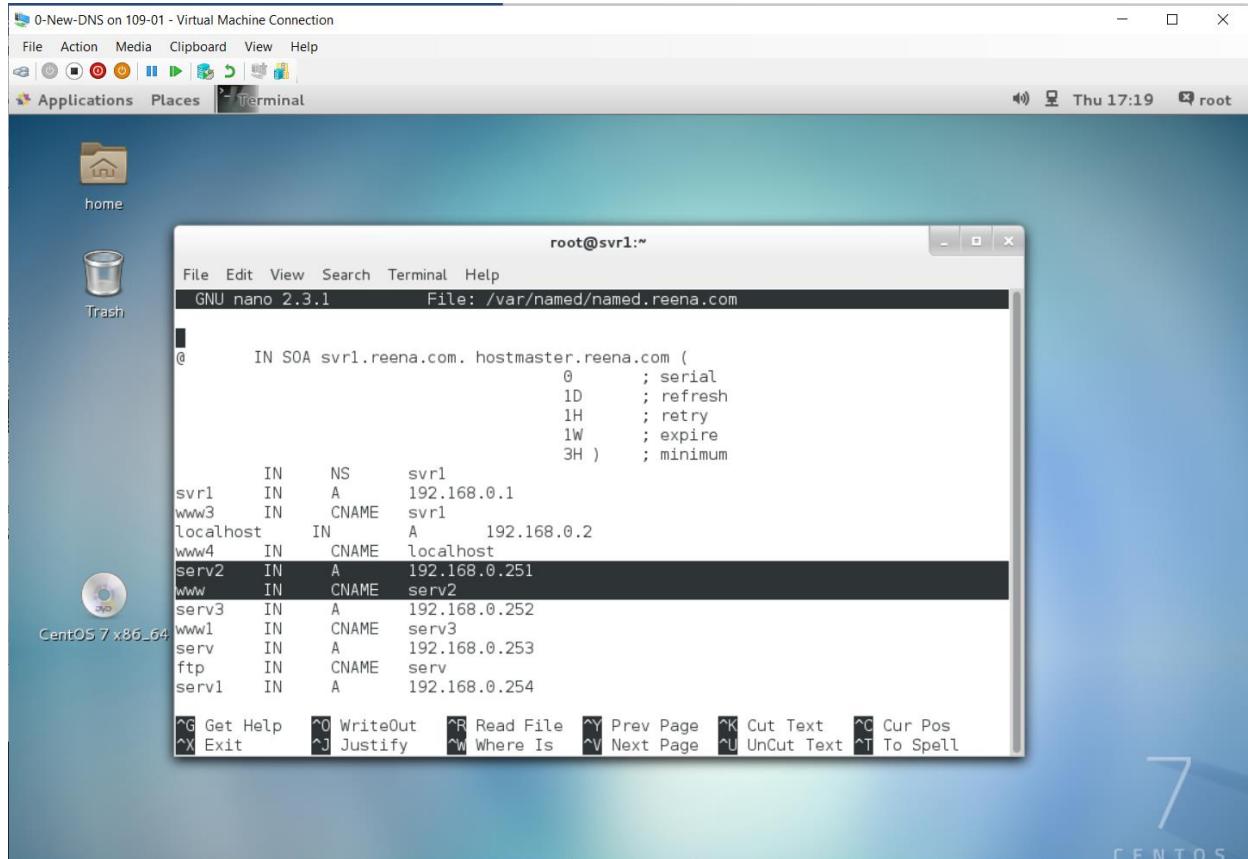


❖ Configurations of DNS

- Now, go to DNS server
- And, open file named.reena.com by using command: nano /var/named/named.reena.com



- Here, we can see that I have already added record for web server 192.168.0.251 (www.reena.com).



The screenshot shows a CentOS 7 desktop environment with a terminal window open. The terminal window title is "root@svr1:~". It displays a DNS zone file named "/var/named/named.reena.com" being edited with the nano 2.3.1 text editor. The file contains the following configuration:

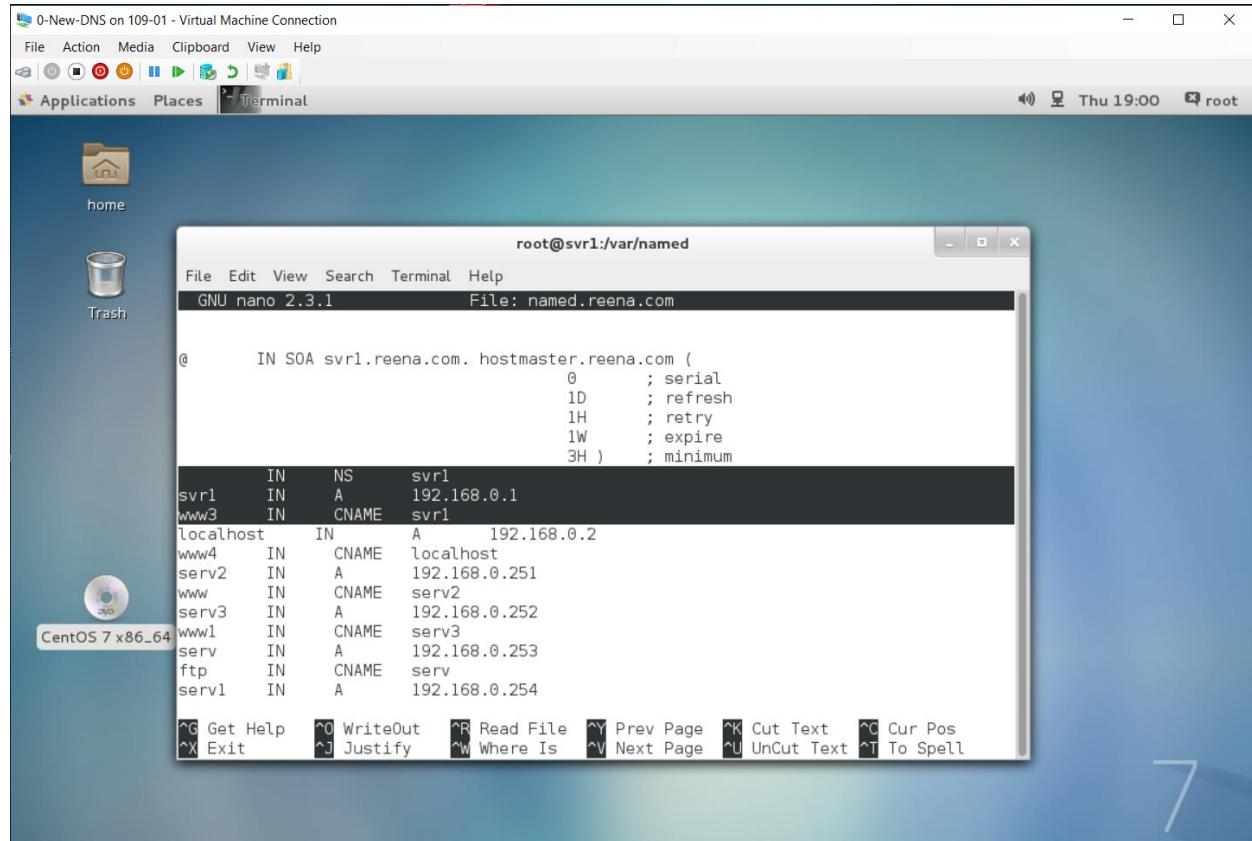
```
root@svr1:~#
File Edit View Search Terminal Help
GNU nano 2.3.1      File: /var/named/named.reena.com

@      IN  SOA svr1.reena.com. hostmaster.reena.com (
          0           ; serial
          1D          ; refresh
          1H          ; retry
          1W          ; expire
          3H )        ; minimum

        IN  NS    svr1
svr1   IN  A    192.168.0.1
www3   IN  CNAME svr1
localhost IN  A    192.168.0.2
www4   IN  CNAME localhost
serv2   IN  A    192.168.0.251
www    IN  CNAME serv2
serv3   IN  A    192.168.0.252
www1   IN  CNAME serv3
serv    IN  A    192.168.0.253
ftp     IN  CNAME serv
serv1   IN  A    192.168.0.254

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify    ^W Where Is   ^V Next Page  ^U Uncut Text ^T To Spell
```

- And Here, we can see that I have already added record for DNS server 192.168.0.1 (www3.reena.com)



The screenshot shows a desktop environment for a virtual machine running CentOS 7 x86_64. The desktop has a blue gradient background. On the left, there's a vertical dock with icons for 'home' (a house), 'Trash' (a trash can), and 'CentOS 7 x86_64'. At the top, a menu bar includes 'File', 'Action', 'Media', 'Clipboard', 'View', 'Help', and a system status bar showing 'Thu 19:00' and 'root'. A central terminal window titled 'root@svr1:/var/named' is open, showing the contents of the 'named' configuration file. The file contains several entries, including a SOA record for 'svr1.reena.com.' and a CNAME entry for 'www3' pointing to 'svr1'. The terminal window has a standard nano editor interface with various keyboard shortcuts at the bottom.

```
root@svr1:/var/named
File Edit View Search Terminal Help
GNU nano 2.3.1          File: named.reena.com

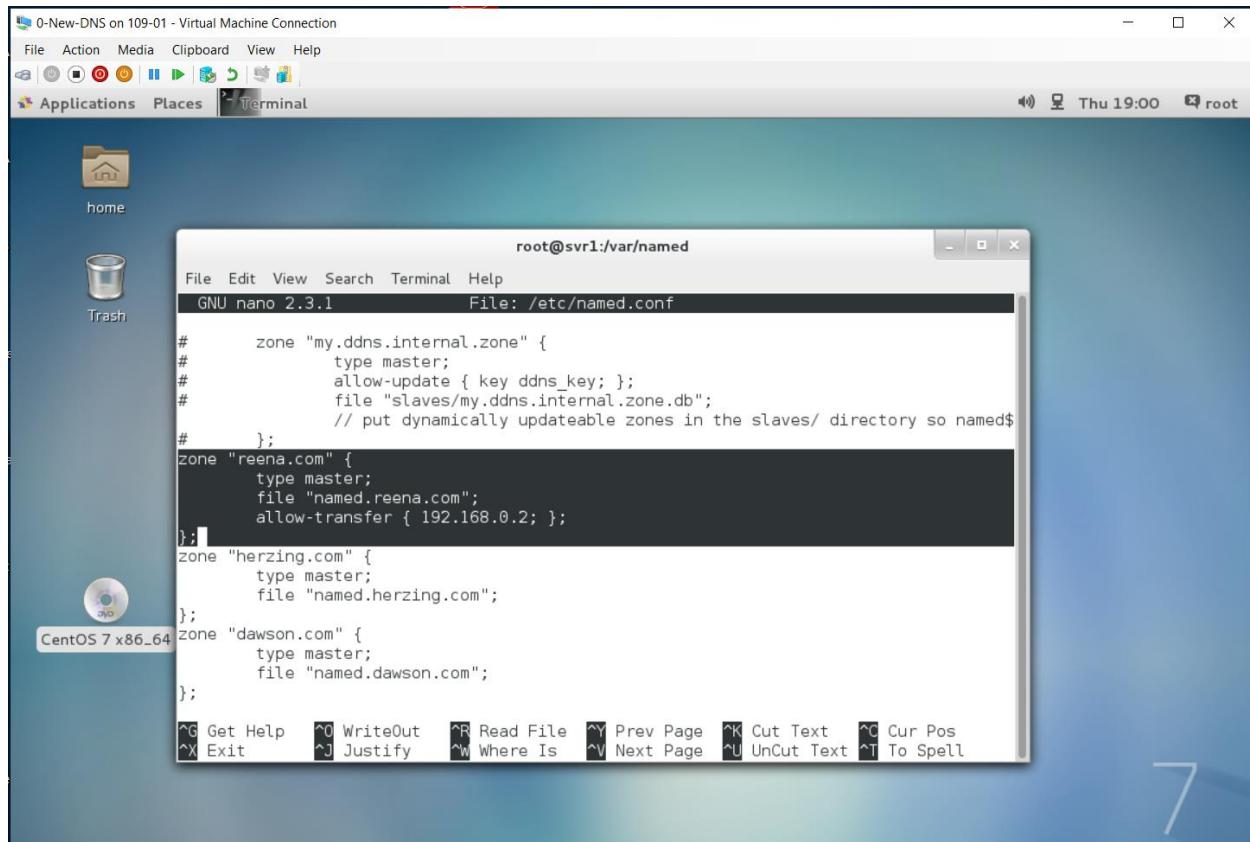
@      IN SOA svr1.reena.com. hostmaster.reena.com (
                      0           ; serial
                      1D          ; refresh
                      1H          ; retry
                      1W          ; expire
                      3H )        ; minimum

svr1    IN  NS    svr1
svr1    IN  A     192.168.0.1
www3   IN  CNAME svr1
localhost IN  A     192.168.0.2
www4   IN  CNAME localhost
serv2   IN  A     192.168.0.251
www    IN  CNAME serv2
serv3   IN  A     192.168.0.252
ww1    IN  CNAME serv3
serv    IN  A     192.168.0.253
ftp    IN  CNAME serv
serv1   IN  A     192.168.0.254

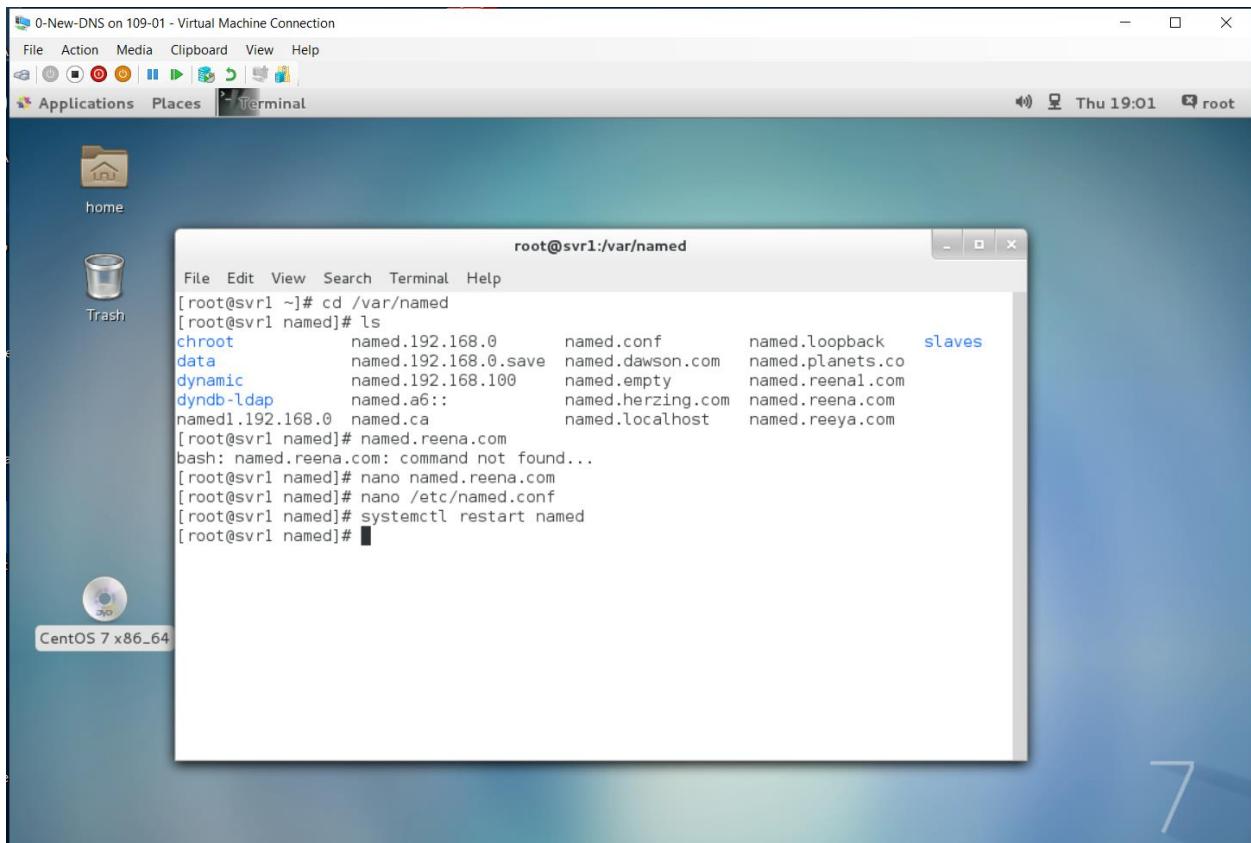
^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
^X Exit      ^J Justify    ^W Where Is   ^V Next Page  ^U UnCut Text  ^T To Spell
```

7

- After that, I am creating zone in named.conf for www.reena.com that we can see in below mentioned image. And also I am doing some configurations for slave.

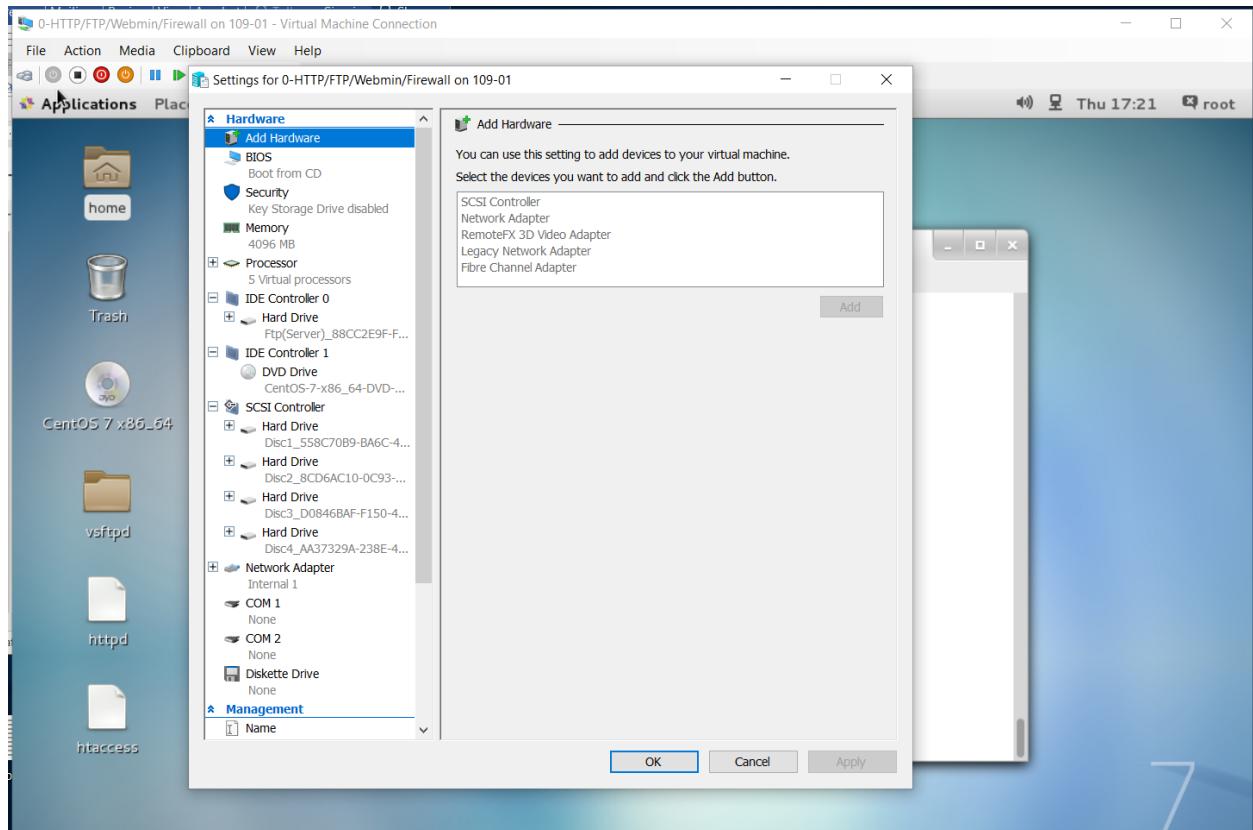


➤ Now, restart the service.

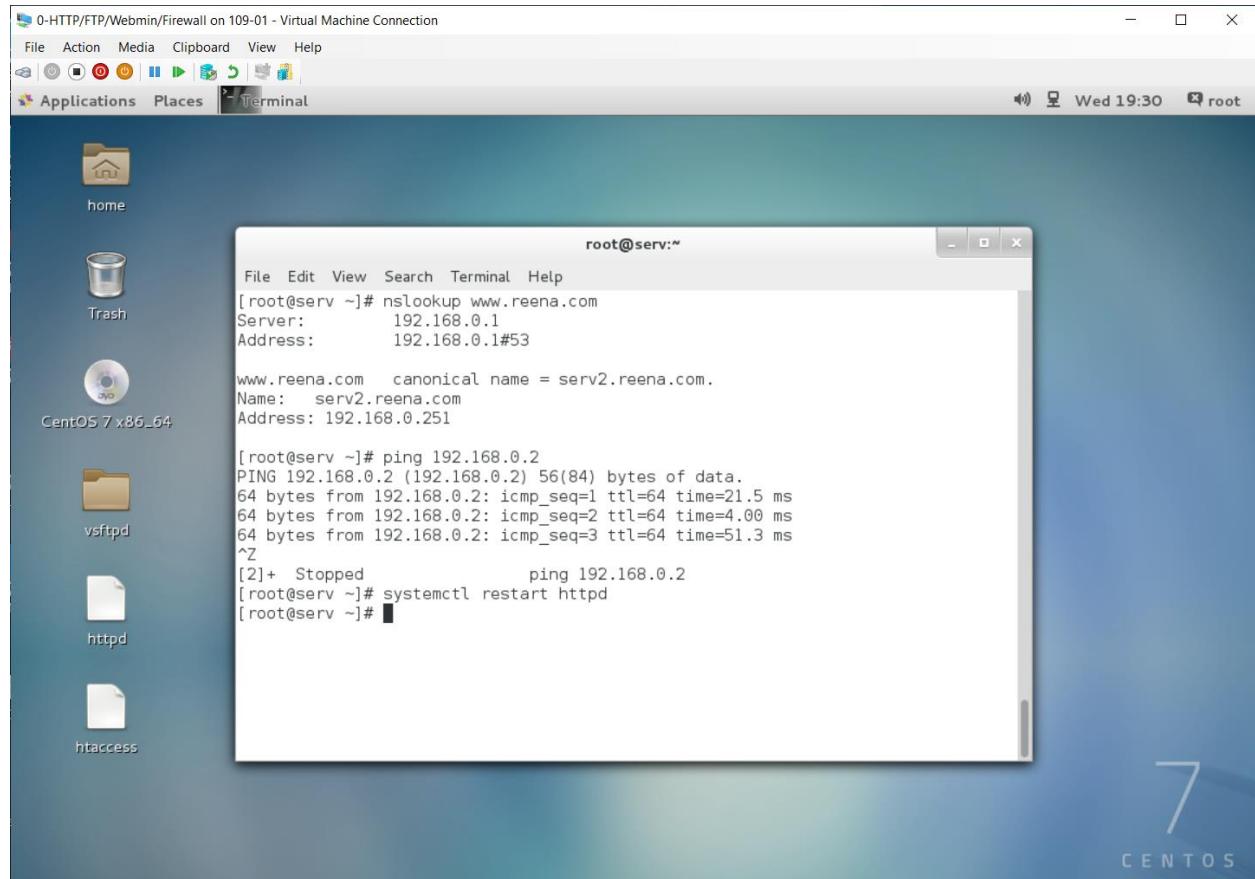


❖ Configurations of Web Server (www.reena.com)

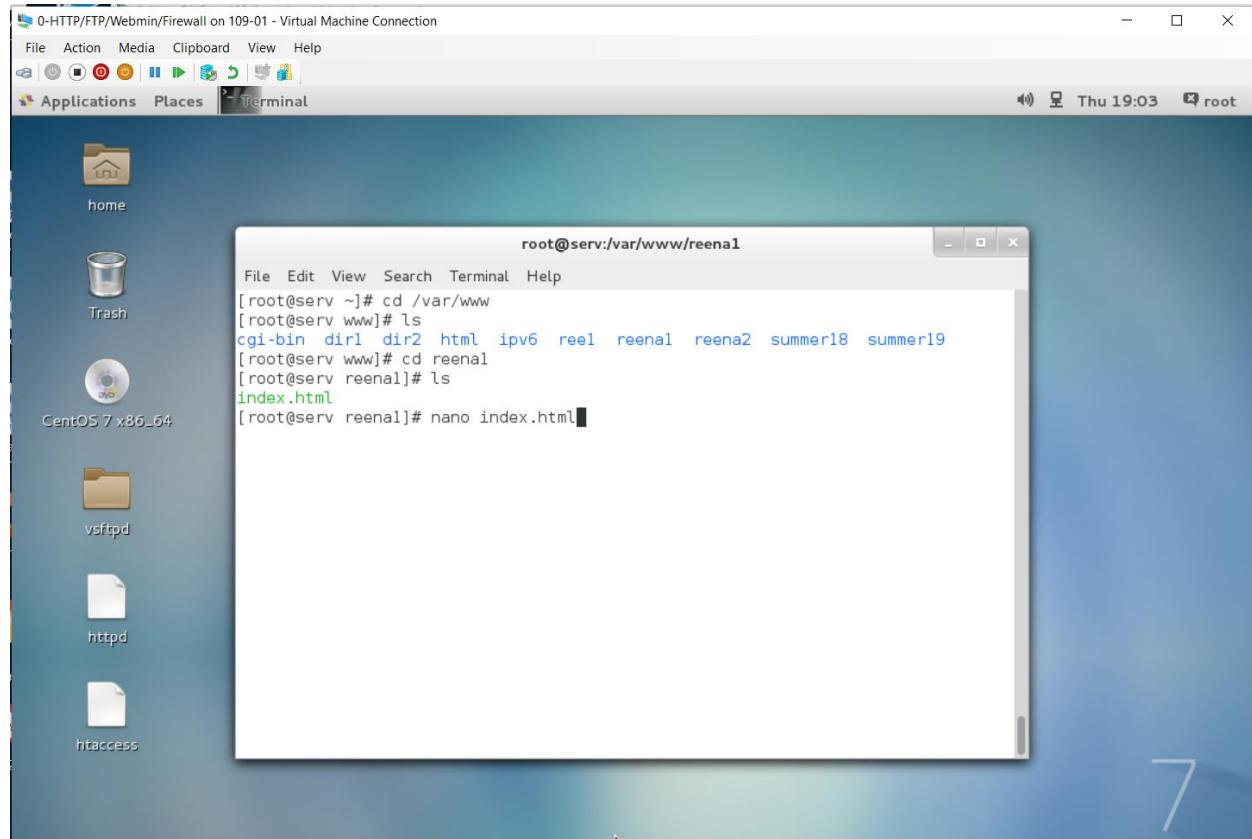
- Now, go to web server
- As we can see, Here I have added network adapter on internal 1



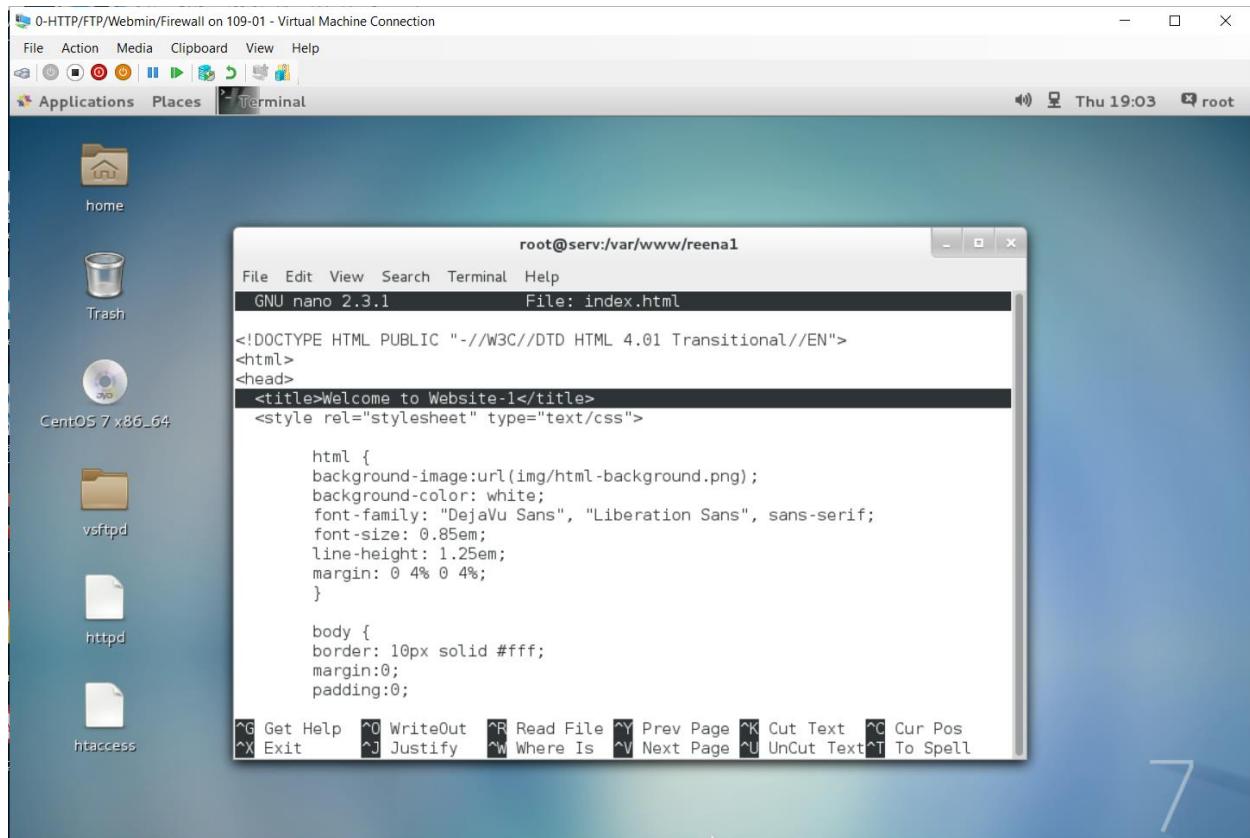
- Here, I am trying to ping Proxy server
- We can see that I can ping proxy server because both are on same network adapter.
- Now, I need to restart the httpd service.



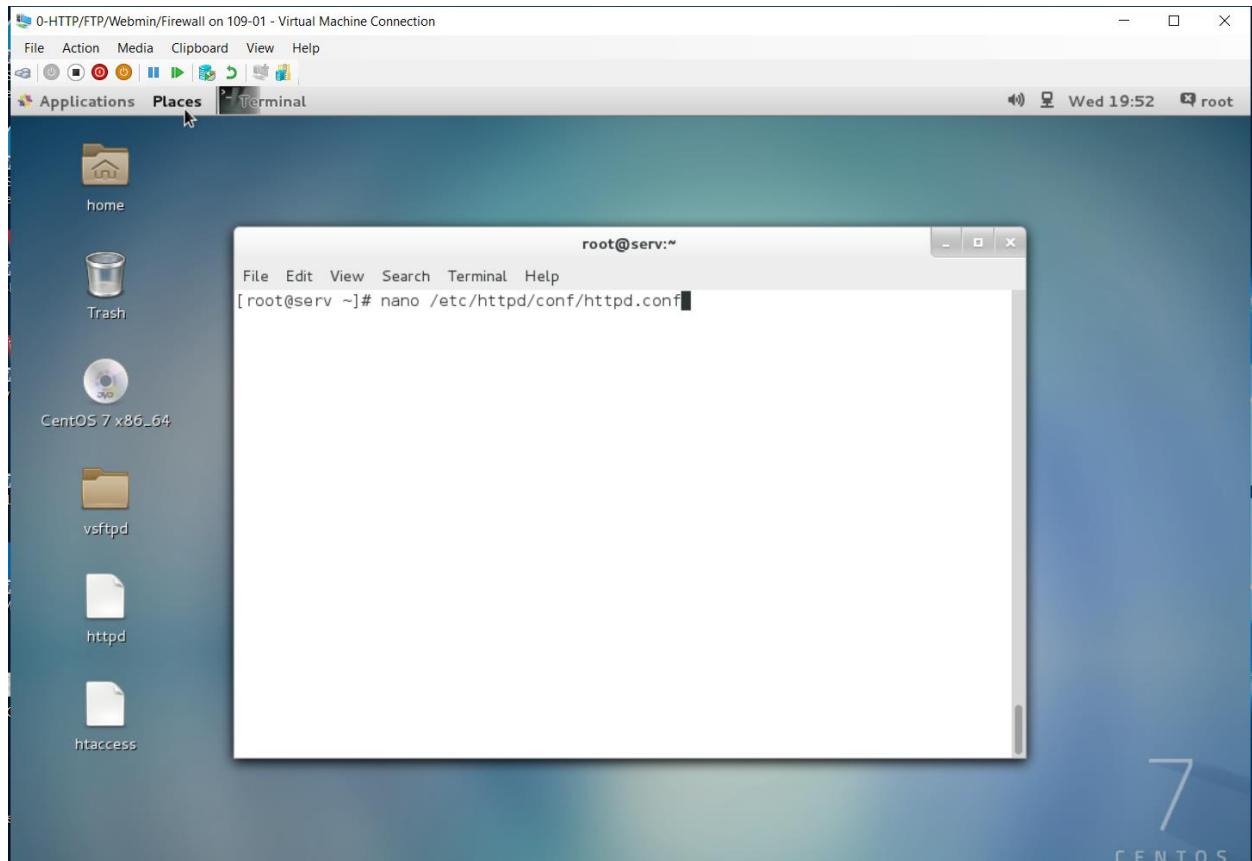
- Here, in cd /var/www, I have created directory reena1
- In reena1 I have html page of website www.reena.com



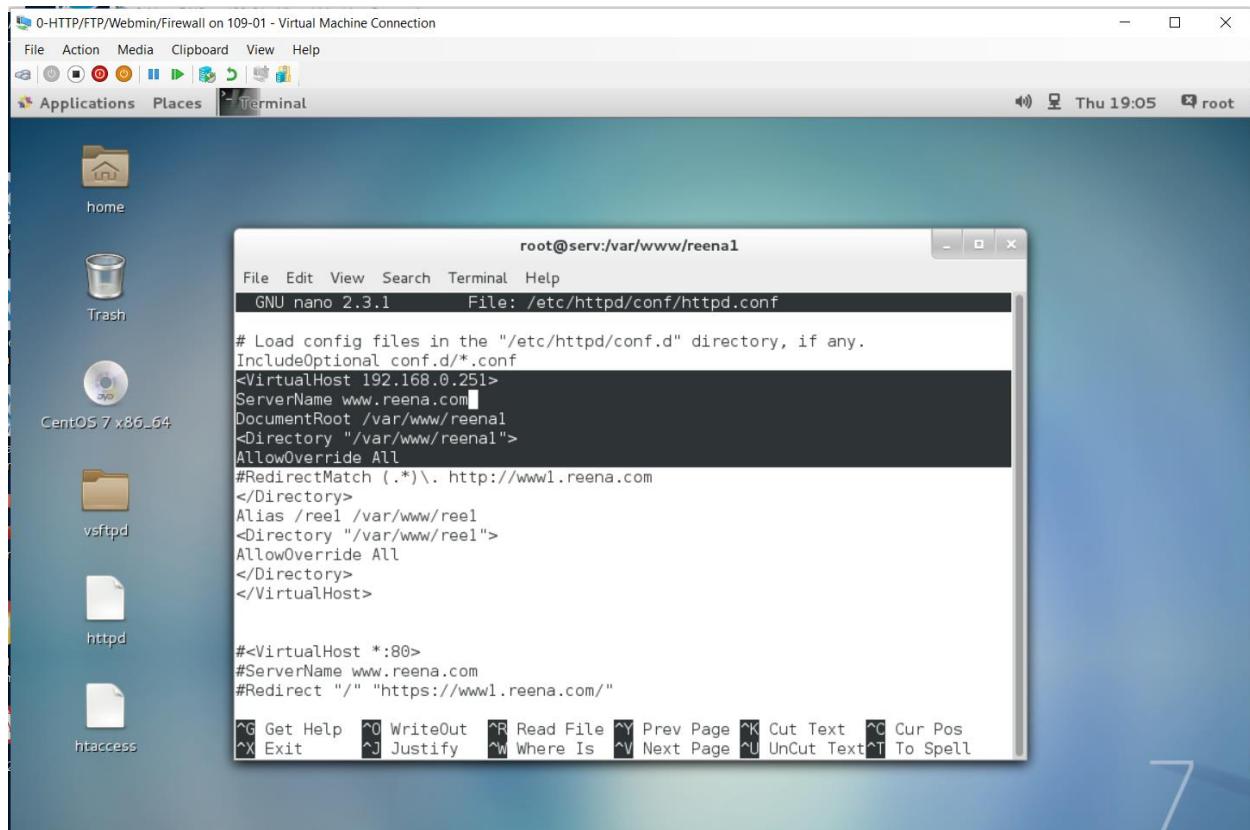
➤ Here, I am showing content of index.html file of www.reena.com



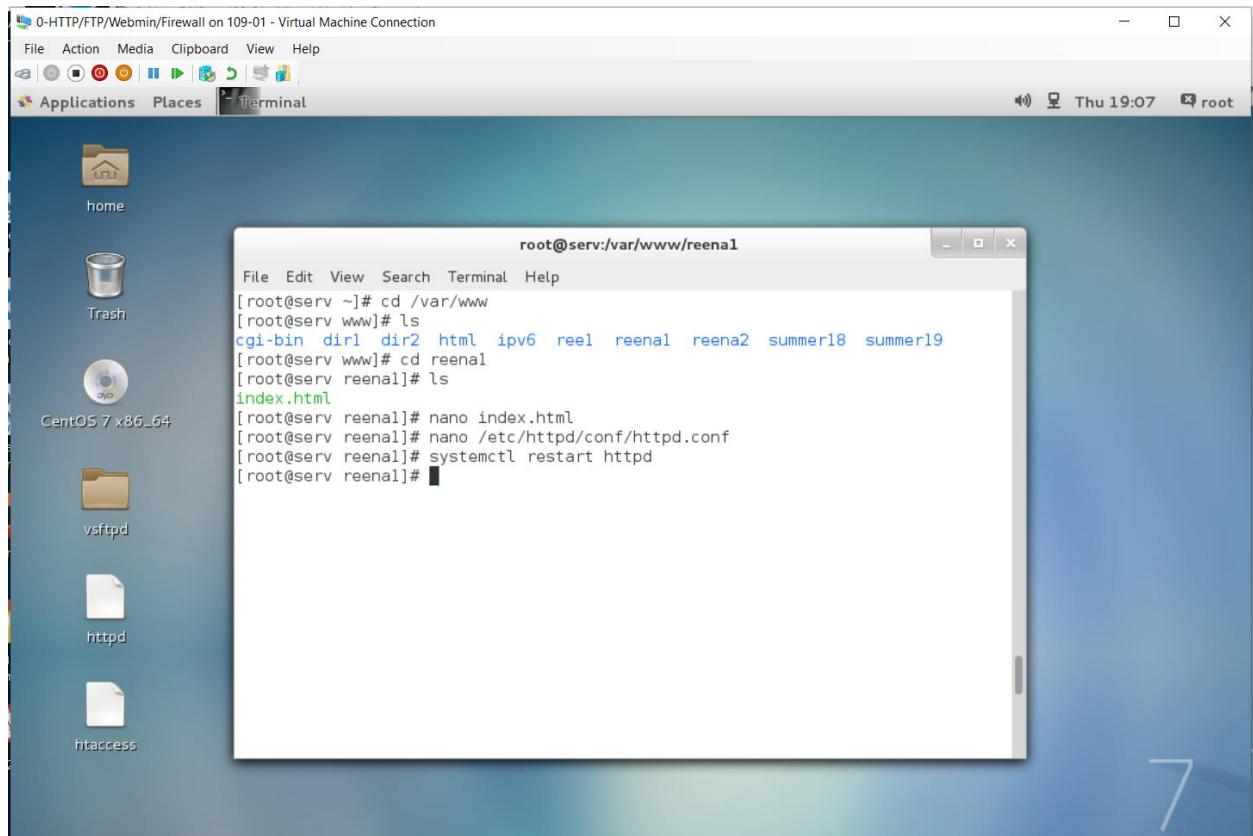
- Then, go to nano /etc/httpd/conf/httpd.conf



- Here, we can see the configurations of www.reena.com

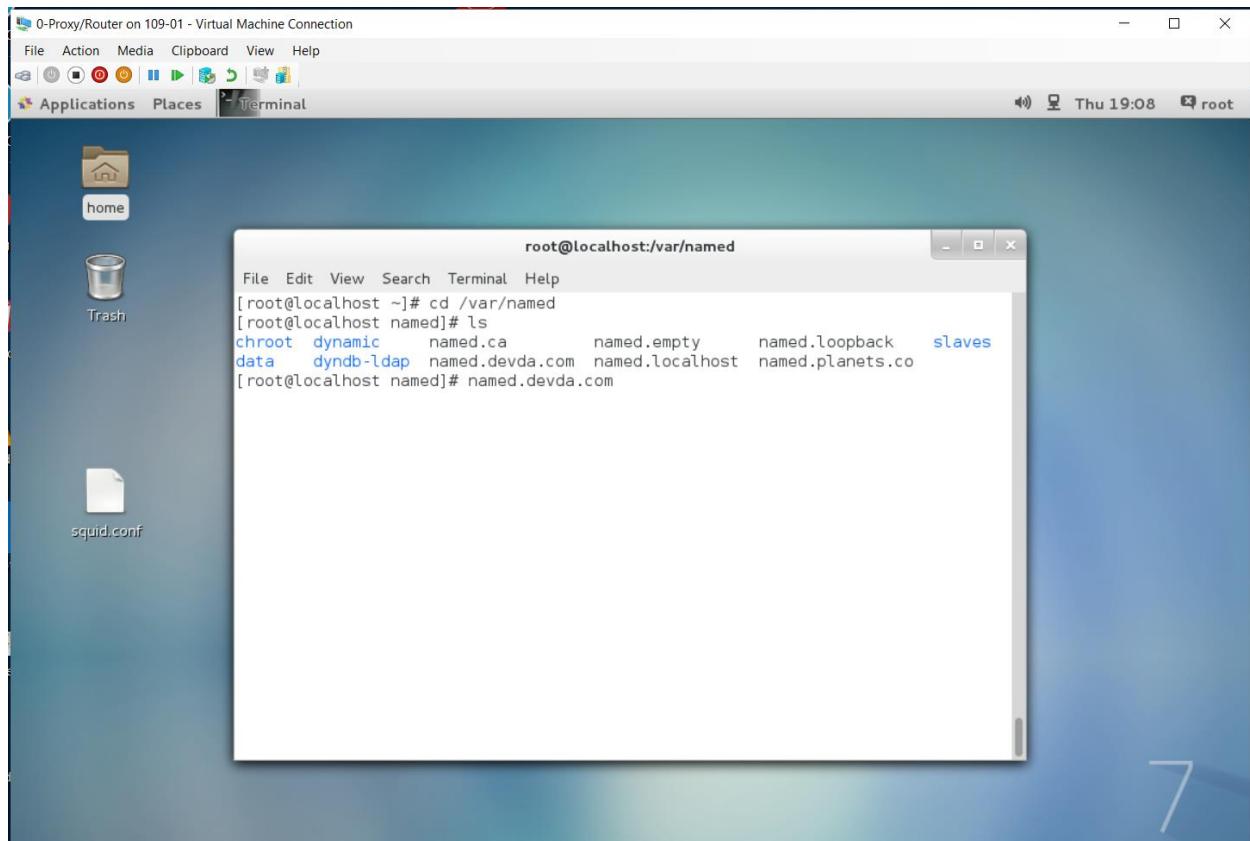


➤ Then restart httpd service.

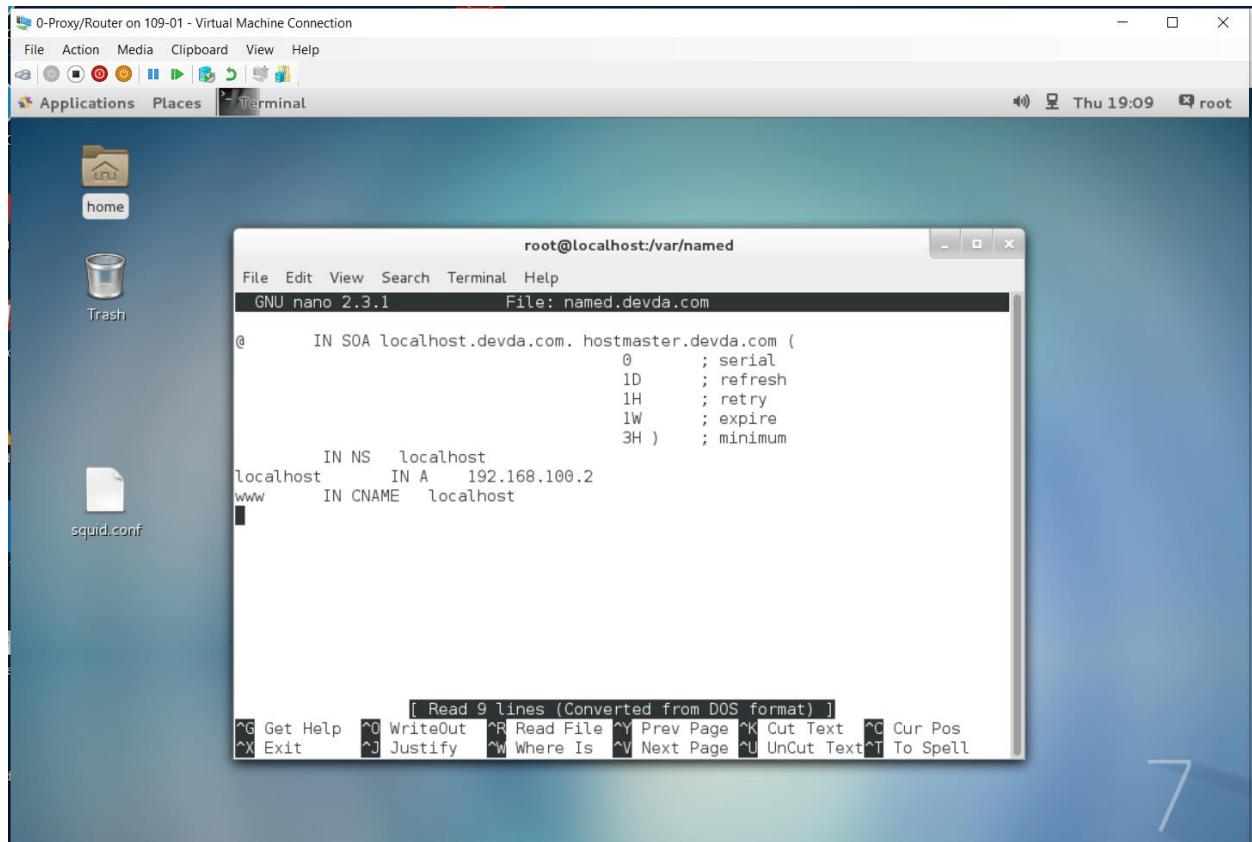


❖ Configurations of Proxy Server (www.devda.com)

- Now, I am going to Proxy Server, and creating new record for new website devda.com in named.devda.com

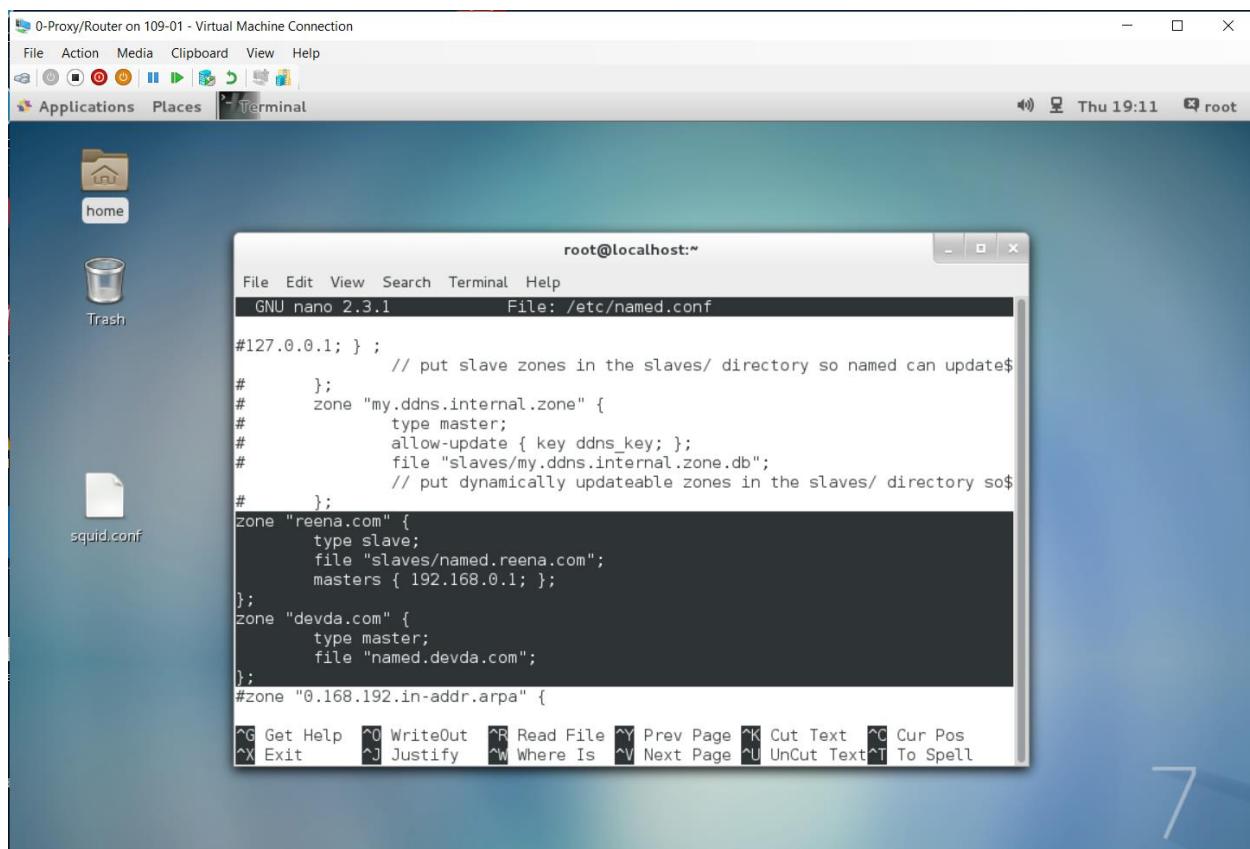


➤ Here, I am adding record for www.devda.com.

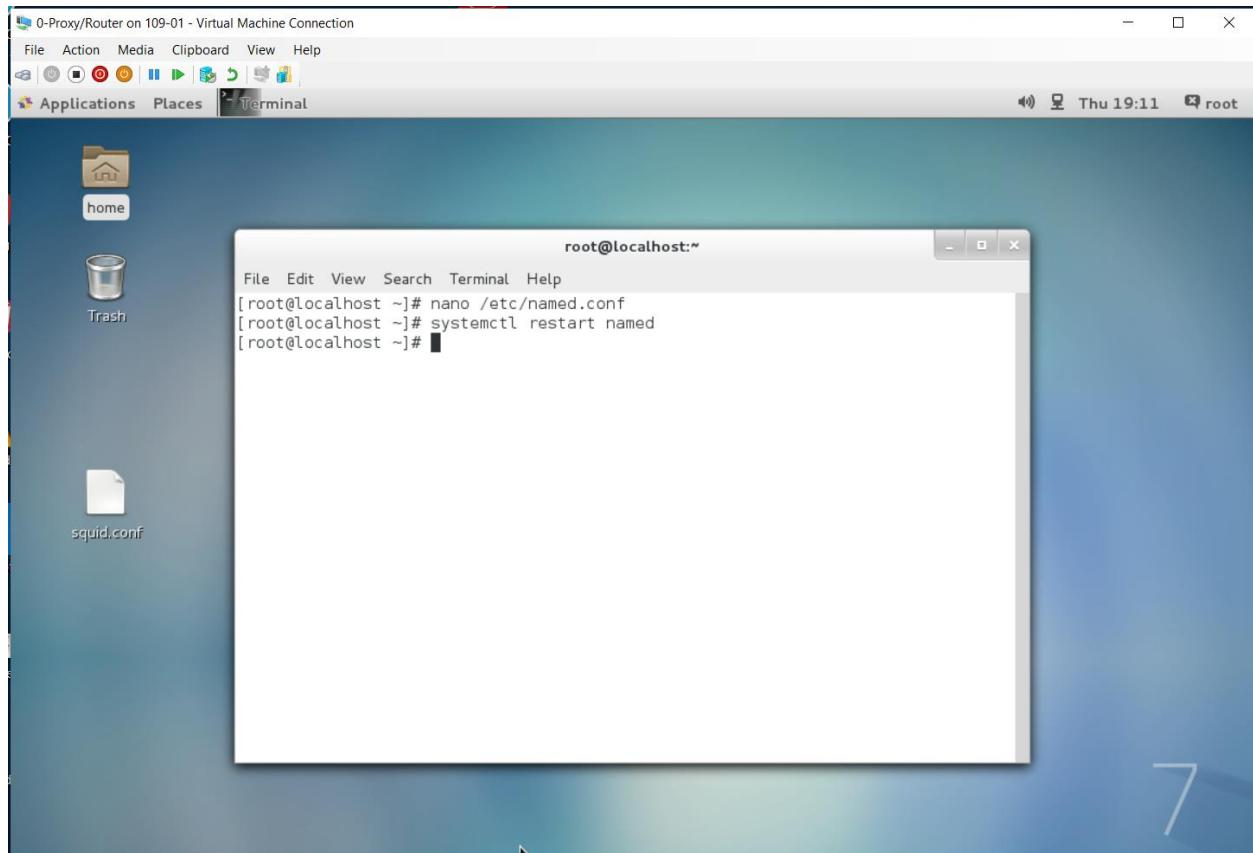


❖ Configurations of Slave On Proxy Server.

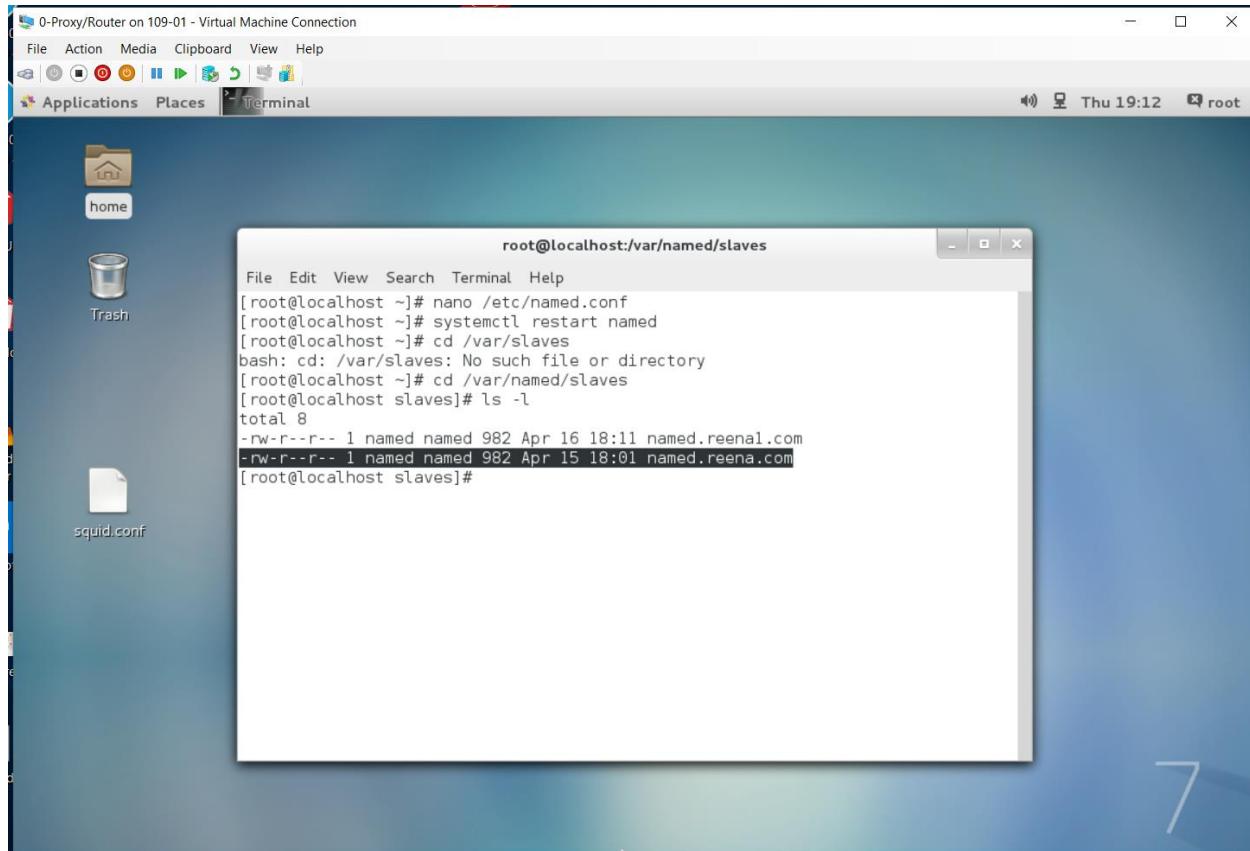
- Here, we need to make proxy server, a slave server for that, I have to do some configurations to make it slave of dns server on proxy server.
- Here on proxy server, go to named.conf it is in etc so go in etc directory then use nano named.conf command. inside that edit internal zone as shown below.
- I am also creating zone for named.devda.com.



- Then, restart named service (systemctl restart named)

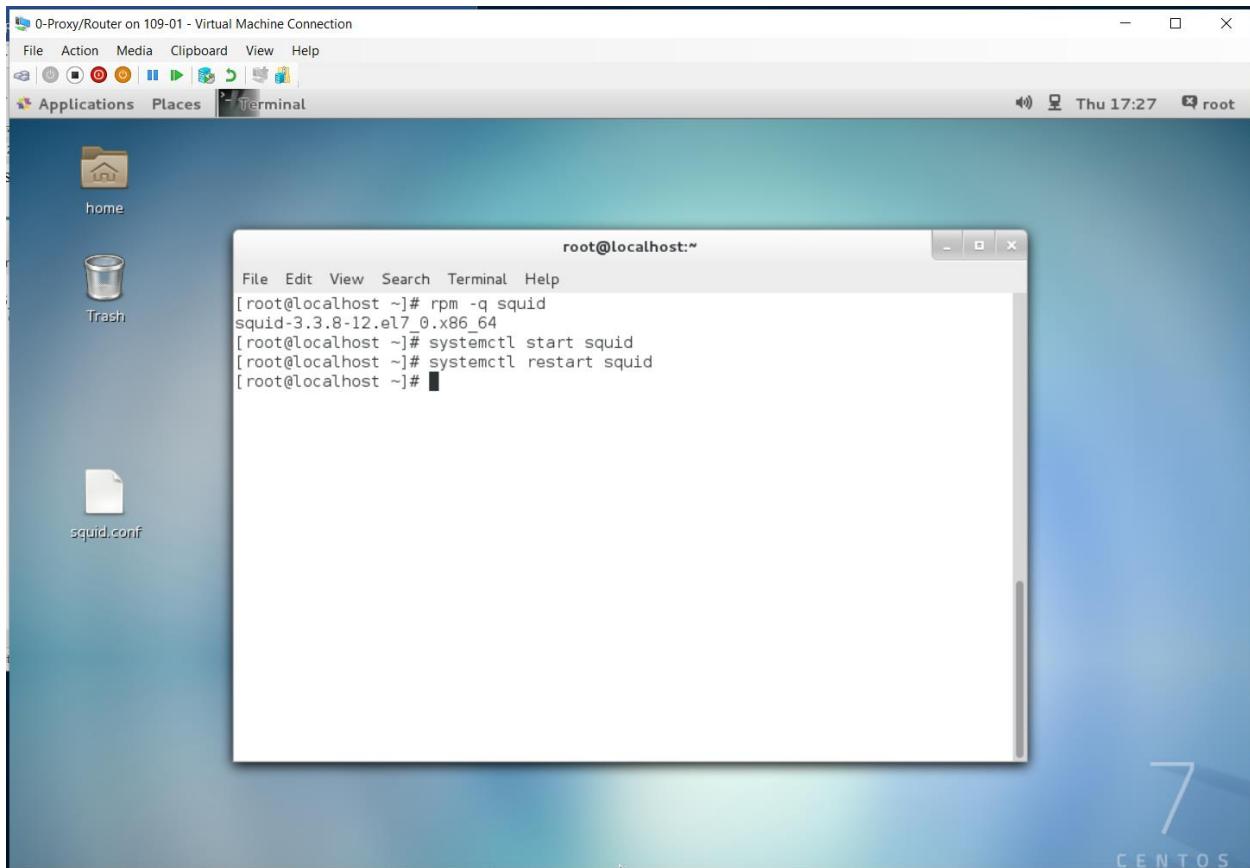


- Now, go to cd /var/named/slaves
- Then do ls -l
- Here we can see named.reena.com in slaves



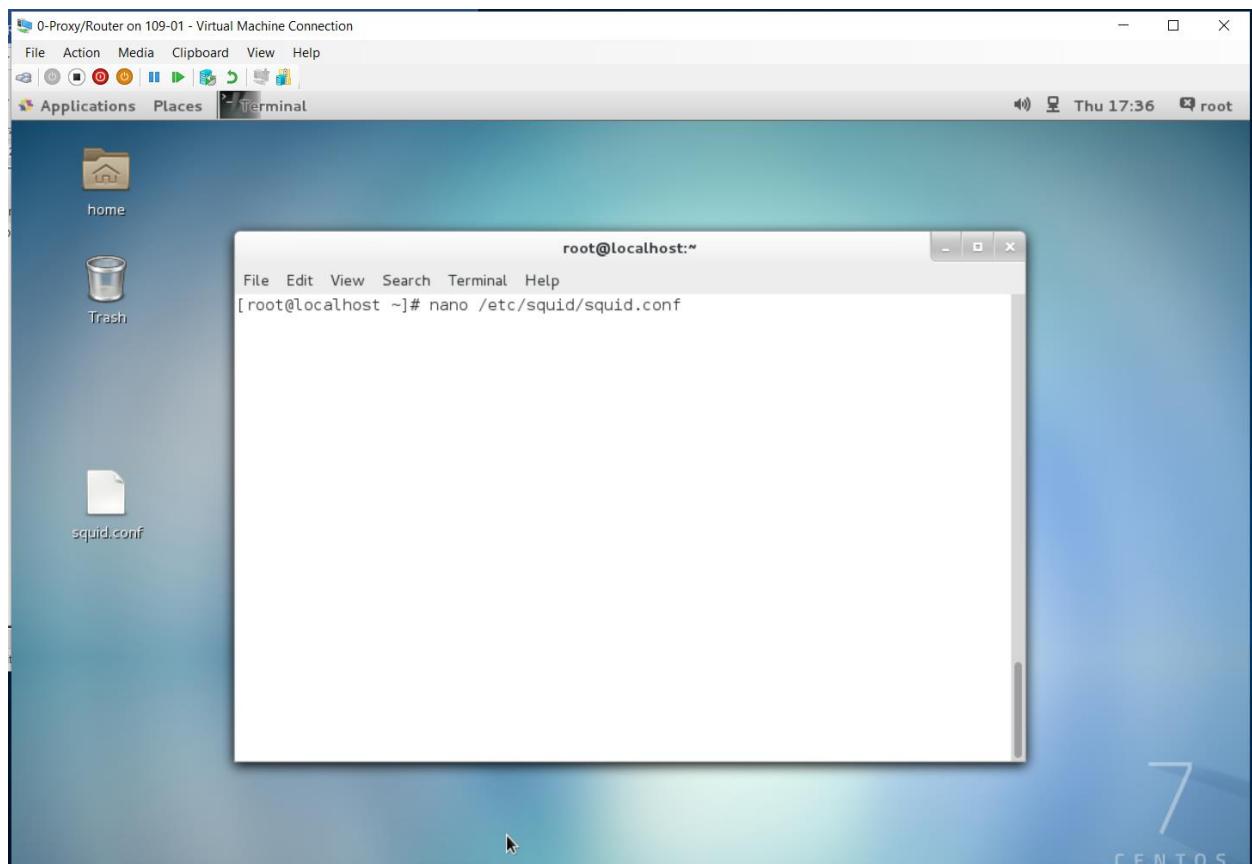
❖ Configurations of Squid (For Reverse Proxy Server).

- Now, On Proxy Server, we need to check that squid is installed or not if squid is not installed then we have to install it.
- But here we can see that squid is already installed.
- And then start the service

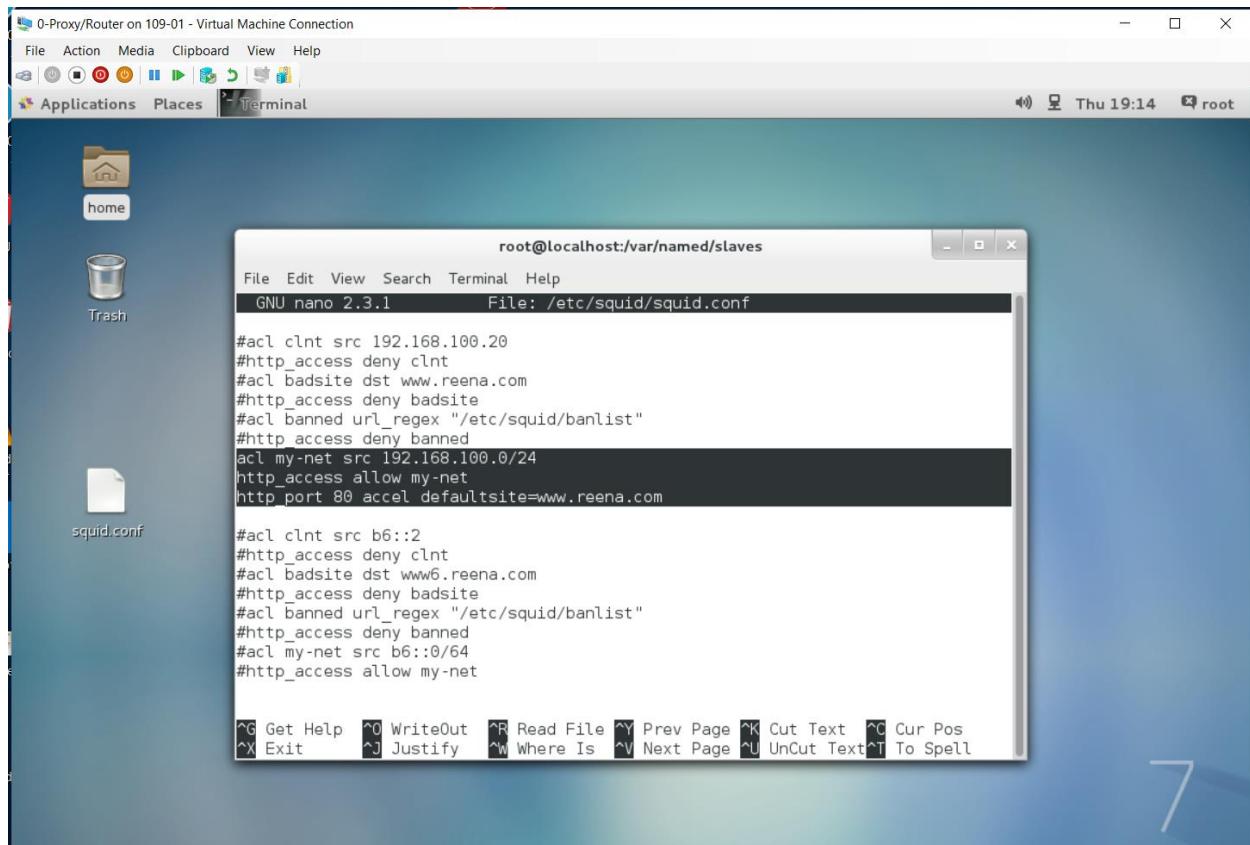


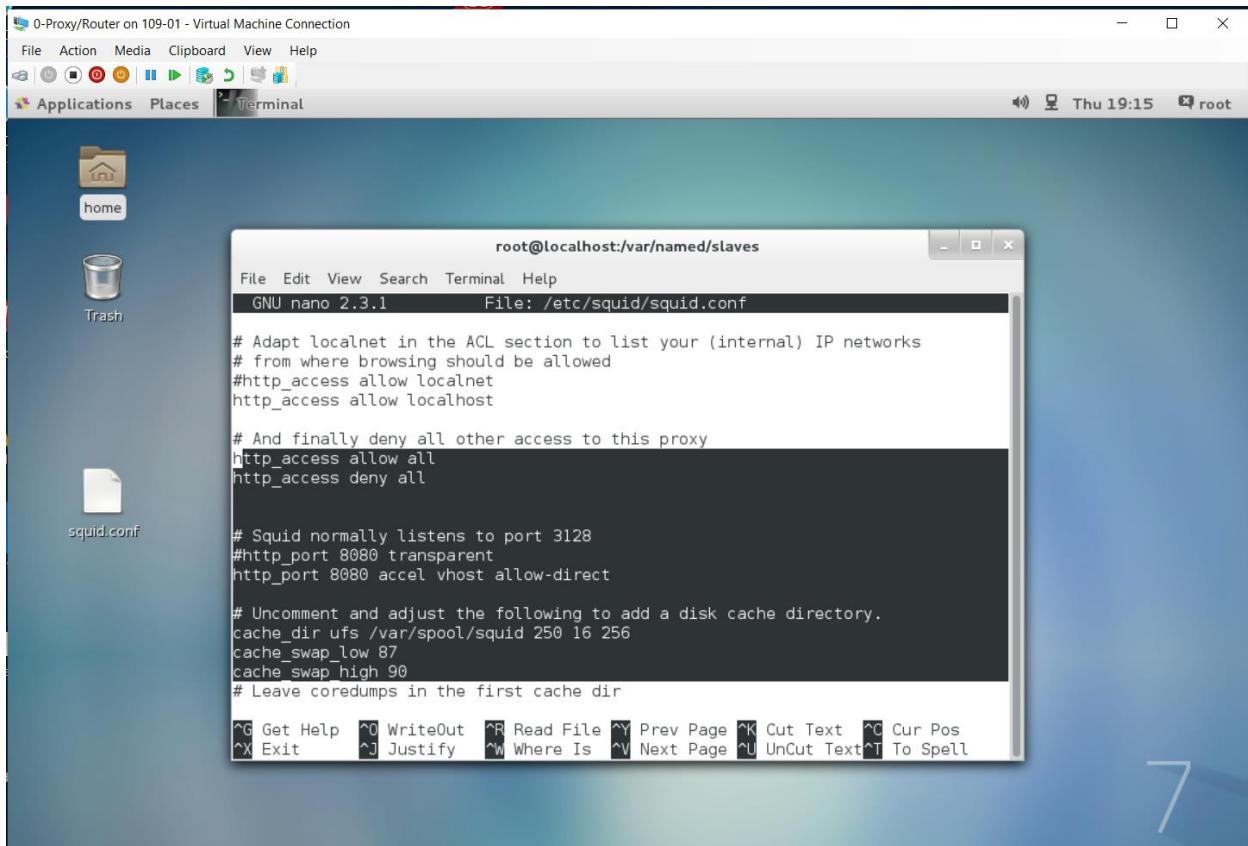
- Here, on proxy server we also need to add ip address of DNS in resolv.conf file by using command: nano /etc/resolv.conf so, we can access the web site from web server.

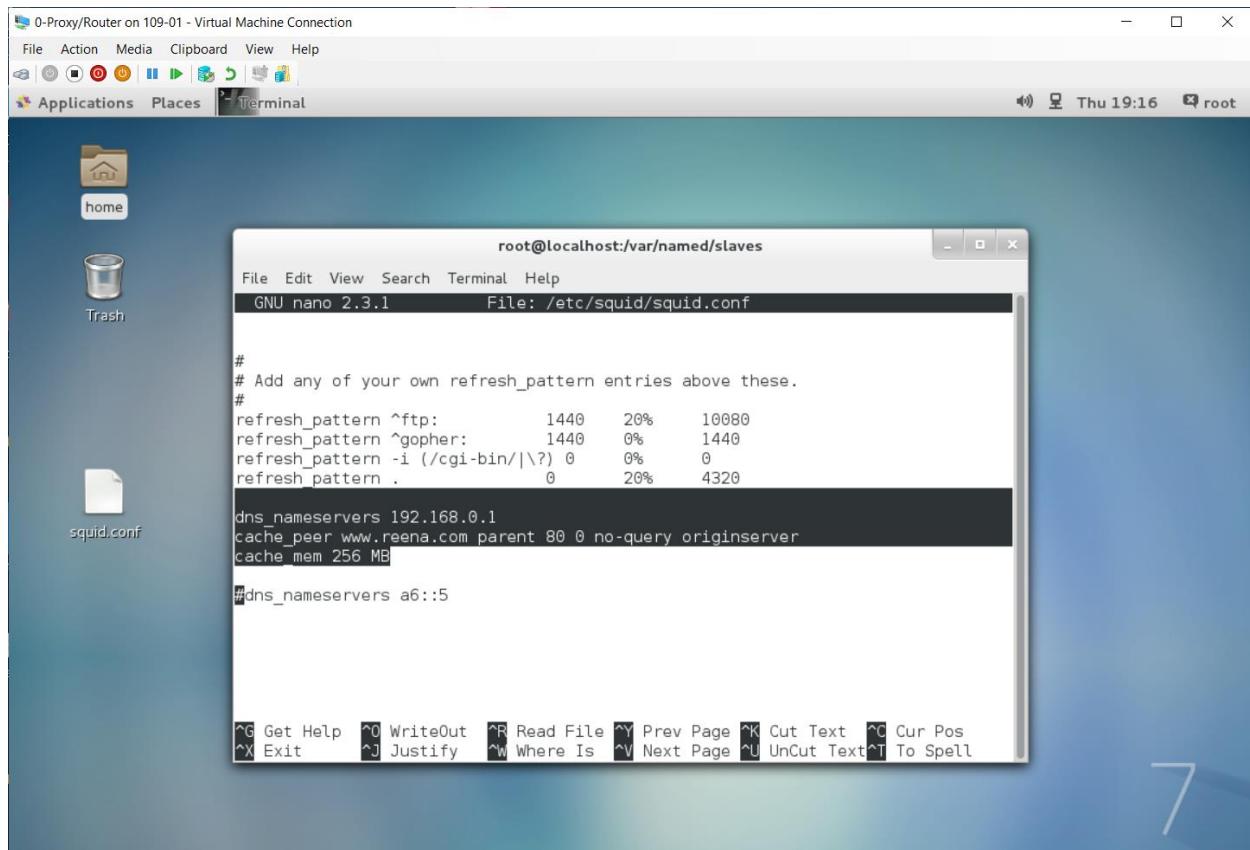
➤ Now, open squid.conf by using command: nano /etc/squid/squid.conf



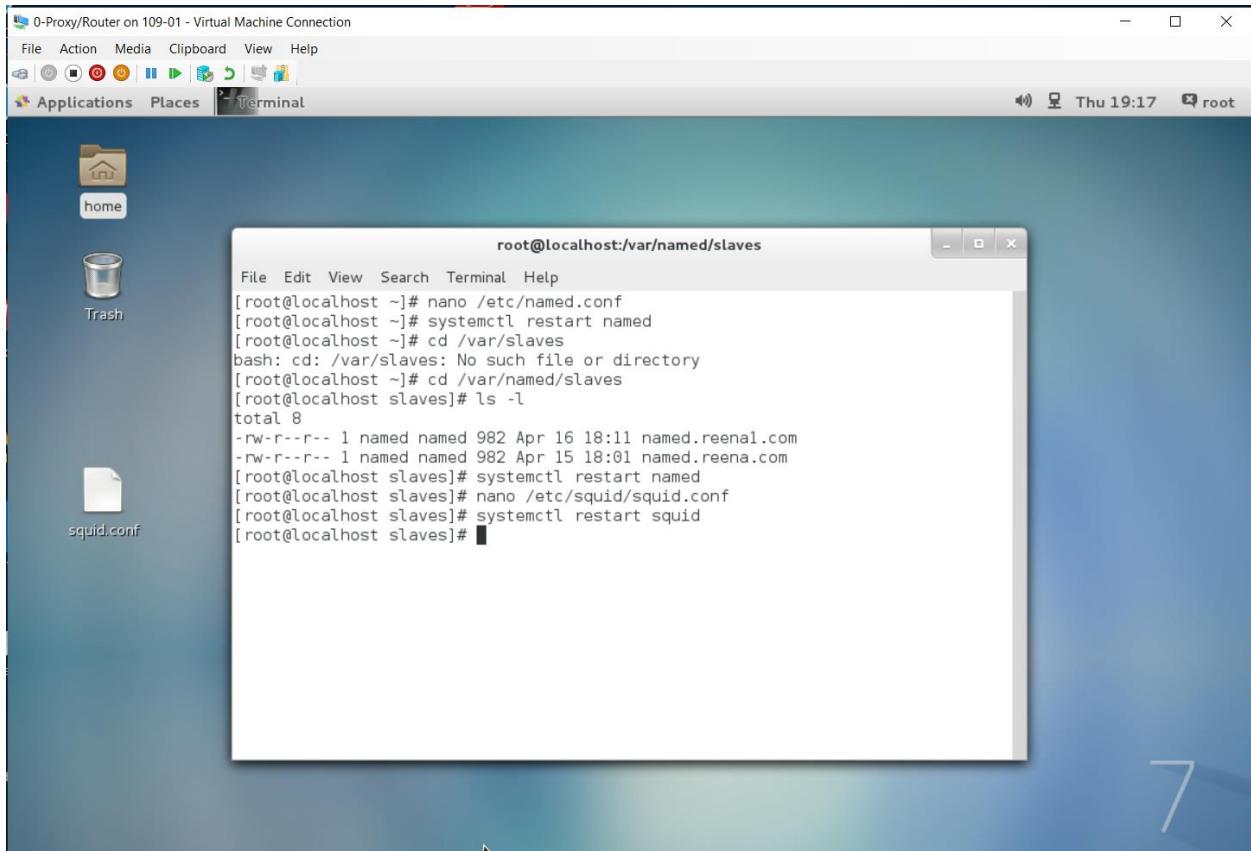
- Here we need to edit squid.conf file and also need to do some configurations to create reverse proxy.





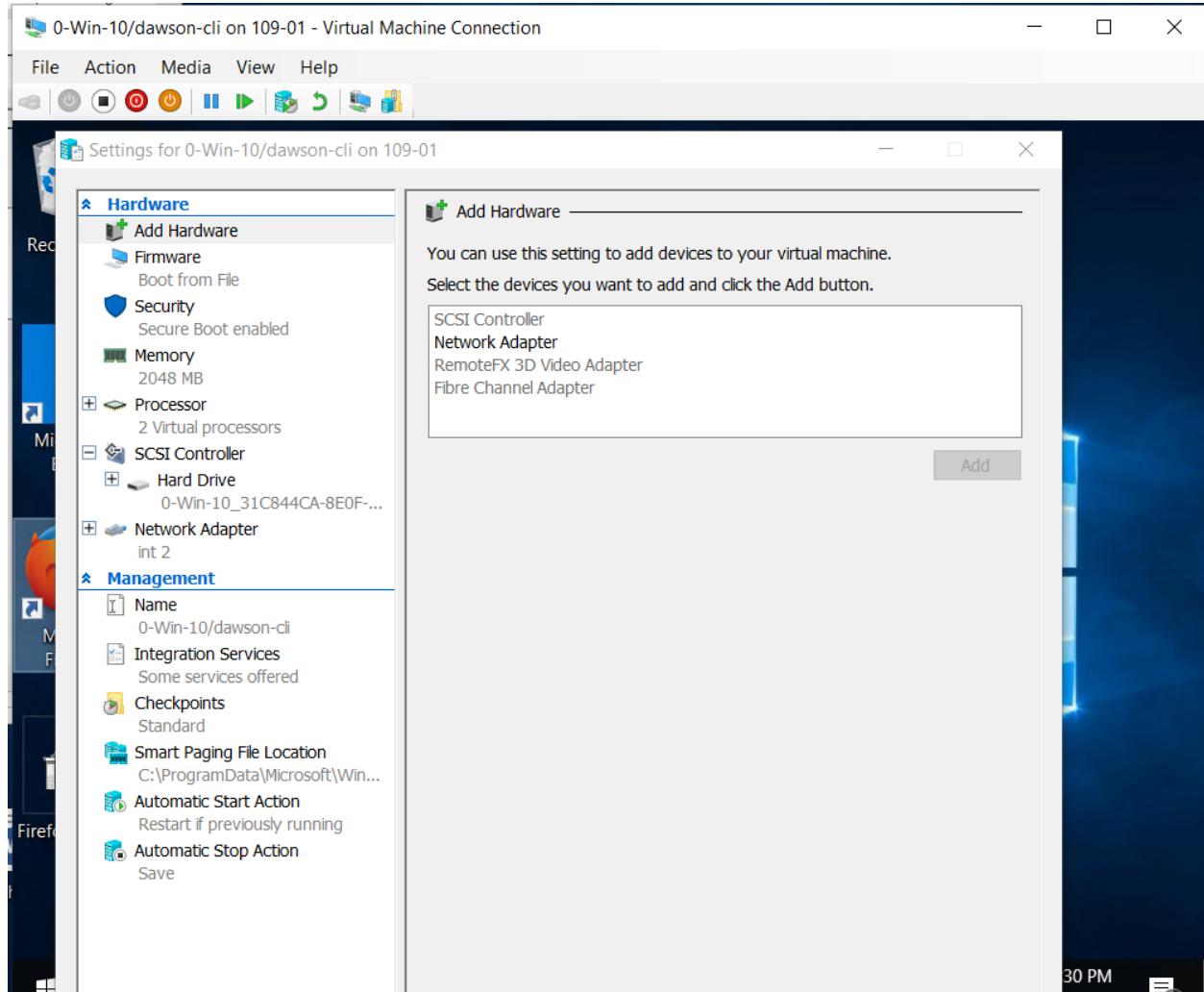


- And then start the squid service



❖ Configurations of Client Machine.

- Now, go to client machine
- Here, we can see that I have set network adapter on int 2



- Here on client, I am trying to ping proxy server
- We can see that client can ping proxy server successfully because both are on same network adapter.
- But it cannot ping web server

```

0-Win-10/dawson-cli on 109-01 - Virtual Machine Connection
File Action Media View Help
Network Connections
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.17134.112]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>ping 192.168.100.2

Pinging 192.168.100.2 with 32 bytes of data:
Reply from 192.168.100.2: bytes=32 time=1ms TTL=64
Reply from 192.168.100.2: bytes=32 time=1ms TTL=64
Reply from 192.168.100.2: bytes=32 time<1ms TTL=64
Reply from 192.168.100.2: bytes=32 time=2ms TTL=64

Ping statistics for 192.168.100.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\Users\Administrator>ping 192.168.0.251

Pinging 192.168.0.251 with 32 bytes of data:
PING: transmit failed. General failure.

Ping statistics for 192.168.0.251:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\Administrator>
C:\Users\Administrator>
1 item 1 item selected

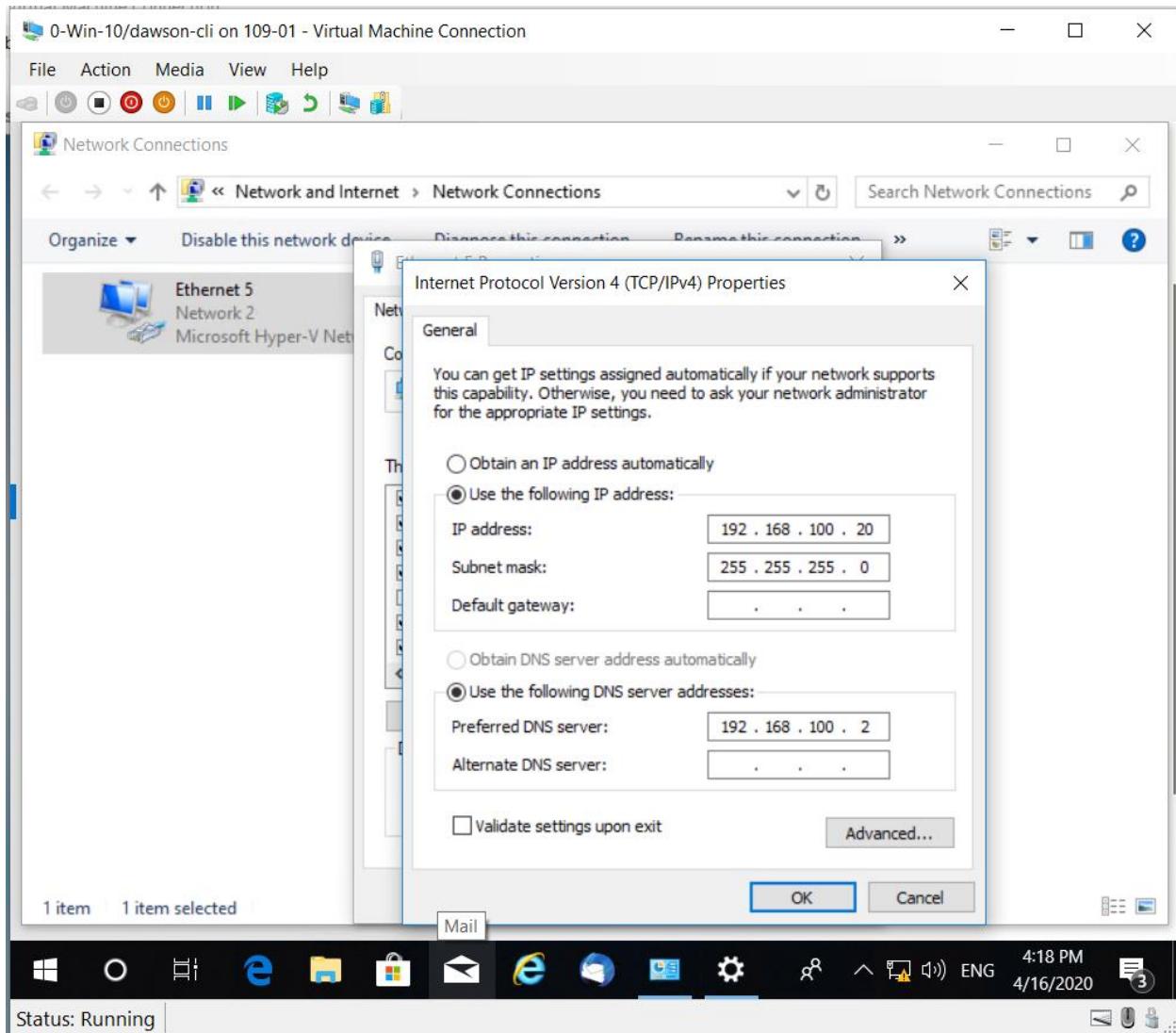
```

Windows Taskbar:

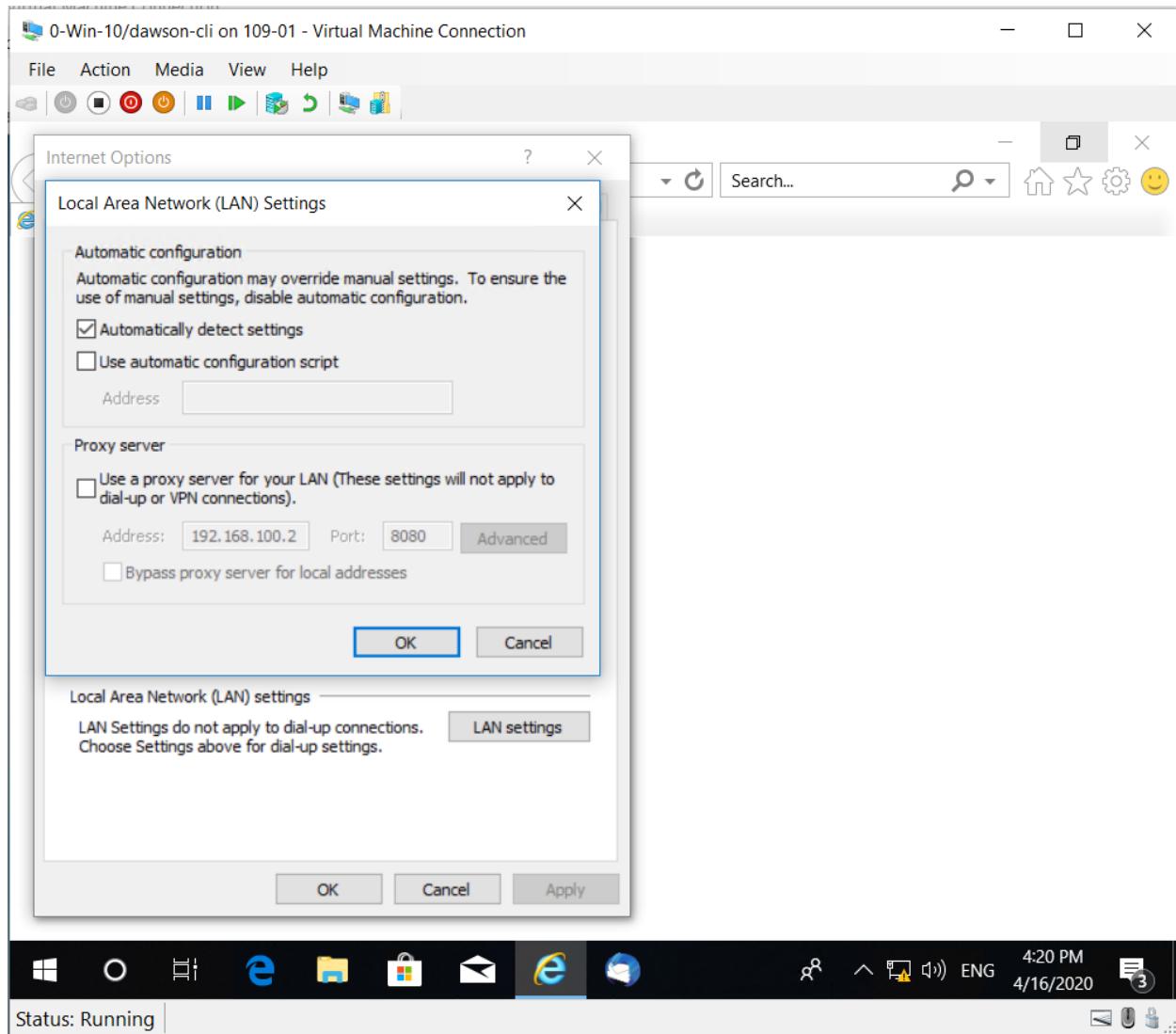
- Start button
- Search icon
- File Explorer icon
- OneDrive icon
- Mail icon
- Edge browser icon
- File Explorer icon
- Task View icon
- Settings icon
- Power icon
- Network icon
- Volume icon
- Screen resolution icon
- Language icon: ENG
- Date and time: 4:18 PM 4/16/2020
- Notification area icons: battery, signal strength, etc.

Status bar: Status: Running

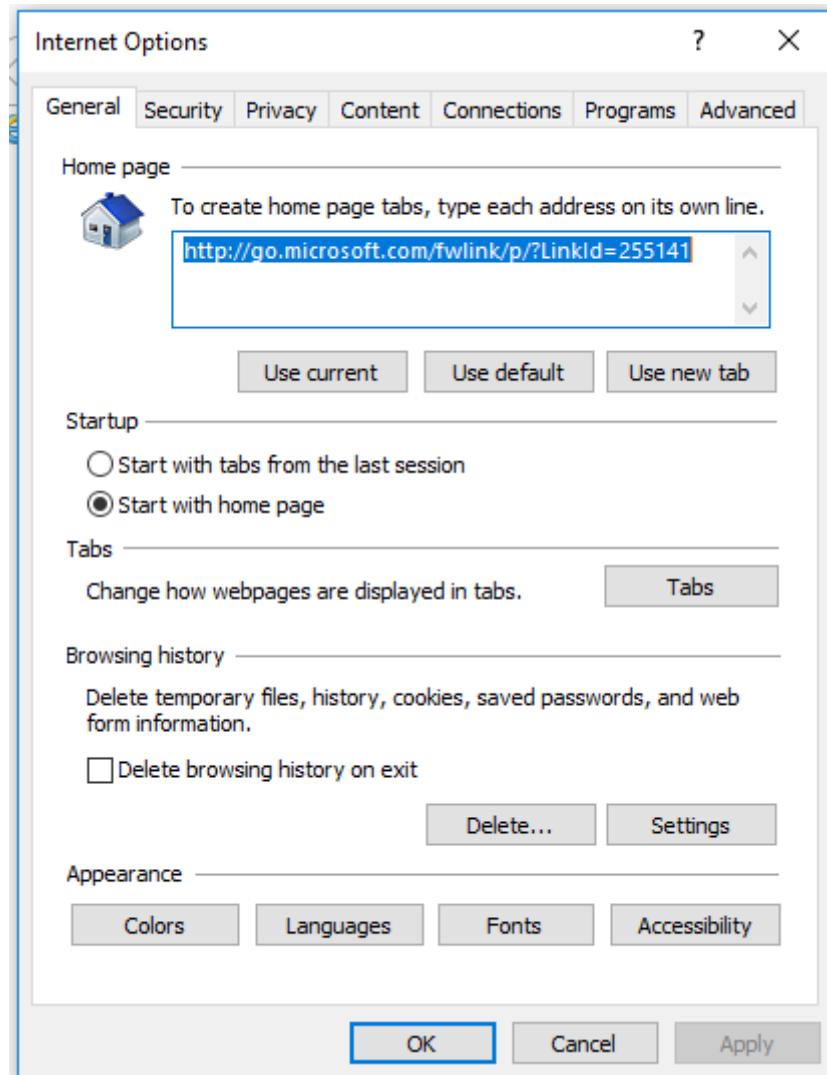
- Here, we can see the configurations of client machine.



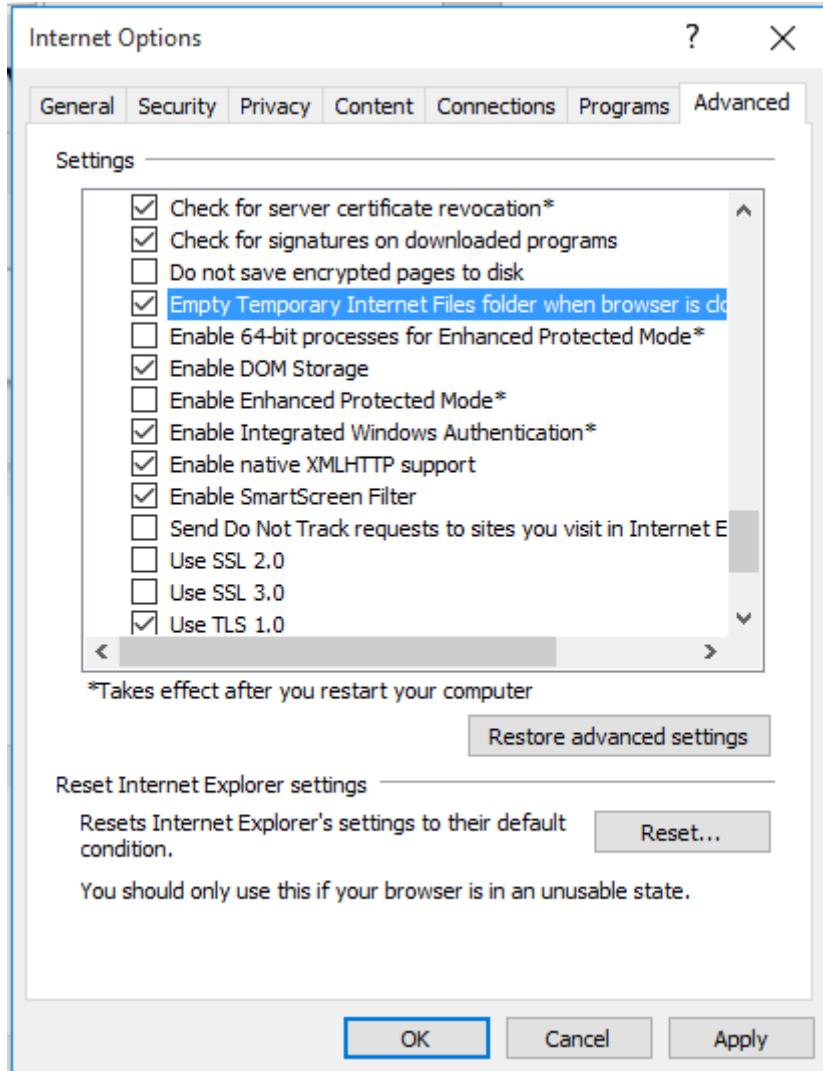
- Open internet explorer to check that lan settings is disable.



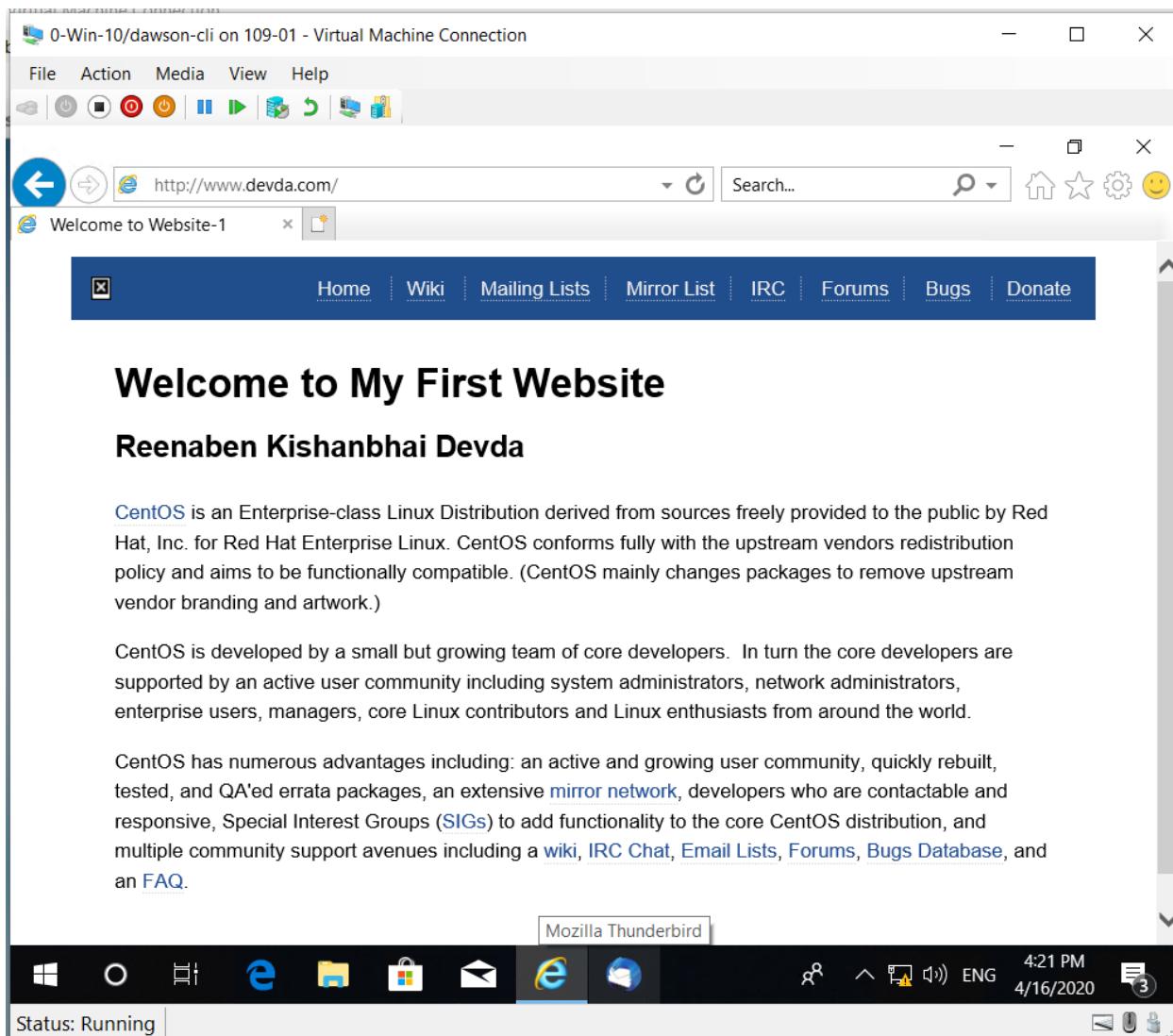
- To clear the cache
- Go to Tools → Internet Options → General → Delete.



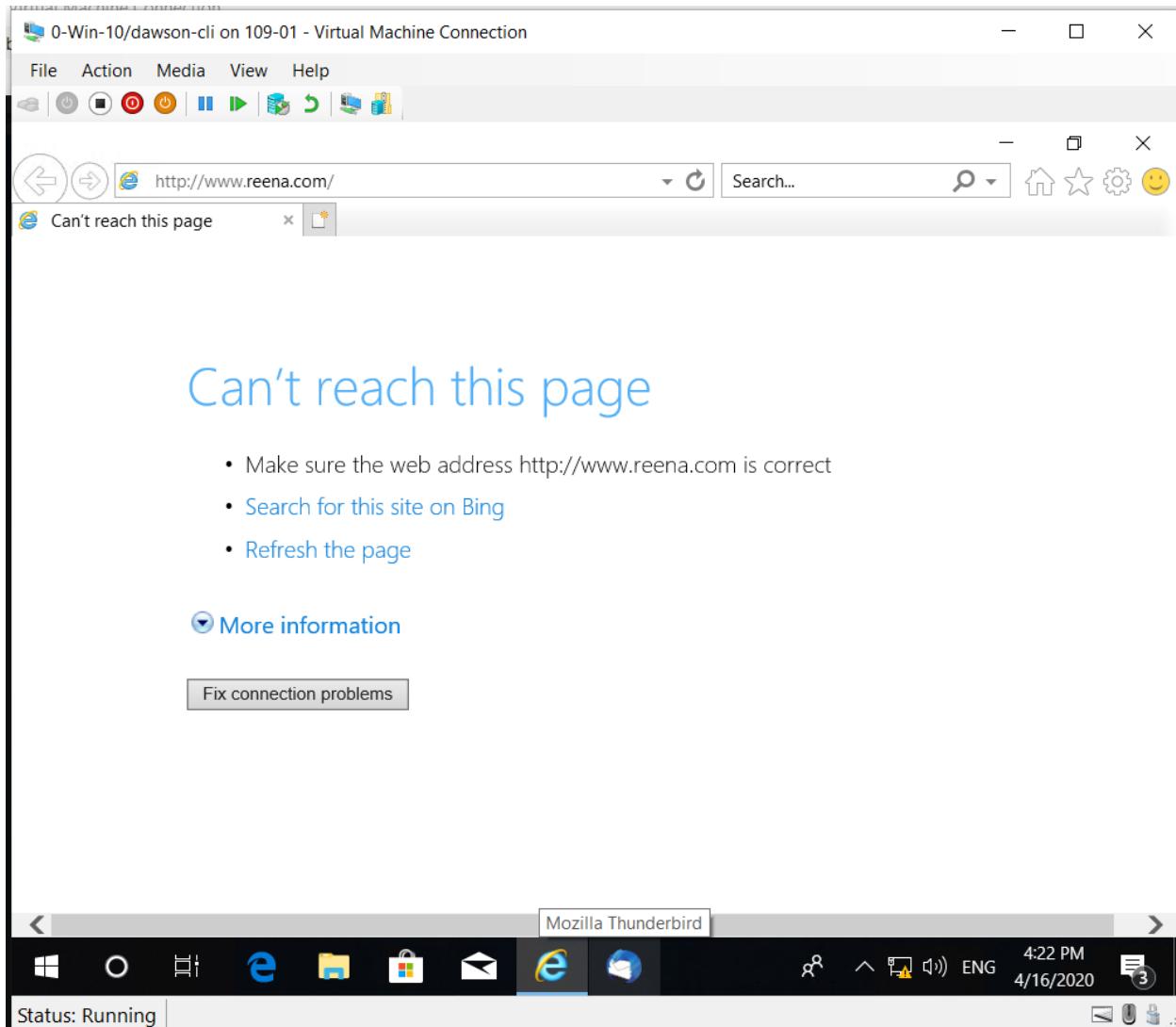
- Or, go to Advance Tab → Mark On Empty Temporary Internet Files Folder
When browser is closed → Apply → Ok.



➤ Now open the web site www.devda.com



➤ Now open the web site www.reena.com



➤ Here, we can see that I can access the web server www.reena.com via proxy server www.devda.com but I cannot access web server www.reena.com directly because client doesn't know about the web server it is connecting to.

Reference: https://www.server-world.info/en/note?os=CentOS_7&p=squid&f=4