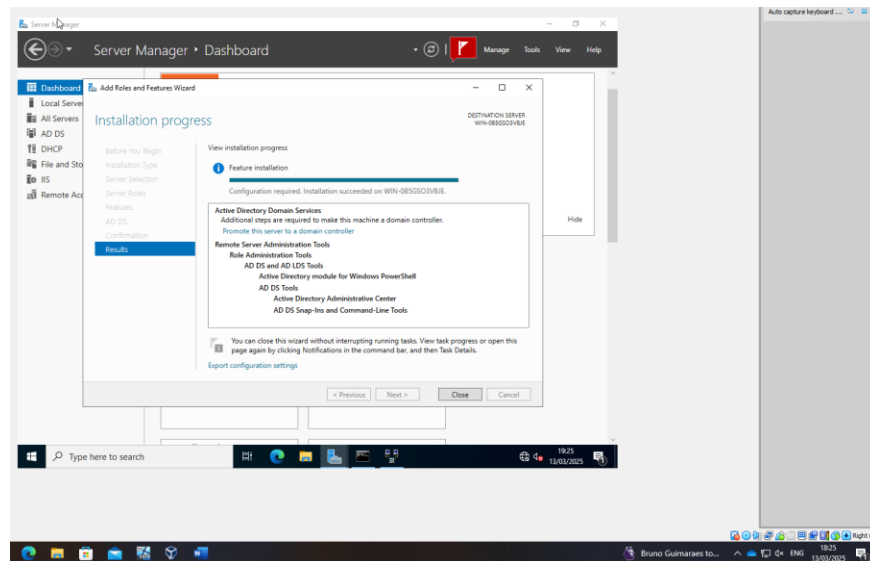


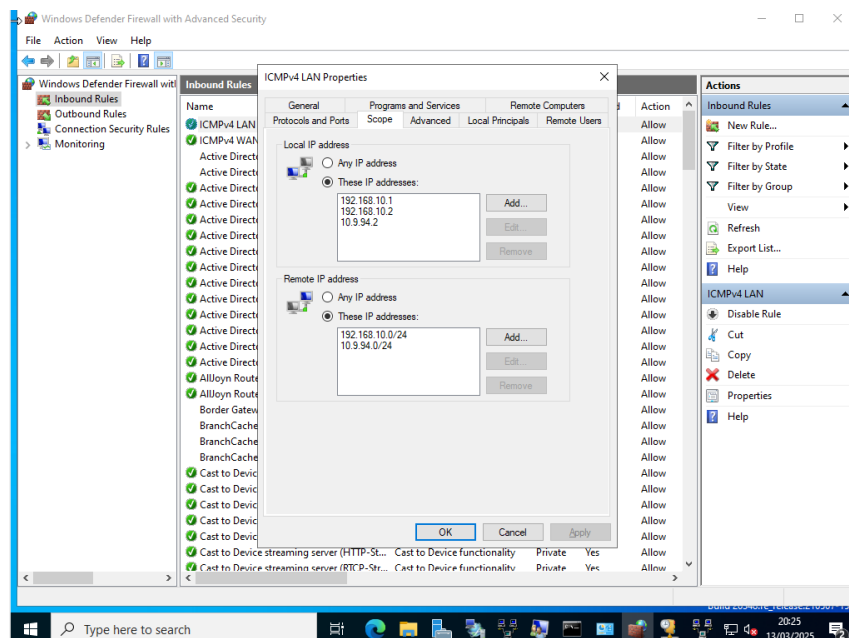
Network Operating Systems and Services – Coursework 2

(Thomas QIAN, 2422983)

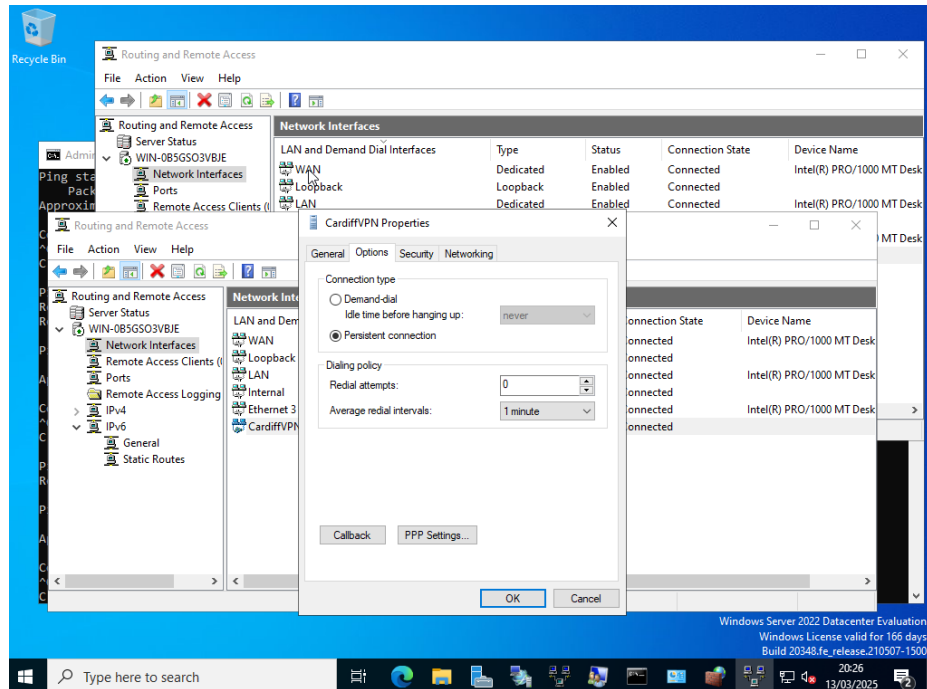
ADDS Installation



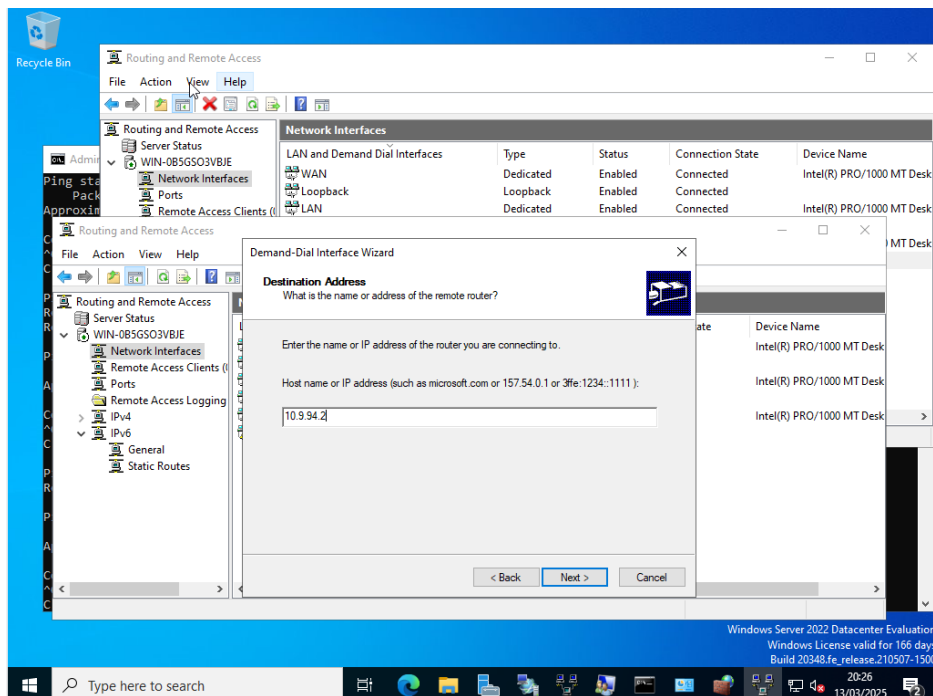
Allowing ping from remote of Cardiff LAN



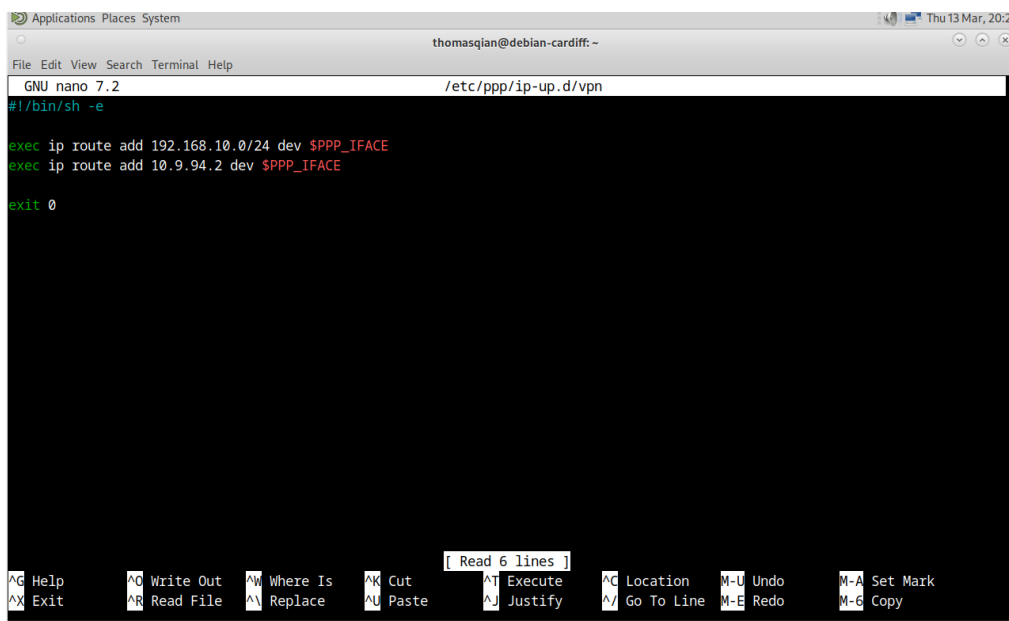
VPN creation Interface (Persistent Connection allowed)



Creating Dial in VPN Interface



Static Route for Swansea LAN in Debian



The screenshot shows a terminal window titled 'thomasqian@debian-cardiff: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal is running GNU nano 7.2 editing the file '/etc/ppp/ip-up.d/vpn'. The content of the file is as follows:

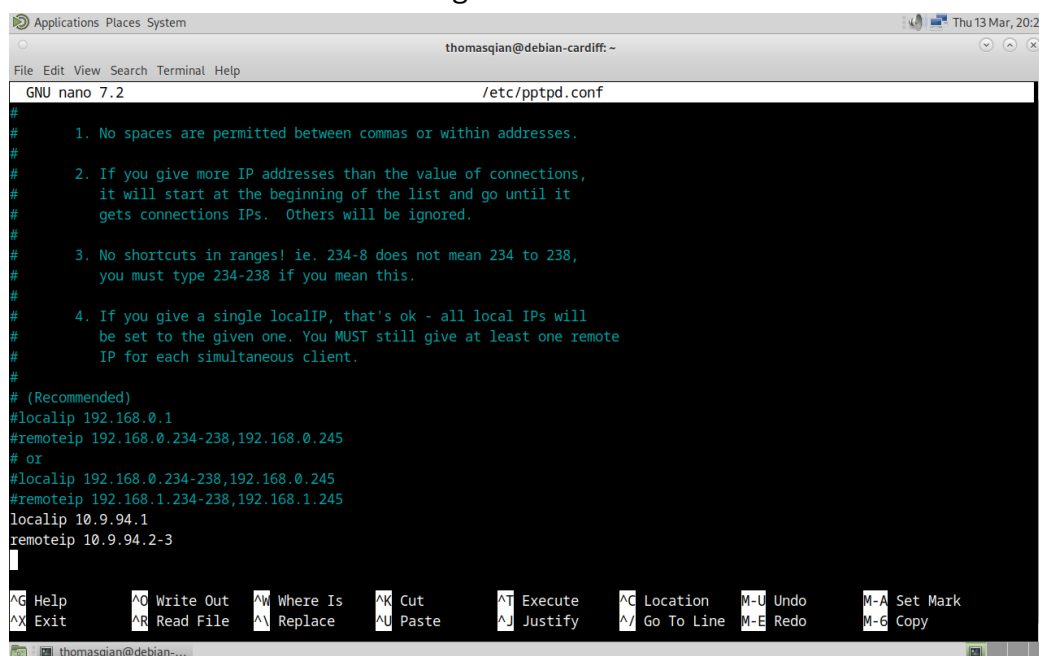
```
#!/bin/sh -e

exec ip route add 192.168.10.0/24 dev $PPP_IFACE
exec ip route add 10.9.94.2 dev $PPP_IFACE

exit 0
```

At the bottom of the terminal, there is a status bar with various keyboard shortcuts: ^G Help, ^X Exit, ^O Write Out, ^R Read File, ^W Where Is, ^N Replace, ^K Cut, ^U Paste, ^T Execute, ^J Justify, ^C Location, ^_ Go To Line, M-U Undo, M-E Redo, M-A Set Mark, M-G Copy. A tooltip '[Read 6 lines]' is visible over the status bar.

PPTPD Configuration for Debian VPN

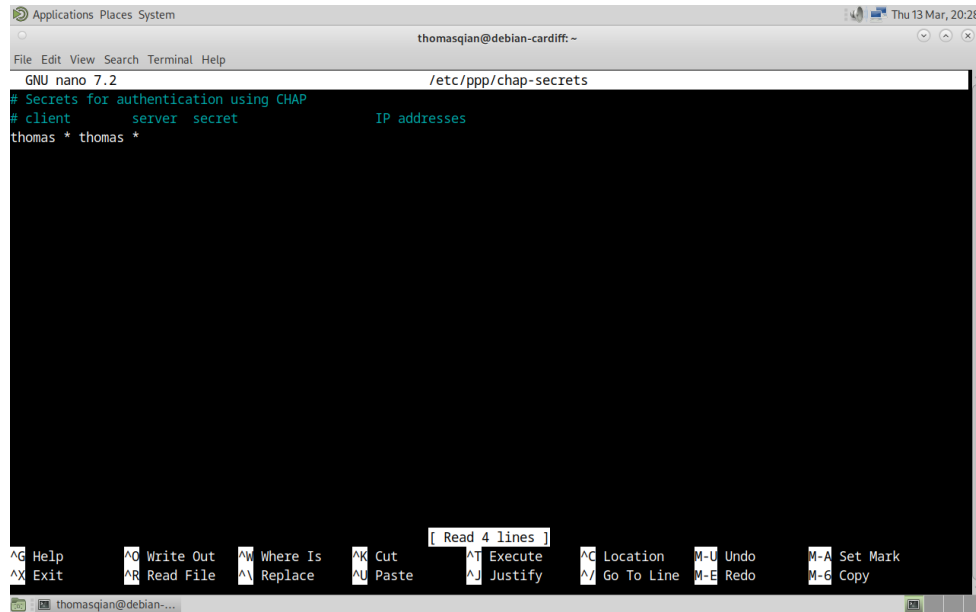


The screenshot shows a terminal window titled 'thomasqian@debian-cardiff: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal is running GNU nano 7.2 editing the file '/etc/pptpd.conf'. The content of the file is as follows:

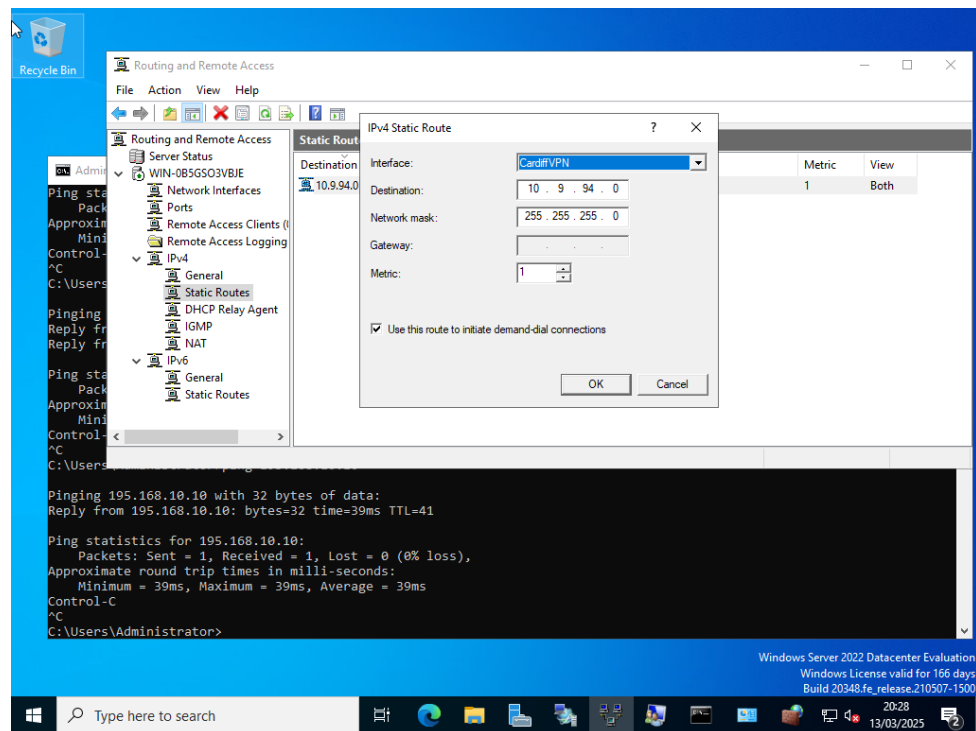
```
#
# 1. No spaces are permitted between commas or within addresses.
#
# 2. If you give more IP addresses than the value of connections,
#    it will start at the beginning of the list and go until it
#    gets connections IPs. Others will be ignored.
#
# 3. No shortcuts in ranges! ie. 234-8 does not mean 234 to 238,
#    you must type 234-238 if you mean this.
#
# 4. If you give a single localIP, that's ok - all local IPs will
#    be set to the given one. You MUST still give at least one remote
#    IP for each simultaneous client.
#
# (Recommended)
#localip 192.168.0.1
#remoteip 192.168.0.234-238,192.168.0.245
# or
#localip 192.168.0.234-238,192.168.0.245
#remoteip 192.168.1.234-238,192.168.1.245
localip 10.9.94.1
remoteip 10.9.94.2-3
```

At the bottom of the terminal, there is a status bar with various keyboard shortcuts: ^G Help, ^X Exit, ^O Write Out, ^R Read File, ^W Where Is, ^N Replace, ^K Cut, ^U Paste, ^T Execute, ^J Justify, ^C Location, ^_ Go To Line, M-U Undo, M-E Redo, M-A Set Mark, M-G Copy.

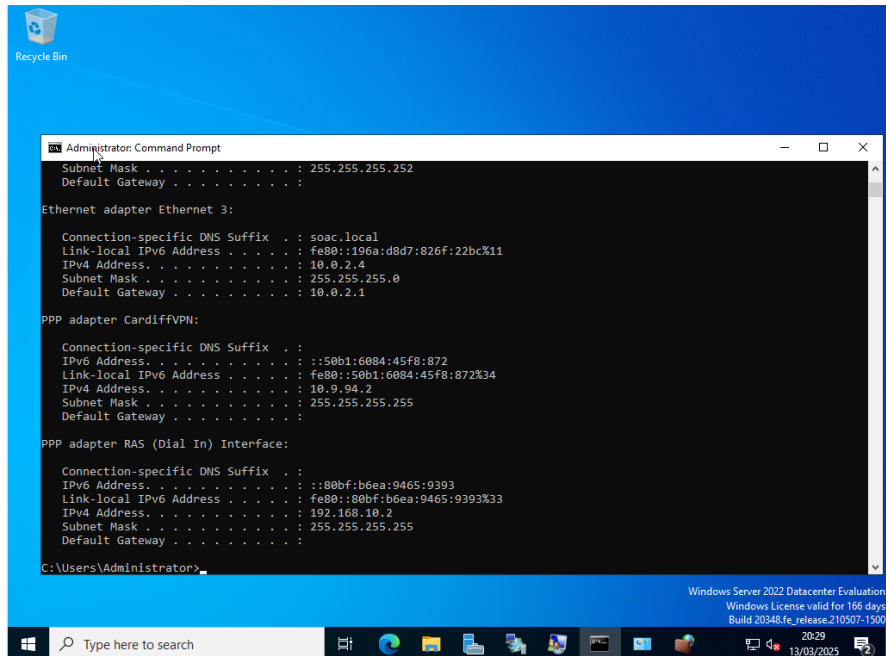
VPN User in Debian's PPP Interface



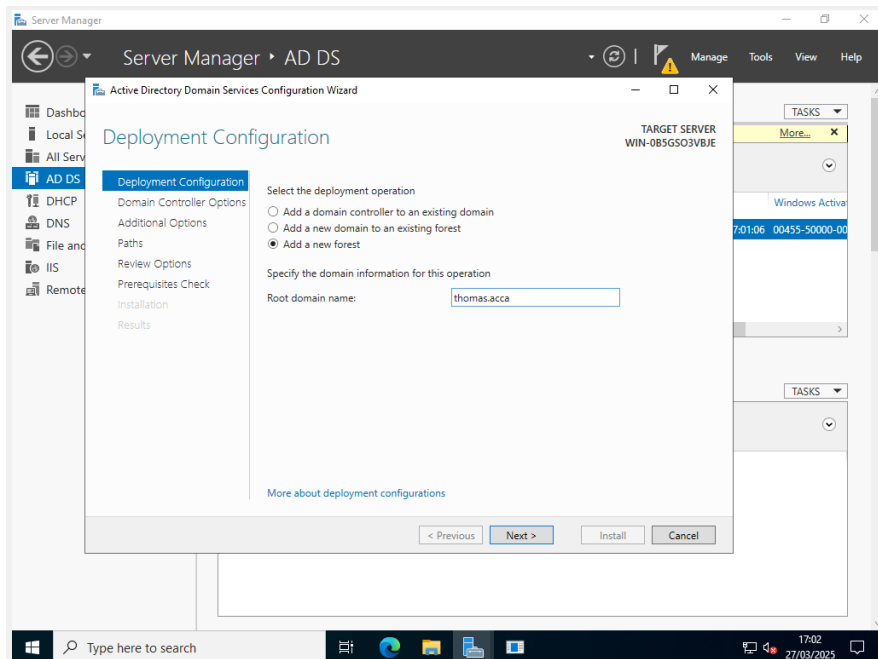
Static Route for CardiffVPN in Windows Server



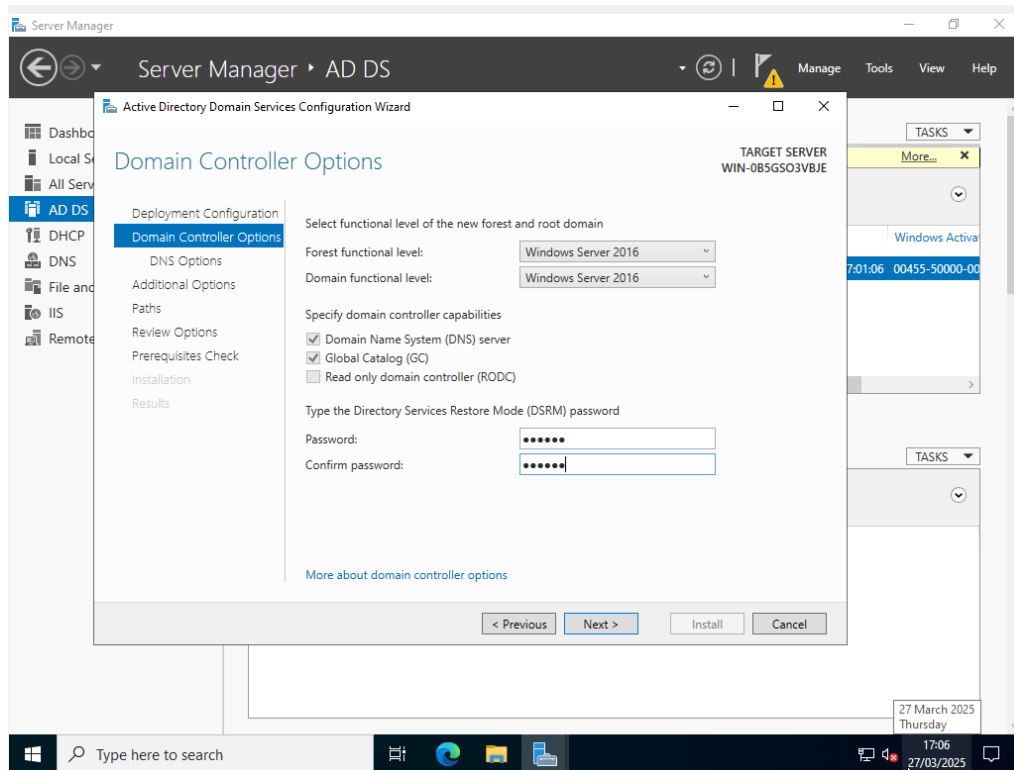
VPN Connected in Windows Server Successful



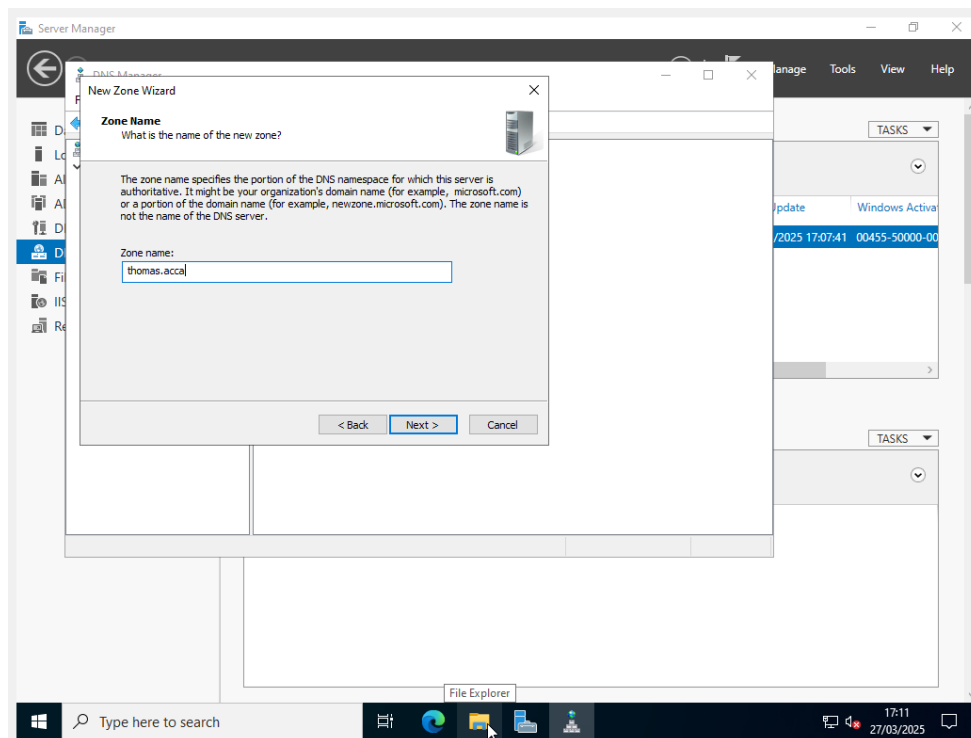
“thomasqian.acca” Forest creation



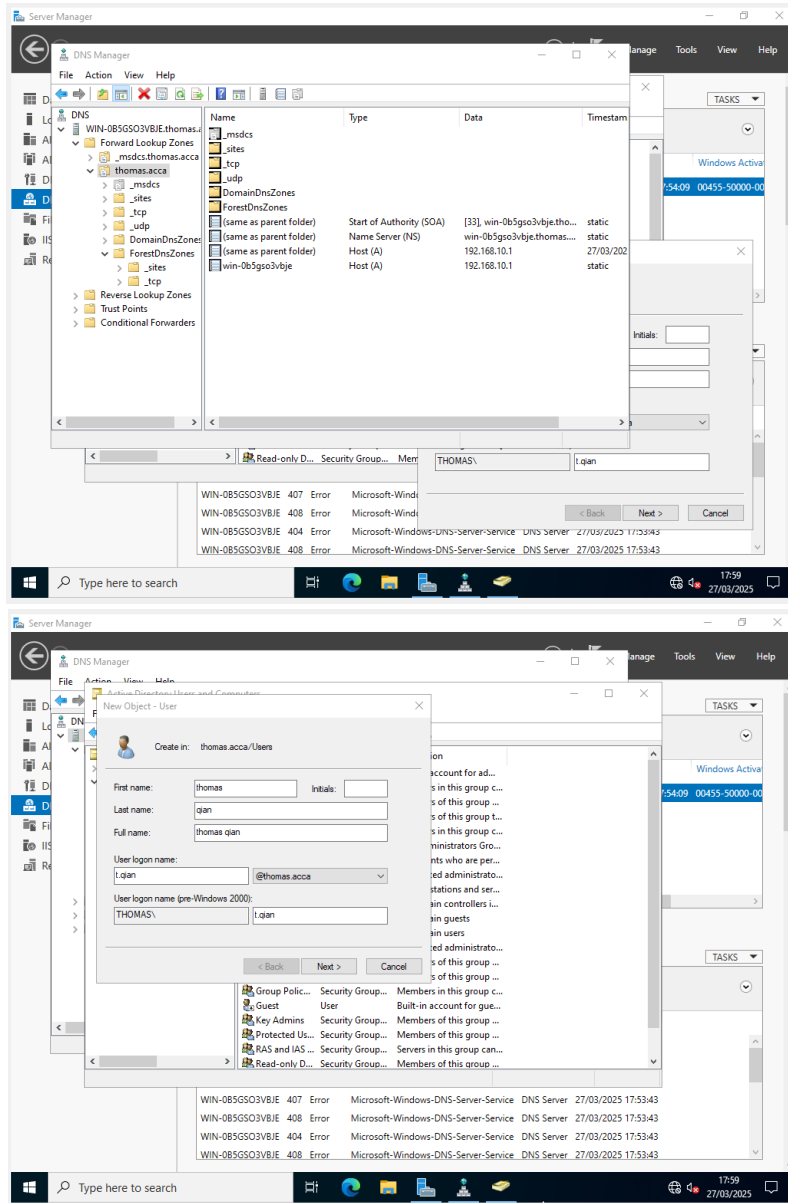
Creation of the password (Domain Controller Options)



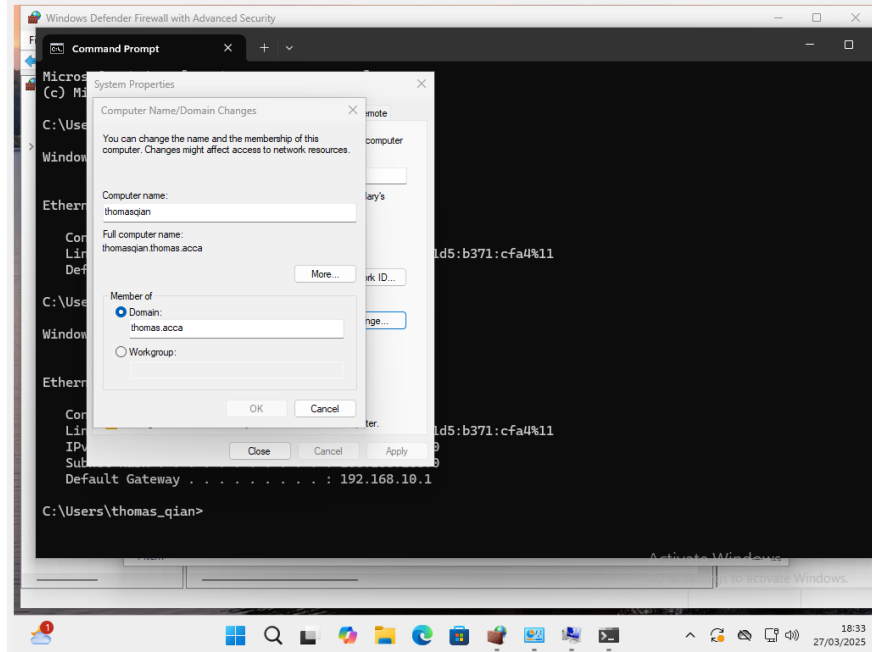
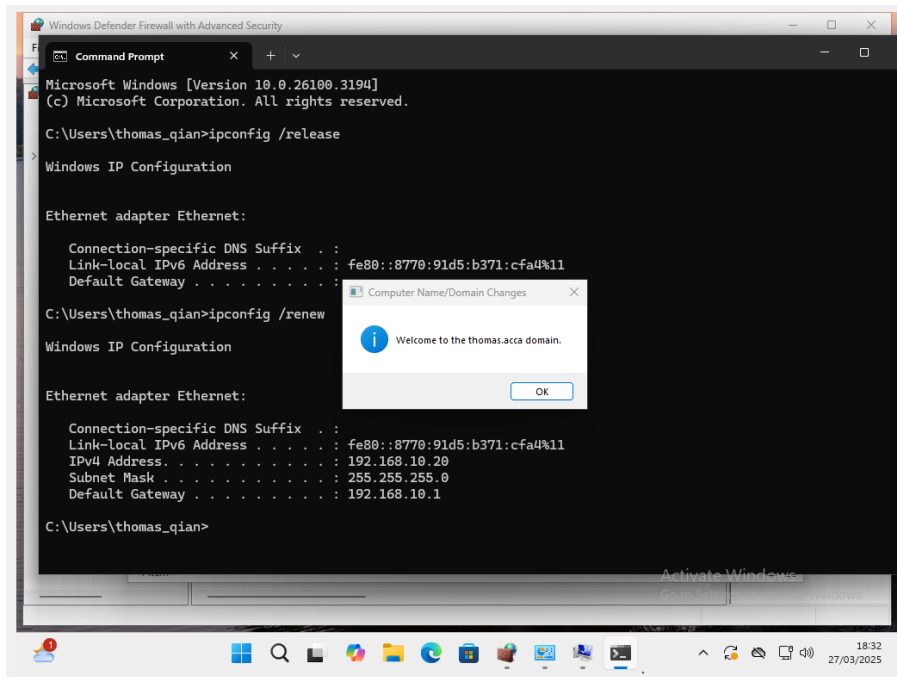
Configuration of DNS Zone Name



Forest thomasqian.acca window and folders



Forest Domain working



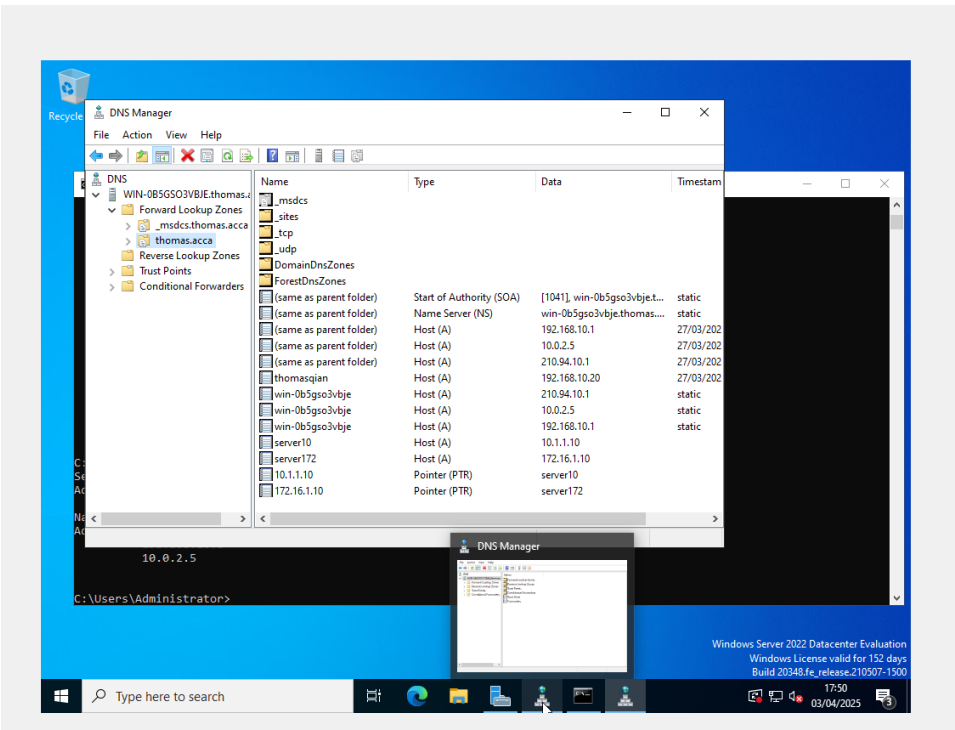
Forest Viewed from Cardiff/Debian

```
Applications Places System
thomasqian@debian-cardiff: ~
File Edit View Search Terminal Help
GNU nano 7.2 /etc/resolv.conf *
nameserver 192.168.10.1
search thomas.acca
nameserver 10.9.94.1
search thomas.acca
nameserver 1.1.1.1
nameserver 8.8.8.8

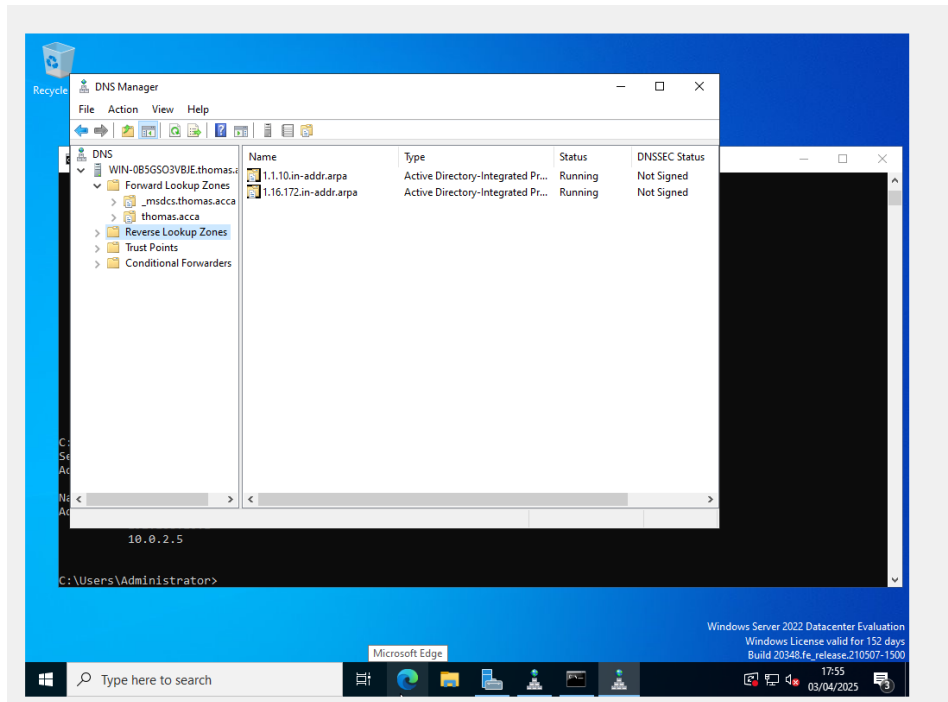
Save modified buffer?
Y Yes
N No Cancel

thomasqian@debian-cardiff:~$
thomasqian@debian-cardiff:~$ hostname
debian-cardiff
thomasqian@debian-cardiff:~$ hostname -f
debian-cardiff.soac.local
thomasqian@debian-cardiff:~$ domainname
(none)
thomasqian@debian-cardiff:~$
```

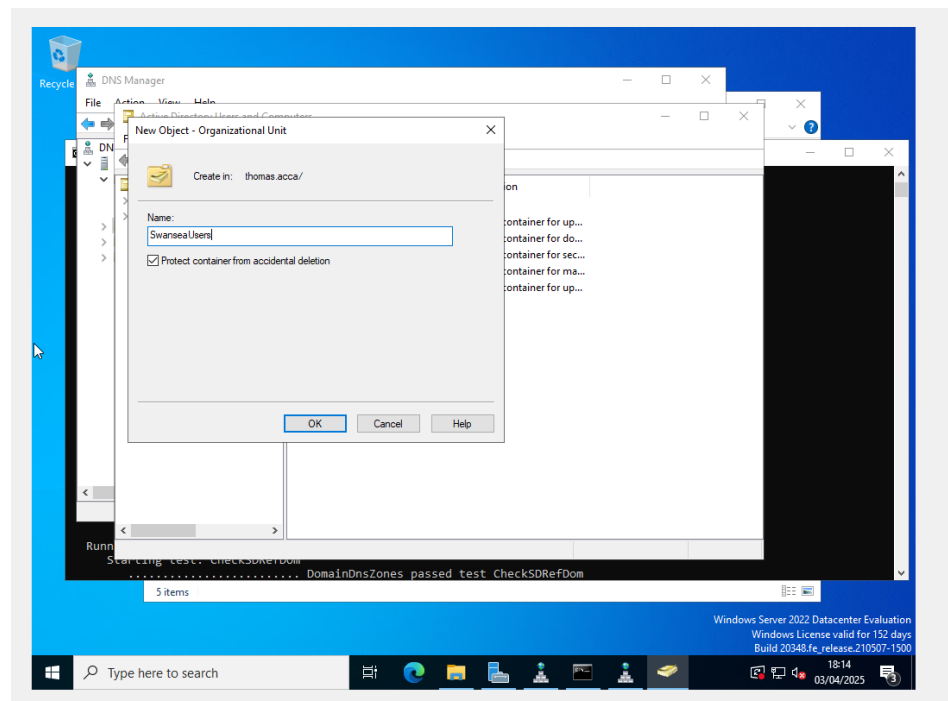
Host A and PTR Record



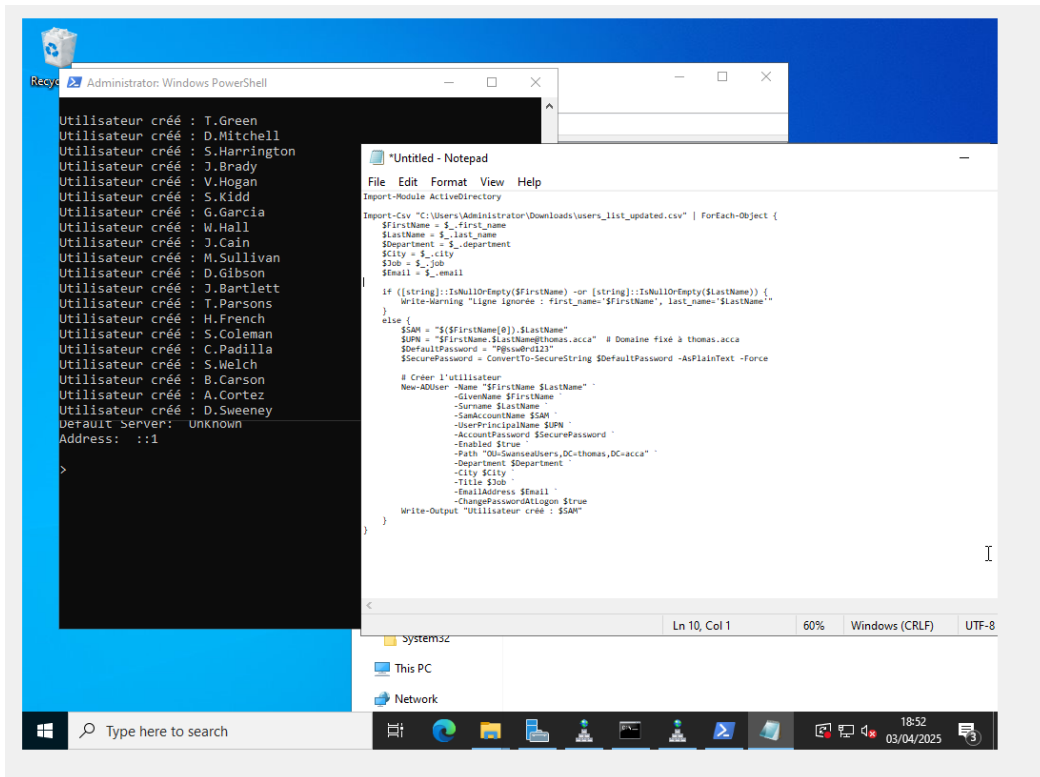
PTR Records (Reverse Lookup Zones)



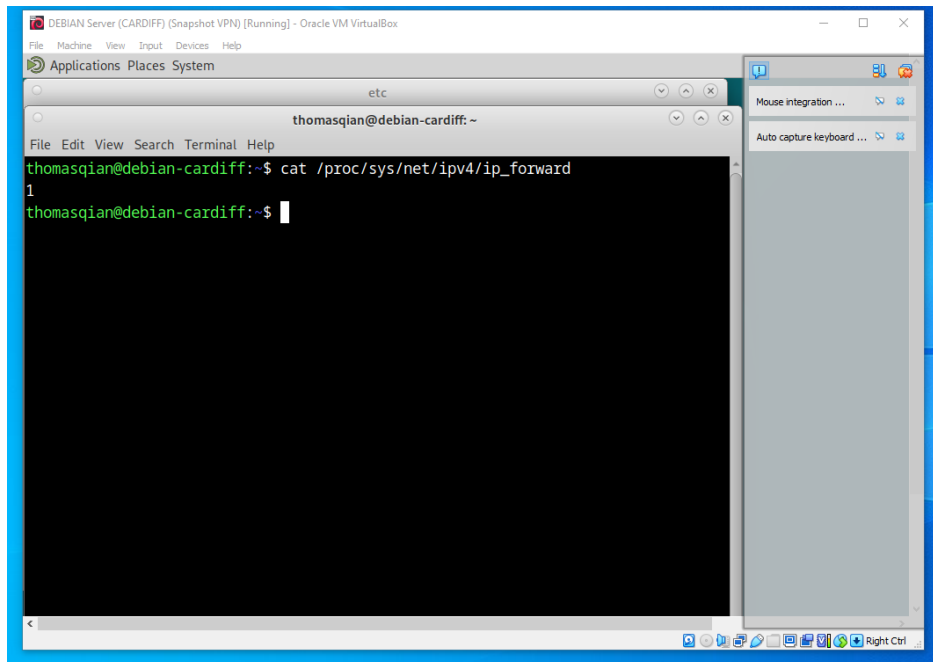
Organization Unit for Users



Creating Users and script with the help of generative AI



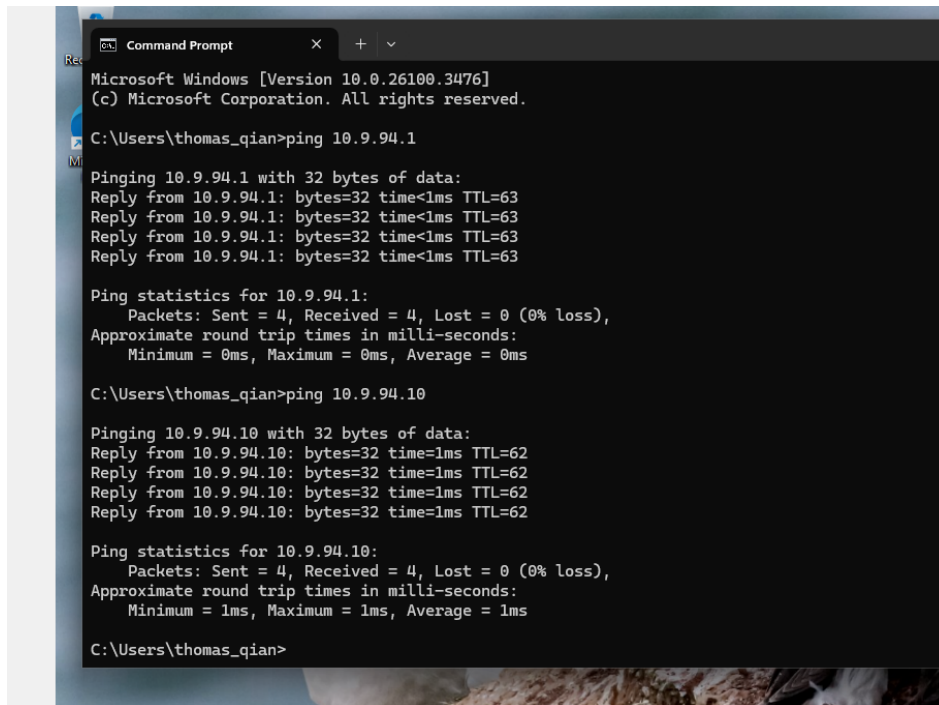
Routing test working



Windows Server and Client PING from Debian

```
thomasqian@debian-cardiff:~$ ping 192.168.10.1
PING 192.168.10.1 (192.168.10.1) 56(84) bytes of data.
64 bytes from 192.168.10.1: icmp_seq=1 ttl=127 time=0.501 ms
64 bytes from 192.168.10.1: icmp_seq=2 ttl=127 time=0.615 ms
64 bytes from 192.168.10.1: icmp_seq=3 ttl=127 time=0.414 ms
64 bytes from 192.168.10.1: icmp_seq=4 ttl=127 time=0.634 ms
^C
--- 192.168.10.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3057ms
rtt min/avg/max/mdev = 0.414/0.541/0.634/0.089 ms
thomasqian@debian-cardiff:~$ ping 192.168.10.20
PING 192.168.10.20 (192.168.10.20) 56(84) bytes of data.
64 bytes from 192.168.10.20: icmp_seq=1 ttl=127 time=0.773 ms
64 bytes from 192.168.10.20: icmp_seq=2 ttl=127 time=0.785 ms
64 bytes from 192.168.10.20: icmp_seq=3 ttl=127 time=0.627 ms
64 bytes from 192.168.10.20: icmp_seq=4 ttl=127 time=0.572 ms
^C
--- 192.168.10.20 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3036ms
rtt min/avg/max/mdev = 0.572/0.689/0.785/0.091 ms
```

Debian Server and Ubuntu Client PING from Windows Server (Connectivity complete)



```
Microsoft Windows [Version 10.0.26100.3476]
(c) Microsoft Corporation. All rights reserved.

C:\Users\thomas_qian>ping 10.9.94.1

Pinging 10.9.94.1 with 32 bytes of data:
Reply from 10.9.94.1: bytes=32 time<1ms TTL=63
Reply from 10.9.94.1: bytes=32 time<1ms TTL=63
Reply from 10.9.94.1: bytes=32 time<1ms TTL=63
Reply from 10.9.94.1: bytes=32 time<1ms TTL=63

Ping statistics for 10.9.94.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

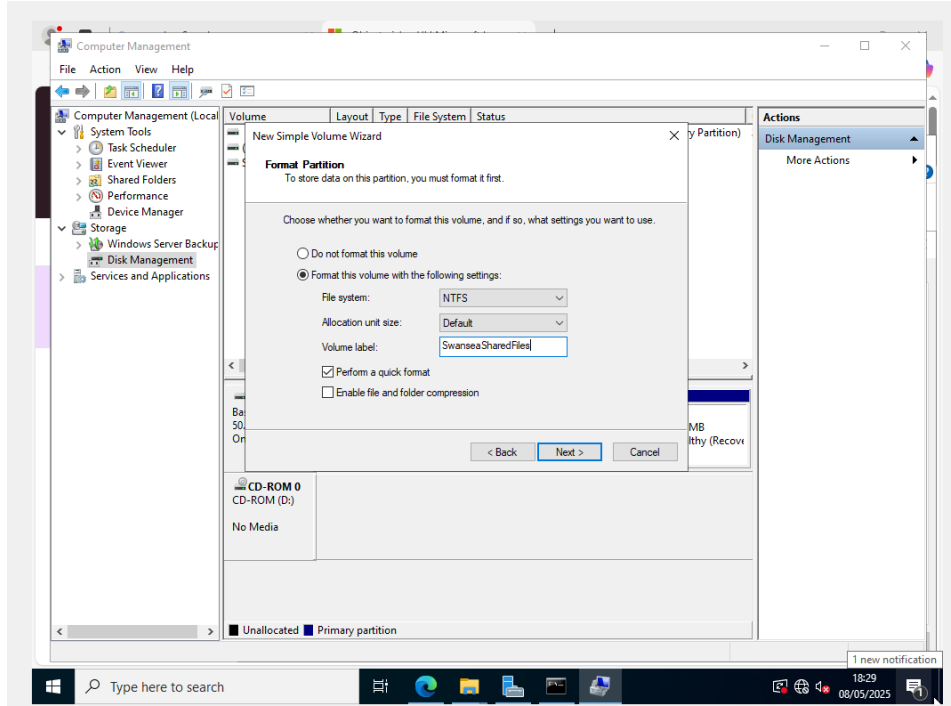
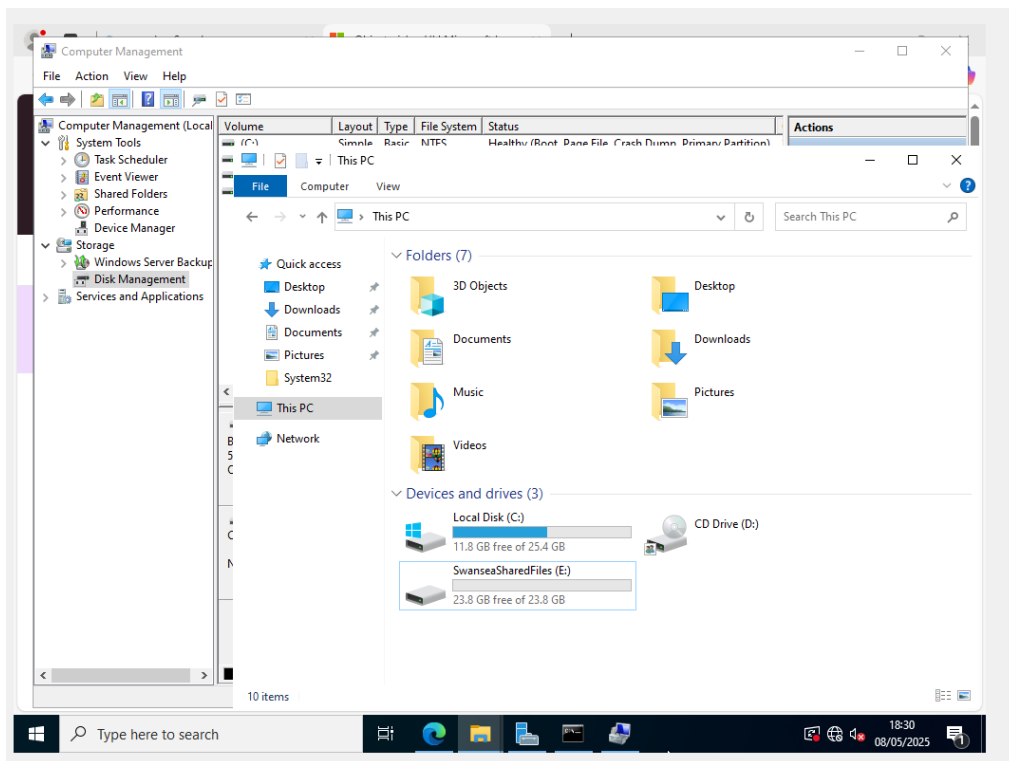
C:\Users\thomas_qian>ping 10.9.94.10

Pinging 10.9.94.10 with 32 bytes of data:
Reply from 10.9.94.10: bytes=32 time=1ms TTL=62
Reply from 10.9.94.10: bytes=32 time=1ms TTL=62
Reply from 10.9.94.10: bytes=32 time=1ms TTL=62
Reply from 10.9.94.10: bytes=32 time=1ms TTL=62

Ping statistics for 10.9.94.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\Users\thomas_qian>
```

Shared Files Creation Disk



thomasqian.acca website creation

