

TASK A

Step 1

```
(sade Faulks09@kali)~$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fd17:625c:f037:2:47c:5327:f39a:1186 prefixlen 64 scopeid 0<global>
    global>
    inet6 fd17:625c:f037:2:a00:27ff:fec6:c5a7 prefixlen 64 scopeid 0<global>
    global>
    inet6 fe80::a00:27ff:fec6:c5a7 prefixlen 64 scopeid 0<20<link>
    ether 08:00:27:c6:c5:a7 txqueuelen 1000 (Ethernet)
    RX packets 20 bytes 4811 (4.6 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 44 bytes 6148 (6.0 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0<10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 8 bytes 480 (480.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 480 (480.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Steps 2 and 3

```
(sade Faulks09@kali)~$ route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
0.0.0.0 10.0.2.2 0.0.0.0 UG 100 0 0 eth0
10.0.2.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0

(sade Faulks09@kali)~$ netstat -tn
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address Foreign Address State
```

Step 4

```
(sade Faulks09@kali)~$ ping -c 10 ubuntu.com
10
PING ubuntu.com (185.125.190.29) 56(84) bytes of data:

64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=1 ttl=255 time=98.2 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=2 ttl=255 time=96.4 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=3 ttl=255 time=95.4 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=4 ttl=255 time=101 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=5 ttl=255 time=95.5 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=6 ttl=255 time=98.3 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=7 ttl=255 time=115 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=8 ttl=255 time=101 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=9 ttl=255 time=99.0 ms
64 bytes from website-content-cache-3.ps5.canonical.com (185.125.190.29): icmp_seq=10 ttl=255 time=96.6 ms

--- ubuntu.com ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 13310ms
rtt min/avg/max/mdev = 95.439/99.654/114.853/5.438 ms
```

Steps 5-7

```
(sade Faulks09@kali)-[~]
└─$ host www.odu.edu
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out
www.odu.edu has address 35.170.140.174
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out
;; communications error to 40.192.249.101#53: timed out

(sade Faulks09@kali)-[~]
└─$ cat /etc/hostname
kali

(sade Faulks09@kali)-[~]
└─$ cat /etc/resolv.conf
# Generated by NetworkManager
search mynetworksettings.com
nameserver 40.192.249.101
nameserver 192.168.1.1
```

Step 8

```
(sade Faulks09@kali)-[~]
└─$ sudo vi /etc/hostname
[sudo] password for sade Faulks09:

File Actions Edit View Help
sfaul001|
-
-
-

(sade Faulks09@kali)-[~]
└─$ sudo vi /etc/hosts
```

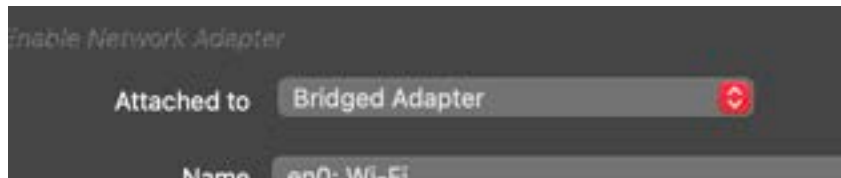
```
File Actions Edit View Help
127.0.0.1      localhost
127.0.1.1      kali.sfaul001.odu.edu  sfaul001

# The following lines are desirable for IPv6 capable hosts
::1           localhost ip6-localhost ip6-loopback
ff02::1       ip6-allnodes
ff02::2       ip6-allrouters
```

```
File Actions Edit View Help
(sadefaults09@ sfaul001)-[~]
$ cat /etc/hostname
sfaul001
```

TASK B

Step 1



Step 2

```
(sade Faulks09@sfault001)~  
└─$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.1.187 netmask 255.255.255.0 broadcast 192.168.1.255  
    inet6 2600:4040:1f2a:900:a00:27ff:fec6:c5a7 prefixlen 64 scopeid 0x  
0<global>  
    inet6 fe80::a00:27ff:fec6:c5a7 prefixlen 64 scopeid 0x20<link>  
    inet6 2600:4040:1f2a:900:e420:93e2:d26c:69b0 prefixlen 64 scopeid 0  
x0<global>  
    ether 00:00:27:c6:c5:a7 txqueuelen 1000 (Ethernet)  
    RX packets 571 bytes 54623 (53.3 KiB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 129 bytes 19448 (18.9 KiB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
    inet 127.0.0.1 netmask 255.0.0.0  
    inet6 ::1 prefixlen 128 scopeid 0x10<chost>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 8 bytes 480 (480.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 8 bytes 480 (480.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
(sade Faulks09@sfault001)~  
└─$ route -n  
Kernel IP routing table  
Destination Gateway Genmask Flags Metric Ref Use Iface  
0.0.0.0 192.168.1.1 0.0.0.0 UG 100 0 0 eth0  
192.168.1.0 0.0.0.0 255.255.255.0 U 100 0 0 eth0  
  
(sade Faulks09@sfault001)~  
└─$ netstat -tn  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address Foreign Address State
```

```
(sade Faulks09@ sfaul001)-[~]
└─$ ping -c 10 ubuntu.com
PING ubuntu.com (2620:2d:4000:1::28) 56 data bytes
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=1 ttl=57 time=96.4 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=2 ttl=57 time=96.6 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=3 ttl=57 time=93.9 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=4 ttl=57 time=108 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=5 ttl=57 time=98.1 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=6 ttl=57 time=97.1 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=7 ttl=57 time=97.7 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=8 ttl=57 time=97.8 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=9 ttl=57 time=93.2 ms
64 bytes from website-content-cache-3.canonical.com (2620:2d:4000:1::28): icmp
p_seq=10 ttl=57 time=95.6 ms

— ubuntu.com ping statistics —
10 packets transmitted, 10 received, 0% packet loss, time 9015ms
rtt min/avg/max/mdev = 93.192/97.444/108.100/3.873 ms
```

```
(sade Faulks09@ sfaul001)-[~]
└─$ host www.odu.edu
www.odu.edu has address 35.170.140.174
```

```
(sade Faulks09@ sfaul001)-[~]
└─$ cat /etc/hostname
sfaul001
```

```
(sade Faulks09@ sfaul001)-[~]
└─$ cat /etc/resolv.conf
# Generated by NetworkManager
search mynetworksettings.com
nameserver 192.168.1.1
nameserver 2600:4040:1f2a:900::1
```

Differences

- NAT mode showed a private IP address, while bridged mode showed an IP from the same network as the host.
- NAT mode used a virtual gateway, while bridged mode used the real network gateway.
- Ping responses were faster in bridged mode than in NAT mode.
- The DNS request timed out in NAT mode due to communication errors, while bridged mode resolved the domain and returned one IP address.
- The hostname stayed the same in both NAT and bridged modes.
- NAT mode used virtual DNS servers, while bridged mode used DNS servers from the physical network.