

Network Engineering 2019 Exercises - Unit 3

0.1 Netmask Calculation

What is the netmask for this network?

22.137.175.192/26

Put your answer on a single line in `unit3/answers.txt`, with 0: at the beginning of the line, e.g., 0:255.255.255.0

What is the netmask for this network?

0.0.0.0/1

Put your answer on a single line in `unit3/answers.txt`, with 1: at the beginning of the line, e.g., 1:255.255.255.0

What is the netmask for this network?

123.186.231.128/27

Put your answer on a single line in `unit3/answers.txt`, with 2: at the beginning of the line, e.g., 2:255.255.255.0

What is the netmask for this network?

24.63.252.120/29

Put your answer on a single line in `unit3/answers.txt`, with 3: at the beginning of the line, e.g., 3:255.255.255.0

What is the netmask for this network?

89.116.93.88/30

Put your answer on a single line in `unit3/answers.txt`, with 4: at the beginning of the line, e.g., 4:255.255.255.0

What is the netmask for this network?

64.0.0.0/3

Put your answer on a single line in `unit3/answers.txt`, with 5: at the beginning of the line, e.g., 5:255.255.255.0

What is the netmask for this network?

13.28.4.0/23

Put your answer on a single line in `unit3/answers.txt`, with 6: at the beginning of the line, e.g., 6:255.255.255.0

What is the netmask for this network?

28.128.0.0/11

Put your answer on a single line in `unit3/answers.txt`, with 7: at the beginning of the line, e.g., 7:255.255.255.0

What is the netmask for this network?

96.0.0.0/4

Put your answer on a single line in `unit3/answers.txt`, with 8: at the beginning of the line, e.g., 8:255.255.255.0

What is the netmask for this network?

0.0.0.0/0

Put your answer on a single line in `unit3/answers.txt`, with 9: at the beginning of the line, e.g., 9:255.255.255.0

What is the netmask for this network?

68.214.178.32/28

Put your answer on a single line in `unit3/answers.txt`, with 10: at the beginning of the line, e.g., 10:255.255.255.0

What is the netmask for this network?

20.0.0.0/6

Put your answer on a single line in `unit3/answers.txt`, with 11: at the beginning of the line, e.g., 11:255.255.255.0

What is the netmask for this network?

0.0.0.0/0

Put your answer on a single line in `unit3/answers.txt`, with 12: at the beginning of the line, e.g., 12:255.255.255.0

What is the netmask for this network?

112.138.2.120/29

Put your answer on a single line in `unit3/answers.txt`, with 13: at the beginning of the line, e.g., 13:255.255.255.0

What is the netmask for this network?

21.224.0.0/11

Put your answer on a single line in `unit3/answers.txt`, with 14: at the beginning of the line, e.g., `14:255.255.255.0`

What is the netmask for this network?

122.0.0.0/9

Put your answer on a single line in `unit3/answers.txt`, with 15: at the beginning of the line, e.g., `15:255.255.255.0`

What is the netmask for this network?

116.0.0.0/7

Put your answer on a single line in `unit3/answers.txt`, with 16: at the beginning of the line, e.g., `16:255.255.255.0`

What is the netmask for this network?

68.10.227.200/30

Put your answer on a single line in `unit3/answers.txt`, with 17: at the beginning of the line, e.g., `17:255.255.255.0`

What is the netmask for this network?

64.0.0.0/5

Put your answer on a single line in `unit3/answers.txt`, with 18: at the beginning of the line, e.g., `18:255.255.255.0`

What is the netmask for this network?

109.248.124.16/28

Put your answer on a single line in `unit3/answers.txt`, with 19: at the beginning of the line, e.g., `19:255.255.255.0`

What is the netmask for this network?

38.0.0.0/7

Put your answer on a single line in `unit3/answers.txt`, with 20: at the beginning of the line, e.g., `20:255.255.255.0`

What is the netmask for this network?

88.112.21.0/26

Put your answer on a single line in `unit3/answers.txt`, with 21: at the beginning of the line, e.g., `21:255.255.255.0`

What is the netmask for this network?

30.0.0.0/7

Put your answer on a single line in `unit3/answers.txt`, with 22: at the beginning of the line, e.g., `22:255.255.255.0`

What is the netmask for this network?

99.128.0.0/9

Put your answer on a single line in `unit3/answers.txt`, with 23: at the beginning of the line, e.g., `23:255.255.255.0`

What is the netmask for this network?

31.198.192.0/18

Put your answer on a single line in `unit3/answers.txt`, with 24: at the beginning of the line, e.g., `24:255.255.255.0`

What is the netmask for this network?

40.148.0.0/15

Put your answer on a single line in `unit3/answers.txt`, with 25: at the beginning of the line, e.g., `25:255.255.255.0`

What is the netmask for this network?

63.53.152.0/21

Put your answer on a single line in `unit3/answers.txt`, with 26: at the beginning of the line, e.g., `26:255.255.255.0`

What is the netmask for this network?

0.0.0.0/0

Put your answer on a single line in `unit3/answers.txt`, with 27: at the beginning of the line, e.g., `27:255.255.255.0`

What is the netmask for this network?

98.204.0.0/14

Put your answer on a single line in `unit3/answers.txt`, with 28: at the beginning of the line, e.g., `28:255.255.255.0`

What is the netmask for this network?

44.69.74.120/29

Put your answer on a single line in `unit3/answers.txt`, with 29: at the beginning of the line, e.g., `29:255.255.255.0`

What is the netmask for this network?

0.0.0.0/1

Put your answer on a single line in `unit3/answers.txt`, with 30: at the beginning of the line, e.g., `30:255.255.255.0`

What is the netmask for this network?

37.67.37.134/31

Put your answer on a single line in `unit3/answers.txt`, with 31: at the beginning of the line, e.g., `31:255.255.255.0`

What is the netmask for this network?

39.162.0.0/17

Put your answer on a single line in `unit3/answers.txt`, with 32: at the beginning of the line, e.g., `32:255.255.255.0`

What is the netmask for this network?

127.0.0.0/10

Put your answer on a single line in `unit3/answers.txt`, with 33: at the beginning of the line, e.g., `33:255.255.255.0`

What is the netmask for this network?

69.152.233.128/26

Put your answer on a single line in `unit3/answers.txt`, with 34: at the beginning of the line, e.g., `34:255.255.255.0`

What is the netmask for this network?

5.153.114.96/27

Put your answer on a single line in `unit3/answers.txt`, with 35: at the beginning of the line, e.g., 35:255.255.255.0

What is the netmask for this network?

48.0.0.0/5

Put your answer on a single line in `unit3/answers.txt`, with 36: at the beginning of the line, e.g., 36:255.255.255.0

What is the netmask for this network?

33.213.239.148/31

Put your answer on a single line in `unit3/answers.txt`, with 37: at the beginning of the line, e.g., 37:255.255.255.0

What is the netmask for this network?

82.255.156.32/27

Put your answer on a single line in `unit3/answers.txt`, with 38: at the beginning of the line, e.g., 38:255.255.255.0

What is the netmask for this network?

87.232.68.0/23

Put your answer on a single line in `unit3/answers.txt`, with 39: at the beginning of the line, e.g., 39:255.255.255.0

0.2 Variable Length Sub-net Masking

What is the VLSM name of the network corresponding to the following?

112.47.183.174 netmask 255.255.128.0

Put your answer on a single line in `unit3/answers.txt`, with 40: at the beginning of the line, e.g., 40:10.0.0.0/8

What is the VLSM name of the network corresponding to the following?

87.100.29.39 netmask 255.255.255.248

Put your answer on a single line in `unit3/answers.txt`, with 41: at the beginning of the line, e.g., 41:10.0.0.0/8

What is the VLSM name of the network corresponding to the following?

61.60.163.7 netmask 255.255.255.240

Put your answer on a single line in `unit3/answers.txt`, with 42: at the beginning of the line, e.g., `42:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

102.67.181.189 netmask 255.255.255.240

Put your answer on a single line in `unit3/answers.txt`, with 43: at the beginning of the line, e.g., `43:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

107.111.163.202 netmask 255.255.255.192

Put your answer on a single line in `unit3/answers.txt`, with 44: at the beginning of the line, e.g., `44:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

24.208.223.26 netmask 240.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 45: at the beginning of the line, e.g., `45:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

57.11.151.123 netmask 128.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 46: at the beginning of the line, e.g., `46:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

18.146.38.99 netmask 224.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 47: at the beginning of the line, e.g., `47:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

39.98.13.242 netmask 128.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 48: at the beginning of the line, e.g., `48:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

74.145.130.13 netmask 255.128.0.0

Put your answer on a single line in `unit3/answers.txt`, with 49: at the beginning of the line, e.g., `49:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

126.150.119.187 netmask 255.255.224.0

Put your answer on a single line in `unit3/answers.txt`, with 50: at the beginning of the line, e.g., `50:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

90.36.97.164 netmask 255.255.255.240

Put your answer on a single line in `unit3/answers.txt`, with 51: at the beginning of the line, e.g., `51:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

46.52.123.248 netmask 255.255.255.192

Put your answer on a single line in `unit3/answers.txt`, with 52: at the beginning of the line, e.g., `52:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

7.188.236.28 netmask 248.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 53: at the beginning of the line, e.g., `53:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

1.86.94.213 netmask 240.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 54: at the beginning of the line, e.g., `54:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

115.250.155.188 netmask 224.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 55: at the beginning of the line, e.g., `55:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

96.34.50.182 netmask 224.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 56: at the beginning of the line, e.g., `56:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

32.235.105.32 netmask 255.255.255.248

Put your answer on a single line in `unit3/answers.txt`, with 57: at the beginning of the line, e.g., `57:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

52.131.152.32 netmask 255.255.255.248

Put your answer on a single line in `unit3/answers.txt`, with 58: at the beginning of the line, e.g., `58:10.0.0.0/8`

What is the VLSM name of the network corresponding to the following?

61.107.36.57 netmask 255.192.0.0

Put your answer on a single line in `unit3/answers.txt`, with 59: at the beginning of the line, e.g., `59:10.0.0.0/8`

0.3 Configure Network Interfaces using the `ifconfig` and `ip` commands

What is `ifconfig` command equivalent to the following `ip` command sequence (apply any options in the order listed)?

```
ip address add 25.184.31.23/19 dev eth0; ip link set eth0 down
```

Put your answer on a single line in `unit3/answers.txt`, with 60: at the beginning of the line, e.g., `60:ip blah blah; ip again with other options; ip again with yet other options`

What is `ifconfig` command equivalent to the following `ip` command sequence (apply any options in the order listed)?

```
ip address add 126.3.16.34/16 dev eth0
```

Put your answer on a single line in `unit3/answers.txt`, with 61: at the beginning of the line, e.g., `61:ip blah blah; ip again with other options; ip again with yet other options`

What is the `ifconfig` command to setup interface `eth0` with the following network settings (apply any options in the order listed)?

```
125.150.152.179 netmask 240.0.0.0, MTU = 2051, PPP remote address 66.36.26.66, but not running
```

Put your answer on a single line in `unit3/answers.txt`, with 62: at the beginning of the line, e.g., `62:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast`

What is the `ifconfig` command to setup interface `eth0` with the following network settings (apply any options in the order listed)?

```
17.102.193.93 netmask 255.255.255.248, MTU = 4032, PPP remote address 7.122.31.128, TX queue length = 1036
```

Put your answer on a single line in `unit3/answers.txt`, with 63: at the beginning of the line, e.g., `63:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast`

What is `ip` command sequence equivalent to the following `ifconfig` command (apply any options in the order listed)?

```
ifconfig eth0 5.225.54.29 netmask 255.248.0.0 mtu 607 promisc
```

Put your answer on a single line in `unit3/answers.txt`, with 64: at the beginning of the line, e.g., `64:ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

95.64.199.8 netmask 128.0.0.0, but not running, without ARP

Put your answer on a single line in `unit3/answers.txt`, with 65: at the beginning of the line, e.g., `65:ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

63.18.0.52 netmask 248.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 66: at the beginning of the line, e.g., `66:ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

54.179.230.114 netmask 248.0.0.0

Put your answer on a single line in `unit3/answers.txt`, with 67: at the beginning of the line, e.g., `67:ip blah blah; ip again with other options; ip again with yet other options`

What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?

62.179.34.153 netmask 255.252.0.0, MTU = 3547, without ARP, in promiscuous mode

Put your answer on a single line in `unit3/answers.txt`, with 68: at the beginning of the line, e.g., `68:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast`

What is ifconfig command equivalent to the following ip command sequence (apply any options in the order listed)?

`ip address add 106.10.138.31/7 dev eth0; ip link set eth0 down; ip link set dev eth0 promisc on`

Put your answer on a single line in `unit3/answers.txt`, with 69: at the beginning of the line, e.g., `69:ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?

`ifconfig eth0 109.109.210.194 netmask 255.255.255.254 mtu 2376`

Put your answer on a single line in `unit3/answers.txt`, with 70: at the beginning of the line, e.g., 70:`ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

`21.15.181.4 netmask 255.0.0.0, MTU = 2406, TX queue length = 3749`

Put your answer on a single line in `unit3/answers.txt`, with 71: at the beginning of the line, e.g., 71:`ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

`107.36.151.164 netmask 255.255.0.0, MTU = 2470, in promiscuous mode`

Put your answer on a single line in `unit3/answers.txt`, with 72: at the beginning of the line, e.g., 72:`ip blah blah; ip again with other options; ip again with yet other options`

What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?

`92.130.91.94 netmask 255.255.252.0, TX queue length = 3945`

Put your answer on a single line in `unit3/answers.txt`, with 73: at the beginning of the line, e.g., 73:`ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast`

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

`35.125.174.20 netmask 255.255.255.248, MTU = 1530, without ARP, in promiscuous mode`

Put your answer on a single line in `unit3/answers.txt`, with 74: at the beginning of the line, e.g., 74:`ip blah blah; ip again with other options; ip again with yet other options`

What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?

```
ifconfig eth0 100.88.122.5 netmask 255.255.255.0 txqueuelen 3590
```

Put your answer on a single line in `unit3/answers.txt`, with 75: at the beginning of the line, e.g., 75:ip blah blah; ip again with other options; ip again with yet other options

What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?

```
ifconfig eth0 44.165.108.237 netmask 255.255.0.0 mtu 2586
```

Put your answer on a single line in `unit3/answers.txt`, with 76: at the beginning of the line, e.g., 76:ip blah blah; ip again with other options; ip again with yet other options

What is ip command sequence equivalent to the following ifconfig command (apply any options in the order listed)?

```
ifconfig eth0 73.43.164.75 netmask 255.252.0.0 mtu 2667 promisc
```

Put your answer on a single line in `unit3/answers.txt`, with 77: at the beginning of the line, e.g., 77:ip blah blah; ip again with other options; ip again with yet other options

What is the ifconfig command to setup interface eth0 with the following network settings (apply any options in the order listed)?

```
5.100.85.230 netmask 0.0.0.0, PPP remote address 123.37.228.62,  
TX queue length = 1295
```

Put your answer on a single line in `unit3/answers.txt`, with 78: at the beginning of the line, e.g., 78:ifconfig moo0 1.2.3.4 netmask 255.0.0.0 -broadcast

What is ip command sequence to setup interface eth0 with the following network settings (apply any options in the order listed)?

```
42.21.16.16 netmask 255.224.0.0
```

Put your answer on a single line in `unit3/answers.txt`, with 79: at the beginning of the line, e.g., 79:ip blah blah; ip again with other options; ip again with yet other options

0.4 Configure Network Interfaces using `/etc/network/interfaces` file

0.4.1 Prepare `unit3/iface0-solution.txt`

Produce an `interfaces` file in `unit3/iface0-solution.txt`, that contains the following:

- A template called `ruins0`, that specifies an MTU of 625 and MAC address `2C:D1:07:4F:D6:A1`.
- A template called `castle1`, that specifies an MTU of 6032 and MAC address `41:94:F4:7F:0D:42`.
- A template called `wealth2`, that specifies an MTU of 5071 and MAC address `42:9B:7E:52:86:B3`.
- An interface named `wlan0`, with IPv4 settings configured by DHCP and inherits the template `wealth2`.
- An interface named `jam1`, with IPv4 address `53.100.5.7` and netmask `255.255.255.0`, and inherits the template `wealth2`.
- An interface named `eth2`, with IPv4 address `55.94.127.175` and netmask `0.0.0.0`.
- An interface named `wlan3`, with IPv4 settings configured by DHCP and inherits the template `ruins0`.
- An interface named `wlan4`, with IPv4 address `32.95.32.117` and netmask `224.0.0.0`, and inherits the template `wealth2`.
- An interface named `jam5`, with IPv4 address `96.83.147.167` and netmask `255.255.255.128`.
- An interface named `wlan6`, with IPv4 address `116.226.66.202` and netmask `255.0.0.0`.

0.4.2 Prepare `unit3/iface1-solution.txt`

Produce an `interfaces` file in `unit3/iface1-solution.txt`, that contains the following:

- A template called `castle0`, that specifies an MTU of 4751 and MAC address `76:59:7F:7B:C4:81`.
- A template called `wealth1`, that specifies an MTU of 6367 and MAC address `03:BA:C4:25:30:A7`.
- An interface named `ftdi0`, with IPv4 settings configured by DHCP and inherits the template `castle0`.

- An interface named `eth1`, with IPv4 address `5.196.112.59` and netmask `255.255.255.240`, and inherits the template `wealth1`.
- An interface named `eth2`, with IPv4 settings configured by DHCP and inherits the template `wealth1`.

0.4.3 Prepare `unit3/iface2-solution.txt`

Produce an `interfaces` file in `unit3/iface2-solution.txt`, that contains the following:

- A template called `castle0`, that specifies an MTU of `8622` and MAC address `23:E2:CD:26:9D:92`.
- A template called `moths1`, that specifies an MTU of `5441` and MAC address `39:2E:F0:16:54:BB`.
- A template called `moths2`, that specifies an MTU of `3590` and MAC address `F6:27:AA:BA:AC:8C`.
- A template called `ruins3`, that specifies an MTU of `981` and MAC address `18:40:DD:FD:E2:AB`.
- An interface named `wlan0`, with IPv4 settings configured by DHCP and inherits the template `ruins3`.
- An interface named `eth1`, with IPv4 address `92.228.163.119` and netmask `255.255.255.0`.
- An interface named `jam2`, with IPv4 settings configured by DHCP.
- An interface named `jam3`, with IPv4 settings configured by DHCP.
- An interface named `jam4`, with IPv4 address `96.164.216.203` and netmask `255.255.128.0`, and inherits the template `castle0`.
- An interface named `eth5`, with IPv4 settings configured by DHCP and inherits the template `moths2`.
- An interface named `wlan6`, with IPv4 settings configured by DHCP.

0.4.4 Prepare `unit3/iface3-solution.txt`

Produce an `interfaces` file in `unit3/iface3-solution.txt`, that contains the following:

- A template called `wealth0`, that specifies an MTU of `7114` and MAC address `01:9B:DC:A5:1D:70`.
- A template called `moths1`, that specifies an MTU of `4946` and MAC address `AF:93:1C:7A:04:FC`.

- A template called `ruins2`, that specifies an MTU of 6414 and MAC address `B8:3E:49:20:C6:E2`.
- An interface named `jam0`, with IPv4 address `80.221.60.195` and netmask `254.0.0.0`.
- An interface named `ftdi1`, with IPv4 settings configured by DHCP.
- An interface named `jam2`, with IPv4 settings configured by DHCP.
- An interface named `wlan3`, with IPv4 settings configured by DHCP.
- An interface named `ftdi4`, with IPv4 address `82.250.4.205` and netmask `192.0.0.0`, and inherits the template `wealth0`.
- An interface named `ftdi5`, with IPv4 address `46.132.172.205` and netmask `255.255.255.224`.
- An interface named `wlan6`, with IPv4 settings configured by DHCP and inherits the template `moths1`.

0.4.5 Prepare `unit3/iface4-solution.txt`

Produce an `interfaces` file in `unit3/iface4-solution.txt`, that contains the following:

- A template called `ruins0`, that specifies an MTU of 4932 and MAC address `DA:A3:63:9D:B5:99`.
- A template called `moths1`, that specifies an MTU of 4835 and MAC address `62:CE:B4:2F:70:4E`.
- A template called `moths2`, that specifies an MTU of 2635 and MAC address `26:80:47:C4:2F:D9`.
- A template called `ruins3`, that specifies an MTU of 7642 and MAC address `A2:4D:C1:BC:80:C2`.
- A template called `wealth4`, that specifies an MTU of 5514 and MAC address `65:8B:F8:1B:24:1F`.
- An interface named `ftdi0`, with IPv4 settings configured by DHCP.
- An interface named `wlan1`, with IPv4 settings configured by DHCP and inherits the template `ruins3`.
- An interface named `wlan2`, with IPv4 address `41.84.124.126` and netmask `255.255.255.0`, and inherits the template `moths2`.

0.5 Create and delete routes

0.5.1 Create files `unit3/routes0add.sh` and `unit3/routes0del.sh` that contains commands that will respectively establish and delete the following routes

- 50.138.128.0/17 via the IP address of your 2nd VM
- 75.148.76.128/28 via the IP address of your 2nd VM
- 19.22.44.0/22 via the IP address of your 2nd VM
- 110.213.12.208/28 via the IP address of your 2nd VM
- 52.244.128.0/17 via the interface to your 2nd VM
- 112.60.187.196/30 via the interface to your 2nd VM

0.5.2 Create files `unit3/routes1add.sh` and `unit3/routes1del.sh` that contains commands that will respectively establish and delete the following routes

- 68.56.206.64/26 via the IP address of your 2nd VM
- 26.239.195.212/30 via the interface to your 2nd VM
- 39.243.45.160/28 via the IP address of your 2nd VM
- 112.253.8.0/26 via the interface to your 2nd VM
- 21.180.51.0/24 via the interface to your 2nd VM
- 43.232.100.60/31 via the interface to your 2nd VM

0.5.3 Create files `unit3/routes2add.sh` and `unit3/routes2del.sh` that contains commands that will respectively establish and delete the following routes

- 52.153.94.0/23 via the IP address of your 2nd VM
- 92.140.128.0/20 via the IP address of your 2nd VM
- 49.189.116.12/30 via the IP address of your 2nd VM
- 71.113.164.0/22 via the interface to your 2nd VM
- 115.90.8.0/21 via the interface to your 2nd VM
- 82.226.157.176/28 via the IP address of your 2nd VM

0.5.4 Create files `unit3/routes3add.sh` and `unit3/routes3del.sh` that contains commands that will respective establish and delete the following routes

- 18.227.52.0/24 via the interface to your 2nd VM
- 71.124.0.0/16 via the IP address of your 2nd VM
- 111.154.147.224/28 via the IP address of your 2nd VM
- 49.107.89.64/27 via the IP address of your 2nd VM
- 109.58.100.0/23 via the IP address of your 2nd VM
- 31.15.176.0/20 via the IP address of your 2nd VM

0.5.5 Create files `unit3/routes4add.sh` and `unit3/routes4del.sh` that contains commands that will respective establish and delete the following routes

- 109.166.55.176/28 via the interface to your 2nd VM
- 67.41.172.240/29 via the interface to your 2nd VM
- 82.176.198.0/28 via the interface to your 2nd VM
- 41.169.128.0/17 via the interface to your 2nd VM
- 115.252.82.160/28 via the IP address of your 2nd VM
- 89.52.164.200/29 via the IP address of your 2nd VM