

- 1) Please provide screenshots for the ifconfig output to prove that your changes have taken effect

h1

The screenshot shows a terminal window titled "root@UbuntuDockerGuest-1: ~". The window contains the configuration file "/etc/network/interfaces". The file includes a sample network configuration for an interface named eth0, which is set to static IP 192.168.1.2 with netmask 255.255.255.0. It also includes a comment about loading custom interface files from /etc/network/interfaces.d/. At the bottom of the file, there is a section for DHCP configuration. The terminal window has a dark background and light-colored text. A status bar at the bottom displays keyboard shortcuts for various actions like Help, Format, Append, Backup File, Cancel, Mac Format, Prepend, and Browse.

```
GNU nano 7.2          /etc/network/interfaces *

#
# This is a sample network config, please uncomment lines to configure the network
#

# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*

# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.168.1.2
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf

# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-1

File Name to Write: /etc/network/interfaces
^G Help      M-D DOS Format     M-A Append      M-B Backup File
^C Cancel    M-M Mac Format     M-P Prepend    ^T Browse
```

```
root@UbuntuDockerGuest-1: ~
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^].
UbuntuDockerGuest-1 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-1:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.2 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:faff:fe3e:f200 prefixlen 64 scopeid 0x20<link>
            ether 02:42:fa:3e:f2:00 txqueuelen 1000 (Ethernet)
            RX packets 63 bytes 5082 (5.0 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 9 bytes 726 (726.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-1:~#
```

h2

```
root@UbuntuDockerGuest-2: ~
root@UbuntuDockerGuest-1: ~
root@UbuntuDockerGuest-2: ~
GNU nano 7.2          /etc/network/interfaces *

#
# This is a sample network config, please uncomment lines to configure the network
#
# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*
#
# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.168.2.2
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf

# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-2

File Name to Write: /etc/network/interfaces
^G Help      M-D DOS Format     M-A Append      M-B Backup File
^C Cancel    M-M Mac Format     M-P Prepend    ^T Browse
```

```
root@UbuntuDockerGuest-2: ~
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^].
UbuntuDockerGuest-2 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-2:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.2.2 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:84ff:fe31:ee00 prefixlen 64 scopeid 0x20<link>
            ether 02:42:84:31:ee:00 txqueuelen 1000 (Ethernet)
            RX packets 71 bytes 5602 (5.6 KB)
            RX errors 0 dropped 2 overruns 0 frame 0
            TX packets 11 bytes 866 (866.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-2:~#
```

h3

root@UbuntuDockerGuest-3: ~

```
GNU nano 7.2          /etc/network/interfaces

#
# This is a sample network config, please uncomment lines to configure the network
#

# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*

# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.163.2.4
    netmask 255.255.252.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf

# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-3

[ Read 19 lines ]
^G Help      ^O Write Out ^W Where Is  ^K Cut      ^T Execute   ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^/ Go To Line
```

```
root@UbuntuDockerG... ~ root@UbuntuDockerG... ~ root@UbuntuDockerG... ~
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^].
UbuntuDockerGuest-3 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-3:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.163.2.4 netmask 255.255.252.0 broadcast 0.0.0.0
        inet6 fe80::42:c1ff:fe5b:ee00 prefixlen 64 scopeid 0x20<link>
            ether 02:42:c1:5b:ee:00 txqueuelen 1000 (Ethernet)
            RX packets 77 bytes 6062 (6.0 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 11 bytes 866 (866.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-3:~#
```

h4

root@UbuntuDockerGuest-4: ~

```
GNU nano 7.2          /etc/network/interfaces *
```

```
# This is a sample network config, please uncomment lines to configure the network
#
# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*
#
# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.168.2.5
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf

# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-4
```

File Name to Write: /etc/network/interfaces

^G Help M-D DOS Format M-A Append M-B Backup File
^C Cancel M-M Mac Format M-P Prepend ^T Browse

```
root@UbuntuDockerGuest-4: ~
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^].
UbuntuDockerGuest-4 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-4:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.2.5 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:e2ff:fe15:af00 prefixlen 64 scopeid 0x20<link>
            ether 02:42:e2:15:af:00 txqueuelen 1000 (Ethernet)
            RX packets 73 bytes 5614 (5.6 KB)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 12 bytes 936 (936.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-4:~#
```

h5

root@UbuntuDockerGuest-5: ~

```
GNU nano 7.2          /etc/network/interfaces *
```

```
# This is a sample network config, please uncomment lines to configure the network
#
# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*
#
# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.168.1.5
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf

# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-5
```

File Name to Write: /etc/network/interfaces

^G Help M-D DOS Format M-A Append M-B Backup File
^C Cancel M-M Mac Format M-P Prepend ^T Browse

```
[+] root@UbuntuDockerGuest-5: ~
root@UbuntuDockerG... × root@UbuntuDockerG... × root@UbuntuDockerG... × ▾
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
UbuntuDockerGuest-5 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-5:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.1.5 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:2bff:feab:d400 prefixlen 64 scopeid 0x20<link>
            ether 02:42:2b:ab:d4:00 txqueuelen 1000 (Ethernet)
            RX packets 64 bytes 4924 (4.9 KB)
            RX errors 0 dropped 5 overruns 0 frame 0
            TX packets 11 bytes 866 (866.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-5:~#
```

h6

root@UbuntuDockerGuest-6: ~

```
GNU nano 7.2          /etc/network/interfaces *
```

```
# This is a sample network config, please uncomment lines to configure the network
#
# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*
#
# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.168.2.19
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf
#
# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-6
```

File Name to Write: /etc/network/interfaces

^G Help M-D DOS Format M-A Append M-B Backup File
^C Cancel M-M Mac Format M-P Prepend ^T Browse

```
root@UbuntuDockerG... × root@UbuntuDockerG... × root@UbuntuDockerG... ×
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^].
UbuntuDockerGuest-6 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-6:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.2.19 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:eaaff:fe45:6d00 prefixlen 64 scopeid 0x20<link>
            ether 02:42:ea:45:6d:00 txqueuelen 1000 (Ethernet)
            RX packets 62 bytes 4764 (4.7 KB)
            RX errors 0 dropped 6 overruns 0 frame 0
            TX packets 11 bytes 866 (866.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-6:~#
```

h7

The screenshot shows a terminal window titled "root@UbuntuDockerGuest-7: ~". The window contains the configuration file for the network interfaces, specifically "/etc/network/interfaces". The file includes comments for static and DHCP configurations for the eth0 interface, along with gateway and nameserver settings. The terminal is running the GNU nano 7.2 editor. At the bottom of the screen, there is a menu bar with options like Help, DOS Format, Append, Backup File, Cancel, Mac Format, Prepend, and Browse.

```
GNU nano 7.2          /etc/network/interfaces *

#
# This is a sample network config, please uncomment lines to configure the network
#

# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*

# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.163.56.7
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf

# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-7

File Name to Write: /etc/network/interfaces
^G Help      M-D DOS Format      M-A Append      M-B Backup File
^C Cancel    M-M Mac Format      M-P Prepend    ^T Browse
```

```
root@UbuntuDockerG... × root@UbuntuDockerG... × root@UbuntuDockerG... ×
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
UbuntuDockerGuest-7 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-7:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.163.56.7 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:67ff:fe8:8500 prefixlen 64 scopeid 0x20<link>
            ether 02:42:67:f8:85:00 txqueuelen 1000 (Ethernet)
            RX packets 50 bytes 3716 (3.7 KB)
            RX errors 0 dropped 2 overruns 0 frame 0
            TX packets 11 bytes 866 (866.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-7:~#
```

h8

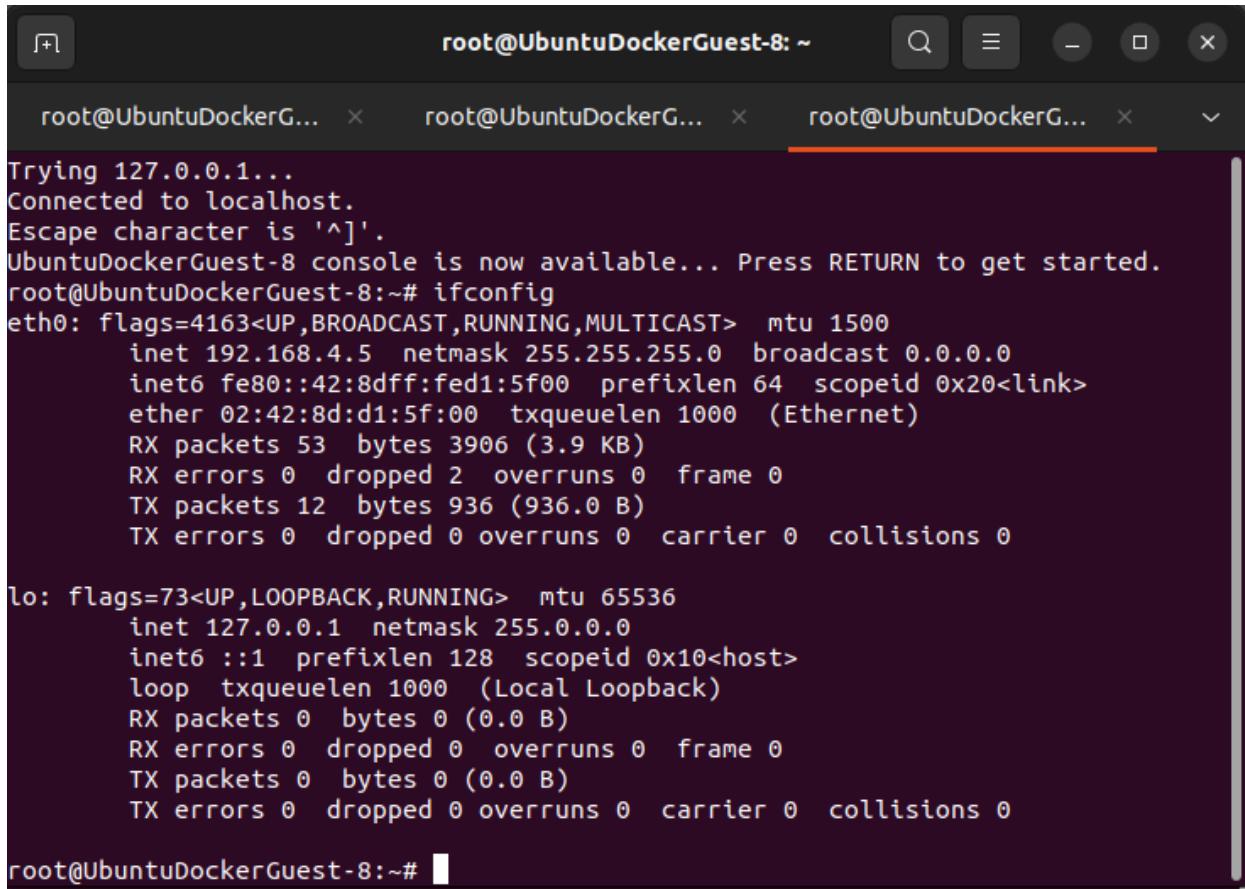
root@UbuntuDockerGuest-8: ~

```
GNU nano 7.2          /etc/network/interfaces *
```

```
# This is a sample network config, please uncomment lines to configure the network
#
# Uncomment this line to load custom interface files
# source /etc/network/interfaces.d/*
#
# Static config for eth0
auto eth0
iface eth0 inet static
    address 192.168.4.5
    netmask 255.255.255.0
#    gateway 192.168.0.1
#    up echo nameserver 192.168.0.1 > /etc/resolv.conf
#
# DHCP config for eth0
#auto eth0
#iface eth0 inet dhcp
#    hostname UbuntuDockerGuest-8
```

File Name to Write: /etc/network/interfaces

^G Help M-D DOS Format M-A Append M-B Backup File
^C Cancel M-M Mac Format M-P Prepend ^T Browse



The screenshot shows a terminal window titled "root@UbuntuDockerGuest-8: ~". The window has three tabs, all showing the same content. The content is a root shell session displaying the output of the "ifconfig" command. The output shows two interfaces: "eth0" and "lo".

```
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^].
UbuntuDockerGuest-8 console is now available... Press RETURN to get started.
root@UbuntuDockerGuest-8:~# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.4.5 netmask 255.255.255.0 broadcast 0.0.0.0
        inet6 fe80::42:8dff:fed1:5f00 prefixlen 64 scopeid 0x20<link>
            ether 02:42:8d:d1:5f:00 txqueuelen 1000 (Ethernet)
            RX packets 53 bytes 3906 (3.9 KB)
            RX errors 0 dropped 2 overruns 0 frame 0
            TX packets 12 bytes 936 (936.0 B)
            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<host>
            loop txqueuelen 1000 (Local Loopback)
            RX packets 0 bytes 0 (0.0 B)
            RX errors 0 dropped 0 overruns 0 frame 0
            TX packets 0 bytes 0 (0.0 B)
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@UbuntuDockerGuest-8:~#
```

- 2) What systems can each system communicate with? Please explain why a system can or cannot communicate with the system in question.

Systems can communicate with each other if they are on the same subnet. For example, UbuntuDockerGuest-1 can communicate with UbuntuDockerGuest-5 because they are under the same subnet 192.168.1.0/24.

So, UbuntuDockerGuest-1 and UbuntuDockerGuest-5 can communicate.
UbuntuDockerGuest-2, UbuntuDockerGuest-4, UbuntuDockerGuest-6 can communicate under the same subnet, 192.168.2.0/24.

UbuntuDockerGuest-8 is alone in its subnet, so it is unable to communicate.
UbuntuDockerGuest-3 is alone in its subnet, so it is unable to communicate.
UbuntuDockerGuest-7 is alone in its subnet, so it is unable to communicate.