

# Hands-on Lab: Working with Networking Commands



Estimated time needed: **30** minutes

## Learning Objectives

After completing this lab, you will be able to:

- View your network configuration using the `hostname` and `ip` commands
- Test a network connection using the `ping` command
- Transfer data using the `curl` and `wget` commands

# Exercise 1 - View configuration info about your network

## 1.1. Display your system's hostname and IP address

`hostname`

A **hostname** is a name that is assigned to a computer or device on a network, and it is used to identify and communicate with that device.

To view the current hostname, run the command below:

```
1 hostname
```

An **IP address** (Internet Protocol address) is a numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication.

You can use the `-i` option to view the IP address of the host:

```
1 hostname -i
```

## 1.2. Display network interface configuration

Please execute the below commands to install the `iproute2` package:

```
1 sudo apt update
2 sudo apt install iproute2
```

### iproute2

The `ip` command is used to configure or display network interface parameters for a network.

To display the configuration of all network interfaces of your system, enter:

```
1 ip a
```

To display the configuration of a particular device, such as the ethernet adapter `eth0`, enter:

```
1 ip addr show eth0
```

`eth0` is usually the primary network interface that connects your server to the network.

You can see your server's IP address in line 2 after the word `inet`.

```
aya: /home/project  theia@theia-naimbenalaya: /home/project  theia@theia-naimbenalaya: /home/project

theia@theia-naimbenalaya:/home/project$ hostname
theia-naimbenalaya
theia@theia-naimbenalaya:/home/project$ hostname -i
172.22.185.97
theia@theia-naimbenalaya:/home/project$ sudo apt update
sudo apt install iproute2
Get:2 https://download.docker.com/linux/ubuntu jammy InRelease [48.8 kB]
Get:1 https://apt.llvm.org/jammy llvm-toolchain-jammy-17 InRelease [6833
Get:4 https://deb.nodesource.com/node_20.x nodistro InRelease [12.1 kB]
Get:5 https://download.docker.com/linux/ubuntu jammy/stable amd64 Package
Get:6 http://archive.ubuntu.com/ubuntu jammy InRelease [270 kB]
Get:7 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:8 https://apt.llvm.org/jammy llvm-toolchain-jammy-17/main amd64 Packa
Get:9 https://deb.nodesource.com/node_20.x nodistro/main amd64 Packages [
Get:10 https://repo.mongodb.org/apt/ubuntu jammy/mongodb-org/6.0 InReleas
Get:3 https://apache.jfrog.io/artifactory/cassandra-deb 40x InRelease [39
Get:11 https://ppa.launchpadcontent.net/deadsnakes/ppa/ubuntu jammy InRel
Get:12 https://ppa.launchpadcontent.net/mozillateam/ppa/ubuntu jammy InRe
Get:13 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:14 https://repo.mongodb.org/apt/ubuntu jammy/mongodb-org/6.0/multiver
s [99.4 kB]
Get:15 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy InRelease
Get:16 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64
B]
Get:17 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:18 https://apache.jfrog.io/artifactory/cassandra-deb 40x/main amd64 P
Get:19 https://ppa.launchpadcontent.net/deadsnakes/ppa/ubuntu jammy/main
33.2 kB]
Get:20 https://repo.mongodb.org/apt/ubuntu jammy/mongodb-org/6.0/multiver
s [96.0 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy/main amd64 Packages [1792 k
Get:22 https://ppa.launchpadcontent.net/mozillateam/ppa/ubuntu jammy/main
```

```

theia@theia-naimbenaalaya:/home/project$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: tunl0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000
    link/ipip 0.0.0.0 brd 0.0.0.0
3: eth0@if866: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1480 qdisc noqueue state UP group default qlen 1000
    link/ether 42:24:cd:8c:f9:d7 brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 172.22.185.97/32 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::4024:cdff:fe8c:f9d7/64 scope link
        valid_lft forever preferred_lft forever
theia@theia-naimbenaalaya:/home/project$ ip addr show eth0
3: eth0@if866: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1480 qdisc noqueue state UP group default qlen 1000
    link/ether 42:24:cd:8c:f9:d7 brd ff:ff:ff:ff:ff:ff link-netnsid 0
    inet 172.22.185.97/32 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::4024:cdff:fe8c:f9d7/64 scope link
        valid_lft forever preferred_lft forever
theia@theia-naimbenaalaya:/home/project$ |

```

## Exercise 2 - Test network connectivity

### 2.1. Test connectivity to a host

**ping**

Use the **ping** command to check if **www.google.com** is reachable. The command keeps pinging data packets to server at **www.google.com** and prints the response it gets back. (Press **Ctrl** + **c** to stop ping.)

```
1 ping www.google.com
```

If you want to ping only a limited number of times, use **-c** option.

```
1 ping -c 5 www.google.com
```

aya: /home/project theia@theia-naimbenaalaya: /home/project theia@theia-naimbenaalaya: /home/project X

```
theia@theia-naimbenaalaya:/home/project$ ping www.google.com
PING www.google.com (142.251.167.103): 56 data bytes
64 bytes from 142.251.167.103: icmp_seq=0 ttl=104 time=2.093 ms
64 bytes from 142.251.167.103: icmp_seq=1 ttl=104 time=1.708 ms
64 bytes from 142.251.167.103: icmp_seq=2 ttl=104 time=1.638 ms
64 bytes from 142.251.167.103: icmp_seq=3 ttl=104 time=1.718 ms
64 bytes from 142.251.167.103: icmp_seq=4 ttl=104 time=1.582 ms
64 bytes from 142.251.167.103: icmp_seq=5 ttl=104 time=1.593 ms
64 bytes from 142.251.167.103: icmp_seq=6 ttl=104 time=1.712 ms
64 bytes from 142.251.167.103: icmp_seq=7 ttl=104 time=1.874 ms
64 bytes from 142.251.167.103: icmp_seq=8 ttl=104 time=1.843 ms
64 bytes from 142.251.167.103: icmp_seq=9 ttl=104 time=1.731 ms
64 bytes from 142.251.167.103: icmp_seq=10 ttl=104 time=1.725 ms
64 bytes from 142.251.167.103: icmp_seq=11 ttl=104 time=1.786 ms
64 bytes from 142.251.167.103: icmp_seq=12 ttl=104 time=1.808 ms
64 bytes from 142.251.167.103: icmp_seq=13 ttl=104 time=1.862 ms
64 bytes from 142.251.167.103: icmp_seq=14 ttl=104 time=1.530 ms
64 bytes from 142.251.167.103: icmp_seq=15 ttl=104 time=1.609 ms
64 bytes from 142.251.167.103: icmp_seq=16 ttl=104 time=1.726 ms
64 bytes from 142.251.167.103: icmp_seq=17 ttl=104 time=1.700 ms
64 bytes from 142.251.167.103: icmp_seq=18 ttl=104 time=1.869 ms
64 bytes from 142.251.167.103: icmp_seq=19 ttl=104 time=1.768 ms
64 bytes from 142.251.167.103: icmp_seq=20 ttl=104 time=1.761 ms
64 bytes from 142.251.167.103: icmp_seq=21 ttl=104 time=1.678 ms
64 bytes from 142.251.167.103: icmp_seq=22 ttl=104 time=1.613 ms
64 bytes from 142.251.167.103: icmp_seq=23 ttl=104 time=1.830 ms
64 bytes from 142.251.167.103: icmp_seq=24 ttl=104 time=1.649 ms
64 bytes from 142.251.167.103: icmp_seq=25 ttl=104 time=1.736 ms
64 bytes from 142.251.167.103: icmp_seq=26 ttl=104 time=1.571 ms
64 bytes from 142.251.167.103: icmp_seq=27 ttl=104 time=1.676 ms
64 bytes from 142.251.167.103: icmp_seq=28 ttl=104 time=1.834 ms
64 bytes from 142.251.167.103: icmp_seq=29 ttl=104 time=1.681 ms
```

```
64 bytes from 142.251.167.103: icmp_seq=75 ttl=104 time=1.723 ms
64 bytes from 142.251.167.103: icmp_seq=76 ttl=104 time=1.634 ms
64 bytes from 142.251.167.103: icmp_seq=77 ttl=104 time=1.778 ms
64 bytes from 142.251.167.103: icmp_seq=78 ttl=104 time=1.751 ms
64 bytes from 142.251.167.103: icmp_seq=79 ttl=104 time=1.736 ms
64 bytes from 142.251.167.103: icmp_seq=80 ttl=104 time=1.831 ms
^C--- www.google.com ping statistics ---
81 packets transmitted, 81 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.521/1.728/2.093/0.103 ms
theia@theia-naimbenaalaya:/home/project$ ping -c 5 www.google.com
PING www.google.com (142.251.167.103): 56 data bytes
64 bytes from 142.251.167.103: icmp_seq=0 ttl=104 time=2.364 ms
64 bytes from 142.251.167.103: icmp_seq=1 ttl=104 time=1.598 ms
64 bytes from 142.251.167.103: icmp_seq=2 ttl=104 time=1.746 ms
64 bytes from 142.251.167.103: icmp_seq=3 ttl=104 time=1.885 ms
64 bytes from 142.251.167.103: icmp_seq=4 ttl=104 time=1.864 ms
--- www.google.com ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max/stddev = 1.598/1.891/2.364/0.257 ms
```

## Exercise 3 - View or download data from a server

### 3.1. Transfer data from a server

`curl`

You can use `curl` to access the file at the following URL and display the file's contents on your screen:

```
1 curl https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/sets/t
```

To access the file at the given URL and also save it in your current working directory, use the `-O` option:

```
1 curl -O https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/sets/t
```

You can also use `curl` to view the HTML code for any web page if you know its URL.

### 3.2. Download file(s) from a URL

`wget`

The `wget` command is similar to `curl`, however its primary use is for file downloading. One unique feature of `wget` is that it can recursively download files at a URL.

To see `wget` in action, first remove `usdoi.txt` from your current directory:

```
1 rm usdoi.txt
```

then download it again using `wget` as follows:

```
1 wget https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/sets/t
```

aya: /home/project X theia@theia-naimbenaalaya: /home/project X theia@theia-naimbenaalaya: /home/project X

```
theia@theia-naimbenaalaya:/home/project$ curl https://cf-courses-data.s3.us.cloud-object-s
torage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/usdoi.txt
The unanimous Declaration of the thirteen united States of America, When in the
Course of human events, it becomes necessary for one people to dissolve the
political bands which have connected them with another, and to assume among the
powers of the earth, the separate and equal station to which the Laws of Nature
and of Nature's God entitle them, a decent respect to the opinions of mankind
requires that they should declare the causes which impel them to the
separation.
```

```
We hold these truths to be self-evident, that all men are created equal, that
they are endowed by their Creator with certain unalienable Rights, that among
these are Life, Liberty and the pursuit of Happiness.--That to secure these
rights, Governments are instituted among Men, deriving their just powers from
the consent of the governed, --That whenever any Form of Government becomes
destructive of these ends, it is the Right of the People to alter or to abolish
it, and to institute new Government, laying its foundation on such principles
and organizing its powers in such form, as to them shall seem most likely to
effect their Safety and Happiness. Prudence, indeed, will dictate that
Governments long established should not be changed for light and transient
causes; and accordingly all experience hath shewn, that mankind are more
disposed to suffer, while evils are sufferable, than to right themselves by
abolishing the forms to which they are accustomed. But when a long train of
abuses and usurpations, pursuing invariably the same Object evinces a design to
reduce them under absolute Despotism, it is their right, it is their duty, to
throw off such Government, and to provide new Guards for their future
security.--Such has been the patient sufferance of these Colonies; and such is
now the necessity which constrains them to alter their former Systems of
Government. The history of the present King of Great Britain is a history of
repeated injuries and usurpations, all having in direct object the
establishment of an absolute Tyranny over these States. To prove this, let
Facts be submitted to a candid world.
```

```

Colonies are, and of Right ought to be Free and Independent States; that they
are Absolved from all Allegiance to the British Crown, and that all political
connection between them and the State of Great Britain, is and ought to be
totally dissolved; and that as Free and Independent States, they have full
Power to levy War, conclude Peace, contract Alliances, establish Commerce, and
to do all other Acts and Things which Independent States may of right do. And
for the support of this Declaration, with a firm reliance on the protection of
divine Providence, we mutually pledge to each other our Lives, our Fortunes and
our sacred Honor.
theia@theia-naimbenaalaya:/home/project$ curl -O https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/usdoi.txt
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 8121 100 8121 0 0 87024 0 --:--:-- --:--:-- --:--:-- 87322
theia@theia-naimbenaalaya:/home/project$ rm usdoi.txt
theia@theia-naimbenaalaya:/home/project$ wget https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/usdoi.txt
--2025-06-30 19:09:06-- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBM-DB0250EN-SkillsNetwork/labs/Bash%20Scripting/usdoi.txt
Resolving cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)... 169.63.118.104, 169.63.118.104
Connecting to cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud (cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud)|169.63.118.104|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 8121 (7.9K) [text/plain]
Saving to: 'usdoi.txt'

usdoi.txt 100%[=====] 7.93K --.-KB/s in 0s

2025-06-30 19:09:06 (3.27 GB/s) - 'usdoi.txt' saved [8121/8121]

theia@theia-naimbenaalaya:/home/project$

```

## Practice exercises

Before you begin, ensure you're in your `/home/project` directory by entering:

```

1 cd ~/home/project
2 pwd

```

### 1. Display your host's IP address.

▼ Click here for Hint

Use the `hostname` command with the correct option.

**Note:** There are many other ways to get your IP address, for example using `ping` or `ip`. Both will display your IP address, but they will also include a lot of extra information.

▼ Click here for Solution

```
1 hostname -i
```

### 2. Get connectivity stats on your connection to `www.google.com`.

▼ Click here for Hint

Use the `ping` command.

▼ Click here for Solution

```
1 ping www.google.com
```



3. View info about your ethernet adapter `eth0`.

▼ Click here for Hint

Use the `ip` command with the correct argument.

▼ Click here for Solution

```
1 ip addr show eth0
```

4. View the HTML code for `www.google.com`'s landing page.

▼ Click here for Hint

Use the `curl` command with the correct argument.

▼ Click here for Solution

```
1 curl www.google.com
```

5. Download the HTML code for `www.google.com`'s landing page.

▼ Click here for Hint

Use the `wget` command with the correct argument.

▼ Click here for Solution

```
1 wget www.google.com
```

**Note:** `wget` saves the HTML code as `index.html`. You can check this with:

```
1 ls -l
```

## Summary

In this lab, you learned how to:

- View your network configuration using the `hostname` and `ip` commands
- Test a network connection using the `ping` command
- Transfer data using the `curl` and `wget` commands