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# Hosting a Webserver Using a Raspberry Pi

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Topics: [Edge Computing](#)

The Raspberry Pi can be used as a web server on your main local network or the internet at large. It is a great selection in cases where you want an intranet for the office or a web development server.

You can create a local Pi webserver to deliver various contents while you are surfing over the internet. To make the webserver operational, the Raspberry Pi should be connected to the local network. And, ensured that it has the latest version of the operating system of **Raspbian**. These are the defined instructions you need for any model to work even on the pocket-sized Raspberry Pi Zero W and the very powerful Raspberry Pi 4.



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## Prerequisites

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## Prerequisites

For the readers to follow through, they are assumed to have an installed operating system with the Pixel window manager. In summary, you need to have:

1. A Raspberry Pi Zero W.
2. Apache webserver.
3. Internet.
4. Modules such as SSH enabled.

## Introduction

Various web servers can be related to the Raspberry Pi, and each has utilization advantages. This tutorial uses the Apache webserver application.

**Apache** is an open-source web server that provides content via the internet. It can be installed on a Raspberry Pi and used to deliver web



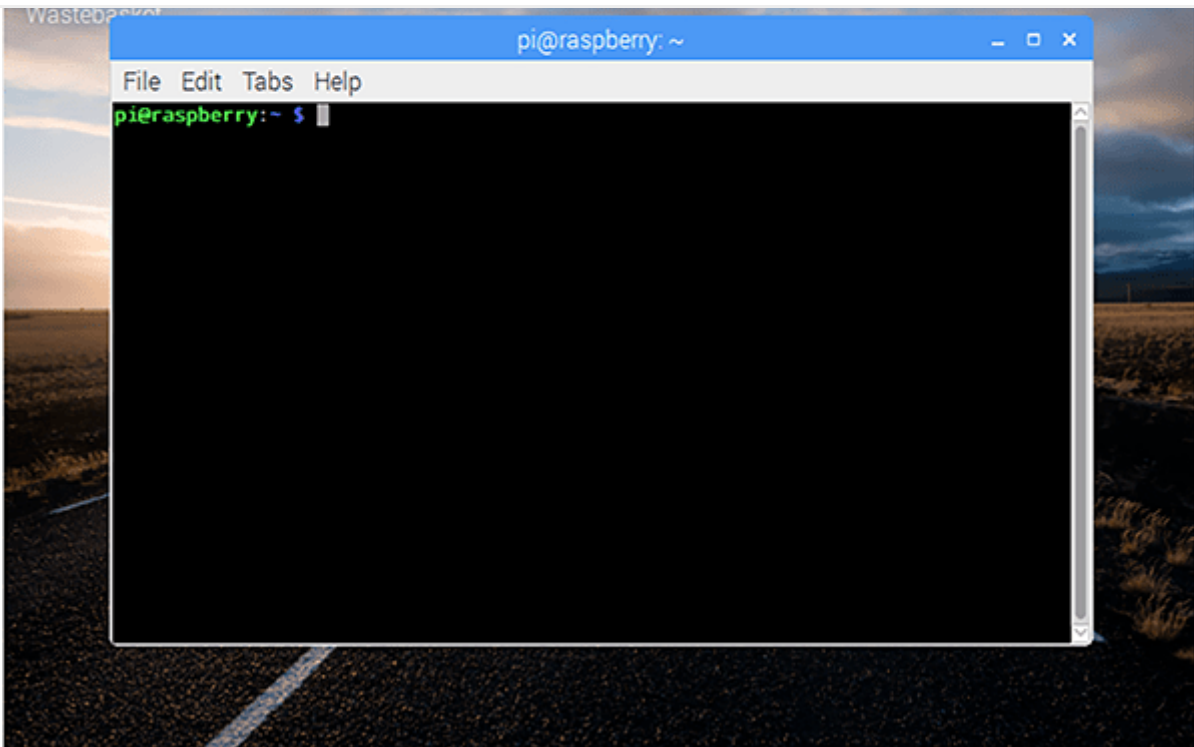
Apache offers the advantage of being able to handle high traffic with less configuration. You can configure it to conduct an operation you wish and the approach to use. To increase its efficiency on the Raspberry Pi, you can eliminate modules that are not required.

## Setting up Apache on Raspberry Pi

### Step 1: Accessing the terminal

This step will describe how to access the raspberry pi's terminal. This can be achieved in two main ways as shown below:

1. You can access the command terminal by clicking `CLRL+ALT+T` from the Raspbian desktop.



2. You can also opt to connect remotely through SSH in case it is enabled on the Raspberry Pi. This is possible through a tool such as Putty and then use raspberry's username and password to log in.

**Note:** The default login credentials for a raspberry Pi using SSH are: Username: pi, Password: raspberry.



```
the programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Mon Aug  9 18:56:44 2021

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set
a new password.

pi@raspberrypi:~$
```

## Step 2: Updating packages

In this step, we will make sure that the available packages in our Raspberry pi are updated by typing the command below into the terminal. This ensures you have the current versions of any file you download afterward.

```
Sudo apt update
```



```
Hit http://ftp.debian.org jessie-updates InRelease
Hit http://security.debian.org jessie/updates InRelease
Hit http://ftp.debian.org jessie Release.gpg
Hit http://archive.raspberrypi.org jessie/main i386 Packages
Hit http://ftp.debian.org jessie-updates/main i386 Packages
Hit http://ftp.debian.org jessie-updates/contrib i386 Packages
Hit http://archive.raspberrypi.org jessie/ui i386 Packages
Hit http://ftp.debian.org jessie-updates/non-free i386 Packages
Hit http://security.debian.org jessie/updates/main i386 Packages
Hit http://ftp.debian.org jessie-updates/contrib Translation-en
Hit http://security.debian.org jessie/updates/contrib i386 Packages
Hit http://ftp.debian.org jessie-updates/main Translation-en
Hit http://ftp.debian.org jessie-updates/non-free Translation-en
Hit http://security.debian.org jessie/updates/non-free i386 Packages
Hit http://ftp.debian.org jessie Release
Hit http://security.debian.org jessie/updates/contrib Translation-en
Hit http://ftp.debian.org jessie/main i386 Packages
Hit http://security.debian.org jessie/updates/main Translation-en
Hit http://ftp.debian.org jessie/contrib i386 Packages
Hit http://security.debian.org jessie/updates/non-free Translation-en
Hit http://ftp.debian.org jessie/non-free i386 Packages
```

## Step 3: Installing Apache

In the third stage, we will install apache. To Install apache2, we run the following command:

```
Sudo apt install apache2 -y
```



```
Reading state information... Done
The following extra packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.1-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine apache2-suexec-custom openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.1-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 331 not upgraded.
Need to get 2,023 kB of archives.
After this operation, 6,142 kB of additional disk space will be used.
Get:1 http://security.debian.org/ jessie/updates/main apache2-bin i386 2.4.10-10+deb8u16 [1,082 kB]
Get:2 http://security.debian.org/ jessie/updates/main apache2-utils i386 2.4.10-10+deb8u16 [200 kB]
Get:3 http://ftp.debian.org/debian/ jessie/main libapr1 i386 1.5.1-3 [104 kB]
Get:4 http://ftp.debian.org/debian/ jessie/main libaprutil1 i386 1.5.4-1 [90.8 kB]
Get:5 http://security.debian.org/ jessie/updates/main apache2-data all 2.4.10-10+deb8u16 [163 kB]
```

## Step 4: Installing PHP

This is the point where we install PHP. PHP helps in making sure that the web pages function as expected and also communicate with the database. Add PHP using the command:

```
sudo apt-get -y install php5-common php5-cgi php5
```



```
Reading state information... Done
The following extra packages will be installed:
  libonig2 libperl4-corelibs-perl libqdbm14 lsof php5-cli php5-json
  php5-readline
Suggested packages:
  php-pear php5-user-cache
The following NEW packages will be installed:
  libonig2 libperl4-corelibs-perl libqdbm14 lsof php5 php5-cgi php5-cli
  php5-common php5-json php5-readline
0 upgraded, 10 newly installed, 0 to remove and 331 not upgraded.
Need to get 8,403 kB of archives.
After this operation, 31.6 MB of additional disk space will be used.
Get:1 http://security.debian.org/ jessie/updates/main libonig2 i386 5.9.5-3.2+deb8u4 [121 kB]
Get:2 http://security.debian.org/ jessie/updates/main php5-common i386 5.6.40+dfsg-0+deb8u12 [750 kB]
Get:3 http://security.debian.org/ jessie/updates/main php5-cli i386 5.6.40+dfsg-0+deb8u12 [2,365 kB]
Get:4 http://ftp.debian.org/debian/ jessie/main libperl4-corelibs-perl all 0.003-1 [43.6 kB]
Get:5 http://ftp.debian.org/debian/ jessie/main lsof i386 4.86+dfsg-1 [312 kB]
```

## Step 5: Downloading MySQL

After PHP has been successfully installed, we can now download our desired database. In this tutorial we are using the MySQL database. To download MySQL, run the following command in the terminal:

```
sudo apt-get install MySQL-server
```





```
Reading state information... Done
The following extra packages will be installed:
  libaio1 libdbd-mysql-perl libdbi-perl libhtml-template-perl libmysqlclient18
  libterm-readkey-perl mysql-client-5.5 mysql-common mysql-server-5.5
  mysql-server-core-5.5
Suggested packages:
  libclone-perl libmldbm-perl libnet-daemon-perl libsql-statement-perl
  libipc-sharedcache-perl mailx tinycd
The following NEW packages will be installed:
  libaio1 libdbd-mysql-perl libdbi-perl libhtml-template-perl libmysqlclient18
  libterm-readkey-perl mysql-client-5.5 mysql-common mysql-server
  mysql-server-5.5 mysql-server-core-5.5
0 upgraded, 11 newly installed, 0 to remove and 331 not upgraded.
Need to get 9,046 kB of archives.
After this operation, 95.3 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://security.debian.org/ jessie/updates/main mysql-common all 5.5.62-0+
deb8u1 [75.7 kB]
Get:2 http://security.debian.org/ jessie/updates/main libmysqlclient18 i386 5.5.
62-0+deb8u1 [684 kB]
Get:3 http://ftp.debian.org/debian/ jessie/main libaio1 i386 0.3.110-1 [9,634 B] ✓
```

**Note:** When prompted to change the root password, please choose a strong password for MySQL. Make sure to write it down somewhere you can refer to later on.

## Step 6: Installing MySQL

This stage describes the installation process of the already downloaded database. When the download is finished, formal installation is required and can be done using the command:

```
sudo mysql_secure_installation
```



```
NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MySQL
SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MySQL to secure it, we'll need the current
password for the root user. If you've just installed MySQL, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MySQL
root user without the proper authorisation.

You already have a root password set, so you can safely answer 'n'.

Change the root password? [Y/n] n
... skipping.
```

## Step 7: Restarting the server

At this point, we will restart the webserver, apache2, to confirm that the changes take effect and are running. Use the command:

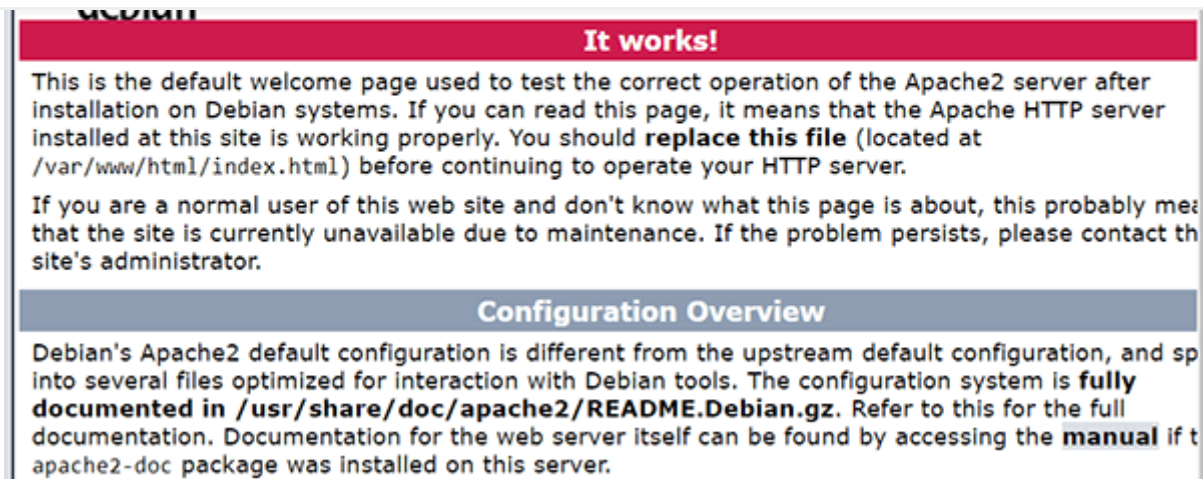
```
sudo service apache2 restart
```



```
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
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pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$  
pi@raspberrypi:~$
```

## Step 8: Testing the webserver

We will now put the apache webserver to test. Since Apache has an HTML file in the Apache web subdirectory, you can serve it on the raspberry when you browse `HTTP://[Host_IP_Address]/`. When you browse to the default page of the webserver on the Pi or using another computer, the following page will be displayed if the Apache webserver is working.

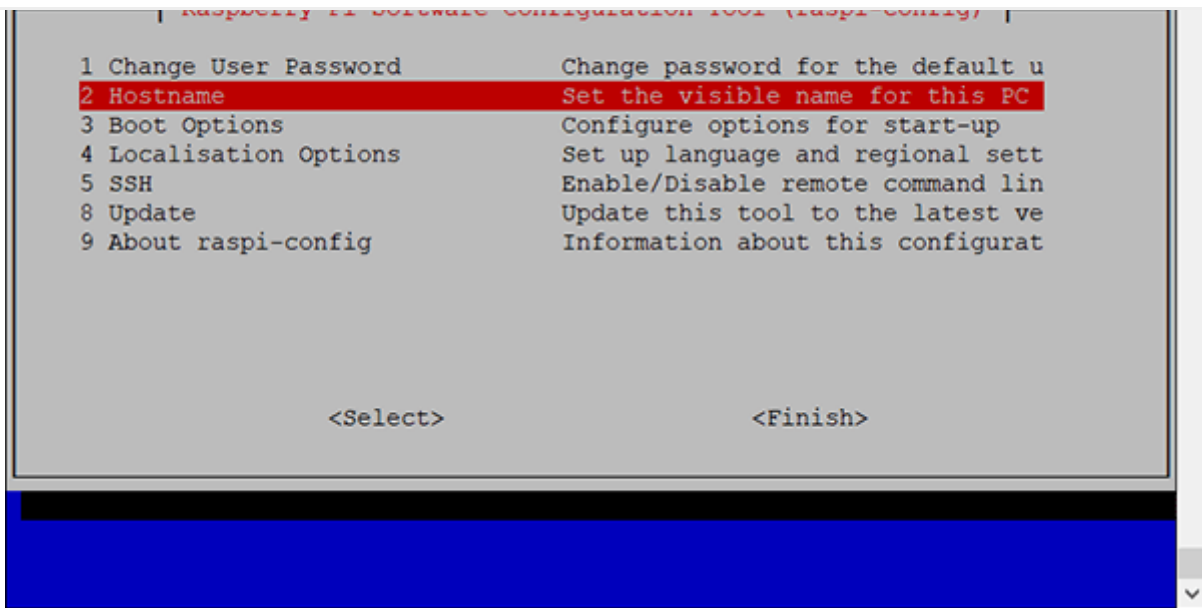


You can build your website by locating the PHP files or the HTML in the `/var/www/HTML` directory. To make the folder easily accessible to the default user, that is, the `pi`, run the command: `Sudo chown -R pi/var/www/html`

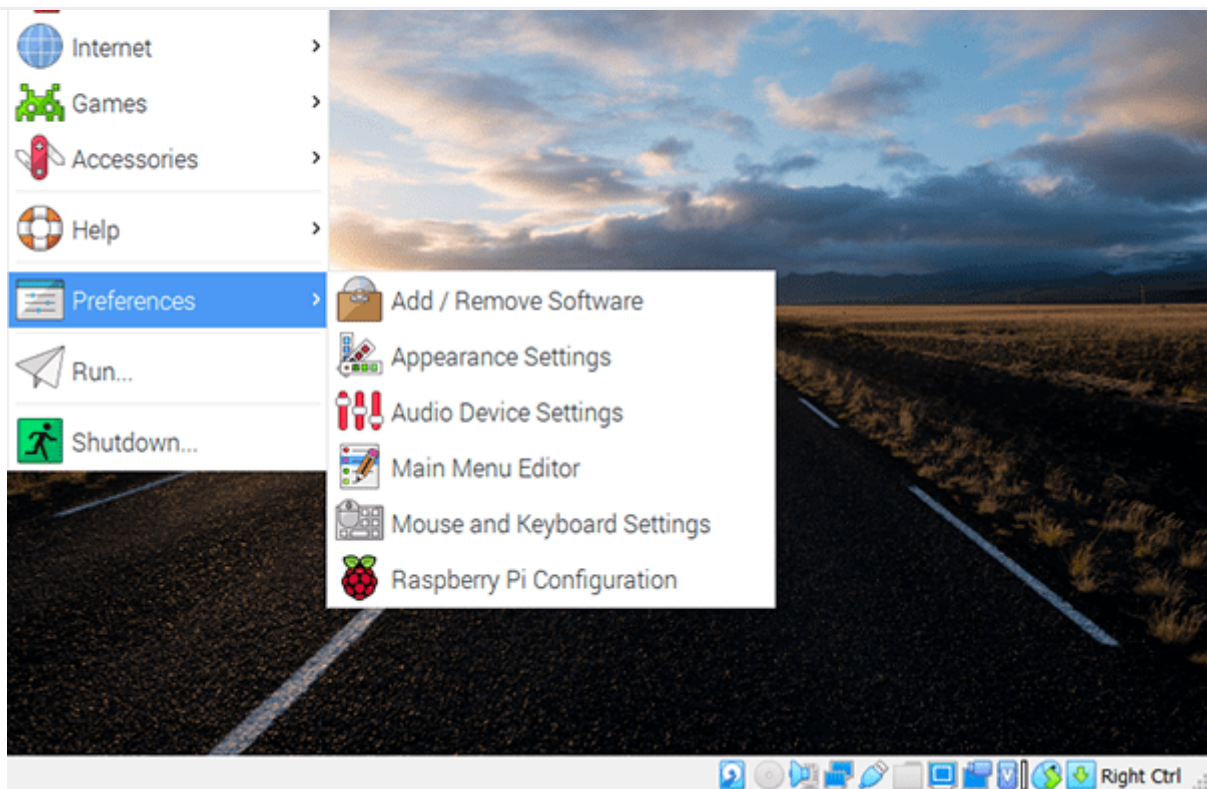
## Changing The host name of the server

The hostname of the Raspberry Pi will be `raspberrypi` by default. Since you might have other `raspberrypi` names on your network, you can make changes using the following steps:

1. Type `Sudo raspi-config` in the terminal and then select the `hostname` option.

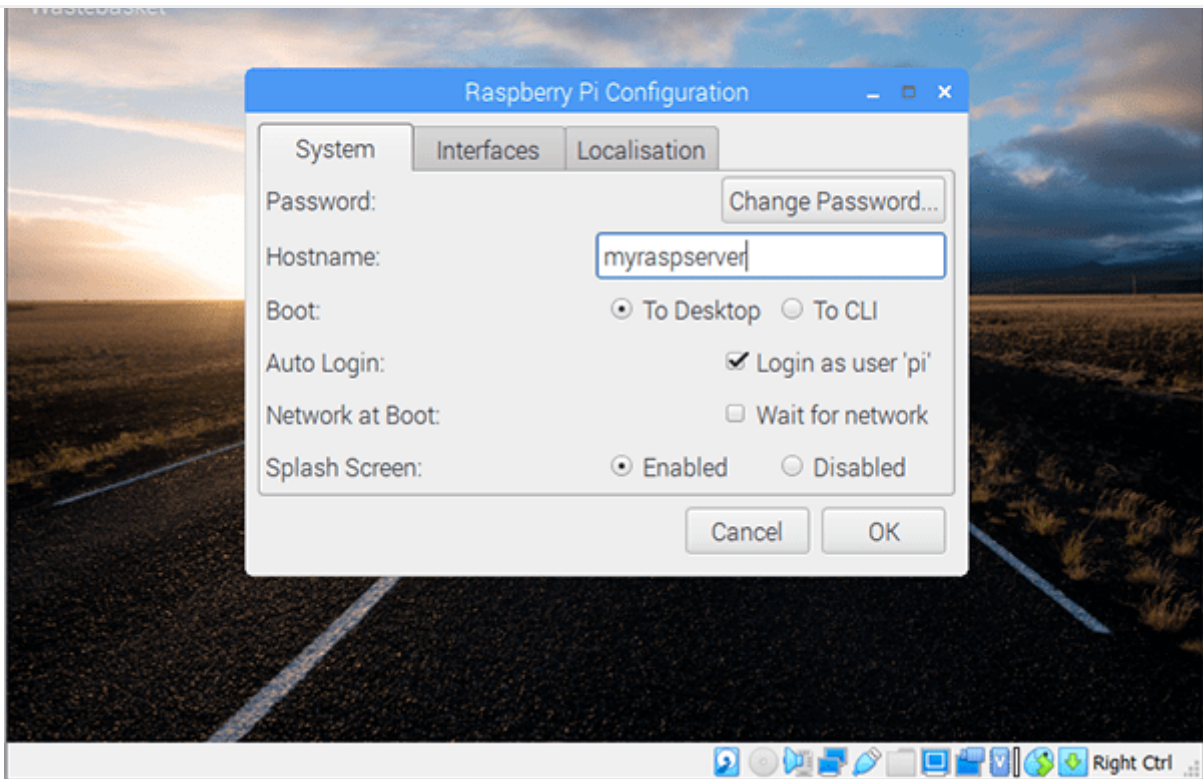


Alternatively, use the start menu to navigate to Preferences->Raspberry configuration to launch the windowed version.



2. Choose the Hostname you wish to have, for instance, “myraspserver”, then click ok.

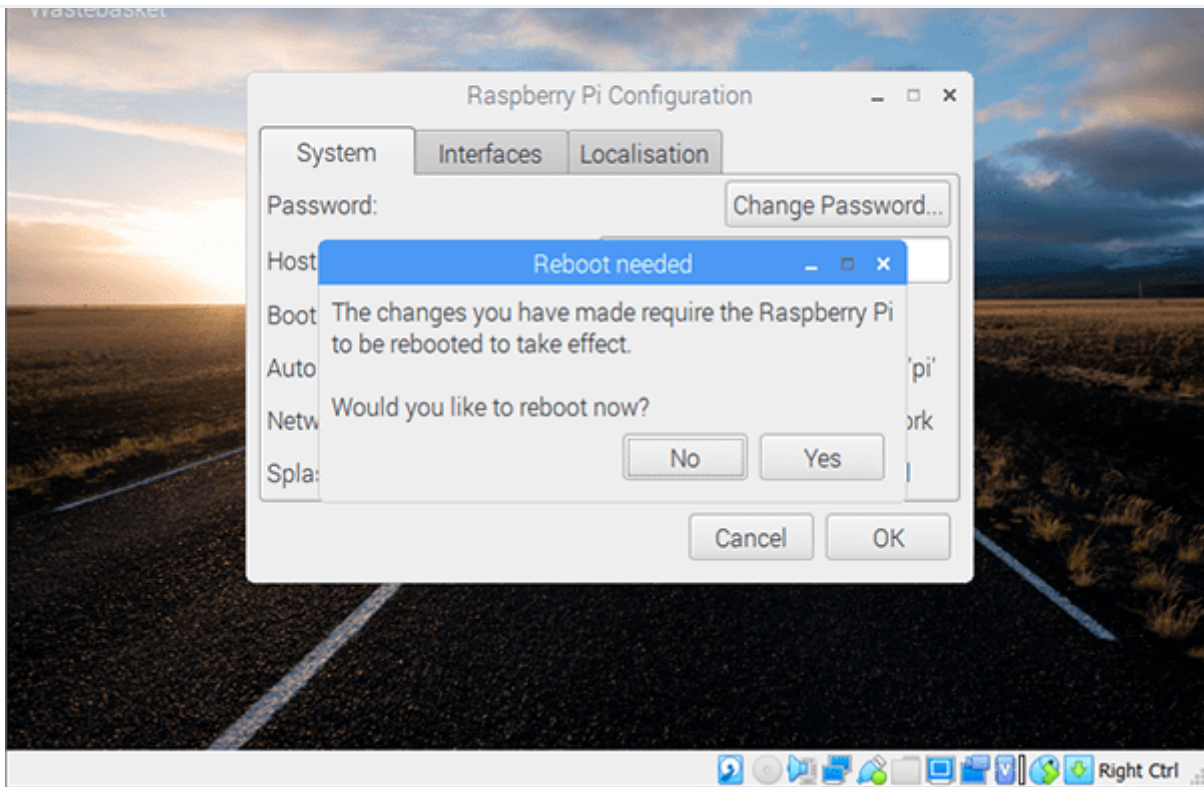




**Note:** This will assist you in getting over the warning about not using characters other than numbers, hyphens, or letters. The hyphen is only allowed in situations where it is in between a name.

3. Choose “yes” when prompted to restart.

Once you have allowed your computer to reboot, the Raspberry Pi will now be shown with its changed name.



## Conclusion

Web hosting offered by providers of such services is given at a price and in some cases, it can be very expensive. Hence, it is important to find ways of cutting such costs, especially if the hosted service is only for a small group of people.

By following the steps presented above, it is possible to install and host a web server using a Raspberry Pi. The hosted web server can be used to serve a small office through an intranet and is more cost-efficient.

## Further reading

[Broadcasting a private FM radio station using a Raspberry Pi](#)





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**Daniel** 9 months ago

does this need a wired ethernet connection? or can you do this connected wirelessly to a router?

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