Configure virtual hosts on Ubuntu 18.04 server with Apache

Apache VirtualHost is used to run multiple website in the same Apache server. It's an awesome feature of Apache 2 web server for high density deployment of websites in a single server. Apache has two types of VirtualHost configuration, IP based VirtualHost and name based VirtualHost.**IP Based VirtualHost:** In IP based VirtualHost, an Apache server has multiple IP addresses and it responds with different websites based on the IP address.

Fig 1: Apache IP based VirtualHost.

Name Based VirtualHost: In name based VirtualHost, an Apache server has a single IP address and multiple domain names configured for each website. In a DNS server, each of these domain names are assigned the IP address of the Apache server. Depending on what domain name the client used, the server returns different websites.

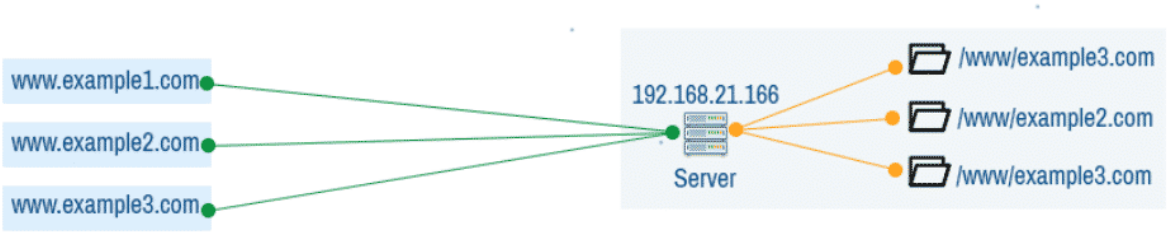


Fig 2: Apache name based VirtualHost.

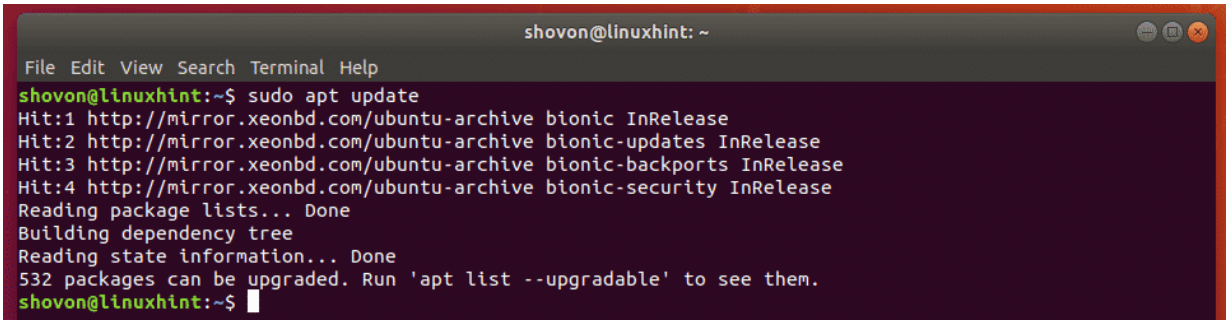
In this article, I am going to show you how to configure the Apache name based VirtualHost. I will be using Ubuntu 18.04 LTS for the demonstration. But it should work on any modern Linux distribution with little to no change. So, let's get started.

Installing Apache 2 Web Server:

Apache 2 web server is available in the official package repository of Ubuntu 18.04 LTS. So, you can easily install it with the APT package manager.

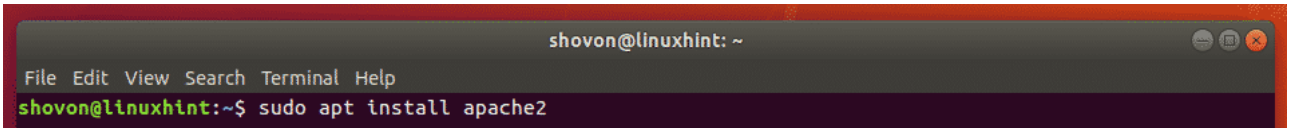
First, update the APT package repository cache with the following command:

$ sudo apt update

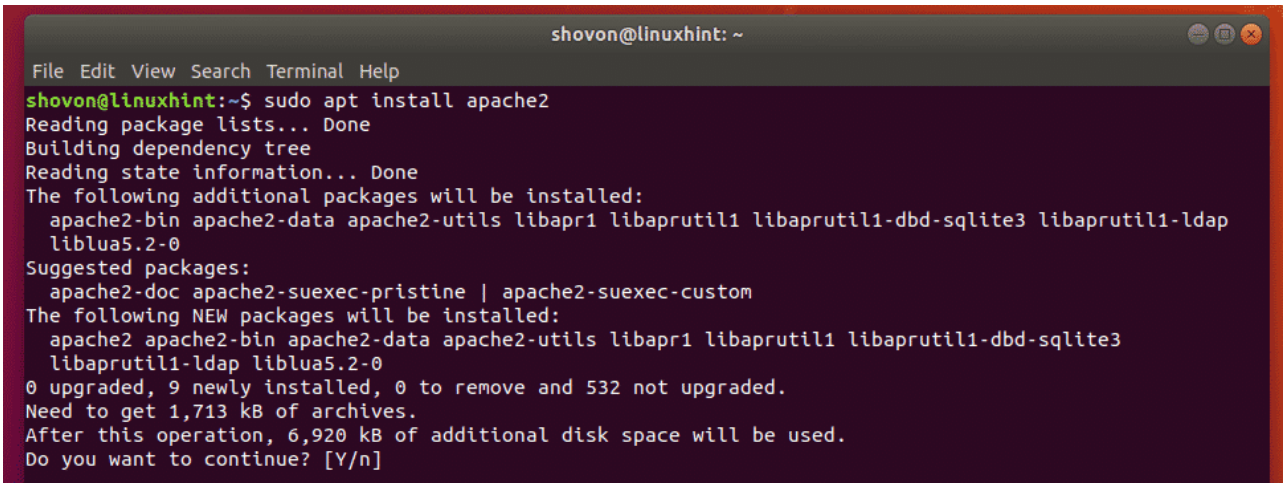


Now, run the following command to install Apache 2 web server:

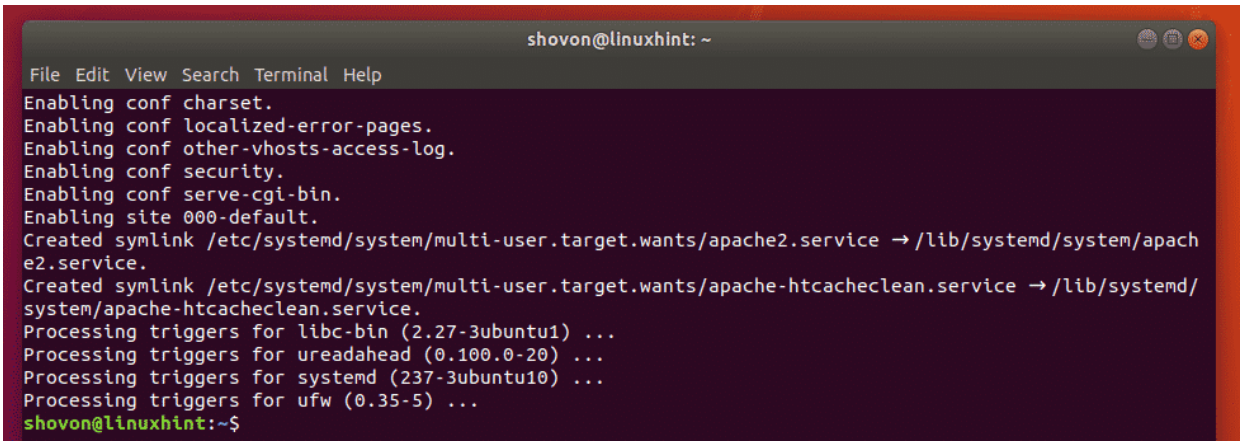
$ sudo apt install apache2



Now, press **y** and then press **<Enter>** to continue.



Apache 2 web server should be installed.



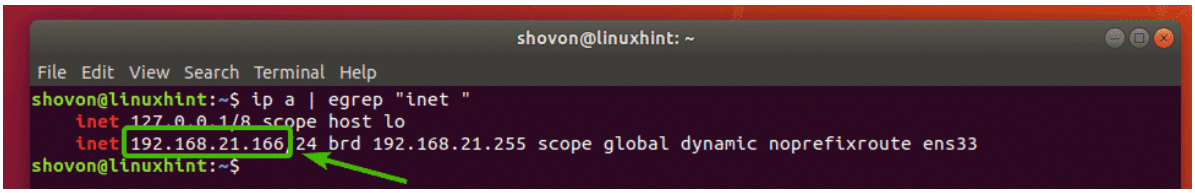
Configuring DNS:

Now, you have to configure the DNS server to map the domain names that you want to use for VirtualHost to the IP address of your Apache server.

You can find the IP address of your Apache server with the following command:

$ ip a | egrep "inet "

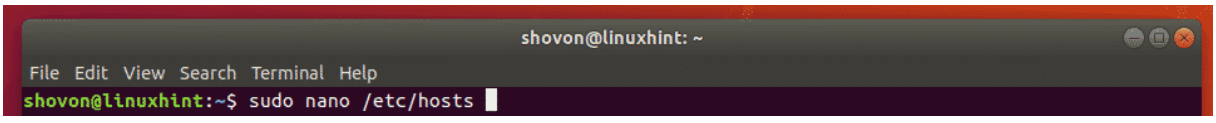
As you can see, the IP address in my case is **192.168.21.166**. It will be different for you. So, make sure to replace it with yours from now on.



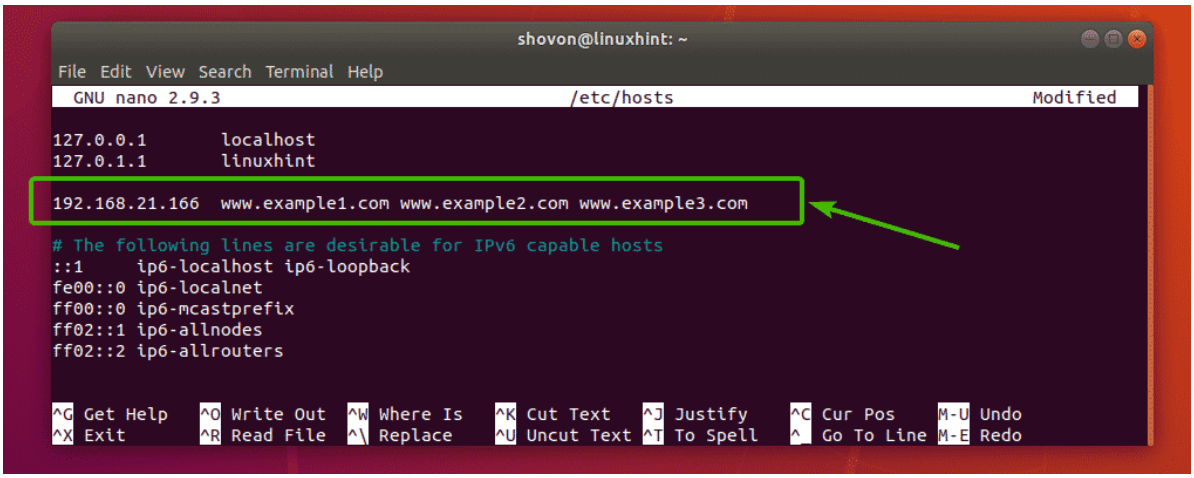
If you want to learn how to configure Apache VirtualHost locally, then you can use the **/etc/hosts** file for local DNS/name resolution.

To configure local DNS resolution, open the **/etc/hosts** file with **nano** as follows:

$ sudo nano /etc/hosts



Now, add the line as marked in the screenshot below to the file. Then press **<Ctrl>** + **x** followed by **y** and **<Enter>** to save the file.



Now, local name resolution should work.

Directory Structures:

I want to keep all the website data of my Apache VirtualHost in a specific directory **/www**. Here, I want to create a directory for each user. Each user will have his/her own **public_html/** and **logs/** directory as well.

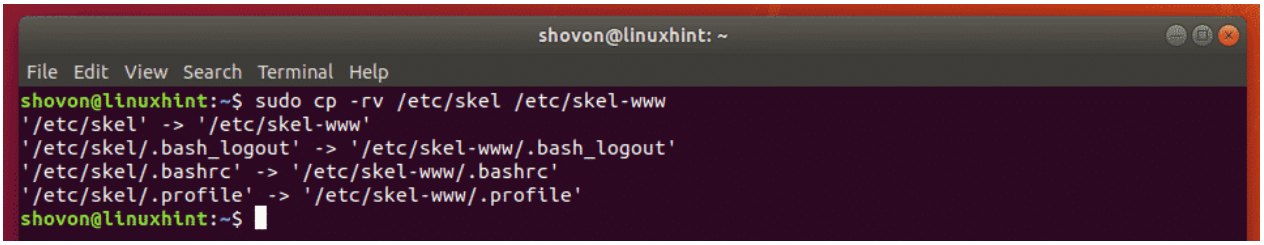
For example, for 3 users **bob (example1.com)**, **alice (example2.com)**, **linda (example3.com)**, the directory structure is as follows:

/www
- example1.com/
- www/
- public_html/
- index.html
- logs/
- example2.com/
- www/
- public_html/
- index.html
- logs/
- example3.com/
- www/
- public_html/
- index.html
- logs/

An easy way to do that is to create a template or skeleton directory and put the directory structure there. Then create each users using this skeleton directory.

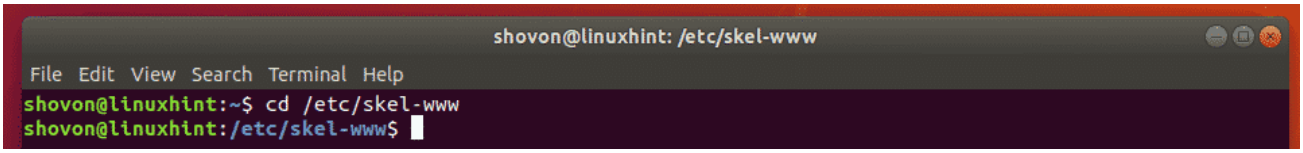
First, copy the contents of the default skeleton directory **/etc/skel** to another directory **/etc/skel-www** as follows:

$ sudo cp -rv /etc/skel /etc/skel-www



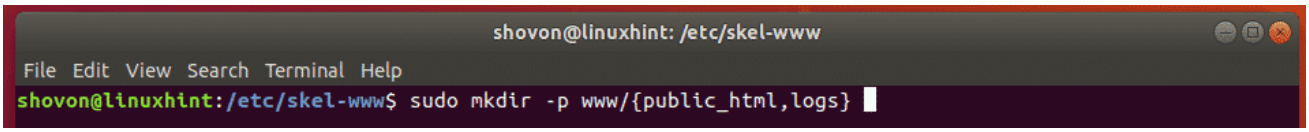
Now, navigate to the new skeleton directory as follows:

$ cd /etc/skel-www



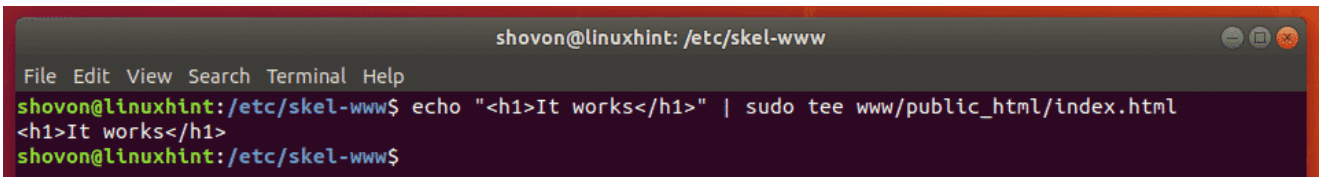
Then create the desired directory structure inside the skeleton directory as follows:

$ sudo mkdir -p www/{public_html,logs}



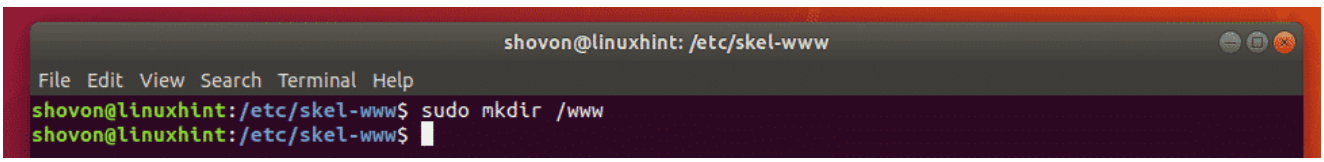
You can also create a default **index.html** file in the **public_html/** directory if you want.

$ echo "<h3>It works</h3>" | sudo tee www/public_html/index.html



Now, create the **/www** directory with the following command:

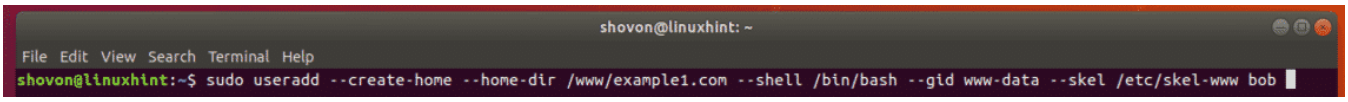
$ sudo mkdir /www



Creating Users:

Now, you can create the user **bob** for www.example1.com as follows:

$ sudo useradd --create-home --home-dir /www/example1.com --shell /bin/bash --gid www-data --skel /etc/skel-www bob

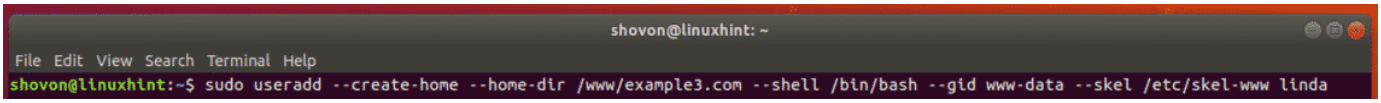


The same way, create the user **alice** for www.example2.com as follows:

$ sudo useradd --create-home --home-dir /www/example2.com --shell /bin/bash --gid www-data --skel /etc/skel-www alice

Again, create the user linda for www.example3.com as follows:

$ sudo useradd --create-home --home-dir /www/example3.com --shell /bin/bash --gid www-data --skel /etc/skel-www linda



Here, I assigned the primary group of each user to **www-data**. By default, Apache server runs as this group. If I hadn't done that, Apache server won't be able to access the files in the **public_html/** directory and create log files in the **logs/** directory.

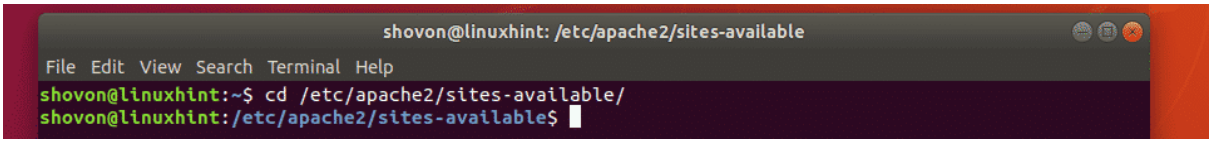
Configuring Apache VirtualHost:

Now, you are ready to configure Apache VirtualHost for 3 users **bob** (www.example1.com), **alice** (www.example2.com) and **linda** (www.example3.com).

The default Apache site configuration directory on Ubuntu is **/etc/apache2/sites-available**.

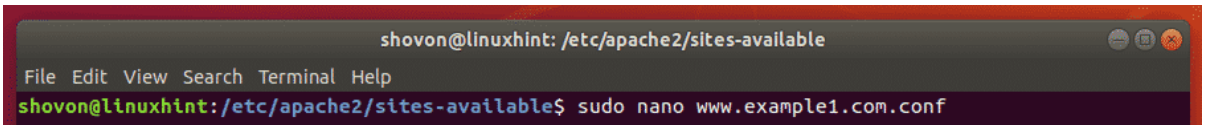
Now, navigate to the directory **/etc/apache2/sites-available/** as follows.

$ cd /etc/apache2/sites-available/

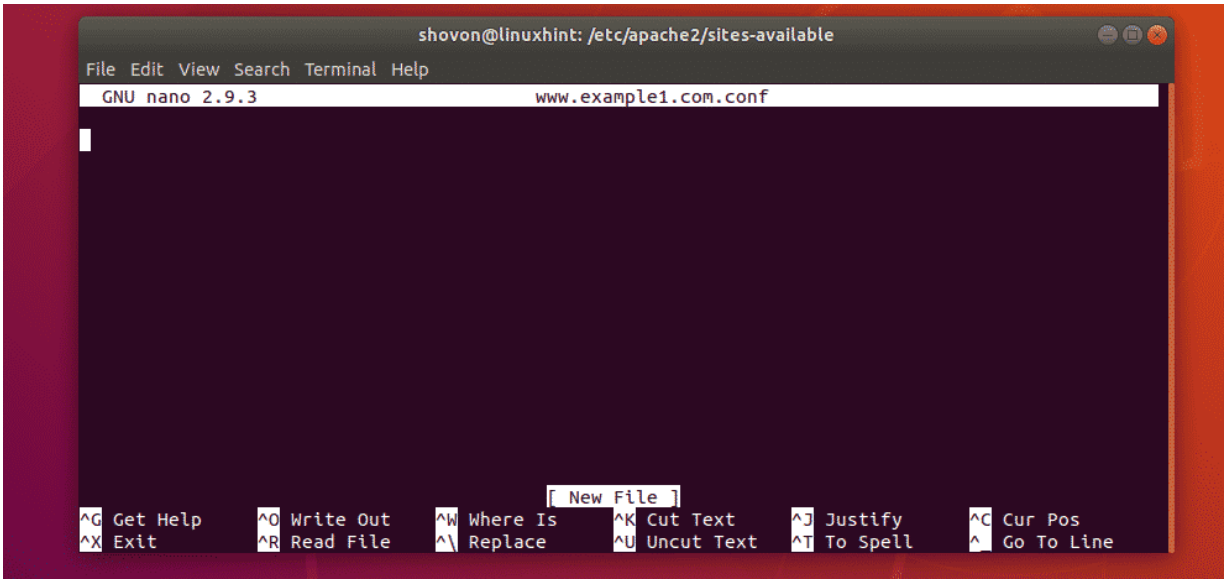


First, create a new configuration file for bob **www.example1.com.conf** as follows:

$ sudo nano www.example1.com.conf



A text editor should be opened.



Now, type in the following lines.

ServerName example1.com
ServerAlias www.example1.com

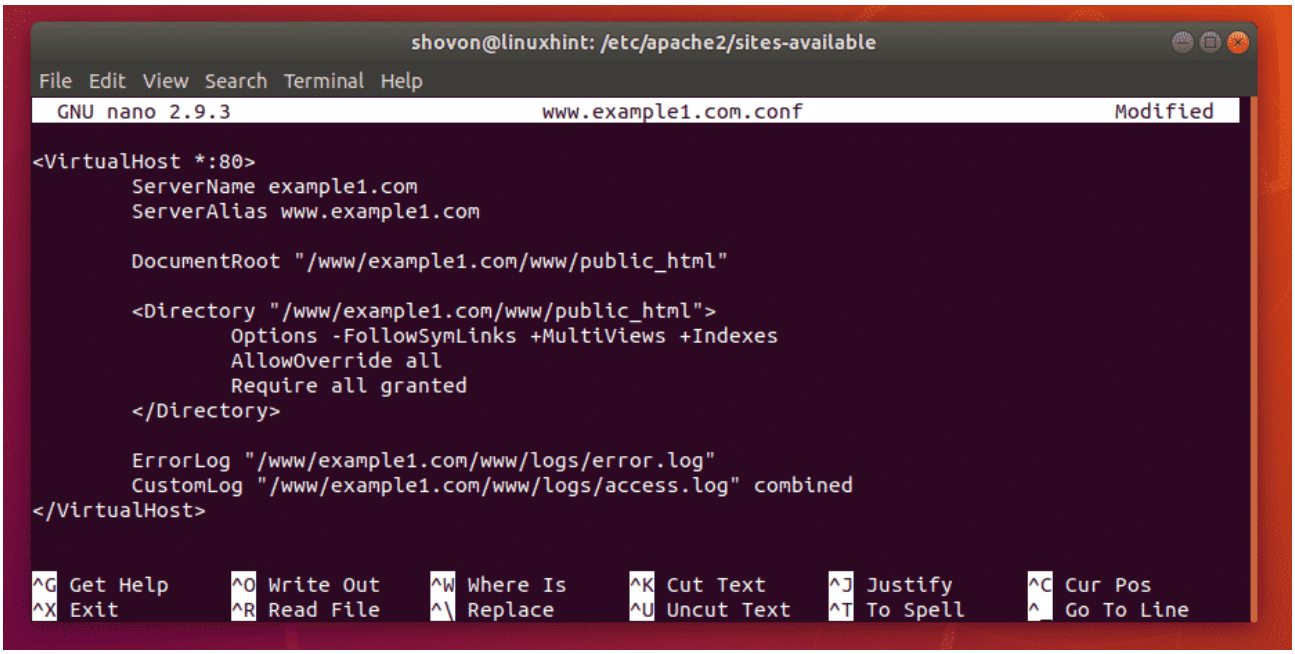
DocumentRoot "/www/example1.com/www/public_html"

<Directory "/www/example1.com/www/public_html">
Options -FollowSymLinks +MultiViews +Indexes
AllowOverride all
Require all granted

ErrorLog "/www/example1.com/www/logs/error.log"
CustomLog "/www/example1.com/www/logs/access.log" combined

NOTE: Change the bold texts according to your requirement.

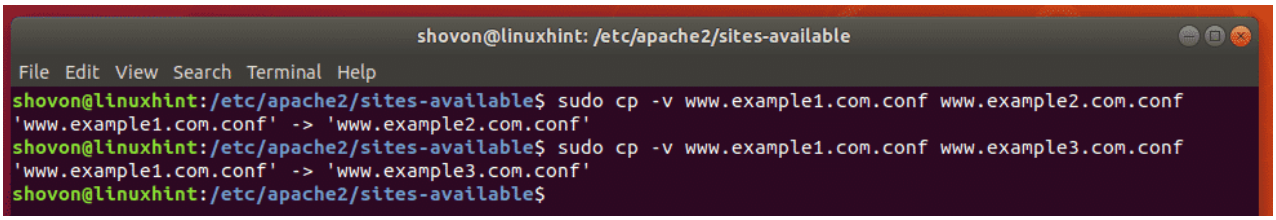
Finally, the configuration file **www.example.com.conf** should looks as follows. Press **<Ctrl>** + **x** followed by y and **<Enter>** to save the configuration file.



to just copy the configuration file for **bob** (**www.example1.com.conf**) and make what little changes are required.

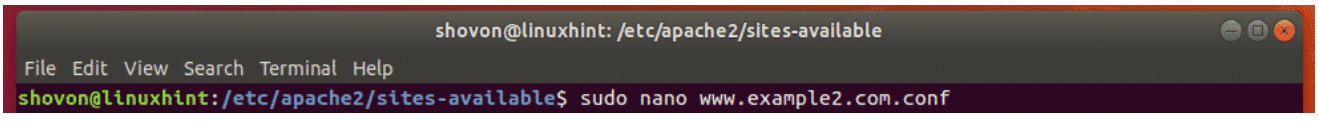
Copy the configuration file of **bob** for **alice** and **linda** with the following commands:

$ sudo cp -v www.example1.com.conf www.example2.com.conf
$ sudo cp -v www.example1.com.conf www.example3.com.conf

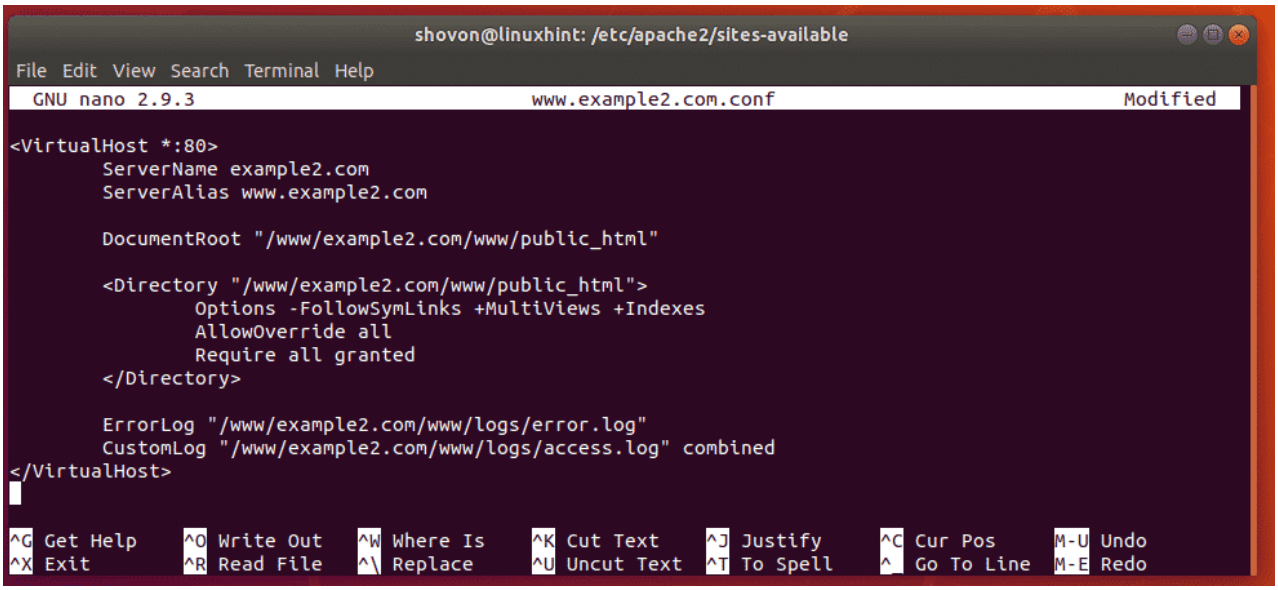


Now, edit the configuration file of **alice** as follows:

$ sudo nano www.example2.com.conf

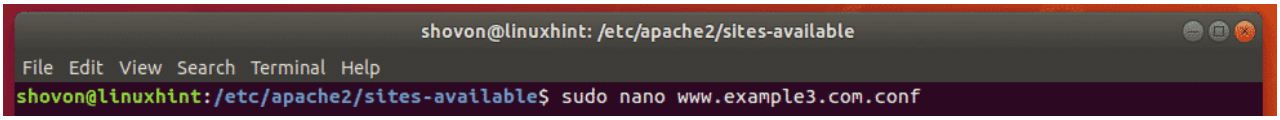


Now, change all occurrences of **example1** to **example2**. Then save the file.

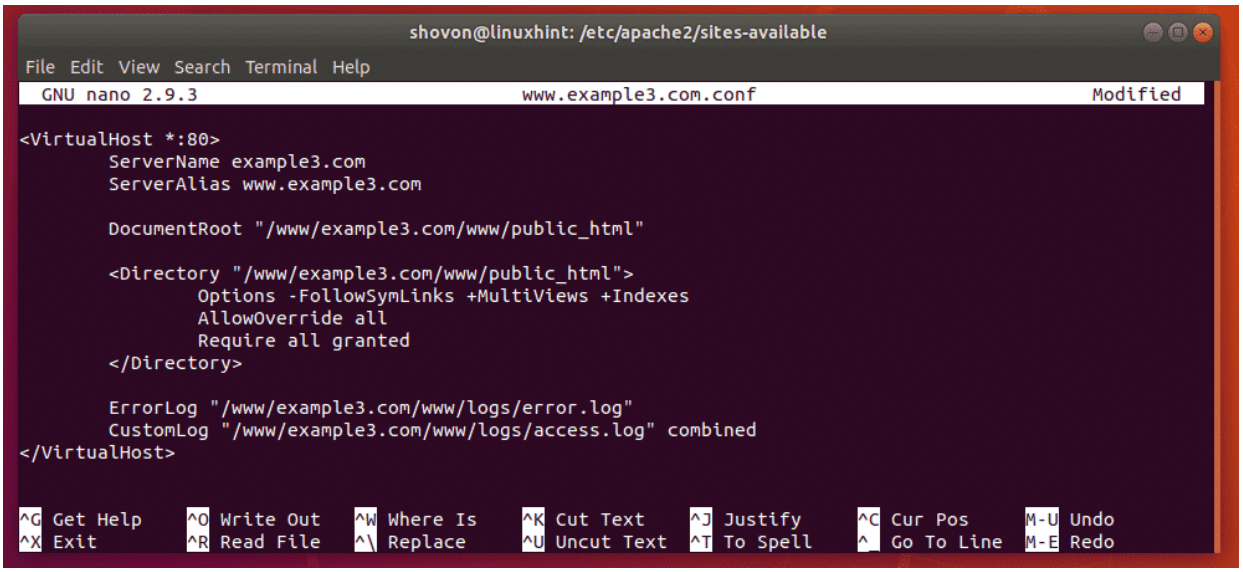


Do the same thing for **linda**.

$ sudo nano www.example3.com.conf



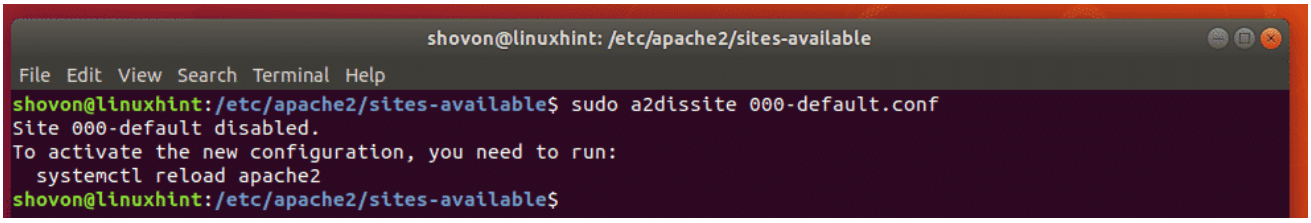
Change all occurrences of **example1** to **example3** and save the file.



Enabling VirtualHost Configurations:

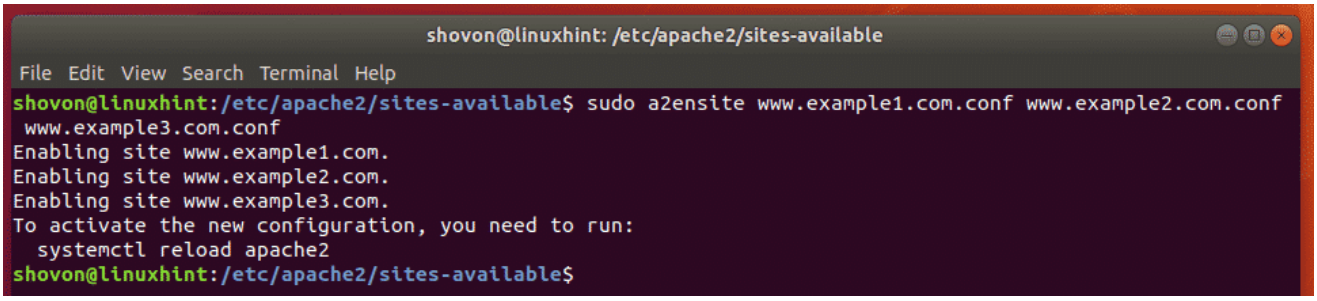
Now, disable the Apache default website configuration as follows:

$ sudo a2dissite 000-default.conf



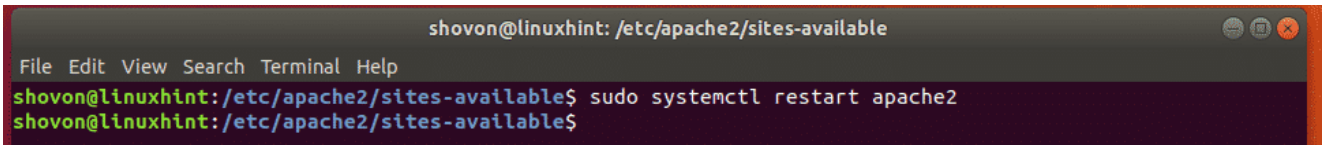
Now, enable the VirtualHost configurations **www.example1.com.conf**, **www.example2.com.conf**, **www.example3.com.conf** as follows:

$ sudo a2ensite www.example1.com.conf www.example2.com.conf www.example3.com.conf



Finally, restart the Apache service as follows:

$ sudo systemctl restart apache2

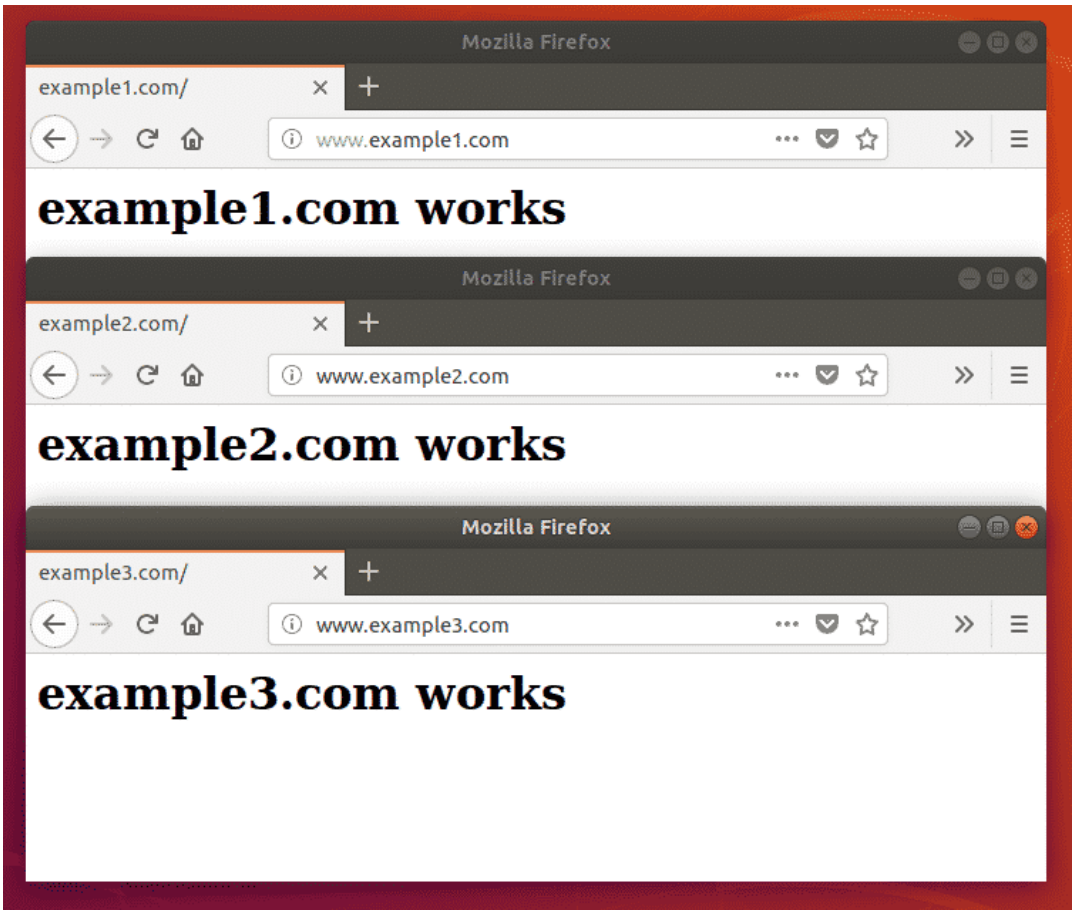


Testing VirtualHosts:

Now, try to access the websites www.example1.com, www.example2.com, www.example3.com

As you can see, all of these websites works as expected.

NOTE: I changed the default page **index.html** for each sites so that it's a little bit different for each website for testing purpose. Otherwise, you won't be able to tell whether VirtualHost configuration works or not.



So, that’s how you configure name based Apache VirtualHost on Ubuntu 18.04 LTS. Thanks for reading this article.