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How To Install Nginx on Ubuntu 22.04

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Nginx Ubuntu Ubuntu 22.04

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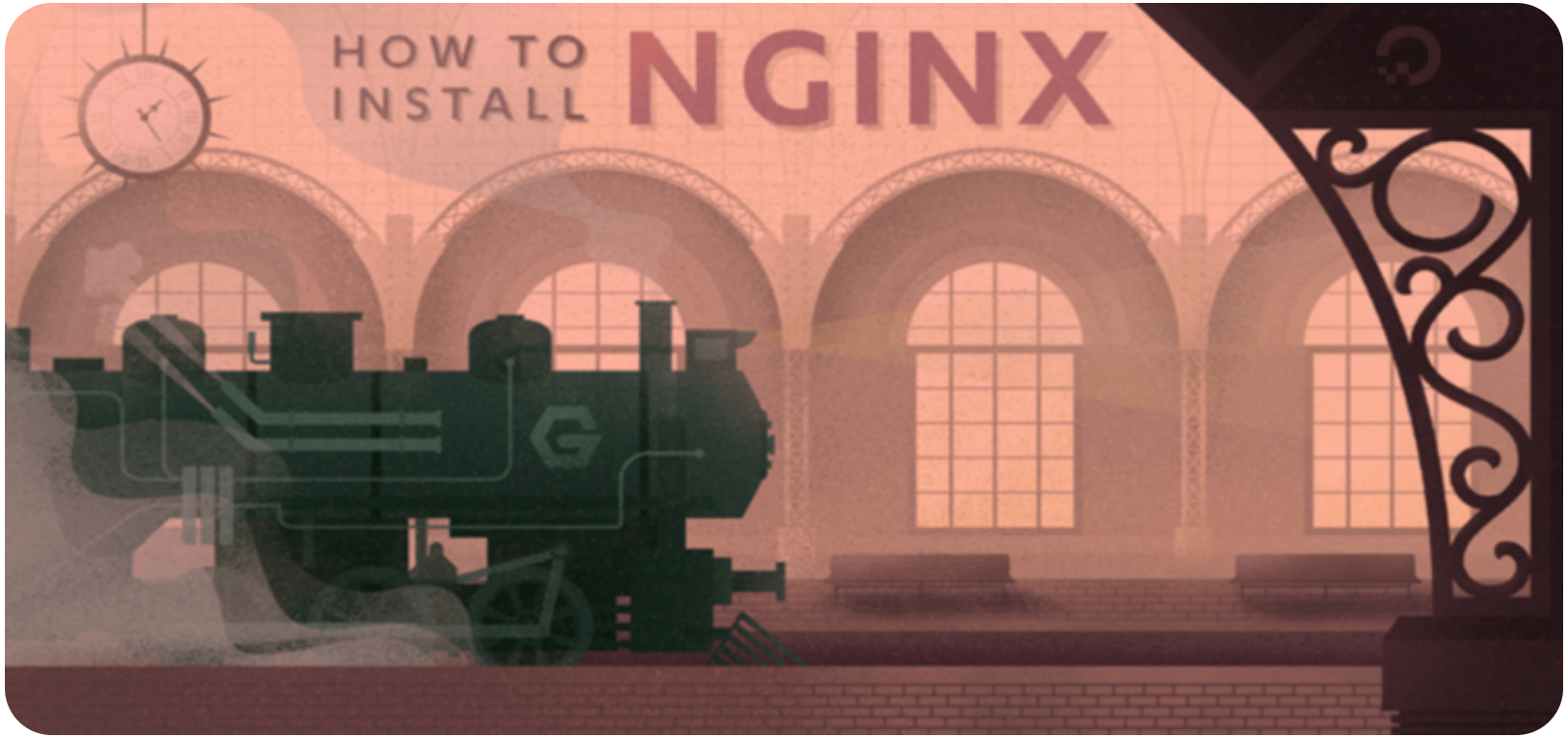

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Ubuntu 22.04

Introduction

Nginx is one of the most popular web servers in the world and is responsible for hosting some of the largest and highest-traffic sites on the internet. It is a lightweight choice that can be used as either a web server or reverse proxy.

In this guide, we'll discuss how to install Nginx on your Ubuntu 22.04 server, adjust the firewall, manage the Nginx process, and set up server blocks for hosting more than one domain from a single server.

Prerequisites

Before you begin this guide, you should have a regular, non-root user with sudo privileges configured on your server. You can learn how to configure a regular user account by following our Initial server setup guide for Ubuntu 22.04.

You will also optionally want to have registered a domain name before completing the last steps of this tutorial. To learn more about setting up a domain name with DigitalOcean, please refer to our Introduction to DigitalOcean DNS.

When you have an account available, log in as your non-root user to begin.

Step 1 – Installing Nginx

Because Nginx is available in Ubuntu's default repositories, it is possible to install it from these repositories using the `apt` packaging system.

Since this is our first interaction with the `apt` packaging system in this session, we will update our local package index so that we have access to the most recent package listings. Afterwards, we can install `nginx`:

```
$ sudo apt update
$ sudo apt install nginx
```

Copy

Press `Y` when prompted to confirm installation. If you are prompted to restart any services, press `ENTER` to accept the defaults and continue. `apt` will install Nginx and any required dependencies to your server.

Step 2 – Adjusting the Firewall

Before testing Nginx, the firewall software needs to be configured to allow access to the service. Nginx registers itself as a service with `ufw` upon installation, making it straightforward to allow Nginx access.

List the application configurations that `ufw` knows how to work with by typing:

```
$ sudo ufw app list
```

Copy

You should get a listing of the application profiles:

```
Output
Available applications:
  Nginx Full
  Nginx HTTP
  Nginx HTTPS
  OpenSSH
```

As demonstrated by the output, there are three profiles available for Nginx:

- **Nginx Full**: This profile opens both port 80 (normal, unencrypted web traffic) and port 443 (TLS/SSL encrypted traffic)
- **Nginx HTTP**: This profile opens only port 80 (normal, unencrypted web traffic)
- **Nginx HTTPS**: This profile opens only port 443 (TLS/SSL encrypted traffic)

It is recommended that you enable the most restrictive profile that will still allow the traffic you've configured. Right now, we will only need to allow traffic on port 80.

You can enable this by typing:

```
$ sudo ufw allow 'Nginx HTTP'
```

Copy

You can verify the change by typing:

```
$ sudo ufw status
```

Copy

The output will indicated which HTTP traffic is allowed:

```
Output
Status: active

To                         Action      From
--                         ------      ----
OpenSSH                    ALLOW       Anywhere
Nginx HTTP                 ALLOW       Anywhere
OpenSSH (v6)               ALLOW       Anywhere (v6)
Nginx HTTP (v6)            ALLOW       Anywhere (v6)
```

Step 3 – Checking your Web Server

At the end of the installation process, Ubuntu 22.04 starts Nginx. The web server should already be up and running.

We can check with the `systemd` init system to make sure the service is running by typing:

```
$ systemctl status nginx
```

Copy

```
Output
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active:  active (running)  since Fri 2022-03-01 16:08:19 UTC; 3 days ago
     Docs: man:nginx(8)
 Main PID: 2369 (nginx)
    Tasks: 2 (limit: 1153)
   Memory: 3.5M
   CGroup: /system.slice/nginx.service
```

```
            ├─2369 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;
            └─2380 nginx: worker process
```

As confirmed by this out, the service has started successfully. However, the best way to test this is to actually request a page from Nginx.

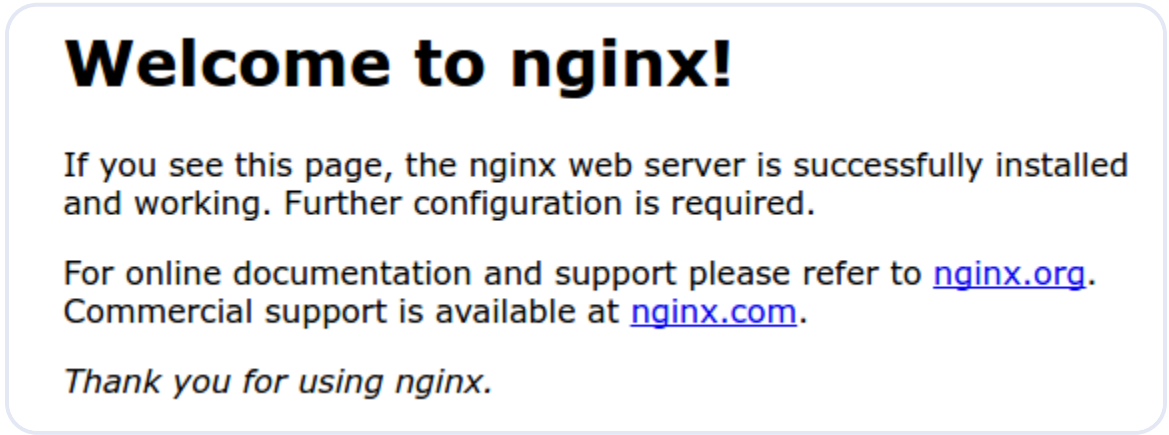
You can access the default Nginx landing page to confirm that the software is running properly by navigating to your server's IP address. If you do not know your server's IP address, you can find it by using the icanhazip.com tool, which will give you your public IP address as received from another location on the internet:

```
$ curl -4 icanhazip.com
```
Copy

When you have your server's IP address, enter it into your browser's address bar:

```
http:// your_server_ip
```

You should receive the default Nginx landing page:



If you are on this page, your server is running correctly and is ready to be managed.

Step 4 – Managing the Nginx Process

Now that you have your web server up and running, let's review some basic management commands.

To stop your web server, type:

```
$ sudo systemctl stop nginx
```
Copy

To start the web server when it is stopped, type:

```
$ sudo systemctl start nginx
```
Copy

To stop and then start the service again, type:

```
$ sudo systemctl restart nginx
```
Copy

If you are only making configuration changes, Nginx can often reload without dropping connections. To do this, type:

```
$ sudo systemctl reload nginx
```
Copy

By default, Nginx is configured to start automatically when the server boots. If this is not what you want, you can disable this behavior by typing:

```
$ sudo systemctl disable nginx
```
Copy

To re-enable the service to start up at boot, you can type:

```
$ sudo systemctl enable nginx
```
Copy

You have now learned basic management commands and should be ready to configure the site to host more than one domain.

Step 5 – Setting Up Server Blocks (Recommended)

When using the Nginx web server, *server blocks* (similar to virtual hosts in Apache) can be used to encapsulate configuration details and host more than one domain from a single server. We will set up a domain called **your_domain**, but you should **replace this with your own domain name**.

Nginx on Ubuntu 22.04 has one server block enabled by default that is configured to serve documents out of a directory at `/var/www/html`. While this works well for a single site, it can become unwieldy if you are hosting multiple sites. Instead of modifying `/var/www/html`, let's create a directory structure within `/var/www` for our **your_domain** site, leaving `/var/www/html` in place as the default directory to be served if a client request doesn't match any other sites.

Create the directory for **your_domain** as follows, using the `-p` flag to create any necessary parent directories:

```
$ sudo mkdir -p /var/www/ your_domain /html
```
Copy

Next, assign ownership of the directory with the `$USER` environment variable:

```
$ sudo chown -R $USER:$USER /var/www/ your_domain /html
```
Copy

The permissions of your web roots should be correct if you haven't modified your `umask` value, which sets default file permissions. To ensure that your permissions are correct and allow the owner to read, write, and execute the files while granting only read and execute permissions to groups and others, you can input the following command:

```
$ sudo chmod -R 755 /var/www/ your_domain
```
Copy

Next, create a sample `index.html` page using `nano` or your favorite editor:

```
$ nano /var/www/ your_domain /html/index.html
```
Copy

Inside, add the following sample HTML:

/var/www/your_domain/html/index.html

```
<html>
    <head>
        <title>Welcome to  your_domain !</title>
    </head>
    <body>
        <h1>Success!  The  your_domain  server block is working!</h1>
    </body>
</html>
```

Copy

Save and close the file by pressing `Ctrl+X` to exit, then when prompted to save, `Y` and then `Enter`.

In order for Nginx to serve this content, it's necessary to create a server block with the correct directives. Instead of modifying the default configuration file directly, let's make a new one at `/etc/nginx/sites-available/ your_domain` :

```
$ sudo nano /etc/nginx/sites-available/ your_domain
```

Copy

Paste in the following configuration block, which is similar to the default, but updated for our new directory and domain name:

/etc/nginx/sites-available/your_domain

```
server {
        listen 80;
        listen [::]:80;

        root /var/www/ your_domain /html;
        index index.html index.htm index.nginx-debian.html;

        server_name  your_domain  www. your_domain ;
```

Copy

```
        location / {
                try_files $uri $uri/ =404;
        }
}
```

Notice that we've updated the `root` configuration to our new directory, and the `server_name` to our domain name.

Next, let's enable the file by creating a link from it to the `sites-enabled` directory, which Nginx reads from during startup:

```
$ sudo ln -s /etc/nginx/sites-available/ your_domain  /etc/nginx/sites-enabled/
```

Copy

> **Note:** Nginx uses a common practice called symbolic links, or symlinks, to track which of your server blocks are enabled. Creating a symlink is like creating a shortcut on disk, so that you could later delete the shortcut from the `sites-enabled` directory while keeping the server block in `sites-available` if you wanted to enable it.

Two server blocks are now enabled and configured to respond to requests based on their `listen` and `server_name` directives (you can read more about how Nginx processes these directives here):

- `your_domain`: Will respond to requests for `your_domain` and `www.your_domain`.
- `default`: Will respond to any requests on port 80 that do not match the other two blocks.

To avoid a possible hash bucket memory problem that can arise from adding additional server names, it is necessary to adjust a single value in the `/etc/nginx/nginx.conf` file. Open the file:

```
$ sudo nano /etc/nginx/nginx.conf
```
Copy

Find the `server_names_hash_bucket_size` directive and remove the `#` symbol to uncomment the line. If you are using nano, you can quickly search for words in the file by pressing `CTRL` and `w`.

> **Note:** Commenting out lines of code – usually by putting `#` at the start of a line – is another way of disabling them without needing to actually delete them. Many configuration files ship with multiple options commented out so that they can be enabled or disabled, by toggling them between active code and documentation.

/etc/nginx/nginx.conf

```
...
http {
    ...
    server_names_hash_bucket_size 64;
    ...
}
...
```

Save and close the file when you are finished.

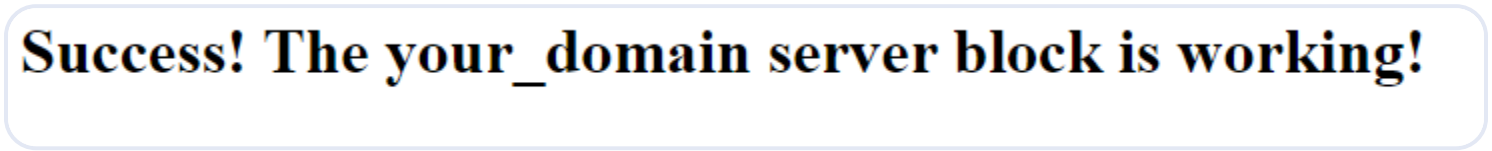
Next, test to make sure that there are no syntax errors in any of your Nginx files:

```
$ sudo nginx -t
```
Copy

If there aren't any problems, restart Nginx to enable your changes:

```
$ sudo systemctl restart nginx
```
Copy

Nginx should now be serving your domain name. You can test this by navigating to `http://your_domain`, where you should see something like this:



Step 6 – Getting Familiar with Important Nginx Files and Directories

Now that you know how to manage the Nginx service itself, you should take a few minutes to familiarize yourself with a few important directories and files.

Content

- `/var/www/html`: The actual web content, which by default only consists of the default Nginx page you saw earlier, is served out of the `/var/www/html` directory. This can be changed by altering Nginx configuration files.

Server Configuration

- `/etc/nginx`: The Nginx configuration directory. All of the Nginx configuration files reside here.
- `/etc/nginx/nginx.conf`: The main Nginx configuration file. This can be modified to make changes to the Nginx global configuration.

- `/etc/nginx/sites-available/`: The directory where per-site server blocks can be stored. Nginx will not use the configuration files found in this directory unless they are linked to the `sites-enabled` directory. Typically, all server block configuration is done in this directory, and then enabled by linking to the other directory.
- `/etc/nginx/sites-enabled/`: The directory where enabled per-site server blocks are stored. Typically, these are created by linking to configuration files found in the `sites-available` directory.
- `/etc/nginx/snippets`: This directory contains configuration fragments that can be included elsewhere in the Nginx configuration. Potentially repeatable configuration segments are good candidates for refactoring into snippets.

Server Logs

- `/var/log/nginx/access.log`: Every request to your web server is recorded in this log file unless Nginx is configured to do otherwise.
- `/var/log/nginx/error.log`: Any Nginx errors will be recorded in this log.

Conclusion

Now that you have your web server installed, you have many options for the type of content to serve and the technologies you want to use to create a richer experience.

If you'd like to build out a more complete application stack, check out the article How To Install Linux, Nginx, MySQL, PHP (LEMP stack) on Ubuntu 22.04.

In order to set up HTTPS for your domain name with a free SSL certificate using *Let's Encrypt*, you should move on to How To Secure Nginx with Let's Encrypt on Ubuntu 22.04.

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Bill Dagg • October 19, 2023

Very well done! Thank you!

Reply

bwn-z • October 18, 2023

1. I did all steps of the instruction.
2. At the end I had an issue - `Connection refused` via the curl or the browser
3. I fixed it by adding a line in the end of the file `/etc/hosts`
4. The line: `127.0.0.1 testik.` I used `testik` as `your_domain`

Show replies Reply

bwn-z • October 18, 2023

This comment has been deleted

bwn-z • October 17, 2023

1. I did all steps of this instruction. In all steps I used `testik as your_domain`
2. Then I wanted to test via browser my site using link `http://testik`
3. I received an error via `curl http://testik - Connection refused`
4. I received an error via browser using link `http://testik`
5. I fixed the error editing `/etc/hosts`
6. I added the line: `127.0.0.1 testik`
7. I saved the `/etc/hosts` file
8. And I restarted nginx service `sudo systemctl restart nginx`

PROFIT

Reply

bwn-z • October 17, 2023

This comment has been deleted

LinuxNoobie • January 1, 2023

The server block doesn't work for me (in Chrome I get This site can't be reached / my_domain refused to connect). I created a new droplet to upgrade from Ubuntu 20 and followed the steps. I also cloned my site and node app from github. Updated DNS (pinging my_domain successfully

gets reply from the new droplet IP). But nothing shows in the browser. I created a test.html file in the root, it doesn't show up either. nginx -t says syntax is ok. If I enter just the ip address, I get the nginx default file (so the 'default' server block is working, but my_domain is not).

Show replies Reply

mmoser-adrianv • December 26, 2022

Please update the tutorial to explicitly add OpenSSH also in the ufw when you add the Nginx HTTP in the list. I have followed this tutorial 2 times now and on both occasions I keep forgetting it. Forgetting OpenSSH causes the web console to be locked out. And I prefer to use the web console for managing my droplet.

Show replies Reply

Hamid Imomov • November 17, 2022

If

```
sudo ufw status
```

returns:

```
Status: inactive
```

then utilize this command:

```
sudo ufw enable
```

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