
Python HTTP Server on Ubuntu

A Practical Guide for Setup, Configuration, and Real-World Use

Written By: *Saikat Goswami*

Running a lightweight HTTP server is one of the easiest ways to test, present, or prototype your work on Ubuntu. Python makes this process simple. Its built-in HTTP server provides a fast way to serve files, test APIs, or validate network behavior without heavy web frameworks or external services.

This article walks through how to set up and run a Python HTTP server on Ubuntu, how to secure and customize it, and how to use it in different real-world scenarios.

1. Why Use Python's HTTP Server?

Ubuntu already includes tools like Apache or Nginx, so why use Python instead?

The Python HTTP server is ideal when you need:

- **A quick test environment** – Serve a directory over HTTP with a single command. No config files, no services, no packages.
- **A simple way to demo files** – Colleagues can open your work through their browser without SSH or shared drives.
- **A sandbox for API experiments** – You can define a custom handler that responds to GET, POST, PUT, or DELETE requests.
- **A portable tool** – Works the same on Ubuntu, macOS, or Windows. If Python is installed, you're ready.

In short, it's perfect for learning, teaching, prototyping, and troubleshooting.

2. Setting Up Your Ubuntu Environment

Most modern Ubuntu distributions include Python 3 by default. Check your version with:

```
python3 --version
```

If Python isn't installed or you want to update it:

```
sudo apt update  
sudo apt install python3
```

For development or testing, it's helpful to install:

```
sudo apt install python3-pip  
sudo apt install python3-venv
```

These tools let you create virtual environments or extend the simple HTTP server with Python packages.

3. Creating a Simple Python HTTP Server

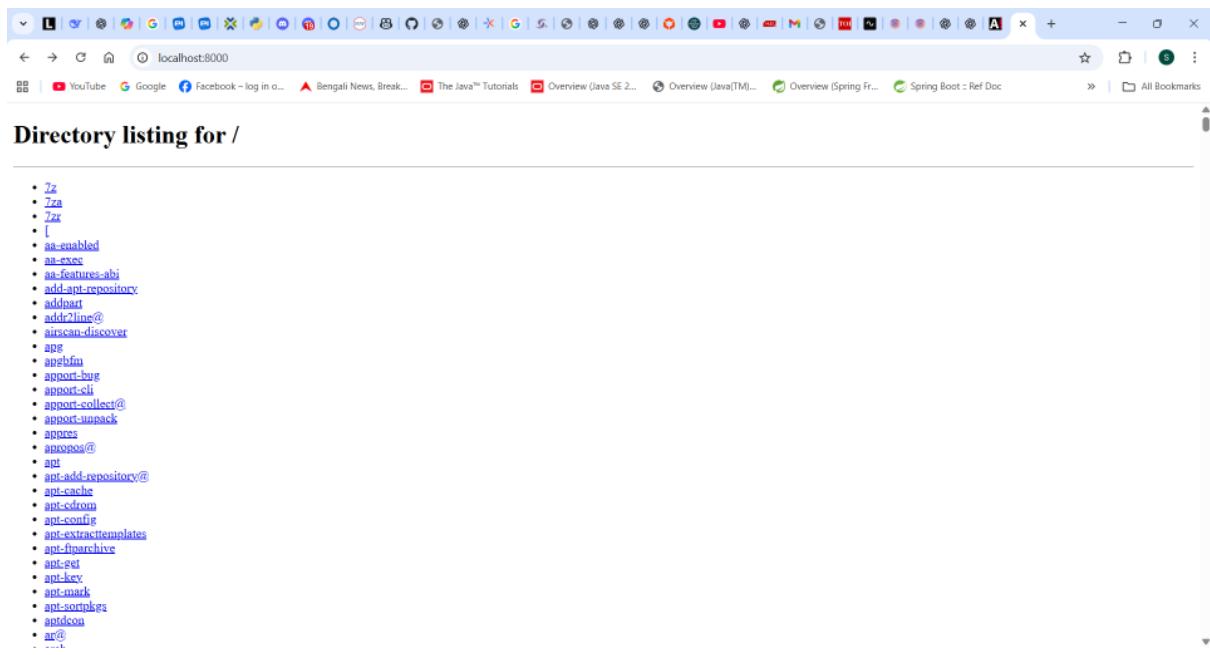
Python 3 includes the `http.server` module to instantly launch a basic web server. Navigate to your desired directory:

```
$ cd /path/to/your/folder  
$ python3 -m http.server
```

Http Server will start. Linux Console will show:

```
saigos@LAPTOP-N53D8VJU:/usr/bin$ python3 -m http.server  
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...  
127.0.0.1 - - [24/Nov/2025 11:28:15] "GET / HTTP/1.1" 200 -  
127.0.0.1 - - [24/Nov/2025 11:28:15] code 404, message File not found  
127.0.0.1 - - [24/Nov/2025 11:28:15] "GET /favicon.ico HTTP/1.1" 404 -
```

Go to browser, and type: <http://localhost:8000>. Browser will show:



Since there is no index.html, the page shows a list of files in the directory from which the command was typed.

To use a different port, type:

```
python3 -m http.server 8080
```

To allow access from other devices, type:

```
python3 -m http.server 8000 --bind 0.0.0.0
```

Now the server is live, and anyone who can reach your IP and port can view your directory.

4. Managing Firewall Rules with UFW

Ubuntu uses UFW (Uncomplicated Firewall) for firewall management. To enable UFW, type:

```
sudo ufw enable
```

To allow external access, type:

```
sudo ufw allow 8000
```

The command `sudo ufw allow 8000` in Ubuntu tells the firewall (UFW) to **open TCP/UDP port 8000** for incoming connections, allowing external clients to reach services running on that port.

Again, type:

```
sudo ufw reload
```

The above command reloads the firewall rules without disabling or re-enabling UFW.

Check status:

```
sudo ufw status
```

For local-only access:

```
python3 -m http.server 8000 --bind 127.0.0.1
```

5. Creating a Custom Python HTTP Server

The built-in command is handy, but sometimes you'll want to control responses—like adding headers, handling POST requests, or serving APIs.

Example – Simple API endpoint:

```
from http.server import BaseHTTPRequestHandler, HTTPServer
import json

class SimpleAPI(BaseHTTPRequestHandler):
    def do_GET(self):
        if self.path == "/status":
            self.send_response(200)
            self.send_header("Content-Type", "application/json")
            self.end_headers()
            response = {"server": "running", "path": self.path}
            self.wfile.write(json.dumps(response).encode())
        else:
            self.send_response(404)
            self.end_headers()

    def run_server():
        server = HTTPServer(("localhost", 8000), SimpleAPI)
        print("Server running at http://localhost:8000/")
        server.serve_forever()

if __name__ == "__main__":
    run_server()
```

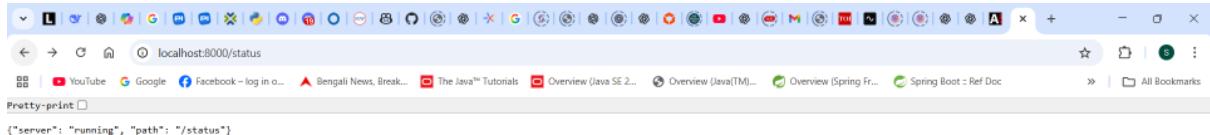
Run it:

```
python3 server.py
```

Test it in your browser:

<http://localhost:8000/status>

Browser will show:



This structure lets you build mock APIs or test behavior without deploying a full web framework.

6. Running the Server in the Background

To keep the server running long-term, use tools like:

- systemd
- tmux
- screen
- nohup

Example with nohup:

```
nohup python3 -m http.server 8000 &
```

Example with systemd:

```
sudo nano /etc/systemd/system/python-http.service
```

Add:

```
[Unit]
Description=Python HTTP Server
After=network.target

[Service]
ExecStart=/usr/bin/python3 -m http.server 8000 --directory /var/www
WorkingDirectory=/var/www
Restart=always

[Install]
WantedBy=multi-user.target
```

Enable and start:

```
sudo systemctl enable python-http
sudo systemctl start python-http
sudo systemctl status python-http
```

The server will now start automatically on boot.

7. Adding HTTPS with a Reverse Proxy

Python's default server doesn't support HTTPS, but you can add it using Nginx as a reverse proxy.

Install Nginx:

```
sudo apt install nginx
```

Configuration example:

```
server {
    listen 80;
    location / {
        proxy_pass http://127.0.0.1:8000;
    }
}
```

Reload Nginx:

```
sudo systemctl reload nginx
```

Add HTTPS with Let's Encrypt:

```
sudo apt install certbot python3-certbot-nginx
sudo certbot --nginx
```

Now your Python server is securely accessible via Nginx.

8. Troubleshooting Common Issues

- **Address already in use** (in case you have already started http on port 8000, or if there is already another process running on port 8000), type:

```
sudo lsof -i :8000
```

This command will give process id of program running in port 8000.

Stop the running program using the process id <PID> using the command below:

```
sudo kill <pid>
```

- **Permission denied:** Use accessible directories or adjust permissions.
- **Cannot access from other devices:** Check firewall, bind address, and router isolation.

9. Conclusion

Running a Python HTTP server on Ubuntu is simple yet powerful. With one command, you can share files, test web content, or build temporary APIs. With a bit of customization, it becomes a versatile development tool for any workflow.