Comment installer un serveur FTP sécurisé avec vsftpd sur Debian-12

vSFTPd or Very Secure FTP Daemon is a free and open-source FTP server software. It is an FTP daemon for Unix-like operating systems and is licensed under the GNU General Public License. vSFTPd is one of the most widely used FTP daemons, it is fast and lightweight in terms of system resources, secure due to PAM and SSL integration, and stable. vSFTPd has earned the trust of major companies such as RedHat, SUSE, Debian, Gnome, KDE, etc. due to its sophistication.

vSFTPd can run with IPv6 and supports virtual IP configurations and users. It can be run as a stand-alone daemon or via inetd. For user management, vSFTPd provides a feature that allows users to set their own configuration, such as per-source IP restrictions, reconfigurability and bandwidth throttling. In addition, vSFTPd supports a plug-in authentication module (PAM) for virtual users and also provides security integration with SSL/TLS.

In this tutorial, you will learn how to set up and create a secure FTP server with vsftpd on a Debian 12 server. In this guide you will also learn how to secure your FTP server installation via UFW (Uncomplicated Firewall) and how to connect to the FTP server using the FTP client FileZilla.

Prerequisites

Before proceeding, ensure you have the following:

- A Debian 12 server.
- A non-root user with sudo administrator privileges.
- The openssl package is installed on top of your server.

Installing vsftpd

The vsftpd is an implementation of FTP protocol for UNIX and Linux operating systems. The vsftpd package is available on most Linux distributions, including Debian. Now you will install vsftpd via APT and verify the vsftpd service to ensure that the service is running.

Before installing the vsftpd package, execute the following command to update your Debian repository.

```
sudo apt update
```

```
root@debian12:~#
root@debian12:~# sudo apt update
Hit:1 http://security.debian.org/debian-security bookworm-security InRelease
Hit:2 http://httpredir.debian.org/debian bookworm InRelease
Hit:3 http://httpredir.debian.org/debian bookworm-updates InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

Now install the vsftpd package using the apt install command below.

```
sudo apt install vsftpd
```

Confirm the installation by typing y and press ENTER.

```
root@debian12:~#
root@debian12:~# sudo apt install vsftpd
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  vsftpd
0 upgraded, 1 newly installed, 0 to remove and 34 not upgraded.
Need to get 142 kB of archives.
After this operation, 351 kB of additional disk space will be used.
Get:1 http://httpredir.debian.org/debian bookworm/main amd64 vsftpd amd64 3.0.3-13+b2 [142 kB]
Fetched 142 kB in 1s (140 kB/s)
```

After vsftpd is installed, the vsftpd service will automatically be running and be enabled. Verify the vsftpd service using the following command.

```
sudo systemctl is-enabled vsftpd
sudo systemctl status vsftpd
```

The following output confirms that the vsftpd service is running and enabled. Also, the vsftpd service will be run automatically at system boot.

```
root@debian12:~#
root@debian12:~# sudo systemctl is-enabled vsftpd
enabled
root@debian12:~# sudo systemctl status vsftpd
● vsftpd.service - vsftpd FTP server
     Loaded: loaded (/lib/systemd/system/vsftpd.service; enabled; preset: enabled)
     Active: active (running) since
    Process: 18976 ExecStartPre=/bin/mkdir -p /var/run/vsftpd/empty (code=exited, sta
   Main PID: 18977 (vsftpd)
      Tasks: 1 (limit: 4642)
     Memory: 876.0K
        CPU: 18ms
     CGroup: /system.slice/vsftpd.service
             └─18977 /usr/sbin/vsftpd /etc/vsftpd.conf
```

Configuring vsftpd

In the following step, you will configure and create a secure FTP server with vsftpd. You will generate SSL/TLS certificates and modify the default vsftpd configuration */etc/vsftpd.conf*.

First, execute the openssl command below to generate new TLS certificates that will be used for your vsftpd server installation.

```
sudo openssl req -x509 -nodes -days 3650 -newkey rsa:2048 -keyout /etc/ssl/private/vsftpd.pem -out /etc/ssl/private/vsftpd.pem
```

Input your details information when asked. After the process is finished, your TLS certificates will be available at */etc/ssl/private/vsftpd.pem*.

```
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:
State or Province Name (full name) [Some-State]:
Locality Name (eg, city) []:
Organization Name (eg, company) [Internet Widgits Pty Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (e.g. server FQDN or YOUR name) []:
Email Address []:
root@debian12:~#
```

Now execute the command below to create a new file */etc/vsftpd.userlist* for storing FTP users.

```
touch /etc/vsftpd.userlist
```

After that, run the following command to backup the vsftpd configuration. Then, open the vsftpd configuration /etc/vsftpd.conf using the nano editor.

```
sudo cp /etc/vsftpd.conf /etc/vsftpd.conf.orig
sudo nano /etc/vsftpd.conf
```

Disable anonymous access to your vsftpd server by changing the **anonymous_enable** option to **NO**.

```
anonymous_enable=NO
```

Allow local users within /etc/passwd file and PAM users to log in to the vsftpd server by changing the option **local_enable** to **YES**.

```
local_enable=YES
```

Allow FTP users to upload files to the vsftpd server by changing the **write_enable** option to **YES**.

```
write_enable=YES
```

Now enable chroot or jail for FTP users by adding the following options. This will lock the FTP user in the **/home/$USER/chroot** directory. For example, the FTP user **bob** will be locked within the directory **/home/bob/chroot**.

```
chroot_local_user=YES
user_sub_token=$USER
local_root=/home/$USER/chroot
```

Next, add the following configuration to set up vsftpd virtual users. Any user within the */etc/vsftpd.userlist* file will be allowed to log in to the vsftpd server.

```
userlist_enable=YES
userlist_file=/etc/vsftpd.userlist
userlist_deny=NO
```

Add the following lines to secure your vsftpd server with SSL/TLS certificates. This will force user login and data transfer connection to use secure connections.

```
rsa_cert_file=/etc/ssl/private/vsftpd.pem
rsa_private_key_file=/etc/ssl/private/vsftpd.pem
ssl_enable=YES
force_local_data_ssl=YES
force_local_logins_ssl=YES
ssl_tlsv1=YES
ssl_sslv2=NO
ssl_sslv3=NO
require_ssl_reuse=NO
ssl_ciphers=HIGH
```

Now add the configuration below to set up the passive-mode connections using ports between **20000** and **25000**.

```
pasv_min_port=20000
pasv_max_port=25000
```

Save and exit the file when you're done.

Now run the following systemctl command to restart the vsftpd service and apply the changes that you've made.

```
sudo systemctl restart vsftpd
```

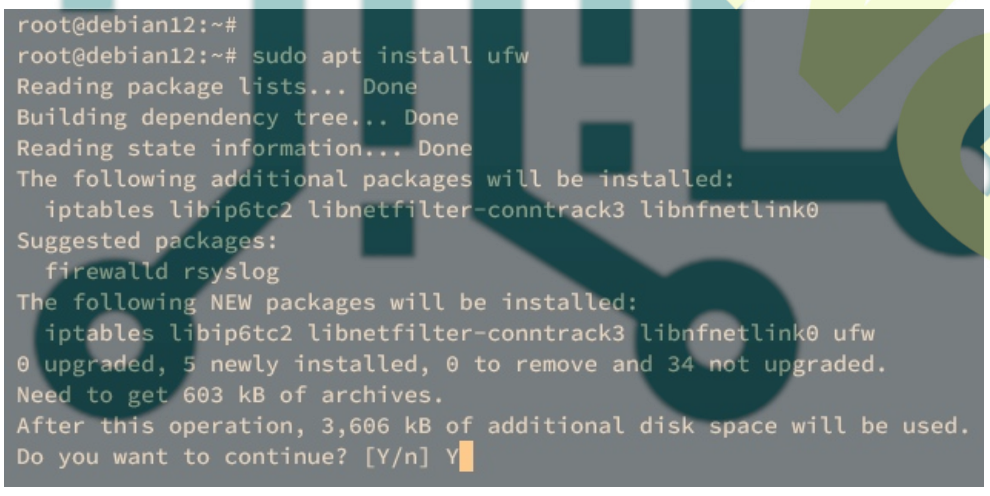
With this, your vsftpd server is now running with new configurations.

Setting Up Firewall

In the following step, you will install UFW (Uncomplicated Firewall) on your Debian server and secure your FTP server installation with it. You will install UFW via APT, open FTP server port **20:21/tcp**, and passive-mode data connection port **20000:25000/tcp**.

Install UFW using the following apt command. Type y to proceed with the installation.

```
sudo apt install ufw
```



After UFW is installed, run the ufw commands below to open the port for the **OpenSSH** service, the vsftpd server ports **20:21**, and the passive-mode FTP connection in between ports **20000** to **25000**.

```
sudo ufw allow OpenSSH
sudo ufw allow 20:21/tcp
sudo ufw allow 20000:25000/tcp
```

Next, execute the ufw command below to start and enable UFW.

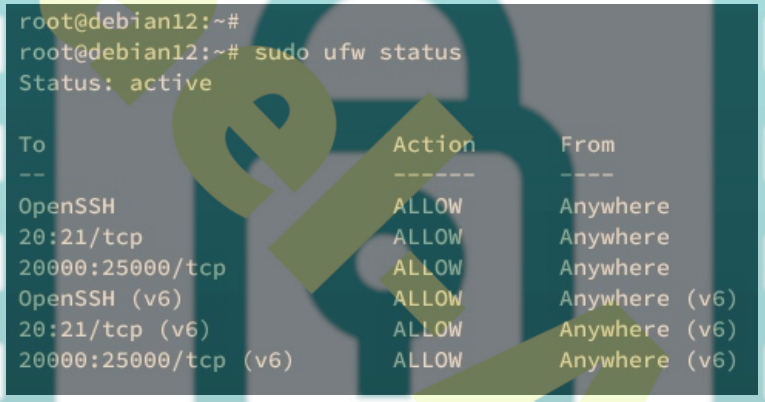
```
sudo ufw enable
```

Type for confirmation and the UFW should be running and enabled on your Debian system.

Verify the detailed status of UFW using the command below.

```
sudo ufw status
```

The output active confirms that UFW is running and enabled. Also, the **OpenSSH** service is added, and some ports for the vsftpd server **20:21/tcp** and **20000:25000/tcp** are added.



Setting up FTP Virtual Users

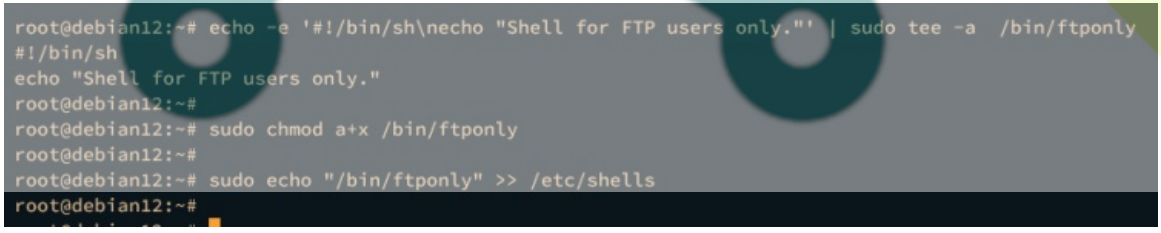
At this point, you've finished your vsftpd server configuration, now you will create a new FTP user that will be used for logging in to the FTP server and uploading files into it.

Execute the following command to create a new file */bin/ftponly*. Then, make it executable via the chmod command below. The file */bin/ftponly* will be used as a default shell for FTP users.

```
echo -e '#!/bin/sh\necho "Shell for FTP users only."' | sudo tee -a  /bin/ftponly
sudo chmod a+x /bin/ftponly
```

Add the file */bin/ftponly* to */etc/shells* to ensure it is a valid shell.

```
sudo echo "/bin/ftponly" >> /etc/shells
```



Now create a new FTP user **bob** and set up the password by executing the command below. Input your password and repeat.

```
sudo useradd -m -s /bin/ftponly bob
sudo passwd bob
```

After that, run the following command to create a new chroot */home/bob/chroot* directory for user **bob**. Also, you will ensure that the chroot directory */home/bob/chroot* has proper ownership.

```
sudo -u bob mkdir -p /home/bob/chroot
sudo chown -R bob: /home/bob/chroot
```

Next, run the command below to create another new directories **data** and **upload** that will be used for storing FTP user data. Be sure to configure proper the ownership for those directories.

```
sudo -u bob mkdir -p /home/bob/chroot/{data,upload}
sudo chown -R bob: /home/bob/chroot/{data,upload}
```

Now run the command below to change the permission of the **/home/bob/chroot** directory to **550** and both **data** and **upload** directories to **750**.

```
sudo chmod 550 /home/bob/chroot
sudo chmod 750 /home/bob/chroot/{data,upload}
```

Now that you've created a new user, execute the command below to add the user **bob** to the */etc/vsftpd.userlist* file.

```
echo "bob" >> /etc/vsftpd.userlist
```

Lastly, run the following command to restart the vsftpd service and apply the changes. After executing the command, your FTP user **bob** is ready.

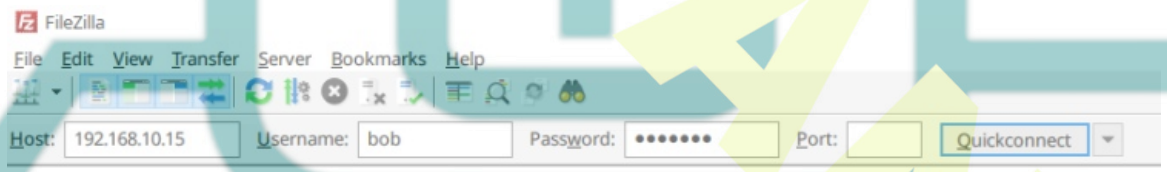
```
sudo systemctl restart vsftpd
```

Uploading Files to FTP Server

To verify your vsftpd server installation, you will be connecting to the FTP server with the new user that you've created via FTP client software. Then, you will also upload new files to ensure that your installation is successful.

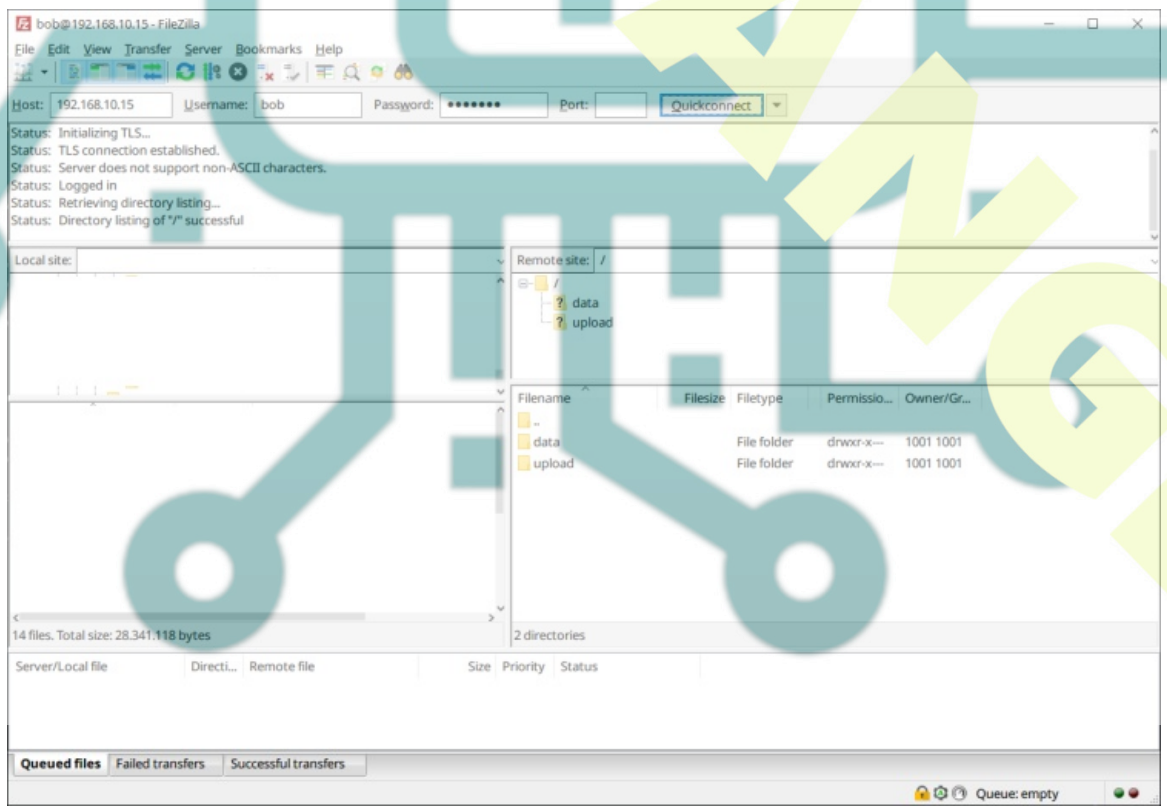
Download and install the FTP client for your local machine. You can use **FileZilla**, which can be installed on Windows, Linux, and MacOS. Once FileZilla is installed, open it to connect to your secure FTP server.

Input your FTP server IP address, and the username and password of your FTP user. Then, click **Quickconnect** to confirm.

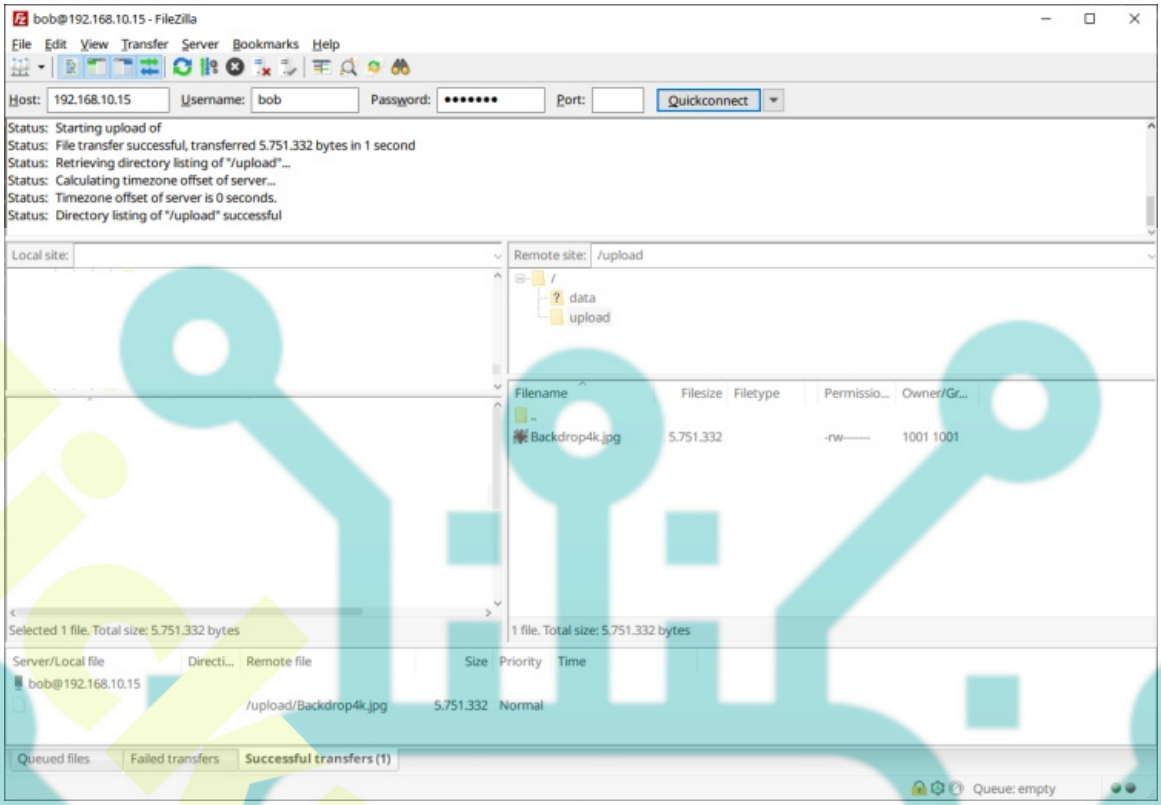


Select the option **Always trust this certificate in future sessions** and click **OK** to confirm.

Once connected to your FTP server, you should see two directories of data and upload available on your FTP server. You can upload files to both directories data and upload, but you can't upload files outside those directories protected via chroot.



You can drag-drop your files to upload to the FTP server.



Conclusion

To wrap up, you have successfully created a secure FTP server with vsftpd on Debian 12 server. You've also secured your FTP server installation via UFW (Uncomplicated Firewall) and learned how to create FTP users. You can now use the FTP server as the main data transfer between your local machine to your server, You can also find another FTP client software with your preferences.
