

How To Install An SSH Daemon (Server)

Ubuntu Linux Recipe

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Thursday 4th July, 2019

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1 Introduction to Networking Terms

In order to understand networking terminology better, let's compare a computer owned by Amazon with the Empire State Building.

Table 1: Computer Networking Analogy

Computer Host Name	Building Name	Comments
www.amazon.com	Empire State Building	
Computer IP Address	Building Address	
13.33.154.42	20 W 34 th St 10118	
Computer Services	Building Tenants	
ssh resides at port 22	Starbucks resides at Suite 100	File /etc/services shows what servers reside at what port

A complete list of ports and what servers reside at these ports can be viewed at <https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml>

2 SSH Server Installation Instructions

2.1 Open a Terminal Window

Open a terminal window by simultaneously pressing the **Ctrl** **Alt** **T** keys.

2.2 Install the SSH Server

Copy and paste the following commands into the terminal window and then press the **Enter** key.

```
sudo apt install openssh-server
```

2.3 Start the SSH Server

Copy and paste the following commands into the terminal window and then press the **Enter** key.

```
sudo systemctl start ssh
```

3 Allow Access to the SSH Server from the Internet

As we saw in the introduction, SSH resides at port 22. In order access the SSH server from the Internet, we need take any port 22 Internet traffic to your router and forward it to your SSH server. This is similar to asking the Post Office to forward your mail when you move. In this case, the router is like your Post Office.

3.1 Determine the IP Address of your SSH Server

Copy and paste the following commands into the terminal window and then press the **Enter** key.

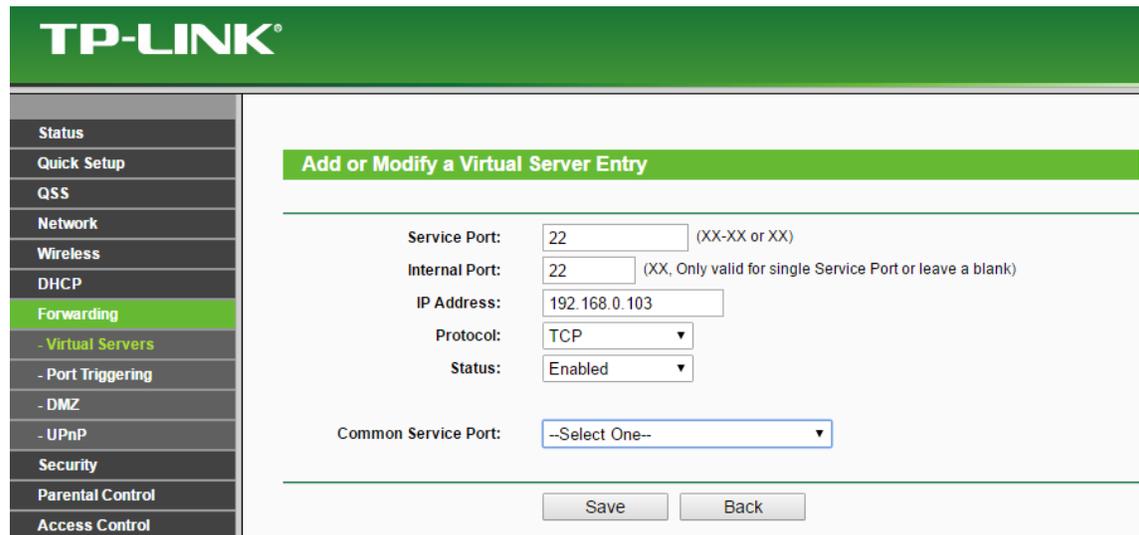
```
nmcli -g IP4.ADDRESS con show $(nmcli -g UUID con show --active) \
| cut -d "/" -f1 | xargs printf "\nMy IP Address is %s\n"
```

The output should look like the below except the IP address may be different.

```
My IP Address is 192.168.1.103
```

3.2 Forward Internet Traffic to your SSH Server

Every router is different. A TP-Link example follows. Note that you should use the IP address returned by the previous caommand.



The screenshot shows the TP-Link router's web interface. On the left is a navigation menu with options: Status, Quick Setup, QSS, Network, Wireless, DHCP, Forwarding (highlighted), Virtual Servers, Port Triggering, DMZ, UPnP, Security, Parental Control, and Access Control. The main content area is titled 'Add or Modify a Virtual Server Entry'. It contains the following fields: Service Port (22), Internal Port (22), IP Address (192.168.0.103), Protocol (TCP), Status (Enabled), and Common Service Port (a dropdown menu set to '--Select One--'). At the bottom are 'Save' and 'Back' buttons.

Figure 1: Add or Modify a Virtual Server Entry

Show the virtual servers to confirm that the router is forwarding port 22 to your SSH server. Note that the IP address should match the IP address returned from the previous command.

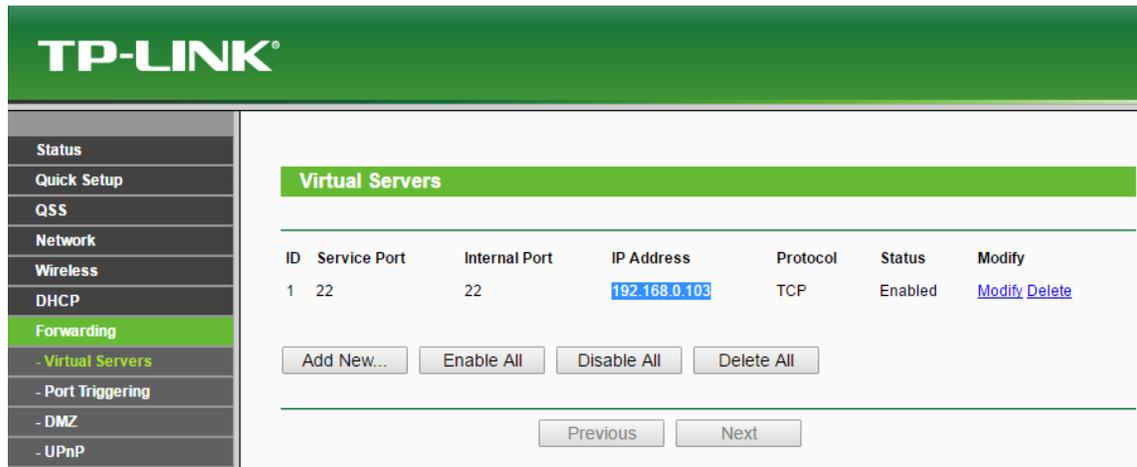


Figure 2: Show Virtual Serveris

3.3 Test SSH Port Forwarding

3.3.1 Install Elinks Web Browser

Copy and paste the following commands into the terminal window and then press the **Enter** key.

```
sudo apt install elinks
```

3.3.2 Install cURL

Copy and paste the following commands into the terminal window and then press the **Enter** key.

```
sudo apt install curl
```

3.3.3 Invoke the SSH Web Test

Copy and paste the following commands into the terminal window and then press the **Enter** key.

```
elinks https://sshcheck.com/server/$(curl -s ifconfig.me)/
```

Then press the **↓** key and then the **Enter** key **within 3 seconds**. The output should look like below. Note that the IP address shown below is the Internet IP address of your SSH server.

```
Rebex SSH Test result for 176.32.98.166
Rebex SSH Check

Rebex SSH Test result for 176.32.98.166

General information

Server Identification: SSH-2.0-OpenSSH_7.6p1 Ubuntu-4ubuntu0.3
IP Address:          176.32.98.166
Generated at:        2019-06-28 01:42:44 UTC (just now)

Key Exchange Algorithms

diffie-hellman-group14-sha256
Secure
Diffie-Hellman with 2048-bit
Oakley Group 14 with SHA-256
hash
Oakley Group 14 should be
secure for now.

diffie-hellman-group16-sha512
Secure
Diffie-Hellman with 4096-bit
MODP Group 16 with SHA-512
hash

diffie-hellman-group18-sha512
Secure
Diffie-Hellman with 8192-bit
MODP Group 18 with SHA-512
```

Press the **Shift** and **Q** keys simultaneously to exit Elinks and return to the command prompt.

Congratulation, you have just successfully completed your SSH server installation!