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Ubuntu / Debian Linux: Install and Setup TFTPd Server

by [nixCraft](#) on December 1, 2012 · [12 comments](#) · LAST UPDATED July 19, 2013

in [Debian / Ubuntu](#), [Networking](#), [Ubuntu Linux](#)



How do I install and configure TFTP server under Debian or Ubuntu Linux server to configure networking equipment such as remote booting of diskless devices or remote loading of Unix like operating systems via PXE boot?

tftpd is a server for the Trivial File Transfer Protocol. The TFTP protocol is extensively used to support remote booting of diskless devices or loading operating systems. Debian or Ubuntu can use any one of the following

Tutorial details

Difficulty
Root privileges

[Intermediate](#) ([rss](#))
[Yes](#)

tftpd server:

Requirements

Debian/Ubuntu
tftpd-hpa

- **atftpd** - Advanced TFTP server.
 - **tftpd** - Trivial file transfer protocol server.
 - **tftpd-hpa** - HPA's tftp server.
 - **dnsmasq** - Lightweight DNS, TFTP and DHCP server.
- Estimated completion time 10 minute

In this tutorial, I am going to install and configure tftpd-hpa.

Warning: TFTP server / protocol provides little security. Make sure a TFTP server is placed behind a firewall system.

tftpd-hpa TFTP server installation

Type the following apt-get command as root user:

```
$ sudo apt-get install tftpd-hpa
```

OR

```
# apt-get install tftpd-hpa
```

You will be promoted as follows (make sure you set the directory name to /srv/tftp):

[Fig.01: Installing and Setting TFTPd Server In Ubuntu / Debian System](#)

Fig.01: Installing and Setting TFTPd Server In Ubuntu / Debian System

Sample outputs:

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  tftpd-hpa
0 upgraded, 1 newly installed, 0 to remove and 15 not upgraded.
Need to get 0 B/49.1 kB of archives.
After this operation, 201 kB of additional disk space will be used.
Preconfiguring packages ...
Selecting previously deselected package tftpd-hpa.
(Reading database ... 281779 files and directories currently installed.)
Unpacking tftpd-hpa (from ../tftpd-hpa_5.0-18_amd64.deb) ...
Processing triggers for man-db ...
Setting up tftpd-hpa (5.0-18) ...
Starting HPA's tftpd: in.tftpd.
```

Configuration

Edit /etc/default/tftpd-hpa, run:

```
# vi /etc/default/tftpd-hpa
```

Sample configuration:

```
TFTP_USERNAME="tftp"
TFTP_DIRECTORY="/srv/tftp"
TFTP_ADDRESS="0.0.0.0:69"
TFTP_OPTIONS="--secure"
```

How do I start / stop / restart tftpd-hpa server?

Type the following commands:

```
service tftpd-hpa status
service tftpd-hpa stop
service tftpd-hpa start
service tftpd-hpa restart
service tftpd-hpa force-reload
```

Sample outputs:

[Fig.02: Starting / Stopping / Restarting the tftpd server commands](#)

Fig.02: Starting / Stopping / Restarting the tftpd server commands

Next, you need to place all boot files in /srv/tftp directory. You can create a directory structure as follows for various operating systems and third party firmwares:

```
# cd /srv/tftp
# mkdir {openbsd,freebsd,netbsd}
# mkdir -p linux/{debian,ubuntu,rhel,centos,fedora,suse}
# mkdir -p firmwares/{linksys,cisco,soekris,pata,sata,ipmi,nic}
# ls -l
# ls -l linux/
# ls -l firmwares/
```

How do I test my tftpd server?

You need to install tftp client called tftp. It is the user interface to the Internet TFTP (Trivial File Transfer Protocol), which allows users to transfer files to and from a remote machine. The remote host may be specified on the command line, in which case tftp uses host as the default host.

Install trivial file transfer protocol client (tftp)

Type the following command:

```
$ sudo apt-get install tftp
```

OR

```
# apt-get install tftp
```

Sample outputs:

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  tftp
0 upgraded, 1 newly installed, 0 to remove and 15 not upgraded.
Need to get 18.9 kB of archives.
After this operation, 53.2 kB of additional disk space will be used.
Get:1 http://debian.osuosl.org/debian/ squeeze/main tftp amd64 0.17-18 [18.9 kB]
Fetched 18.9 kB in 1s (10.5 kB/s)
Selecting previously deselected package tftp.
(Reading database ... 281794 files and directories currently installed.)
Unpacking tftp (from .../tftp_0.17-18_amd64.deb) ...
Processing triggers for man-db ...
Setting up tftp (0.17-18) ...
```

Test the tftpd server

In this example, I am putting pxeboot file (second-stage PXE bootstrap for network installs)

from OpenBSD.org in /srv/tftp/openbsd/ directory to retrieve with a client, for testing purpose:

```
# cd /srv/tftp/openbsd/
# wget http://ftp.openbsd.org/pub/OpenBSD/5.2/i386/pxeboot
Sample outputs:
```

```
--2012-12-01 17:17:09-- http://ftp.openbsd.org/pub/OpenBSD/5.2/i386/pxeboot
Resolving ftp.openbsd.org... 129.128.5.191
Connecting to ftp.openbsd.org|129.128.5.191|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 53920 (53K) [text/plain]
Saving to: `pxeboot'
```

```
100%[=====>] 53,920      53.0K/s   in 1.0s
```

```
2012-12-01 17:17:10 (53.0 KB/s) - `pxeboot' saved [53920/53920]
```

I am also downloading bsd.rd file. It is a compressed RAMDISK kernel; the embedded filesystem contains the installation tools:

```
# wget http://ftp.openbsd.org/pub/OpenBSD/5.2/i386/bsd.rd
Sample outputs:
```

```
--2012-12-01 17:17:25-- http://ftp.openbsd.org/pub/OpenBSD/5.2/i386/bsd.rd
Resolving ftp.openbsd.org... 129.128.5.191
Connecting to ftp.openbsd.org|129.128.5.191|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 6422208 (6.1M) [text/plain]
Saving to: `bsd.rd'
17% [=====>] 11,42,782    20.3K/s   eta 3m 47s
```

Finally, verify that both files are downloaded and installed correctly at the /srv/tftp/openbsd/ location:

```
# ls -l /srv/tftp/openbsd/
Sample outputs:
```

```
total 6344
-rw-r--r-- 1 root root 6422208 Dec  1 17:20 bsd.rd
-rw-r--r-- 1 root root  53920 Aug  1 22:02 pxeboot
```

Type the following command from the remote client:

```
$ tftp tftp-server-ip-here
$ tftp 192.168.1.5
```

Sample outputs (type the commands highlighted in green color at tftp> prompt):

```
tftp> status
Connected to 192.168.1.5.
Mode: netascii Verbose: off Tracing: off
Rexmt-interval: 5 seconds, Max-timeout: 25 seconds
tftp> get openbsd/pxeboot
Received 54234 bytes in 0.0 seconds
tftp> get openbsd/bsd.rd
Received 6465608 bytes in 0.5 seconds
tftp> quit
```

Firewall configuration

Add firewall rules to your firewall script to open required ports:

```
## make sure you load the following modules first ##
```

```
modprobe ip_conntrack_tftp
modprobe ip_conntrack_ftp

## firewall rules to open tcp/udp tftpd port 69 for 192.168.1.0/24 ##
/sbin/input -A INPUT -s 192.168.1.0/24 -m tcp -p tcp --dport 69 -j ACCEPT
/sbin/input -A INPUT -s 192.168.1.0/24 -m tcp -p udp --dport 69 -j ACCEPT
```

Did it worked?

Now, you have [DHCP](#) and TFTP services available. Reboot the test system. Turn on PXE network boot in BIOS. Save and reboot the system. You will see information about the BIOS. Press [Enter] (or special key) to start pxe booting. A sample session:

Fig.03: Install OpenBSD is by booting the server via PXE

Fig.03: Installing OpenBSD by booting the server via PXE

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This entry is **2** of **3** in the [Debian / Ubuntu Linux DHCP+TFTPd Netboot Server Tutorial](#) series. Keep reading the rest of the series:

1. [Setup An ISC DHCP Server For Your Network](#)
2. [Setup A TFTPd-HPA Trivial File Transfer Protocol Server](#)
3. [Example: Install OpenBSD Using PXE](#)

{ 12 comments... read them below or [add one](#) }

[1](#) Jeremy April 5, 2013 at 5:33 pm

During and after the apt-get install, I never received the Package Configuration screen as you have shown here in the tutorial. How do I go about setting up the /srv/tftp directory after it has been installed or do I need to remove tftp and try again?

Jeremy

[Reply](#)

[2](#) Happy1789 April 5, 2013 at 8:55 pm

Hi,
Thanks for your post.
To avoid issues with the get/put action, I would recommend to add
-create
in the configuration of /etc/default/tftpd-hpa:

```
# vi /etc/default/tftpd-hpa
[...]  
TFTP_OPTIONS="-secure -create"  
[...]
```

[Reply](#)

[3](#) Dave April 12, 2013 at 1:39 pm

Jeremy, I started to install tftpd last night and noticed the same thing. However, while I haven't done it yet, I think you just need to continue with his instructions and execute

'vi /etc/default/tftpd-hpa' and set the directory there.

[Reply](#)

[4](#) Daniel May 16, 2013 at 1:07 pm

I tried to install it into Raspberry PI (Debian Wheezy) but an error occurs :

```
[....] Starting HPA's tftpd: in.tftpdinvoke-rc.d: initscript tftpd-hpa, action "start" failed.
dpkg: error processing tftpd-hpa (--configure):
 subprocess installed post-installation script returned error exit status 71
Setting up tftp (0.17-18) ...
Errors were encountered while processing:
 tftpd-hpa
E: Sub-process /usr/bin/dpkg returned an error code (1)
an known bug:
http://bugs.debian.org/cgi-bin/bugreport.cgi?bug=544089
for that you must modify the file /etc/default/tftpd-hpa and change the line with TFTP_OPTIONS like:
TFTP_OPTIONS="--secure --ipv4"
and then run the command : apt-get install -f
and done :
Reading package lists... Done
Building dependency tree
Reading state information... Done
0 upgraded, 0 newly installed, 0 to remove and 8 not upgraded.
1 not fully installed or removed.
After this operation, 0 B of additional disk space will be used.
Setting up tftpd-hpa (5.2-4) ...
tftpd user (tftp) already exists, doing nothing.
tftpd-hpa directory (/srv/tftp) already exists, doing nothing.
[ ok ] Starting HPA's tftpd: in.tftpd.
```

Best Regards,

Daniel

[Reply](#)

[5](#) adrian May 27, 2013 at 7:06 am

when a try to do this
\$ tftp 192.168.1.5

```
tftp> status
Connected to 192.168.1.5.
Mode: netascii Verbose: off Tracing: off
Rexmt-interval: 5 seconds, Max-timeout: 25 seconds
tftp> get openbsd/pxeboot
"show this"
Transfer timed out.
```

help me please

[Reply](#)

[6](#) Hiero July 19, 2013 at 1:39 pm

I've got the same, you should put your IP adress in the configuration file (see with ifconfig).

[Reply](#)

[7](#) Cindy September 10, 2013 at 6:54 pm

Hi Hiero,

Can you specify which configuration file you are referring to? is it the /etc/xinetd.d/tftp file to change? what should it be to add the ip address?

Thanks.

[Reply](#)

[8](#) eko indriatmoko November 15, 2013 at 9:01 am

Hi

I am new in linux n try to install tftpd-hpa server on my laptop but i got this message on terminal :

```
root@echoy:/home/echoy# apt-get install tftpd-hpa
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  tftpd-hpa
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 37,5 kB of archives.
After this operation, 145 kB of additional disk space will be used.
Get:1 http://id.archive.ubuntu.com/ubuntu/ saucy/main tftpd-hpa i386 5.2-7ubuntu3 [37,5 kB]
Fetched 37,5 kB in 1s (31,7 kB/s)
Preconfiguring packages ...
Selecting previously unselected package tftpd-hpa.
(Reading database ... 196155 files and directories currently installed.)
Unpacking tftpd-hpa (from .../tftpd-hpa_5.2-7ubuntu3_i386.deb) ...
Processing triggers for man-db ...
Processing triggers for ureadahead ...
Setting up tftpd-hpa (5.2-7ubuntu3) ...
tftpd-hpa start/running, process 21463
Processing triggers for ureadahead
```

was my installation fail or what?

i use ubuntu 13.10 saucy

Thanks for the help

[Reply](#)

[9](#) [nixCraft](#) November 15, 2013 at 9:08 am

It was a success.

[Reply](#)

[10](#) eko indriatmoko November 18, 2013 at 4:42 am

thanks..

[Reply](#)

[11](#) Root December 8, 2013 at 11:59 am

hey guys

i am new here

i have another laptop in that i want to install windows 7

in that laptop dont have disk drive nor support usb
so i want install os with lan
right now i am using ubuntu 13.10
and i have no idea how to do that
so can any one help me out with this

[Reply](#)

[12](#) L-J February 23, 2015 at 10:35 am

For R-pi users getting install errors for tftpd-hpa:

Edit the file: /etc/default/tftpd-hpa
Add "--ipv4" under TFTP_OPTIONS

After that run "apt-get install -f tftpd-hpa"

[Reply](#)

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