



[Translation\(s\): Português Brasileiro](#)

# LTSP How To

Upstream documentation with official, detailed information about installing LTSP is at <http://wiki.ltsp.org/wiki/LTSPedia>.

## Installing and configuring LTSP

This section documents a standard Debian LTSP installation on recent versions of Debian (wheezy and jessie), which uses NFS for a root filesystem, and ISC DHCPD.

1. If you want a complete LTSP server with all the bells and whistles:

```
apt-get install ltsp-server-standalone
```

If you want more fine-grained control, splitting some services off to separate servers, you can install [DebianPkg: ltsp-server](#) instead, and manually install each of the other services.

2. Build the LTSP client environment, downloading packages from the internet:

```
ltsp-build-client
```

If your clients do not support 64-bit extensions (amd64), and your server is 64-bit, you may want to build your chroot specifying the i386 architecture:

```
ltsp-build-client --arch i386
```

3. Configure DHCP. Edit `/etc/ltsp/dhcpd.conf` to adapt to your network. Include the LTSP `dhcpd.conf` at the bottom of `/etc/dhcp/dhcpd.conf`:

```
include "/etc/ltsp/dhcpd.conf";
```

Restart isc-dhcp-server:

```
service isc-dhcp-server restart
```

4. Configure /etc/exports:

```
/opt/ltsp *(ro,no_root_squash,async,no_subtree_check)
```

Restart nfs-kernel-server:

```
service nfs-kernel-server restart
```

5. Boot a PXE capable machine and enjoy.

## Installing LTSP using the LTSP-PNP method

At the time of writing the version of LTSP in Debian Jessie is 5.5.2-1, while in Debian Wheezy 5.4.2-6+deb7u1. This particular model has much less flexibility since the clients must run the same version of distribution and platform as the server. The upside is that the model is easier to maintain. Thus a 32bit version (Jessie i386 or Wheezy i386) is suggested. There is no separate chroot (sometimes referred to as ltsp-pnp) and nbd (rather than nfs) is used to provide a squashfs image.

The use of dnsmasq provides ease of configurability and maintenance. The default config file generated provides its use as the tftp server as well as handling dhcp-proxy or dhcp-server proper with the adjustment of commenting and/or uncommenting lines provided.

1. Update the server, ensure the ip(s) is/are as desired (static is recommended) and /etc/hosts is as desired.
2. Install ltsp-server-standalone, ltsp-client (since there is to be no separate chroot) dnsmasq (an easy to configure tool) other desired software and the desktop environment of your choice.
3. On the commandline run as root

```
ltsp-config dnsmasq
```

This reports: Created /etc/dnsmasq.d/ltsp-server-dnsmasq.conf [ ok ]  
Restarting DNS forwarder and DHCP server: dnsmasq.

4. If the server will run one subnet containing the Internet connection and the clients it need have only one network interface card. In this case dnsmasq can be configured to run a dhcp-proxy if there already is another dhcp server active. In this case edit the above file to comment out the dhcp range line and ensure there is a line (uncommented) stating dhcp-proxy.
5. If the server will also run a dhcp-server then comment out the dhcp-proxy line and leave the dhcp-range line uncommented, ensuring the subnet entries are correct.
6. Edit the config file /etc/ltsp/update-kernels.conf to have the uncommented lines:

```
BOOT_METHODS=NBD  
IPAPPEND=3
```

7. The version of the kernel running on the server can be determined by:

```
uname -r
```

8. Note that at the time of writing the wheezy kernel was 3.2.0-4-486.

```
dpkg-reconfigure linux-image-3.2.0-4-486
```

This reports update-initramfs: Generating /boot/initrd.img-3.2.0-4-486  
adding the changes above and triggers the call to /usr/share/ltsp/update-kernels.

9. Inspect and edit as desired /etc/ltsp/ltsp-update-image.excludes as some software running on the server will not be appropriate for the clients.
10. On the commandline run as root:

```
ltsp-update-image --cleanup /
```

This reports updating /var/lib/tftpboot directories for chroot: i386 (i.e. putting pxelinux.0 and pxelinux.cfg and the latest kernel into /var/lib/tftpboot/ltsp/i386/) and triggers ltsp-config nbd-server reporting created /etc/nbd-server/conf.d/swap.conf and created /etc/nbd-server/conf.d/ltsp\_i386.conf and nbd-server. It also creates /etc/nbd-client but did not report it as well as putting the latest squashfs image for nbd into /opt/ltsp/images.

11. On the commandline run as root:

```
ltsp-config nbd-server
```

This creates 3 files: /etc/nbd-server/conf.d/swap.conf /etc/nbd-client and /etc/nbd-server/conf.d/ltsp\_i386.conf. If there is an error message "FATAL: Module overlays not found" it is a non-issue since aufs is used instead of overlays.

12. On the commandline run as root:

```
service nbd-server restart
```

13. On the commandline run as root:

```
ltsp-config lts.conf
```

This creates a default lts.conf file which many should study and edit as appropriate. Note that all headings (written between square brackets) should have at least one entry each so don't leave any empty.

This file plays a role similar to xorg.conf for xorg and there are many options for it to choose from. One is worth mentioning here:

Under [Default] the option LDM\_DIRECTX = True (the default is false) allows one to turn off the encrypted X tunnel via SSH, and instead run a less secure, but much faster unencrypted tunnel. If speed is important and security is less so then it is recommended.

As this model describes a usage with nbd rather than Debian's default using nfs note that the useful file `lts.conf` is in `/var/lib/tftpboot/ltsp/i386/` which among other things means that changes made to this file do NOT require a re-creation of the squashfs image.

When ready to try ltsp don't forget to create users as appropriate for the clients. This also does NOT require a re-creation of the squashfs image.

Notes:

The following changes require a re-creation of the squashfs image:

When the server is updated.

Software is added to the server that is desirable for clients.

This means one repeats the step:

On the commandline run as root:

```
ltsp-update-image --cleanup /
```

At the time of writing Debian Jessie's version of xserver-xorg is 1.16. This may not run well on some older graphic cards. Debian Wheezy, on the other hand, has the 1.12 version and will work on many of those older graphic cards.