

Installation Manual

Installing the Freedom Toaster

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Installation Manual: Installing the Freedom Toaster

by Sean Wheller

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Chapter 1. Introduction

Thanks to some nifty scripts, installation of a Freedom Toaster is mostly an automated process. Follow the instructions in this book to install a Freedom Toaster in accordance with the Shuttleworth Foundation specification.

Scope

This document guides you through the process of installing and configuring the computer system part of the Freedom Toaster. The resulting system will be in accordance with the production system specification defined by the Shuttleworth Foundation.

While this specification defines Ubuntu 5.10 (Intel x86 Edition) as the distribution upon which to build a Freedom Toaster, please note that any Linux-based distribution can be used. Similarly, there can be any number of ways to configure a Freedom Toaster system. Such experimentation and deviation from the original specification is encouraged, but are beyond the scope of this document.

If you choose to install on a distribution other than Ubuntu 5.10 (Intel x86 Edition) the convenience scripts discussed in this manual and provided for automating installation will not work. You will need to modify the script to work with your specific distribution. If you do create scripts to setup Freedom Toaster on another distribution, we hope you will share them with project so that others may benefit.

If you choose to deviate from the specification, this document will serve as a guide of what is needed and you will have to exchange things such as names of applications, file system paths and commands as is appropriate for your system.

Prerequisites

For purpose of brevity, this document assumes reasonable proficiency at installing and administering computer systems based on Linux. Ubuntu specific knowledge or expertise is not a prerequisite.

Associated Documentation

The following documents are associated with this document:

Assembly Manual	This document defines the Shuttleworth Foundation specification for manufacture of a production Freedom Toaster system. It explains how to assemble the physical housing and computer equipment that comprise a Freedom Toaster, it also provides the specifications and instructions required in order to make those parts that are bespoke and cannot be bought from a supply-store.
Maintenance Manual	Explains how to perform routine maintenance tasks such as checking and gathering statistics, upgrading Freedom Toaster software, and loading new Freedom Toaster content.
Customization Manual	Explains how the layout and design of the Freedom Toaster software Graphical User Interface and its functionality can be modified to meet new requirements.
User Manual	Explains how navigate the Freedom Toaster Graphical User Interface and how to complete the task of selecting and burning digital content or software to CD or DVD media.

Requirements

Before proceeding with installation of a Freedom Toaster please ensure that the following items are available.

- Ubuntu Linux Install CD - 5.10 (Intel x86 Edition). Download here [<http://cdimage.ubuntu.com/releases/5.10/release/>].
- eGalax Touch Screen Linux Drivers. Download the Fedora Core RPM here [<http://www.egalax.com.tw/>].
- A Freedom Toaster Install Pack or a broadband connection to the Internet.



If you are using a Touch Screen monitor device other than the one listed in the Shuttleworth specification please ensure that the device is Linux compatible and that you are in possession of the appropriate Linux drivers.

Freedom Toaster Install Pack

If installation from the Internet is not possible, use of the Freedom Toaster Install Pack is recommended. The Install Pack is available as a tarball or ISO image from the Freedom Toaster Web Site [<http://www.freedomtoaster.org/installpack>]. The Install Pack contains the most current stable version of the Freedom Toaster software and everything needed in order to install, upgrade and configure a Freedom Toaster on top of a new Ubuntu 5.10 server installation.

As of version 3.0 of the Freedom Toaster, the Install Pack is also available from other Freedom Toasters. So, if you have a Freedom Toaster near you, you can burn a copy of the Freedom Toaster Install Pack.

Chapter 2. Installation

This chapter explains how to install the components required for a Freedom Toaster. The installation overview is as follows:

- Install Base System [3]
- Install Freedom Toaster Software [4]
- Install Touch Screen Drivers [5]

Install Base System

At time of writing, production Freedom Toaster systems were based on server install of Ubuntu 5.10 (Intel x86 Edition). During installation, prompts guide you through the process. For the most part it is up to the person performing the installation to make selections based on the particular circumstances of the computer, language selection, geographic location, etc.

The main point at which installation of Ubuntu for a Freedom Toaster differs from most installations is the partition setup. Because a Freedom Toaster serves digital content and software, the partition on which the images (content and software) reside needs to be large enough to accommodate the sum of all the image sizes that will be made available. It is also advised that some room be left for growth. Additionally, since a standard Freedom Toaster is installed with three CD/DVD burning devices, that may be required to burn simultaneously, a reasonably large swap space, 1 Gigabyte or greater, is required.

Assuming your Freedom Toaster disk meets the recommended specification (Seagate 120GB Serial ATA Drive). The following partition setup is recommended using the ext3 file system.

- `/boot`- 60M
- `/`- 2G
- `/home`- 2G
- `/var`- 2G
- `/tmp`- 2G
- `/usr`- 3G
- `/srv`- what's left

Install Base

1. Set the computer system BIOS to boot from ROM.
2. Place the "Install CD" into the Primary ROM device and restart.

The primary ROM device is usually the one connected directly to the second motherboard IDE.

3. At the Ubuntu installation boot prompt type `server` then press **Enter**.
4. Follow the installation, select options as is suitable, create partitions as per recommendations above.
5. When prompted to create an admin user, use the following username:
 - **Full Name:**kiosk-admin
 - **Username:**kiosk-admin
 - **Password:** Enter a string or your choice

This account is your administrative account. Do not forget to record the account password for future use.

-
- When installation is complete, login to the new server using the kiosk-admin account.

Install Freedom Toaster Software

This section explains how to install and configure the Freedom Toaster software and content.

Unless you are using the Freedom Toaster Installation Pack, it is recommended that the Freedom Toaster is connected to the Internet.



This procedure and the scripts used assume an Ubuntu server installation as per the previous section.

The Freedom Toaster software can be installed from the following installation sources:

- **Network**

This option installs the Freedom Toaster via the Internet using the project Subversion repository as the input source. The following versions of the software are available select the option of your choice.

1. **tags** - This option installs the current stable version of the Freedom Toaster. It is recommended for use on all production systems. This is the most current stable version and is the one used in producing the Freedom Toaster Install Pack.
2. **branches** - This option installs the current unstable version of the project currently under testing. The files installed are still under the Subversion revision control system. To enable faster patch and testing cycle during development. This version is a candidate for release as a 'stable' version.
3. **trunk** - This is the development version of the Freedom Toaster software. It is the bleeding edge of project development. As such it may not work or features may produce unexpected results. Installation of this version is only recommended for people wishing to develop the Freedom Toaster software. The files installed are still under the Subversion revision control system. To enable faster patch and testing cycle during development.

- **CD/DVD/HDD**

- This option installs the Freedom Toaster from CD/DVD or Hard Disk Drive using the Freedom Toaster Install Pack.

Network Installation

1. Start the computer and login using the kiosk-admin account.
2. Login as 'root'.

sudo -H -s

3. Insert the Ubuntu Install CD.
4. Download the file named `SetupScript` using the command below.

wget http://learnlinux.tsf.org.za/ft/SetupScript

5. Make the script editable and executable.

chmod a+x SetupScript

6. Execute the `SetupScript`.

./SetupScript

-
7. When prompted to proceed, enter **y**.
 8. Select the installation source of your choice, enter **1**, **2** or **3**.
 9. Proceed, from time-to-time a prompt may be displayed requesting whether or not to install listed packages without verification, enter **y**.
 10. When prompted to configure xserver-org, press the **Tab** key to focus on the **OK** button and then press **Enter**. This will select the defaults and proceed with the installation.
 11. When the installation is complete the message, "We're Done!!" is displayed, remove the Ubuntu Install CD from the drive then restart the system by pressing the **Ctrl-Alt-Delete** key combination.

CD/DVD Installation

1. Start the computer and login using the kiosk-admin account.
2. Login as 'root'.

sudo -H -s

3. Insert the Freedom Toaster Install Pack.
4. Mount the CD/DVD drive containing the media.

mount /dev/hdc

```
mount: block device /dev/hdc is write-protected, mounting read-only
```

5. Change directory to the root of the CD.

cd /media/cdrom

6. Execute the **SetupScript**.

../SetupScript



The command above contains two periods (..) this is not a typo, it is known as sourcing and is required.

7. When prompted to proceed, enter **y**.
8. Select **1**, when prompted to select CD or Network, select **1** to install from CD.
9. Proceed, from time-to-time a prompt may be displayed requesting whether or not to install listed packages without verification, enter **y**.
10. When prompted to configure xserver-org, press the **Tab** key to focus on the **OK** button and then press **Enter**. This will select the defaults and proceed with the installation.
11. When the installation is complete the message, "We're Done!!" is displayed, remove the Ubuntu Install CD from the drive then restart the system by pressing the **Ctrl-Alt-Delete** key combination.



When using the Freedom Toaster Install Pack it is also possible to execute the installation from a directory on the local hard drive. To do so, just copy the contents of the CD, or to extract the tarball available from the Freedom Toaster Web Site, into a directory and execute the SetupScript from there.

Install Touch Screen Drivers

Drivers for touch screen monitors are usually specific to a particular monitor type. Linux drivers for the eGalax, the monitor used on production systems, are available on the CD-ROM supplied with the monitor and from the eGalax Web Site [<http://www.egalax.com.tw/>]. Download the latest Touchkit Setup script (contained in `Fedora_4.tar.gz`) for Fedora Core to your user home folder.



There is no need to download and install sharutils as it has already been installed in the previous section.

Since the Touchkit Setup is for a RPM-based system, we will not be able to use it unless we make some change to prepare it for use on Ubuntu. The following procedure outlines the steps required.

Install the Kernel Sources

1. Login as the kiosk-admin user.
2. Install linux-source-2.6.12.

```
sudo apt-get install linux-source-2.6.12
```

3. Create a link from the build to the source tree.

```
ln -s /usr/src/linux-source-2.6.12 /lib/modules/2.6.12-10-686/build
```

4. Add kiosk-admin to the src group.

```
adduser kiosk-admin src
```

5. Switch kiosk-admin to root.

```
sudo su - kiosk-admin
```

6. Change to the `src/` directory.

```
cd /usr/src
```

7. Extract the kernel source archive.

```
tar -xjf linux-source-2.6.12.tar.bz2
```

8. Change to the extracted source directory.

```
linux-source-2.6.12/
```

9. Run the make

```
make oldconfig
```

```
make
```

The following procedure assumes that the touch monitor attached to the system is the eGalax model listed in the specification and the drivers, provided in a tarball, have been copied to the kiosk-admin user home directory.

Install Touchkit

1. Change to the user home directory.

```
cd
```

2. Extract the tarball.

```
tar -xzf Fedora_4.tar.gz
```

-
- Execute the touchkit script.

Fedora_4/touchkit.setup.sh

- Change to the temporary touchkit directory

cd /tmp/touchkit

- Before we can build touchkit we need to:

- Set the kernel headers.

sed -i 's#/lib/modules/\${shell uname -r}/build#/usr/src/linux-source-2.6.12#' usb/Makefile

- Remove the RPM related build information.

sed -i '11,39d' setup

- Change the location of `rc.local`

sed -i 's/rc.d/rcS.d/ utility/rclocal.tcl

- Run the touchkit build and setup.

sudo ./setup

Chapter 3. Configuration

This chapter explains how to perform the final configuration changes to a newly installed Freedom Toaster.

The `setupscript` used in the section called “Install Freedom Toaster Software” [4] has performed most of the required configuration changes. What remains is as follows:

- Add Content Packages [8]
- Check Configuration and Calibrate [8]

Add Content Packages

During installation the folder `srv/isos/` and its contents was created. This directory is intended to organize the Freedom Toaster content and contains everything needed except the ISO images themselves.

The software and digital content stored on the Freedom Toaster are available for download from the individual project Web Sites. The Software and content files are normally available in the ISO 9660 file system format. An ISO 9660 file system is a standard CD-ROM file system that allows you to read the same CD-ROM whether you're on a PC, Mac, or other major computer platform. Almost all computers with CD-ROM drives can read files from an ISO 9660 file system. ISO files are also called ISO images because they contain an image of what the CD-ROM will look like.

The hierarchy of `isos/` directory is logically structured using the following syntax logic:

`isos/distro/version/medium`

Where:

- `isos/` is the root of the `/srv/isos/` directory.
- `distro/` is the name of the content (software or content), in lowercase. For example, ubuntu, suse, gutenber.
- `version/` is the version number of the ISO package.
- `medium/` is the format, CD or DVD



The folder naming convention is all lower case without spaces in strings.

ISO images from each of the projects need to be downloaded to their respective directories. Obtaining the ISO images can be done in the following ways:

- **Download** - Download each of the ISO files from the various project servers or their mirrors. To assist in this procedure a simple shell script is provided in the `contrib/getcontent-sh/` directory found in the project source tree or the Install Pack. When using this script, it is recommended to change the Fully Qualified Domain Names (FQDN) and paths to suite local servers or mirrors.
- **Toaster** - From version 3.0 the Freedom Toaster has the ability to toast update packages. This requires an already running Freedom Toaster, 1 CD and several DVDs.
- As an alternative route, post a request to the Freedom Toaster user list to see if somebody can help you.
- If all these options fail, please contact Jason Hudson at the Shuttleworth Foundation [<http://www.tsf.org.za>].

Check Configuration and Calibrate

The final step in installation of a Freedom Toaster is to check the system configuration and calibrate the burners. These tasks are performed from the Freedom Toaster administration interface.

This interface is accessed from the Home page by touching the empty space between the **FireMonger** and **Project Gutenberg** graphic buttons. This will display the administration Login screen, which provides a virtual keyboard that enables input of the admin password.

First Time Admin Login

1. Touch the empty space between the **FireMonger** and **Project Gutenberg** graphic buttons. The on screen keyboard is displayed.
2. Enter the administration password by touching each of the letters of the password, then touch the **Enter** button.
3. When prompted to remember the password for this site, touch the **Never for This Site** button. This will ensure that a user must always enter the password in order to gain access to the administration interface.

Check Configuration

- ...

Calibrate the Burners

- ...

Following successful calibration all that will remain as a final test is to try burn a CD or DVD on the system, and what better way to test than by burning a backup of the newly installed system.

Burn a Backup

- ...