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Frugal Install Tiny Core Linux

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0. Introduction

Before making the commitment to perform a frugal install you should consider our [Quick and Easy Overview](#). It covers the basics of running Tiny Core from CDROM and/or USB pendrive. Most will find learning Tiny Core the quick and easy way a better starting point.

But for those who are ready to take the plunge to frugal, this guide shows step by step information on how to partition a blank IDE hard drive using cfdisk, copy over the TC operating system files, and install the GRUB bootloader on that drive.

It assumes that TC was booted from a liveCD and is already running on the target system with Internet access.

Keep in mind that this guide is basic and that the user may choose to adapt, remove and/or add parts as desired.

The result: a standard TC PPR installation.

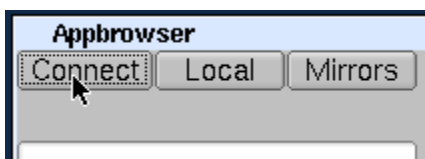
Note: If you already have a Linux System booting via Grub, then you do not need to make a partition for Tiny Core! Tiny Core can run in a couple of directories in your existing Linux Grub installation. Skip to Step 5. You will only need to do Step 5 and add a Grub menu item (title, kernel, and initrd lines) as shown in Step 6.

1. Obtaining cfdisk and GRUB via Appbrowser

Click on the wbar icon **Apps** (or access the right-click menu on the desktop and selecting **SystemTools/Appbrowser**)



Click on **Connect**



The list on the left side should now be populated. Select **cfdisk.tcz** from the list.

The screenshot shows the AppBrowser interface. At the top, there are tabs for 'Connect', 'Local', and 'Mirrors', and a search field. Below the tabs is a 'Select Extension' list on the left and a details pane on the right. The details pane has sub-tabs for 'Info', 'Files', 'Depends', and 'Size'. The 'Info' tab is active, showing the following information for 'cfdisk.tcz':

- Title: cfdisk.tcz
- Description: Cfdisk partitioning utility
- Version: 2.17.2
- Author: Karel Zak and others.
- Original-site: www.kernel.org/pub/linux/utils/util-linux-ng/
- Copying-policy: GPL
- Size: 32K
- Extension_by: Jason W
- Comments: This is the cfdisk utility from the util-linux-ng-2.17.2 package.
- Change-log: 2008/10/16 First version
2008/11/12 Rebuilt for i486 and size optimization and removed version number from name.
- Current: Updated to util-linux-ng version 2.17.2

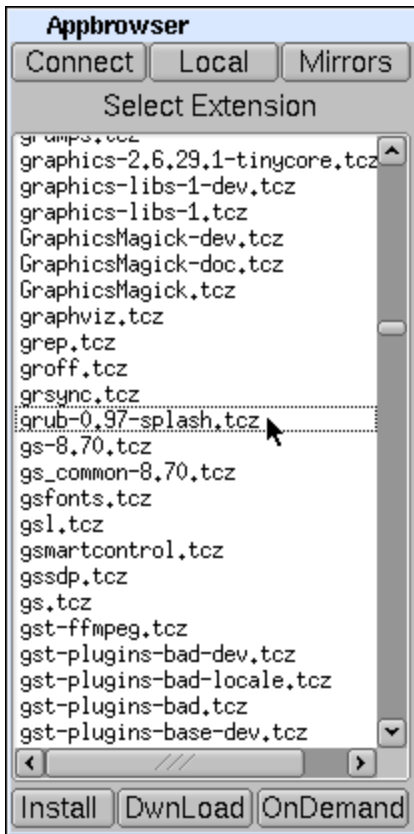
At the bottom of the interface, there are buttons for 'OnBoot', 'Go', and 'Status'.

Then click the **Go** button located in the bottom left corner. It should report that it was installed successfully.



Note: For microcore users, the command-line version of Appbrowser is **ab**, so you could use `ab cfdisk`, or to directly download and install, use **tce-load -wi cfdisk.tcz**

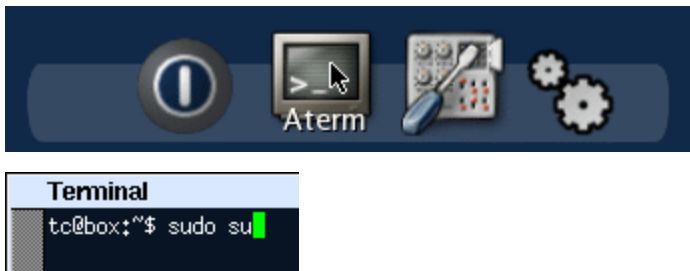
Now **repeat** this process, by selecting and installing **grub-0.97-splash.tcz**.



Note: For microcore users, the command line version of Appbrowser is **ab**, so you could use `ab grub` and select `grub-0.splash.tcz`, or to directly download and install, use **`tce-load -wi grub-0.97-splash.tcz`**

2. Open a root shell

Start a terminal, and type **`sudo su`** to make it a root shell:



3. Partitioning

Find a disk you want to install on. The following command will list your disks and their current partitions.

`fdisk -l`

Remember which disk will be used for installation. For the purposes of this guide, `/dev/hda` will be used.

```

Terminal
root@box:~# fdisk -l

Disk /dev/hda: 10.7 GB, 10737419264 bytes
255 heads, 63 sectors/track, 1305 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

Disk /dev/hda doesn't contain a valid partition table
root@box:~# █
    
```

The cfdisk command will be used to partition the hard drives.

cfdisk /dev/hda

Use the **left and right arrow keys** to navigate the bottom menu, and press **Enter** to select an option.

Navigate and select [**New**]

```

Terminal
cfdisk (util-linux-ng 2.14.1)

Disk Drive: /dev/hda
Size: 10737419264 bytes, 10.7 GB
Heads: 255 Sectors per Track: 63 Cylinders: 1305

-----
Name      Flags      Part Type  FS Type    [Label]    Size (MB)
-----
          Pri/Log    Free Space
          10734.00

                                     █

[ Help ] [ New ] [ Print ] [ Quit ] [ Units ]
[ Write ]

Print help screen █
    
```

Select [**Primary**]

```

[Primary] [Logical] [Cancel ]

Create a new primary partition █
    
```

Input the size by entering the numbers you want, or accept the default. Press enter to accept. This demonstration will use 100 MB.

```

Size (in MB): 100 █
    
```

If prompted, choose where to put the new partition.

```
[Beginning] [ End ] [ Cancel ]
```

```
Add partition at beginning of free space
```

Set the boot flag on the new partition by selecting [**Bootable**]. *Remember this partition as it will be used for installation.* This guide will use **hda1**.

```
Terminal
cfdisk (util-linux-ng 2.14.1)

Disk Drive: /dev/hda
Size: 10737419264 bytes, 10.7 GB
Heads: 255 Sectors per Track: 63 Cylinders: 1305

-----
Name      Flags      Part Type  FS Type      [Label]      Size (MB)
-----
hda1     Boot      Primary   Linux        [Label]      98.71
          Pri/Log   Free Space
-----

                                     |

[ Bootable ] [ Delete ] [ Help ] [ Maximize ] [ Print ]
[ Quit ] [ Type ] [ Units ] [ Write ]

Toggle bootable flag of the current partition
```

Setup the rest of the disk if preferred, when completed. Adding a swap partition is recommended.

Select [**Write**]

```
[ Bootable ] [ Delete ] [ Help ] [ Maximize ] [ Print ]
[ Quit ] [ Type ] [ Units ] [ Write ]

Write partition table to disk (this might destroy data)
```

Confirm the write by entering "yes":

```
Are you sure you want to write the partition table to disk? (yes or no): yes
Warning!! This may destroy data on your disk!
```

Select [**Quit**]

```
[ Bootable ] [ Delete ] [ Help ] [ Maximize ] [ Print ]
[ Quit ] [ Type ] [ Units ] [ Write ]

Quit program without writing partition table
```

4. Formatting

Format the new partition. This demonstration will use ext3. You may format other partitions here as preferred.

```
mkfs.ext3 /dev/hda1
```

After formatting rebuild the fstab file

```
rebuildfstab
```

Note that if you wish to migrate to ext4, or use grub 2, enable 256-byte inodes by adding `-l 256` to the `mkfs` command above. (capital i)

5. Copy over TC system files and prepare for PPR mode.

Mount the new install partition:

```
mount /mnt/hda1
```

Create directories for TC files and GRUB:

```
mkdir -p /mnt/hda1/boot/grub
```

Mount the original boot media. For this guide, TC was booted from an IDE cd-rom drive on the second channel:

```
mount /mnt/hdc
```

Copy over the file:

```
cp -p /mnt/hdc/boot/* /mnt/hda1/boot/
```

This will copy over `bzImage` and `tinycore.gz`. Ignore any "omitting directory" warnings.

Next setup the `tce` directory to store application extensions:

```
mkdir -p /mnt/hda1/tce
```

Prepare file for backup & restore

```
touch /mnt/hda1/tce/mydata.tgz
```

6. Installing GRUB

Copy over GRUB files (please note that the `grub-0.97-splash.tcz` extension will need to be installed as mentioned in step 1):

```
cp -p /usr/lib/grub/i386-pc/* /mnt/hda1/boot/grub/
```

The following assumes `vi`, a console text editor. You can use any other editor instead, for example the "editor" in TC.

Create `menu.lst`: (note that "lst" contains a lower case 'L')

```
vi /mnt/hda1/boot/grub/menu.lst
```

Press `i` (enters insert mode)

Enter the following:

```
default 0
```

```
timeout 10
title tinycore
kernel /boot/bzImage quiet
initrd /boot/tinycore.gz
```

If unsure, copy and paste the above. Note there's a capital i in bzImage.

Optionally, add other bootcodes now on the kernel line separated by spaces.

*Note: If you are using a pendrive or other Flash device, be sure to add the boot code of **waitusb=5***

Press <esc> when done. Enter :x (saves and quits)

Run GRUB:

```
grub
```

Note that grub uses hd numbers in the form of (hdM,n) and (hdM), instead of hdXy and hdX.

M corresponds to a number from '0', which represents 'a' for **X**.

For every letter after that, add one.

'b' is '1', 'c' is '2', 'd' is '3', etc.

n corresponds to a number from '0', which represents '1' for **y**.

Subtract 1 from **y** to get **n**.

'1' becomes '0', '2' becomes '1', '3' becomes '2', etc.

Since this guide is using **hda1** for **hdXy**, this means that (hdM,n) is (hd0,0)

and that the use of **hda** for **hdX** means (hdM) is (hd0)

In the grub prompt,

```
root (hd0,0)
```

```
setup (hd0)
```

```
quit
```

Note: you can use **tab** to auto-complete.

```
GNU GRUB version 0.97 (640K lower / 3072K upper memory)

[ Minimal BASH-like line editing is supported. For
  the first word, TAB lists possible command
  completions. Anywhere else TAB lists the possible
  completions of a device/filename. ]

grub> root (hd0,0)
Filesystem type is ext2fs, partition type 0x83

grub> setup (hd0)
Checking if "/boot/grub/stage1" exists... yes
Checking if "/boot/grub/stage2" exists... yes
Checking if "/boot/grub/e2fs_stage1_5" exists... yes
Running "embed /boot/grub/e2fs_stage1_5 (hd0)"... 16 sectors are embedded.
succeeded
Running "install /boot/grub/stage1 (hd0) (hd0)1+16 p (hd0,0)/boot/grub/stage2 /boot/grub/menu.lst"... succeeded
Done.

grub> quit
```

7. Testing

TC and GRUB are now installed!

Remove the original CD boot media:

```
umount /mnt/hdc
```

```
eject /dev/hdc
```

To test, reboot the system.

reboot

Note: the system may need to be configured to boot hdX first in the BIOS.

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