Boot Linux from Memory stick
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About this Document
The following sample shows you how to install the boot loader Grub
on a memory stick. It does not a lot, but can help you as a start for
some installation related stuff. You should also read my document
Boot from USB, since I do not repeat everything here.

Problem
You can not just copy files to a memory stick an think your computer
would be able to boot from it (the same applies to Hard disks,
Floppies, ...).

After power up the motherboards Bios comes alive and tries to load
and start a program that lies on a specific location on the boot device.
This specific location is called boot sector. The reason behind this is
that the Bios does not understand file systems. Copying data to a
device moves the data never to this boot sector. A special task or
program has to be used for that.

Fortunately grub offers all that for you. Grub is a boot loader that will
be located in the boot sector and has also a installation feature to put
it there.

Installation
It is assumed that you have a Linux computer having Grub installed.

Windows warning and partitions
You probably want to start and create a Linux partition on your
memory stick and copy all your stuff onto it. But be warned, if or your
friend, plugs this memory stick into a windows (e.g. XP) computer, the
windows computer probably comes with the following question: Not
formatted USB disk. Do you want to format? If you or your friend
answers yes, then all your work is gone and you can say thank you
Billy! To avoid this, I suggest you create two partition on your memory
stick. The first is bootable and holds a FAT32 partition (be aware
about some restrictions as Linux links). On this first partition you can
put grub and maybe the linux kernel and the initial ramdisk file initrd.
The second partition will be ext2.Windows will not see this partitions,
however what scares me it shows the whole memory stick size.
Format the fat partition and make2fs on the ext2 partition.

Installation
Mount your memory sticks partition /dev/sda1 and /dev/sda2 to
/mnt/sda1 and /mnt/sda2 Create on the first (FAT) partition a

/boot/grub directory.
To install grub copy first the files stage1, stage2 and menu.lst and maybe splash.xpm.gz to /mnt/sda1/boot/grub. Edit then the file menu.lst to your needs. Maybe menu.lst is a link (e.g.to grub.conf). This will not work on a fat partition since fat partition do not support links, remove the link and rename the remaining file to the name of the link.

I assume that you run now from a Linux computer where its internal disk and first partition (hda1) is called by grub hd0,0. Your usb memory sticks first partition is hd1,0.
To make grub bootable start on your Linux computer grub.
When the prompt comes type in the following:
root (hd1,0)
setup(hd1)
quit

Booting
Now you should modify your computers BIOS setup, that it boots first from usb and then from internal HD. When you have done this reboot it and grub from the USB stick should show up.

Linux kernel
It is easy to start the linux kernel from the memory stick copy the necessary file e.g kernel-2.6.11-gentoo-r9 to the fat partition and make grub finding it.

To boot successful you need an initial ram disk see see my document Boot from USBHD for more details.

It is also easy to launch the bash after the kernel boot. Then you have some text based single user system where you do not need to login.

To have a complete Linux system you need to launch init instead of the bash. Init requires the file /etc/inittab. /etc/inittab points to various script files that contain a key knowhow of a linux distribution.

Since you have limited memory available on a memory stick it gets tricky to just copy the necessary files to it.

MORE TO COME. The longer I wait the bigger the memory stick will be. One day Gentoo Linux will fit on it as it is.