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GRUB2 Quick Start

From Gentoo Wiki

This page is a translated version (https://wiki.gentoo.org/index.php?title=Special:Translate&group=page-GRUB2+Quick+Start&action=page&filter=&language=en) of the page GRUB2 Quick Start (/wiki/GRUB2_Quick_Start) and the translation is 100% complete.

This article provides information on how to get up and running with **GRUB2** in the simplest configurations. For more comprehensive information, see GRUB2 (/wiki/GRUB2). For a migration from GRUB Legacy (/wiki/GRUB) to GRUB2, see GRUB2 Migration (/wiki/GRUB2_Migration).

Contents

Installing GRUB2 software

The sys-boot/grub (https://packages.gentoo.org/packages/sys-boot/grub) package is slotted which means both grub-0.97 and grub-2.xx may be installed at the same time. However, while both versions of GRUB can be installed simultaneously, only one version of GRUB may be active as the system's bootloader at a time.

To install GRUB2, first set the *GRUB_PLATFORMS* variable with one or more appropriate values in the system's `make.conf`. If unset, GRUB2 will guess which platform to use on the system. It guesses `pc` (which is the MBR style of installation) for **`x86/amd64`** architectures.

FILE `/etc/portage/make.conf` **GRUB_PLATFORMS example**

```
# Standard PC (BIOS)
GRUB_PLATFORMS="pc"

# UEFI on amd64
GRUB_PLATFORMS="efi-64"

# Both UEFI and PC
GRUB_PLATFORMS="efi-64 pc"
```

After the variable is set, emerge the software:

```
root # emerge --ask sys-boot/grub:2
```

Activating the GRUB2 boot loader

Mount `/boot` if applicable:

```
root # mount /boot
```

When using an EFI platform, make sure that the EFI System Partition (/wiki/EFI_System_Partition) is available (mounted) at `/boot/efi`. This can either be through a specific mount point (at `/boot/efi`) or by having an entire `/boot` partition formatted with the FAT filesystem. This will effectually render `/boot` into a large EFI System Partition.

Presuming only `/boot/efi` is FAT:

```
root # mount /boot/efi
```

Run the **grub-install** utility to copy the relevant files to `/boot/grub`. On the PC platform, this also installs a boot image to the Master Boot Record (MBR) or a partition's boot sector.

To install GRUB2 to the MBR:

```
root # grub-install /dev/sda
```

```
Installation finished. No error reported.
```

To install GRUB2 on an EFI capable system:

```
root # grub-install --target=x86_64-efi
```

```
Installation finished. No error reported.
```

Important
When installing GRUB2 to an EFI capable system (like the example above) is giving troubles, make sure the *GRUB_PLATFORMS* variable is properly set in `/etc/portage/make.conf`

The **grub-install** command accepts a `--target` option to specify which CPU/Platform to install. If unspecified, **grub-install** will make a guess: on **x86/amd64** it will use the `i386-pc` value by default.

Automatic configuration

GRUB2 is traditionally configured by using the **grub-mkconfig** program to generate a configuration file.

grub-mkconfig generates the configuration file based on template sections located in `/etc/grub.d`. The default templates should cover most common boot setups.

user $ `ls /etc/grub.d`

```
00_header  10_linux  20_linux_xen  30_os-prober  40_custom  41_custom  README
```

The behavior of these templates can be controlled by setting variables in `/etc/default/grub`. See the GRUB manual (http://www.gnu.org/software/grub/manual/html_node/Simple-configuration.html) for more information.

Kernel naming scheme

In order for **grub-mkconfig** to detect the available Linux kernel(s), their names must start with `vmlinuz-` or `kernel-`.

For example:

CODE **Example kernel names that GRUB2 can detect**

```
/boot/vmlinuz-3.4.3
/boot/kernel-2.6.39-gentoo
/boot/kernel-genkernel-x86_64-3.17.1-gentoo-r1
```

When using an initramfs (/wiki/Initramfs), its name should start with `initramfs-` or `initrd-` and end with `.img`. The version must match one of a kernel image. File names generated by **genkernel (/wiki/Genkernel)** will also work.

For example:

CODE **Example initramfs names that GRUB2 can detect**

```
/boot/initrd.img-3.4.3
/boot/initrd-3.4.3.img
/boot/initrd-3.4.3.gz
/boot/initrd-3.4.3
/boot/initramfs-3.4.3.img
/boot/initramfs-genkernel-3.4.3-gentoo
/boot/initramfs-genkernel-x86_64-2.6.39-gentoo
```

To generate the `grub.cfg` file, execute the **grub-mkconfig** command like so:

```
root # grub-mkconfig -o /boot/grub/grub.cfg
```

```
Generating grub.cfg ...
Found linux image: /boot/vmlinuz-3.2.9
done
```

Silent kernel decompression

To silence kernel decompression at boot time, edit `/etc/default/grub` and add `quiet` to the *GRUB_CMDLINE_LINUX_DEFAULT* variable.

FILE **`/etc/default/grub`** **Silent decompression example**

```
GRUB_CMDLINE_LINUX_DEFAULT="quiet"
```

Systemd

To boot systemd while using GRUB2 make the *GRUB_CMDLINE_LINUX* variable look like this:

FILE **`/etc/default/grub`** **Systemd example**

```
GRUB_CMDLINE_LINUX="init=/usr/lib/systemd/systemd"
```

Loading another operating system

grub-mkconfig can also generate configurations to load *other* operating systems. This requires the sys-boot/os-prober (https://packages.gentoo.org/packages/sys-boot/os-prober) package.

To boot Windows, the sys-fs/ntfs3g (https://packages.gentoo.org/packages/sys-fs/ntfs3g) also needs to be installed. It allows for the **grub-mkconfig** utility to probe NTFS filesystems.

Manual configuration

Users do not need to use **grub-mkconfig**. The `grub.cfg` file can be edited manually as well.

As most users have experience with GRUB Legacy format, the next example shows how to write a GRUB2 configuration file based on information from the GRUB Legacy configuration.

`grub.conf` (GRUB Legacy)

```
timeout 5

title Gentoo Linux 3.2.12
root (hd0,0)
kernel /boot/kernel-3.2.12-gentoo root=/dev/sda3
```

`grub.cfg` (GRUB 2)

```
timeout=5

menuentry 'Gentoo Linux 3.2.12' {
    root=hd0,1
    linux /boot/kernel-3.2.12-gentoo root=/dev/sda3
}
```

Note
GRUB Legacy numbers partitions starting with 0; GRUB2 numbers partitions starting with 1. Both bootloaders number drives starting with 0.

See also

- GRUB2 (/wiki/GRUB2) - The 'full' GRUB2 article contains more information and an extensive list of resources.

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Category (/wiki/Special:Categories): Bootloaders (/wiki/Category:Bootloaders)

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