



Gentoo Linux

Scott MacVicar

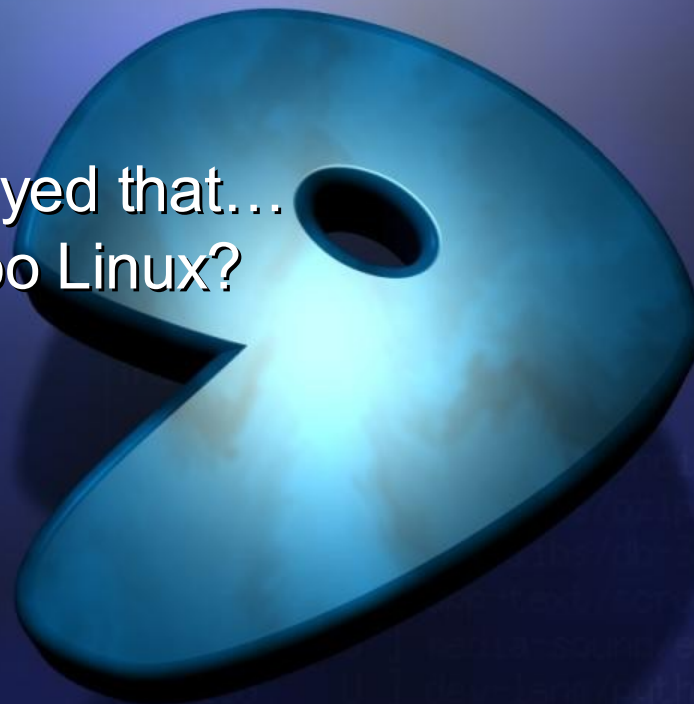
Overview

- Introduction

- Ever got annoyed that...
- What is Gentoo Linux?
- Features
- History
- Future

- Portage

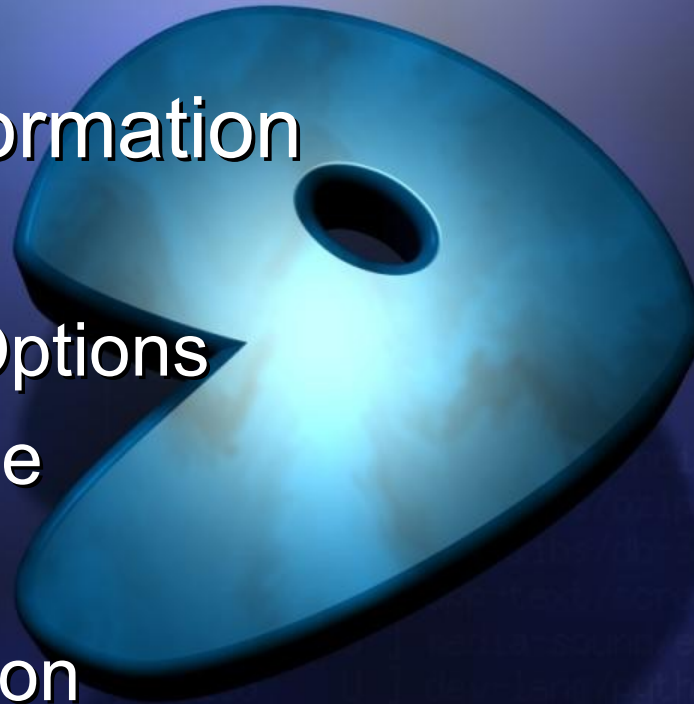
- What is it?
- Features
- Ebuilds
- User Tools



```
up world
would merge, in order,
...done!
2-1,0,2-r2 to /
2-3 to /
ikeeper-0,3,9-r1 to /
esound-0,2,28-r1 to /
python-2,1,1-r4 to /
astresql-7,1,3-r4 to /
librep-0,16 to /
libs/rep-0,16 to /
lib/Fluxbox-0,1,9-r2 to /
showcase/doctor-2,0,0-r1 to /
dev/abs/libsig-1,0,4-r2 to /
dev/abs/libsig-1,1,1 to /
all/libgthand-1,3-r2 to /
gnome-extras/gnome-2,4,0-r1 to /
rebuild
rebuild
rebuild
```

Overview

- Practical Information
 - Stages?
 - Configure Options
 - USE variable
 - Installation
 - Customisation
 - Help and Support



Overview

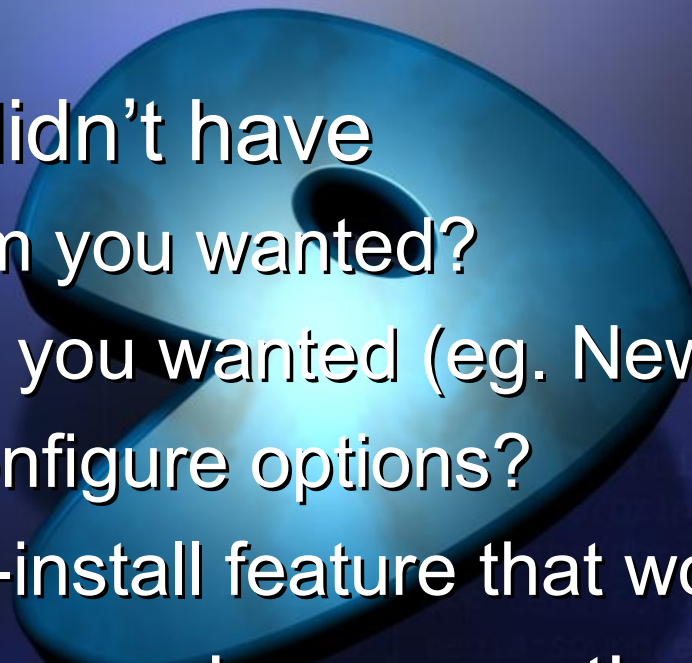
- Gentoo vs Debian
 - Stability
 - Package Management
 - Advantages
- Conclusion
 - Questions
 - Pub



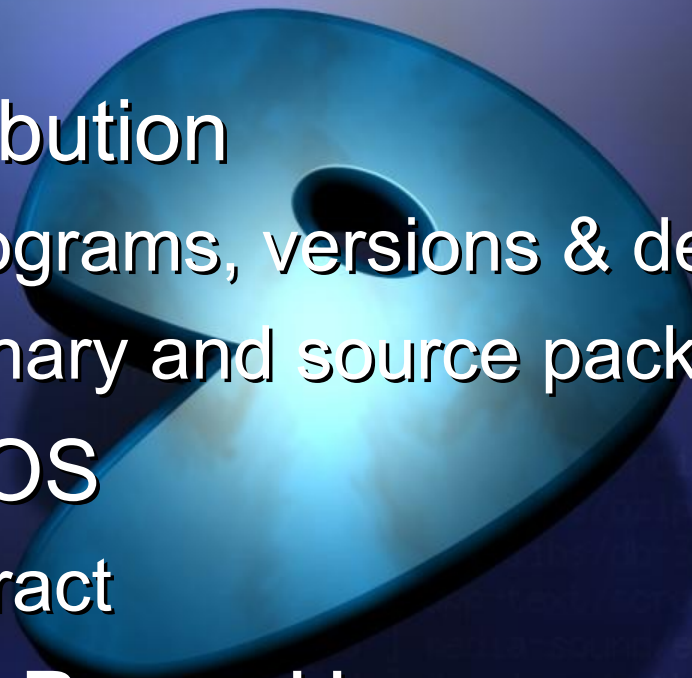
Introduction



Ever got annoyed that...

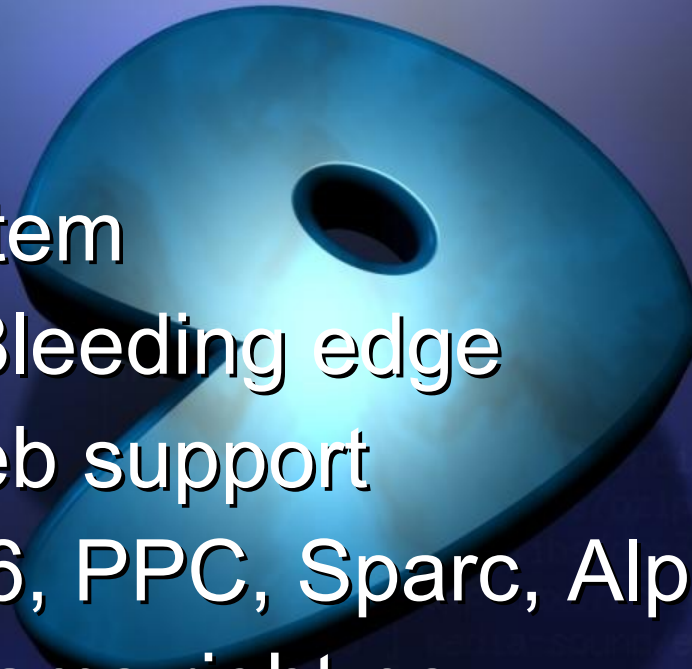
- Your distro didn't have
 - The program you wanted?
 - The version you wanted (eg. Newest)?
 - The right configure options?
 - A fetch-and-install feature that worked?
 - You had to upgrade your entire distro for the latest fixes
- 

What is Gentoo Linux?

- A meta distribution
 - Choose: programs, versions & dependencies
 - Supports binary and source packages
 - Community OS
 - Social Contract
 - The target is Power Users
 - You have to do it all yourself
 - Also for beginners
- 

Features

- Portage
- Own init system
- Stable and Bleeding edge
- RPM and Deb support
- Supports x86, PPC, Sparc, Alpha
- 8500+ programs right now
- Kernel Choice
 - Vanilla, Gentoo, Redhat, WOLK



History

- Started in 1999 by Daniel Robbins
 - Called Enoch until October 1999
- 1.0 Release Primo 2001
- 2004 - Gentoo Foundation
- April 2004 – Daniel resigns
 - Joins Microsoft June 2005

Future

- Gentoo Foundation
- Sponsors

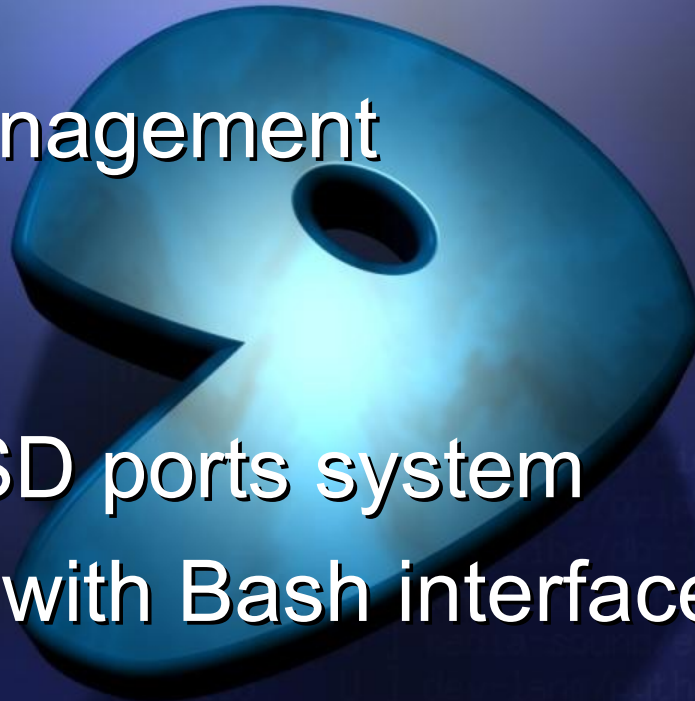


Portage

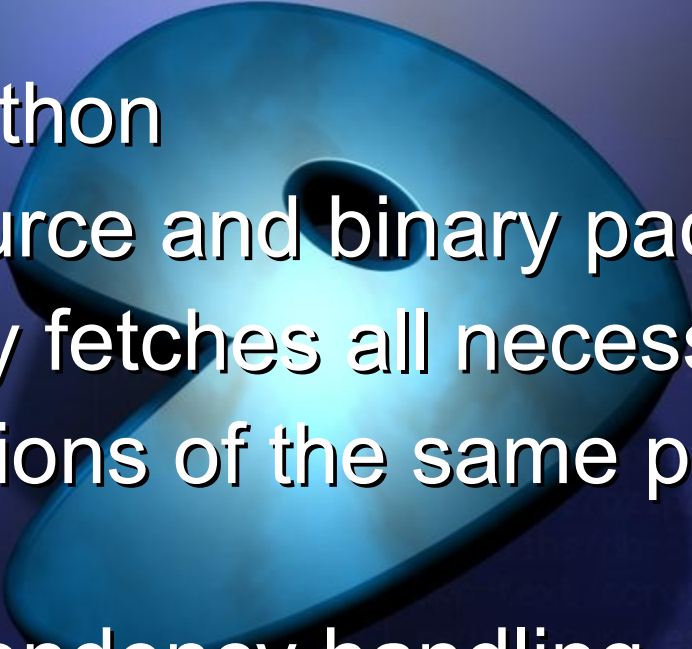


What is it?

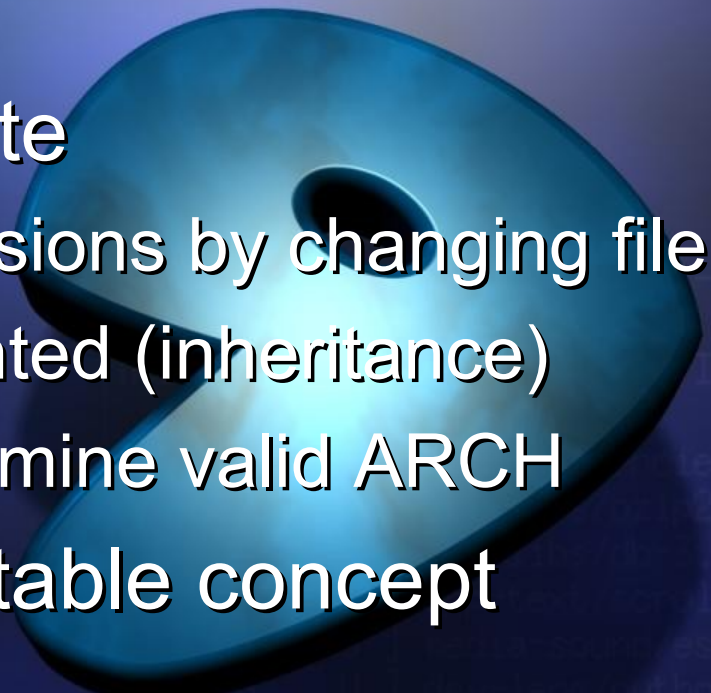
- Package Management
 - Building
 - Installation
- Similar to BSD ports system
- Python core with Bash interface



Features

- Written in Python
 - Supports source and binary packages
 - Automatically fetches all necessary files
 - Multiple versions of the same program at once
 - Flexible dependency handling
 - Sandbox
 - Distributed Compiling
- 

Ebuilds

- Easy to create
 - Change versions by changing filename
 - Object oriented (inheritance)
 - Easily determine valid ARCH
 - Stable / Unstable concept
- 

Ebuild Sample Script

```
# Copyright 1999-2005 Gentoo Foundation
# Distributed under the terms of the GNU General Public License v2
# $Header:
```

```
inherit eutils
```

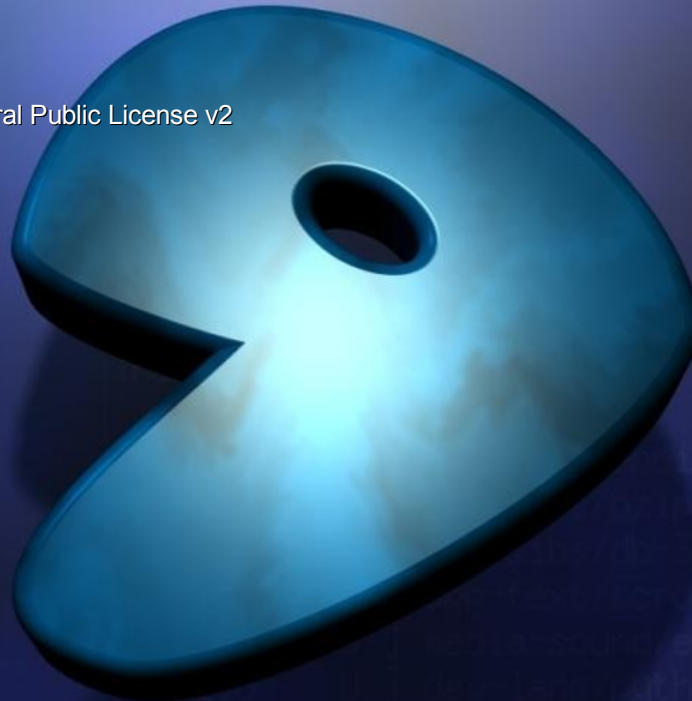
```
DESCRIPTION="This is a sample ebuild file"
HOMEPAGE="http://www.example.com"
SRC_URI="ftp://www.example.com/${P}.tar.gz"
```

```
LICENSE="GPL-2"
SLOT="0"
KEYWORDS="x86 ~amd64 -sparc -*ppc"
IUSE="ssl"
```

```
DEPEND="ssl? ( >=dev-libs/openssl-0.9.6b )
        >=dev-language/perl-5.6.1-r1"
RDEPEND=""
```

```
src_compile() {
    econf || die "could not configure"
    emake || die "emake failed"
}
```

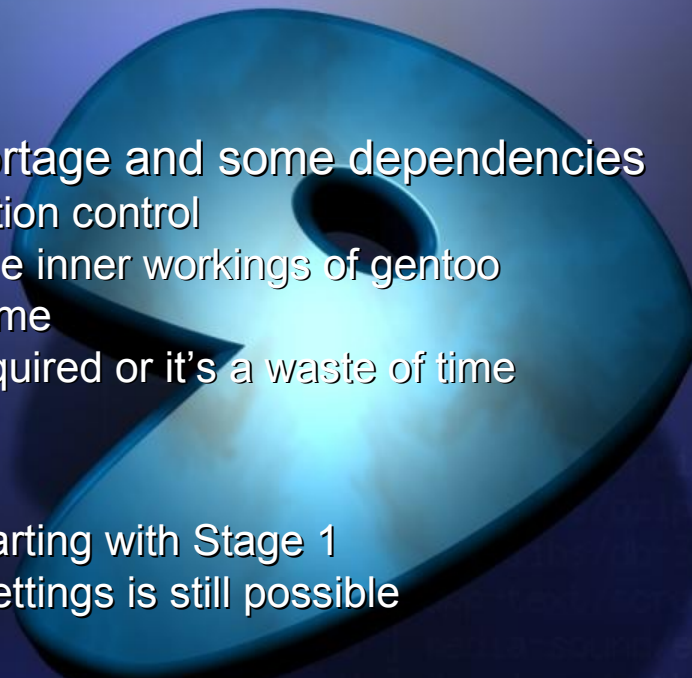
```
src_install() {
    einstall || die "einstall failed"
}
```



Practical Information



Stages?

- Stage 1
 - Basic compiler, Portage and some dependencies
 - + Total optimisation control
 - + Learn about the inner workings of gentoo
 - - Takes a long time
 - - Tweaks are required or it's a waste of time
 - Stage 2
 - Bootstrap system
 - + Faster than starting with Stage 1
 - + Tweaking of settings is still possible
 - - Still not fast
 - - Have to accept developer chosen optimisations
 - Stage 3
 - Prebuilt minimal system
 - + Fastest way to get a Gentoo base system
 - - Nothing to tweak its already done
- 

Configure Options

- CFLAGS / LDFLAGS
 - Why are they important?
- CHOST="i686-pc-linux-gnu"
CFLAGS="-O2 -march=pentium-m -pipe -fomit-frame-pointer"
CXXFLAGS="\${CFLAGS}"
- MAKEOPTS="-j2"

The USE variable



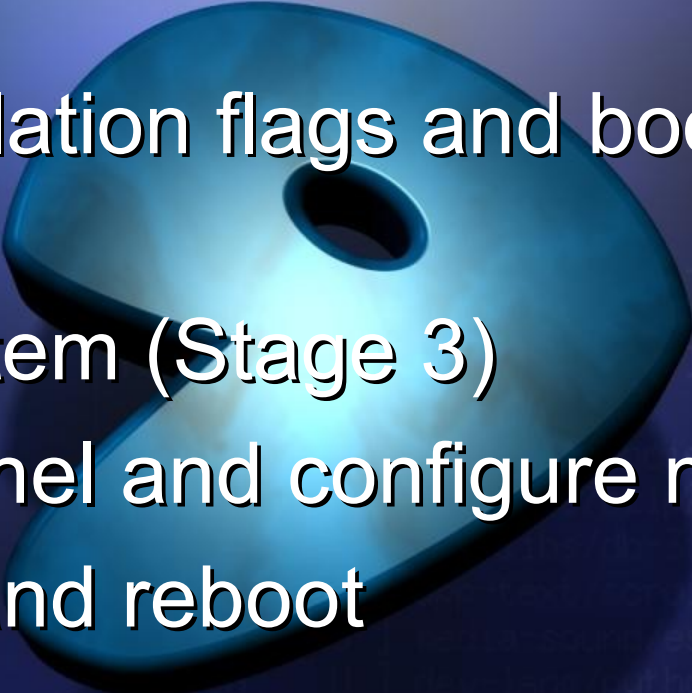
- USE
 - What's it for?
 - Definition
 - What exists
- Example
 - USE="-kde -qt gtk2"
- Default
 - USE="x86 oss apm arts avi berkdb bitmap-fonts crypt cups encodefoomaticdb gdbm gif gpm gtk gtk2 imlib jpeg kde gnome libg++ libwww mad mikmod motif mpeg ncurses nls ogg vorbis opengl pam pdflib png python qt quicktime readline sdl spell ssl svga tcpd truetype X xml2 xmms xv zlib"
- Temporary Usage
 - USE="java" emerge mozilla

Installation

- Boot Live CD
- Setup Networking
- Create Partitions and mount them
- Select your stage



Installation

- Setup compilation flags and bootstrap (Stage 2)
 - Emerge System (Stage 3)
 - Compile Kernel and configure machine
 - Setup grub and reboot
- 

Customisation and Tips

- Post Install
- General
 - Always build packages
 - Save GCC before upgrading
 - Try distcc (distcc.samba.org)
- Gentoo as a Server
 - Use a buildhost
 - Remove gcc and buildtools
- Gentoo as a Desktop
 - Run test and stable together

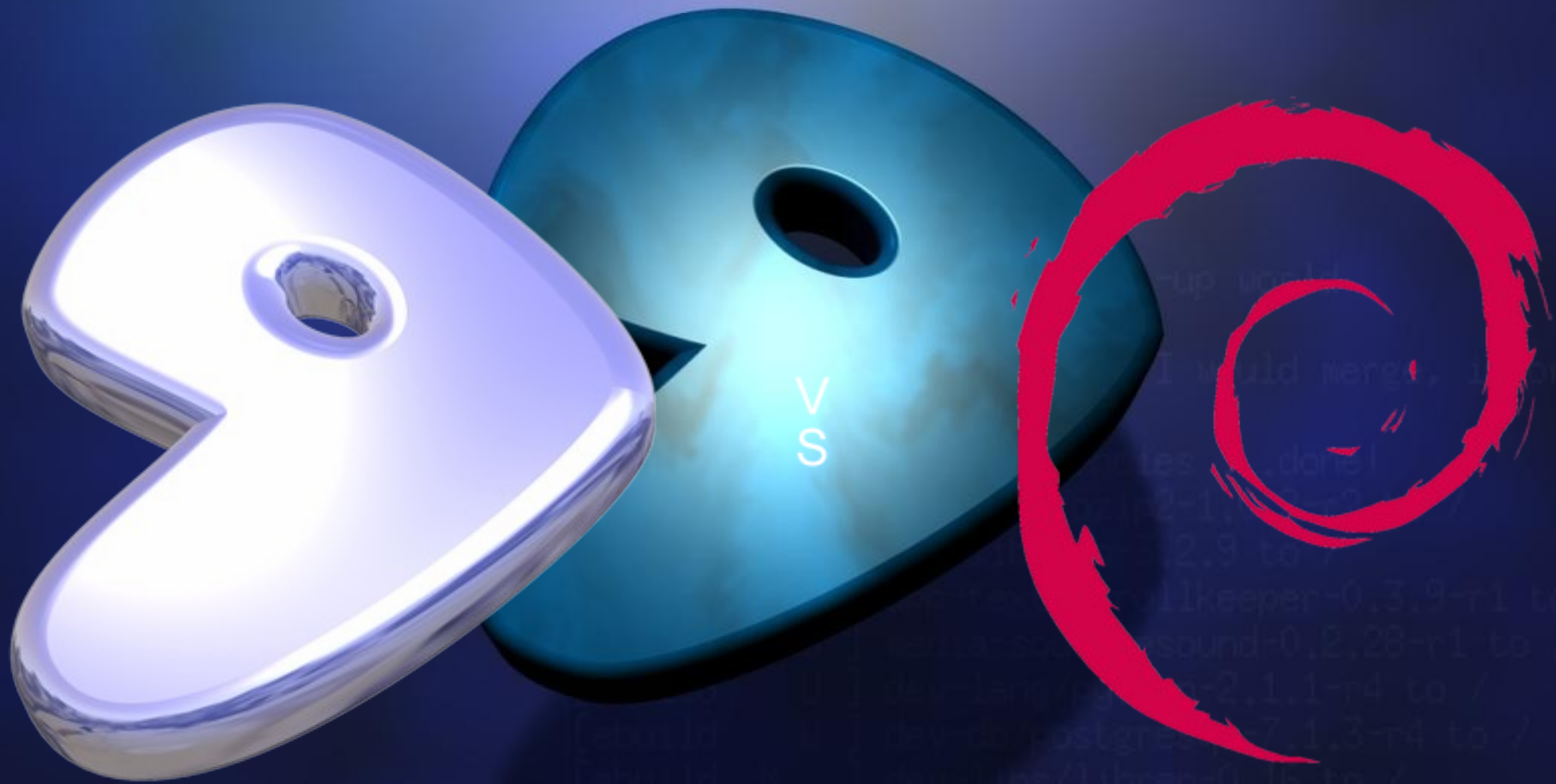


Help and Support

- Gentoo Documentation
 - www.gentoo.org/doc/en/index.xml
- Forums
 - forums.gentoo.org
- Wiki
 - gentoo-wiki.com
- IRC
 - [#gentoo](http://irc.freenode.net)



Gentoo vs Debian

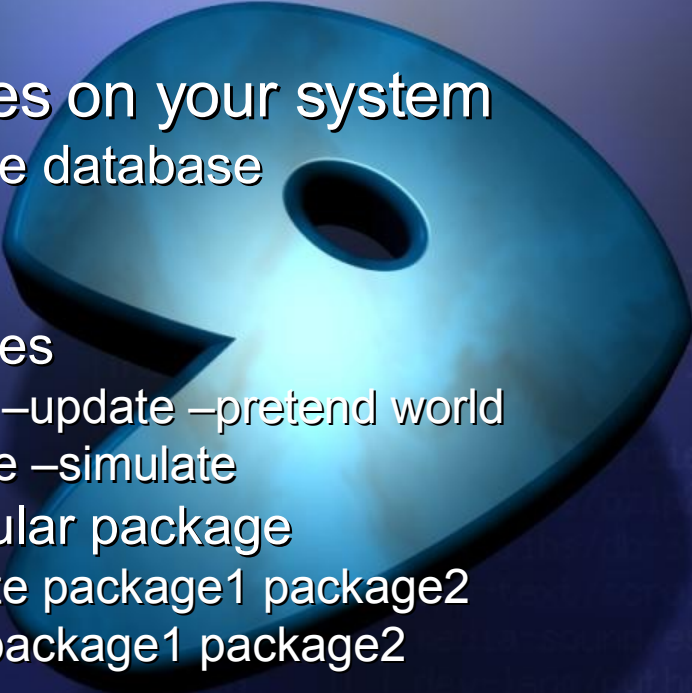


Stability

- Build method
 - binary / source
- Package updates
 - Time
 - Testing
- Security
- Conf hiccups?



Package Management

- Updating packages on your system
 - Updating package database
 - emerge –sync
 - apt-get update
 - Updating packages
 - emerge –deep –update –pretend world
 - apt-get upgrade –simulate
 - Updating a particular package
 - emerge –update package1 package2
 - apt-get install package1 package2
 - Installing Packages
 - emerge package1 package2
 - apt-get install package1 package2
 - apt-get build-dep package1 && apt-get source package1
- 

Package Management

- Reinstall a particular package
 - emerge –oneshot package1 package2
 - apt-get install –reinstall package1 package2
- Search package database
 - emerge –searchdesc searchword
 - apt-cache search searchword

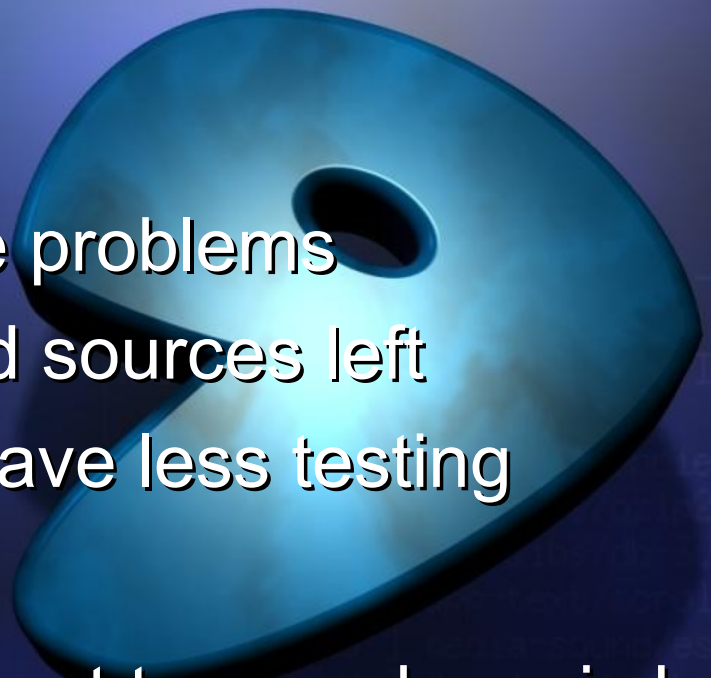
Advantages

- Gentoo
 - Speed
 - Up to date
- Debian
 - Extremely stable
 - Binary packages



```
up world
would merge, in order,
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2-1,0,2-r2 to /
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sound-0,2,28-r1 to /
thon-2,1,1-r4 to /
staresql-7,1,3-r4 to /
librep-0,16 to /
libs/rep-gtk-0,16 to /
ll-w/Fluxbox-0,1,9-r2 to /
snowbase/luotop-2,0,0-r1 to /
dev-libs/libsigc++-1,0,4-r2 to /
dev-libs/libsigc++-1,1,11 to /
all-libs/ghc-ml-2,3-r2 to /
gnome-extra/gnome-panel-2,3-r3 to /
gnome-panel-2,3-r3 to /
```

Disadvantages

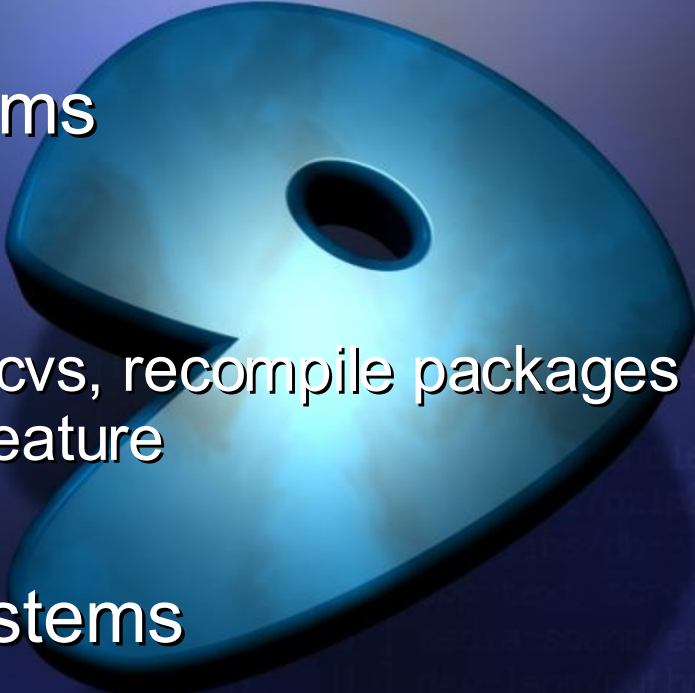


- Gentoo
 - Flags cause problems
 - Downloaded sources left
 - Packages have less testing
- Debian
 - Adding support to a package is harder
 - Say glibc with NTPL support
 - Unable to install multiple versions

Conclusion



Where to use Gentoo

- Desktop Systems
 - Fun
 - Exciting
 - Emerge beta, cvs, recompile packages with or without support for a feature
 - Powerful
 - Low quality systems
 - Distcc, central server
 - Problems?
 - With great power comes great responsibility
- 

Questions

- Ask questions



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thon-2,1,1-r4 to /
postgres-7,1,3-r4 to /
es/librep-0,16 to /
es/librep-gtk-0,16 to /
ll-wm/Fluxbox-0,1,9-r2 to /
snow-base/luogtop-2,0,0-r1 to /
dev-libs/libsigc++-1,0,4-r2 to /
dev-libs/libsigc++-1,1,11 to /
ll-libs/gtkmm-1,2,9-r2 to /
gnome-extra/gnome-wm-2,2-r3 to /
gnome-libs/gnome-wm-2,2-r3 to /
```

Pub

- CD's
- Gentoo Badges

