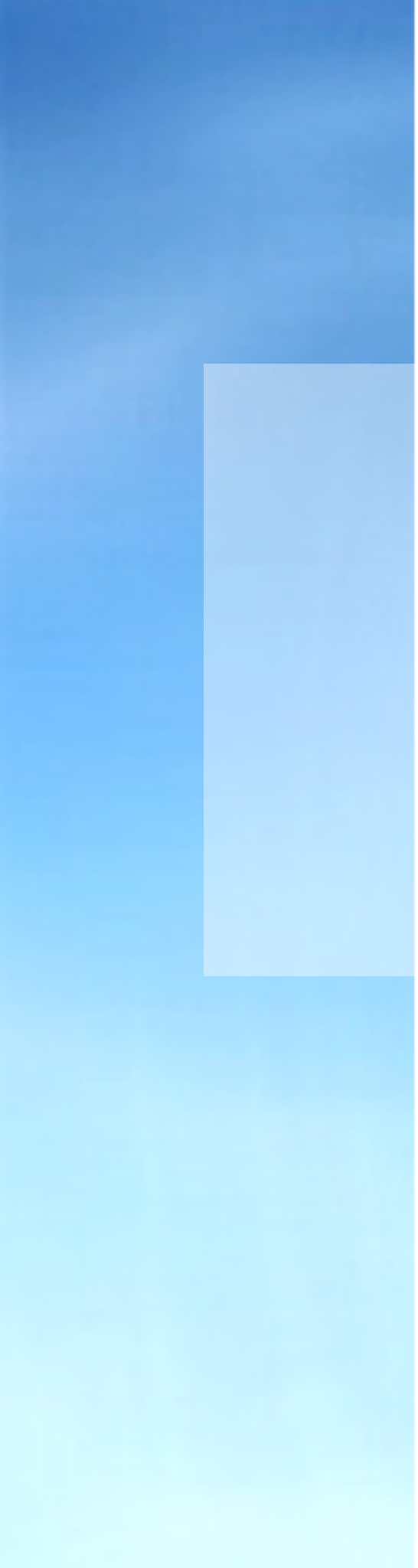


Gentoo / Alt:Prefix

Gentoo on a different level

Fabian Groffen
<grobian@gentoo.org>





Why Prefix



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Gentoo / Outlaw

Gentoo for Mac OS X

- ppc-macos: try and survive having outdated tools
- prefix: build a complete userland

Gentoo/Alt:Prefix

“I am an outlaw, I was born an outlaw son...” – Eagles



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Haunted ppc-macos

- package.provided
- outdated (development) tools
- failing core dependencies
- non-GNU (up-to-date) core utilities

“ppc-macos est mort, vive ppc-macos!”



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Wish list

- no package.provided lies and horror
- “upgrade” OS provided stuff
- get `mutt` and `vim` out-of-the-box

“Father, why are we hiding from the police?”



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Prefix = offset

- Rely on a bare minimum (kernel)
- Install into an offset (no conflicts)
- Fully managed by Portage

“because they use emacs son, and we use Vi”

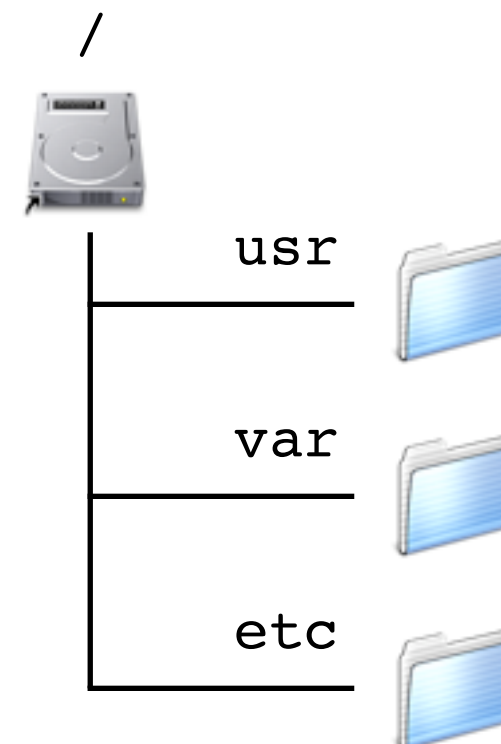


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Prefix for Dummies

- Gentoo Linux uses `/usr`, `/var`, `/etc` ...
- Most OSs use those too: Solaris, Mac OS X, *BSD ...



“One Prefix to Rule Them All”

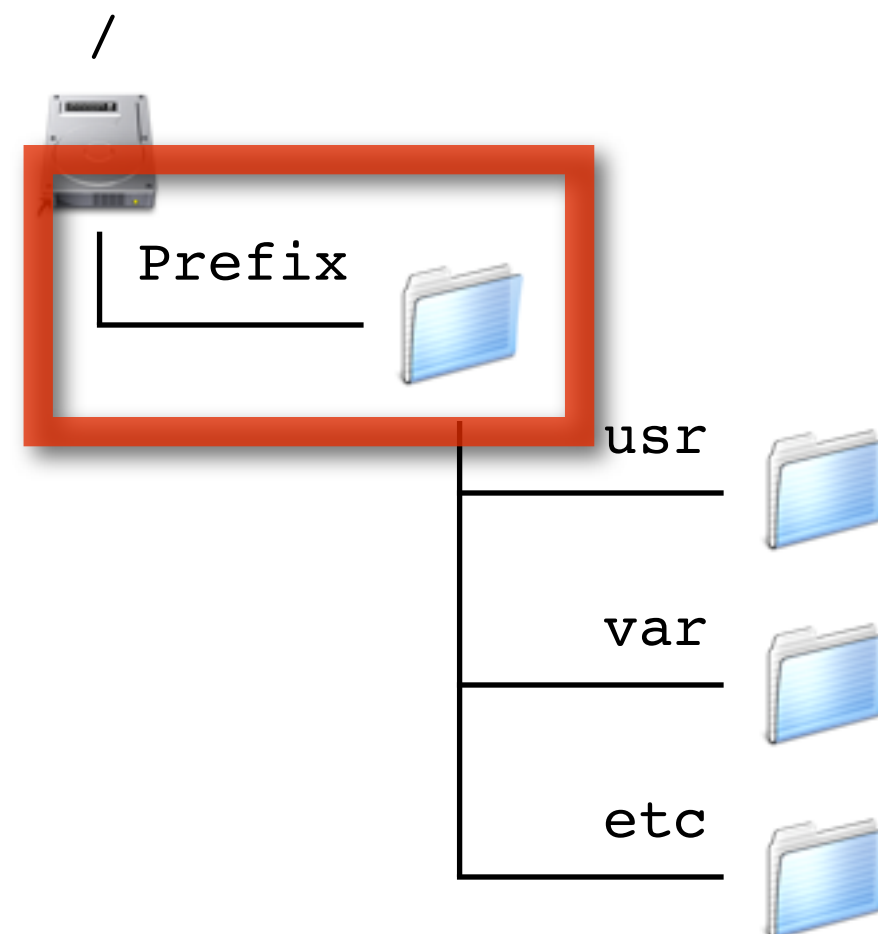


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Prefix for Dummies

➤ Avoid conflicts, use an
offset



“One Prefix to Rule Them All”



Prefix' History



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Early Days

- Michael Haubenwallner makes patch
- Brian Haring forks off a branch
- Kito Danya Dietrich engineers first version

“Once upon a time...”



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Dark Ages

- Developers leave or disappear
 - knowledge vaporises
- Nothing happens

“... things that should not have been forgotten, were lost ...”



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Golden Age

- A “rebirth” of Prefix
 - tree updates (scripts)
 - Portage fixes, entire rewrite
 - contributing participants

“Halcyon & On & On” – Orbital



The *Facts*



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Technology

- prefix branch of Portage
- very close to trunk
- merges succeed ~95% of the time (hi genone!)

“99% of all statistics are made up”



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Infrastructure

- Prefix Portage tree on overlays.g.o
- Tools patched for SVN (repoman!)
- User overlays through layman

“Prefix, Just Do It”



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Supported archs

- ppc-macos
- x86-macos
- sparc-solaris
- x86-solaris
- amd64-linux
- x86-linux
- ia64-linux

“Life is all about choice”



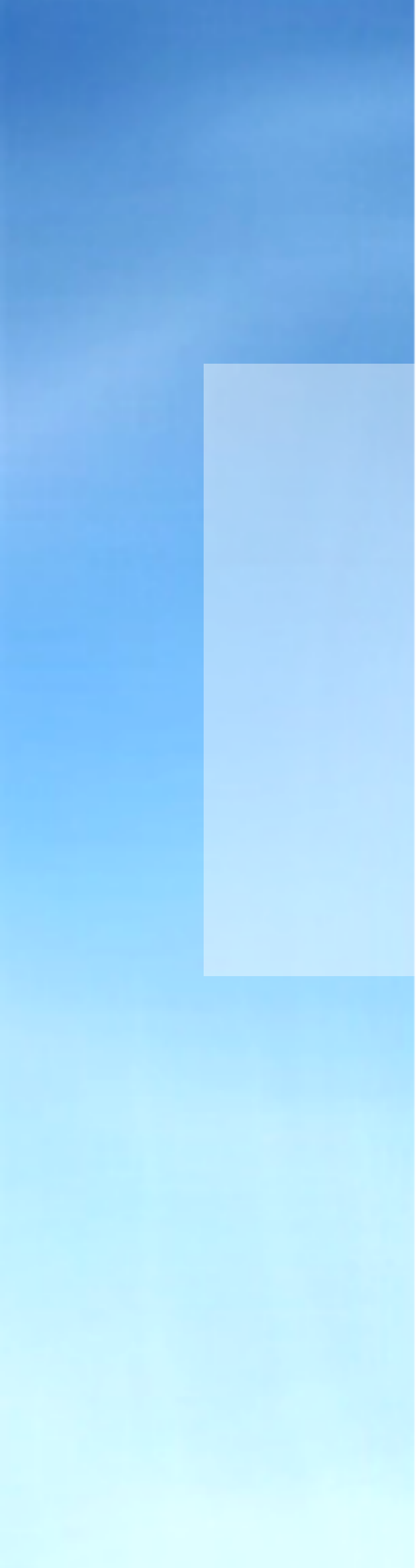
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Toolchain

- Use of `gcc-config` and `binutils-config`
- Darwin: `odcctools` linker, Solaris: GNU `binutils`
- GNU `coreutils`, `patch`, `diff`, `findutils`

“GNU is Not Linux”



The Details



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Prefix Portage

- Prefix offset addition
 - clean diff, just `prefix+“path”`
- No root privileges
 - mostly unnecessary in prefix
 - allows user installations

“Got root? No.”



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Prefix Offset

- In ebuilds econf does
`--prefix=${prefix}/usr`
- Illogical in prefix idea, why `usr`?
- Good idea for back/forward compatibility, avoids problems (shells, coreutils)

“Usually the first thought is right”



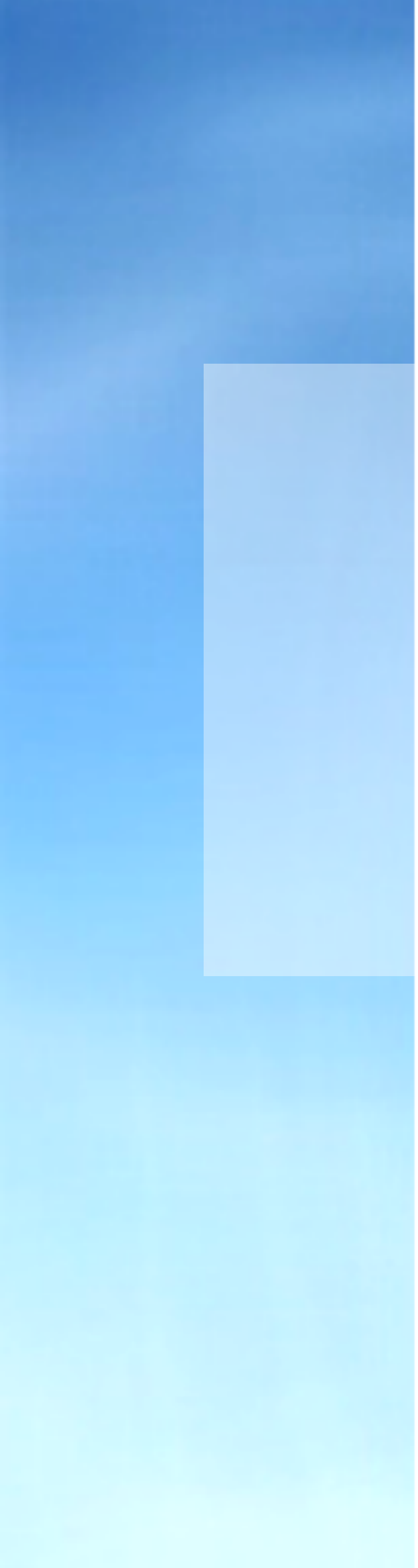
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Prefixed Ebuilds

- The offset itself `EPREFIX`
- Two conveniences:
 - `EROOT=${ROOT}${EPREFIX}`
 - `ED=${D}${EPREFIX}`
- `econf`, `dosym`, etc. are prefixed

“us is not schizophrenic!”



Ebuild pitfalls



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Double Prefixes

- Autotools help, but
- packages are broken (makefiles)
- packages don't use autotools

“Seeing double?”



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Prefix tools

- Hardcoded paths prevent finding
 - tools
 - headers
 - libs
- Program prefixes (gnumake, gmake)

“The Devil is in the Details”



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Prefix awareness

- Find config files in prefix
- Use tools/resources from prefix

“Be Prefix!”



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Prefix scripts

- Scripts need to “Think Prefix”
- shebang `#!/usr/bin/ruby`
- encoded paths
- gcc-config,eselect, layman, ...

“Think PrefixTM”



Conclusions



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Gentoo Prefix

- Gentoo system in an offset
- Unprivileged install
- Enabling technique

“Going places no Gentoo has gone before”

<http://www.gentoo.org/~grobrian/fosdem2007.pdf>

Questions?

Thanks for your attention

Fabian Groffen

`<grobrian@gentoo.org>`

