Gentoo EAPI 7

Ulrich Müller

Gentoo Linux developer, PMS/EAPI team and Council member
<ulm@gentoo.org>

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Outline

1. Introduction

2. Features for EAPI 7
   - Removals
   - Easy features
   - Difficult or controversial features
What are EAPIs?

- EAPI = Ebuild Application Programming Interface
- Interface between ebuild and package manager (PM)

- PMS = Package Manager Specification
  <https://wiki.gentoo.org/wiki/Project:PMS>
Procedure for a new EAPI

- Discuss ideas for new features in gentoo-dev mailing list
- All features traced via bugs <https://bugs.gentoo.org/>
  Gentoo Hosted Projects – PMS/EAPI
- Pre-approval by Council
- Write the specification (PMS)
- Implement in Portage
- Final approval by Council

Takes time ...

- One EAPI about every other year
- Not so bad, want to keep number of EAPIs in tree limited
EAPIs 0, 1, 2, 3 banned (March 2014 / January 2016)
EAPI 4 deprecated (October 2015)
EAPI 6 approved (November 2015)
EAPI 6 is EAPI 5 with the following changes:

- Bash version is 4.2
- Default `src_prepare` no longer a no-op
- Different `src_install` implementation
- `LC_CTYPE` and `LC_COLLATE` compatible with POSIX locale
- `failglob` is enabled in global scope
- `einstall` banned
- `die` and `assert` called with `-n` respect nonfatal
- `eapply` support
- `eapply_user` support
EAPI 6 (continued)

- econf adds --docdir and --htmlmdir
- in_iuse support
- unpack supports absolute and relative paths
- unpack supports .txz
- unpack matches filename extensions case-insensitively
- einstalldocs support
- get_libdir support
Did EAPI 6 take too long?

- More than 3 years after EAPI 5
- Most proposed features came without a patch
- Late changes:
  - Exact behaviour of `eapply`
  - Idempotence and return status of `eapply_user`
  - Directories for profile files ill-defined → postponed
  - Bash 4 `^^` and `, ,` case modifying operators in some locales
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Ban DESTTREE and INSDESTTREE

Bug 173630

- Install locations for `dobin etc. and doins`
- Variables should not be exposed to ebuild environment
- Removal already suggested in 2007
- No longer used in eclasses
- Use `into` and `insinto` instead
Creeping featurism

- Options \(-r, -V, -A, -a, -f, -x, -p\)
- 8 filename extensions (more suggested)

PMS and Portage implementation disagree

Deprecated in EAPI 6

Use `dodo -r` as replacement

“The council remains silent about the issue if a substitute in an eclass will be needed.” (2014-09-09 Council meeting)
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Bash version

- Roughly keep in sync with stable version
- Update to Bash 4.3 (or later)
Currently no minimum version required

“patch-2.7 introduced support for git-formatted patches”
Directory support for profile files

Bug 282296

- Allow most `package.*` and `use.*` in profiles to be either regular files or directories
- Allow `profiles/package.mask` to be a directory
- Requested for overlays, not intended for gentoo tree
- Didn’t make it into EAPI 6
Listed in PMS as strongly deprecated
Not used in tree
If not removed, would have to support directories for consistency
Bug 482884

- Portage function, with proxy in eutils.eclass
- Similar to `ewarn`
- Widely used in eclasses
Consistent install locations for helpers

Bug 595924

- into controls location for dobin, dosbin, dolib*, and domo
- Mostly used for / vs /usr
- domo is inconsistent with doheader, doinfo, doman, etc.
- Should always install into /usr/share/locale
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Runtime-switchable USE flags
Bug 424283


- A way to specify optional runtime dependencies in ebuild
- USE dependencies: `RDEPEND="foo? ( cat/foo )"`
- Behaves like a regular USE flag
- Avoid rebuilding the package when the flag is switched
- Two ways to implement:
  - New ebuild variable, `IUSE_RUNTIME="foo"`
  - Special syntax, like `IUSE="foo(*)"`
- Replaces proposed “recommended/suggested dependencies” (bug 327701)
Typical usage in ebuilds: 

```
"${D}"/usr/bin/foo
```

\( D \) has a trailing slash, so we end up with // in path

Proposal to remove trailing slash everywhere:

```
"${D}, "${ED}, "${ROOT}, "${EROOT}
```

Problem: \( \text{ROOT} \) allowed to be empty?
Variant of || ( ) with defined runtime behaviour
Bug 489458

- Currently undefined if || ( cat1/foo cat2/bar ) dependencies can be switched at runtime
- Replace by two new dependency types:
  - ||* ( ) switchable at runtime
  - ||= ( ) not switchable at runtime
- Still several open questions, e.g. interaction with SLOT operators (like ||* ( A:= B:= ))
- Conditionally approved by Council, pending implementation in Portage
Currently implemented in versionator.eclass
Slow and sometimes called in global scope
15 functions in versionator.eclass, implement reasonable subset:
  - Version comparison
  - Component extraction
  - Separator replacement

PM implementation in Bash (code duplication)? IPC?
src_fetch() for fetching VCS sources
Bug 481434

- Split off VCS fetching from src_unpack()
- Only useful for live ebuilds ...
New dependency types
Bugs 182028, 317337, 327701, 392239

<https://wiki.gentoo.org/wiki/Future_EAPI/New_dependency_types>

- Host/target build-time dependencies (when cross-compiling)
- Build-against dependencies (e.g., libX11 → xproto)
- Fetch dependencies (when fetching from VCS)
- Suggested dependencies
- ...
- Which ones do we need?
- Complete solution would be best
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