

Linux Packaging

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What is a Linux Package?

- A single file that may contain:
 - Executables, scripts, configuration files, language files, data files
 - Owners, groups, and permissions of those files
 - Metadata: Name, version, aliases, size, version, architecture, description, licenses, dependencies, maintainer, etc.
 - Run scripts (pre-/post-install, pre-/post-uninstall)
 - Cryptographic signature
- A given package is usually built for:
 - Each distro and release (e.g.: Ubuntu 22.04, Fedora 36, Debian 11)
 - Each architecture (e.g.: x86_64, i686, aarch64, “noarch”)

What is a Repository?

- Packages
 - Contains packages that are designed to work together for a given distro and release
- Database
 - Database of how all the packages are interconnected with dependencies and versions

Why Different Repos?

- Different distros and releases
 - Each distro and release will typically have their own repos
- Different maintainers
 - Who owns the repo and builds the packages
- Different licenses
 - free/non-free (free as in freedom, not cost)
- Different roles
 - server/desktop, beta, devel, debug, source, etc.

What is a Package Manager?

- An interface between the administrator, repos, and the OS
- Installs packages and their dependencies
 - A package being installed may require or want others
- Checks for conflicts
 - Ensures installed software stays in a consistent state
- Can remove packages safely
- Maintains a history of installs, can undo installs
- Ensures packages/files haven't been compromised

