Article

Moving from apt to dnf package management

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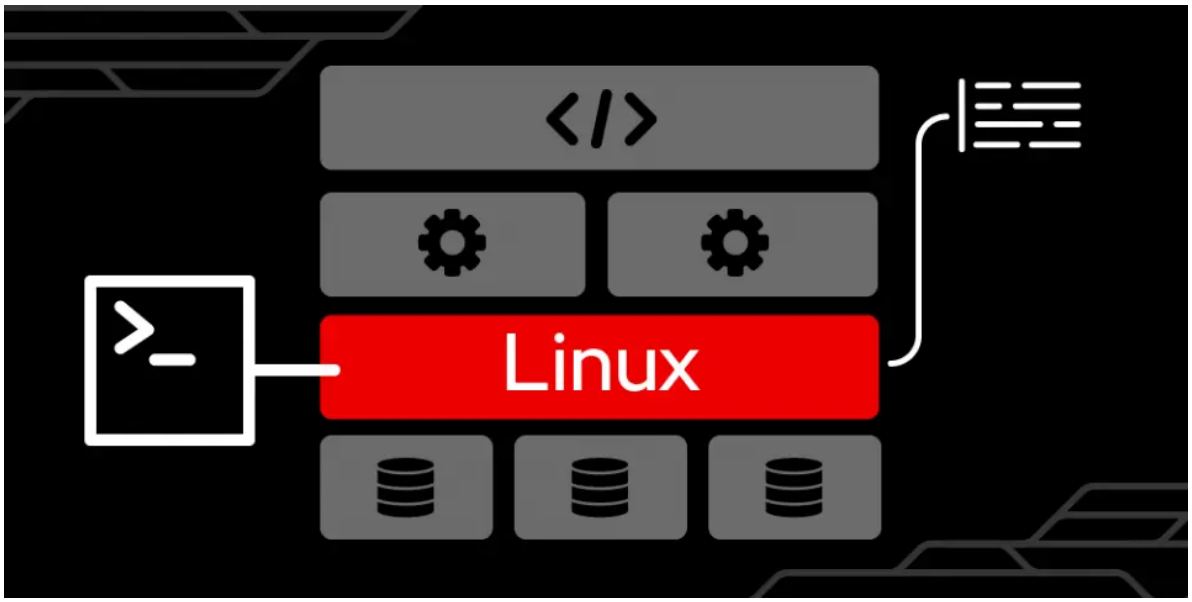

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A package manager makes it simple to install GNU/Linux applications on a local computer. Before package management became commonplace, installing applications was a tedious, error-prone undertaking. The ease a package manager brings to installing an application on a Linux computer has been a major factor contributing to the widespread adoption of Linux as a mainstream operating system for both business and home users.

Package management under Linux is divided, however. Two major systems co-exist:

- The APT package management system for Debian and its many derivatives, notably Ubuntu. Packages are marked with the `.deb` suffix and are managed through the `apt` command-line interface (CLI).
- The RPM package management system for Red Hat Enterprise Linux and its derivatives, notably Fedora and CentOS Stream. Packages are marked with the `.rpm` suffix and are managed through the `dnf` CLI.

This article is for developers who are currently using Debian-based systems and are familiar with APT, but want to start using a system in the Red Hat Enterprise Linux family. The article explains the similarities and differences between APT and RPM. I show how to execute specific, commonplace package management tasks using each system.

Understanding apt, dnf, and yum

Debian users are accustomed to managing their packages via the `apt` command. Switching to the current RPM tool, `dnf`, is the topic of this article.

You might also have seen references to a `yum` command. Both `dnf` and `yum` are command-line utilities that work with RPM packages. Red Hat originally released and depended on `yum`, which is an acronym for *Yellowdog Updater, Modified*. `dnf`, an abbreviation for *dandified yum*, is

the follow-up technology—based on `yum`, as the name implies.

Today, `dnf` is the default package management utility for Red Hat Enterprise Linux, Fedora, and CentOS Stream, and has been so since Fedora 22, CentOS 8, and Red Hat Enterprise Linux 8, respectively. `yum` has been deprecated as the default package manager in the Red Hat family of distributions, so while `yum` commands currently work, it's best to use just `dnf`.

Understanding package discovery and installation

The pattern for finding and installing a Linux package is essentially the same whether you're using `apt` or `dnf`.

When you execute a command to install a package, the package manager looks at configuration files on the local machine to determine the location of a repository that has a given package on the internet. Then the installation command downloads the package along with its dependencies from the internet. Finally, the package manager installs and configures the application on the local machine. Figure 1 illustrates the process.

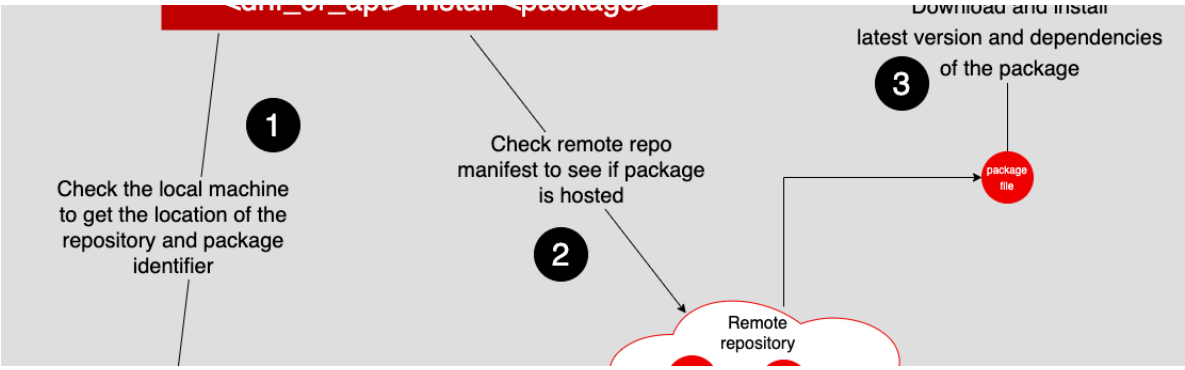

Figure 1: A package manager gets information from the local machine to retrieve a package from a repository.

Although the basic installation process is similar for both the RPM and APT package managers, there are distinctions when it comes to implementation. Besides the commands used, there's a bit of difference in the way these commands consult files to find and install packages.

When you invoke a package manager's installation command, the package