# Portage GUI

Authors: Jason Herne, Kevin Roberts, Chris Johnson, Aaron Hughes

## Introduction

The goal of this project is to create a user-friendly graphical package management system for Gentoo Linux. A large hurdle to the adoption of Linux is the difficulty of installing and updating new software. By focusing on ease of use for beginning/intermediate computer users, we hope to make Gentoo Linux more appealing to a larger group of computer users while still producing a tool that is useful even for advanced users.

Currently Gentoo makes use of the command line interface to install and update system wide packages.

Consider the current way in which software is installed and updated on Gentoo Linux:

The user my open a terminal, use the 'su -' command to become the root user, and then the user must execute a series of commands to update his/her system.

- emerge sync
- emerge -u –deep world -p
- emerge -u –deep world
- eupdatedb

We developed PortageGUI, a graphical software installation and update tool. Updating is as easy as clicking on the 'update' button on the main window. A graphical dialog is used to ask the user for their root password. A terminal is never needed, and no specific command line knowledge is necessary. Installing new packages is just as easy. Finding packages under the new system will be much easier since PortageGUI provides a simple well known tree-view of all packages organized by category. We have even included a search dialog that allows one to search for keywords in package names and descriptions. The methodology used to implement the search, although not designed by us, is almost ten times faster than Gentoo's native search algorithm.

## System Architecture and Features

PortageGUI is a standalone program that utilizes many backend command line interface based tools to provide the user with a graphical user interface for obtaining and applying system updates and new program installs.

Our system allows the user to

1) Install new software and update software already on their system.
2) Quickly search for packages based on name and description.
3) Browse packages and get information before installing.

4) Display a description and homepage URL for each package.
5) View dependencies of a package before installing.
6) Update all packages on the system in the background (nice 20 to not interrupt user).
7) View the time remaining on any task with a progress bar using genlop.

## Methodology

PortageGUI is written in C and uses the Gimp Tool Kit (GTK). It is a multithreaded application written with pthreads. Multiple threads allow backend programs, like emerge, to work without interfering with the responsiveness or drawing of the GUI. Unix pipes are used to obtain the output of the command line tools called in the background by the GUI. This output is processed and displayed to the user in a clear and easy to understand way.

## Tools Used:

- The C programming language.
- GTK : ( The Gimp Tool Kit ) Provides a multi-platform toolkit for creating graphical user interfaces.
- Glib: Low level core library and the basics for GTK and Gnome. Also provides several useful data structures used in the development process.
- Subversion: Served as a centralized repository for our code and severed as source control.
- gdb: GNU Project Debugger proved useful in tracking and eliminating bugs.