

Introduction to PC-BSD

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Introduction to PC-BSD

What is PC-BSD?

Introduction to PC-BSD

What is **BSD**?

Introduction to PC-BSD

- What **BSD** is NOT -

- Not a fork of Linux
- Not a flavor of Linux
- Not a distribution of Linux

Introduction to PC-BSD

- What is **BSD** -

- A branch of UNIX derived from the original AT&T UNIX in the late 70's
- Complete operating system, with kernel and integrated userland
- Released under a business friendly BSD style license

Introduction to PC-BSD

Short digression to make a point



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```
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```

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Introduction to PC-BSD

- What is **FreeBSD** -

- Direct descent of the original BSD UNIX
- Complete OS, with support for running 3rd party applications via the ports and packages system.
- Popular server OS for hosting companies, data centers, etc.

Introduction to PC-BSD

- What is **FreeBSD** -

- Able to build and run most popular open-source applications natively, such as Apache, X, KDE, FireFox, OpenOffice, etc.
- Features such as ZFS, GELI (encryption) and others.
- Includes compatibility layer, which allows running Linux apps at full-speed.

Introduction to PC-BSD

- What is **PC-BSD** -

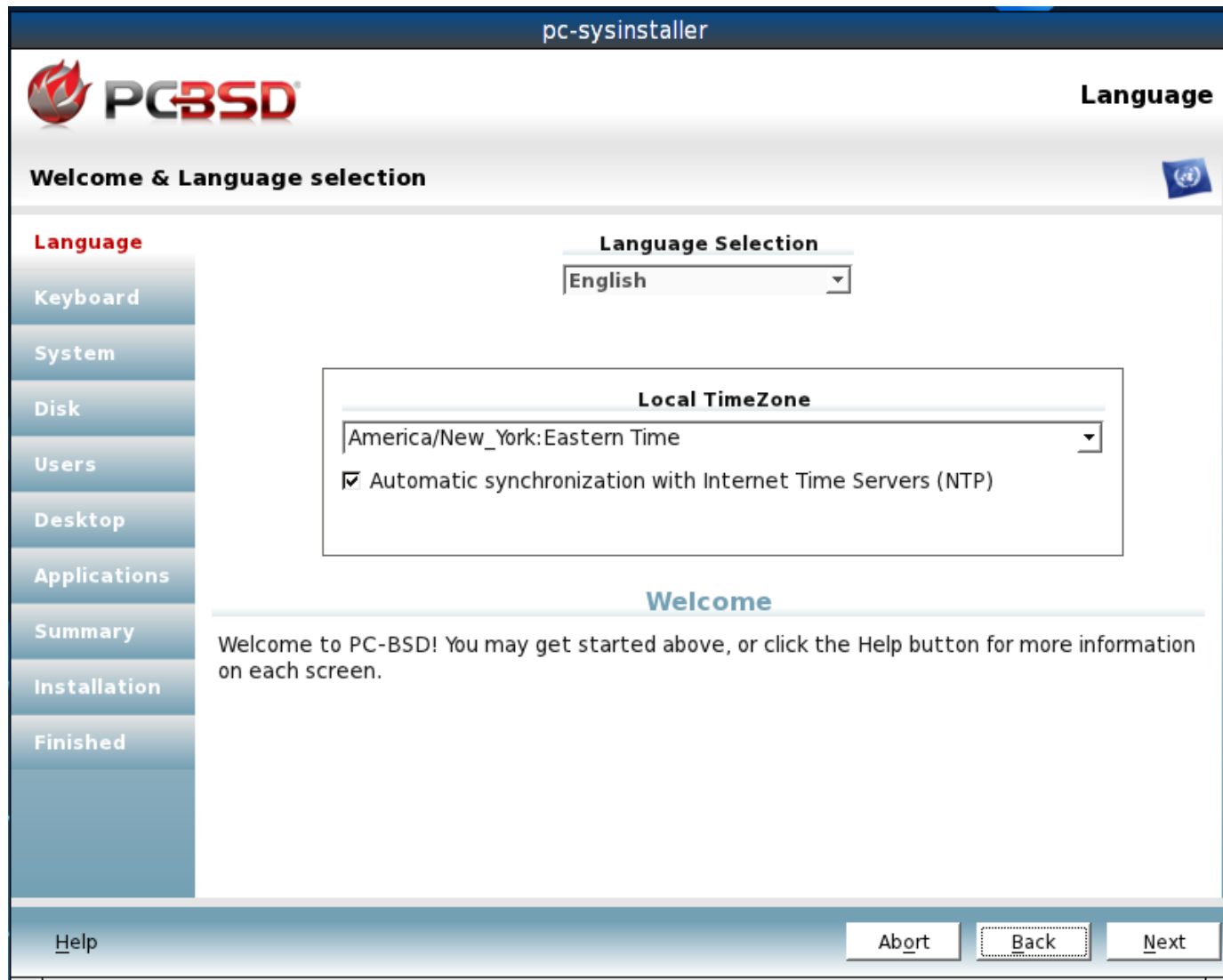
- Desktop version of FreeBSD, but not a fork, 100% compatible.
- Pre-built with desktop packages, such as X, KDE and others.
- Initialized for the desktop environment and includes packages such as Flash, NVIDIA drivers, etc.

Introduction to PC-BSD

- PC-BSD Additives -

- Custom GUI installer
 - Support for FreeBSD features such as ZFS, GELI, Mirroring, Labels
 - Allows installing FreeBSD or PC-BSD
 - Installation from DVD, USB, Network and Live media.

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The screenshot shows the 'pc-sysinstaller' window for PC-BSD. The title bar reads 'pc-sysinstaller'. The window has a sidebar on the left with menu items: Language, Keyboard, System, **Disk** (highlighted), Users, Desktop, Applications, Summary, Installation, and Finished. At the top right, there is a 'Disk' label and a globe icon. The main area is titled 'Disk setup' and contains the following elements:

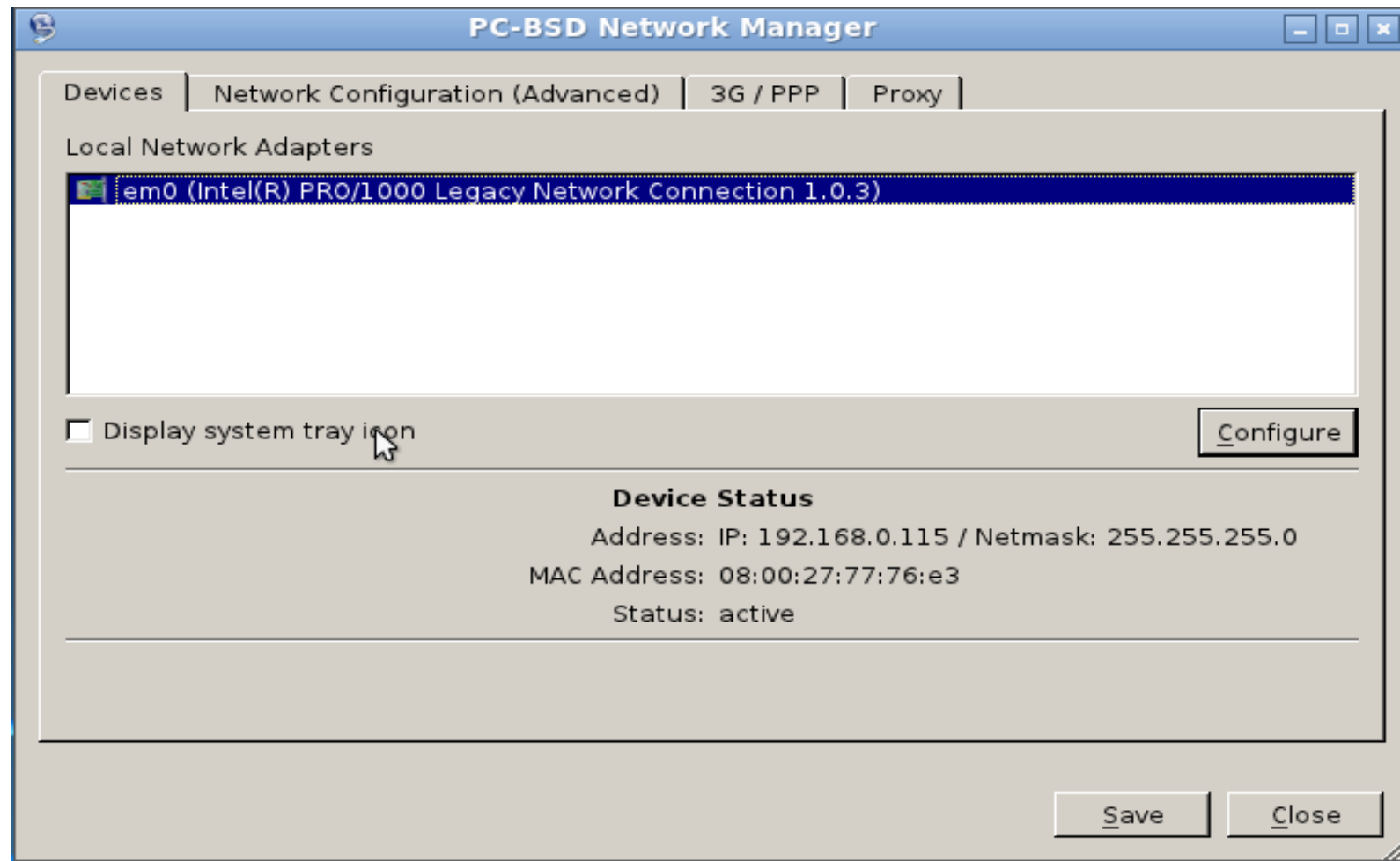
- A prompt: "Please select the disk drive you wish to use:"
- A dropdown menu showing "ada0 - 25600MB BOX HARDDISK" with a refresh icon to its right.
- A section titled "Disk Layout" with two radio buttons: "Auto Partition" (selected) and "Customize Disk Partitions (Advanced)".
- Text: "Select the slice you wish to install to, or check 'Use Entire Disk'"
- A checkbox for "Use Entire Disk" which is unchecked.
- A list of available slices: "ada0s1: 25598MB (FreeBSD/NetBSD/386BSD)".
- Text: "Filesystem for auto-partitioning. If unsure, please leave at the default."
- Filesystem options: "UFS + SoftUpdates Journaling", "UFS + SoftUpdates", and "ZFS" (selected).
- A checkbox for "Encrypt user data" which is unchecked.
- Buttons: "+ Add" and "- Delete".
- At the bottom of the main area: "Install PC-BSD bootloader" (checkbox unchecked) and "Partition with GPT for full disk install" (checkbox unchecked).
- A "Help" link at the bottom left.
- Buttons for "Abort", "Back", and "Next" at the bottom right.

Introduction to PC-BSD

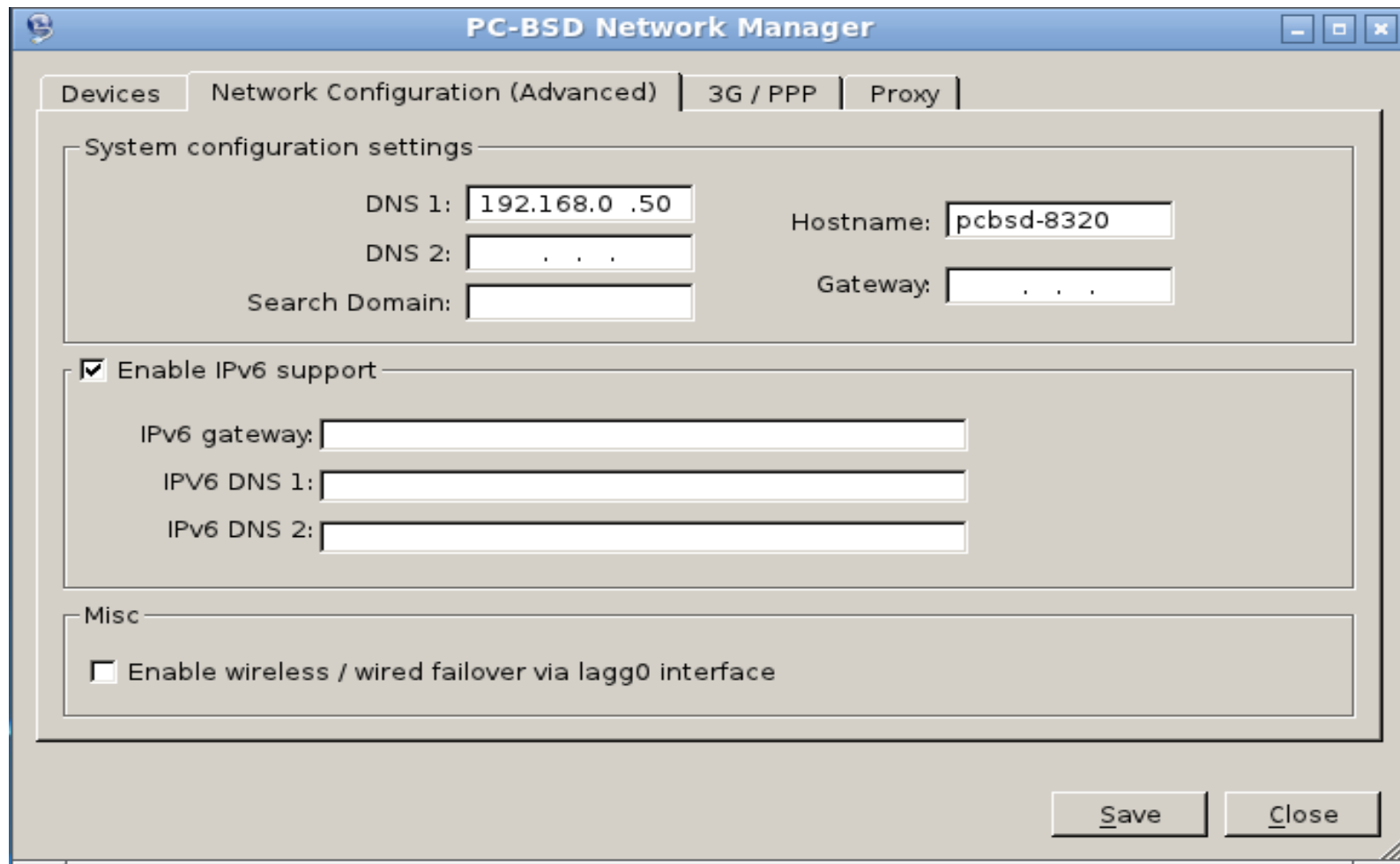
- PC-BSD Additives -

- Network Management GUI
 - Wired / Wireless configuration tools
 - Support for IPv4 & IPv6
 - Optional Wired → Wireless failover via the “lagg” interface

Introduction to PC-BSD



Introduction to PC-BSD



The image shows a screenshot of the PC-BSD Network Manager configuration window. The window title is "PC-BSD Network Manager" and it has standard window controls (minimize, maximize, close). The interface is divided into several sections:

- Navigation:** "Devices", "Network Configuration (Advanced)", "3G / PPP", and "Proxy".
- System configuration settings:**
 - DNS 1:
 - DNS 2:
 - Search Domain:
 - Hostname:
 - Gateway:
- IPv6 support:**
 - Enable IPv6 support
 - IPv6 gateway:
 - IPV6 DNS 1:
 - IPV6 DNS 2:
- Misc:**
 - Enable wireless / wired failover via lagg0 interface

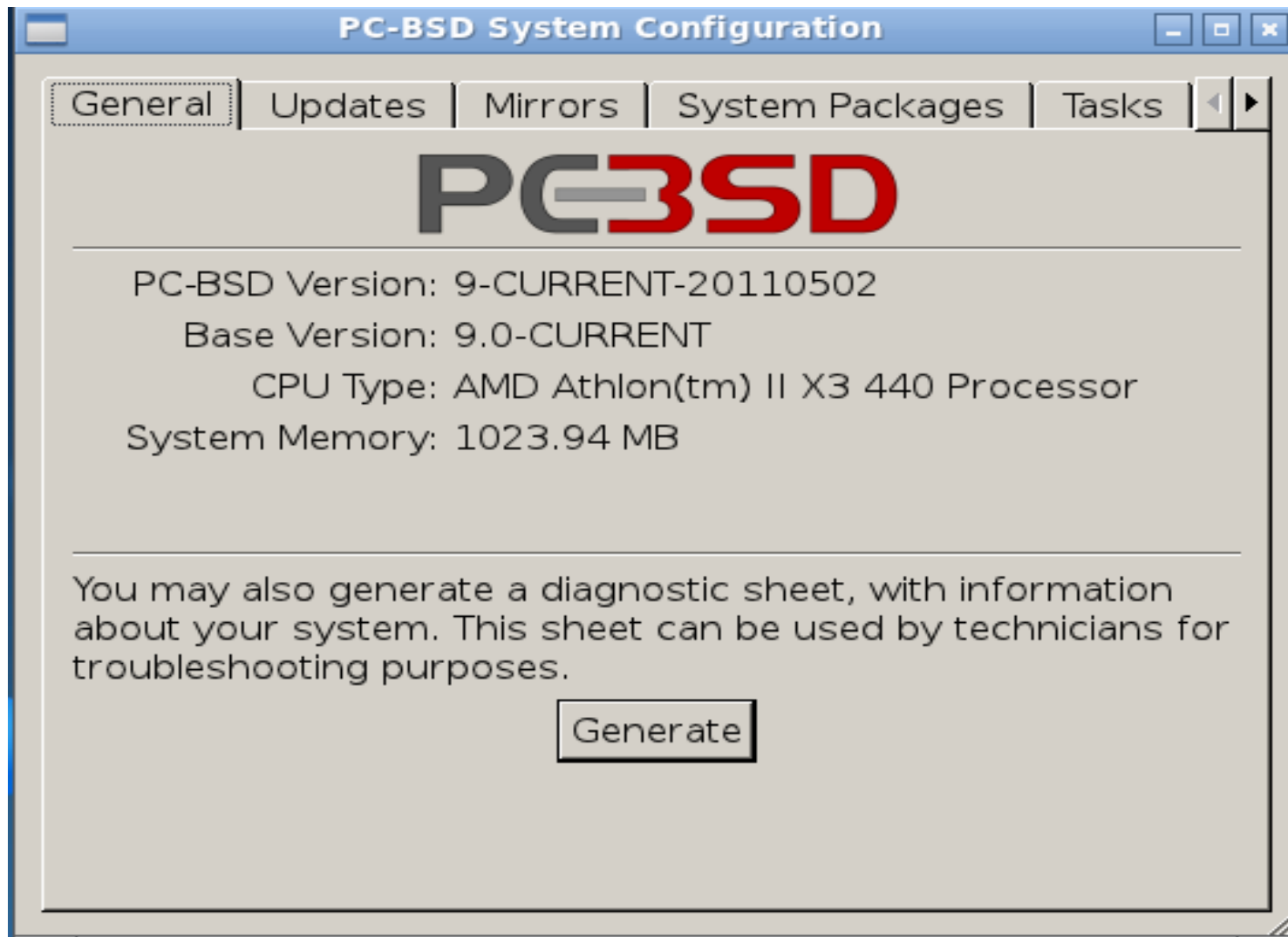
At the bottom right, there are "Save" and "Close" buttons.

Introduction to PC-BSD

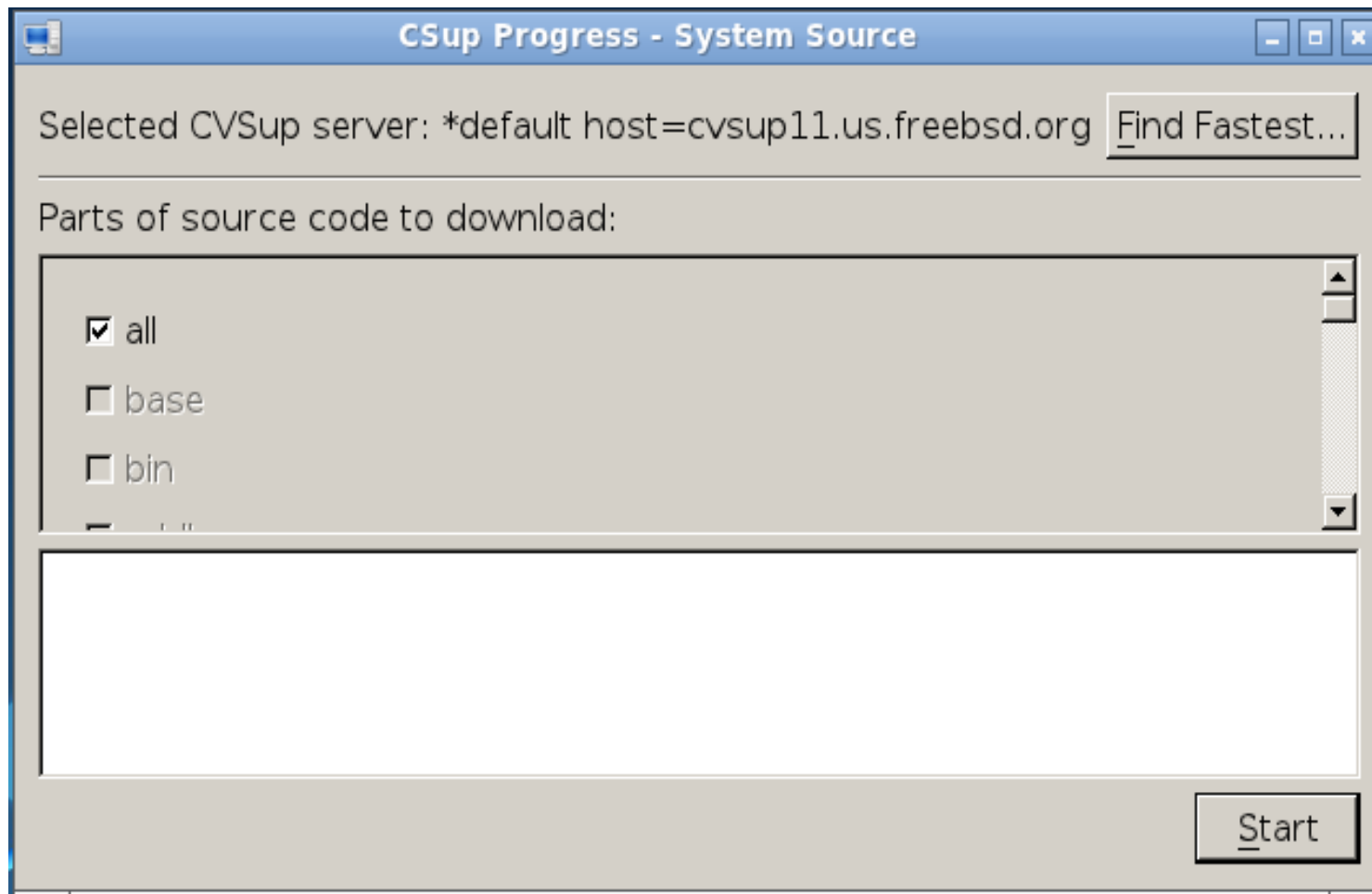
- PC-BSD Additives -

- System Management Utility
 - Features for checkout of FreeBSD system sources
 - Portsnap support, which can update FreeBSD ports tree
 - Generation of tech support sheets

Introduction to PC-BSD



Introduction to PC-BSD



Introduction to PC-BSD

- PC-BSD Additives -

- Package system via PBIs
 - Self-contained package format
 - Keeps operating system separate from applications
 - Provides stability to users desktop experience

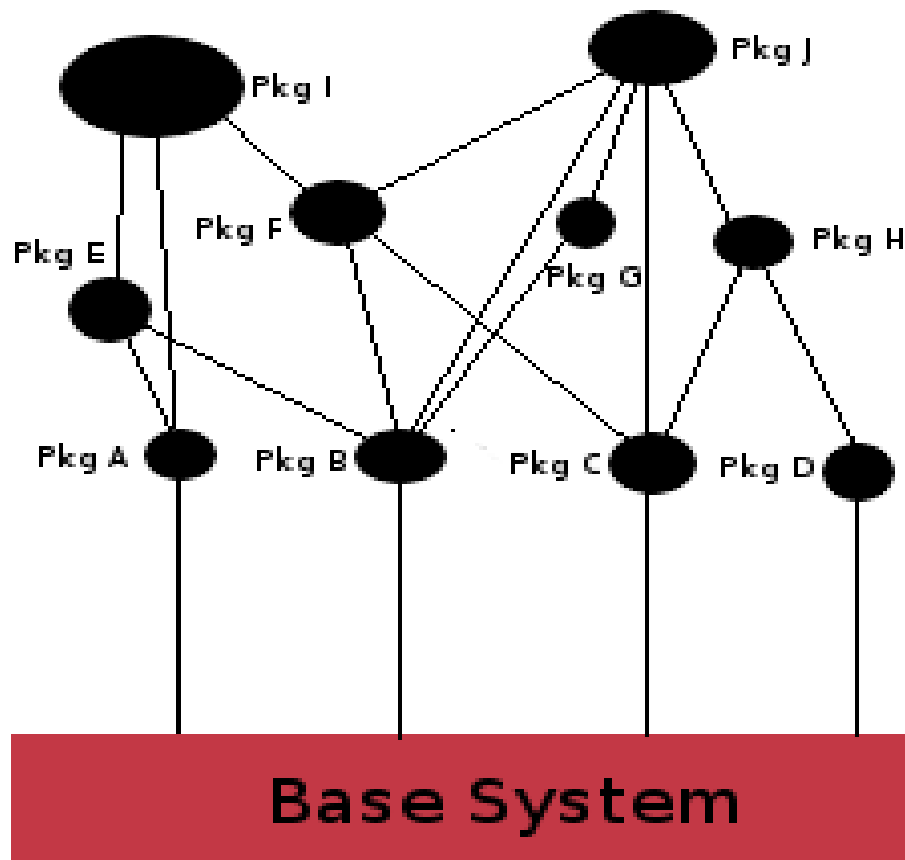
Introduction to PC-BSD

- A closer look at PBIs -

- Based upon the philosophy that applications are NOT the operating system.
- Packages are self-contained, I.E. include required files / libraries within.
- Does not change installed system packages.

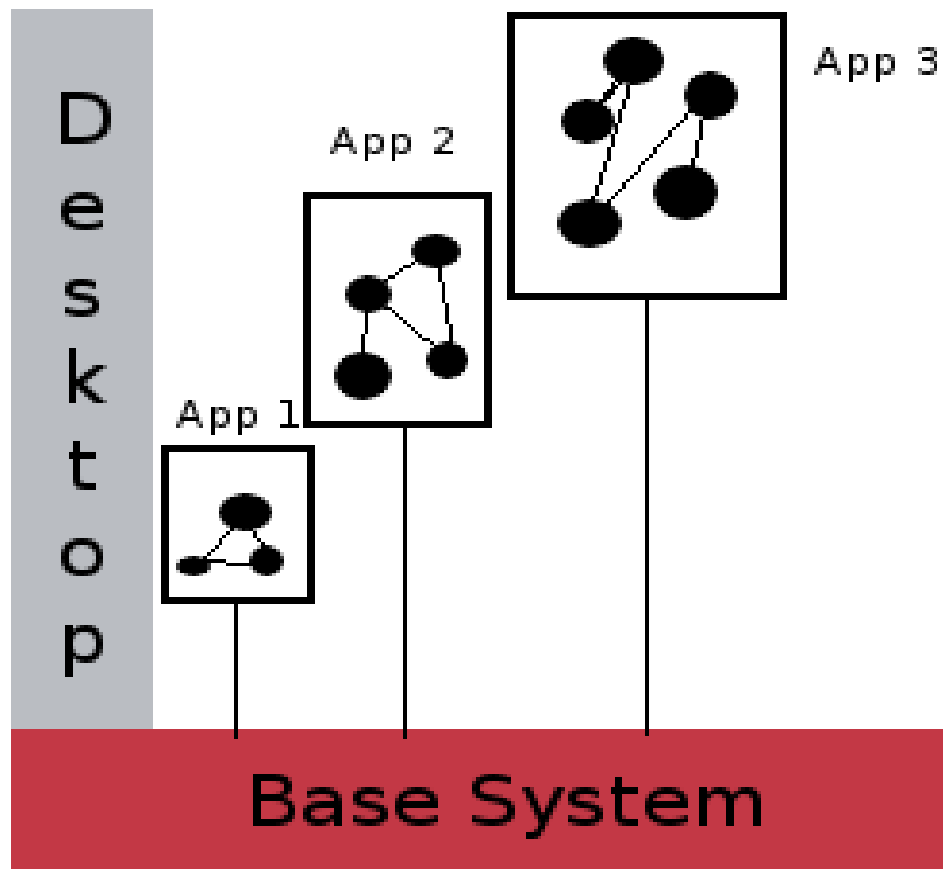
Introduction to PC-BSD

Traditional Open-Source Packaging



Introduction to PC-BSD

PBI packages on PC-BSD



Introduction to PC-BSD

- PC-BSD 9.0 -

- No longer KDE centric
- Improved WM agnostic system utilities
- Re-implemented PBI system

Introduction to PC-BSD

- Multiple desktop support -

- All system tools have been detached from KDE4 and made pure QT4
- Installer offers choice of Window Manager “meta-pkgs”
- Post-installation WM's can be removed / added via system manager.

Introduction to PC-BSD

- Multiple desktop support -

- Current desktop offerings
 - KDE 4
 - GNOME 2
 - XFCE
 - LXDE
- Other “Unsupported” WM's
 - Awesome, FVWM, IceWM, OpenBox, ScrotWM, Window Maker, Fluxbox

Introduction to PC-BSD



Desktop

Meta Package Selection



Language

Keyboard

System

Disk

Users

Desktop

Sources

Summary

Installation

Finished

System Package Configuration

Available System Packages

- Desktops
- GNOME
- KDE
- LXDE
- XFCE

The LXDE Desktop, a light weight and minimal desktop manager.

Please select the software you wish to have installed. At least one desktop must be selected, and changes may be made after installation.



Help

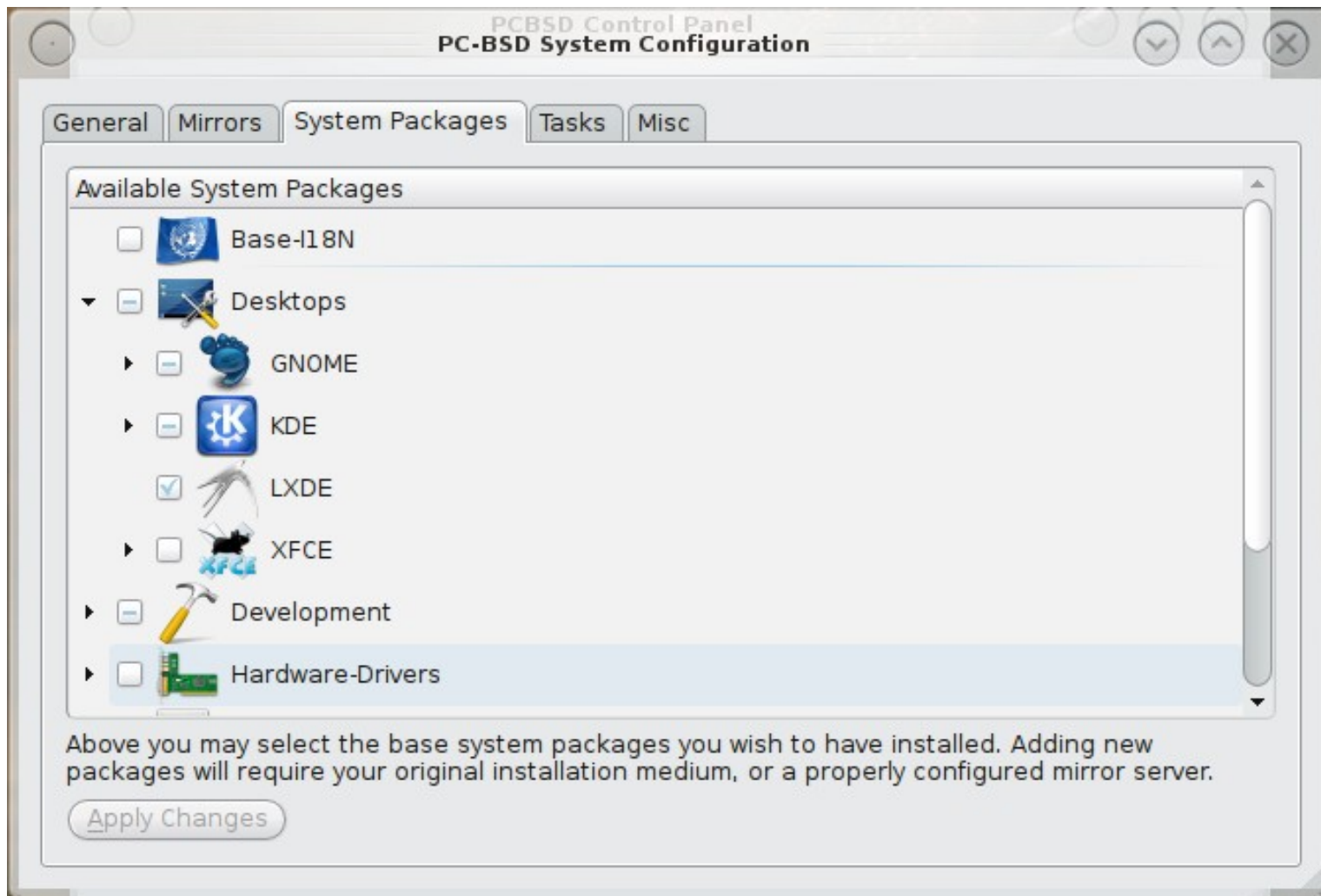


Abort

Back

Next

Introduction to PC-BSD

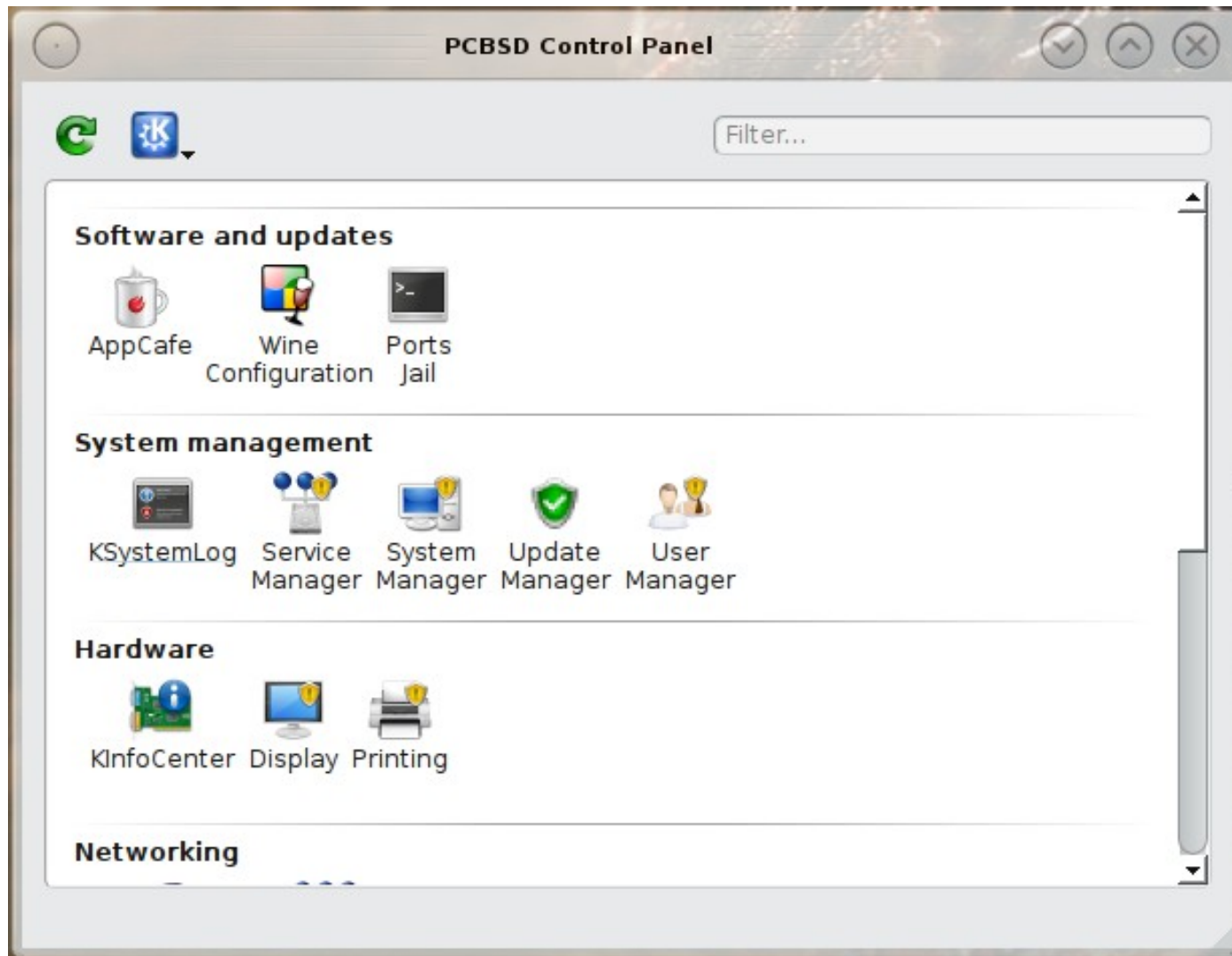


Introduction to PC-BSD

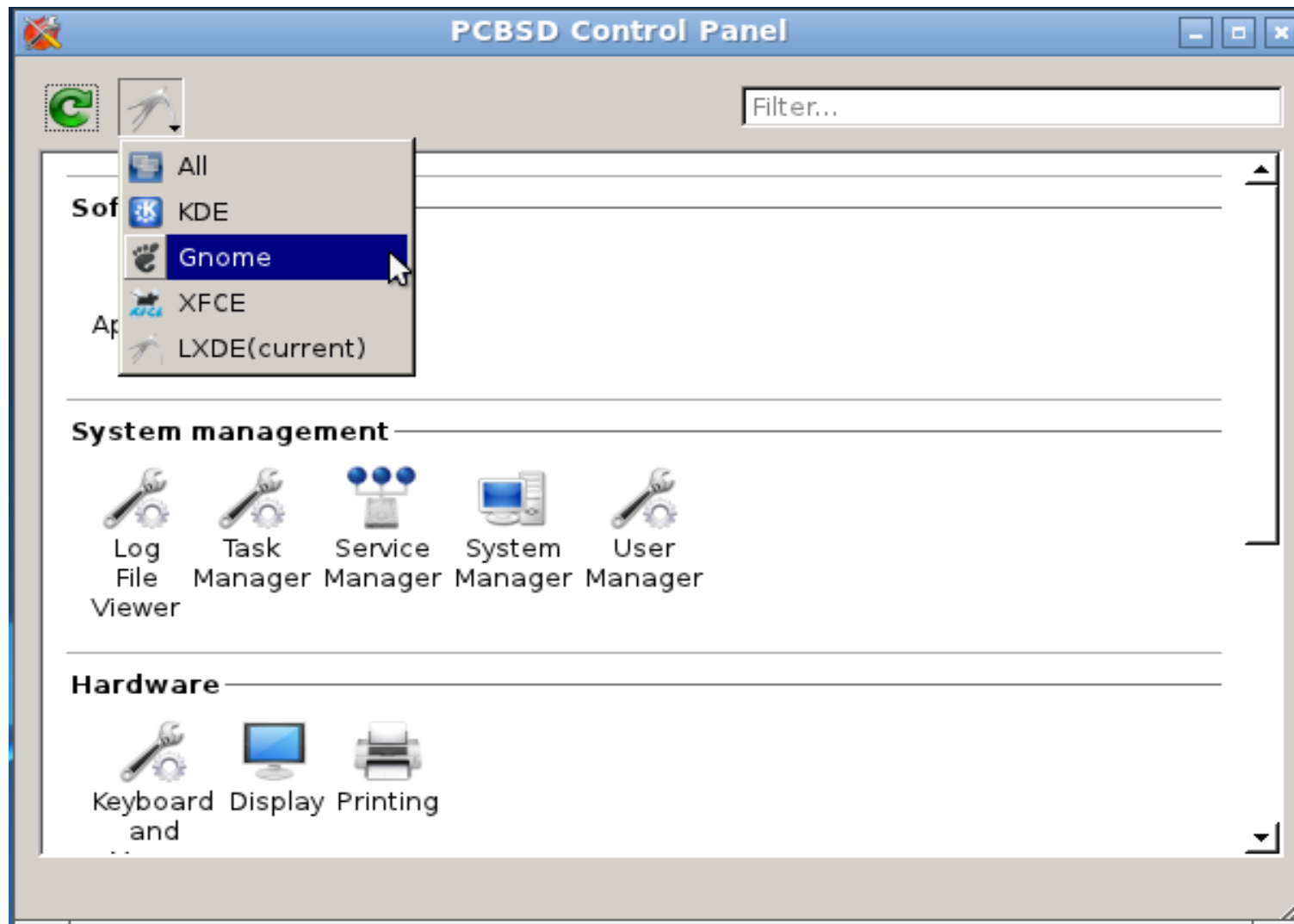
- Improved Control Panel -

- Agnostic to particular WM being used
- Provides consistent user experience
- Detects running WM and shows appropriate choices

Introduction to PC-BSD



Introduction to PC-BSD



Introduction to PC-BSD

- PBI re-implementation for 9.0 -
- Addresses several issues present in original implementation
 - Tacked on CLI interface
 - Wasted space due to not sharing libraries
 - Weak distribution infrastructure
 - No digital signatures
 - Large file updates

Introduction to PC-BSD

- PBI9 Command-line Interface -

- PBI toolchain implemented in shell for portability
- All PBI functionality available via CLI
 - pbi_browser
 - pbi_repo
 - pbi_add

Introduction to PC-BSD

- PBI9 Intelligent Library Sharing -

- Allows sharing of identical files / libraries between PBIs with hard-links
- Reduces disk / run-time memory usage
- Tracking of matches with sha256 checksum
- Monitored and managed by the **pbid** daemon

Introduction to PC-BSD

Hashdir

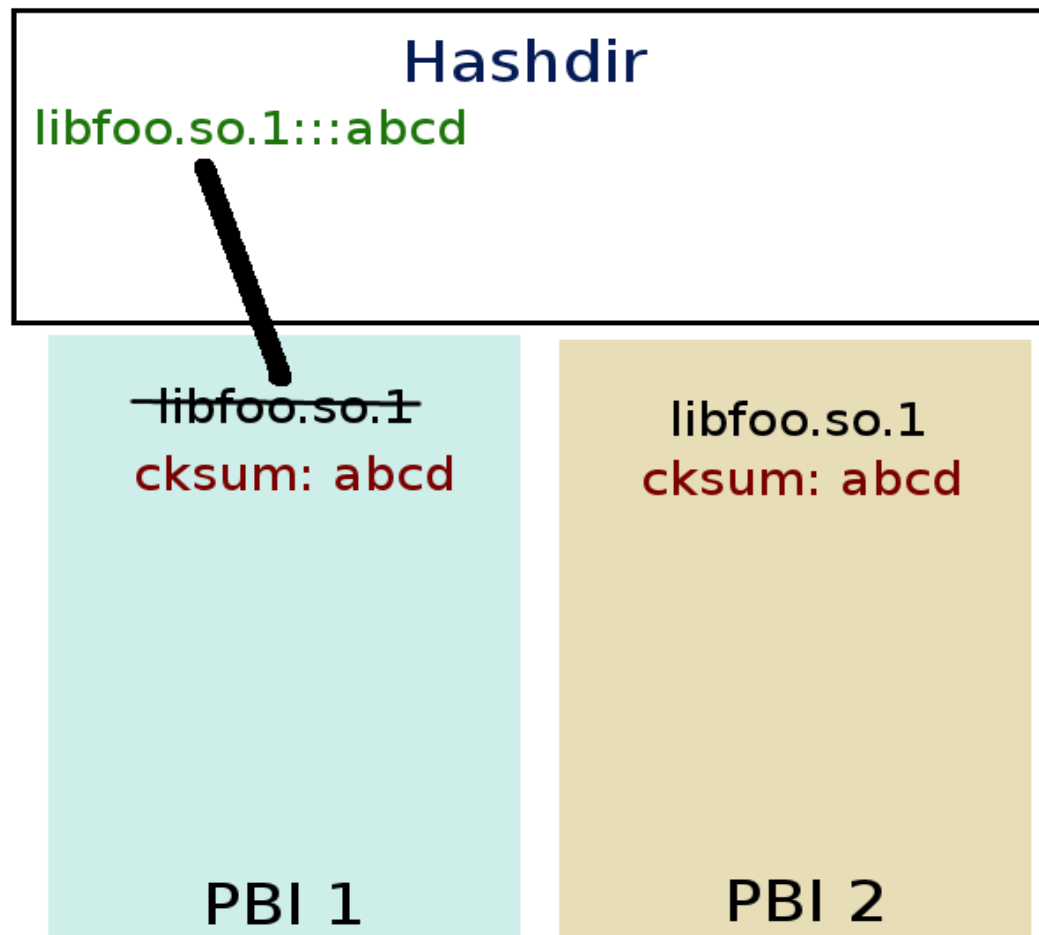
libfoo.so.1
cksum: abcd

PBI 1

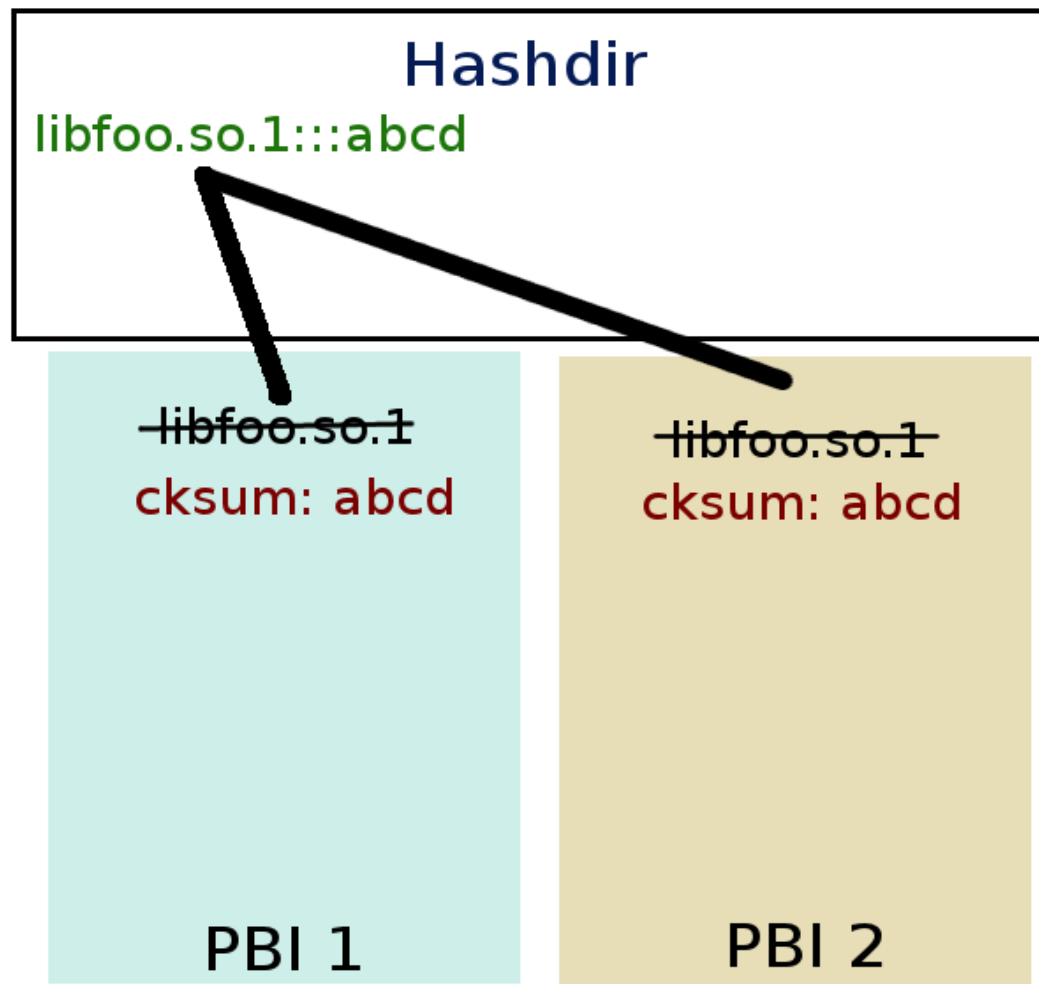
libfoo.so.1
cksum: abcd

PBI 2

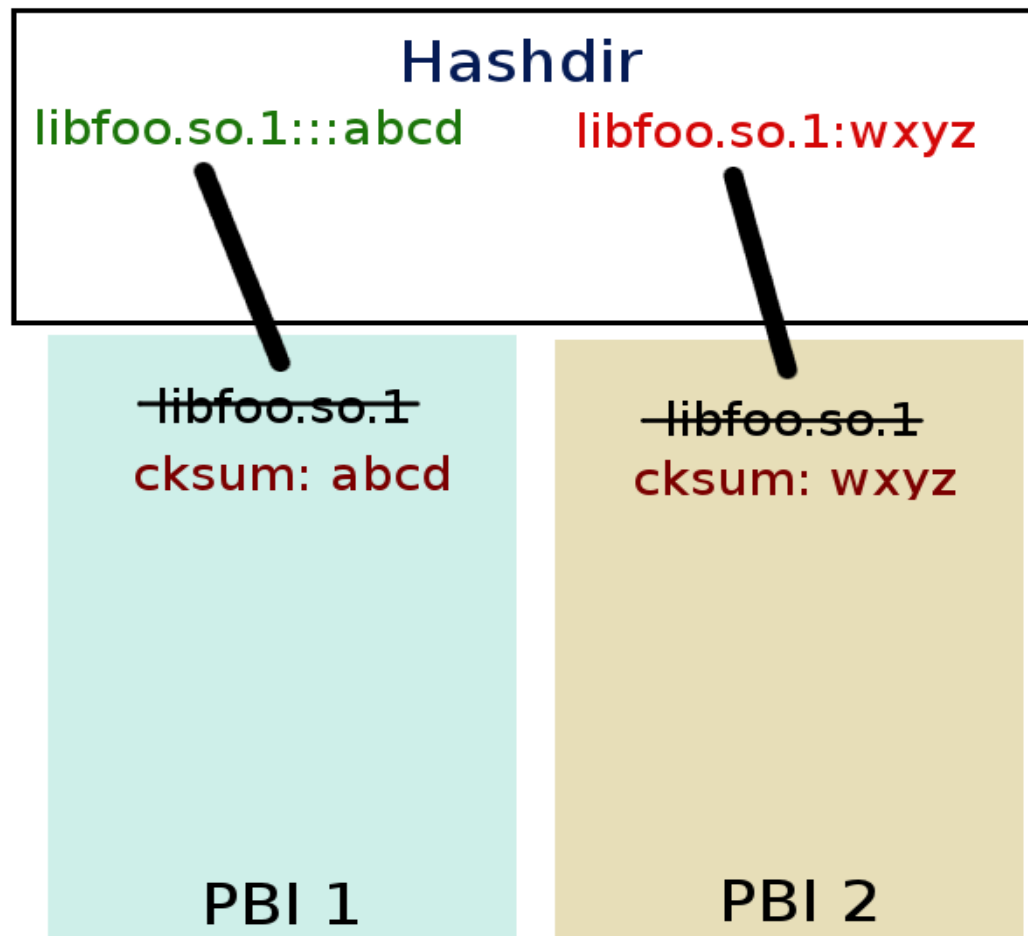
Introduction to PC-BSD



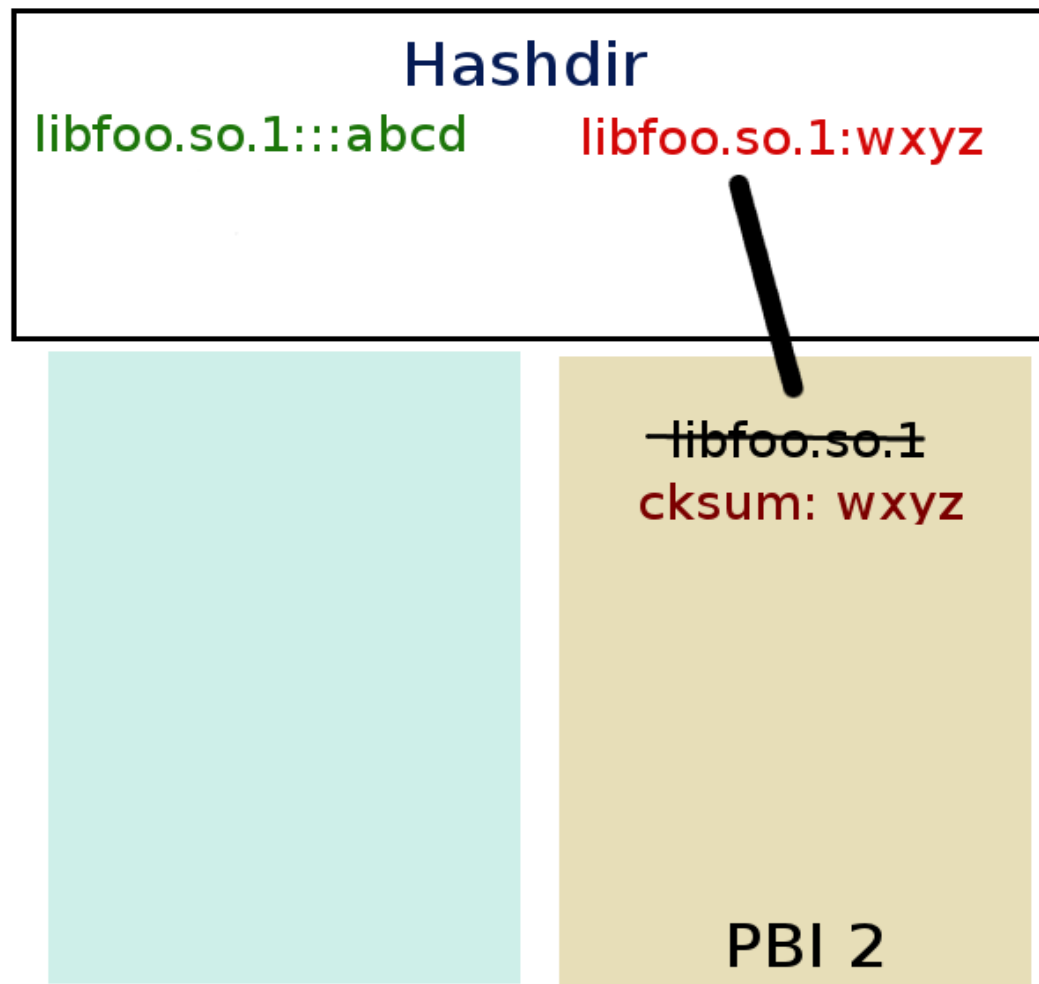
Introduction to PC-BSD



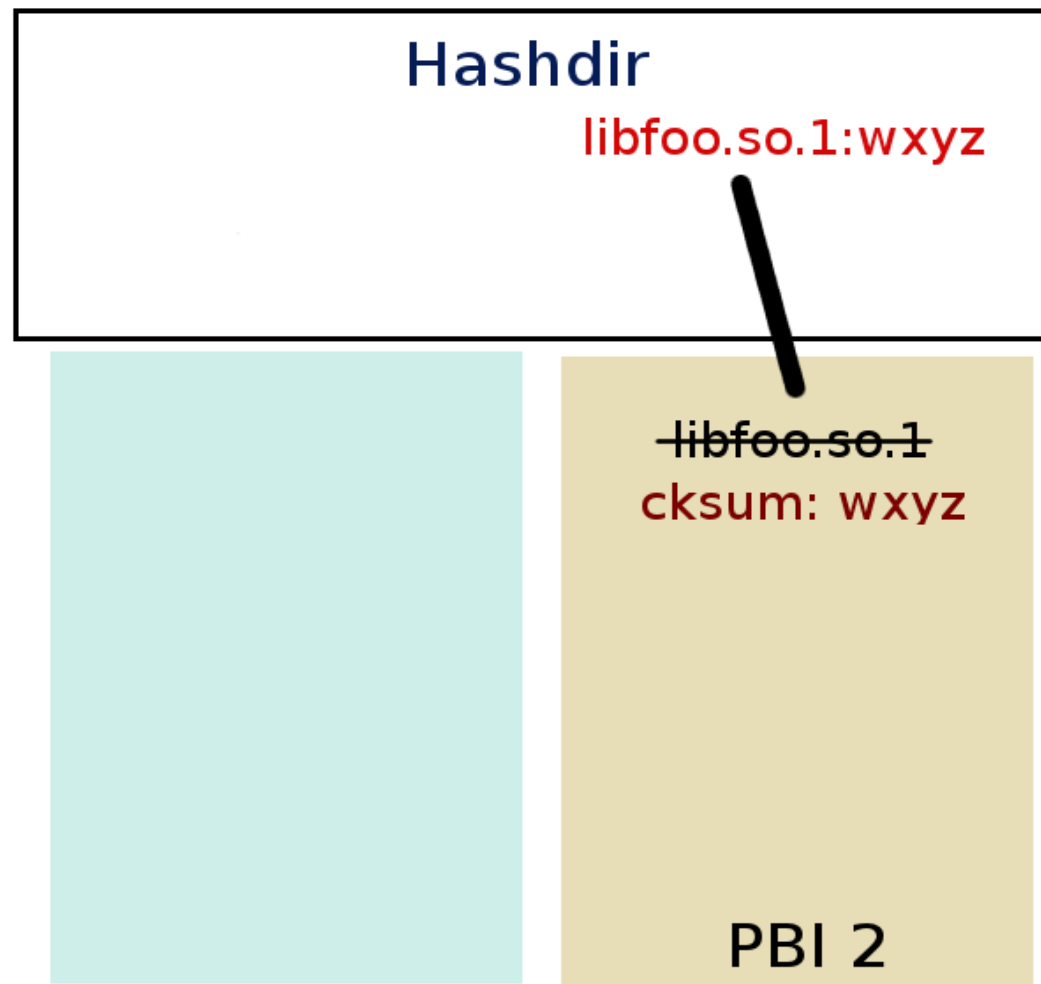
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Introduction to PC-BSD



Introduction to PC-BSD



Introduction to PC-BSD

- PBI9 Distribution -

- Provides mechanism for PBI creators to distribute PBI files to end-users
- Integrated with digital signatures
- Allows maintaining both a master INDEX of released PBIs, along with meta-index of PBI information
- Users can browse the meta-index, and download PBIs from repo, or perform updates of older PBIs to newer versions.

Introduction to PC-BSD

- PBI9 Digital Signatures -

- Digital signatures using **openssl**
- Archive and installation scripts individually signed during PBI creation
- End user or front-end can verify signatures with `pbi_add` command.

Introduction to PC-BSD

- PBI9 Binary Patching -

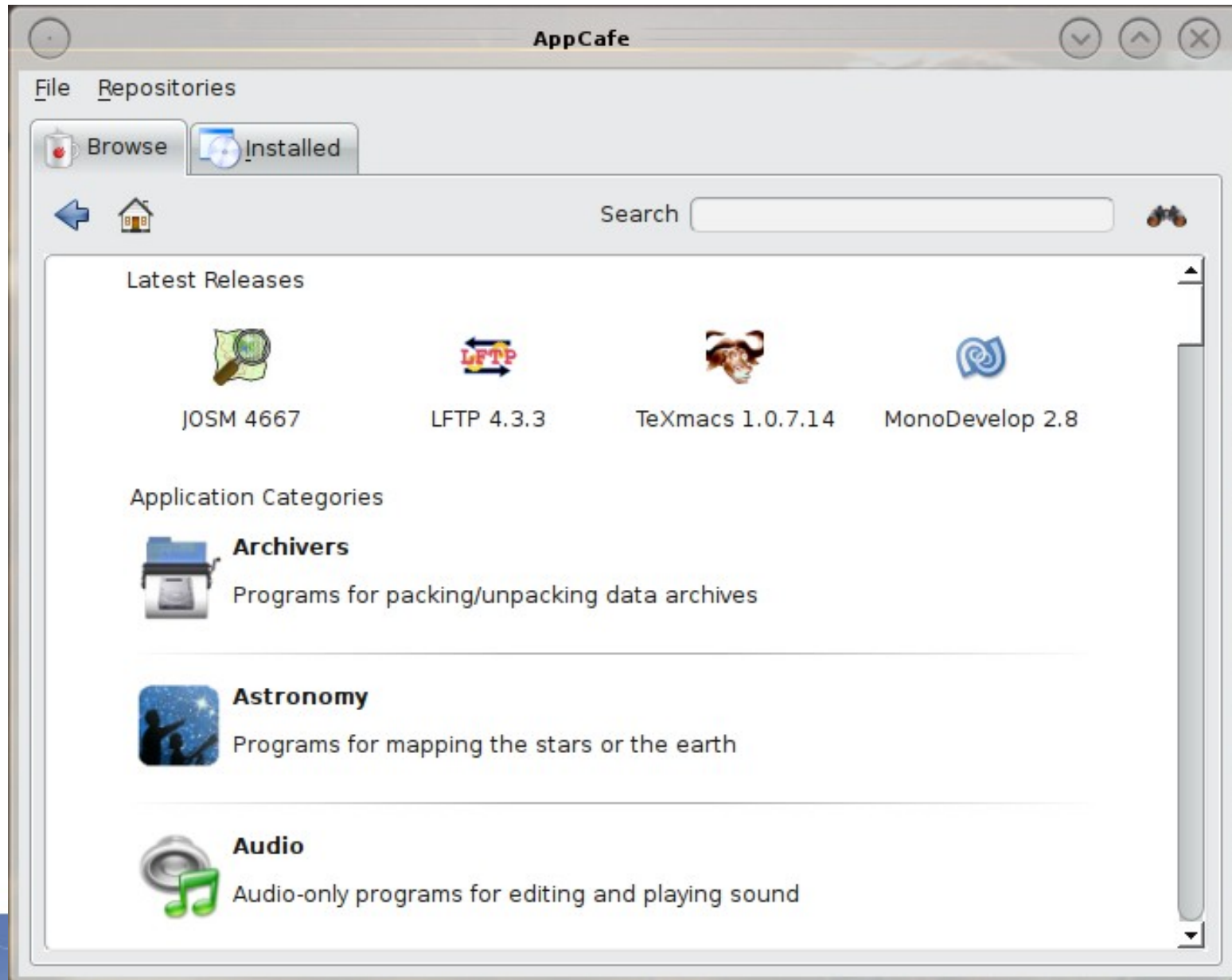
- Allows updating of PBIs with smaller downloads
- In some cases a 95% size reduction
- Uses `bsdiff` / `bspatch` for patching process
- Auto-generation of patch files from port builds
- Auto-fallback to full-patching if `bspatch` fails

Introduction to PC-BSD

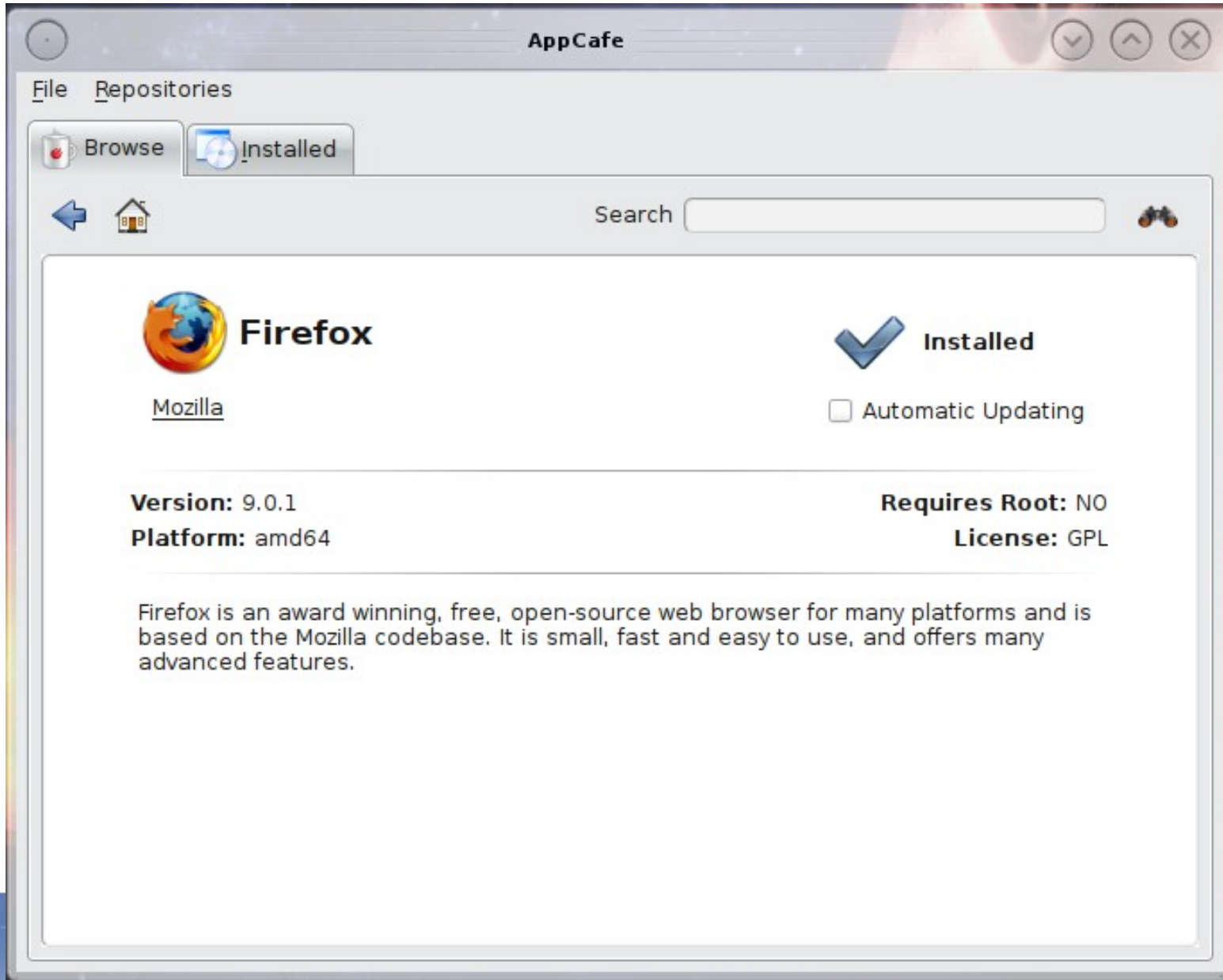
- Graphical AppCafe -

- QT4 Based front-end to “pbi_browser”
- Allows installing applications as user account
- Support for browsing and managing repos, mirrors, etc
- Notifier tray icon for updates

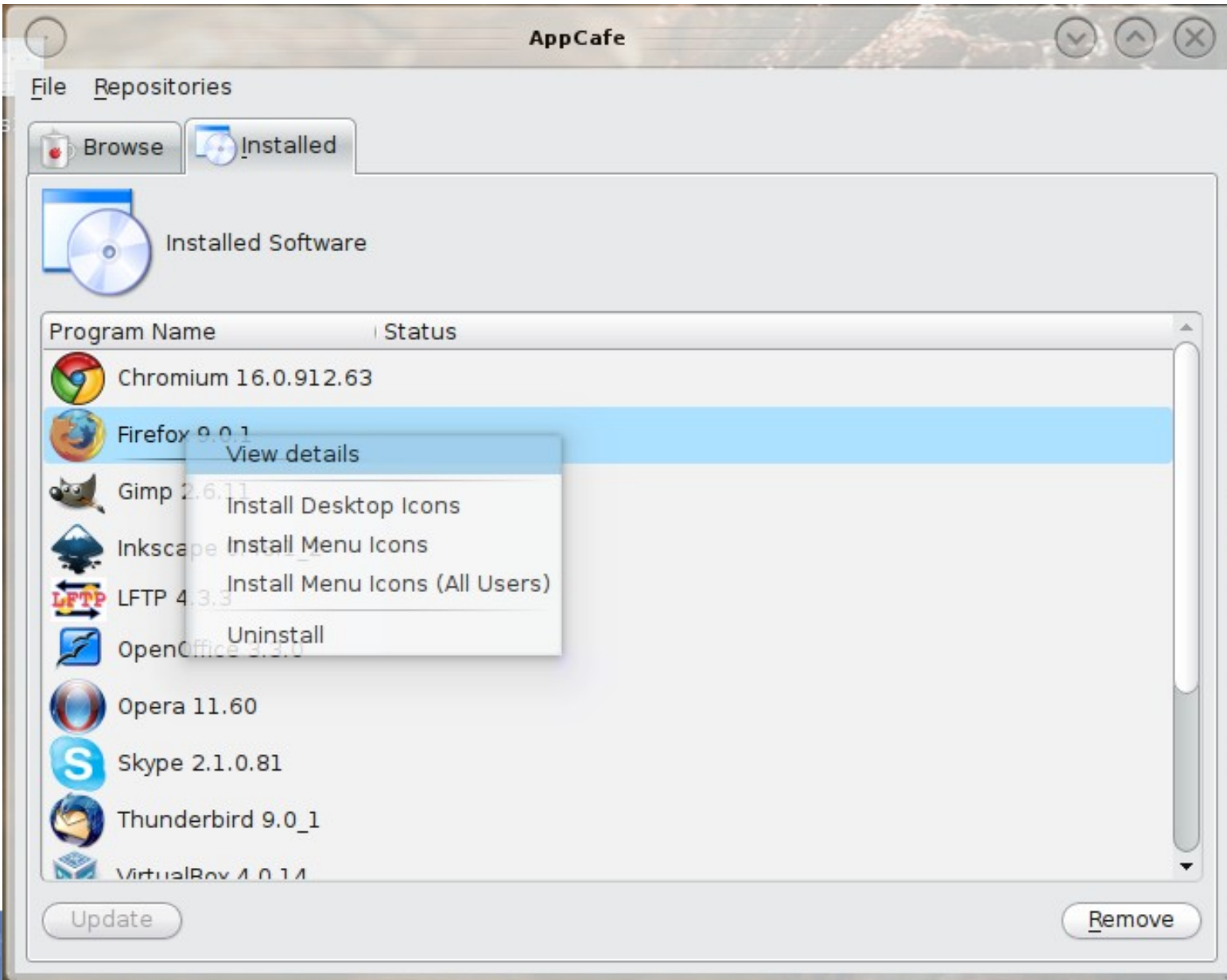
Introduction to PC-BSD



Introduction to PC-BSD



Introduction to PC-BSD

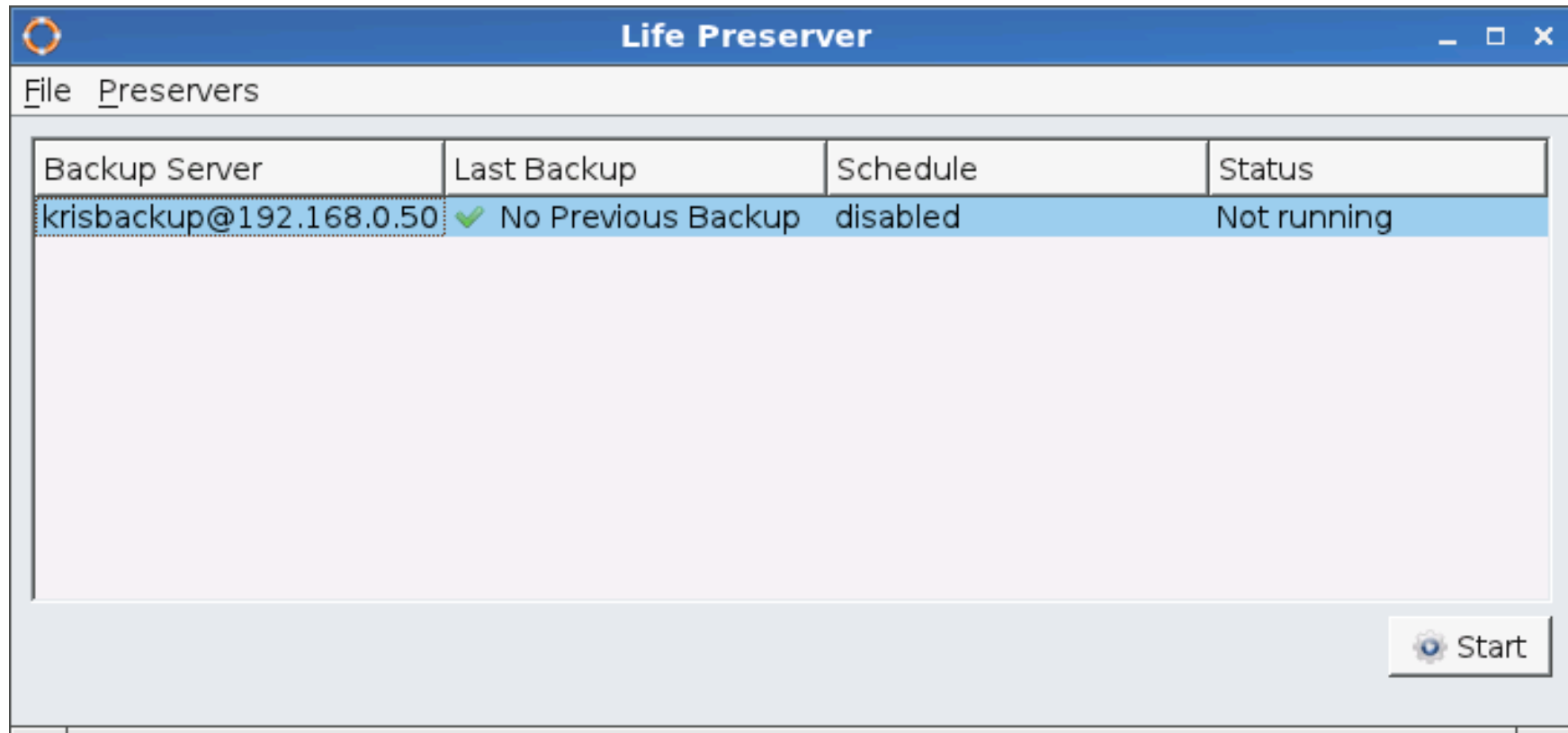


Introduction to PC-BSD

- Simplified Life-Preserver -

- Backup home data to remote server, such as FreeNAS.
- Easy to use Tray application
- Scheduled daily / weekly syncing
- Uses rsync over ssh

Introduction to PC-BSD



The screenshot shows the 'Life Preserver' application window. The title bar reads 'Life Preserver' and includes standard window controls. Below the title bar is a menu bar with 'File' and 'Preservers'. The main area contains a table with the following data:

| Backup Server | Last Backup | Schedule | Status |
|-------------------------|----------------------|----------|-------------|
| krisbackup@192.168.0.50 | ✔ No Previous Backup | disabled | Not running |

At the bottom right of the window, there is a 'Start' button with a gear icon.

Introduction to PC-BSD

- PC-BSD 9.0
 - Released January of 2012
 - Variety of new installation media, including:
 - CD's
 - DVD
 - USB
 - VirtualBox Images
 - VMware Images
 - LIVE media (DVD/USB)

Introduction to PC-BSD

- PC-BSD 9.0
 - Includes Quick Start Guide & Handbook
 - Support for ZFS & UFS Journaling

Introduction to PC-BSD

Questions?

Introduction to PC-BSD

- Additional Info -

www.pcbsd.org
www.freebsd.org
wiki.pcbsd.org

- Slides -

<http://www.pcbsd.org/~kris/scale-pcbsdintro-2012.pdf>