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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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.
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- 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.
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- 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.
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- 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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Welcome & Language selection

Language Selection

Local TimeZone

America/New_York: Eastern Time

☑ Automatic synchronization with Internet Time Servers (NTP)

Welcome

Welcome to PC-BSD! You may get started above, or click the Help button for more information on each screen.
Introduction to PC-BSD

Please select the disk drive you wish to use:

- ada0 - 25600MB BOX HARDDISK

Disk Layout

- Auto Partition
- Customize Disk Partitions (Advanced)

Select the slice you wish to install to, or check "Use Entire Disk"

- Use Entire Disk

Choose filesystem for auto-partitioning. If unsure, please leave at the default.

- UFS + SoftUpdates journaling
- UFS + SoftUpdates
- ZFS

- Encrypt user data

- Install PC-BSD bootloader
- Partition with GPT for full disk install

Abort  Back  Next
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- PC-BSD Additives -

• Network Management GUI
  - Wired / Wireless configuration tools
  - Support for IPv4 & IPv6
  - Optional Wired → Wireless failover via the “lagg” interface
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- 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
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PC-BSD Version: 9-CURRENT-20110502
Base Version: 9.0-CURRENT
CPU Type: AMD Athlon(tm) II X3 440 Processor
System Memory: 1023.94 MB

You may also generate a diagnostic sheet, with information about your system. This sheet can be used by technicians for troubleshooting purposes.

Generate
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- 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.
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Traditional Open-Source Packaging

Base System
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PBI packages on PC-BSD
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- PC-BSD 9.0 -

- No longer KDE centric
- Improved WM agnostic system utilities
- Re-implemented PBI system
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- 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.
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- Multiple desktop support -

• Current desktop offerings
  – KDE 4
  – GNOME 2
  – XFCE
  – LXDE

• Other “Unsupported” WM's
  – Awesome, FVWM, IceWM, OpenBox, ScrotWM, Window Maker, Fluxbox
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Meta Package Selection

System Package Configuration

Available System Packages

- Desktops
- GNOME
- KDE
- LXDE
- XFCE

The LXDE Desktop, a lightweight 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.
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Above you may select the base system packages you wish to have installed. Adding new packages will require your original installation medium, or a properly configured mirror server.
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- Improved Control Panel -

- Agnostic to particular WM being used
- Provides consistent user experience
- Detects running WM and shows appropriate choices
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- 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
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- PBI9 Command-line Interface -
  
  - PBI toolchain implemented in shell for portability
  
  - All PBI functionality available via CLI
    
    - pbi_browser
    - pbi_repo
    - pbi_add
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- 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
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Hashdir

libfoo.so.1
cksum: abcd
PBI 1

libfoo.so.1
cksum: abcd
PBI 2
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Hashdir

libfoo.so.1:::abcd

libfoo.so.1
checksum: abcd

PBI 1

libfoo.so.1
checksum: abcd

PBI 2
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Hashdir

libfoo.so.1:::abcd

libfoo.so.1
cksum: abcd

PBI 1

libfoo.so.1
cksum: abcd

PBI 2
Introduction to PC-BSD

Hashdir

libfoo.so.1:::abcd

libfoo.so.1:::wxyz

PBI 1

PBI 2

libfoo.so.1
cksum: abcd

libfoo.so.1
cksum: wxyz
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Hashdir

libfoo.so.1: wxyz

libfoo.so.1
cksum: wxyz

PBI 2
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- 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.
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- 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.
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- 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
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- 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
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AppCafe

Latest Releases

- JOSM 4667
- LFTP 4.3.3
- TeXmacs 1.0.7.14
- MonoDevelop 2.8

Application Categories

**Archivers**
Programs for packing/unpacking data archives

**Astronomy**
Programs for mapping the stars or the earth

**Audio**
Audio-only programs for editing and playing sound
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Firefox is an award winning, free, open-source web browser for many platforms and is based on the Mozilla codebase. It is small, fast and easy to use, and offers many advanced features.
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- 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
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![Life Preserver backup server status](image)
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- 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)
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- PC-BSD 9.0
  - Includes Quick Start Guide & Handbook
  - Support for ZFS & UFS Journaling
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Questions?
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- Additional Info -

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

- Slides -