PC-BSD Guide

Welcome to the PC-BSD Guide; brought to you by the Documentation Team:

Jacob Cervantes - Paul J Baptie - Brian J. Barber - Karl Fischer - Dragon Flyer - Wayne Fowler - James Knightly - Roger O'Donnell - Terry Poulin - Terry Schima - Roberto Soriano - Gerard van Essen - Terrance Young

This Guide is aimed at users new to PC-BSD, FreeBSD and Unix in general. As it is under constant development, you may come across mistakes and out-of-date information. If so, feel free to report them to us on the documentation forum or the Documentation Mailinglist. For the latest and most up-to-date version please visit the PC-BSD Guide online. We hope this guide is both simple and useful and make using PC-BSD an enjoyable experience.

If you have suggestions for PC-BSD, you can either let us know on the forum, or send an e-mail to the Public Mailinglist, we value your opinion. Thank you for your support.

Click on any of the links below or open/download the Guide as one file:

- HTML (gz, 7z, zip)
- PDF (gz, 7z, zip)
- RTF (gz, 7z, zip)
- ODT (gz, 7z, zip)
- TEXT (gz, 7z, zip)

1 Introduction

1.1 Welcome to PC-BSD

Welcome to PC-BSD and many thanks for your interest.

Early 2005 Kris Moore, the founder of PC-BSD, presented the first beta version of PC-BSD to the community. What some FreeBSD advocates had been waiting for for years had finally arrived: an easy-to-use FreeBSD-based operating system for the desktop, with very little configuration necessary. A polished, full-featured, free-of-charge, open-source operating system with a BSD license, based on FreeBSD, that anybody could use, from the beginner to the advanced user alike, was a dream slowly being realised.

With the arrival of "easy-to-use" Linux distributions (another Unix-like operating system) and their immediate success, it became obvious that there was a large niche market. However, Kris thought that the Linux market could have advanced more in user friendliness. The BSD community had already very good server operating systems such as FreeBSD or OpenBSD, but none for the desktop market. Taking a strong liking to FreeBSD due to its design, speed, and robustness, Kris Moore decided to create a

user-friendly and intuitive FreeBSD based operating systems for desktop use.

PC-BSD is a desktop-oriented operating system to the likes of Microsoft Windows XP or Apple Mac OS X. It is based on one of the most powerful operating systems for servers, FreeBSD, a Unix-like server operating system which is based upon the BSD and Unix operating systems, arguably the best of breed systems nowadays. When it comes to stability, scalability and openness Unix has no competition. In fact Unix has been the undisputed choice of information technology professionals for many years. [Unix History Chart | BSD History Chart]

PC-BSD started off as an independent project, but since 10 October 2006 PC-BSD is (financially) backed and supported by the enterprise-class hardware solution provider iXsystems.

1.2 Differences between PC-BSD and FreeBSD

PC-BSD is essentially a customized installation of FreeBSD, and not a forked-derivative. PC-BSD is and will always be based on FreeBSD's latest STABLE-branch. Since the underlying FreeBSD system has been kept intact, you have a fully functional FreeBSD system under the hood that was built with speed and performance in mind.

It is important to remember that PC-BSD is NOT a Linux distibution. Both FreeBSD and Linux are Unix-like systems, but PC-BSD is based on FreeBSD and NOT on Linux.

The main difference between PC-BSD and FreeBSD is: PC-BSD is geared towards desktop use, while FreeBSD has been created with server use in mind. Other differences are:

- PC-BSD is based on FreeBSD (currently 7.0) and the KDE desktop environment (currently 4.1.1)
- PC-BSD is installed by a graphical installer, rather than FreeBSD's text based installer, Sysinstall. However, work in underway to create a graphical installer for FreeBSD
- PC-BSD installs a number of pre-installed applications, whereas FreeBSD lets you choose your own applications
- PC-BSD supports all the standard packaging systems provided by FreeBSD (PKG, Ports, source) as well as its own PBI package system (see Package Management)
- PC-BSD's kernel has been recompiled with some configuration tweaks to better suit it for desktop use
- PC-BSD comes pre-configured with a number of automatic scripts (i.e. to connect (mount) digital cameras or USB memory sticks etc) that only work in KDE. So, if you want Gnome desktop environment instead of KDE, for the time being, you will have to install FreeBSD with Gnome or manually install Gnome onto PC-BSD. Be very careful when you install Gnome onto PC-BSD, since most, if not all, PC-BSD tools, which are KDE based, will not work.

So, in summary, there is no real difference between PC-BSD and FreeBSD. PC-BSD is basically FreeBSD with a nice installer, some pre-configuration, kernel tweaks, PBI package management, a couple pre-selected packages and some handy (GUI) utilities to make PC-BSD suitable for desktop use.As a user of PC-BSD, you don't have to worry about configuring your system, but rather to simply install it and start working and/or playing with it.

1.3 Microsoft Windows and PC-BSD

As you may already know or will have gathered from the preceeding paragraphs, PC-BSD is a different kind of operating system compared to Microsoft Windows. FreeBSD (the base of PC-BSD) has been built with stability and security in mind, and these properties don't particulary spring in mind when thinking of Windows.

Let's have a look at some similarities and differences between PC-BSD and MS Windows.

Some similarities:

- Both have a useful graphical user interface (though the command line is available in PC-BSD)
- Both have a excellent internet connectivity stack (IPv4 and IPv6). Did you know Microsoft borrowed from FreeBSDs TCP/IP code?
- Both have a large collection of applications available (currently 19.000+ for FreeBSD)
- Both can browse and share Windows networking resources (SMB shares, printers)
- Both can handle audio/video, can play CDs/DVDs and can be used for word processing, photo editing, databases etc
- Installing software is easy, quick and straight forward

However, there are also some major differences:

- PC-BSD is free of charge and its source code is free to view and to download
- PC-BSD doesn't have a registry database where all the operating system's settings are stored, so your computer won't get slow after a few months' of use
- PC-BSD is not affected by viruses, spyware and other malware that plague Windows systems
- PC-BSD doesn't always have drivers or support for the latest or less popular hardware
- Hard drives or partitions with PC-BSD installed don't need to be defragmented to increase the PC's speed

1.4 PC-BSD's goals

The PC-BSD Team aims to

- make software installation as painless as possible and as easy as clicking a mouse button. To install software you simply double-click on a ready-to-use pre-built software package and the software will be installed without you having to worry about dependencies and other technical details. PBIs can be downloaded for free from www.pbidir.com.
- create a minimalist operating system that is lean and fast. PC-BSD comes with a minimum of software installed so you can add only those packages you're interested in.
- release versions that are backwardly compatible.

1.5 Reasons for using PC-BSD

PC-BSD has been designed with the "casual" computer user in mind. Installing the system is simply a matter of a few mouse clicks and a few minutes for the installation process to finish. Hardware such as

video, sound, network and other devices are auto-detected and available at the first system startup. Home users will immediately feel comfortable with PC-BSD's KDE desktop interface.

PC-BSD is a safe, secure and stable operating systems from the BSD family that is virtually immune to any virus infection. With PC-BSD you can safely surf the internet without worrying about websites dropping trojans, virusses, adware or spyware on your system without your consent. PC-BSD lets you run the best open-source applications, a number of Windows programs and (nearly all) Linux software. This is all free.

PC-BSD's key features include all that a modern operating system has to offer. It combines the rock-solid stability, security and speed of FreeBSD, the usability and functionality of the KDE desktop environment and the simplicity of PC-BSD's software package management to provide a system that's easy to use and to install. Installing andremoving software has been made as easy as clicking your mouse button and your system is kept up-to-date with automatic downloads. With PC-BSD it is now possible to combine the strength of FreeBSD with the ease of use of Microsoft Windows in the same system.

With PC-BSD you can do about everything a desktop user expects from a modern operating system. Nearly all day-do-day computer tasks and fun stuff can be done on PC-BSD:

- Browse the web and send/receive emails
- Chat with friends on Yahoo, MSN, AOL and IRC
- Listen to mp3's, podcasts, streaming music/radio stations
- Burn/rip CDs/DVDs and watch DVDs and videos
- Use bittorrent and P2P networks for file sharing
- Create drawings. Import, view and edit pictures and digital photo's
- Play games and play online multi-player games
- Write letters, create databases, spreadsheets and slide presentations, etc

1.6 PC-BSD's most bleeding-edge features

Let's discover PC-BSD's unique features...

1.6.1 Visual system installer

Installing PC-BSD is a breeze! To install PC-BSD you only need to put the CD-ROM in the drive, reboot the system to start the installer, select from menus, type in your information and click buttons to proceed step by step. PC-BSD does the hard stuff for you, and only asks for the necessary information. The power user will find it interesting to access the advanced options to custom partition the hard disk drive or access options such as DiskLabel. When you are done installing, just remove your CD-ROM, reboot and you are up and running.
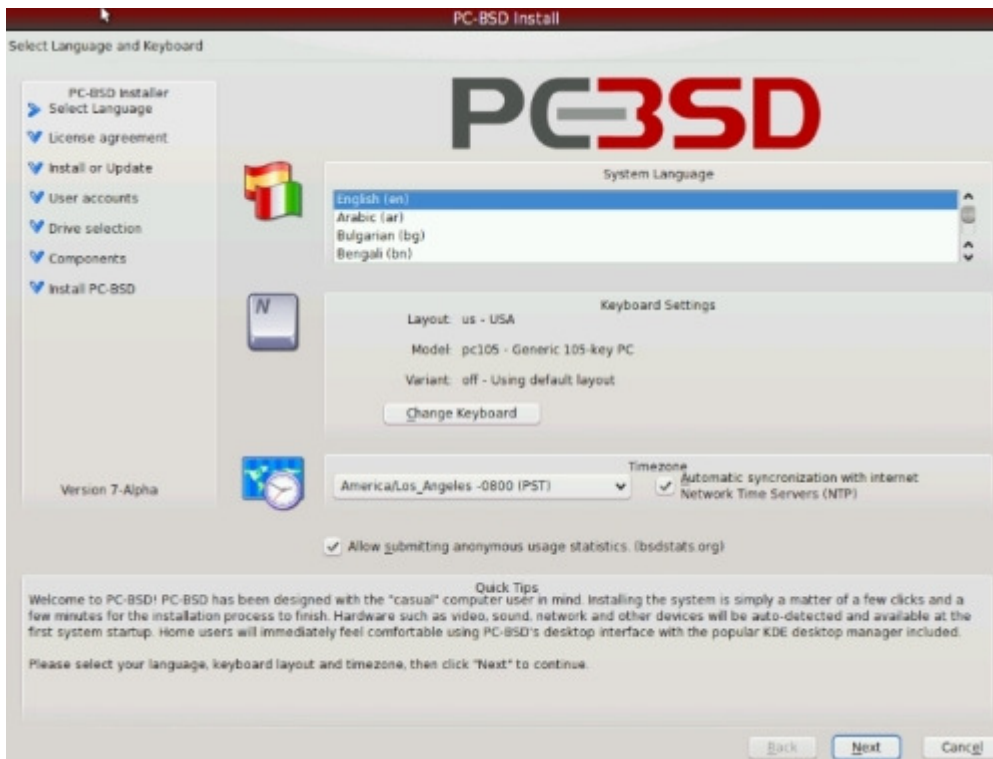
1.6.2 Fully graphical desktop environment

PC-BSD comes with the latest stable version of KDE award-winning desktop environment, and a few essential KDE applications such as, Kate, Kaffeine, or Konqueror. KDE alone will probably cover most of your day-to-day needs immediately.

1.6.3 Graphical software installer

Installing software can hardly be easier than on PC-BSD. With a fully graphical software installer, you can install any .pbi file on your computer the same way you are used to on MS Windows or on the Mac. Double-click the setup file, follow the instructions, click "Next" and you're done! More...


1.6.4 Network Manager

Setting up your local network to access the Internet is easy with PC-BSD.
During installation, PC-BSD configures your connection using DHCP so that if you already have a connection to the Internet in your home or office, you get connected automatically. You still have the ability to manually change your network settings such as IP address, gateway, netmask and DNS using the Network Manager.
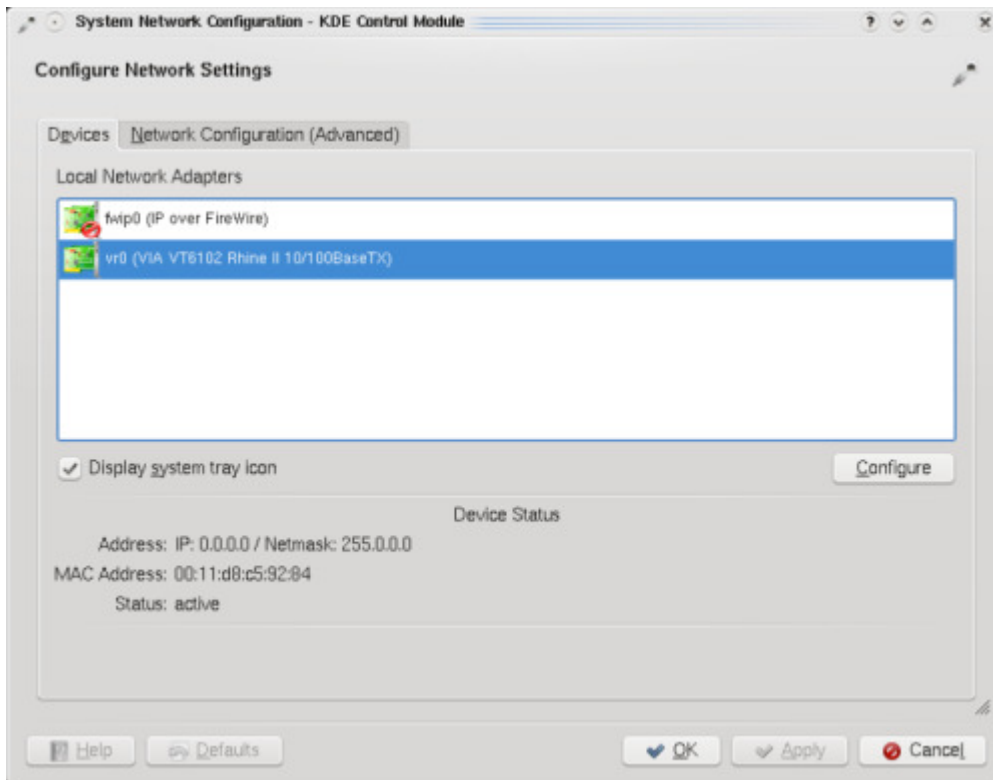
1.6.5 System updates

Are you worried about having an outdated operating system? Don't fear! PC-BSD has a built-in system updater that will notify you of available system updates to install security fixes, bug fixes, system enhancements and updated PBIs. Read more about keeping PC-BSD up-to-date in chapter 13.
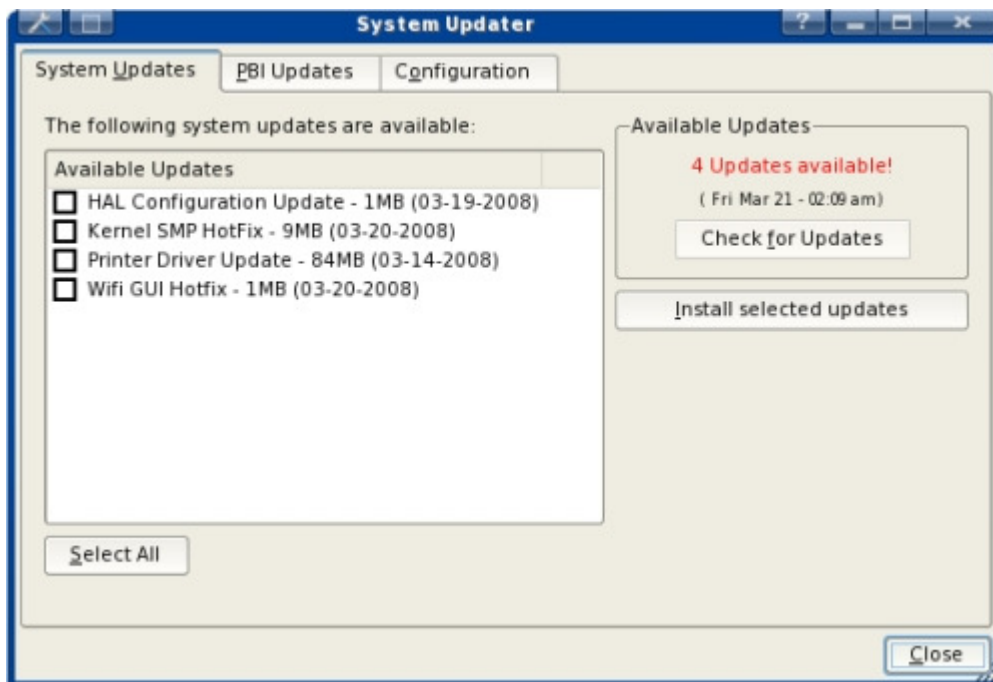
1.6.6 Visually attractive

PC-BSD comes by default with Nvidia videocard drivers and the Compiz-Fusion accelerated 3D desktop for the next level desktop experience. Also, Adobe Flash is installed so you can watch your favorite movies and videos on Youtube and Google Video out of the proverbial box.

1.6.7 Optimised for i368s and compatible with the 64-bits architecture

PC-BSD is optimised for the latest systems for optimum speed and performance. PC-BSD is available for the i386 architecture and for 64bits systems.

1.7 Package Management

As mentioned above, PC-BSD's package management system takes a different approach to installing software compared to many other Unix-like operating systems. Instead of utilising FreeBSD's ports or packages system (although these are still available), PC-BSD uses files with the .pbi (Push Button Installer or PC-BSD Installer) filename extension. All that is necessary to install a PBI is to download it (e.g. from pbidir.com), double-click to launch the installation wizard program, enter the root password, follow the installation steps and you're ready to use the program. Uninstalling is just as easy. Installing PC-BSD software packages (PBIs) is similar to that of Microsoft Windows and Mac OS X. Installing PBIs is as easy as installing a Windows .exe file.

PC-BSD's own package management system resolves the issue of library dependency problems that often occur on Linux based systems. This is the feature that sets PC-BSD apart from most free open source systems that are available. It's easy, simple and straightforward.A PBI installs all software packages and libraries in their own self-contained directories in /Programs, decreasing confusion about where the binary programs reside and reducing the possibility of breaking a package if system libraries are upgraded or changed. The PC-BSD package manager also takes care of creating links in the KDE menu and on the KDE desktop.

1.8 Summary of PC-BSD's features

- Fully functional and free operating system for the desktop; PC-BSD uses the popular KDE desktop environment
- Based on FreeBSD 7.0, a stable, reliable and time-tested operating system in the Unix family
- Improvement upon FreeBSD with extremely easy installation and greatly improved application management
- All the major package management systems available that are supported by FreeBSD (PKG, ports etc), but has additionally the PBI package installer
- Major Windows applications available for PC-BSD as PBI (OpenOffice, Firefox, Opera, VLC etc)
- Major KDE applications are included in PC-BSD
- Self-installing software packages (PBIs), making installing programs a snap
- Graphical system installer, making the system installation process effortless
- Graphical tools for system administration
- Online upgrades and patches for PC-BSD and any installed PBIs are downloaded and installed automatically
- Ability to read/edit/save Microsoft Word, Excel and Powerpoint files
- Safe from viruses, adware, spyware and trojans that plague Windows systems

- PC-BSD is able to run Windows XP/2000 through emulators (such as Qemu or Win4BSD) or Windows applications through Wine.
- Adobe Flash 7 supported (Flash 9 available as part of the Win Firefox PBI)
- Support for a number of native languages
- Friendly and helpful support community
- Professional email and phone support available from iXsystems

1.9 More features (advanced/technical)

- Based on FreeBSD, a Unix-like free operating system descended from AT&T Unix via the Berkeley Software Distribution (BSD) branch through the 386BSD and 4.4BSD operating systems
- Licensed under BSD license (may contain many GPL, LGPL and other licensed software)
- Optional SWAP space encryption (useful addition to notebook owners)
- Powerfull PF firewall (Packet Filter from OpenBSD) automatically configured
- RAM memory based and SWAP memory backed temporary drive space mounted as /tmp
- Brute-force attack protection with denyhosts security application (IP of attacker is blocked for 20 minutes IP is unblocked in case you are blocked yourself)
- Ability to run almost all GNU/Linux applications like Oracle, WordPerfect, Skype, Doom 3, Quake 4, etc. through to the Linux Compatibility Layer (LCL). Generally, no noticeable performance penalty when running Linux binaries compared to native FreeBSD ones

1.10 PC-BSD Releases

As from September 2008 we will number our releases after FreeBSD's, i.e. PC-BSD 7.0 is based on FreeBSD 7.0, PC-BSD 7.1 will have FreeBSD 7.1 as it's underlying system, etc.

- PC-BSD 1.5.1 - 23 April 2008
- PC-BSD **1.5 - 12 March 2008**
- PC-BSD 1.4.1.2 - 4 January 2007
- PC-BSD 1.4.1.1 - 4 December 2007
- PC-BSD 1.4.1 - 16 November 2007
- PC-BSD **1.4 - 24 September 2007**
- PC-BSD 1.3.4 - 17 April 2007
- PC-BSD 1.3.3 - 12 February 2007
- PC-BSD 1.3.2 - 19 January 2007
- PC-BSD **1.3 - 31 December 2006**
- PC-BSD **1.2 - 12 July 2006**
- PC-BSD 1.11 - 19 June 2006
- PC-BSD 1.1 - 29 May 2006
- PC-BSD **1.0 - 29 April 2006**
- PC-BSD 0.8.3 - 23 October 2005
- PC-BSD 0.8.2 - 25 September 2005
- PC-BSD 0.8.1 - 20 September 2005
- PC-BSD 0.8 - 13 September 2005
- PC-BSD 0.7.8 - 18 July 2005
- PC-BSD 0.7.5 - 25 June 2005

2 Pre-installation

The previous chapter contained some background information of PC-BSD. This chapter is about your hardware, obtaining PC-BSD and getting ready for installation.

2.1 Minimum Hardware Requirements

PC-BSD has moderate hardware requirements and commonly uses less resources than its commercial counterparts. Before installing PC-BSD on your computer, please make sure you meet the minimum requirements.

Minimum system requirements:

- Pentium II or higher
- 256MB RAM
- 6GB of free Hard Drive space (Either partition, or entire disk)
- Network card
- Sound card

Recommended system requirements:

- Pentium 4 or higher
- 512MB of RAM
- 12GB of free Hard Drive space (Either partition, or entire disk)
- Network card
- Sound card
- 3D accelerated video card (NVIDIA or Intel)

PC-BSD can run on any of the following processors (providing the motherboard is recognised):

AMD Opteron, AMD Athlon, AMD Athlon XP, AMD Athlon 64, AMD Athlon 64 X2, AMD Athlon FX, AMD Duron, AMD Sempron, AMD Turion 64, AMD Turion 64 X2, Intel Pentium Pro, Intel Pentium II, Intel Pentium III, Intel Celeron, Intel Xeon, Intel Pentium 4, Intel Pentium M, Intel Pentium D, Intel Pentium Extreme Edition , Intel Core, Intel Core 2 Duo

Though 256Mb RAM is the absolute minumun, you should use at least 512Mb of RAM if possible. To play modern video games, you should use a fast CPU, and if you want to create a collection of tunes and movies on your computer, you should use a larger hard disk drive too.

2.2 Hardware compatibility

Most hardware should work with PC-BSD, but in some cases, cheap hardware has been reported not to work. If you use mainstream or top-end hardware, such as those that feature VIA or NVIDIA chipsets, it will usually work flawlessly.

To ensure your hardware is supported, check the FreeBSD 7.0 Hardware List.

2.3 Obtaining PC-BSD

PC-BSD installation CDs can be either bought or downloaded. If you have a slow download connection or if you want to support the PC-BSD project financially, you can buy the CDs and/or support from iXsystems, the parent company of PC-BSD, or from FreeBSD Mall, another iXsystems susidiary. Alternatively, PC-BSD can be downloaded for free.

There are 4 different ways of installing PC-BSD, by:

- CD
- DVD
- USB Flash
- Boot Only

There are two PC-BSD installation CD's. The first one is the system installation CD (required) and the second contains multi-language support and the essential PBI Pack (optional). If you want PC-BSD in a language other than English (if available), you will need to download CD #2 as well.

The DVD contains the same as CD1 and CD2, i.e. required installation files, translations, useful PBIs and the source code.

The USB installation file can be written to USB memory sticks or Flash Cards and be installed from there.

The Boot Only option allows to start up the installation of PC-BSD which will then pull all necessary files from over the network of internet. This is recommended for companies and administrators employing large networks.

2.4 Data Integrity Check

Now that the installation file has been downloaded, it's a good idea to check if the file is exactly the same as the one on the PC-BSD server, i.e. check theintegrity of your .iso file. Whilest downloading some bits and bytes may get "damaged" or lost, so it's wise to check the integrity of the downloaded file. Did you know that missing a few bits can make the CD unusable?

One of the best (and free) data integrity check (also called MD5 checksum) programs for Windows is called Mat-MD5, but there's nothing wrong with WinMd5Sum.
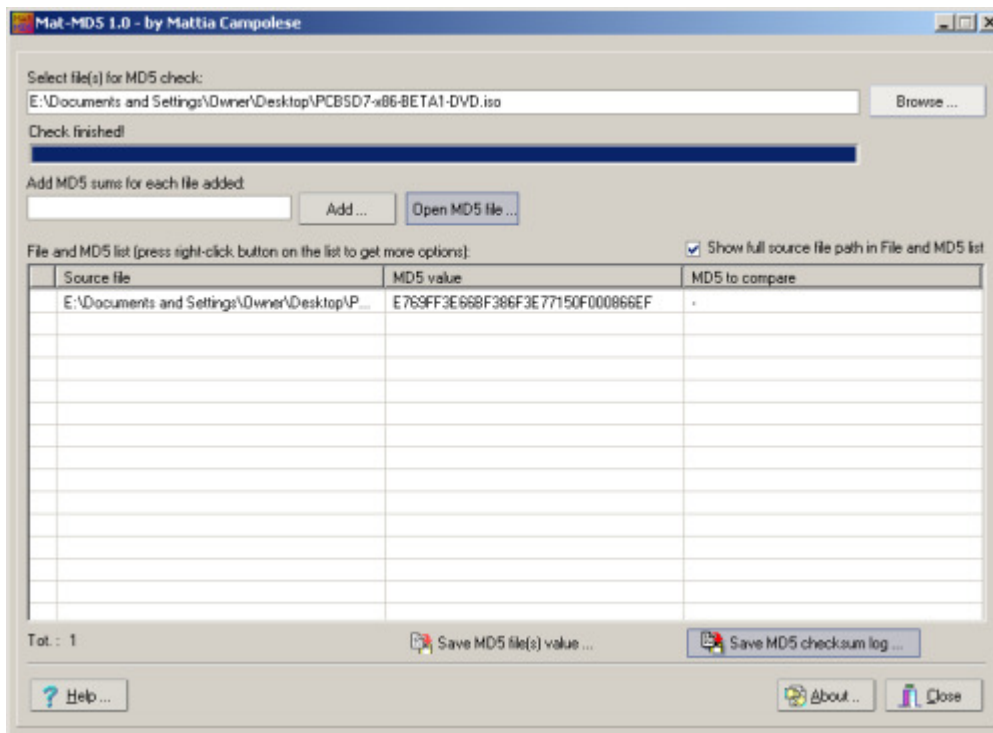
Click to enlarge.

You will find the MD5 checksum on the download page of PC-BSD for each .iso file. For each of them, the checksum reported by either Mat-MD5, WinMd5Sum or md5 must be the same as the checksum listed on PC-BSD's download page. If the MD5 numbers don't match, you'd better download the file again.

On Unix systems (Linux, FreeBSD), you can use the md5 commandline tool to check the data integrity.:

```
md5 path_to/downloaded_file.iso
```

2.5 Burning the installation CD-ROM/DVD

You have now downloaded PC-BSD and checked if the download has gone OK. It's now time to burn the ISO to a CD or DVD. This section will assist you to burn PC-BSD onto a CD-R (Writable) or on a CD-RW (Rewritable). This tutorial assumes you already have:

- A CD-RW or DVD-RAM drive that allows you to burn media and not just read
- A writable medium in your DVD-RAM or CD-RW drive
- A file with a .iso extension containing PC-BSD
- A Windows or Unix computer to burn your ISO file.

At this point, you will have to choose how you want to burn the downloaded .iso file. If you use a Windows computer, you can choose from Nero, Burnatonce, ImgBurn or CDBurnerXP. If you use a Unix computer with KDE (such as PC-BSD), you can use K3B. Alternatively, if you use a Unix machine with Gnome, you can use Gnome Baker to burn your CD-ROM. And we also have instructions on how to burn the CD on the MAC.

2.5.1 Burning the CD-ROM on Windows

Burnatonce

Burnatonce is a freeware application that you can use freely for your personal needs. It is a simple and light-weight application. To use Burnatonce, simply launch it, and click "File > Load New Image...":
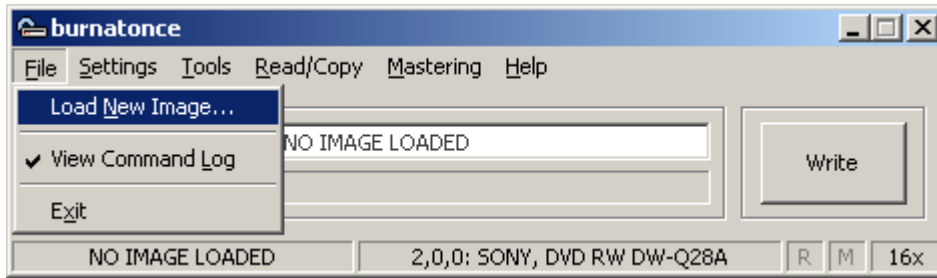

Your PCBSD `.iso` file will then be listed in grey in Burnatonce. Click "Write", and Burnatonce will start burning your CD-ROM:

A few minutes later, Burnatonce will let you know that the CD-ROM was burned successfully.

ImgBurn

ImgBurn is with Burnatonce one of the easiest image burners available as it's just doing what its name suggests: burning images/ISO files, and nothing else.

Open ImgBurn, select the "please select a file" button to locate the downloaded ISO and click the CD image at the bottom to burn.
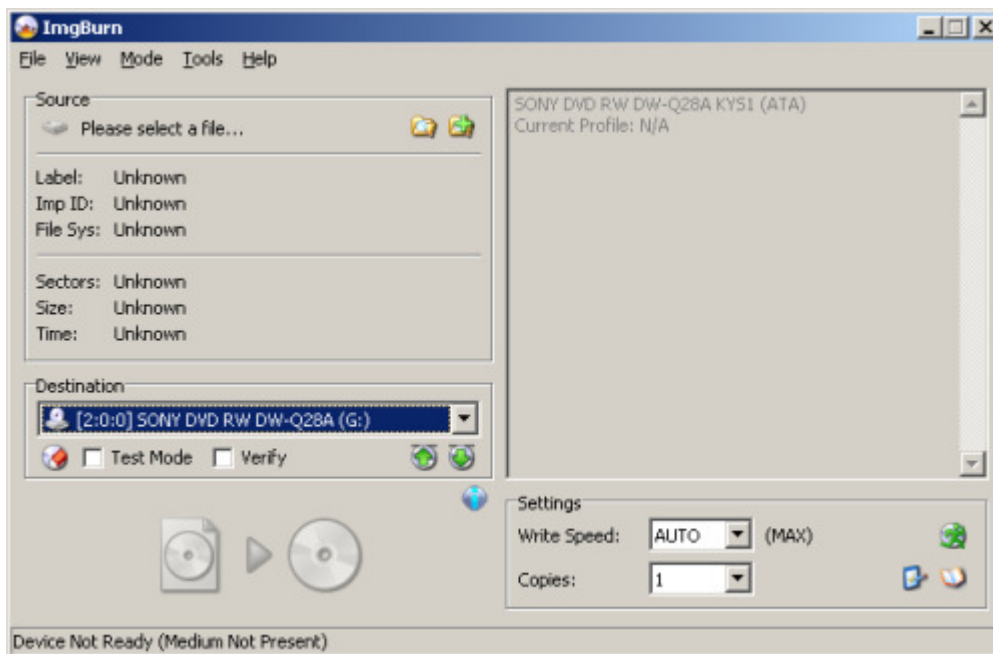
Click to magnify.

Ahead Nero Burning ROM

Ahead Nero Burning ROM is one of the most popular commercial applications on Windows to burn CD-ROMs and DVD-RAMs. Although it is commercial, you usually have a month free to test it. Let's see how you can burn your CD-ROM in a few steps. Launch Nero, and click "Recorder > Burn Image", select your `.iso` file and burn your CD-ROM. Alternatively, you can click "File > Open":
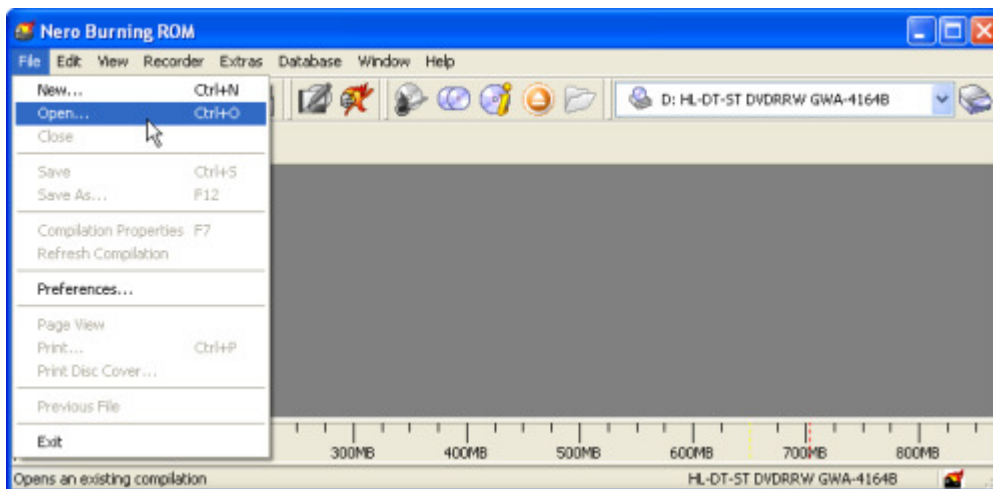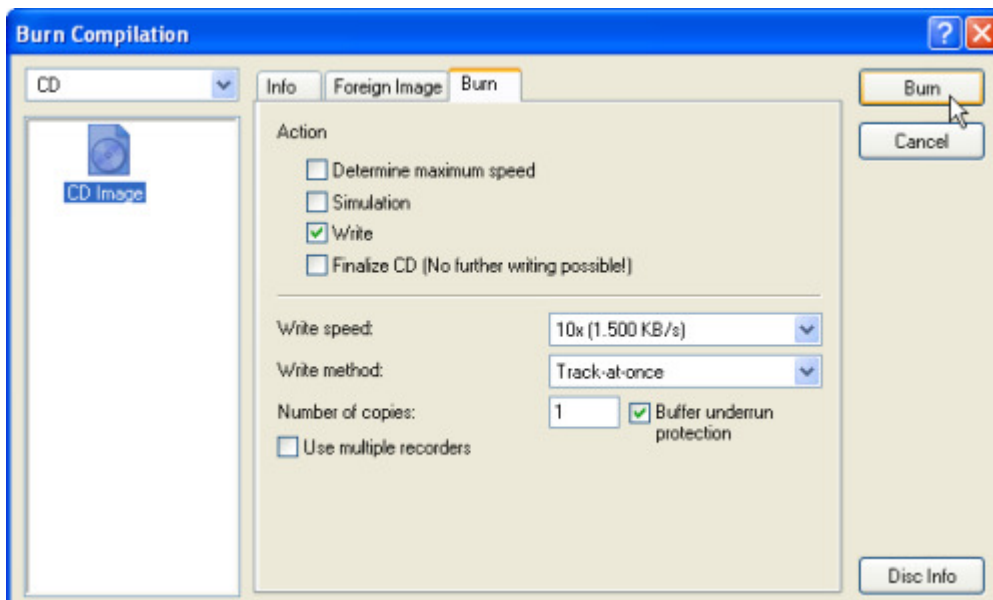
Click to enlarge.

In the Windows dialog box, select the penultimate option labeled "Image Files" to display `.iso` files in your file browser:
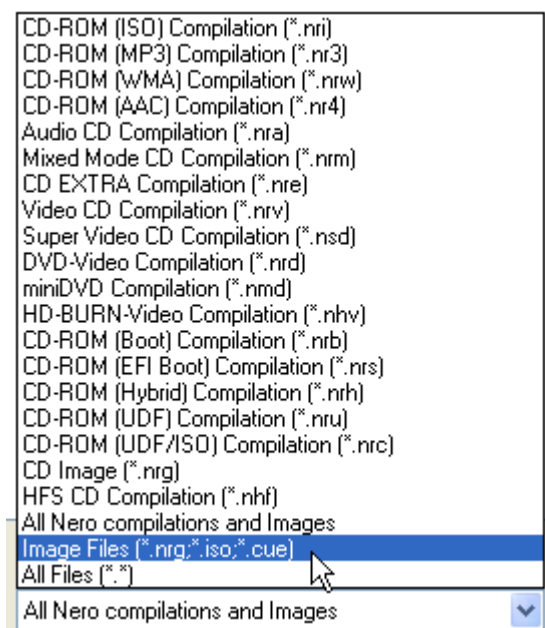
Browse to the directory where you stored your `.iso` file of PC-BSD; you should see your file listed. Select it and click "OK". On the next screen, click "Burn", and Nero will start burning your disk:
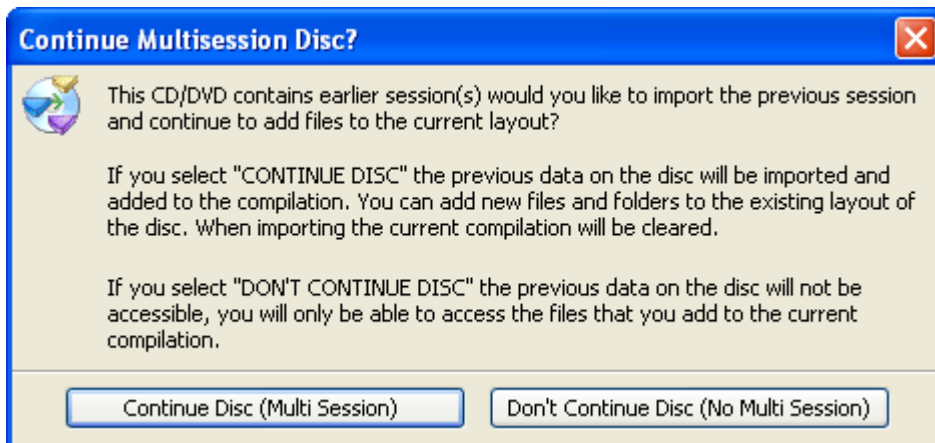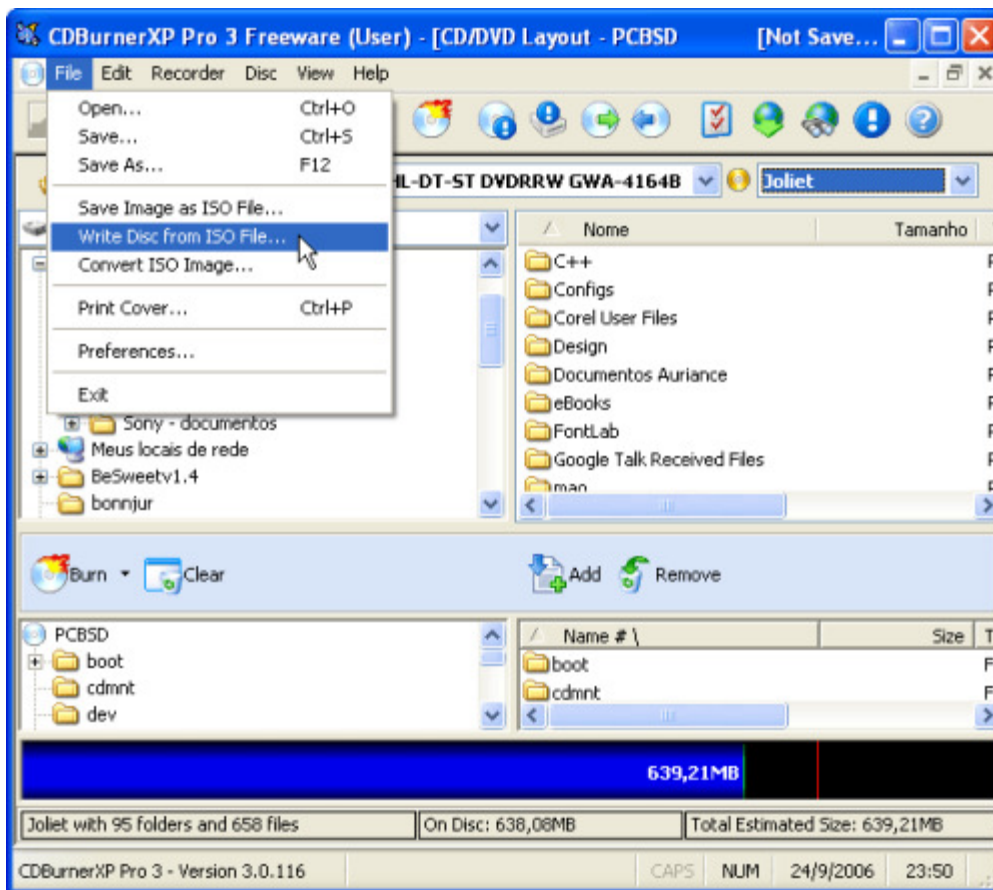
Click to enlarge.

After a few minutes, Nero will alert you that the burning process is complete and will eject the CD-ROM for you.

CDBurnerXP

CDBurnerXP is another freeware application for Windows. It has a modern interface and looks similar to its commercial counterparts. Using CDBurnerXP is also very easy: Launch the application. A dialog window will appear and ask you whether you want to continue burning files on a writable disk that already has files (multi session), or whether your CD-ROM doesn't have any content yet (No multi session). You will click the second option "Don't Continue Disc (No Multi Session)":
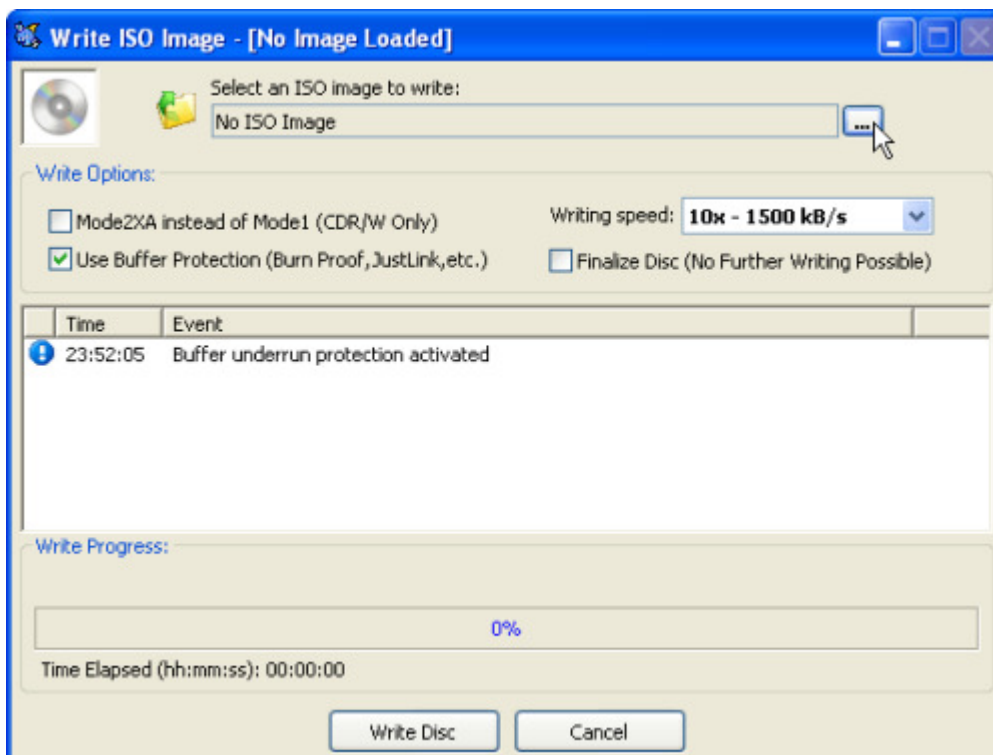

Afterwards, CDBurnerXP's main interface will show up. In the upper-left corner, click "File > Write Disc from ISO File...":
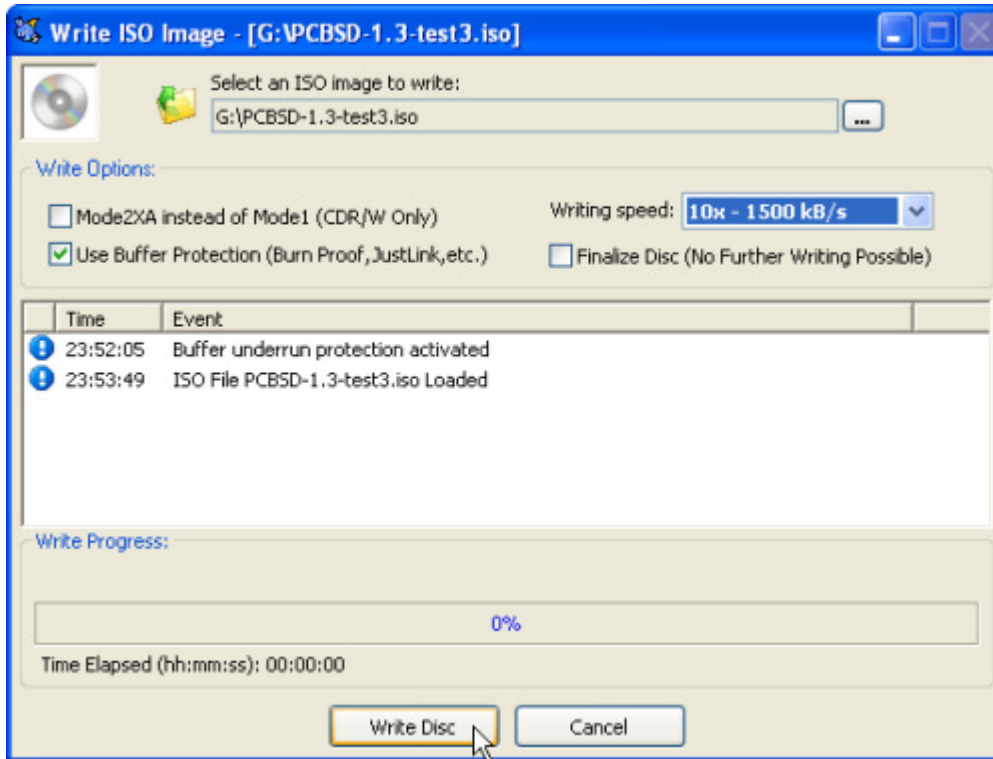
Click to enlarge

A dialog window then appears for you to select your `.iso` file. Under "Select an ISO image to write", click the "..." button to select your file:

Click to magnify,

The file will be listed in the main window. The only thing you have to do is "Write Disc", and CDBurnerXP will start burning your `.iso` file onto your CD-ROM:


2.5.2 Burning the CD-ROM on a Unix system

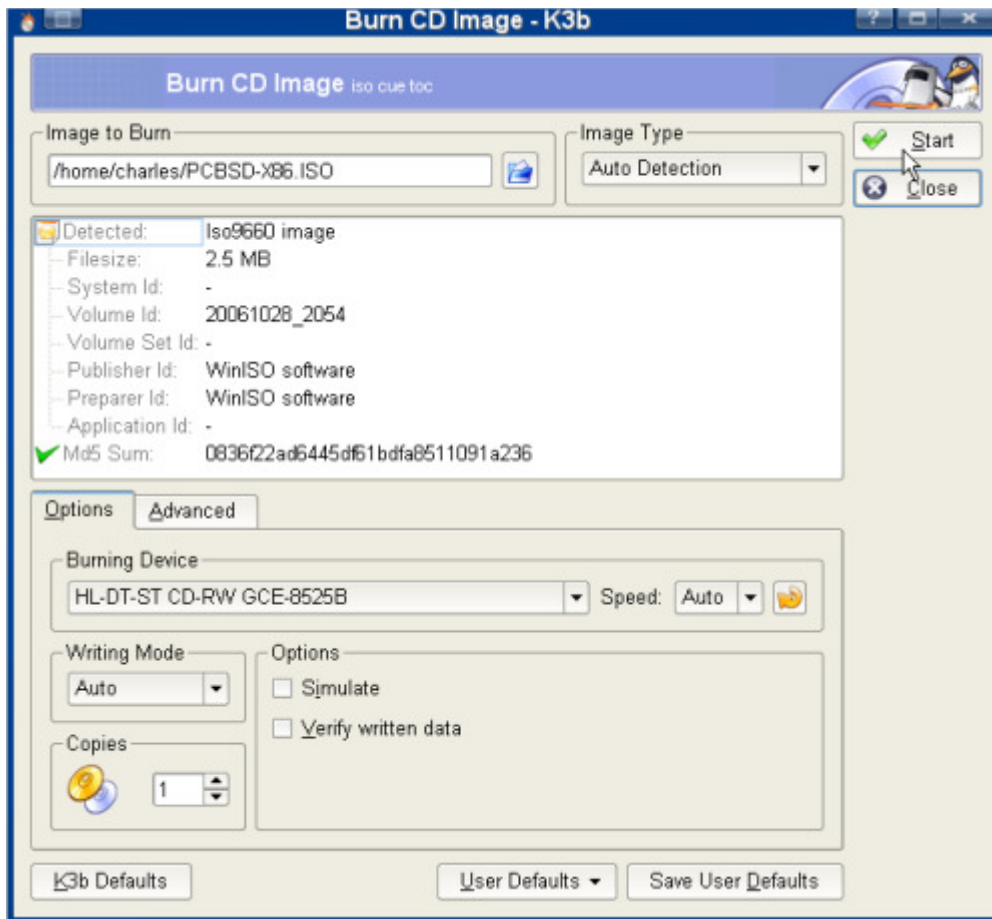### Using K3B on Unix-like installations with KDE X-Windows

Any Unix-based operating (with the KDE Windows manager) such as PC-BSD, FreeBSD or Linux distributions using KDE, are suitted to K3B, one of the best CD-ROM burning application for Unix. K3B has a similar interface to other modern burning software found on Windows, such as Nero Burning ROM or CDBurnerXP, and is equally easy to use.

Launch K3B and click "Tools > Burn CD Image...":
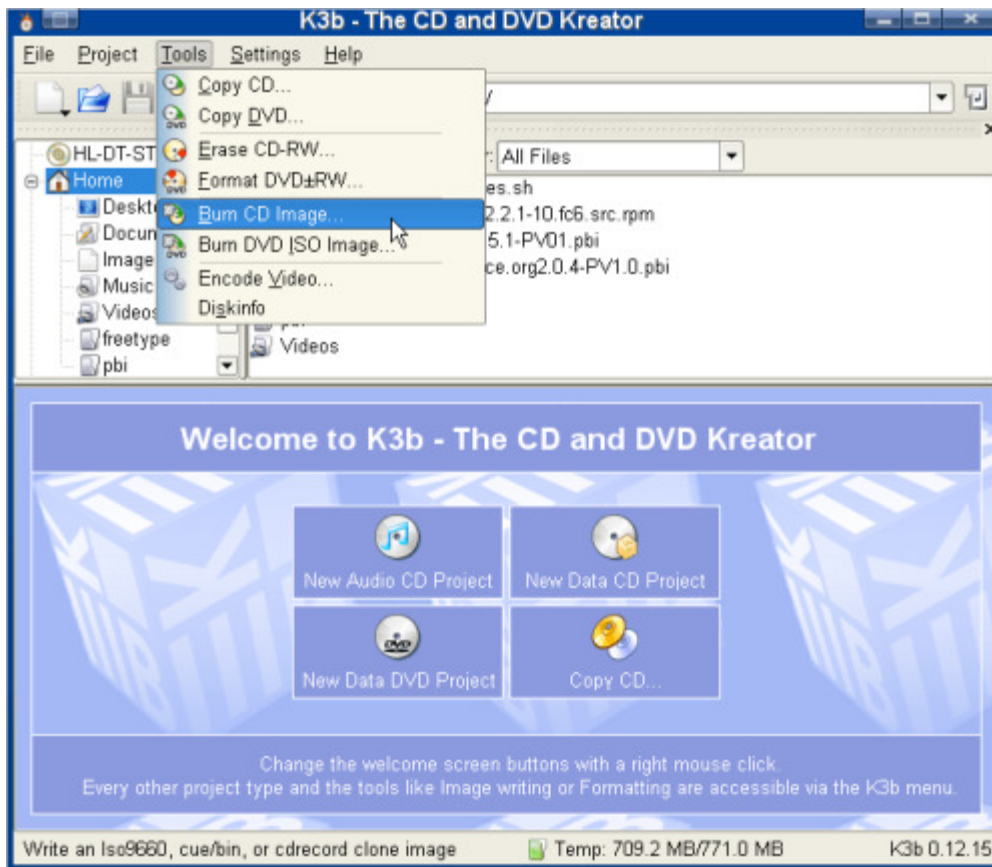
Click to magnify.

A new window will show up where you can choose your .iso file. Under "Image to burn", click the blue folder icon to select your file:

Once your file is listed, click the "Start" button in the top-right corner, and K3B will burn the `.iso` file onto your CD-ROM.

**Using Gnome Baker on Unix-like installations with Gnome X-Windows**

Gnome Baker is probably the best CD-ROM/DVD burner for the Gnome desktop. It is also easy to use. To burn your `.iso` file, first, launch Gnome Baker and click "Actions> Burn CD Image":
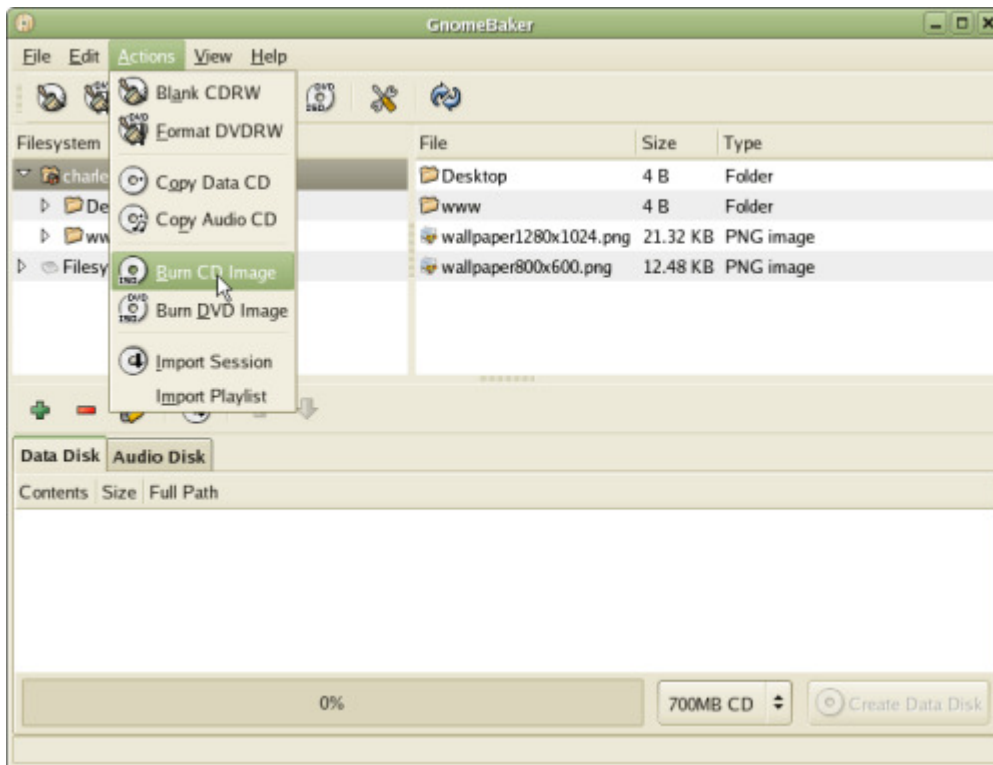
A dialog window will be displayed and you will be able to select your `.iso` file. Select it and click "OK":
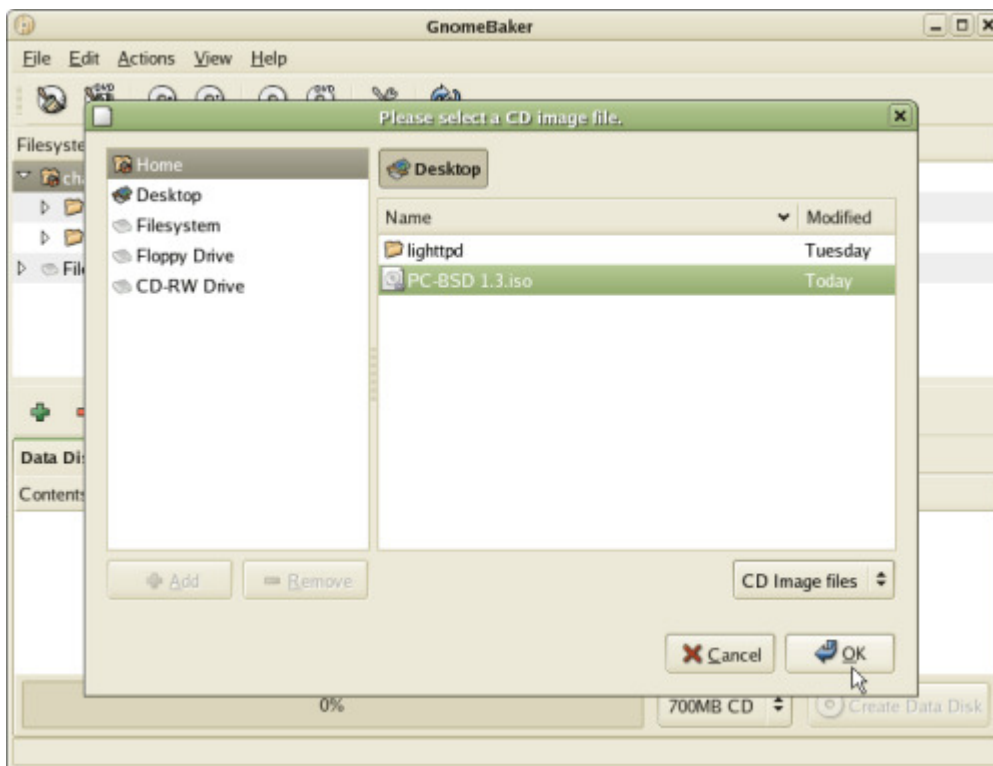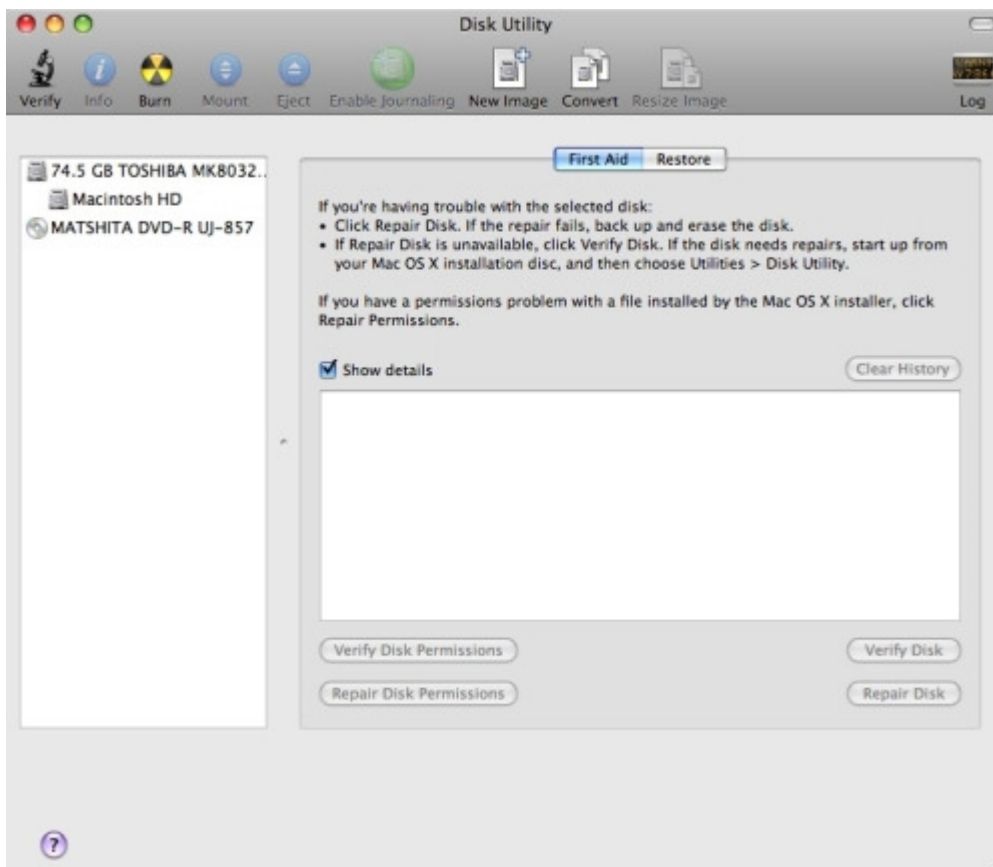

The last window allows you to select your CD-ROM drive, as well as a few other options. Leave these options as default. Click "Start" and Gnome Baker will begin to burn PC-BSD onto your CD-ROM drive:
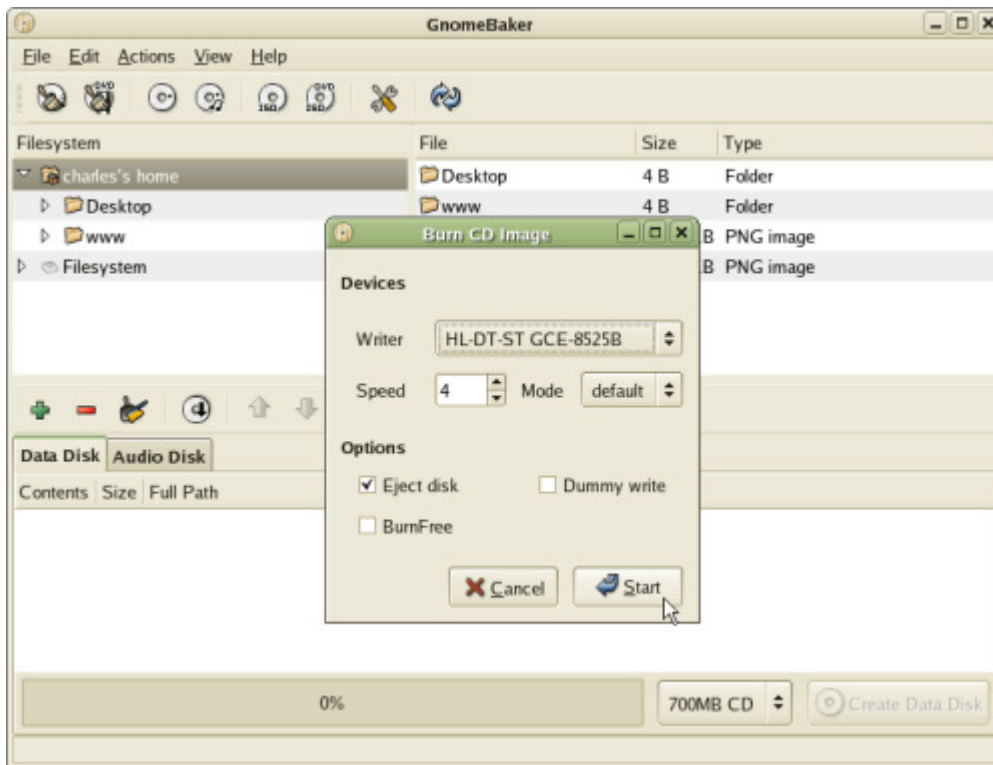
Gnome Baker will alert you when the burning is finished.
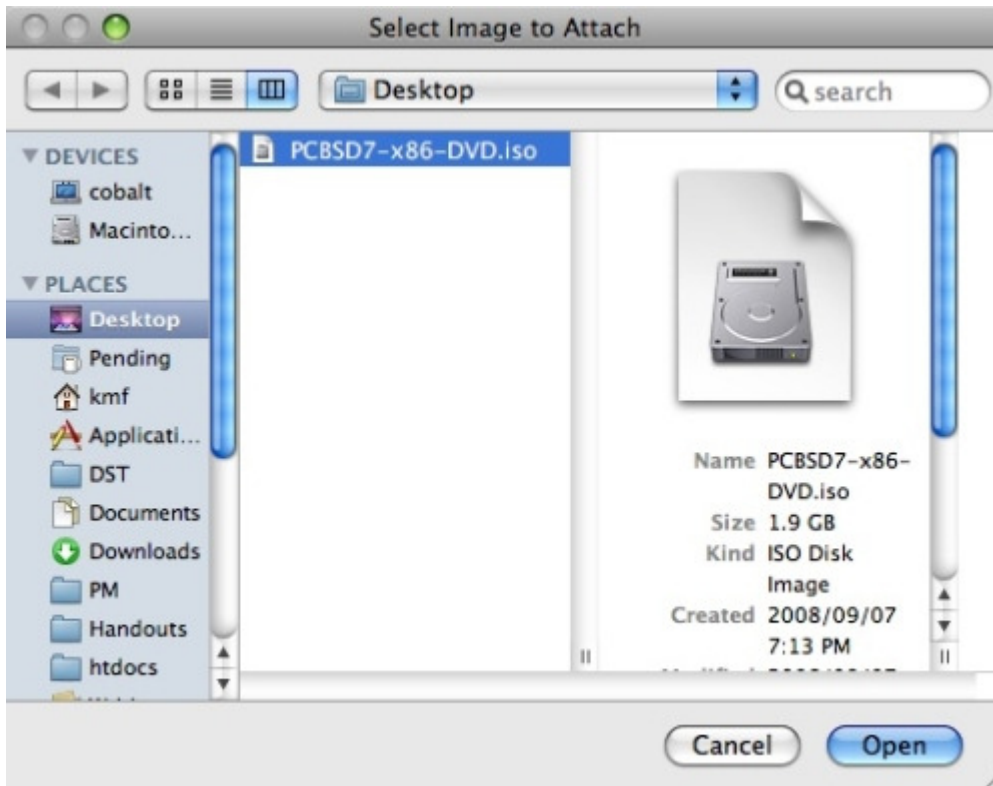
2.5.3 Burning a ISO image on a Mac OSX system

Launch 'Disk Utility' located under 'Applications' -> 'Utilities'
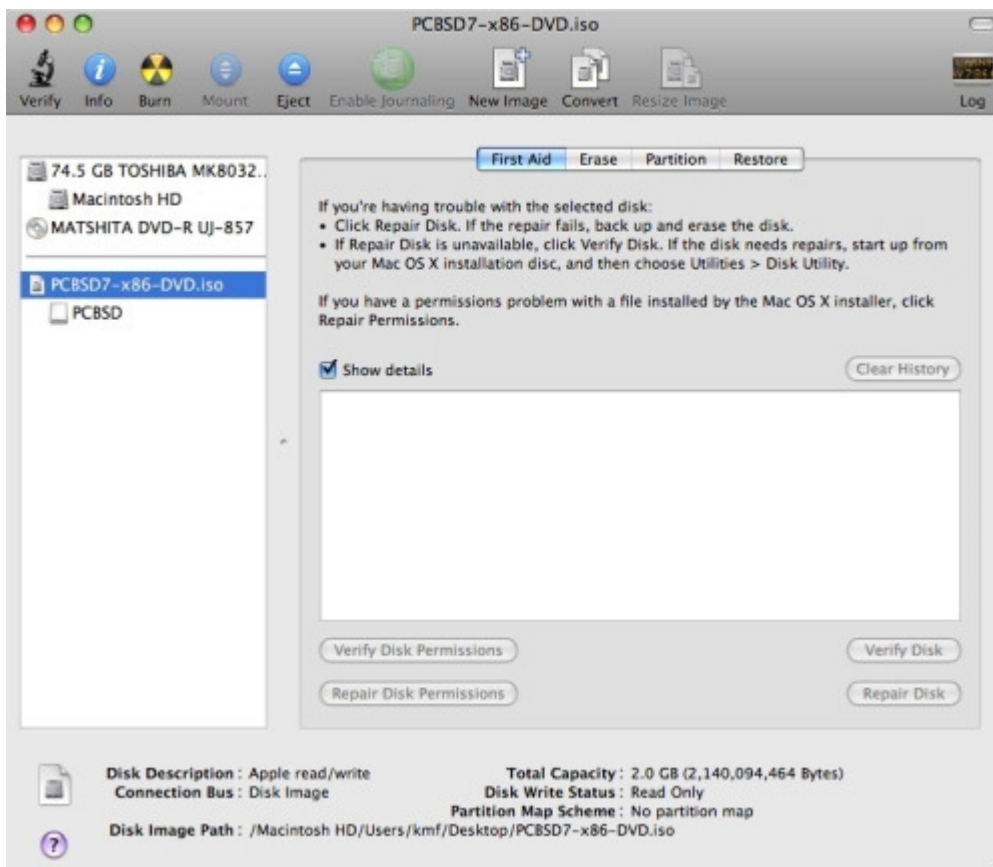

Click to magnify.

Click on 'File' then on 'Open Disk Image...' then browse to the location of the ISO image.
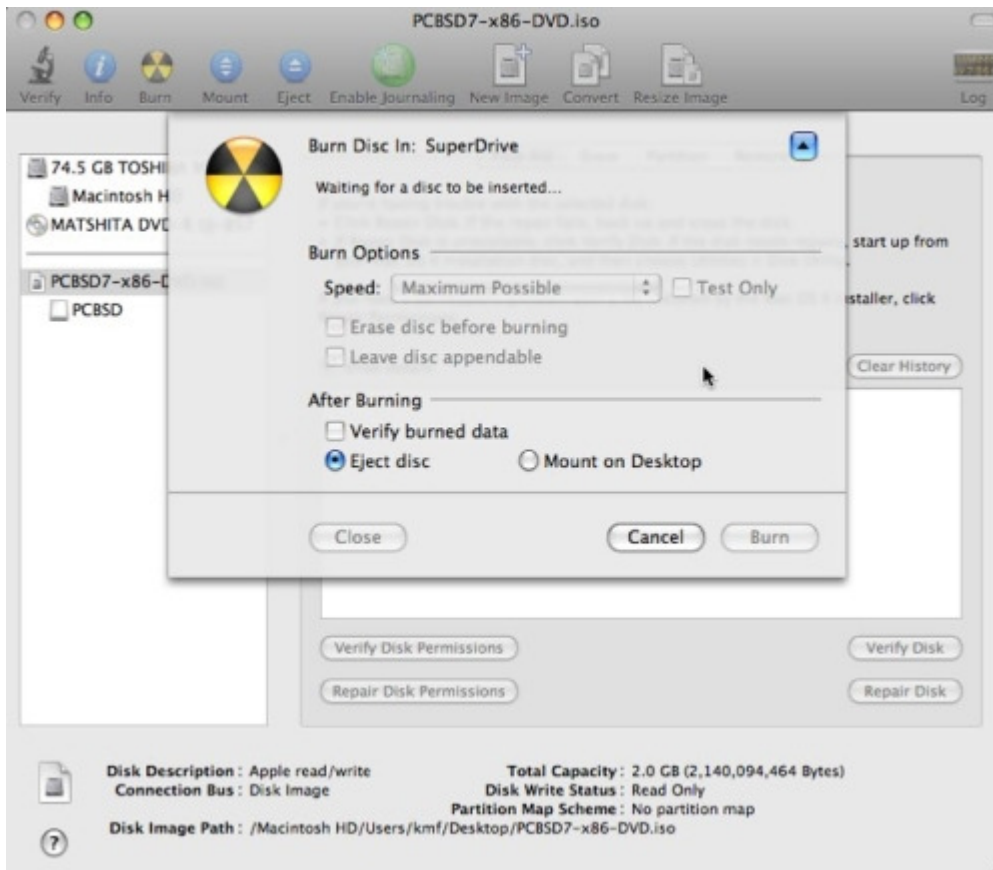Select the ISO image and click 'Open'.

Click to magnify.

The ISO will be displayed in the right hand side pane. Select the ISO image and click the 'Burn' icon.

Click to magnify.

The insert the appropriate media, check the 'Verify burned data' if applicable and click 'Burn'.

Click to magnify.

2.6 Writing the ISO to Flash media

To write the USB ISO file to a Flash Card or USB pen drive you can do this with the Unix command 'dd':

```
dd if=<path_to/img_file.iso> of=/dev/da0 bs=1m
```

Just substitute da0 with the device name of your USB stick.

2.7 Partitioning the hard drive

PC-BSD doesn't come with a built-in partition manager. If you're planning to install PC-BSD on a partition, partitions have to be created before installing. **Before creating or editing any partitions, make sure you back up your valuable data first.**

PC-BSD can be installed on a PC as the sole operating system; this is the easiest way. Most people probably want to be able to run Windows or Linux (or both) and PC-BSD on the same computer. To accomplish this the hard drive need to be partioned, i.e. the disk has to be sectioned on parts for each of the operating systems (what is disk partitioning?)

So, there are two options for installing PC-BSD:

- PC-BSD taking the whole hard disk drive
- PC-BSD installed on a partition of the hard disk drive with another operating system on another partition (dual boot, triple boot, multi boot)

Before you do any partitioning, ensure you have backed up all your valuable data, especially if this is the first time you install PC-BSD and you have saved data on another partition.

Be aware that BSD operating systems, and hence PC-BSD, only recognise primary partitions and consider any logical partitions as a whole primary partition. Trying to install on a logical partition will convert your extended partition into a primary partition and erase all logical partitions of your system. PC-BSD can be installed on any primary partition; it doesn't necessarily have to be on the first one. **Be careful and make sure you have a backup of your data.**

There is a quite a number of partition managers available, of which two Live CDs are particularly useful and user friendly: PartImage and PartedMagic.

Now that you have a CD-ROM with the latest version of PC-BSD, let's go through the installation!

3 Installing PC-BSD

PC-BSD can be installed from installation CD-ROMs and used on a 'real' PC, or it can be downloaded as an VMware Player image and be run as a 'virtual computer' within Microsoft Windows. A Live CD is not available as yet.

3.1 Installation from CD/DVD or USB

3.1.1 Introduction

The PC-BSD installer has made installing a Unix-like operating system as easy as installing Microsoft Windows. When installing PC-BSD you don't need to use the command line or text-based installers, neither do you have to manually edit configuration files.

The installation of PC-BSD is a fast, easy and straight-forward process with a pretty looking Installer. An easy-to-use wizard will take you step-by-step through the whole process by asking a few simple questions and after a few minutes you will have your system up and running. Though the installation process has been made as short and as easy as possible, there are still some advanced options available for power users.

3.1.2 Starting the PC-BSD Installation

Now, let's start the installation.

Ensure that your CD/DVD drive is configured in BIOS as a boot device and power on your computer.

As soon as you can, put the installation CD in the CD/DVD drive, or put a USB pendrive in one of the USB ports. After a couple of second, a series of lines of code will scroll down the screen, meaning that PC-BSD is being loaded.

If your computer didn't boot PC-BSD but rather loaded as usual, press the F8 or F12 key until you see a screen to select the drive of your choice to boot. You may have to edit your BIOS or CMOS settings to change the boot order of all the bootable devices on your system. When you get a screen to select which drive to select your drive of choice to boot, select the CD-ROM drive, based on its hardware name, which should load PC-BSD immediately. Soon after, you should get a screen with the following options:
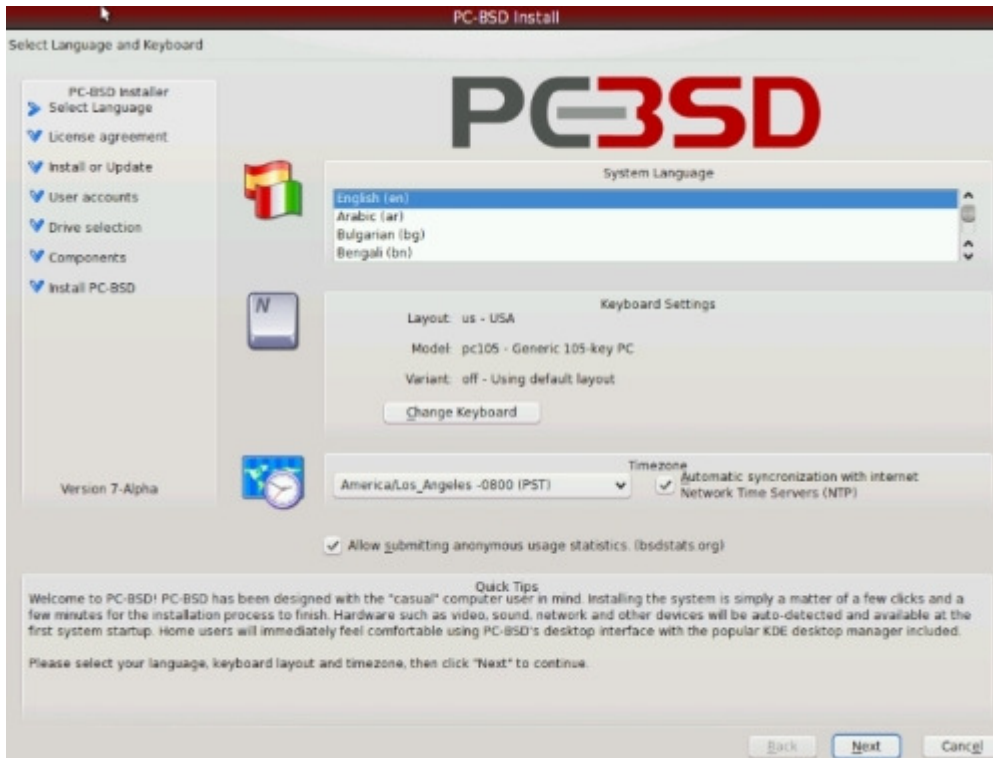

Click to magnify.

There are in total 9 options to choose from:

1. **Boot PC-BSD [default]** - Normal bootup, start with all standard options enabled.
2. **Boot PC-BSD with ACPI disabled** - This disables the ACPI device / power management, which may be useful for certain newer BIOS's and laptops [advanced]
3. **Boot PC-BSD in Safe Mode** - Boot up PC-BSD with a forced PIO mode (disabling the use of DMA) and disables write caching for all IDE hard drives and CD ROM drives, disables the probing of EISA slots (as very few systems have them), and in i386 it also disables the use of ACPI and the APICs.
4. **Boot PC-BSD in single user mode** - Boot to a shell prompt right after the kernel is finished loading.
5. **Boot PC-BSD with verbose logging** - This option displays much, much more detail during the boot process.
6. **Boot PC-BSD to emergency console** - Boot to a PC-BSD emergency text console, which can provide access to the hard drive, and allow fixing critical system failures.
7. **Run installer in VESA mode** - Disable trying to auto-detect the video card driver, and instead default to VESA mode. Useful when option 1 fails to bring up the GUI installer.
8. **Enable installer ZFS support** - This enable Sun's Zetabyte File System. This is for advanced users.
9. **Escape to loader prompt** - Drop to the boot loader prompt to issue advanced commands, such as changing kernels, etc.

Option 1 ("Boot PC-BSD [default]") is recommended for most users; Simply hit "Enter" or "1" to start the installation.

3.1.3 Select your Language

The next screen is the actual system installer with the first options:

Click to magnify.

As you can see, the installer is divided into four logical areas:

- The left pane with the different steps of the installer, showing the current and completed steps with a different arrow;
- The main area in the centre where the installer expects user input;
- The quick tips at the bottom, always here to help you, to explain what each field means, and how to fill in the fields;
- The bottom navigation bar where you can go forward or backward.

While at the initial pane, you must select your language, keyboard layout, and time zone. You can synchronise your clock with the Internet if you want, or re-adjust your time manually for daylight savings, if needed in the future. If your keyboard is listed with the wrong details, click the "Change Keyboard" button to change the keyboard model, layout and variant.

PC-BSD supports the BSDStats.org Project which collects different statistics and data (such as version, country and CPU) about the use of different BSD flavours and the hardware they run on. By default the "allow submitting anonymous usage statistics" box is checked. By leaving the checkbox ticked, PC-BSD will anonymously submit some data about your system to BSDstats.org. It's recommended to keep this setting "on" so the growth and size of the BSD community can be measured. However, if this setting is turned off at this stage and you change your mind later, you will have to manually install the bsdstats port (/usr/ports/sysutils/bsdstats).

3.1.4 License Agreement

When done, click the "Next" button to proceed to the license agreement:
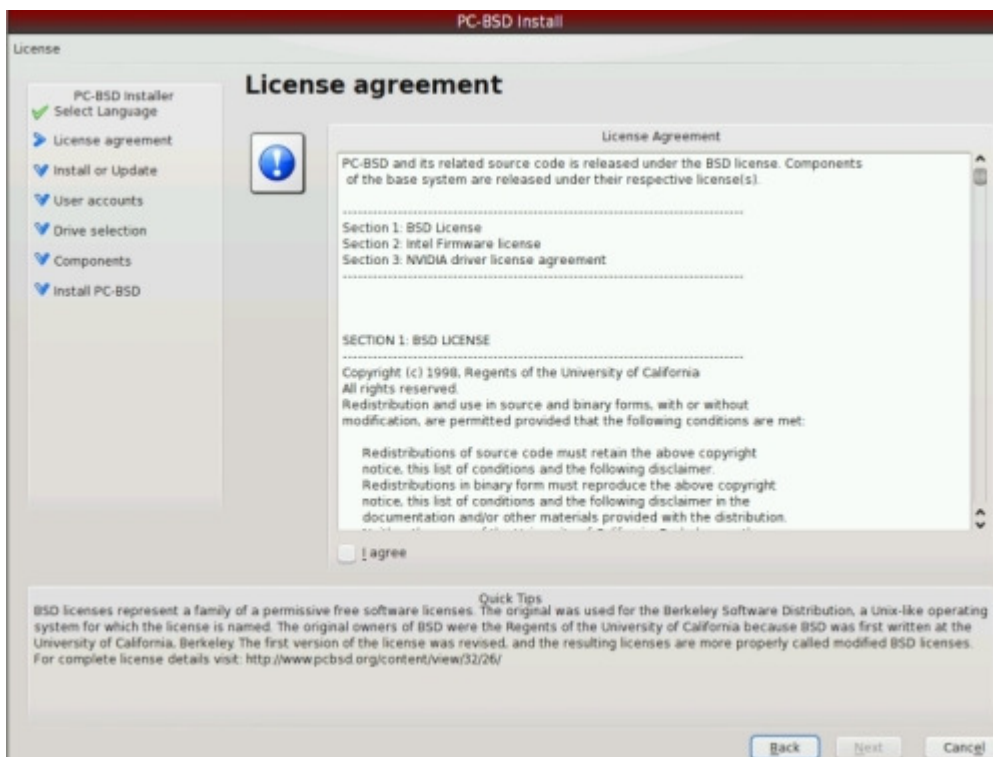

Click to magnify.

This step requires you to accept the license agreement. PC-BSD is free and open-source software, based on the BSD license. You need to accept that there is no warranty whatsoever in case of loss of data.

PC-BSD comes with proprietary software such as Nvidia video card drivers and Intel firmware. In order to use these you need to read the agreement and accept it in order to proceed with the installation. By ticking the "I agree" box, you agree to all licenses.

3.1.5 Install choice
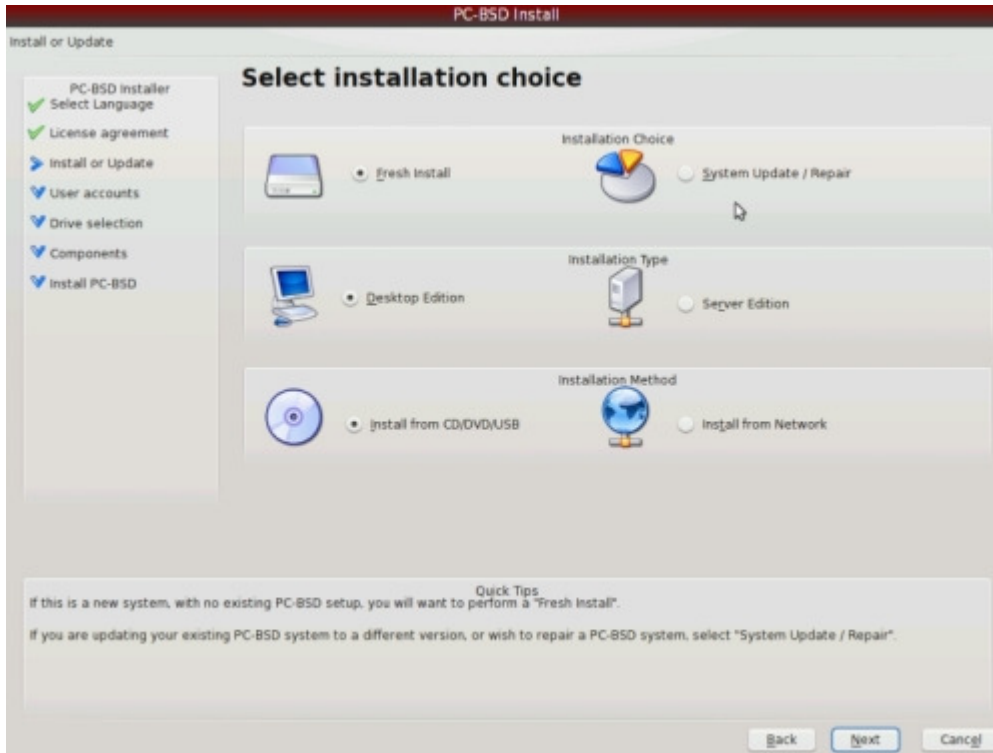
On this screen 3 choices have to be made::

- Fresh Installation or System Update / Repair
- Desktop Edition or Server Edition
- Install frm CD/DVD/USB or install from Network

Select the "Fresh installation" option in the following cases:

- You don't have PC-BSD installed on your computer yet, or
- You already have PC-BSD on your computer installed but you want to reinstall it and erase all the content of the PC-BSD partition
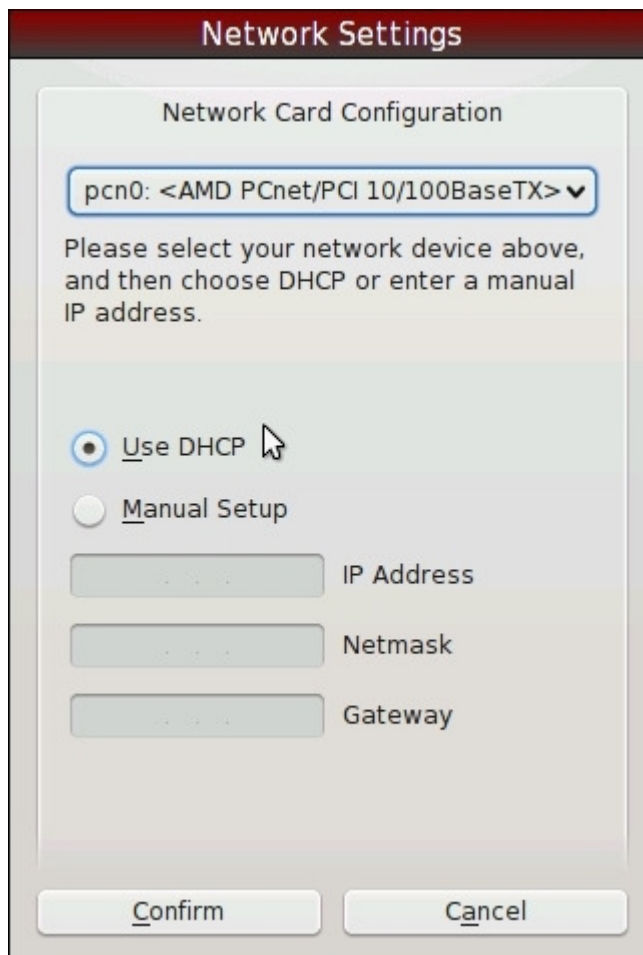
Select the "System update / Repair" option if PC-BSD is already installed on your PC, and

- you want to keep all your files and
- you want to reinstall or upgrade to a newer version of PC-BSD

The difference between Desktop and Servers version is that installs all of PC-BSD but adds the Wine PBI, secures the firewall, blocks SSH and other ports. A server install disables the X Windows Manager (but leaves it installed if the user wants to enable it for something), opens the firewall to allow incoming SSH, and installs a copy of "The Warden" for jail management.

To install PC-BSD from CD/DVD or USB, leave the "install from CD/DVD/USB ticked, but network

administrators can install PC-BSD from the installation server ("Install from Network"). When the "install from Network" option has been chosen the network settings can be entered and the installation source be selected after a user account has been created (3.1.6)
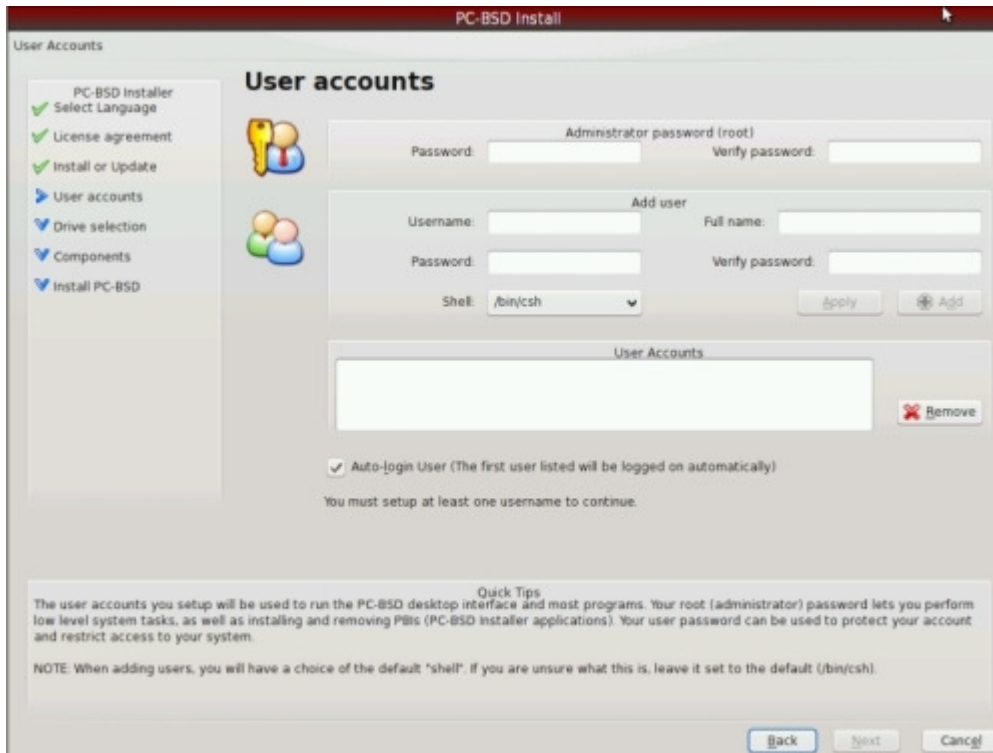

When you are done, click "Next" to go to the next step:

3.1.6 User Accounts

In this step, an Administrator account (or "root" account) has to be created, as well as at least one user account. Similar to other modern operating systems, PC-BSD has mainly two levels of administration:

- Administrator-level: Full control over the entire system, can manage files, software and users (add/edit/remove);
- User-level: Control limited to user's directory, cannot install applications system-wide, cannot edit files outside user directory

It's good to be aware that the administrator has all system privileges and has access to all parts of the operating system. Using a computer as an administrator can be dangerous because mistakes can have system-wide consequences, especially when using the command-line.

To install software, for instance PBIs, the root password is required, so when you're installing a PBI and you're prompted for a password, enter the root (administrator) password.

Using a computer as user is much more secure, and if damage is done, it will be limited to the user's directory. This is why at least one user account needs to be created, which you will use to log into PC-BSD. Note, that it is not possible to log into PC-BSD as administrator. When you have filled in the information for the new user, click the "Add" button, and the user account should appear in the "User Accounts" field underneath. You can click a user name at any time and modify the details; clicking "Apply" will save the changes.

You can leave the "Shell" field as it is. This option is used by power users who can choose which shell to use by default to interact with the heart of the system using the terminal. The shell is to PC-BSD what MS-DOS was to MS Windows.

If you're security conscious or if you share the PC with others and you don't want others to access your files, unmark the checkbox for auto-login.

Make sure you remember your user name (which is CaSe sensitive) as you won't be able to choose from a list of user names when you log on!

Click "Next" when the administrator account has been created and at least one user account has been added, to go to the next step:

3.1.7 Drive Selection
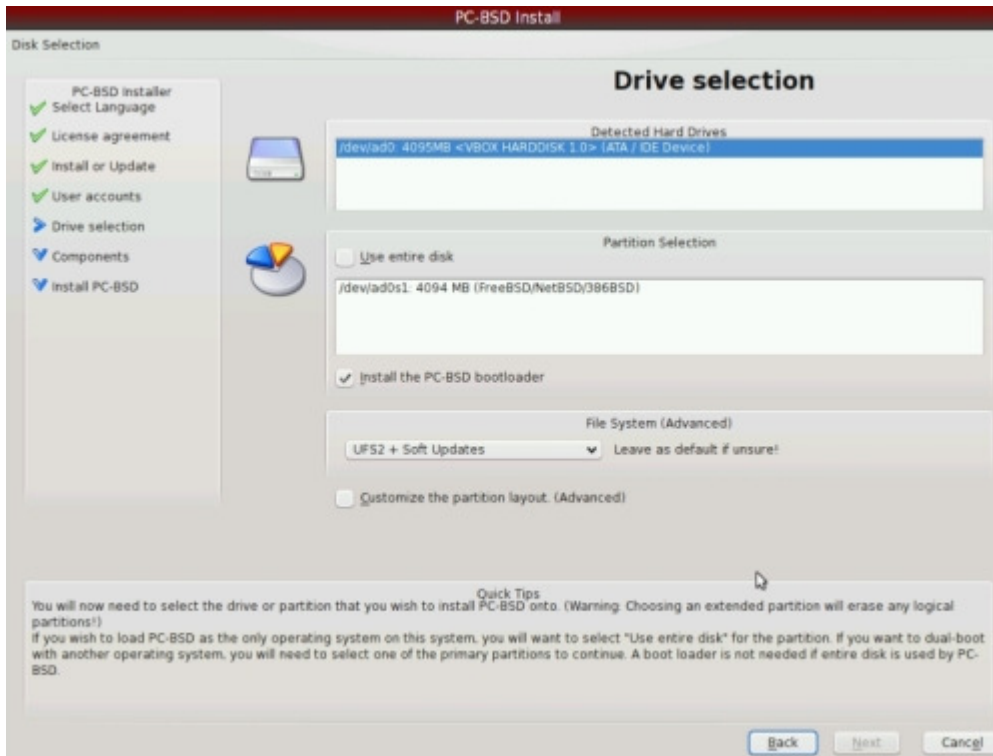
Click to enlarge.

This step allows you to select which physical hard disk drive and which partition are going to be used for the installation. The "Detected Hard Drives" field lists the disks that PC-BSD has found during boot up, from which one needs to be selected. If you want PC-BSD to use the entire disk, for instance if you don't have any other operating systems on your PC, and no separate partition is used to store documents, you can check the "Use entire disk" option underneath to use all disk space of your hard disk drive. Be very careful when you select "Use entire disk" as it will overwrite all partitions!

In FreeBSD, and hence PC-BSD, each partition has a code in front of them, such as /dev/ad0s1, which is the path to the device (dev) file. Naming convention is as follows:

- ad0 or da0 means "first drive"
- ---s1 means "the first partition or "slice" in FreeBSD vocabulary

FreeBSD, starts counting disk drives from "0", and starts counting partitions from "1". Here are a few examples:

- /dev/ad0s1 — First drive, first partition
- /dev/ad1s1 — Second drive, first partition
- /dev/da0s3 — First drive (SCSI), third partition
- /dev/da1s1 — Second drive (SCSI), first partition

You also need to select the partition on which you want to install PC-BSD. If you already have more than one partition, all of them will be listed under the "Partition Selection" box. Select the one you want to use.

If Microsoft Windows is already installed and if you wish to have PC-BSD on the same computer, check the "Install the PC-BSD bootloader" option. The next time your computer boots up, a welcome screen will allow you to select which operating system you want to use. If you wish to use only PC-BSD on your computer or if you already have a Unix-based operating system installed with a bootloader such as Grub, GAG or Lilo, uncheck this option to keep your existing bootloader. When Windows is installed after PC-BSD, the FreeBSD bootloader will be overwritten and PC-BSD will be unbootable, which can be easily fixed. More information on the boot process, the FreeBSD bootloader and troubleshooting can be found here.

If you want to make a custom partition layout mark the corresponding checkbox (recommended for advanced users only).
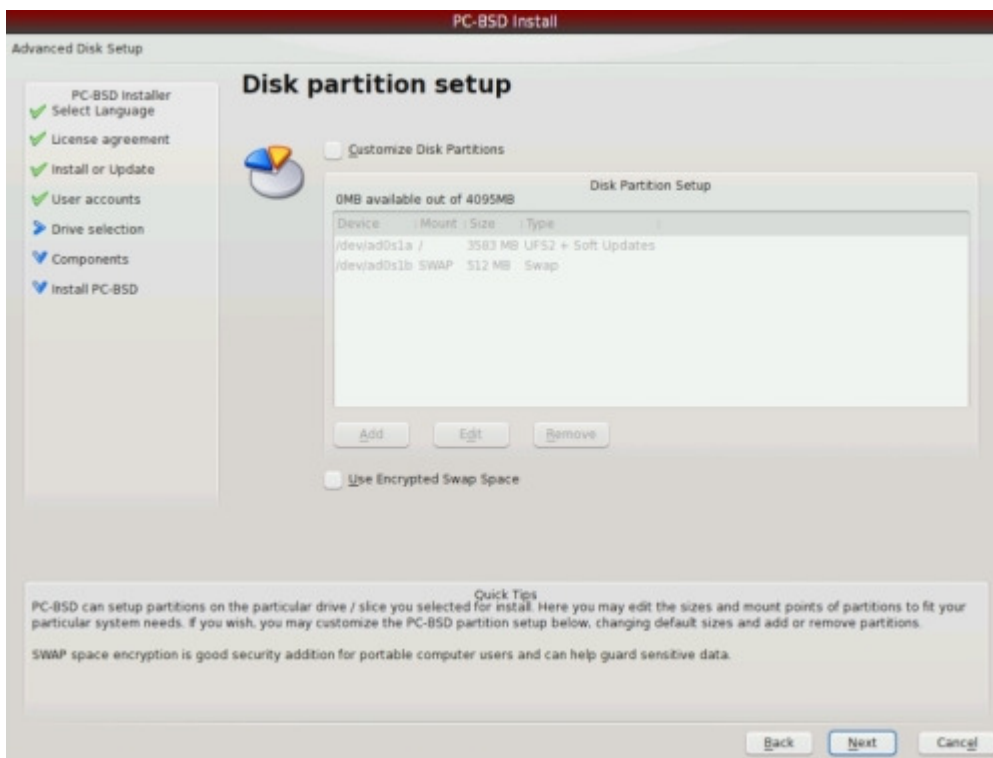
Click to enlarge.

If you marked the checkbox for a custom partition layout, you may now edit the partition layout to your needs.

On the partition editing screen the BSD disk partitions can be customised. PC-BSD (and FreeBSD) have two levels of partitioning:

- Regular partitions, also known as "Slices" by FreeBSD (ie: C:, D:, etc...);
- Sub-partitions invisibles by non-BSD systems, and known as "Partitions" by FreeBSD (ie: /boot, /var, /home, etc....)

You can keep all your mount points under "/", or you can spread them across several partitions or disks, or even across raid arrays for maximum performance. At the very least, you need a "/" partition with enough room for your files (4GB+) and a SWAP partition for virtual memory. Typically, SWAP space is

advised to be set twice as big as your amount of RAM. This is not always necessary, for instance if you have 1GB of RAM, 1 GB of SWAP is probably sufficient for ordinary users. More information and examples check the "Allocating Disk Space" from the FreeBSD Handbook.

For more security, you can check the "Use Encrypted Swap Space" option, which will not leave any passwords or credit card numbers visible in your swap space. Swap Space Encryption can also at a later stage be turned of or off with the Services Manager.

Click "Next" to go to the next step:

3.1.8 System Components
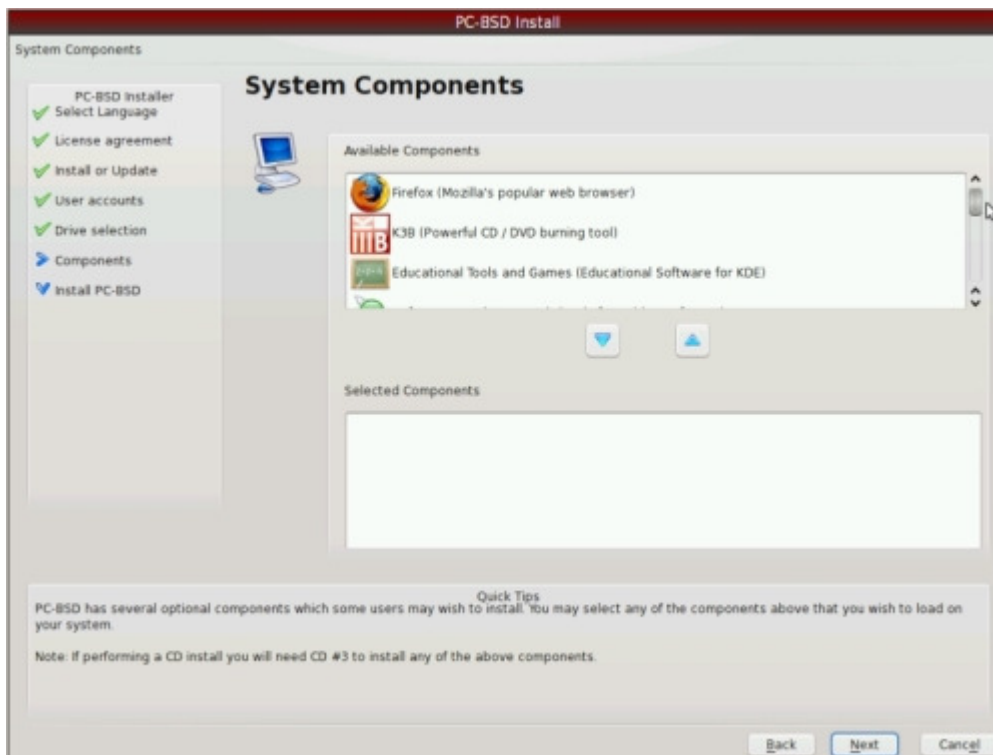
Click to enlarge.

On the system components screen one or more software packages can be selected for installation (with the blue arrows). In the "Available Components" box the most common packages are listed, plus the FreeBSD ports directory and the FreeBSD source code. Selecting and installing packages at this point saves you from downloading and installing them after the installation PC-BSD.

The following packages are available as components:

- **Firefox** (Mozilla's popular web browser) - website
- **K3B** (Powerful CD /DVD burning tool) - website
- **Educational Games** (KDE Educational package) - website
- **Games** (Arcade, Board, and Card games) - website
- **Office Suite** (The KOffice Suite) - website
- **Software** Development Kit (tools for writing software) - website
- **Desktop Toys** (Misc programs for your desktop)
- **OpenOffice.org** (Full featured office suite) - website
- **Opera** (Web Browser with BitTorrent client) - website

- **Ports Tree** (FreeBSD ports collection) - [website](#)
- **Source Code** (FreeBSD system source) - [website](#)

To be able to install any of these packages, you will need installation CD #2 (Multi-language support & Essential PBI Pack).

3.1.9 Ready to install
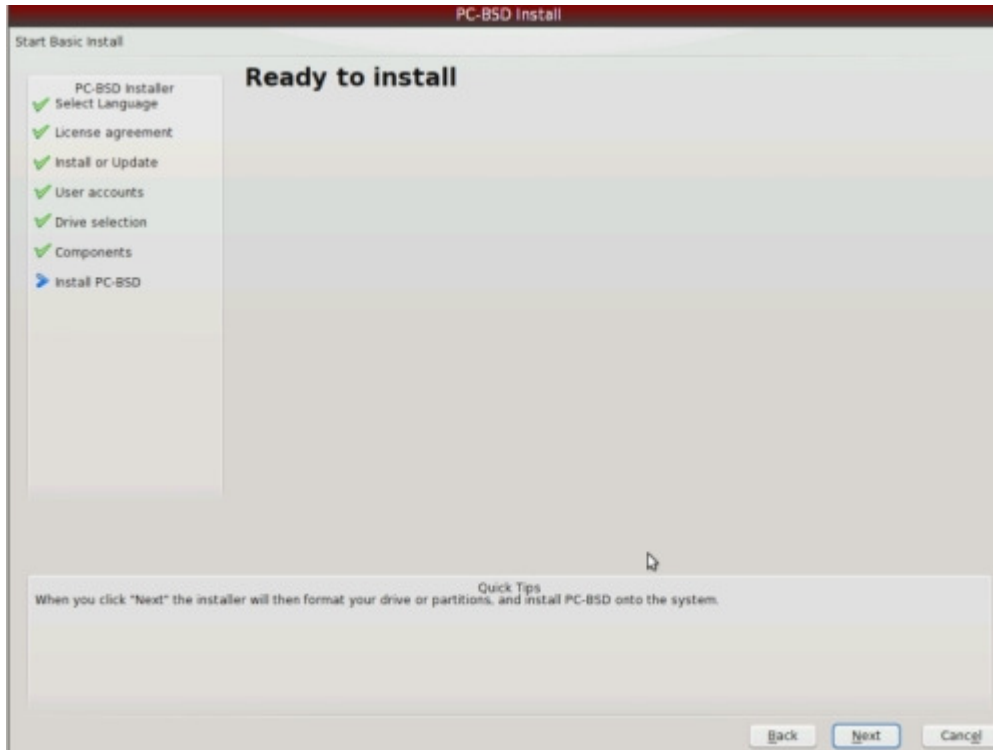
Click to enlarge.

At this point, you are about to copy all files from the CD-ROM to your hard disk drive.

Click "Next" to start the installation:
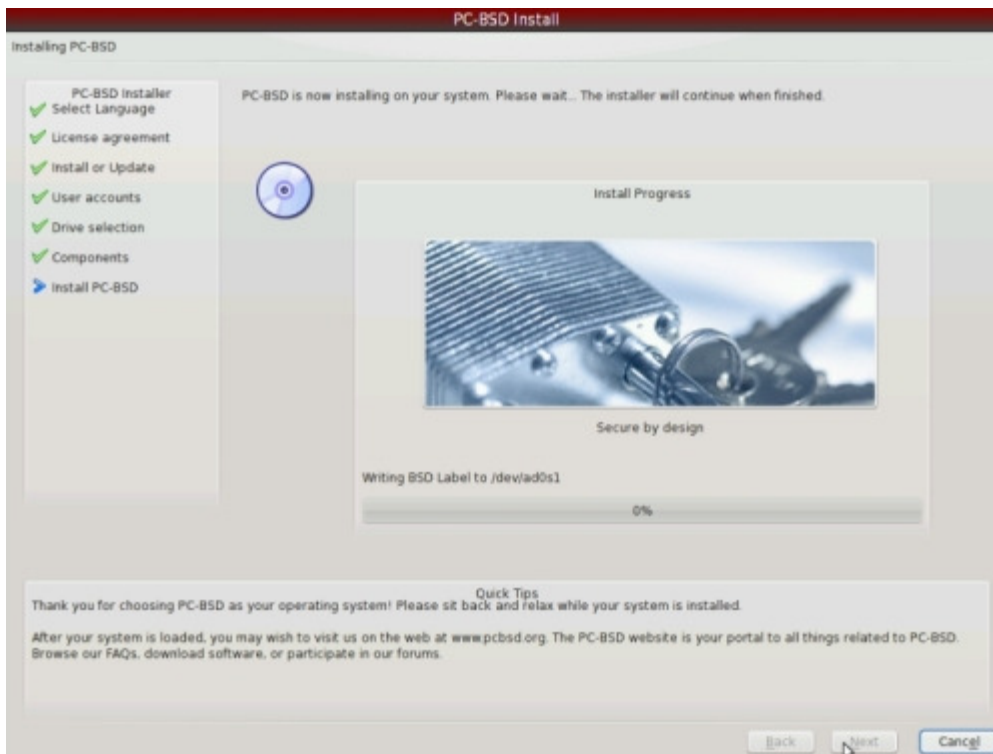
Click to enlarge

The system is now being installed. This process is quite fast. On a modern hard disk drive, it should take around 15 minutes.

If you're doing the CDROM installation and you selected one or more components, you will be prompted to insert installation CD #2:

3.1.10 Setup Complete

When you see a note confirming the installation is finished, the setup is complete and PC-BSD is installed on your computer. You can now safely eject the CD, and click "Finish" to reboot the computer. If you installed the PC-BSD bootloader, you will have to choose "FreeBSD" from the list, in order to load PC-BSD. Otherwise, your computer should load PC-BSD directly without your intervention.

3.2 Installation in Sun xVM VirtualBox

Sun xVM VirtualBox is an open source virtualiser created and maintained by Sun. VirtualBox runs on Windows, Linux, Macintosh and OpenSolaris and supports a large number of guest operating systems. The advantage of installing a virtual, guest computer is that it runs within it's own designated space on your PC, the host, so it's great for testing purposes. VirtualBox free and running an operating system within VirtualBox is reasonably fast.

3.2.1 Setting up a virtual PC

The following is a step-by-step guide on installing PC-BSD on VirtualBox.

Download VirtualBox and install it.
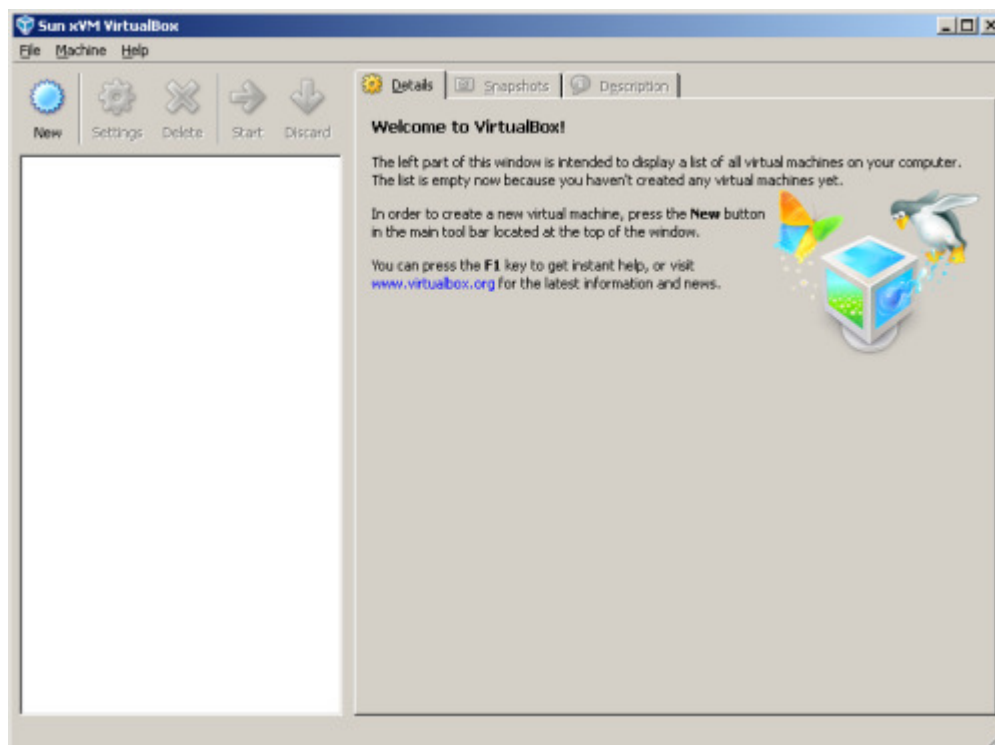
Start VirtualBox, click the "New" button to add a new operating system, read the introduction and click "Next"

Now enter a name for your operating system (this can be anything you want to call your operating system), and enter the OS Type, which is FreeBSD:
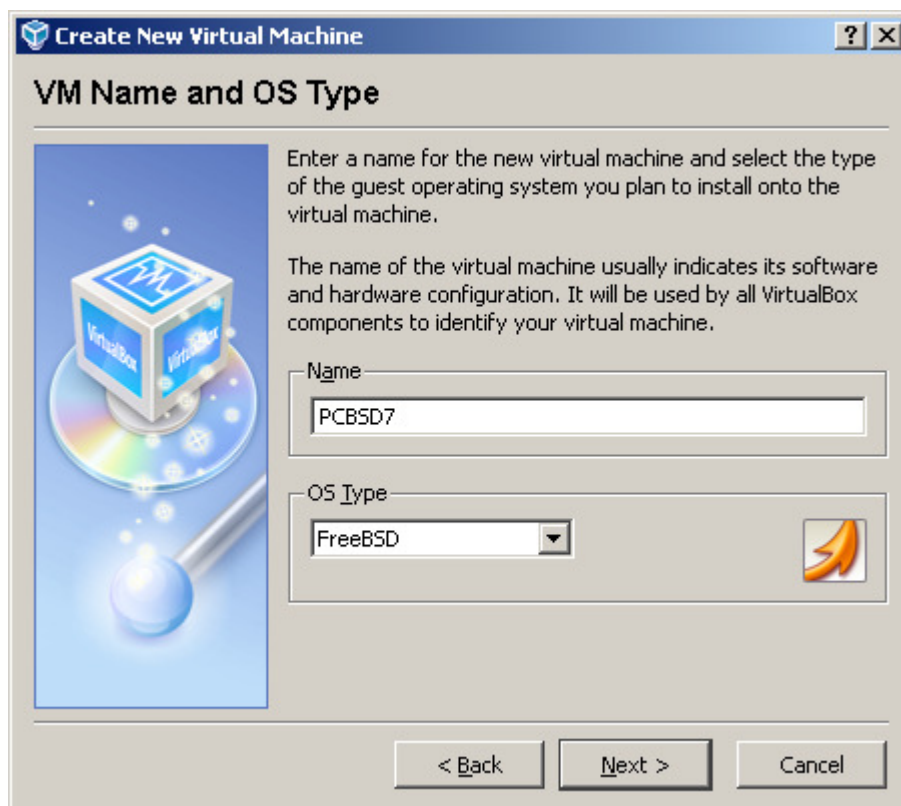
We need to set max amount of RAM for our virtual PC-BSD to use. Note that this amount of RAM is taking off your host PC's RAM, so keep it balanced, i.e. if Windows uses 1Gb RAM you can assign 384Mb to PC-BSD:
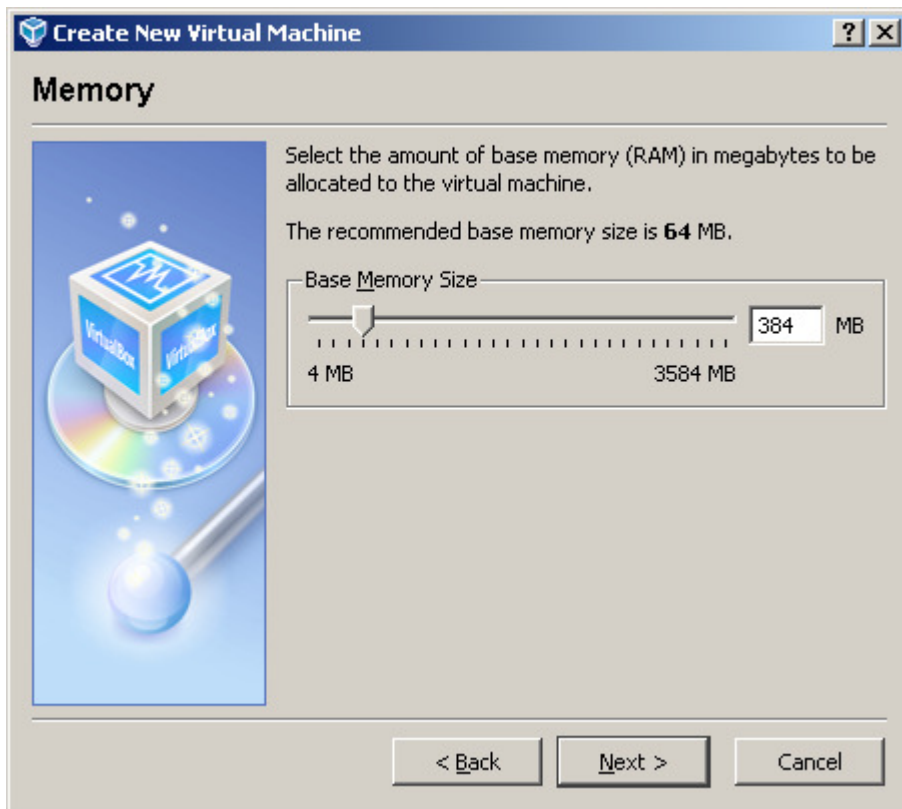
The next steps allows you to set up a virtual hard drive. Click "next" and then "new" to setup this hard drive. When the New Virtual Disk Wizard shows up, click "Next". Choose now wether you want a "Dynamically Expanding Drive" or a "Fixed-size Drive". The first one expands when your guest operating system, i.e. PC-BSD, grows; the second option reserves the specified amount of disk space for the guest operating system, whether it's going to be used or not. The last options tends to result in your guest operating system running faster than running it in a Dynamically Expanding Drive. Note that you're not going to see another drive in Window, e.g. a E: Drive, but VirtualBox creates a 6Gb file on your Windows hard disk which it's using as virtual hard drive.
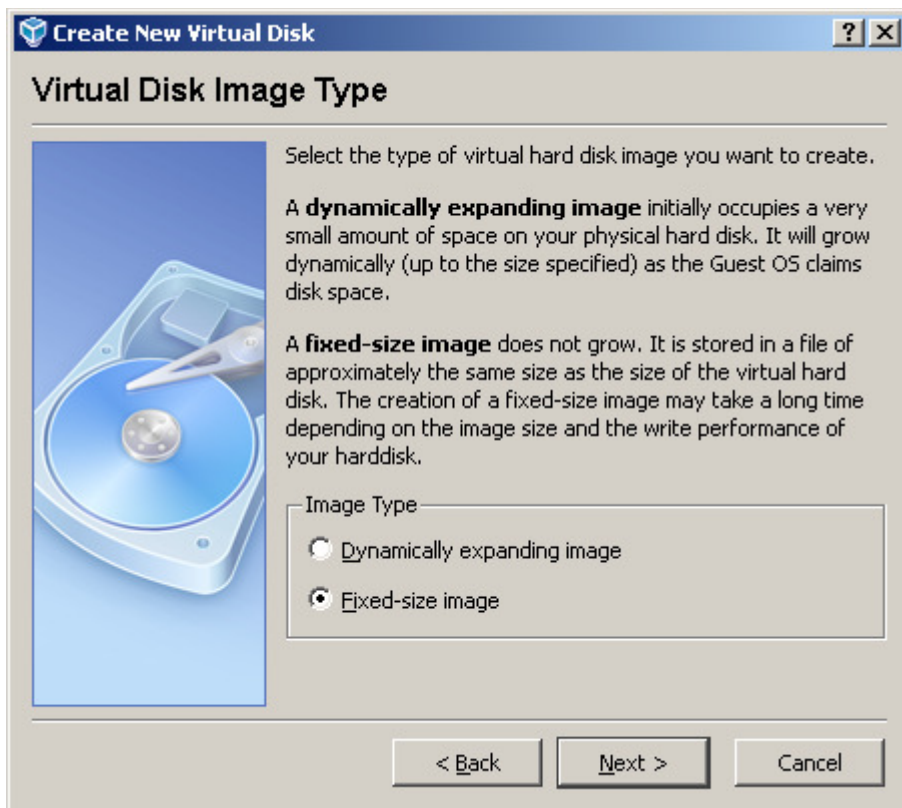
Give the drive a name or leave the name that the Wizard is showing and set the size. The recommended minimum size is 6Gb, especially if you install the DVD version. Click "Next" and finish the wizard.
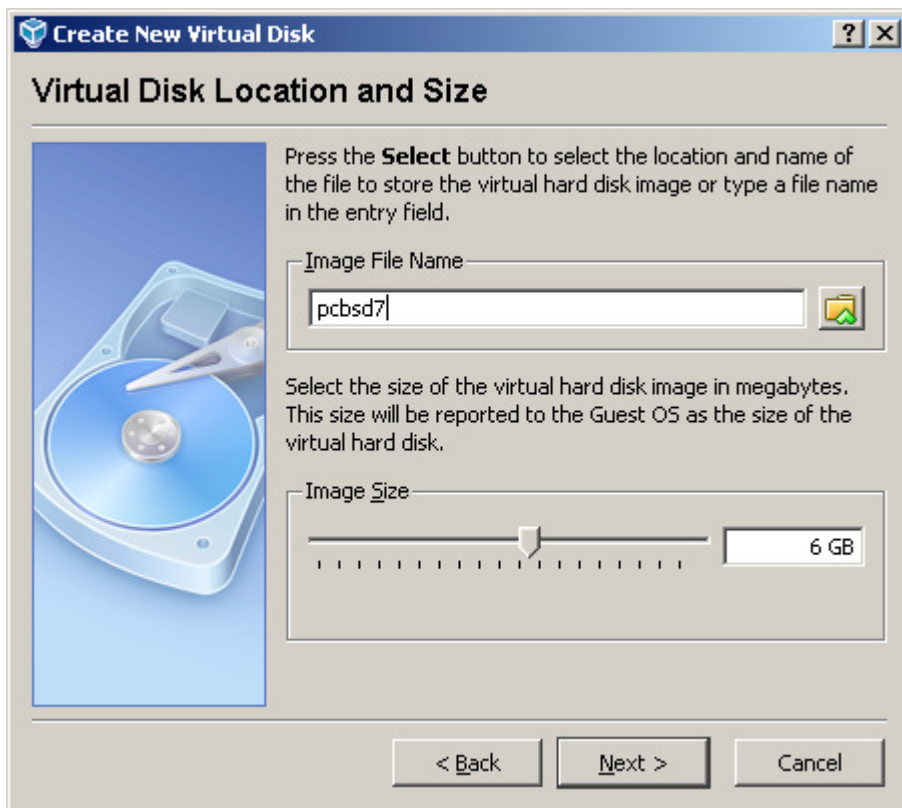
Now you should be back on the "Virtual Hard Disk" Screen and your new Hard drive should be listed under "Boot Hard Disk (Primary Master)".

Click "Next" to go to the Summary Screen and "Finish" to complete setting up the virtual PC-BSD computer.
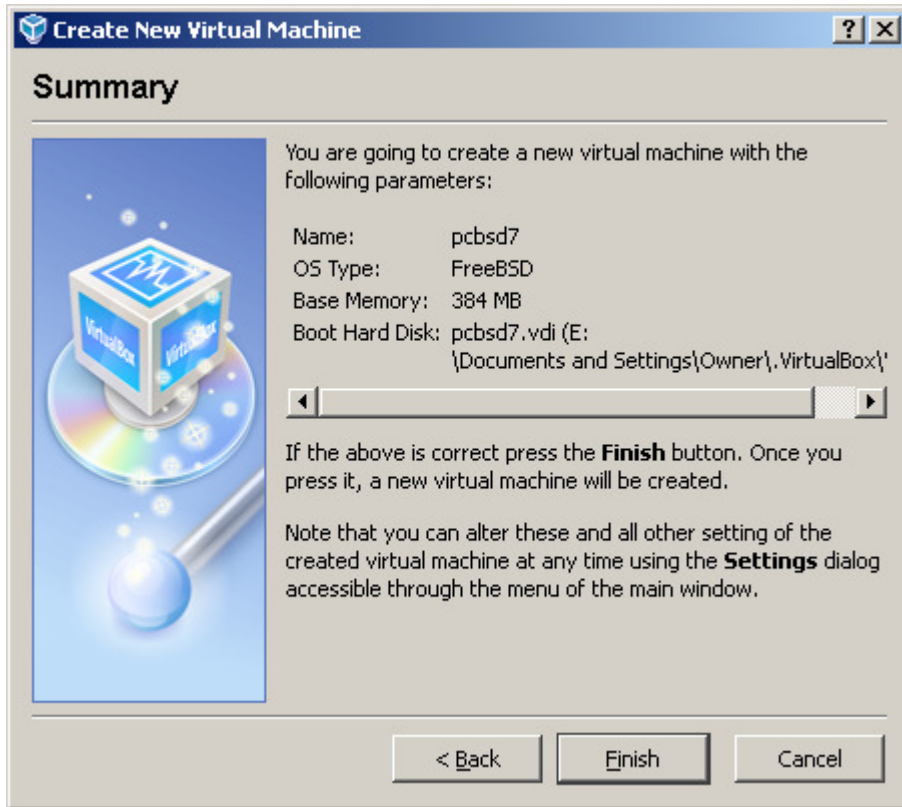
3.2.2 Installing PC-BSD

In the previous section we set up a virtual PC; now we're going to boot it up and start the installation from the CD/DVD drive or straight from the downloaded iso file:

On the main VirtualBox screen, select your PC-BSD from the side and click the "settings" button. You can make changes to the RAM etc. Make sure you assing enough video memory, otherwise KDE won't start up (8Mb is not enough, try at least 32Mb if possible)

On the left hand side, select "CD/DVD-ROM" and tick the "mount CD/DVD Drive". When you have burned a copy of the PC-BSD installation CD/DVD, select your station and put the CD/DVD in the station.

Alternatively, if you have not burned a CD/DVD you can boot up from the downloaded iso file. Just tick the radio button before "ISO Image File" and locate the file (you will need to add the iso as a CD/DVD image on the following screen)
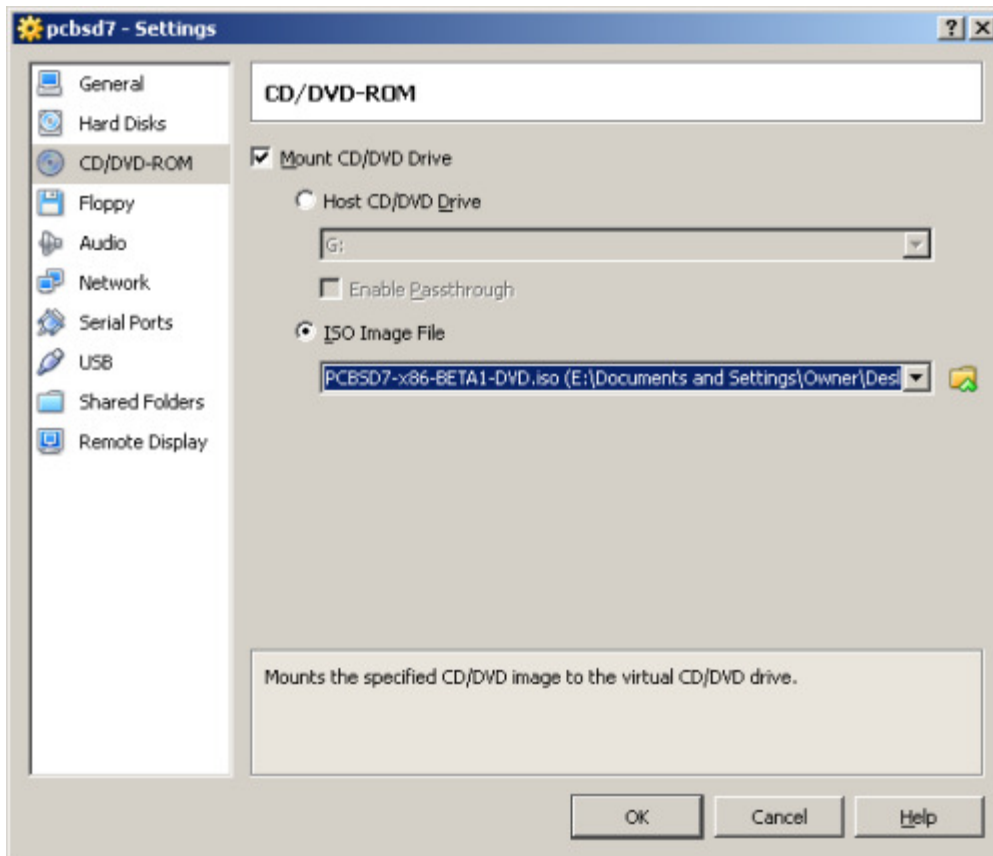
Click to enlarge.

Click OK and you're all set up to boot up the PC (press the green arrow) and the installation. The installation will just be the same as 3.1 Installation from CD/DVD or USB.

When the installation is finished, untick the "mount CD/DVD Drive" button in the Settings window.

3.3 Installation in VMware Desktop

to be added

4 First boot and Post Installation

At this point PC-BSD you have installed PC-BSD onto your PC. A few more steps are needed to start KDE/X Window manage and then we'll show you how to install more fonts, codecs, java, etc.

4.1 Starting up PC-BSD for the 1st time

4.1.1 Boot up selection

PC-BSD shows a boot up menu with eight choices when starting up. Most of them are identical to the options shown during booting up the PC-BSD Installation CD (see above). However, instead of "Boot PC-BSD to emergency prompt", option 6 is now "Run installer in VESA mode". This is the option to choose should you get a black screen or in case you have problems with the screen resolution stopping you from using KDE.

4.1.2 Display Settings

After the installation, during the first startup, you will need to select your desired screen resolution, color depth and the video driver. For your monitor's native (or optimum) resolution and the colour resolution check the screen's documentation or the manufacturer's website. The video card driver can be selected from the "video driver" dropdown list. To find out what driver you should use, have a look at the list of common graphics cards and drivers.
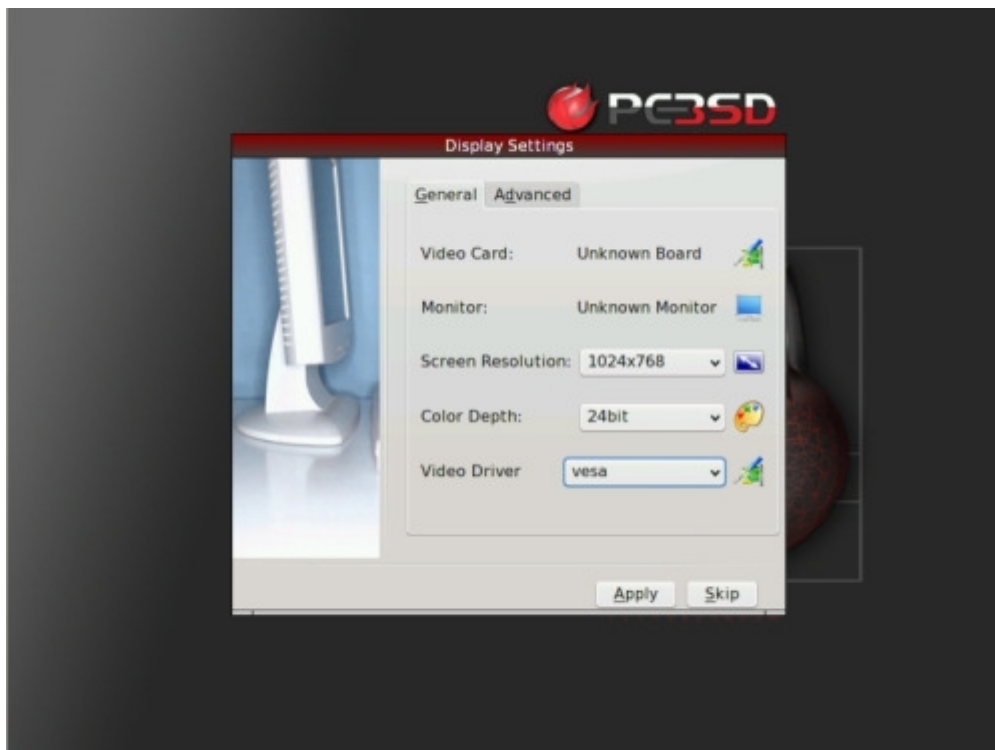
Click to enlarge.

Optionally, the settings for the horizontal synchronisation and the vertical refresh can be set and adjusted on the "Advanced" tab. To add the horizontal and vertical frequency, mark the "Monitor Settings" tickbox, and enter the details (which, again, can be found in the monitor's documentation or the manufacturer's website).
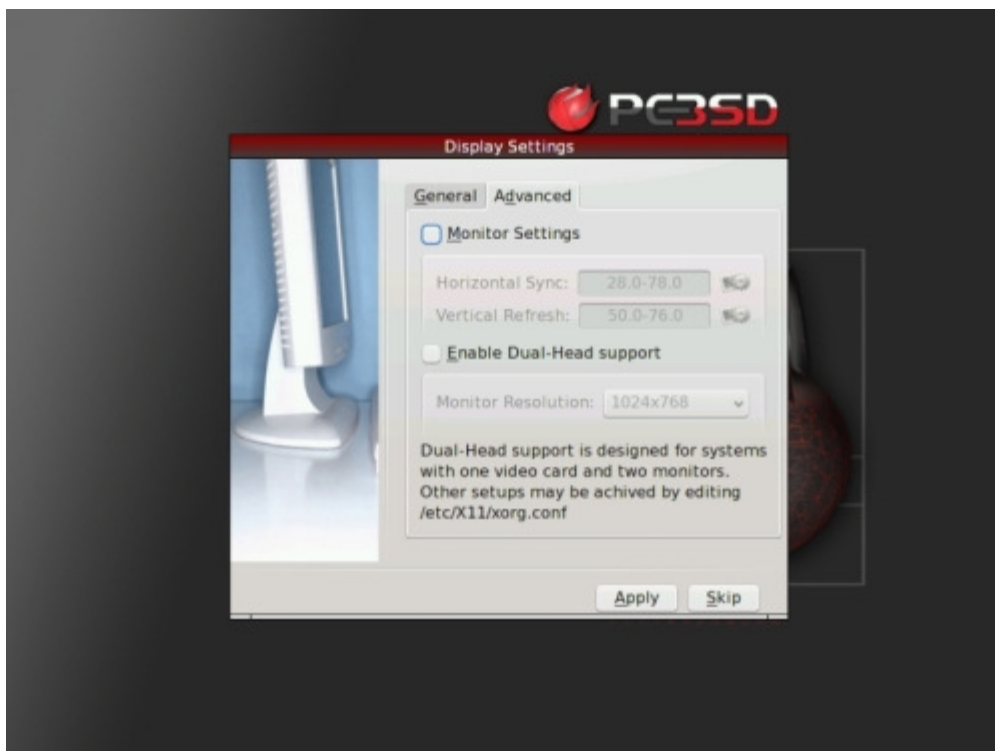
Click to enlarge.

When you have entered and selected the different settings, click "Apply" for them to be saved and tested. If anything goes wrong during testing, you will be taken back to this "Display Settings" screen, so

you can amend the details. If you're happy with the resolution, click "Yes" in the next step. Click "No" to return to the "Display Settings" screen.

4.1.3 Logon to PC-BSD

After having set up the screen settings and the video card you can log in with the user account details as set up in 3.1.6. Optionally, you can adjust some session related settings at the bottom on the right.

If you marked the "Auto-login User" in 3.1.6 then you won't see this login screen and PC-BSD will launch the KDE desktop environment without prompt. Either way, whether you logon manually or automatically, next you see the KDE splash screen:

PC-BSD is now up and running. Welcome to the desktop.
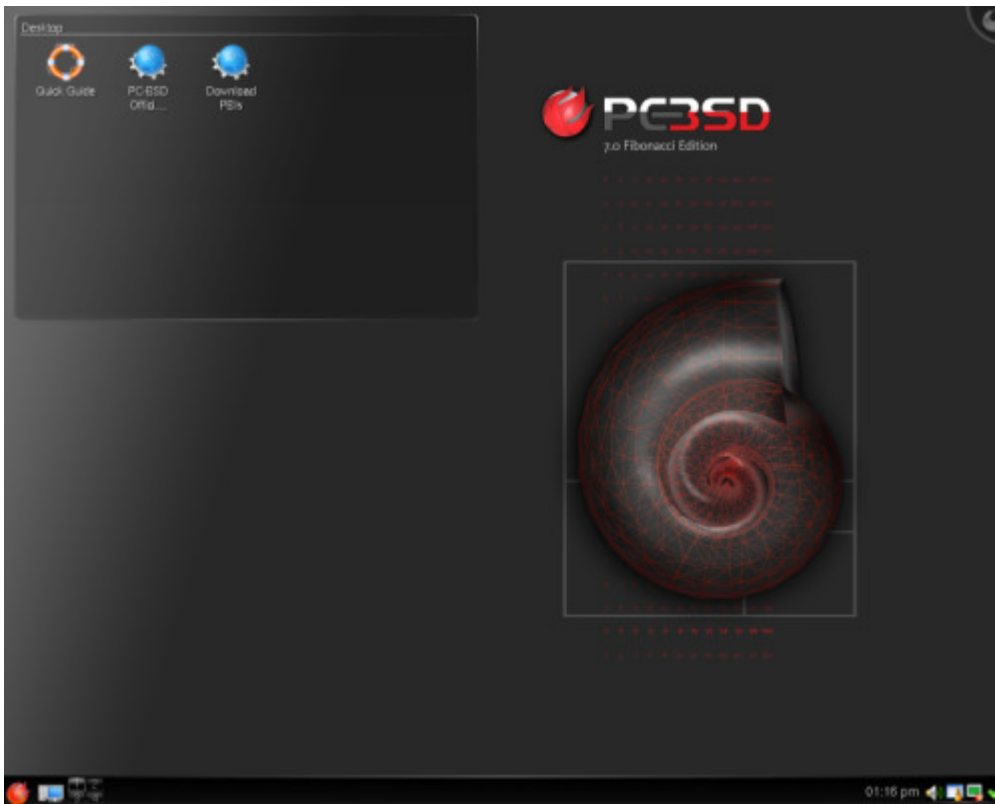
Click to enlarge.

s you will see, PC-BSD comes pretty much tailored with the common user in mind. Most will have little to change in PC-BSD's configuration if any. There are still several things that some people like to change that we have listed here for you.

4.2 Installing applications

Like popular commercial operating systems, PC-BSD makes software installation a breeze. The same way Microsoft Windows uses a `setup.exe` or `.msi` file and Mac OS X uses `setup.dmg`, PC-BSD uses an executable setup file with a `.pbi` extension, standing for PC-BSD Installer.

- Search for an application on a `.pbi` web site such as the PBI Directory

- Download the executable `.pbi` setup file onto your computer
- Double-click the `.pbi` file and click "Next" all the way

It is this simple. Common software that people like to install are OpenOffice.org, the codecs (to play MP3 and video), or different browsers such as Opera or Firefox.

To find out all the ins-and-outs of installing software on PC-BSD, go over to chapter 7.

4.3 Installing more fonts

It is easy to add more fonts in PC-BSD. There are two ways to install fonts:

- Using a fonts `.pbi` file: Access a web site such as the PBI Directory, search for "fonts", download your `.pbi` file, double-click it and install the fonts. Log out from KDE and log back in. You should be able to use the new fonts
- Using regular TrueType font files: Download your `.ttf` files onto your desktop, then copy them to your hidden `.fonts` directory. This can be achieved using the font installer as follows

Click the lower-left Start Menu (red ball) and click "Settings > System Administration > Font Installer". The Font Installer will show up:
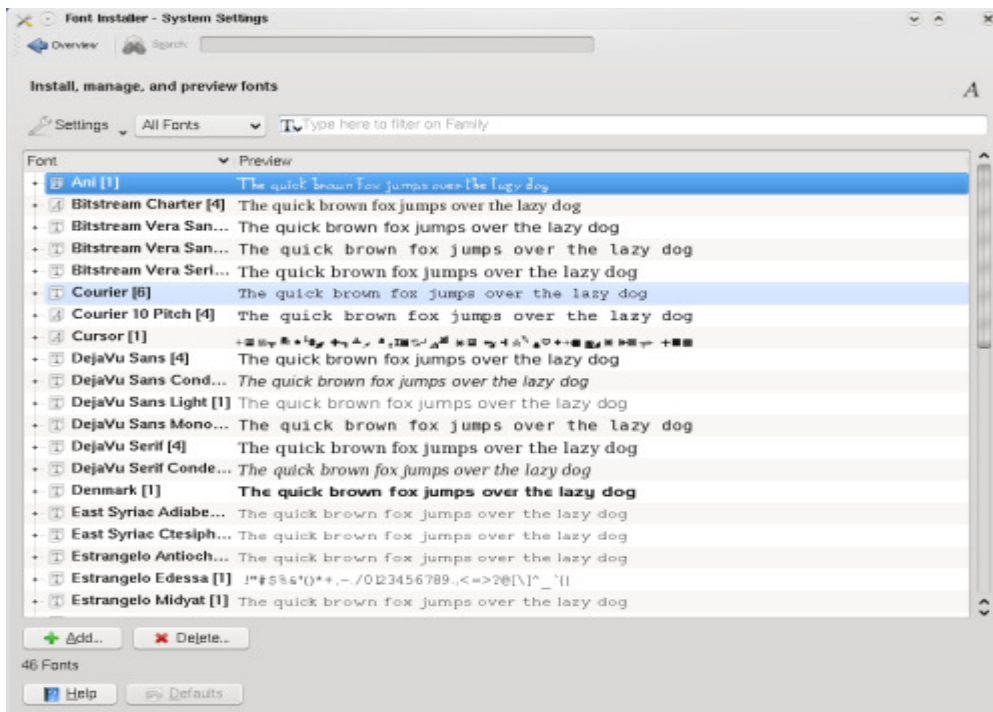
Click to enlarge

Click "Add Fonts", select your new fonts, and add them. When you are done, click "Ok". You will need to log out from KDE and to log back in for changes to take effect.

Windows users may feel more comfortable using the Microsoft fonts that can be accessed on the PBI Directory. After installing these fonts, PC-BSD's fonts will look like MS Windows'.

4.4 Java

The FreeBSD Foundation has a license with Sun Microsystems to distribute FreeBSD binaries for the Java Runtime Environment (JRE) and Java Development Kit (JDK), which means it is also available for PC-BSD. Should you need Java for playing games, for online banking or anything else, download the Java PBI, install it and you're ready to use it.

4.5 Codecs

For license reasons we cannot ship multimedia codecs with PC-BSD. If we did ship codecs, you could watch movies out of the box, but PC-BSD wouldn't be free of charge. Apple and Microsoft have paid for codecs and are therefore legally allowed to redistribute them. Another reason why we cannot ship codecs is that this is illegal in some countries, e.g. the United States. It's not only the governments' laws, but also the codec's group laws (ex. the MPEG group) that restrict the distribution of codecs. The Codecs PBI can be downloaded here.

There are a couple of media players available for PC-BSD (either as PBI or installed from ports), such as KMPlayer, Kaffeine, VLC, and Xine. These media players let you play, together with the Codecs PBI, about 99% of `.wmv`, `.avi`, `.qt`, `.asf`, `.asx`, `.ogm`, `.mp3`, `.ogg`, `.m4a`, `.mpg`, DivX, Real Media files and embedded media. Judging from feedback on the PC-BSD Forums KMPlayer (and to a lesser degree Kaffeine) seems to be the best player.

However, tastes and experiences are varied and many; some people can play (nearly) all media with KMPlayer, whereas others have more success with Kaffeine and Xine. Just try and see what works best for you and if you get stuck please search the for a solution.

4.6 Troubleshooting

So, you want to install PC-BSD? You're excited, but your PC is not taking it? Have problems with booting up the installation or is the KDE Window manager is not starting? Or did the installation go fine, but you find that on the first boot things aren't going as expected? In this paragraph we will have a look at the most common problems occurring when when PC-BSD is intalled..

No PC-BSD Welcome screen

```
         Welcome to PC-BSD!

    1. Boot PC-BSD [default]
    2. Boot PC-BSD with ACPI enabled
    3. Boot PC-BSD in Safe Mode
    4. Boot PC-BSD in single user mode
    5. Boot PC-BSD with verbose logging
    6. Run X in VESA mode
    7. Run the Display Setup Wizard
    8. Escape to loader prompt
    9. Reboot


    Select option, [Enter] for default
    or [Space] to pause timer  2
```

If you can't even get to the above screen, this is probably due to a so called fatal trap 12 error. You should unplug as many devices as possible, for instance webcams, scanners, printers, USB mice and keyboards. Keep the bare minimum hardware. If this solves the problem, start plugging in more hardware one by one to see which device is causing the problem.

ACPI

If the doesn't solve your problem, try disabling ACPI (Advance Configuration and Power Interface) next time you start up on the very first black & white screen (option 2).

No Graphical Installer

If you can't even start the graphical installer, when you are in the initial text installer screen, select 7 "Run installer in VESA mode".

MD5

As mentioned above (2.4 Data Integrity Check), there's a chance your download may have experienced a problem and resulted in PC-BSD's installation CD-ROM being corrupted. Even if the file is missing a few bits, it can make PC-BSD unusable. Check the MD5 checksum of the downloaded file against the MD5 on the PC-BSD download page.

Hardware compatibility

If you're still experiencing problems, ensure your hardware is on the FreeBSD 7.0 Hardware List.

LBA

A not uncommon cause for problems is the LBA (Logical Block Addressing) setting in the BIOS. If your PC is not booting up before or after installation, check your BIOS and turn LBA off (don't leave it on automatic)

Monitor Detection

It is possible to run the Monitor Detection again if PC-BSD starts up with the wrong resolution or not

using the correct videocard driver. To rerun the monitor detection, start the Display Setup Wizard (option 7 on the first black and white welcome screen).

If none of the above has fixed your problem, search the PC-BSD forums for a solution or search with Google BSD or check Chapter 14 - Help & Support.

5 PC-BSD Live Mode

5.1 VMware Player

to be added

5.2 Live CD/DVD

to be added

6 Exploring PC-BSD

KDE or the K Desktop Environment, is a contemporary and easy to use desktop environment for Unix desktops and compatible systems, similar to desktop environments found on the Macintosh and Microsoft Windows operating systems. While KDE includes a window manager, virtual desktops, file manager, panel, control center and many other components that one would expect to be part of a contemporary desktop environment, the true strength of this environment lies in the large suite of applications and interoperability of its components. Desktop environments are the interface that make interaction of your hands through a mouse/keyboard as logical and easy as possible and display the results of your actions on the screen in a manner so that you quickly and easily understand the consequences of your actions. KDE is a desktop environment that aims to be the best graphical interface between humans and the information they have stored Even though there are a number of desktop environments available, such as Gnome, XFCE, Enlightenment etc, PC-BSD currently supports KDE only. KDE Frequently Asked Questions here KDE Quick Start manual here

6.1 KDE Desktop

The first thing of KDE you see is the splash screen with the little glowing icons showing the progress of loading the desktop.

If you are familiar with MS Windows, you won't get lost with PC-BSD, and if you have already used KDE, you will feel right at home! PC-BSD's workspace is an intuitive interface that follow common sense usability rules which you can find in other modern operating systems, with the desktop, a taskbar at the bottom of the screen and a start button, which in this case is the red icon in the lower-left corner, also known as the "Start menu", and your application shortcuts in the main screen:

Click to enlarge.

6.1.1 Desktop

The PC-BSD desktop is, just like the system: clean, bare and very customisable. There are only three icons on the default desktop: two are linking to a website (the PB-BSD homepage and pbidir.com for PBI packages) and a link to this Guide. The Desktop panel where the 3 shortcuts are, is the place where documents are placed when saved onto the Desktop. The remainder of the screen spaces is used for plasmoids, tiny programs that show different kinds of information on your desktop, e.g. last few emails, progress of a download, a clock, upcoming appointments etc etc The possibilities are endless. Install widgets click the button on the top right-hand corner.

6.1.2 Taskbar

On the taskbar you will find the start button to start your applications, programs that are running, current time, audio output regulator, diary appointments, network connection and a updates indicator.

From left to right:

 brings up the startmenu

 shows, when clicked, all found and mounted disks (incl. USB memory sticks)

 lets you switch between 4 virtual screens, i.e. instead of having multiple physical monitors, you can switch between virtual screens on one monitor.

lets you adjust the audio output

keeps track of any appointments that are in Kalendar

activates the network manager when right-clicked. Hovering the mouse pointer over the icon shows current settings.

links to the Update Manager. Depending on whether PC-BSD and installed PBIs are up-to-date, it can show different colors, indicating different updates (see Chapter 13 - Keeping PC-BSD up-to-date.

6.1.3 Start menu

As you will have noticed see, the start menu looks slightly different from the one on Windows. Clicking the "Start Menu" toggles a list of options:

There are five main buttons at the bottom of the start menu:

- **Favorites** – programs that are marked as favorites are listed here. You can add any program here by right-clicking on them in the start menu and clicking "add as favorite". Having your favourite programs listed on this first tab saves you time browsing through the regular application menu.
- **Applications** – In this list, you can find all applications that come with PC-BSD as well as software that you installed separately. Applications are sorted by category (Games, Graphics, etc...).
- **Computer** – shows shortcuts to System Settings, your home folder, the network, root and the trash can.
- **Recently Used** – shows a list of the last few
- **Leave** – here you can logout, lock and switch users, or shutdown/restart the PC.

6.2 File system

On PC-BSD like most other forms of the BSD Operating System files are stored as part of a single hierarchy starting with the root folder known as '/'. This is the top level of the file system.

If you have used a DOS or Windows NT based operating before you may have noticed that Unix derived systems such as PC-BSD use a forward slash ('/') to separate the names of folders in a 'file path' instead of the backslash ('\'). There is also no such thing as a 'drive letter' under Unix like systems because all disk partitions and removable media (CDs, DVDs, USB memory ticks, etc) are attached or 'mounted' onto the root (/) of the file system.

Note that the root user account has unlimited access to all files as it is used for system administration tasks, such as installing new software, starting and stopping certain services, or editing critical configuration files.

Files are spread out among several directories as is Unix tradition. The programs that are essential for starting up your system are found in the /boot, /bin, /sbin, /lib, and the /etc folders. You probably will not use any of these programs unless you choose to explore the command prompt and the directory structure. These folder are essential to the functioning of PC-BSD's startup sequence.

More details on disk organisation can be found in the [Disk Organisation chapter](#) in the FreeBSD Handbook.

6.2.1 Folder hierarchy

A full description of the FreeBSD system can be found in the hier manual page. You can view this by opening a Konsole session and typing the command:

```
man hier
```

Use the up and down arrow keys to move up and down, press the 'q' key when you are done or simply close the window. You can also view the manual page right in your web browser with Konqueror by going to the following link

man://intro/usr/share/man/man7/hier.7.gz

Here is a small mapping of the file system (more details can be found in the [FreeBSD Handbook](#))

Directory	Description
/	Root (top of file system tree)
/PCBSD	PC-BSD specific files and programs
/Programs	The default storage location of PBI Packages
/bin	Critical command line user programs
/boot	Stores startup code, including hardware drivers
/compat/linux/	Linux software compatibility files
/dev	Device 'special' files
/etc	System configuration files
/etc/X11	Your xorg.conf file
/etc/rc.d	Scripts for controlling services and system startup
/home	Stores individual user files
/home/username	Personal files of user 'username'
/lib	System libraries for programs in in /bin and /sbin
/libexec	Miscellanies system libraries and binaries
/media	Mount Point' for storage media, CDs, DVDs, etc
/mnt	Temporary 'Mount Point' for disks
/root	System Administrators (root) personal files
/sbin	Critical command line programs for system admin.
/tmp	Temporary file storage
/usr	Programs and files used by most PC Users.
/var	Files that may vary in size greatly,
/var/log	Log files used by the operating system
/var/spool	Printer job specific files
/var/db	Database files
/usr/bin	Command line programs common to all users
/usr/games	Command line games for all users
/usr/home	A symbolic link for /home
/usr/include	Standard 'include' files for C/C++ programs
/usr/lib	Libraries for programs in /usr/bin and /usr/sbin

/usr/local	Files specific to this system
/usr/local/bin	Graphical programs for all users
/usr/local/etc	Configuration files for site specific services
/usr/etc/rc.d	Scripts for controlling services under /usr/local/*
/usr/local/include	Location of 'include' files for C/C++ developers
/usr/local/lib	Libraries used by programs under /usr/local/*
/usr/local/man	Manual pages for programs under /usr/local/*
/usr/local/sbin	Site specific programs for administrators
/usr/local/share	Common program data and configuration area
/usr/local/share/applnk	Standard K-Menu short cuts
/usr/local/share/doc	Documentation for programs under /usr/local/*
/usr/local/share /examples	Examples from programs under /usr/local/*
/usr/local/share/fonts	System wide fonts for graphical applications
/usr/local/share/icons	Icon files for KDE (K Desktop Environment)
/usr/local/share/sounds	System sounds used by KDE
/usr/local/share/themes	KDE Themes shared by all users
/usr/local/share /wallpapers	Wall papers shared by all users
/usr/local/share /appname	Data files specific to 'appname'
/usr/ports	The local ports tree, used to install software
/usr/share	System documentation, manual pages, etc
/usr/share/doc	Extra documentation from FreeBSD
/usr/share/examples	Examples from FreeBSD documentation
/usr/sbin	More command line programs for admins
/usr/src	FreeBSD source code

6.2.2 Home Folder

Every user account is given a 'home directory' to store there personal files, a directory is the same thing as a folder. The home directory is normally named for the users log in name and stored in the /home folder. For example if your account (login) name on the computer is johnsmith, your personal files would be stored in the folder /home/johnsmith. It is not a requirement that home directories be created this way but it is the system default and common convention on many Unix like operating systems.

On PC-BSD a new user receives a set of folders for storing files. Typically these are Documents, Music, and Images. You are free to do any thing you wish within your home directory. Only the root user account and your own can modify files; by default all other users can read files. With the exception of several that are made read-only for security reasons. You can change this, however

6.2.3 Mounting/Unmounting drives

A great example of this is accessing the contents of a CD-ROM. If you place a disk into your CD-ROM drive PC-BSD will attempt to automatically detect its presence and issue you a prompt asking you what actions you wish to take. Hardware support is not perfect so results are likely to vary with quality of your computers ACPI implementation.

If the system fails to detect an inserted disk, right click on the CD-ROM icon on your desktop that

represents your disk and click the mount option, double clicking on the icon should cause it to automatically mount and browse to its contents. By default the desktop will create a folder to use as a mount point in the /media folder.

You can also mount partitions from the command line directly using Konsole, which is very useful for finding problems when partitions fail to mount. Open a konsole and use the following command to mount your CD-ROM on to the /mnt folder:
mount /dev/acd0 /mnt

The file /dev/acd0 represents the first optical disk drive on your system, this is typically a CD-ROM or DVD-ROM drive. Each drive is assigned a number starting at zero so to mount your second CD-ROM drive (if you have one) you would replace /dev/acd0 in the command above with /dev/acd1 and so on.

Once the disk is mounted you can access the files on it from that specific folder, in the above example our CD-ROMs files can be viewed through the folder /mnt/. You can mount hard drive partitions in the same way as above but the device names are different (see below).
Before you eject the disk you must close any programs accessing files on the disk and inform the system that the disk is about to be ejected. This is the same principal as working with a USB stick or an external hard drive under other operating systems.

Right click on the desktop icon representing your CD-ROM drive and choose to "unmount" it and then eject the disk. You can also do this from the command prompt in a konsole with the umount command (note that it is 'u' not 'un'):
umount /mnt

You can mount almost any storage medium like this but in order to modify files on it. You must have file permissions set on the mount point that allow the necessary user accounts to do so.

On MS-DOS and related operating systems each disk drive is assigned a drive letter, for example A:\ represents the root of your first floppy drive if installed. On PC-BSD since you can mount disks anywhere on the file system (with sufficient file permissions). It is quite possible to always mount your disk to /home/username/Floppy instead and so on.

Again, many more details can be found in the FreeBSD Handbook on [Mounting and Unmounting File Systems](#).

7 Installing Applications

There are several methods of installing software on a PC-BSD system. Each method will be described in more detail below.

- PBI Installer, the easy way (recommended)
- Packages, the quick FreeBSD way
- Ports, the traditional FreeBSD way

When you install software from a PBI you will be presented with a simple graphical interface which takes you through the steps to install your software. Similar to many other popular operating systems you just click and go. Since PBI programs are created from traditional FreeBSD ports and packages, they are fewer and less up to date than ports.

Ports and Packages are the traditional ways of installing software.

You can get the most up to date software by compiling directly from ports. The quicker method of installation is by package, but not all software is available as a package.

Installing software via PBI

When you install a program through the PC-BSD Installer system, it is placed with all required files in its own folder in /Programs and linked into the system. This is very simple and safe to the system as it is not changed more than necessary to allow the software to function.

To install a PBI we need to go to the PBI Directory and download a program:

Once the download is completed, simply double click on the file to launch the installer. It will prompt you once for the super user password before beginning the installation process. This is effective as a security measure, parental control, and prevents accidental alteration of the system.

Click "Next" at the welcome screen, you will then be asked to read any license agreements that comes with the program you are installing. Check the "I agree" box and click "Next" to continue installation. You may have the options of placing icons on your desktop and entries in the PBI Programs section of the application menu. Check all boxes that apply and click "Install":

Once the installation has completed, click " Finished " and try out your program.

You can also install in text mode from a console session by changing directory to the location of the PBI and run the following as the super user.

```
# ./PBI_File -text pbifilename-1.0-PV1.pbi
```

If at a later date you wish to add an icon to your desktop for software installed during a PBI install you may do so by right clicking on the desktop and selecting "Create new link to application". This will open a menu where you can set the name of the icon, its picture (click the cog image). Then click the "Application" tab. Here you will have to set the program you wish to create an icon for, you can set a comment, description, the work path, and file types as required.

Removing PBI applications

To remove a .pbi application, just go to "Start Menu > Settings > System Administration > Remove Programs (PBIs)". You will see the list of installed PBI applications:
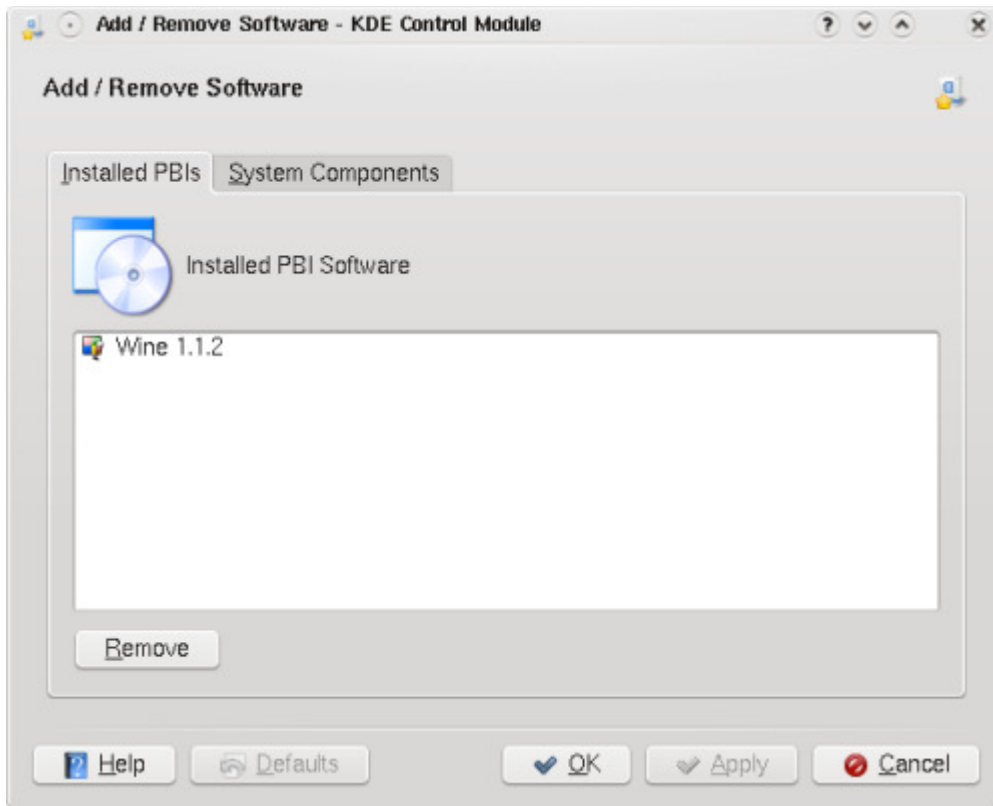
Click the application you want to remove and press the "Remove" button in the lower-left corner. When you are done, click "OK".

Installing packages

Packages are prepared files for installing software, they install software into the system and can cause dependency issues. The package system is comparable to `yum`, and `apt-get` used in several Linux distributions. To find the name of a package, first you need to search on the [FreeBSD ports](#) database. For instance if we want to install Skype, we search for "skype" and we find [2 search results](#): the development release and the stable release. If you pass your mouse over the name of the package of the stable release, you see something like `http://cvsweb.freebsd.org/ports/net/skype` in the status bar of your browser. The `/net/skype` part tells you that the name of the package is `skype` and that it belongs to the `net` category. You don't have to download anything, as the package manager will take care of that for you. Just remember the name of the package. Installing packages requires you to open a console with root permissions. You can type `kdesu konsole` in a run dialog from the K-Menu or open a konsole from the K-Menu in super user mode, or open a konsole and type `su -` and press "Enter". You will be prompted for the root (super user) password, it will not display the password on screen for security reasons. After switching to the super user account you have complete access to the system and can install software at will. You can install a program using the package system thusly:

```
# pkg_add -r irssi
```

This will install the "irssi" program with all required files but not update the K-Menu or desktop. You can generally find the binary (executable) in /usr/local/bin, configuration files in /usr/local/share/ or your home directory and the libraries (like `.dll`) will be placed into the system as needed and shared between applications.

You can uninstall a package by using the pkg_delete command and the name and version of the package

or a wild card.

```
# pkg_delete  irssi-0.8.10_2          # And pkg_delete "irssi-*" are equivalent.
```

You can get info about an installed package the same way using the pkg_info command.

```
# pkg_info "irssi-*"          # Or pkg_info | grep irssi
```

Installing software using ports

Traditionally BSD installs software from source; the ports collection. You first need to install an up to date ports collection before you may use the ports collection to install software. New users coming from Gentoo GNU/Linux will find this similar to the "Emerge" system which is based on FreeBSD ports.

To install the ports collection click on the K-Menu and navigate to: "Settings > Administration > PC-BSD System". Enter the super users password to access the admin panel and click on the "Tasks" tab. Now click "Fetch ports" and it will begin downloading the necessary files and installing them. This will take a while depending on your Internet connection and Processor speeds.
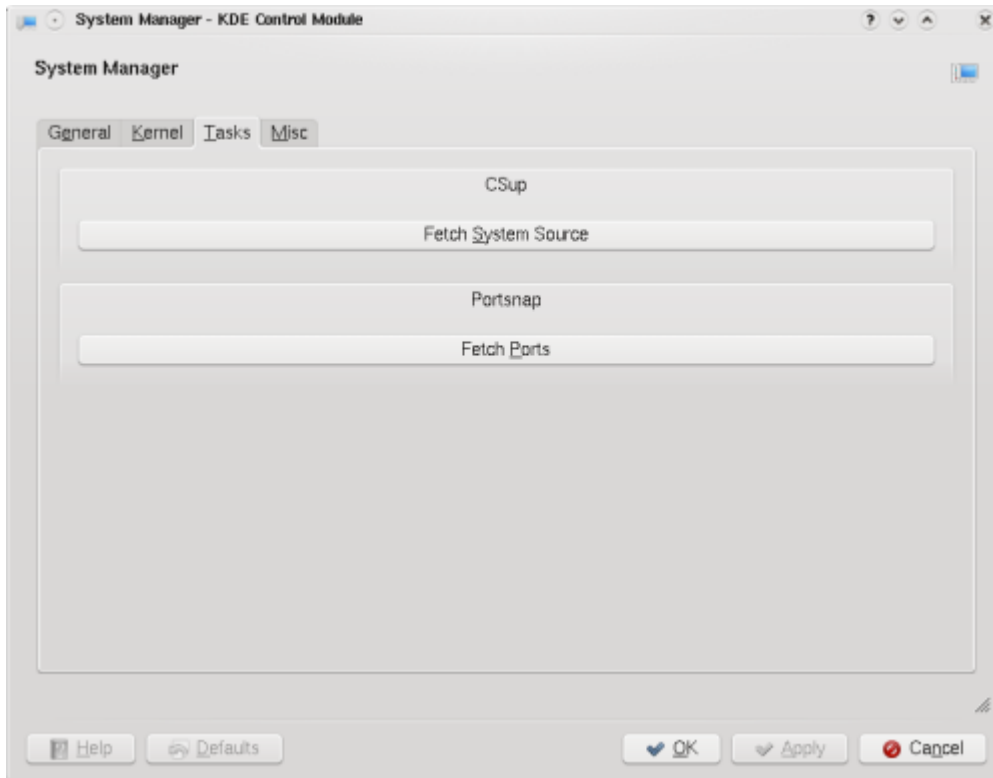
Click to enlarge.

If you wish to do this from the command line open a console as the super user as described in fetching packages and run the following command:

```
# cvsup -g -L 1 /root/ports-supfile
```

You can also use the `portsnap` method

```
# portsnap fetch extract
```

If you install ports using `portsnap` you should not update the ports collection with `cvsup`, instead use:

```
# portsnap  fetch && portsnap update
```

if you installed ports using `cvsup` you may update them in the same way as before:

```
# cvsup -g  -L 1 /root/ports-supfile
```

You can edit the supfiles and set a download mirror closer to you, please see the FreeBSD handbook for more information on [using CVSUP](#).

Now that the ports collection is installed if you look in `/usr/ports` you will see a simple tree structure of folders. The structure is in the format of category > program name.

Then, to install an application from ports, just go to the application directory, for instance /usr/ports /net/skype and start compilation:

```
# cd /usr/ports/net/skype
# make install clean
```

After a few minutes or hours, depending on the size of the package, the application is installed on your system.

Removing a package or a port

To remove a package or port, first you need to find the name of the package. For instance if you want to remove kopete, to find out its full name, you will type:

```
# pkg_info | grep kopete
kdenetwork-kopete-0.11_1 KDE multi-protocol instant messenger (IM)
```

Then to uninstall the package, type as `root`:

```
# pkg_delete kdenetwork-kopete-0.11_1
```

If you installed from the ports, you can also uninstall going to the specific port directory and you can uninstall from there:

```
# cd /usr/ports/net-im/kopete
# make deinstall
```

To learn more about ports and packages, feel free to read the excellent [FreeBSD handbook](#).

---

11 Networking & Security

PC-BSD comes with an easy network configuration tool allowing you to set up your network and your network interfaces in no time.

There are two ways to configure your network interfaces:

- Either you don't mind using any IP address from your ISP or you don't know what your DNS servers are, in which case you will use the DHCP protocol (recommended)

- Or you have a small network of two or more computers, and you want to assign a local IP address to each of them such as 192.168.0.1, 192.168.0.2, etc... In which case you will need to know the DNS servers

To start configuring your network interface, click the Start Menu in the lower-left corner (red ball) and click "Settings > Internet & Network > Network Settings". The main window will appear. Resize the window so that you can see the lower buttons:
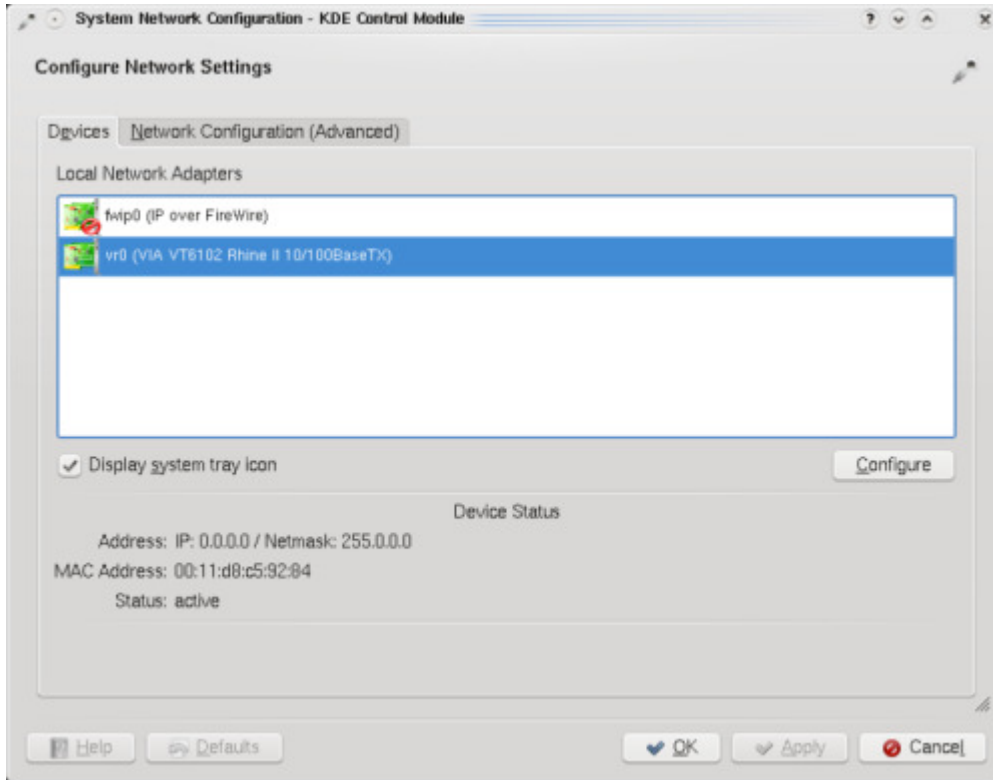
Click to magnify.

As you can see, for security reasons, all options are greyed out. To edit the settings, you need to click the "Administrator Mode..." button and type your administrator password at the prompt. Then you will be able to set up your network interface. To do so, double-click one of the network interfaces listed in the main window. A popup window appears for you to adjust various settings:
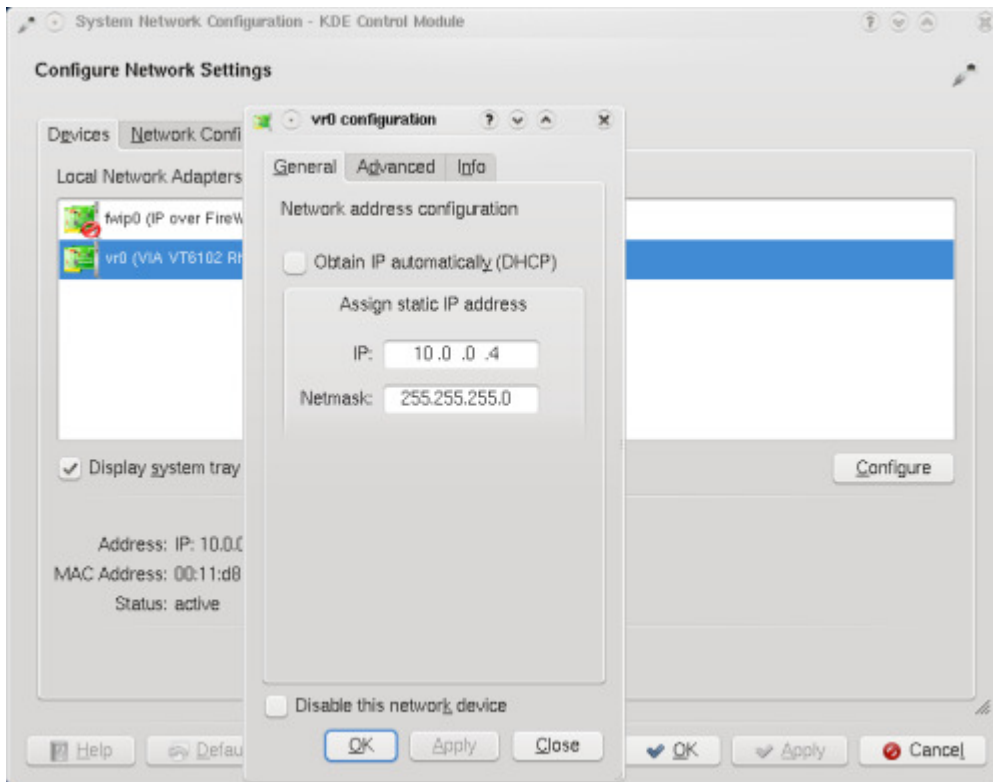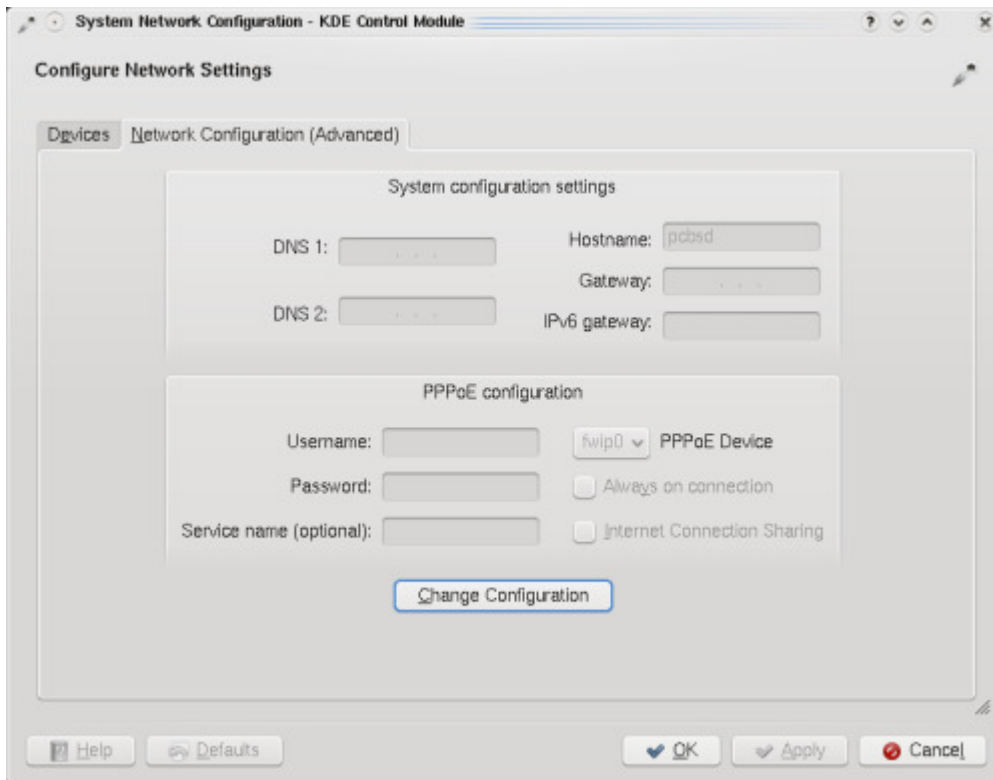
Click to magnify

Select either "Automatic - DHCP" (Recommended) or "Manual", accordingly. If you selected "Manual", you need to type the following information:

- IP address: The IP address you want for the selected network interface. This IP address cannot be a public IP and needs to belong to private network IP addresses
- Netmask: Can be set using numbers (ie: 255.255.255.0) or using hexadecimal values (ie: 0xffffff00)
- Activate when the computer starts: This option should be checked if you want to use your network interface automatically when you start your computer
- Description: Type a name to identify your network interface
- Gateway: If you connect to the Internet through another computer, server or router, also known as "gateway", type its IP address

Click "OK", and repeat the procedure for other network interfaces if you have several that are to be used. If you have a gateway, click the "Routes" tab where you should have your gateway listed and the network interface through which the route will go:

If you selected "Manual" setup, click the "Domain Name System" tab to set up your DNS. This does not apply if you selected "DHCP" for your network interface.

Click to magnify.

Add at least one DNS here. It is advised that two DNS are set, so that you don't rely on just one. If you don't know your DNS, either get in touch with the technical support of your ISP, or ask some one who lives in your geographical region and who is "computer-savvy".

When you are done, click "OK" and your network interfaces are set up. You should be able to access the Internet and other computers of your network if you have them. If you have a DSL connection that you need to dial from your computer manually or if you use a dialup connection, please get in touch with us on the forum for more details to assist you.

---

12 PC-BSD Tools

KDE comes with great tools for managing certain tasks, but PC-BSD additionally comes with some extra tools written by the PC-BSD developers for some specific PC-BSD tasks:

The PC-BSD desktop allows users the ability to find nearly anything you would ever want to know about your system. PC-BSD is built on FreeBSD so users can always use the command line in a terminal to see system information but what is the fun of that? In PC-BSD/KDE there are specific desktop programs to do this job for you using a graphical interface.

12.1 System Information

Unique to PC-BSD there is a "System" window that can be opened by clicking on the "Start Menu > Computer > System Settings > System Manager ". At this point you will have to type in your root password to allow the System Manager window to open. Once the PC-BSD System window opens you will be presented with four tabs with the following titles:

- General
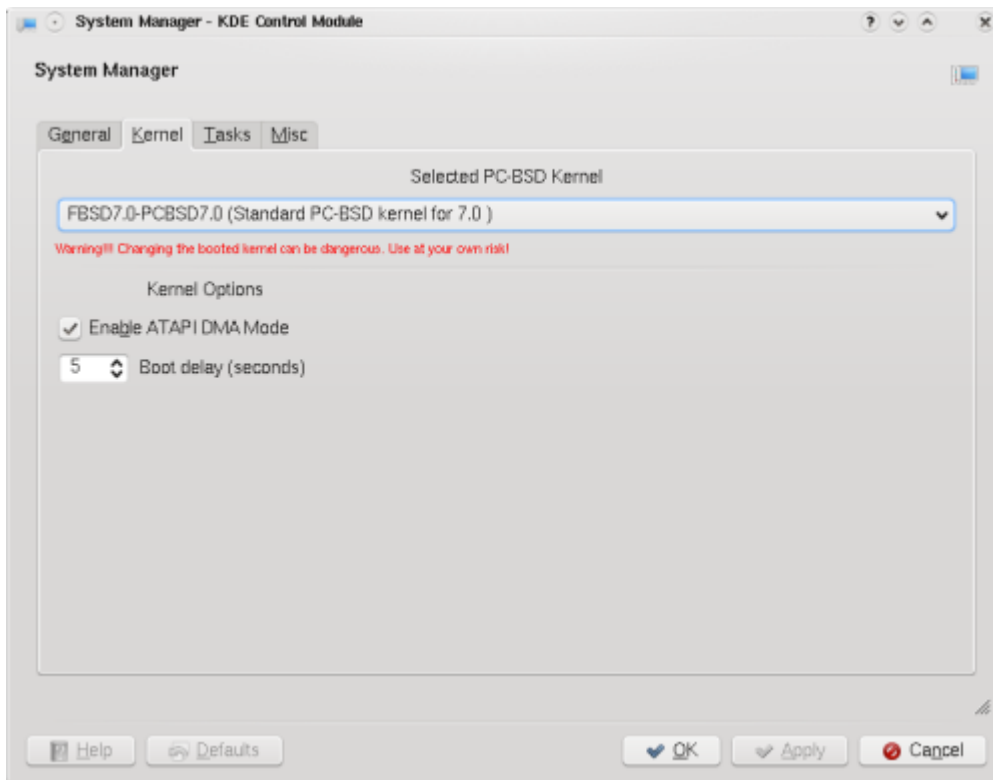- Kernel
- Tasks
- Misc

The General Tab
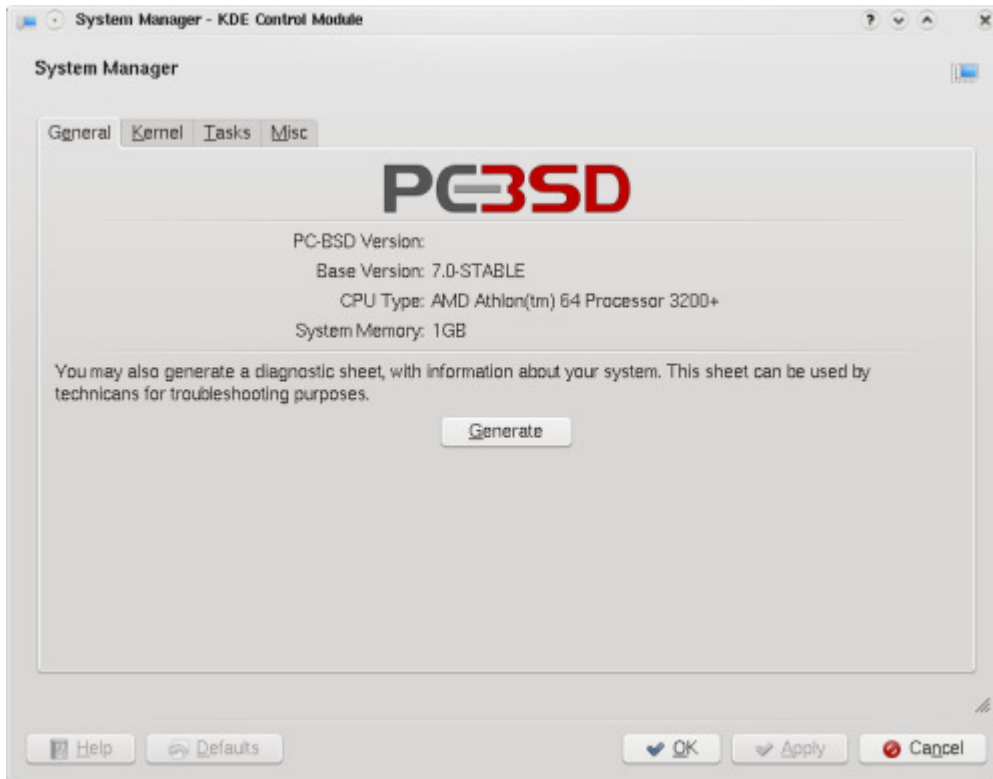
The "General" tab shows us the versions of both PC-BSD and the base FreeBSD system. It's a good idea to report both of these when asking questions on the PC-BSD forums or any of the FreeBSD lists.

Also found on this tab is a report generator that creates a report by clicking on the "Generate" button. While this report doesn't show all system attributes, it does hold an abundance of pertinent information. Items included in the report are as follows:

- the kernel responses as your system boots (`dmesg`)
- the last few lines of the `/var/log/` messages log file
- your resource configuration file (`/etc/rc.conf`)
- your boot configuration file (`/boot/loader.conf`)
- the free space of your hard drive (`df -m`)
- a listing of `top` (currently running processes)

You will be given an opportunity to save the generated report to a file and directory of your choice. Once it is saved it will open up in `kwrite` (or your default KDE editor) for your inspection. While this report isn't a complete report of every variable of your system, it is a very comprehensive report of most things that matter and it is quite lengthy. All successful probes and loads as well as most errors will be reported here.

The Kernel Tab

Here on the "Kernel" tab you are presented with several options. They are:

- the ability to select single or multiple processor kernels
- enable/disable the splash screen as PC-BSD starts
- enable/disable ATAPI DMA Mode
- Boot Delay

Please be VERY CAREFUL setting options on this tab. The kernel settings and the ATAPI DMA can leave your system in an unstable state if set incorrectly.

If you have two physical CPU sockets on your motherboard, an AMD x2, an Intel Hyperthreading CPU with hyperthreading turned on in the BIOS, or an Intel Core 2 then you should be safe choosing the Multi Processor kernel option by clicking on its drop down and selecting it.

If you want to see all of the probes and peeks of PC-BSD/FreeBSD as it loads the operating system you can un-check the "Enable Splash Screen" option and you will see all the raw messages as the system loads. Some people like to see what is happening and this often comes in handy while diagnosing problems.

The "ATAPI DMA" option will probably not cause any problems if you turn it off but it may slow down your disk access. There seems to be some computers with mostly older CD-ROMs or hard drives that may benefit by having this turned off.

The last option, the "Boot Delay", can be set anywhere from Off to 0 to 60 seconds. It defaults to 1 but some people prefer to set it higher if they are diagnosing problems or need to boot up with special flags set.

Any changes on this tab must be saved by clicking on the "Save Changes" button.

As on the previous tab, any changes must be saved by clicking on the "Save Changes" button.

The Tasks Tab
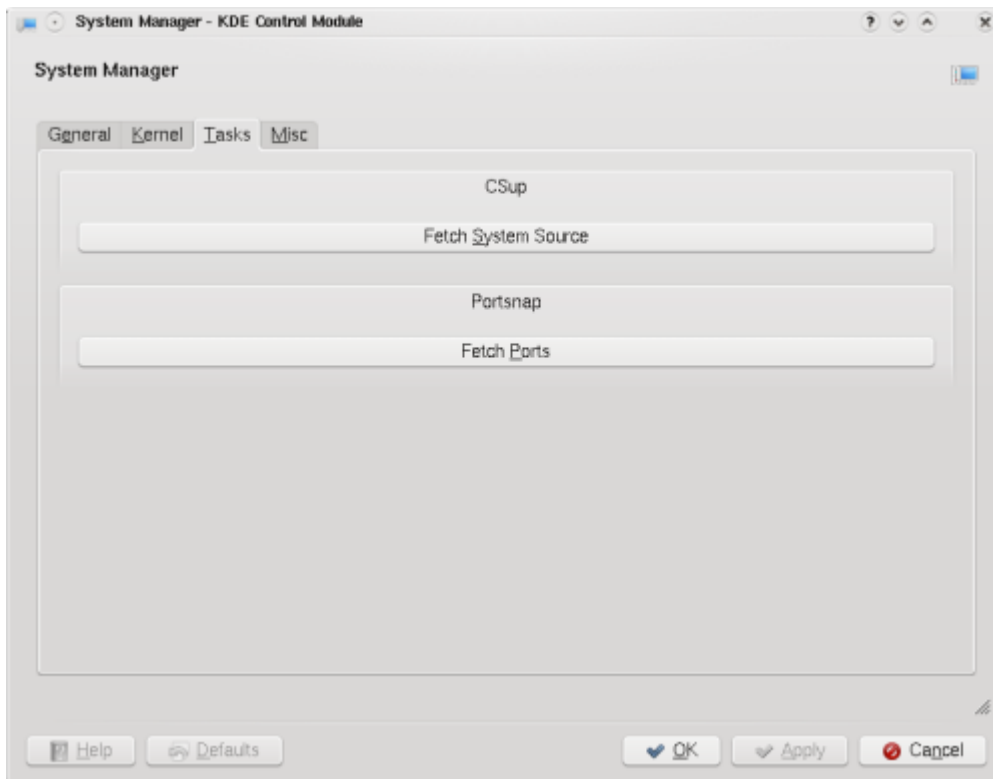
Click to enlarge.

This tab could also be called the "Wait" tab because if you run both of the functions on this tab you will be waiting, and waiting and if you are on dial up connection you could be waiting several hours. The longest wait is only for the first time they are run, major base updates or long intervals between updates. Like all good things that teach patience, this wait will reward you richly if you ever need to compile a kernel or any application not yet available as a PBI. The two functions are:

- Fetch System Source
- Fetch Ports

The first function, the Fetch System Source, will open a small terminal screen and show you how it progresses. This will take some time the first run or at long intervals between updating. If you run it on a regular basis that time will be greatly shortened.

The second function, Fetch Ports, will open a progress window and show you its progress as it downloads, expands and places the ports tree under the `/usr/ports` directory. This one will also take a while to complete if you are using it for the first time or a long period has elapsed between updates. Once your port tree is downloaded and in place you will be able to open a terminal screen (`konsole`), log in as `root`, change directory to the application you want to install and run a `make install clean` to compile and create the application you wish.
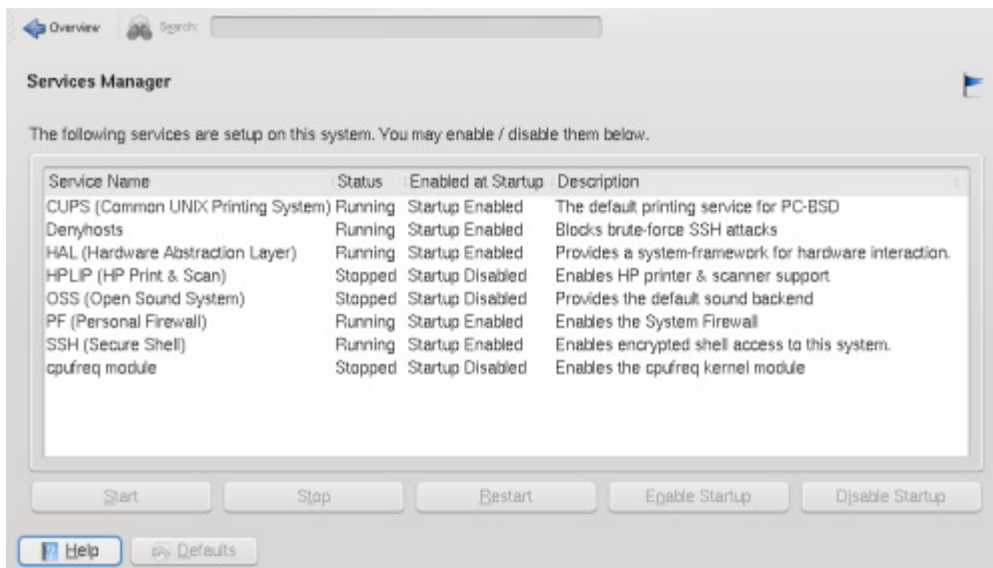
The Misc Tab

Here you may select any pictures that you want to see during boot-up.
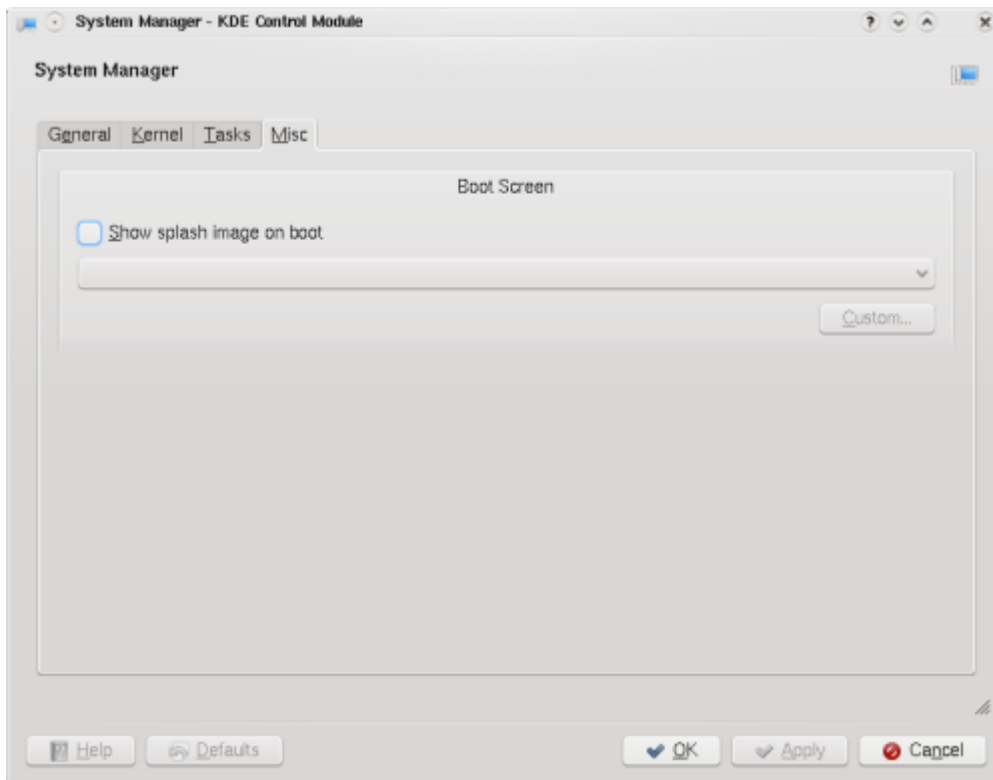
Click to enlarge.

12.2 Services Manager

The Services Manager is an easy-to-use GUI tool for managing some KDE and FreeBSD services. It allows services to be enabled/disabled at system startup or change their status to stopped/running.

Click to enlarge.

The following services can be managed with this GUI:

- **CUPS** (**Common UNIX Printing System**) - CUPS is required if a local (USB or parallel) printer is being used on your system.

- **Denyhosts** - This is a script that analyses log messages to determine what hosts are attempting unauthorised access to your system. It also determines what user accounts are being targeted and it keeps track of the frequency of hacking attempts.
- **FreeBSD Update** - When enabled, the Updater will automatically download and install updates for FreeBSD, the underlying operating system of PC-BSD. These updates are issued by the FreeBSD Project and not by the PC-BSD Project.
- **HAL** (**Hardware Abstraction Layer**) - HAL is an abstraction layer, implemented in software, between the physical computer hardware and the software that runs on that computer.
- **OSS** (**Open Sound System**) - OSS is a cross platform API developed by 4Front Technologies that provides drivers for most consumer and professional audio devices for UNIX based operating systems. When your sound card is not producing any sound, activate OSS and see/hear if that's fixed your problem. There have been occasions where Nvidia graphics card drivers interfered with OSS producing broken sound. If this is the case, turn OSS off.
- **PF** (**Packet Filter**) - PF is OpenBSD's firewall for filtering TCP/IP network traffic and doing Network Address Translation (NAT). It's recommended to keep the PF firewall turned on, unless you have installed another firewall or are using a router with a built-in firewall. **[LINK TO PF FIREWALL CHAPTER TO BE INCLUDED LATER]**
- **PF Generator** - This PF Generator creates rules for the PF Firewall when booting up
- **SSH** (**Secure Shell**) - SSH is a network protocol that allows data to be exchanged over a secure channel between two computers by using data encryption. This is what causes your internet browser to display the locked pad lock icon at certain (secure) web pages. Secure Secure FTP (SFTP) and secure copy (SCP) capabilities are handled through the SSH protocol as well.
- **cpufreq** - cpufreq is a background process (daemon) to adjust CPU speed and voltage on the fly. This is a nice way to save battery power, because the lower the clock speed, the less power the CPU consumes. This is especially recommended for laptop users.

13 Keeping PC-BSD up-to-date

13.1 Online Update Manager

The Update Manager helps you to keep PC-BSD up-to-date by downloading and installing the latest patches and updates.

While starting up, PC-BSD checks by default if any updates are available (internet connection is required). The Updater icon in the system tray (right hand bottom of the screen next to the clock) shows whether your system is up-to-date or not.

There are five different states of the Updater system tray icon:

Your system is up-to-date

Looking for updates and patches

⚠️ Your system is out-of-date; system update(s) and patche(s) are available to be downloaded and installed

⚠️ PBI update(s) are available for downloading and installing

⚙️ Selected updates and patches are being installed

There are different ways to launch the Update Manager:

- by clicking the PC-BSD Start button -> Settings -> Software & Updates -> Online Update Manager, or
- by double-clicking on the Updater icon in the system tray or by right clicking it and selecting "start the Update Manager"
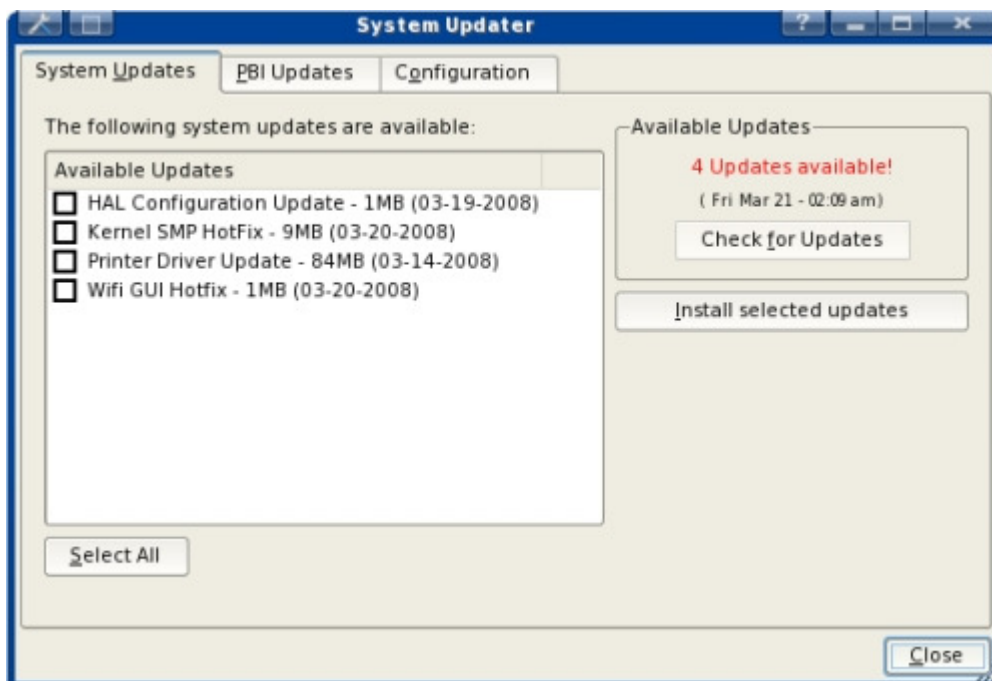

The Update Manager contains three tabs. To for checking for and downloading of new downloads and one for different setting::

- System Updates
- PBI Updates
- Configuration

Let's have a look at each of the different tabs.
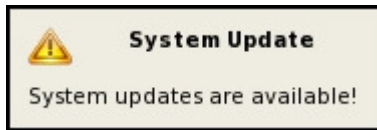
System Updates

Click to magnify

This screen is divided into two sides. On the left hand side are any available updates listed. These can all

be selected at once by clicking the "Select All" button or by selecting them manually. On the right hand side you see the "Check for Updates" button which, when clicked, will connect to the update server to check if any updates are available.


If any updates are found, a "System updates are available" pop-up window comes up, and the updates are shown in the "available updates" pane.

Though the installation of updates is highly recommended as they make your system more secure, add more functionalities and fix bugs, these updates are not mandatory; you're free to download and install (a selection of) them. Oh, and you don't have to verify if you have a valid PC-BSD license ;-)

Selected updates will be downloaded and installed when the "Install selected updates" button is clicked:
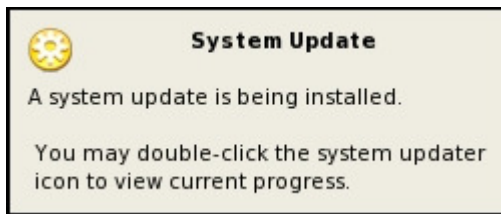

To view the progress of the downloading and installation, double-click the Updater icon in the system tray which will then bring up a screen similar to this one:
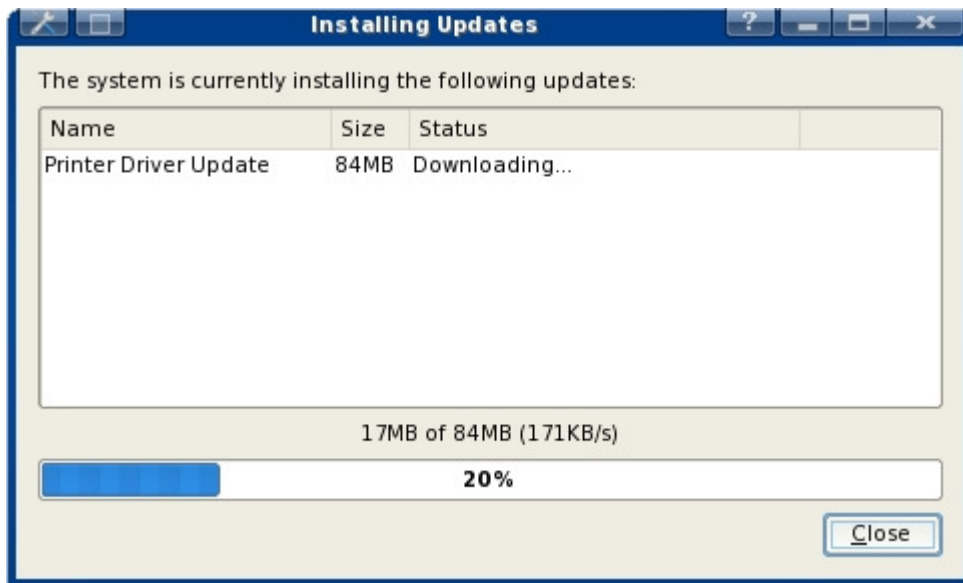

When the installation of the update(s) is successfully completed, the Installer will notify you of this with either "Updates successfully installed" or "Updates successfully installed! Your system will need to reboot to finish". In the latter case, clicking the OK button won't reboot the PC automatically. Finish whatever you're doing and reboot the computer at a convenient time manually.
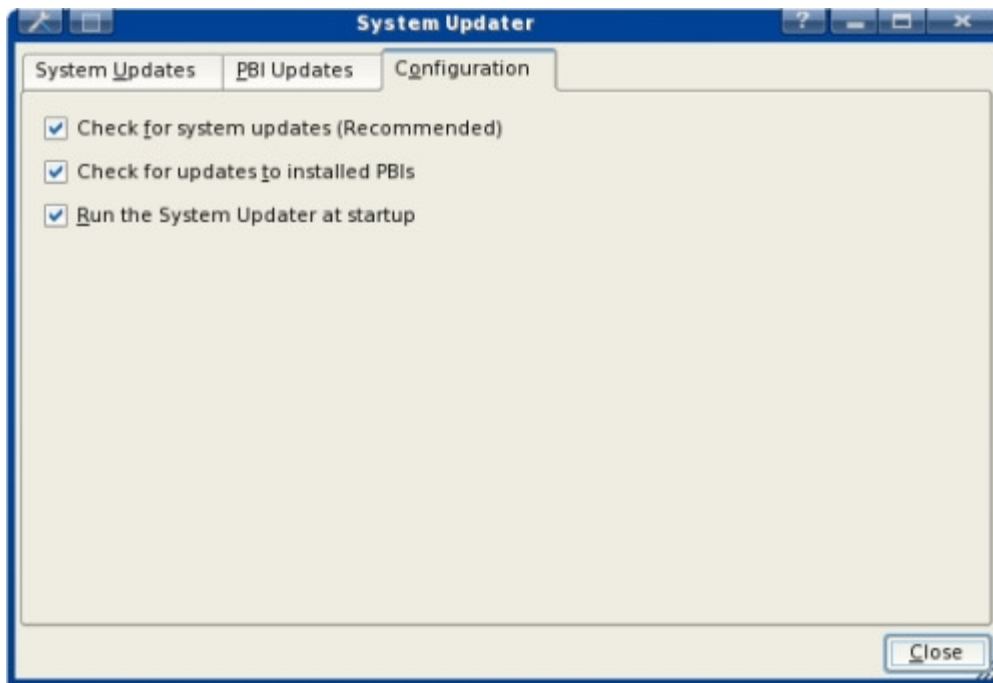
PBI Updates
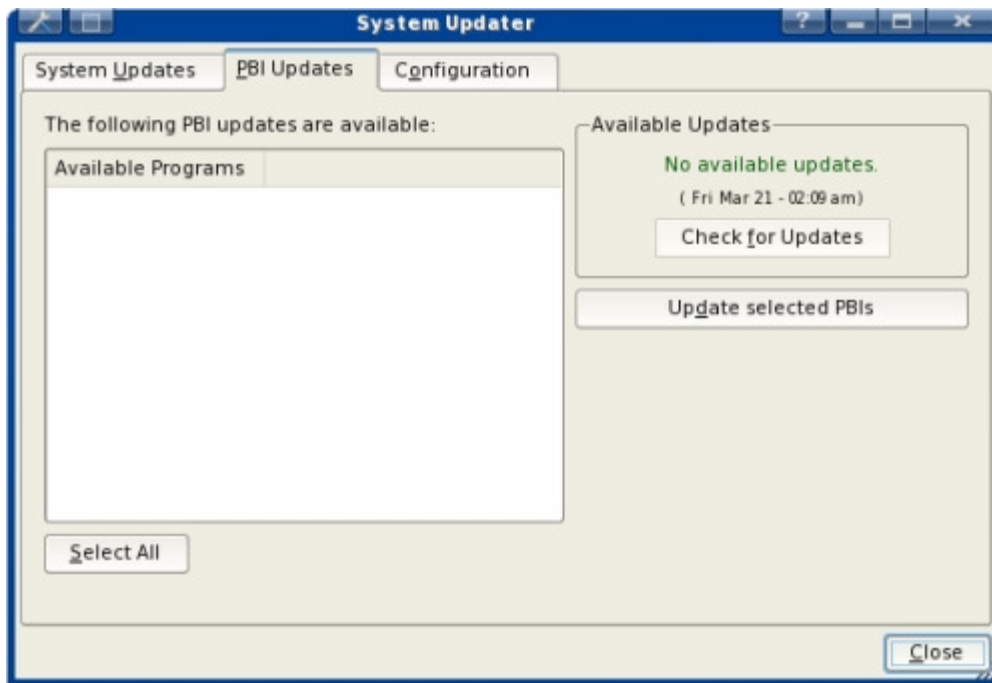
Click to magnify

The second tab window, PBI Updates, is identical to the System Updates tab, but with one difference: instead of looking for updates for the PC-BSD operating system, the Updater will check, when you click on the "Check for Updates" button, if there are any newer PBIs listed on pbidir.com than those that are already installed on your PC. For instance, if you have installed Firefox 2.0.0.11 and version 2.0.0.12 has been added to the pbidir.com website later, the Updater will list version 2.0.0.12. The older version can then by removed and the latest installed.
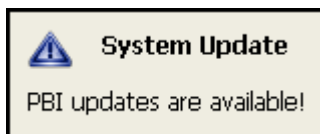
To manually check if there are more recent PBI versions available, click the "check for updates" button. In case there are newer versions of your PBIs on pbidir.com, they will be listed on the "available programs" window and a little message pops up in the system tray advising of new PBI updates being available.

Configuration

Click to magnify

The Configuration tab has tree options which are all activated by default in order to check for system and PBI updates at system bootup.

Downloading and installing of system updates are highly recommended in order to keep your system safe and free of bugs. By default the Updater will also check if any newer and more up-to-date versions have been added to pbidir.com after you installed a particular PBI.

The last option on the Configuration panel is "Run the System Updater at startup". PC-BSD checks by default if any updates are available on PC-BSD's update server. If, for any reason, you deem this not necessary, this option can be turned off.

14 Help and Support

Professional PC-BSD support is available from iXsystems, but it's probably quite a safe assumption that most users will turn to the internet for help first. We are doing our best to make PC-BSD as easy as possible for newcomers. Should you need help with anything, there are plenty of ways to get in touch with the Team and with the community.

14.1 Forums

The PC-BSD Forums contain a wealth of information, tips and solutions built up over the last few years. There are many active members and you will find that many questions are replied to quickly. When posting, please try to be as clear as possible, give details your PC's hardware and what has caused the problem (if you know, obviously).

Before posting anything, please search the Forums first to see if anybody else has had the same problem

in the past. Oh, and Google BSD is a friend too.

Most of the discussions on the forum are done in English, but with PC-BSD covering more and more countries and languages, we have now also a few non-English sub forums. Apart from these sub forums you may prefer to use other, unofficial, PC-BSD forums in your native language. This is expanding all the time, so check availability for your locale regularly!

- PC-BSD Germany
- PC-BSD Hungary
- PC-BSD Poland
- PC-BSD Russia
- PC-BSD Spain
- PC-BSD Ukraine

14.2 The knowledge database

A fair amount of information can be found in the PC-BSD Knowledge Database. You are welcome to add your hardware in the supported or unsupported list of hardware too! If you think we can add more entries to this knowledge database, feel free to let us know, and make this database richer!

14.3 IRC Channel

PC-BSD has an IRC channel to connect supporters and users, just like many other open source projects! To get connected, use the following information:

```
Server: irc.freenode.net
 Channel: #pcbsd
```

To find an IRC client on pbidir.com, click here. If unsure which IRC client to use, we suggest Kirc or X-chat.

14.4 Mailing lists

One of the direct ways the Team stays in touch with the community is by using mailing lists. To stay up-to-date with announcements and discussions, subscribe to any of the following mailinglists

- Announcements (Low traffic)
- General
- Support
- Translations
- Beta testing
- PBI Developer
- Documentation
- Developers

Apart from these official mailinglists, there's also a number of non-official mailinglists set up by PC-BSD users for PC-BSD users. A list of alternative PC-BSD mailinglists can be found here.

14.5 FreeBSD Handbook

We admit that the FreeBSD Handbook may look difficult and technical, but, hey, it won't bite! Why not have a quick look through to see if your question is answered there or if a solution is suggested for your problem? PC-BSD has FreeBSD as it's underlying operating system, so everthing in the FreeBSD handbook applies to PC-BSD as well.

15 Additional resources

PC-BSD is part of the BSD family of operating systems based on Unix, and is specifically based on FreeBSD. Since PC-BSD has a fully functional FreeBSD system included, most adjustments that you do for FreeBSD also work for PC-BSD. As a result, the majority of FreeBSD material will be useful for you as an advanced user. Here is a non-exhaustive list of other resources on FreeBSD:

15.1 Forums
- The BSD Forums
- BSD Nexus
- BSD Foren (German)
- BSD Forums (Romanian)
- BSD Support
- Usenet channel - comp.unix.bsd.freebsd.misc

15.2 Search
- Google BSD
- The OpenDirectory
- FreeBSD mail archives search

15.3 Portals and Blogs
- The FreeBSD diary
- FreeBSD News
- O'Reilly's BSD Devcenter
- Slashdot BSD
- BSD Guru (Polish)
- Freebsdlinks
- BSD Guides

15.4 Miscellaneous
- The FreeBSD Handbook
- The FreeBSD FAQ
- BSD Hacks (book)
- Screaming Electron's tutorials

- [FreeBSD How-Tos for the Lazy and Hopeless](#)
- [BSD Newsletter](#)

16 Supporting PC-BSD

PC-BSD is a community project and hence it can't exist without involvement from its users and supporters.

16.1 Get involved

In order to make PC-BSD better with each release we appreciate your feedback and help; you can post ideas, report bugs/problems [on the mailinglist,](#) [TRAC](#) or the [forums,](#) If you like 'playing around' with operating systems, you can [test drive](#) developement snapshots, alpha/beta/rc releases, and if you like languages, why not [translate PC-BSD](#) in your language if it's not available yet? If you like programming, and especially coding on FreeBSD, we'd love to see you join the [PC-BSD Team](#).

Intermediate and advanced users can help us assisting other users by answering their questions and trying to solve their problems; on the [PC-BSD forums](#) and IRC (13.2).

16.2 Financially

To help the PC-BSD project financially, why not consider making a donation if you're happy with our product? Alternatively you can buy your PC-BSD installation CD/DVD and cool stuff from [FreeBSD Mall](#), PC-BSD's sister company. Companies may consider buying professional support from [iXsystems](#).

16.3 Online

We are always interested in more download mirrors. If you have spare web space and bandwidth on your server, PC-BSD will be greatly helped if you would be willing to donate this to us. More mirrors means higher download speeds and more (local) servers for users to download from. PC-BSD is also distributed as [torrent](#) and you can help us with seeding, especially the first two weeks after a new release.

Webmasters and bloggers can put a [Spread PC-BSD](#) button on their site and start collecting... Collecting what?

16.4 Offline

So you love PC-BSD? Why not tell the world about it? Your family, your friends, fellow students and colleagues? You won't be the only one that likes a free, virus-free, spyware-free and adware-free operating system. You can burn a couple of CDs and pass them out.