NAME

INSTALL — Installation procedure for NetBSD/hpcsh.

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DESCRIPTION

About this Document

This document describes the installation procedure for NetBSD 5.2.1 on the *hpcsh* platform. It is available in four different formats titled `INSTALL.`*`ext`*, where *`.ext`* is one of `.ps`, `.html`, `.more`, or `.txt`:

`.ps` PostScript.

`.html` Standard Internet HTML.

`.more` The enhanced text format used on UNIX-like systems by the `more`(1) and `less`(1) pager utility programs. This is the format in which the on-line *man* pages are generally presented.

`.txt` Plain old ASCII.

You are reading the *PostScript* version.

What is NetBSD?

The NetBSD Operating System is a fully functional Open Source UNIX-like operating system derived from the University of California, Berkeley Networking Release 2 (Net/2), 4.4BSD-Lite, and 4.4BSD-Lite2 sources. NetBSD runs on 57 different system architectures (ports) across 15 distinct CPU families, and is being ported to more. The NetBSD 5.2.1 release contains complete binary releases for many different system architectures. (A few ports are not fully supported at this time and are thus not part of the binary distribution. Please see the NetBSD web site at **http://www.NetBSD.org/** for information on them.)

NetBSD is a completely integrated system. In addition to its highly portable, high performance kernel, NetBSD features a complete set of user utilities, compilers for several languages, the X Window System, firewall software and numerous other tools, all accompanied by full source code.

NetBSD is a creation of the members of the Internet community. Without the unique cooperation and coordination the net makes possible, it's likely that NetBSD wouldn't exist.

The complete list of changes can be found in the CHANGES-5.2.1:
http://ftp.NetBSD.org/pub/NetBSD/NetBSD-5.2.1/CHANGES-5.2.1
file in the top level directory of the NetBSD 5.2.1 release tree. An abbreviated list is as follows:

Security Advisory Fixes

- NetBSD-SA2013-004:
  http://ftp.NetBSD.org/pub/NetBSD/security/advisories/NetBSD-SA2013-004.txt.asc
  Vulnerabilities in grep
- NetBSD-SA2013-005:
  http://ftp.NetBSD.org/pub/NetBSD/security/advisories/NetBSD-SA2013-005.txt.asc
  bind Denial of Service (CVE-2013-4854)
- NetBSD-SA2013-006:
  http://ftp.NetBSD.org/pub/NetBSD/security/advisories/NetBSD-SA2013-006.txt.asc
  Arbitrary Kernel Read with netstat -P
- NetBSD-SA2013-007:
  http://ftp.NetBSD.org/pub/NetBSD/security/advisories/NetBSD-SA2013-007.txt.asc
  Protocol handling issues in X Window System client libraries
- NetBSD-SA2013-009:
  http://ftp.NetBSD.org/pub/NetBSD/security/advisories/NetBSD-SA2013-009.txt.asc
  user settable small BPF buffer can cause a panic

Advisories prior to NetBSD-SA2013-004 do not affect NetBSD 5.2.1: *.:*
http://www.NetBSD.org/support/security/patches-5.2.1.html

Kernel

- Fixed a panic triggered when killing a process waiting to start. (PR#44935): **http://gnats.NetBSD.org/44935**
- Fixed a LOCKDEBUG panic in sysctl path. (PR#45827): **http://gnats.netbsd.org/45827**
- Fixed diagnostic panic when killing a traced process. (PR#42309): **http://gnats.netbsd.org/42309**

Networking

- Include BRDADDR and NETMASK in the IPv4 ioctls we ban for IPv6.

File Systems

- `fss`(4): Don't crash when running multiple "dump -X". (PR#47514): **http://gnats.netbsd.org/47514**
-

Miscellaneous

- Update tzdata to 2013e.
- Update IPv6 DNS servers in sysinst.
- MAKEDEV: the console major number is not always 0.
- Update some TNF ssh keys in /etc/ssh/ssh_known_hosts.

Features to be removed in a later release

The following features are to be removed from NetBSD in the future:

- Support for soft dependencies, also knows as soft updates (see "softdep" in `mount`(8)) will be removed in the next major release.

  NetBSD 5.2.1 includes a preview of WAPBL (Write Ahead Physical Block Logging), which will replace soft dependencies in the next major release. See `wapbl`(4) and
  http://mail-index.netbsd.org/netbsd-announce/2008/12/14/msg000051.html
  for details.

- Support for Xen 2.0.x. The Xen-3 and hypervisor interface is diverging from Xen-2 as development is ongoing, increasing the maintenance cost for NetBSD.

  It should be considered as deprecated. Users are expected to not rely on it any more beyond this major release.

  Further, at least version 3.1 of Xen will be required to run NetBSD as Dom0 or DomU.

The NetBSD Foundation

The NetBSD Foundation is a tax exempt, not-for-profit 501(c)(3) corporation that devotes itself to the traditional goals and Spirit of the NetBSD Project and owns the trademark of the word "NetBSD". It supports the design, development, and adoption of NetBSD worldwide. More information on the NetBSD Foundation, its composition, aims, and work can be found at: **http://www.NetBSD.org/foundation/**

Sources of NetBSD

Refer to **http://www.NetBSD.org/mirrors/**

NetBSD 5.2.1 Release Contents

The root directory of the NetBSD 5.2.1 release is organized as follows:

`.../NetBSD-5.2.1/`

`CHANGES`	Changes between the 4.0 and 5.0 releases.
`CHANGES-5.0`	Changes between the initial 5.0 branch and final release of 5.0.
`CHANGES-5.1`	Changes between the 5.0 and 5.1 releases.

`CHANGES-5.2` Changes between the 5.1 and 5.2 releases.

`CHANGES-5.2.1`
Changes between the 5.2 and 5.2.1 releases.

`CHANGES.prev` Changes in previous NetBSD releases.

`LAST_MINUTE` Last minute changes and notes about the release.

`README.files` README describing the distribution's contents.

`source/` Source distribution sets; see below.

In addition to the files and directories listed above, there is one directory per architecture, for each of the architectures for which NetBSD 5.2.1 has a binary distribution.

The source distribution sets can be found in subdirectories of the `source` subdirectory of the distribution tree. They contain the complete sources to the system. The source distribution sets are as follows:

gnusrc This set contains the "gnu" sources, including the source for the compiler, assembler, groff, and the other GNU utilities in the binary distribution sets.
79 MB gzipped, 450 MB uncompressed

sharesrc This set contains the "share" sources, which include the sources for the man pages not associated with any particular program; the sources for the typesettable document set; the dictionaries; and more.
7 MB gzipped, 32 MB uncompressed

src This set contains all of the base NetBSD 5.2.1 sources which are not in **gnusrc**, **sharesrc**, or **syssrc**.
59 MB gzipped, 350 MB uncompressed

syssrc This set contains the sources to the NetBSD 5.2.1 kernel for all architectures as well as the `config`(1) utility.
34 MB gzipped, 197 MB uncompressed

xsrc This set contains the sources to the X Window System.
127 MB gzipped, 694 MB uncompressed

All the above source sets are located in the `source/sets` subdirectory of the distribution tree.

The source sets are distributed as compressed tar files. Except for the **pkgsrc** set, which is traditionally unpacked into `/usr/pkgsrc`, all sets may be unpacked into `/usr/src` with the command:

```
# cd / ; tar -zxpf set_name.tgz
```

In each of the source distribution set directories, there are files which contain the checksums of the files in the directory:

`MD5` MD5 digests in the format produced by the command:
cksum -a MD5 *file*.

`SHA512` SHA512 digests in the format produced by the command:
cksum -a SHA512 *file*.

The SHA512 digest is safer, but MD5 checksums are provided so that a wider range of operating systems can check the integrity of the release files.

NetBSD/hpcsh subdirectory structure

The hpcsh-specific portion of the NetBSD 5.2.1 release is found in the `hpcsh` subdirectory of the distribution: `.../NetBSD-5.2.1/hpcsh/`. It contains the following files and directories:

`INSTALL.html`
`INSTALL.ps`
`INSTALL.txt`
`INSTALL.more` Installation notes in various file formats, including this file. The `.more` file contains underlined text using the `more`(1) conventions for indicating italic and bold display.
`binary/`
`kernel/`
`netbsd-GENERIC.gz`
A gzipped NetBSD kernel containing code for everything supported in this release.
`sets/` hpcsh binary distribution sets; see below.
`installation/`
`misc/` Miscellaneous hpcsh installation utilities; see installation section below.

Binary distribution sets

The NetBSD hpcsh binary distribution sets contain the binaries which comprise the NetBSD 5.2.1 release for hpcsh. The binary distribution sets can be found in the `hpcsh/binary/sets` subdirectory of the NetBSD 5.2.1 distribution tree, and are as follows:

base The NetBSD 5.2.1 hpcsh **base** binary distribution. You *must* install this distribution set. It contains the base NetBSD utilities that are necessary for the system to run and be minimally functional.
28 MB gzipped, 74 MB uncompressed

comp Things needed for compiling programs. This set includes the system include files (`/usr/include`) and the various system libraries (except the shared libraries, which are included as part of the **base** set). This set also includes the manual pages for all of the utilities it contains, as well as the system call and library manual pages.
39 MB gzipped, 126 MB uncompressed

etc This distribution set contains the system configuration files that reside in `/etc` and in several other places. This set *must* be installed if you are installing the system from scratch, but should *not* be used if you are upgrading.
1 MB gzipped, 1 MB uncompressed

games This set includes the games and their manual pages.
4 MB gzipped, 8 MB uncompressed

kern-GENERIC
This set contains a NetBSD/hpcsh 5.2.1 `GENERIC` kernel, named `/netbsd`. You *must* install this distribution set.
2 MB gzipped, 3 MB uncompressed

man This set includes all of the manual pages for the binaries and other software contained in the **base** set. Note that it does not include any of the manual pages that are included in the other sets.
12 MB gzipped, 50 MB uncompressed

misc This set includes the system dictionaries, the typesettable document set, and other files from `/usr/share`.
4 MB gzipped, 13 MB uncompressed

text This set includes NetBSD's text processing tools, including `groff`(1), all related programs, and their manual pages.
3 MB gzipped, 10 MB uncompressed

NetBSD maintains its own set of sources for the X Window System in order to assure tight integration and compatibility. These sources are based on XFree86 4.5.0. Binary sets for the X Window System are distributed with NetBSD. The sets are:

xbase The basic files needed for a complete X client environment. This does not include the X servers.
7 MB gzipped, 19 MB uncompressed

xcomp The extra libraries and include files needed to compile X source code.
13 MB gzipped, 43 MB uncompressed

xfont Fonts needed by the X server and by X clients.
31 MB gzipped, 39 MB uncompressed

xetc Configuration files for X which could be locally modified.
1 MB gzipped, 1 MB uncompressed

xserver The X server.
5 MB gzipped, 11 MB uncompressed

The hpcsh binary distribution sets are distributed as gzipped tar files named with the extension **.tgz**, e.g. `base.tgz`.

The instructions given for extracting the source sets work equally well for the binary sets, but it is worth noting that if you use that method, the filenames stored in the sets are relative and therefore the files are extracted *below the current directory*. Therefore, if you want to extract the binaries into your system, i.e. replace the system binaries with them, you have to run the **`tar -xzpf`** command from the root directory (`/`) of your system.

Note: Each directory in the hpcsh binary distribution also has its own checksum files, just as the source distribution does.

NetBSD/hpcsh System Requirements and Supported Devices

A H/PC machine contains a keyboard and a touch screen and generally has 8 MB or more of RAM. The port supports the HPC form factor, as well as the H/PC Pro and PsPC (Palmsized PC) form factors.

Supported WindowsCE machines

- Hewlett-Packard
  - Jornada 680
  - Jornada 690
  - HP 620LX
- Hitachi
  - PERSONA HPW-50PAD
  - PERSONA HPW-230JC
  - PERSONA HPW-650PA (serial console only)

Supported WindowsCE devices

- CPUs
  - SH-3 SH7709
  - SH-3 SH7709R

  - SH-3 SH7709A
  - SH-4 SH7750V

- RAM requirements
  - 8 MB of RAM is required to run NetBSD/hpcsh. 4 MB is insufficient for most purposes.
- Console devices
  - built-in LCD screen
  - built-in keyboard
  - serial port (with boot option 'h')
- Storage devices
  - Flash ATA card, CF card (wd)
  - Adaptec APA-1460[Slim SCSI](aic)
- Network interfaces
  - MB8696x based Ethernet (mbe)
  - NE2000-compatible Ethernet (ne)
- Input devices
  - Keyboard.
- Miscellaneous
  - Battery-backed real-time clock.

Getting the NetBSD System on to Useful Media

Note that if you are installing or upgrading from writable media, it can be write-protected if you wish. These systems mount a root image from inside the kernel, and will not need to write to the media. If you booted from a floppy, the floppy disk may be removed from the drive after the system has booted.

Installation is supported from several media types, including:

- CD-ROM / DVD
- MS-DOS floppy
- FTP
- Remote NFS partition
- Tape
- Existing NetBSD partitions, if performing an upgrade

The steps necessary to prepare the distribution sets for installation depend upon which installation medium you choose. The steps for the various media are outlined below.

CD-ROM / DVD Find out where the distribution set files are on the CD-ROM or DVD. Likely locations are `binary/sets` and `hpcsh/binary/sets`.

Proceed to the instructions on installation.

MS-DOS floppy NetBSD does not include split distribution sets for installation by floppy. However, they can be created on a separate machine using the `split`(1) command, running e.g. **`split -b 235k base.tgz base.`** to split the `base.tgz` file from `hpcsh/binary/sets` into files named `base.aa`, `base.ab`, and so on. Repeat this for all `set_name.tgz` files, splitting them into `set_name.`*`xx`* files. Count the number of `set_name.`*`xx`* files that make up the distribution sets you want to install or upgrade. You will need one sixth that number of 1.44 MB floppies.

Format all of the floppies with MS-DOS. Do *not* make any of them bootable MS-DOS floppies, i.e. don't use `format /s` to format them. (If the floppies are bootable, then the MS-DOS system files that make them bootable will take up some space, and you

won't be able to fit the distribution set parts on the disks.) If you're using floppies that are formatted for MS-DOS by their manufacturers, they probably aren't bootable, and you can use them out of the box.

Place all of the `set_name.`*`xx`* files on the MS-DOS disks.

Once you have the files on MS-DOS disks, you can proceed to the next step in the installation or upgrade process. If you're installing NetBSD from scratch, go to the section on preparing your hard disk, below. If you're upgrading an existing installation, go directly to the section on upgrading.

FTP

The preparations for this installation/upgrade method are easy; all you need to do is make sure that there's an FTP site from which you can retrieve the NetBSD distribution when you're about to install or upgrade. If you don't have DHCP available on your network, you will need to know the numeric IP address of that site, and, if it's not on a network directly connected to the machine on which you're installing or upgrading NetBSD, you need to know the numeric IP address of the router closest to the NetBSD machine. Finally, you need to know the numeric IP address of the NetBSD machine itself. If you don't have access to a functioning nameserver during installation, the IPv4 address of **ftp.NetBSD.org** is `204.152.190.15` and the IPv6 address is `2001:4f8:3:7:230:48ff:fec6:9aaa:21` (as of May, 2010).

Once you have this information, you can proceed to the next step in the installation or upgrade process. If you're installing NetBSD from scratch, go to the section on preparing your hard disk, below. If you're upgrading an existing installation, go directly to the section on upgrading.

NFS

Place the NetBSD distribution sets you wish to install into a directory on an NFS server, and make that directory mountable by the machine on which you are installing or upgrading NetBSD. This will probably require modifying the `/etc/exports` file on the NFS server and resetting its mount daemon (mountd). (Both of these actions will probably require superuser privileges on the server.)

You need to know the numeric IP address of the NFS server, and, if you don't have DHCP available on your network and the server is not on a network directly connected to the machine on which you're installing or upgrading NetBSD, you need to know the numeric IP address of the router closest to the NetBSD machine. Finally, you need to know the numeric IP address of the NetBSD machine itself.

Once the NFS server is set up properly and you have the information mentioned above, you can proceed to the next step in the installation or upgrade process. If you're installing NetBSD from scratch, go to the section on preparing your hard disk, below. If you're upgrading an existing installation, go directly to the section on upgrading.

Tape

To install NetBSD from a tape, you need to make a tape that contains the distribution set files, in 'tar' format.

If you're making the tape on a UNIX-like system, the easiest way to do so is probably something like:

```
# tar -cf tape_device dist_directories
```

where *`tape_device`* is the name of the tape device that describes the tape drive you're using; possibly `/dev/rst0`, or something similar, but it will vary from system to system. (If you can't figure it out, ask your system administrator.) In the above example, *`dist_directories`* are the distribution sets' directories, for the distribution sets you wish to place on the tape. For instance, to put the **kern-GENERIC, base,**

and **etc** distributions on tape (in order to do the absolute minimum installation to a new disk), you would do the following:

```
# cd .../NetBSD-5.2.1
# cd hpcsh/binary
# tar -cf tape_device kern-GENERIC base etc
```

Note: You still need to fill in *tape_device* in the example.

Once you have the files on the tape, you can proceed to the next step in the installation or upgrade process. If you're installing NetBSD from scratch, go to the section on preparing your hard disk, below. If you're upgrading an existing installation, go directly to the section on upgrading.

Preparing your System for NetBSD installation

First and foremost, before beginning the installation process, *make sure you have a reliable backup* of any data on your Windows CE memory and settings that you wish to keep. Sadly, there is no freely available program to accomplish this task, so you must use ActiveSync or another commercially available program to backup your Windows CE machine before installing NetBSD/hpcsh.

Installing the NetBSD System

Installation mechanism is yet to be provided.

Post installation steps

Once you've got the operating system running, there are a few things you need to do in order to bring the system into a properly configured state. The most important steps are described below.

1. Configuring /etc/rc.conf

   If you or the installation software haven't done any configuration of /etc/rc.conf (**sysinst** usually will), the system will drop you into single user mode on first reboot with the message

   ```
   /etc/rc.conf is not configured. Multiuser boot aborted.
   ```

   and with the root file system (/) mounted read-only. When the system asks you to choose a shell, simply press RETURN to get to a /bin/sh prompt. If you are asked for a terminal type, respond with **vt220** (or whatever is appropriate for your terminal type) and press RETURN. You may need to type one of the following commands to get your delete key to work properly, depending on your keyboard:

   ```
   # stty erase '^h'
   # stty erase '^?'
   ```

   At this point, you need to configure at least one file in the /etc directory. You will need to mount your root file system read/write with:

   ```
   # /sbin/mount -u -w /
   ```

   Change to the /etc directory and take a look at the /etc/rc.conf file. Modify it to your tastes, making sure that you set rc_configured=YES so that your changes will be enabled and a multi-user boot can proceed. Default values for the various programs can be found in /etc/defaults/rc.conf, where some in-line documentation may be found. More complete documentation can be found in rc.conf(5).

   When you have finished editing /etc/rc.conf, type **exit** at the prompt to leave the single-user shell and continue with the multi-user boot.

   Other values that may need to be set in /etc/rc.conf for a networked environment are *hostname* and possibly *defaultroute*. You may also need to add an *ifconfig_int* for your ⟨int⟩ network interface, along the lines of

```
ifconfig_ne0="inet 192.0.2.123 netmask 255.255.255.0"
```

or, if you have *myname.my.dom* in `/etc/hosts`:

```
ifconfig_ne0="inet myname.my.dom netmask 255.255.255.0"
```

To enable proper hostname resolution, you will also want to add an `/etc/resolv.conf` file or (if you are feeling a little more adventurous) run `named`(8). See `resolv.conf`(5) or `named`(8) for more information. Instead of manually configuring network and naming service, DHCP can be used by setting `dhclient=YES` in `/etc/rc.conf`.

Other files in `/etc` that may require modification or setting up include `/etc/mailer.conf`, `/etc/nsswitch.conf`, and `/etc/wscons.conf`.

2. Logging in

   After reboot, you can log in as `root` at the login prompt. Unless you've set a password in **`sysinst`**, there is no initial password. You should create an account for yourself (see below) and protect it and the "root" account with good passwords. By default, root login from the network is disabled (even via `ssh`(1)). One way to become root over the network is to log in as a different user that belongs to group "wheel" (see `group`(5)) and use `su`(1) to become root.

3. Adding accounts

   Use the `useradd`(8) command to add accounts to your system. Do not edit `/etc/passwd` directly! See `vipw`(8) and `pwd_mkdb`(8) if you want to edit the password database.

4. The X Window System

   If you installed the X Window System, you may want to read the chapter about X in the NetBSD Guide:
   http://netbsd.org/docs/guide/en/chap-x.html

5. Installing third party packages

   If you wish to install any of the software freely available for UNIX-like systems you are strongly advised to first check the NetBSD package system, pkgsrc. pkgsrc automatically handles any changes necessary to make the software run on NetBSD. This includes the retrieval and installation of any other packages on which the software may depend.

   - More information on the package system is available at
     http://www.NetBSD.org/docs/software/packages.html
   - A list of available packages suitable for browsing is at
     ftp://ftp.NetBSD.org/pub/NetBSD/packages/pkgsrc/README.html
   - Precompiled binaries can be found at
     ftp://ftp.NetBSD.org/pub/pkgsrc/packages/NetBSD/
     usually in the `hpcsh/5.2.1/All` subdir. You can install them with the following commands under `sh`(1):

     ```
     # PKG_PATH=ftp://ftp.NetBSD.org/pub/pkgsrc/packages/NetBSD/hpcsh/5.2.1/All
     # export PKG_PATH
     # pkg_add -v tcsh
     # pkg_add -v bash
     # pkg_add -v perl
     # pkg_add -v apache
     # pkg_add -v kde
     # pkg_add -v firefox
     ...
     ```

If you are using csh(1) then replace the first two lines with the following:

```
# setenv PKG_PATH ftp://ftp.NetBSD.org/pub/pkgsrc/packages/NetBSD/hpcsh/5.2.1/A
```

Note: Some mirror sites don't mirror the /pub/pkgsrc directory. If you would like to use such mirrors, you could also try the /pub/NetBSD/packages/current-packages/NetBSD/hpcsh/5.2.1/All directory, which may have the same contents.

The above commands will install the Tenex-csh and Bourne Again shells, the Perl programming language, Apache web server, KDE desktop environment and the Firefox web browser as well as all the packages they depend on.

Note: In some cases the pkg_add(1) command will complain about a version mismatch of packages with a message like the following:

```
Warning: package 'foo' was built for a different version
of the OS:
NetBSD/i386 M.N (pkg) vs. NetBSD/i386 5.2.1 (this host),
```

This warning is harmless if the formal major release numbers are the same between the pkg and your host. Please refer to the NetBSD release glossary and graphs at

http://www.NetBSD.org/releases/release-map.html

for more information about NetBSD's release numbering scheme.

- The framework for compiling packages can be obtained by retrieving the file

  ftp://ftp.NetBSD.org/pub/NetBSD/packages/pkgsrc.tar.gz

  It is typically extracted into /usr/pkgsrc (though other locations work fine) with the commands:

  ```
  # cd /usr
  # tar -zxpf pkgsrc.tar.gz
  ```

  After extracting, see the doc/pkgsrc.txt file in the extraction directory (e.g., /usr/pkgsrc/doc/pkgsrc.txt) for more information.

6. Misc

   - Edit /etc/mail/aliases to forward root mail to the right place. Don't forget to run newaliases(1) afterwards.
   - The /etc/postfix/main.cf file will almost definitely need to be adjusted. If you prefer a different MTA, then install it using pkgsrc or by hand and adjust /etc/mailer.conf.
   - Edit /etc/rc.local to run any local daemons you use.
   - Many of the /etc files are documented in section 5 of the manual; so just invoking

     ```
     # man 5 filename
     ```

     is likely to give you more information on these files.

Upgrading a previously-installed NetBSD System

The easiest way to upgrade to NetBSD 5.2.1 is with binaries, and that is the method documented here.

To do the upgrade, you must have one form of boot media available. You must also have at least the **base** and **kern** binary distribution sets available. Finally, you must have sufficient disk space available to install the new binaries. Since files already installed on the system are overwritten in place, you only need additional free space for files which weren't previously installed or to account for growth of the sets between releases. If you have a few megabytes free on each of your root (/) and /usr partitions, you should have enough space.

Since upgrading involves replacing the kernel, boot blocks, and most of the system binaries, it has the potential to cause data loss. You are strongly advised to *back up* any important data on the NetBSD partition or on another operating system's partition on your disk before beginning the upgrade process.

The upgrade procedure is similar to an installation, but without the hard disk partitioning. **sysinst** will attempt to merge the settings stored in your /etc directory with the new version of NetBSD. Also, file systems are checked before unpacking the sets. Fetching the binary sets is done in the same manner as the installation procedure; refer to the installation part of the document for help.

After a new kernel has been copied to your hard disk, your machine is a complete NetBSD 5.2.1 system. However, that doesn't mean that you're finished with the upgrade process. You will probably want to update the set of device nodes you have in /dev. If you've changed the contents of /dev by hand, you will need to be careful about this, but if not, you can just cd into /dev, and run the command:

```
# sh MAKEDEV all
```

Finally, you will want to delete old binaries that were part of the version of NetBSD that you upgraded from and have since been removed from the NetBSD distribution.

Compatibility Issues With Previous NetBSD Releases

Users upgrading from previous versions of NetBSD may wish to bear the following problems and compatibility issues in mind when upgrading to NetBSD 5.2.1.

If your port uses X.Org and you see messages from the X server indicating that no devices were found, you may need to run **X -configure** and update your existing xorg.conf to use the BusID line from the newly-generated config file.

Dual-head support for PC systems has become broken for many configurations with the update to xorg-server 1.6.x, which has removed the userland PCI configuration mechanism, and needs to rely upon the OS. We hope to correct this for future releases. Workaround: The only workaround is non-trivial and requires programming several PCI BAR registers as they previously were in NetBSD 5.0.

If you are updating to NetBSD 5.2.1 without the aid of sysinst or postinstall and your port uses X.Org, be sure to remove /usr/X11R7/lib/X11/xkb/symbols/pc before extracting the xbase set. In the version of X.Org shipped with 5.0, this was a directory, but in more recent X.Org versions it is a file.

pkg_install now depends on the pkgdb cache for automatic conflict detection. It is recommended to rebuild the cache with

```
# pkg_admin rebuild
```

audit-packages.conf(5) has been superseded by pkg_install.conf(5). The default configuration is the same.

Support for pkg_view(1) has been retired.

The functionality of audit-packages(1) and download-vulnerability-list(1) has moved into pkg_admin(1). However, wrapper scripts that handle the common use cases are provided.

Issues when running older binaries on NetBSD 5.2.1

The pthread libraries from previous versions of NetBSD require that the sysctl(3) node kern.no_sa_support be set to 0. This affects the following environments:

- Running a 5.x kernel with an older userland.
- Running an older userland inside a chroot'ed environment on a 5.x system.

- Running older statically linked pthread applications.

The 5.x kernel defaults to `0` for `kern.no_sa_support`, which covers the first case. However, please note that a full installation of 5.x (either from scratch or through an upgrade) will set `kern.no_sa_support` to 1 during the boot process. This means that for the last two cases, you will have to manually set `kern.no_sa_support` to `0`, using either the `sysctl`(8) command or through `sysctl.conf`(5).

Note that **`sysinst`** will automatically invoke

```
postinstall fix
```

and thus all issues that are fixed by **`postinstall`** by default (see below) will be handled.

Issues affecting an upgrade from NetBSD 3.x releases

See the section below on upgrading from NetBSD 4.x as well.

The following issues can generally be resolved by running *postinstall* with the **etc** set:

```
postinstall -s /path/to/etc.tgz check
postinstall -s /path/to/etc.tgz fix
```

Issues fixed by *postinstall*:

- Various files in `/etc` need upgrading. These include:
  - `/etc/defaults/*`
  - `/etc/mtree/*`
  - `/etc/daily`
  - `/etc/weekly`
  - `/etc/monthly`
  - `/etc/security`
  - `/etc/rc.subr`
  - `/etc/rc`
  - `/etc/rc.shutdown`
  - `/etc/rc.d/*`
  - `/etc/envsys.conf`

The following issues need to be resolved manually:

- The users '_proxy', '_rwhod', and '_sdpd' and the groups '_proxy', '_rwhod' and '_sdpd' need to be created and the user 'uucp' needs to be updated.
- A number of things were removed in the NetBSD 4.0 release, including: the evbsh5 port, the Fortran 77 compiler (g77), NETCCITT, NETNS, Sendmail, Sushi, UUCP, and Vinum. If you were using any of these, please see the "Components removed from NetBSD" at
  http://www.NetBSD.org/releases/formal-4/NetBSD-4.0.html#removals
- The replacement of Sendmail by Postfix can be handled automatically by *postinstall* but it is not done by default. If you want to transition to Postfix, the command

  ```
  postinstall -s /path/to/etc.tgz fix mailerconf
  ```

  will update your `/etc/mailer.conf` file to use Postfix as the MTA. When using **`sysinst`** to upgrade the system, it will ask if you want this to be done.

  Note that if you have a customized Sendmail setup, you need to set up Postfix in an equivalent way; there is no tool for automatic conversion of Sendmail configuration to a Postfix one.

  Postfix will be started automatically when the system boots. You may see messages like "$sendmail is not set properly" at boot. You can suppress them by removing `/etc/rc.d/sendmail` and `/etc/rc.d/smmsp`. Those files and other parts of sendmail configuration like files under

`/usr/share/sendmail` are not removed by default while upgrading for those who want to continue using sendmail from outside the base system. If you want to delete them, *postinstall* can be used:

```
postinstall -s /path/to/etc.tgz fix sendmail
```

Issues affecting an upgrade from NetBSD 4.x releases

The following issues can generally be resolved by running *postinstall* with the **etc** set:

```
postinstall -s /path/to/etc.tgz check
postinstall -s /path/to/etc.tgz fix
```

Issues fixed by *postinstall*:

- Various files in `/etc` need upgrading. These include:
  - `/etc/defaults/*`
  - `/etc/mtree/*`
  - `/etc/daily`
  - `/etc/weekly`
  - `/etc/monthly`
  - `/etc/security`
  - `/etc/rc.subr`
  - `/etc/rc`
  - `/etc/rc.shutdown`
  - `/etc/rc.d/*`
  - `/etc/envsys.conf`

The following issues need to be resolved manually:

- The users '_httpd' and '_timedc' and the groups '_httpd' and '_timedc' need to be created.
- Unprivileged use of the `mount`(8) command now requires the *`nosuid`* and *`nodev`* options to be explicitly specified. Previously, these options were automatically enforced even if they were not explicitly specified.
- A number of things have been removed from the NetBSD 5.2.1 release. See the "Components removed from NetBSD" section near the beginning of this document for a list.

Using online NetBSD documentation

Documentation is available if you installed the manual distribution set. Traditionally, the "man pages" (documentation) are denoted by '`name(section)`'. Some examples of this are

- `intro`(1),
- `man`(1),
- `apropos`(1),
- `passwd`(1), and
- `passwd`(5).

The section numbers group the topics into several categories, but three are of primary interest: user commands are in section 1, file formats are in section 5, and administrative information is in section 8.

The *man* command is used to view the documentation on a topic, and is started by entering **`man`** [*`section`*] *`topic`*. The brackets [] around the section should not be entered, but rather indicate that the section is optional. If you don't ask for a particular section, the topic with the lowest numbered section name will be displayed. For instance, after logging in, enter

```
# man passwd
```

to read the documentation for passwd(1). To view the documentation for passwd(5), enter

```
# man 5 passwd
```

instead.

If you are unsure of what man page you are looking for, enter

```
# apropos subject-word
```

where *subject-word* is your topic of interest; a list of possibly related man pages will be displayed.

Administrivia

If you've got something to say, do so! We'd like your input. There are various mailing lists available via the mailing list server at majordomo@NetBSD.org. To get help on using the mailing list server, send mail to that address with an empty body, and it will reply with instructions. See **http://www.NetBSD.org/mailinglists/** for a web interface.

There are various mailing lists set up to deal with comments and questions about this release. Please send comments to: netbsd-comments@NetBSD.org.

To report bugs, use the send-pr(1) command shipped with NetBSD, and fill in as much information about the problem as you can. Good bug reports include lots of details.

Bugs also can be submitted and queried with the web interface at
http://www.NetBSD.org/support/send-pr.html

There are also port-specific mailing lists, to discuss aspects of each port of NetBSD. Use majordomo to find their addresses, or visit **http://www.NetBSD.org/mailinglists/**

If you're interested in doing a serious amount of work on a specific port, you probably should contact the 'owner' of that port (listed below).

If you'd like to help with this effort, and have an idea as to how you could be useful, send us mail or subscribe to: netbsd-users@NetBSD.org.

As a favor, please avoid mailing huge documents or files to these mailing lists. Instead, put the material you would have sent up for FTP or WWW somewhere, then mail the appropriate list about it, or, if you'd rather not do that, mail the list saying you'll send the data to those who want it.

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  Ralph Campbell
  Mike Karels
  Marshall Kirk McKusick

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- The Luleå Academic Computer Society for providing the backup services server.

- The Columbia University Computer Science Department for hosting the NYC build cluster.
- The Western Washington University Computer Science Department for running the WWU build cluster.
- The many organizations that provide NetBSD mirror sites.
- Without CVS, this project would be impossible to manage, so our hats go off to Brian Berliner, Jeff Polk, and the various other people who've had a hand in making CVS a useful tool.
- We list the individuals and organizations that have made donations or loans of hardware and/or money, to support NetBSD development, and deserve credit for it at **http://www.NetBSD.org/donations/** (If you're not on that list and should be, tell us! We probably were not able to get in touch with you, to verify that you wanted to be listed.)
- Finally, we thank all of the people who've put sweat and tears into developing NetBSD since its inception in January, 1993. (Obviously, there are a lot more people who deserve thanks here. If you're one of them, and would like to be mentioned, tell us!)

We are...

(in alphabetical order)

The NetBSD core group:

Alistair Crooks	agc@NetBSD.org
Quentin Garnier	cube@NetBSD.org
Matt Thomas	matt@NetBSD.org
YAMAMOTO Takashi	yamt@NetBSD.org
Christos Zoulas	christos@NetBSD.org

The portmasters (and their ports):

Erik Berls	cyber@NetBSD.org	**cobalt**
Manuel Bouyer	bouyer@NetBSD.org	**xen**
Simon Burge	simonb@NetBSD.org	**evbmips**
Simon Burge	simonb@NetBSD.org	**pmax**
Simon Burge	simonb@NetBSD.org	**sbmips**
Julian Coleman	jdc@NetBSD.org	**atari**
Marcus Comstedt	marcus@NetBSD.org	**dreamcast**
Andrew Doran	ad@NetBSD.org	**amd64**
Andrew Doran	ad@NetBSD.org	**i386**
Matthias Drochner	drochner@NetBSD.org	**cesfic**
Gavan Fantom	gavan@NetBSD.org	**iyonix**
Jaime A Fournier	ober@NetBSD.org	**zaurus**
Matt Fredette	fredette@NetBSD.org	**sun2**
Ichiro FUKUHARA	ichiro@NetBSD.org	**hpcarm**
Chris Gilbert	chris@NetBSD.org	**cats**
Ben Harris	bjh21@NetBSD.org	**acorn26**
Ross Harvey	ross@NetBSD.org	**alpha**
Nick Hudson	skrll@NetBSD.org	**hp700**
Martin Husemann	martin@NetBSD.org	**sparc64**
IWAMOTO Toshihiro	toshii@NetBSD.org	**hpcarm**
Darrin Jewell	dbj@NetBSD.org	**next68k**
Søren Jørvang	soren@NetBSD.org	**sgimips**

Wayne Knowles	wdk@NetBSD.org	**mipsco**
Takayoshi Kochi	kochi@NetBSD.org	**ia64**
Paul Kranenburg	pk@NetBSD.org	**sparc**
Michael Lorenz	macallan@NetBSD.org	**macppc**
Anders Magnusson	ragge@NetBSD.org	**vax**
Cherry G. Mathew	cherry@NetBSD.org	**ia64**
NISHIMURA Takeshi	nsmrtks@NetBSD.org	**x68k**
Tohru Nishimura	nisimura@NetBSD.org	**luna68k**
Tohru Nishimura	nisimura@NetBSD.org	**sandpoint**
Andrey Petrov	petrov@NetBSD.org	**sparc64**
Scott Reynolds	scottr@NetBSD.org	**mac68k**
Tim Rightnour	garbled@NetBSD.org	**ofppc**
Tim Rightnour	garbled@NetBSD.org	**prep**
Tim Rightnour	garbled@NetBSD.org	**rs6000**
Noriyuki Soda	soda@NetBSD.org	**arc**
Ignatios Souvatzis	is@NetBSD.org	**amiga**
Jonathan Stone	jonathan@NetBSD.org	**pmax**
Shin Takemura	takemura@NetBSD.org	**hpcmips**
Matt Thomas	matt@NetBSD.org	**alpha**
Matt Thomas	matt@NetBSD.org	**netwinder**
Jason Thorpe	thorpej@NetBSD.org	**algor**
Jason Thorpe	thorpej@NetBSD.org	**evbarm**
Jason Thorpe	thorpej@NetBSD.org	**shark**
Izumi Tsutsui	tsutsui@NetBSD.org	**ews4800mips**
Izumi Tsutsui	tsutsui@NetBSD.org	**hp300**
Izumi Tsutsui	tsutsui@NetBSD.org	**news68k**
Valeriy E. Ushakov	uwe@NetBSD.org	**landisk**
Nathan Williams	nathanw@NetBSD.org	**sun3**
Steve Woodford	scw@NetBSD.org	**evbppc**
Steve Woodford	scw@NetBSD.org	**mvme68k**
Steve Woodford	scw@NetBSD.org	**mvmeppc**
Reinoud Zandijk	reinoud@NetBSD.org	**acorn32**

The NetBSD 5.2.1 Release Engineering team:

Manuel Bouyer	bouyer@NetBSD.org
David Brownlee	abs@NetBSD.org
James Chacon	jmc@NetBSD.org
Julian Coleman	jdc@NetBSD.org
Håvard Eidnes	he@NetBSD.org
Liam J. Foy	liamjfoy@NetBSD.org
John Heasley	heas@NetBSD.org
Geert Hendrickx	ghen@NetBSD.org
Soren Jacobsen	snj@NetBSD.org
Phil Nelson	phil@NetBSD.org
Jeff Rizzo	riz@NetBSD.org
Stephen Borrill	sborrill@NetBSD.org

NetBSD Developers:

Nathan Ahlstrom	nra@NetBSD.org
Steve Allen	wormey@NetBSD.org
Jukka Andberg	jandberg@NetBSD.org
Julian Assange	proff@NetBSD.org
Lennart Augustsson	augustss@NetBSD.org
Christoph Badura	bad@NetBSD.org
Bang Jun-Young	junyoung@NetBSD.org
Dieter Baron	dillo@NetBSD.org
Robert V. Baron	rvb@NetBSD.org
Alan Barrett	apb@NetBSD.org
Grant Beattie	grant@NetBSD.org
Jason Beegan	jtb@NetBSD.org
Erik Berls	cyber@NetBSD.org
Hiroyuki Bessho	bsh@NetBSD.org
John Birrell	jb@NetBSD.org
Mason Loring Bliss	mason@NetBSD.org
Charles Blundell	cb@NetBSD.org
Rafal Boni	rafal@NetBSD.org
Stephen Borrill	sborrill@NetBSD.org
Sean Boudreau	seanb@NetBSD.org
Manuel Bouyer	bouyer@NetBSD.org
John Brezak	brezak@NetBSD.org
Allen Briggs	briggs@NetBSD.org
Mark Brinicombe	mark@NetBSD.org
Aaron Brown	abrown@NetBSD.org
Andrew Brown	atatat@NetBSD.org
David Brownlee	abs@NetBSD.org
Frederick Bruckman	fredb@NetBSD.org
Jon Buller	jonb@NetBSD.org
Simon Burge	simonb@NetBSD.org
Robert Byrnes	byrnes@NetBSD.org
Pavel Cahyna	pavel@NetBSD.org
D'Arcy J.M. Cain	darcy@NetBSD.org
Daniel Carosone	dan@NetBSD.org
Dave Carrel	carrel@NetBSD.org
James Chacon	jmc@NetBSD.org
Mihai Chelaru	kefren@NetBSD.org
Bill Coldwell	billc@NetBSD.org
Julian Coleman	jdc@NetBSD.org
Ben Collver	ben@NetBSD.org
Marcus Comstedt	marcus@NetBSD.org
Jeremy Cooper	jeremy@NetBSD.org
Chuck Cranor	chuck@NetBSD.org
Alistair Crooks	agc@NetBSD.org
Aidan Cully	aidan@NetBSD.org
Garrett D'Amore	gdamore@NetBSD.org
Johan Danielsson	joda@NetBSD.org

John Darrow	jdarrow@NetBSD.org
Jed Davis	jld@NetBSD.org
Matt DeBergalis	deberg@NetBSD.org
Arnaud Degroote	degroote@NetBSD.org
Rob Deker	deker@NetBSD.org
Chris G. Demetriou	cgd@NetBSD.org
Tracy Di Marco White	gendalia@NetBSD.org
Jaromír Dolecek	jdolecek@NetBSD.org
Andy Doran	ad@NetBSD.org
Roland Dowdeswell	elric@NetBSD.org
Emmanuel Dreyfus	manu@NetBSD.org
Matthias Drochner	drochner@NetBSD.org
Jun Ebihara	jun@NetBSD.org
Håvard Eidnes	he@NetBSD.org
Jaime A Fournier	ober@NetBSD.org
Stoned Elipot	seb@NetBSD.org
Michael van Elst	mlelstv@NetBSD.org
Enami Tsugutomo	enami@NetBSD.org
Bernd Ernesti	veego@NetBSD.org
Erik Fair	fair@NetBSD.org
Gavan Fantom	gavan@NetBSD.org
Hauke Fath	hauke@NetBSD.org
Hubert Feyrer	hubertf@NetBSD.org
Jason R. Fink	jrf@NetBSD.org
Matt J. Fleming	mjf@NetBSD.org
Marty Fouts	marty@NetBSD.org
Liam J. Foy	liamjfoy@NetBSD.org
Matt Fredette	fredette@NetBSD.org
Thorsten Frueauf	frueauf@NetBSD.org
Castor Fu	castor@NetBSD.org
Ichiro Fukuhara	ichiro@NetBSD.org
Quentin Garnier	cube@NetBSD.org
Thomas Gerner	thomas@NetBSD.org
Simon J. Gerraty	sjg@NetBSD.org
Justin Gibbs	gibbs@NetBSD.org
Chris Gilbert	chris@NetBSD.org
Eric Gillespie	epg@NetBSD.org
Brian Ginsbach	ginsbach@NetBSD.org
Paul Goyette	pgoyette@NetBSD.org
Michael Graff	explorer@NetBSD.org
Brian C. Grayson	bgrayson@NetBSD.org
Matthew Green	mrg@NetBSD.org
Andreas Gustafsson	gson@NetBSD.org
Ulrich Habel	rhaen@NetBSD.org
Jun-ichiro itojun Hagino	itojun@NetBSD.org
HAMAJIMA Katsuomi	hamajima@NetBSD.org
Adam Hamsik	haad@NetBSD.org
Juergen Hannken-Illjes	hannken@NetBSD.org
Charles M. Hannum	mycroft@NetBSD.org

Ben Harris	bjh21@NetBSD.org
Ross Harvey	ross@NetBSD.org
Eric Haszlakiewicz	erh@NetBSD.org
John Hawkinson	jhawk@NetBSD.org
HAYAKAWA Koichi	haya@NetBSD.org
John Heasley	heas@NetBSD.org
Geert Hendrickx	ghen@NetBSD.org
René Hexel	rh@NetBSD.org
Iain Hibbert	plunky@NetBSD.org
Kouichirou Hiratsuka	hira@NetBSD.org
Michael L. Hitch	mhitch@NetBSD.org
Ádám Hóka	ahoka@NetBSD.org
Jachym Holecek	freza@NetBSD.org
David A. Holland	dholland@NetBSD.org
Christian E. Hopps	chopps@NetBSD.org
Ken Hornstein	kenh@NetBSD.org
Marc Horowitz	marc@NetBSD.org
Eduardo Horvath	eeh@NetBSD.org
Nick Hudson	skrll@NetBSD.org
Shell Hung	shell@NetBSD.org
Martin Husemann	martin@NetBSD.org
Dean Huxley	dean@NetBSD.org
Love Hörnquist Åstrand	lha@NetBSD.org
Roland Illig	rillig@NetBSD.org
Bernardo Innocenti	bernie@NetBSD.org
Tetsuya Isaki	isaki@NetBSD.org
ITOH Yasufumi	itohy@NetBSD.org
IWAMOTO Toshihiro	toshii@NetBSD.org
Matthew Jacob	mjacob@NetBSD.org
Soren Jacobsen	snj@NetBSD.org
Lonhyn T. Jasinskyj	lonhyn@NetBSD.org
Darrin Jewell	dbj@NetBSD.org
Nicolas Joly	njoly@NetBSD.org
Chris Jones	cjones@NetBSD.org
Søren Jørvang	soren@NetBSD.org
Takahiro Kambe	taca@NetBSD.org
Masanori Kanaoka	kanaoka@NetBSD.org
Antti Kantee	pooka@NetBSD.org
Frank Kardel	kardel@NetBSD.org
Mattias Karlsson	keihan@NetBSD.org
KAWAMOTO Yosihisa	kawamoto@NetBSD.org
Mario Kemper	magick@NetBSD.org
Min Sik Kim	minskim@NetBSD.org
Thomas Klausner	wiz@NetBSD.org
Klaus Klein	kleink@NetBSD.org
John Klos	jklos@NetBSD.org
Wayne Knowles	wdk@NetBSD.org
Takayoshi Kochi	kochi@NetBSD.org
John Kohl	jtk@NetBSD.org

Daniel de Kok	daniel@NetBSD.org
Jonathan A. Kollasch	jakllsch@NetBSD.org
Paul Kranenburg	pk@NetBSD.org
Lubomir Kundrak	lkundrak@NetBSD.org
Jochen Kunz	jkunz@NetBSD.org
Martti Kuparinen	martti@NetBSD.org
Kentaro A. Kurahone	kurahone@NetBSD.org
Arnaud Lacombe	alc@NetBSD.org
Kevin Lahey	kml@NetBSD.org
David Laight	dsl@NetBSD.org
Johnny C. Lam	jlam@NetBSD.org
Martin J. Laubach	mjl@NetBSD.org
Greg Lehey	grog@NetBSD.org
Ted Lemon	mellon@NetBSD.org
Christian Limpach	cl@NetBSD.org
Frank van der Linden	fvdl@NetBSD.org
Joel Lindholm	joel@NetBSD.org
Tonnerre Lombard	tonnerre@NetBSD.org
Mike Long	mikel@NetBSD.org
Michael Lorenz	macallan@NetBSD.org
Warner Losh	imp@NetBSD.org
Tomasz Luchowski	zuntum@NetBSD.org
Federico Lupi	federico@NetBSD.org
Brett Lymn	blymn@NetBSD.org
Paul Mackerras	paulus@NetBSD.org
MAEKAWA Masahide	gehenna@NetBSD.org
Anders Magnusson	ragge@NetBSD.org
Cherry G. Mathew	cherry@NetBSD.org
David Maxwell	david@NetBSD.org
Gregory McGarry	gmcgarry@NetBSD.org
Dan McMahill	dmcmahill@NetBSD.org
Jared D. McNeill	jmcneill@NetBSD.org
Neil J. McRae	neil@NetBSD.org
Julio M. Merino Vidal	jmmv@NetBSD.org
Perry Metzger	perry@NetBSD.org
Luke Mewburn	lukem@NetBSD.org
Jean-Yves Migeon	jym@NetBSD.org
Brook Milligan	brook@NetBSD.org
Minoura Makoto	minoura@NetBSD.org
Simas Mockevicius	symka@NetBSD.org
der Mouse	mouse@NetBSD.org
Joseph Myers	jsm@NetBSD.org
Ken Nakata	kenn@NetBSD.org
Takeshi Nakayama	nakayama@NetBSD.org
Phil Nelson	phil@NetBSD.org
John Nemeth	jnemeth@NetBSD.org
Bob Nestor	rnestor@NetBSD.org
NISHIMURA Takeshi	nsmrtks@NetBSD.org
Tohru Nishimura	nisimura@NetBSD.org

NONAKA Kimihiro	nonaka@NetBSD.org
Takehiko NOZAKI	tnozaki@NetBSD.org
Tobias Nygren	tnn@NetBSD.org
OBATA Akio	obache@NetBSD.org
Jesse Off	joff@NetBSD.org
Tatoku Ogaito	tacha@NetBSD.org
OKANO Takayoshi	kano@NetBSD.org
Masaru Oki	oki@NetBSD.org
Atsushi Onoe	onoe@NetBSD.org
Greg Oster	oster@NetBSD.org
Rui Paulo	rpaulo@NetBSD.org
Jonathan Perkin	sketch@NetBSD.org
Andrey Petrov	petrov@NetBSD.org
Herb Peyerl	hpeyerl@NetBSD.org
Matthias Pfaller	matthias@NetBSD.org
Chris Pinnock	cjep@NetBSD.org
Adrian Portelli	adrianp@NetBSD.org
Peter Postma	peter@NetBSD.org
Dante Profeta	dante@NetBSD.org
Chris Provenzano	proven@NetBSD.org
Niels Provos	provos@NetBSD.org
Mindaugas Rasiukevicius	rmind@NetBSD.org
Michael Rauch	mrauch@NetBSD.org
Marc Recht	recht@NetBSD.org
Darren Reed	darrenr@NetBSD.org
Jeremy C. Reed	reed@NetBSD.org
Antoine Reilles	tonio@NetBSD.org
Tyler R. Retzlaff	rtr@NetBSD.org
Scott Reynolds	scottr@NetBSD.org
Michael Richardson	mcr@NetBSD.org
Tim Rightnour	garbled@NetBSD.org
Alan Ritter	rittera@NetBSD.org
Jeff Rizzo	riz@NetBSD.org
Hans Rosenfeld	hans@NetBSD.org
Gordon Ross	gwr@NetBSD.org
Steve Rumble	rumble@NetBSD.org
Ilpo Ruotsalainen	lonewolf@NetBSD.org
Heiko W. Rupp	hwr@NetBSD.org
Blair J. Sadewitz	bjs@NetBSD.org
David Sainty	dsainty@NetBSD.org
SAITOH Masanobu	msaitoh@NetBSD.org
Kazuki Sakamoto	sakamoto@NetBSD.org
Curt Sampson	cjs@NetBSD.org
Wilfredo Sanchez	wsanchez@NetBSD.org
Ty Sarna	tsarna@NetBSD.org
SATO Kazumi	sato@NetBSD.org
Jan Schaumann	jschauma@NetBSD.org
Matthias Scheler	tron@NetBSD.org
Silke Scheler	silke@NetBSD.org

Karl Schilke (rAT)	rat@NetBSD.org
Amitai Schlair	schmonz@NetBSD.org
Konrad Schroder	perseant@NetBSD.org
Georg Schwarz	schwarz@NetBSD.org
Lubomir Sedlacik	salo@NetBSD.org
Christopher SEKIYA	sekiya@NetBSD.org
Reed Shadgett	dent@NetBSD.org
John Shannon	shannonjr@NetBSD.org
Tim Shepard	shep@NetBSD.org
Takeshi Shibagaki	shiba@NetBSD.org
Naoto Shimazaki	igy@NetBSD.org
Takao Shinohara	shin@NetBSD.org
Takuya SHIOZAKI	tshiozak@NetBSD.org
Daniel Sieger	dsieger@NetBSD.org
Chuck Silvers	chs@NetBSD.org
Thor Lancelot Simon	tls@NetBSD.org
Jeff Smith	jeffs@NetBSD.org
Noriyuki Soda	soda@NetBSD.org
Wolfgang Solfrank	ws@NetBSD.org
SOMEYA Yoshihiko	someya@NetBSD.org
Bill Sommerfeld	sommerfeld@NetBSD.org
Jörg Sonnenberger	joerg@NetBSD.org
Ignatios Souvatzis	is@NetBSD.org
T K Spindler	dogcow@NetBSD.org
Bill Squier	groo@NetBSD.org
Jonathan Stone	jonathan@NetBSD.org
Bill Studenmund	wrstuden@NetBSD.org
Kevin Sullivan	sullivan@NetBSD.org
SUNAGAWA Keiki	kei@NetBSD.org
Kimmo Suominen	kim@NetBSD.org
Robert Swindells	rjs@NetBSD.org
Shin Takemura	takemura@NetBSD.org
TAMURA Kent	kent@NetBSD.org
Shin'ichiro TAYA	taya@NetBSD.org
Ian Lance Taylor	ian@NetBSD.org
Matt Thomas	matt@NetBSD.org
Jason Thorpe	thorpej@NetBSD.org
Christoph Toshok	toshok@NetBSD.org
Greg Troxel	gdt@NetBSD.org
Tsubai Masanari	tsubai@NetBSD.org
Izumi Tsutsui	tsutsui@NetBSD.org
UCHIYAMA Yasushi	uch@NetBSD.org
Masao Uebayashi	uebayasi@NetBSD.org
Shuichiro URATA	ur@NetBSD.org
Valeriy E. Ushakov	uwe@NetBSD.org
Todd Vierling	tv@NetBSD.org
Aymeric Vincent	aymeric@NetBSD.org
Paul Vixie	vixie@NetBSD.org
Mike M. Volokhov	mishka@NetBSD.org

Krister Walfridsson	kristerw@NetBSD.org
Lex Wennmacher	wennmach@NetBSD.org
Leo Weppelman	leo@NetBSD.org
Assar Westerlund	assar@NetBSD.org
Todd Whitesel	toddpw@NetBSD.org
Frank Wille	phx@NetBSD.org
Nathan Williams	nathanw@NetBSD.org
Rob Windsor	windsor@NetBSD.org
Dan Winship	danw@NetBSD.org
Jim Wise	jwise@NetBSD.org
Michael Wolfson	mbw@NetBSD.org
Colin Wood	ender@NetBSD.org
Steve Woodford	scw@NetBSD.org
YAMAMOTO Takashi	yamt@NetBSD.org
Yuji Yamano	yyamano@NetBSD.org
David Young	dyoung@NetBSD.org
Reinoud Zandijk	reinoud@NetBSD.org
S.P.Zeidler	spz@NetBSD.org
Maria Zevenhoven	maria7@NetBSD.org
Christos Zoulas	christos@NetBSD.org

Other contributors:

Dave Burgess	burgess@cynjut.infonet.net
Brian R. Gaeke	brg@dgate.org
Brad Grantham	grantham@tenon.com
Lawrence Kesteloot	kesteloo@cs.unc.edu
Waldi Ravens	waldi@moacs.indiv.nl.net

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