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# FreeBSD 3.3 Release Notes

## RELEASE NOTES FreeBSD 3.3-RELEASE

Welcome to 3.3-RELEASE, a full follow-on to 3.2-RELEASE released May 1999. In the months since 3.2 was released, many bug fixes and general enhancements have been made to the system. Please see relevant details below.

Any installation failures or crashes should be reported by using the send-pr command (those preferring a WEB based interface can also see [this page](#)).

For information about FreeBSD and the layout of the 3.3-RELEASE directory (especially if you're installing from floppies!), see ABOUT.TXT. For installation instructions, see the INSTALL.TXT and HARDWARE.TXT files.

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### 1. What's new since 3.2-RELEASE

#### 1.1. KERNEL CHANGES

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The Berkeley Packet Filter (bpf) is enabled by default. This is to allow DHCP supported installs.

Linux mode has undergone significant bug fixes and improvements.

The i386 bootstrap has been enhanced for some problematic systems.

Driver support has been added for IEEE 802.11 PCMCIA wireless network

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|                                                                |
|----------------------------------------------------------------|
| <p><b>Amazon Ex. 1022</b><br/>IPR Petition - USP 7,784,058</p> |
|----------------------------------------------------------------|

1/11

**Oracle Ex. 1022**  
**Oracle v. VirtaMove, IPR2025-00966**

adapters based on the Lucent Hermes chipset, including the Lucent WaveLAN/IEEE 802.11 and the Cabletron RoamAbout. Both 2Mbps and 6Mbps Turbo adapters are supported. [MERGED]

Driver support has been added for PCI fast Ethernet cards based on the ADMtek Inc. AL981 Comet chipset.

Driver support has been added for PCI fast Ethernet cards based on the LC82C115 'PNIC II' chipset.

Driver support has been added for SysKonnnect SK-984x PCI gigabit Ethernet adapters.

Driver support has been added for Adaptec Duralink PCI Ethernet adapters based on the Adaptec AIC-6915 fast Ethernet controller.

Driver support for M-systems DiskOnChip products integrated.

Driver support has been added for the 3Com 3c905C-TX.

Driver support has been added for the 3Com 3x574-TX 16-bit FastEtherlink PC-card support.

Driver support has been added for the Compaq Smart Raid family of RAID controllers.

Driver support for a number of Realtek and Avance Asound audio cards has been added.

USB support has been improved.

Major updates to the Vinum volume manager have been incorporated. [Though the new RAID-5 features should still be considered experimental since they are, well, new].

A number of NFS problems have been fixed.

APM support has been improved. A kernel panic problem with an older APM BIOSes has been fixed. Also, the suspend/standby transition is more robust.

User- and group-based IPFW firewalling has been added.

Support for probabilistic rule matching has been added to IPFW.

IPFW logging is now dynamic. IPFW logging counts can be reset, and any given rule can be given an arbitrary logging limit.

## 1.2. SECURITY FIXES

-----

A problem with file systems flags has been corrected.

A problem with profil(2) remaining inactive after an exec call.

A remotely exploitable root hole in amd (the automount daemon) has been fixed.

The wu-ftpd port has been updated with the latest patches to prevent possible remote root exploits.

The proftpd port has been updated with the latest patches to prevent possible remote root exploits.

The samba port has been updated with the latest patches to prevent

possible remote root exploits.

The inn port has been updated to a new version that corrects some buffer overflows.

Since FreeBSD 3.0 RELEASE, many minor problems with the network stack have been corrected which could have been exploited for denial of service attacks.

### 1.3. USERLAND CHANGES

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The support environment for Linux mode has finally been updated. The linux\_lib and linux\_devel ports are replaced by resp. linux\_base and linux\_devtools. These new ports are based on Red Hat 5.2 packages and include support for both glibc2 and libc5 based applications.

Sysinstall now contains DHCP client support.

TCP Wrapper support in inetd(8) is now controlled with command-line options and data-gram (UDP) services may be wrapped in addition to previously wrapped service types. Please see the manpage for details, since inetd run without command-line options will do no wrapping.

ISC's DHCP client has been upgraded to version 2.0.

Bison, the GNU parser generator, has been upgraded to version 1.28.

The Advanced Power Management monitor daemon, apmd(8), has been added. This allows the user to select the APM events to be handled from userland and specify the commands for a given event. This allows the APM behavior to be configured in a flexible manner. Please see the manpage for details.

## 2. Supported Configurations

-----

FreeBSD currently runs on a wide variety of ISA, VLB, EISA and PCI bus based PC's, ranging from 386sx to Pentium class machines (though the 386sx is not recommended). Support for generic IDE or ESDI drive configurations, various SCSI controller, network and serial cards is also provided.

What follows is a list of all peripherals currently known to work with FreeBSD. Other configurations may also work, we have simply not as yet received confirmation of this.

### 2.1. Disk Controllers

-----

WD1003 (any generic MFM/RLL)  
WD1007 (any generic IDE/ESDI)  
IDE  
ATA

Adaptec 1535 ISA SCSI controllers  
Adaptec 154x series ISA SCSI controllers  
Adaptec 174x series EISA SCSI controller in standard and enhanced mode.  
Adaptec 274X/284X/2920C/294x/2950/3940/3950 (Narrow/Wide/Twin) series EISA/VLB/PCI SCSI controllers.  
Adaptec AIC7850, AIC7860, AIC7880, AIC789x, on-board SCSI controllers.

AdvanSys SCSI controllers (all models).

BusLogic MultiMaster controllers:

[ Please note that BusLogic/Mylex "Flashpoint" adapters are NOT yet supported ]

BusLogic MultiMaster "W" Series Host Adapters:

BT-948, BT-958, BT-958D

BusLogic MultiMaster "C" Series Host Adapters:

BT-946C, BT-956C, BT-956CD, BT-445C, BT-747C, BT-757C, BT-757CD, BT-545C, BT-540CF

BusLogic MultiMaster "S" Series Host Adapters:

BT-445S, BT-747S, BT-747D, BT-757S, BT-757D, BT-545S, BT-542D, BT-742A, BT-542B

BusLogic MultiMaster "A" Series Host Adapters:

BT-742A, BT-542B

AMI FastDisk controllers that are true BusLogic MultiMaster clones are also supported.

DPT SmartCACHE Plus, SmartCACHE III, SmartRAID III, SmartCACHE IV and SmartRAID IV SCSI/RAID controllers are supported. The DPT SmartRAID/CACHE V is not yet supported.

SymBios (formerly NCR) 53C810, 53C810a, 53C815, 53C820, 53C825a, 53C860, 53C875, 53C875j, 53C885, 53C895 and 53C896 PCI SCSI controllers:

ASUS SC-200

Data Technology DTC3130 (all variants)

Diamond FirePort (all)

NCR cards (all)

Symbios cards (all)

Tekram DC390W, 390U and 390F

Tyan S1365

QLogic 1020, 1040, 1040B, 1080 and 1240 SCSI Host Adapters.

QLogic 2100 Fibre Channel Adapters (private loop only).

DTC 3290 EISA SCSI controller in 1542 emulation mode.

With all supported SCSI controllers, full support is provided for SCSI-I & SCSI-II peripherals, including hard disks, optical disks, tape drives (including DAT and 8mm Exabyte), medium changers, processor target devices and CDROM drives. WORM devices that support CDROM commands are supported for read-only access by the CDROM driver. WORM/CD-R/CD-RW writing support is provided by cdrecord, which is in the ports tree.

The following CD-ROM type systems are supported at this time:

(cd) SCSI interface (also includes ProAudio Spectrum and SoundBlaster SCSI)

(matcd) Matsushita/Panasonic (Creative SoundBlaster) proprietary interface (562/563 models)

(scd) Sony proprietary interface (all models)

(wcd) ATAPI IDE interface

The following drivers were supported under the old SCSI subsystem, but are NOT YET supported under the new CAM SCSI subsystem:

Tekram DC390 and DC390T controllers (maybe other cards based on the AMD 53c974 as well).

NCR5380/NCR53400 ("ProAudio Spectrum") SCSI controller.

UltraStor 14F, 24F and 34F SCSI controllers.

Seagate ST01/02 SCSI controllers.

Future Domain 8xx/950 series SCSI controllers.

WD7000 SCSI controller.

Adaptec 1510 series ISA SCSI controllers (not for bootable devices)  
 Adaptec 152x series ISA SCSI controllers  
 Adaptec AIC-6260 and AIC-6360 based boards, which includes the AHA-152x  
 and SoundBlaster SCSI cards.

[ Note: There is work-in-progress to port the AIC-6260/6360 and  
 UltraStor drivers to the new CAM SCSI framework, but no estimates on  
 when or if they will be completed. ]

Unmaintained drivers, they might or might not work for your hardware:

Floppy tape interface (Colorado/Mountain/Insight)

(mcd) Mitsumi proprietary CD-ROM interface (all models)

## 2.2. Ethernet cards

-----  
 Adaptec Duralink PCI fast Ethernet adapters based on the Adaptec  
 AIC-6915 fast Ethernet controller chip, including the following:

ANA-62011 64-bit single port 10/100-BaseTX adapter  
 ANA-62022 64-bit dual port 10/100-BaseTX adapter  
 ANA-62044 64-bit quad port 10/100-BaseTX adapter  
 ANA-69011 32-bit single port 10/100-BaseTX adapter  
 ANA-62020 64-bit single port 100-BaseFX adapter

Allied-Telesis AT1700 and RE2000 cards

Alteon Networks PCI gigabit Ethernet NICs based on the Tigon 1 and Tigon 2  
 chipsets, including the following:

Alteon AceNIC (Tigon 1 and 2)  
 3Com 3c985-SX (Tigon 1 and 2)  
 Netgear GA620 (Tigon 2)  
 Silicon Graphics Gigabit Ethernet  
 DEC/Compaq EtherWORKS 1000  
 NEC Gigabit Ethernet

AMD PCnet/PCI (79c970 & 53c974 or 79c974)

SMC Elite 16 WD8013 Ethernet interface, and most other WD8003E,  
 WD8003EBT, WD8003W, WD8013W, WD8003S, WD8003SBT and WD8013EBT  
 based clones. SMC Elite Ultra. SMC Etherpower II.

RealTek 8129/8139 fast Ethernet NICs including the following:

Allied Telesyn AT2550  
 Allied Telesyn AT2500TX  
 Genius GF100TXR (RTL8139)  
 NDC Communications NE100TX-E  
 OvisLink LEF-8129TX  
 OvisLink LEF-8139TX  
 Netronix Inc. EA-1210 NetEther 10/100  
 KTX-9130TX 10/100 Fast Ethernet  
 Accton "Cheetah" EN1027D (MPX 5030/5038; RealTek 8139 clone?)  
 SMC EZ Card 10/100 PCI 1211-TX

Lite-On 82c168/82c169 PNIC fast Ethernet NICs including the following:

LinkSys EtherFast LNE100TX  
 NetGear FA310-TX Rev. D1  
 Matrox FastNIC 10/100  
 Kingston KNE110TX

Macronix 98713, 98713A, 98715, 98715A and 98725 fast Ethernet NICs

NDC Communications SFA100A (98713A)  
CNet Pro120A (98713 or 98713A)  
CNet Pro120B (98715)  
SVEC PN102TX (98713)

Macronix/Lite-On PNIC II LC82C115 fast Ethernet NICs including the following:  
LinkSys EtherFast LNE100TX Version 2

Winbond W89C840F fast Ethernet NICs including the following:  
Trendware TE100-PCIE

VIA Technologies VT3043 "Rhine I" and VT86C100A "Rhine II" fast Ethernet NICs including the following:  
Hawking Technologies PN102TX  
D-Link DFE530TX

SysKonnnect SK-984x PCI gigabit Ethernet cards including the following:  
SK-9841 1000baseLX single mode fiber, single port  
SK-9842 1000baseSX multi-mode fiber, single port  
SK-9843 1000baseLX single mode fiber, dual port  
SK-9844 1000baseSX multi-mode fiber, dual port

Texas Instruments ThunderLAN PCI NICs, including the following:  
Compaq Netelligent 10, 10/100, 10/100 Proliant, 10/100 Dual-Port  
Compaq Netelligent 10/100 TX Embedded UTP, 10 T PCI UTP/Coax, 10/100 TX UTP  
Compaq NetFlex 3P, 3P Integrated, 3P w/ BNC  
Olicom OC-2135/2138, OC-2325, OC-2326 10/100 TX UTP  
Racore 8165 10/100-BaseTX  
Racore 8148 10-BaseT/100-BaseTX/100-BaseFX multi-personality

ADMtek Inc. AL981-based PCI fast Ethernet NICs

ASIX Electronics AX88140A PCI NICs, including the following:  
Alfa Inc. GFC2204  
CNet Pro110B

DEC EtherWORKS III NICs (DE203, DE204, and DE205)  
DEC EtherWORKS II NICs (DE200, DE201, DE202, and DE422)  
DEC DC21040, DC21041, or DC21140 based NICs (SMC Etherpower 8432T, DE245, etc)  
DEC FDDI (DEFPA/DEFEA) NICs

Fujitsu MB86960A/MB86965A

HP PC Lan+ cards (model numbers: 27247B and 27252A).

Intel EtherExpress 16  
Intel EtherExpress Pro/10  
Intel EtherExpress Pro/100B PCI Fast Ethernet

Isolan AT 4141-0 (16 bit)  
Isolink 4110 (8 bit)

Novell NE1000, NE2000, and NE2100 Ethernet interface.

PCI network cards emulating the NE2000: RealTek 8029, NetVin 5000,  
Winbond W89C940, Surecom NE-34, VIA VT86C926.

3Com 3C501 cards

3Com 3C503 Etherlink II

3Com 3c505 Etherlink/+

3Com 3C507 Etherlink 16/TP

3Com 3C509, 3C579, 3C589 (PCMCIA), 3C590/592/595/900/905/905B/905C PCI and EISA (Fast) Etherlink III / (Fast) Etherlink XL

3Com 3c980/3c980B Fast Etherlink XL server adapter

3Com 3cSOH0100-TX OfficeConnect adapter

Toshiba Ethernet cards

Crystal Semiconductor CS89x0-based NICs, including:  
IBM Etherjet ISA

PCMCIA Etherjet cards from IBM and National Semiconductor are also supported.

Note that NO token ring cards are supported at this time as we're still waiting for someone to donate a driver for one of them. Any takers?

## 2.3 ATM

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- o ATM Host Interfaces
  - FORE Systems, Inc. PCA-200E ATM PCI Adapters
  - Efficient Networks, Inc. ENI-155p ATM PCI Adapters
- o ATM Signaling Protocols
  - The ATM Forum UNI 3.1 signaling protocol
  - The ATM Forum UNI 3.0 signaling protocol
  - The ATM Forum ILMI address registration
  - FORE Systems's proprietary SPANS signaling protocol
  - Permanent Virtual Channels (PVCs)
- o IETF "Classical IP and ARP over ATM" model
  - RFC 1483, "Multi-protocol Encapsulation over ATM Adaptation Layer 5"
  - RFC 1577, "Classical IP and ARP over ATM"
  - RFC 1626, "Default IP MTU for use over ATM AAL5"
  - RFC 1755, "ATM Signaling Support for IP over ATM"
  - RFC 2225, "Classical IP and ARP over ATM"
  - RFC 2334, "Server Cache Synchronization Protocol (SCSP)"
  - Internet Draft draft-ietf-ion-scsdp-atmarp-00.txt, "A Distributed ATMARP Service Using SCSP"
- o ATM Sockets interface

## 2.4. Misc

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AST 4 port serial card using shared IRQ.

ARNET 8 port serial card using shared IRQ.  
ARNET (now Digiboard) Sync 570/i high-speed serial.

Boca BB1004 4-Port serial card (Modems NOT supported)  
Boca IOAT66 6-Port serial card (Modems supported)  
Boca BB1008 8-Port serial card (Modems NOT supported)  
Boca BB2016 16-Port serial card (Modems supported)

Comtrol Rocketport card.

Cyclades Cyclom-y Serial Board.

STB 4 port card using shared IRQ.

SDL Communications Riscom/8 Serial Board.

SDL Communications RISCom/N2 and N2pci high-speed sync serial boards.

Stallion multi-port serial boards: EasyIO, EasyConnection 8/32 & 8/64, ONboard 4/16 and Brumby.

Specialix SI/XIO/SX ISA, EISA and PCI serial expansion cards/modules.

Adlib, SoundBlaster, SoundBlaster Pro, ProAudioSpectrum, Gravis UltraSound and Roland MPU-401 sound cards. (snd driver)

Most ISA audio codecs manufactured by Crystal Semiconductors, OPTi, Creative Labs, Avance, Yamaha and ENSONIQ. (pcm driver)

Connectix QuickCam  
Matrox Meteor Video frame grabber  
Creative Labs Video Spigot frame grabber  
Cortex1 frame grabber  
Hauppauge Wincast/TV boards (PCI)  
STB TV PCI  
Intel Smart Video Recorder III  
Various Frame grabbers based on Brooktree Bt848 / Bt878 chip.

HP4020, HP6020, Philips CDD2000/CDD2660 and Plasmon CD-R drives.

PS/2 mice

Standard PC Joystick

X-10 power controllers

GPIO and Transputer drivers.

Genius and Mustek hand scanners.

Xilinx XC6200 based reconfigurable hardware cards compatible with the HOT1 from Virtual Computers ([www.vcc.com](http://www.vcc.com))

Support for Dave Mills experimental Loran-C receiver.

Lucent Technologies WaveLAN/IEEE 802.11 PCMCIA and ISA standard speed (2Mbps) and turbo speed (6Mbps) wireless network adapters and work-a-likes (NCR WaveLAN/IEEE 802.11, Cabletron RoamAbout 802.11 DS). Note: the ISA versions of these adapters are actually PCMCIA cards combined with an ISA to PCMCIA bridge card, so both kinds of devices work with the same driver.

FreeBSD currently does NOT support IBM's microchannel (MCA) bus.

### 3. Obtaining FreeBSD

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You may obtain FreeBSD in a variety of ways:

#### 3.1. FTP/Mail

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You can ftp FreeBSD and any or all of its optional packages from `'ftp.FreeBSD.org'` - the official FreeBSD release site.

For other locations that mirror the FreeBSD software see the file MIRROR.SITES. Please ftp the distribution from the site closest (in networking terms) to you. Additional mirror sites are always welcome! Contact [freebsd-admin@FreeBSD.org](mailto:freebsd-admin@FreeBSD.org) for more details if you'd like to become an official mirror site.

If you do not have access to the Internet and electronic mail is your only recourse, then you may still fetch the files by sending mail to ``ftpmail@ftpmail.vix.com'` - putting the keyword "help" in your message to get more information on how to fetch files using this mechanism. Please do note, however, that this will end up sending many \*tens of megabytes\* through the mail and should only be employed as an absolute LAST resort!

### 3.2. CDROM

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FreeBSD 3.3-RELEASE CDs may be ordered on CDROM from:

Walnut Creek CDROM  
4041 Pike Lane, Suite F  
Concord CA 94520  
1-800-786-9907, +1-925-674-0783, +1-925-674-0821 (FAX)

Or via the Internet from `orders@cdrom.com` or `http://www.cdrom.com`.  
Their current catalog can be obtained via ftp from:

`ftp://ftp.cdrom.com/cdrom/catalog`

Cost per -RELEASE CD is \$39.95 or \$24.95 with a FreeBSD subscription. FreeBSD SNAPshot CDs, when available, are \$39.95 or \$14.95 with a FreeBSD-SNAP subscription (-RELEASE and -SNAP subscriptions are entirely separate). With a subscription, you will automatically receive updates as they are released. Your credit card will be billed when each disk is shipped and you may cancel your subscription at any time without further obligation.

Shipping (per order not per disc) is \$5 in the US, Canada or Mexico and \$9.00 overseas. They accept Visa, Mastercard, Discover, American Express or checks in U.S. Dollars and ship COD within the United States. California residents please add 8.25% sales tax.

Should you be dissatisfied for any reason, the CD comes with an unconditional return policy.

### 4. Upgrading from previous releases of FreeBSD

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If you're upgrading from a previous release of FreeBSD, most likely it's 2.2.x or 2.1.x (in some lesser number of cases) and some of the following issues may affect you, depending of course on your chosen method of upgrading. There are two popular ways of upgrading FreeBSD distributions:

- o Using sources, via `/usr/src`
- o Using `sysinstall`'s (binary) upgrade option.

In the case of using sources, there are simply two targets you need to be aware of: The standard ``upgrade'` target, which will upgrade a 2.x or 3.0 system to 3.3 and the ``world'` target, which will take an already upgraded system and keep it in sync with whatever changes have happened since the initial upgrade.

In the case of using the binary upgrade option, the system will go straight to 3.3/ELF but also populate the `/<basepath>/lib/aout` directories for backwards compatibility with older binaries.

In either case, going to ELF will mean that you'll have somewhat smaller binaries and access to a lot more compiler goodies which have

been already been ported to other ELF environments (our older and somewhat cruffy a.out format being largely unsupported by most other software projects). Those who wish to retain access to the older a.out dynamic executables should be sure and install the compat22 distribution. Notice that the a.out libraries won't be accessible until the system is rebooted, which may cause trouble with certain a.out packages.

Also, do not use install disks or sysinstall from previous versions, as version 3.1 introduced a new bootstrapping procedure, requiring new boot blocks to be installed (because of elf kernels), and version 3.2 has further modifications to the bootstrapping procedure.

[ other important upgrading notes should go here]

## 5. Reporting problems, making suggestions, submitting code.

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Your suggestions, bug reports and contributions of code are always valued - please do not hesitate to report any problems you may find (preferably with a fix attached, if you can!).

The preferred method to submit bug reports from a machine with Internet mail connectivity is to use the send-pr command or use the CGI script at <http://www.FreeBSD.org/send-pr.html>. Bug reports will be dutifully filed by our faithful bugfiler program and you can be sure that we'll do our best to respond to all reported bugs as soon as possible. Bugs filed in this way are also visible on our WEB site in the support section and are therefore valuable both as bug reports and as "signposts" for other users concerning potential problems to watch out for.

If, for some reason, you are unable to use the send-pr command to submit a bug report, you can try to send it to:

[freebsd-bugs@FreeBSD.org](mailto:freebsd-bugs@FreeBSD.org)

Note that send-pr itself is a shell script that should be easy to move even onto a totally different system. We much prefer if you could use this interface, since it make it easier to keep track of the problem reports. However, before submitting, please try to make sure whether the problem might have already been fixed since.

Otherwise, for any questions or tech support issues, please send mail to:

[freebsd-questions@FreeBSD.org](mailto:freebsd-questions@FreeBSD.org)

Additionally, being a volunteer effort, we are always happy to have extra hands willing to help - there are already far more desired enhancements than we'll ever be able to manage by ourselves! To contact us on technical matters, or with offers of help, please send mail to:

[freebsd-hackers@FreeBSD.org](mailto:freebsd-hackers@FreeBSD.org)

Please note that these mailing lists can experience \*significant\* amounts of traffic and if you have slow or expensive mail access and are only interested in keeping up with significant FreeBSD events, you may find it preferable to subscribe instead to:

[freebsd-announce@FreeBSD.org](mailto:freebsd-announce@FreeBSD.org)

All of the mailing lists can be freely joined by anyone wishing to do so. Send mail to MajorDomo@FreeBSD.org and include the keyword 'help' on a line by itself somewhere in the body of the message. This will give you more information on joining the various lists, accessing archives, etc. There are a number of mailing lists targeted at special interest groups not mentioned here, so send mail to majordomo and ask about them!

## 6. Acknowledgments

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FreeBSD represents the cumulative work of many dozens, if not hundreds, of individuals from around the world who have worked very hard to bring you this release. For a complete list of FreeBSD project staffers, please see:

<http://www.FreeBSD.org/handbook/staff.html>

or, if you've loaded the doc distribution:

<file:/usr/share/doc/handbook/staff.html>

Special mention to:

The donors listed at <http://www.FreeBSD.org/handbook/donors.html>

And to the many thousands of FreeBSD users and testers all over the world, without whom this release simply would not have been possible.

We sincerely hope you enjoy this release of FreeBSD!

The FreeBSD Project

[Release Home](#)

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[freebsd-questions@FreeBSD.ORG](mailto:freebsd-questions@FreeBSD.ORG)

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