Linux Hardware Compatibility HOWTO

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This document lists most of the hardware supported by Linux and helps you locate any necessary drivers.

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1 Introduction

NOTE: CHECK APPENDIX C ON PnP DEVICES AND ISAPNPTOOLS.

1.1 Welcome

Welcome to the Linux Hardware Compatibility HOWTO. This document lists most of the hardware components (not computers with components build in) supported by Linux, so reading through this document you can choose the components for your own Linux computer. As the list of components supported by Linux is growing rapidly, this document will never be complete. So, when components are not mentioned in this HOWTO, the only reason will be that I don't know they are supported. I simply have not found support for the component and/or nobody has told me about support.

Subsections titled Others list hardware with alpha or beta drivers in varying degrees of usability or other drivers that aren't included in standard kernels. Note that some drivers only exist in alpha kernels, so if you see something listed as supported but isn't in your version of the Linux kernel, upgrade.

The latest version of this document can be found on
<http://users.bart.nl/~patrickr/hardware-howto/Hardware-HOWTO.html>, SunSite and all the usual mirror sites. Translations of this and other Linux HOWTO's can be found at
<http://sunsite.unc.edu/pub/Linux/docs/HOWTO/tanslations> and
<ftp://sunsite.unc.edu/pub/Linux/docs/HOWTO/tanslations>.

If you know of any Linux hardware (in)compatibilities not listed here please let me know, just send mail. Thanks.

Still need some help selecting components after reading this document? Check the "Build Your Own PC" site at <http://www.verinet.com/pc/>.

1.2 Copyright

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If you use this or any other Linux HOWTO's in a commercial distribution, it would be nice to send the authors a complimentary copy of your product.

1.3 System architectures

This document only deals with Linux for Intel platforms, for other platforms check the following:

- ARM Linux
  <http://www.arm.uk.linux.org/~rmk92/armlinux.html>

- Linux/68k
- Linux/8086
  <http://www.linux.org.uk/Linux8086.html>
- Linux/Alpha
  <http://www.azstarnet.com/~axplinux/>
- Linux/MIPS
  <http://www.fnet.fr/linux-mips/>
- Linux/PowerPC
  <http://www.linuxppc.org/>
- Linux for Acorn
  <http://www.ph.kcl.ac.uk/~amb/linux.html>
- Linux for PowerMac
  <http://ftp.sunet.se/pub/os/Linux/mklinux/mkarchive/info/index.html>

2 Computers/Motherboards/BIOS

ISA, VLB, EISA, and PCI buses are all supported.

PS/2 and Microchannel (MCA) is supported in the standard kernel 2.0.7. There is support for MCA in kernel 2.1.16 and newer, but this code is still a little buggy. For more information you can always look at the Micro Channel Linux Home Page (<http://glycerine.itsmm.uni.edu/mca/>)

2.1 Specific systems

- IBM PS/2 MCA systems
  <ftp://ftp.dcrl.nd.edu/pub/misc/linux/>

3 Laptops

For more information about Linux and laptops, the following site is a good starting point.

- Linux Laptop Homepage
  <http://www.cs.utexas.edu/users/kharker/linux-laptop/>

Other information related to laptops can be found at the following sites:

- Avanced Power Management
  <ftp://ftp.cs.unc.edu/pub/users/faith/linux/>

- Notebook battery status
  <ftp://sunsite.unc.edu/pub/Linux/system/power/>
- non-blinking cursor
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/console/noblink-1.7.tar.gz>
- other general info
  <ftp://tsx-11.mit.edu/pub/linux/packages/laptops/>

3.1 Specific laptops

- Compaq Concerto (pen driver)
  <http://www.cs.nmsu.edu/~pfeiffer/>
- Compaq Contura Aero
  <http://domen.uninett.no/~hta/linux/aero-faq.html>
- IBM ThinkPad
  <http://peipa.essex.ac.uk/tp-linux/tp-linux.html>
- NEC Versa M and P
  <http://www.santafe.edu:80/~nelson/versa-linux/>
- Tadpole P1000
  <http://www.tadpole.com/Support/linux.html>
- Tadpole P1000 (another one)
- TI TravelMate 4000M
  <ftp://ftp.biomath.jussieu.fr/pub/linux/TM4000M-mini-HOWTO.txt.Z>
- TI TravelMate 5100
- Toshiba Satellite Pro 400CDT
  <http://terra.mpikg-teltow.mpg.de/~burger/T400CDT-Linux.html>

3.2 PCMCIA

- PCMCIA
  <http://hyper.stanford.edu/~dhinds/pcmcia/>

PCMCIA drivers currently support all common PCMCIA controllers, including Databook TCIC/2, Intel i82365SL, Cirrus PD67xx, and Vadem VG-468 chipsets. Motorola 6AHC05GA controller used in some Hyundai laptops is not supported. See Appendix B for a list of supported PCMCIA cards.

4 CPU/FPU

Intel/AMD/Cyrix 386SX/DX/SL/DXL/SLC, 486SX/DX/SL/SX2/DX2/DX4, and Pentium are supported. Basically all 386 or better processors will work. Linux has built-in FPU emulation if you don't have a math coprocessor.

Experimental SMP (multiple CPU) support is included in kernel 1.3.31 and newer. Check the Linux/SMP Project page for details and updates.

- Linux/SMP Project
  <http://www.linux.org.uk/SMP/title.html>

A few very early AMD 486DX's may hang in some special situations. All current chips should be okay and getting a chip swap for old CPU's should not be a problem.

ULSI Math*Co series has a bug in the FSAVE and FRSTOR instructions that causes problems with all protected mode operating systems. Some older IIT and Cyrix chips may also have this problem.

There are problems with TLB flushing in UMC U5S chips in very old kernels. (1.1.x)

- enable cache on Cyrix processors
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/CxPatch030.tar.z>
- Cyrix software cache control
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/linux.cxpatch>
- Cyrix 5x86 CPU register settings
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/cx5x86mod_1.0c.tgz>

5 Video cards

Linux will work with all video cards in text mode, VGA cards not listed below probably will still work with mono VGA and/or standard VGA drivers.

If you're looking into buying a cheap video card to run X, keep in mind that accelerated cards (ATI Mach, ET4000/W32p, S3) are MUCH faster than unaccelerated or partially accelerated (Cirrus, WD) cards.

"32 bpp" is actually 24 bit color aligned on 32 bit boundaries. It does NOT mean the cards are capable of 32 bit color, they still display 24 bit color (16,777,216 colors). 24 bit packed pixels modes are not supported in XFree86, so cards that can do 24 bit modes to get higher resolutions in other OS's are not able to do this in X using XFree86. These cards include Mach32, Cirrus 542x, S3 801/805/868/968, ET4000, and others.

5.1 Diamond video cards

Most currently available Diamond cards ARE supported by the current release of XFree86. Early Diamond cards may not be officially supported by XFree86, but there are ways of getting them to work. Diamond is now actively supporting the XFree86 Project.

5.2 SVGALIB (graphics for console)

- VGA
- EGA
- ARK Logic ARK1000PV/2000PV
- ATI VGA Wonder
- ATI Mach32
- Cirrus 542x, 543x
- OAK OTI-037/67/77/87
- S3 (limited support)
- Trident TVGA8900/9000
- Tseng ET3000/ET4000/W32

5.3 XFree86 3.3.1

5.3.1 Accelerated

- ARK Logic ARK1000PV/VL, ARK2000PV/MT
- ATI Mach8
- ATI Mach32 (16 bpp supported for cards with RAMDAC ATI68875, AT&T20C49x, BT481 and 2Mb video ram)
- ATI Mach64 (16/32 bpp supported for cards with RAMDAC ATI68860, ATI68875, CH8398, STG1702, STG1703, AT&T20C408, 3D Rage II, internal, IBM RGB514)
- Chips & Technologies 64200/64300/65520/65525/65530/65535/65540/65545/65546/65548/65550/65554
- Cirrus Logic 5420, 542x/5430 (16 bpp), 5434 (16/32 bpp), 5436, 544x, 546x, 5480, 62x5, 754x
- IBM 8514/A
- IBM XGA-I, XGA-II
- IIT AGX-010/014/015/016 (16 bpp)
- Matrox MGA2064W (Millennium)
- Matrox MGA1064SG (Mystique)
- Number Nine Imagine I128

- Oak OTI-087
- S3 732 (Trio32), 764 (Trio64), Trio64V+, 801, 805, 864, 866, 868, 86C325 (ViRGE), 86C375 (ViRGE/DX), 86C385 (ViRGE/GX), 86C988 (ViRGE/VX), 911, 924, 928, 964, 968
  - see Appendix A for list of supported S3 cards
- SiS 86c201, 86c202, 86c205
- Trident 9440, 96xx, Cyber938x
- Tseng ET4000/W32/W32i/W32p, ET6000
- Weitek P9000 (16/32 bpp)
  - Diamond Viper VLB/PCI
  - Orchid P9000
- Western Digital WD90C24/24A/24A2/31/33

5.3.2 Unaccelerated

- Alliance AP6422, AT24
- ATI VGA Wonder series
- Avance Logic AL2101/2228/2301/2302/2308/2401
- Cirrus Logic 6420/6440, 7555
- Compaq AVGA
- DEC 21030
- Genoa GVGA
- MCGA (320x200)
- MX MX68000/MX68010
- NCR 77C22, 77C22E, 77C22E+
- NVidia NV1
- Oak OTI-037C, OTI-067, OTI-077
- RealTek RTG3106
- SGS-Thomson STG2000
- Trident 8800CS, 8200LX, 8900x, 9000, 9000i, 9100B, 9200CXr, 9320LCD, 9400CXi, 9420, 9420DGi, 9430DGi
- Tseng ET3000, ET4000AX

- VGA (standard VGA, 4 bit, slow)
- Video 7 / Headland Technologies HT216-32
- Western Digital/Paradise PVGA1, WD90C00/10/11/30

5.3.3 Monochrome

- Hercules mono
- Hyundai HGC-1280
- Sigma LaserView PLUS
- VGA mono

5.3.4 Others

- EGA (ancient, from c. 1992)
  `<ftp://ftp.funet.fi/pub/Linux/BETA/Xega/>`

5.4 Commercial X servers

Commercial X servers provide support for cards not supported by XFree86, and might give better performances for cards that are supported by XFree86. In general they support many more cards than XFree86, so I'll onlys list cards that aren't supported by XFree86 here. Contact the vendors directly or check the Commercial HOWTO for more info.

5.4.1 Accelerated-X 1.2

- Chips & Technologies 82C45x, 82C48x
- Compaq QVision 2000
- Weitek P9100

X Inside, Inc. `<info@xinside.com>`

Accel-X supports most cards in 16 and 32 bpp modes and it also supports 24 bit packed pixel modes for cards that have these modes, including ATI Mach32, Mach64 (1280x1024@24bpp), ET4000/W32p, S3-866/868/968, and more. Accel-X also supports other input hardware like graphics tablets and touchscreens.

Accel-X also supports XVideo (Xv) extensions (on Matrox Comet, Marvel-II, and SPEA ShowTime Plus), PEX, and XIE.

5.4.2 Metro-X 2.3

Metro Link <sales@metrolink.com>

Metro-X supports more boards than XFree but less than Accel-X, however I don't have much more information as I can't seem to view the PostScript files they sent me. Mail them directly for more info.

The S3 ViRGE video card is said not to be supported by Metro-X.

6 Controllers (hard drive)

Linux will work with standard IDE, MFM and RLL controllers. When using MFM/RLL controllers it is important to use ext2fs and the bad block checking options when formatting the disk.

Enhanced IDE (EIDE) interfaces are supported. With up to two IDE interfaces and up to four hard drives and/or CD-ROM drives. Linux will detect these EIDE interfaces.

- CMD-640
- DTC 2278D
- FGI/Holtek HT-6560B
- RZ1000
- Triton (82371FB) IDE (with busmaster DMA)

ESDI controllers that emulate the ST-506 (MFM/RLL/IDE) interface will also work. The bad block checking comment also applies to these controllers.

Generic 8 bit XT controllers also work.

7 Controllers (SCSI)

It is important to pick a SCSI controller carefully. Many cheap ISA SCSI controllers are designed to drive CD-ROM's rather than anything else. Such low end SCSI controllers are no better than IDE. See the SCSI HOWTO and look at performance figures before buying a SCSI card.

7.1 Supported

- AMI Fast Disk VLB/EISA (BusLogic compatible)
- Adaptec AVA-1505/1515 (ISA) (Adaptec 152x compatible)
- Adaptec AHA-1510/152x (ISA) (AIC-6260/6360)
- Adaptec AHA-154x (ISA) (all models)

- Adaptec AHA-174x (EISA) (in enhanced mode)
- Adaptec AHA-274x (EISA) / 284x (VLB) (AIC-7770)
- Adaptec AHA-2940/3940 (PCI) (AIC-7870) (since 1.3.6)
- Adaptec AVA1502E (AHA-152x driver) (AIC-6360)
- Always IN2000
- BusLogic (ISA/EISA/VLB/PCI) (all models)
- DPT PM2001, PM2012A (EATA-PIO)
- DPT Smartcache (EATA-DMA) (ISA/EISA/PCI) (all models)
- DTC 329x (EISA) (Adaptec 154x compatible)
- Future Domain TMC-16x0, TMC-3260 (PCI)
- Future Domain TMC-8xx, TMC-950
- Media Vision Pro Audio Spectrum 16 SCSI (ISA)
- NCR 5380 generic cards
- NCR 53c400 (Trantor T130B) (use generic NCR 5380 SCSI support)
- NCR 53c406a (Acculogic ISApport / Media Vision Premium 3D SCSI)
- NCR 53c7x0, 53c8x0 (PCI)
- Qlogic / Control Concepts SCSI/IDE (FAS408) (ISA/VLB)
- Seagate ST-01/ST-02 (ISA)
- SoundBlaster 16 SCSI-2 (Adaptec 152x compatible) (ISA)
- Trantor T128/T128F/T228 (ISA)
- UltraStor 14F (ISA), 24F (EISA), 34F (VLB)
- Western Digital WD7000 SCSI

7.2 Others

- AMD AM53C974, AM79C974 (PCI) (Compaq, HP, Zeos onboard SCSI)
  `<ftp://sunsite.unc.edu/pub/Linux/kernel/patches/scsi/AM53C974-0.3.tgz>`
- Adaptec ACB-40xx SCSI-MFM/RLL bridgeboard
  `<ftp://sunsite.unc.edu/pub/Linux/kernel/patches/scsi/adaptec-40XX.tar.gz>`
- Always Technologies AL-500
  `<ftp://sunsite.unc.edu/pub/Linux/kernel/patches/scsi/al500-0.2.tar.gz>`

- BusLogic (ISA/EISA/VLB/PCI) (new beta driver)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/scsi/BusLogic-1.3.0.tar.gz>
- Iomega PC2/2B
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/scsi/iomega_pc2-1.1.x.tar.gz>
- Qlogic (ISP1020) (PCI)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/scsi/isp1020-0.5.gz>
- Ricoh GSI-8
  <ftp://tsx-11.mit.edu/pub/linux/ALPHA/scsi/gsi8.tar.gz>

7.3 Unsupported

- Parallel port SCSI adapters
- Non Adaptec compatible DTC boards (327x, 328x)

8 Controllers (I/O)

Any standard serial/parallel/joystick/combo cards. Linux supports 8250, 16450, 16550, and 16550A UART's. Cards that support non-standard IRQ's (IRQ $>$ 9) can be used.

See National Semiconductor's "Application Note AN-493" by Martin S. Michael. Section 5.0 describes in detail the differences between the NS16550 and NS16550A. Briefly, the NS16550 had bugs in the FIFO circuits, but the NS16550A (and later) chips fixed those. However, there were very few NS16550's produced by National, long ago, so these should be very rare. And many of the "16550" parts in actual modern boards are from the many manufacturers of compatible parts, which may not use the National "A" suffix. Also, some multiport boards will use 16552 or 16554 or various other multiport or multifunction chips from National or other suppliers (generally in a dense package soldered to the board, not a 40 pin DIP). Mostly, don't worry about it unless you encounter a very old 40 pin DIP National "NS16550" (no A) chip loose or in an old board, in which case treat it as a 16450 (no FIFO) rather than a 16550A. - Zhahai Stewart <zstewart@hisys.com>

9 Controllers (multiport)

9.1 Non-intelligent cards

9.1.1 Supported

- AST FourPort and clones (4 port)
- Accent Async-4 (4 port)
- Arnet Multiport-8 (8 port)

- Bell Technologies HUB6 (6 port)
- Boca BB-1004, 1008 (4, 8 port) - no DTR, DSR, and CD
- Boca BB-2016 (16 port)
- Boca IO/AT66 (6 port)
- Boca IO 2by4 (4 serial / 2 parallel, uses 5 IRQ's)
- Computone ValuePort (4, 6, 8 port) (AST FourPort compatible)
- DigiBoard PC/X (4, 8, 16 port)
- Comtrol Hostess 550 (4, 8 port)
- PC-COMM 4-port (4 port)
- SIIG I/O Expander 4S (4 port, uses 4 IRQ's)
- STB 4-COM (4 port)
- Twincom ACI/550
- Usenet Serial Board II (4 port)

Non-intelligent cards usually come in two varieties, one using standard com port addresses and use 4 IRQ's, and another that's AST FourPort compatible and uses a selectable block of addresses and a single IRQ. (Addresses and IRQ's are set using `setserial`.) If you're getting one of these cards, be sure to check which standard it conforms to, prices are no indication.

9.2 Intelligent cards

9.2.1 Supported

- Cyclades Cyclom-8Y/16Y (8, 16 port) (ISA/PCI)
- DigiBoard PC/Xe (ISA), PC/Xi (EISA) and PC/Xeve
  `<ftp://ftp.digibd.com/drivers/linux/>`
- Stallion EasyIO (ISA) / EasyConnection 8/32 (ISA/MCA)
- Stallion EasyConnection 8/64 / ONboard (ISA/EISA/MCA) / Brumby / Stallion (ISA)

9.2.2 Others

- Comtrol RocketPort (8/16/32 port)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/serial/comtrol-1.04.tar.gz>
- Computone IntelliPort II (4/8/16 port)
  contact Michael H. Warfield <mhw@wittsend.atl.ga.us>
- DigiBoard COM/Xi
  contact Simon Park <si@wimpol.demon.co.uk>
- Hayes ESP8
  contact Dennis Boylan <dennis@lan.com>
- Moxa C102, C104, C168, C218 (8 port), C320 (8/16/24/32 expandable) and C320T
  <ftp://ftp.moxa.com.tw/drivers/linux/>
- Specialix SIO/XIO (modular, 4 to 32 ports)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/serial/sidrv.taz>

10 Network adapters

Ethernet adapters vary greatly in performance. In general the newer the design the better. Some very old cards like the 3Com 3C501 are only useful because they can be found in junk heaps for $5 a time. Be careful with clones, not all are good clones and bad clones often cause erratic lockups under Linux. Read the Ethernet HOWTO, <http://sunsite.unc.edu/LDP/HOWTO/>, for detailed descriptions of various cards.

10.1 Supported

10.1.1 Ethernet

For ethernet cards with the DECchip DC21x4x family the "Tulip" driver is available. More information on this driver can be found at <http://cesdic.gsfc.nasa.gov/linux/drivers/tulip.html>.

- 3Com 3C501 - "avoid like the plague"
- 3Com 3C503, 3C505, 3C507, 3C509/3C509B (ISA) / 3C579 (EISA)
- 3Com Etherlink III Vortex Ethercards (3C590, 3c592, 3C595, 3c597) (PCI), 3Com Etherlink XL Boomerang Ethercards (3c900, 3c905) (PCI) and 3Com Fast EtherLink Ethercard (3c515) (ISA)
  Newer versions of this driver are available at
  <http://cesdis.gsfc.nasa.gov/linux/drivers/vortex.html>
- AMD LANCE (79C960) / PCnet-ISA/PCI (AT1500, HP J2405A, NE1500/NE2100)
- AT&T GIS WaveLAN

- Allied Telesis AT1700
- Allied Telesis LA100PCI-T
- Ansel Communications AC3200 EISA
- Apricot Xen-II / 82596
- Cabletron E21xx
- Cogent EM110
- Danpex EN-9400
- DEC DE425 (EISA) / DE434/DE435 (PCI) / DE450/DE500 (DE4x5 driver)
- DEC DE450/DE500-XA (Tulip driver)
- DEC DEPCA and EtherWORKS
- DEC EtherWORKS 3
- DEC QSilver's (Tulip driver)
- Fujitsu FMV-181/182/183/184
- HP PCLAN (27245 and 27xxx series)
- HP PCLAN PLUS (27247B and 27252A)
- HP 10/100VG PCLAN (J2577, J2573, 27248B, J2585) (ISA/EISA/PCI)
  More information at `<http://cesdis1.gsfc.nasa.gov:80/linux/drivers/100vg.html>`
- ICL EtherTeam 16i / 32 EISA
- Intel EtherExpress
- Intel EtherExpress Pro
- NE2000/NE1000 (be careful with clones)
- New Media Ethernet
- Racal-Interlan NI5210 (i82586 Ethernet chip)
- Racal-Interlan NI6510 (am7990 lance chip) - doesn't work with more than 16 megs RAM
- PureData PDUC8028, PDI8023
- SEEQ 8005
- SMC Ultra / EtherEZ (ISA)
- SMC 9000 series
- SMC PCI EtherPower 10/100 (Tulip driver)

- Schneider & Koch G16
- Western Digital WD80x3
- Zenith Z-Note / IBM ThinkPad 300 built-in adapter
- Znyx 312 etherarray (Tulip driver)

10.1.2 ISDN

- Linux ISDN WWW page
  <http://www.ix.de/ix/linux/linux-isdn.html>
- 3Com Sonix Arpeggio
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/network/sonix.tgz>
- AVM A1
  <ftp://ftp.franken.de/pub/isdn4linux/>
- Combinet EVERYWARE 1000 ISDN
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/network/combinet1000isdn-1.02.tar.gz>
- Creatix PnP S0
  <ftp://ftp.franken.de/pub/isdn4linux/>
- Elsa Microlink PCC-16, PCF, PCF-Pro, PCC-8
  <ftp://ftp.franken.de/pub/isdn4linux/>
- ELSA QuickStep 1000
  <ftp://ftp.franken.de/pub/isdn4linux/>
- ICN ISDN cards
  <ftp://ftp.franken.de/pub/isdn4linux/>
- ITK ix1-micro Rev.2
  <ftp://ftp.franken.de/pub/isdn4linux/>
- Octal PCBIT
  <ftp://ftp.franken.de/pub/isdn4linux/>
- Teles 8.0/16.0/16.3 and compatible ones
  <ftp://ftp.franken.de/pub/isdn4linux/>
- Teles S0
  <ftp://ftp.franken.de/pub/isdn4linux/>

ISDN cards that emulate standard modems or common Ethernet adapters don't need any special drivers to work.

10.1.3 Pocket and portable adapters

- AT-Lan-Tec/RealTek parallel port adapter
- D-Link DE600/DE620 parallel port adapter

10.1.4 Slotless

- SLIP/CSLIP/PPP (serial port)
- EQL (serial IP load balancing)
- PLIP (parallel port) - using "LapLink cable" or bi-directional cable

10.1.5 ARCnet

- Works with all ARCnet cards

10.1.6 Token Ring

- Any IBM token ring card not using DMA
- IBM Tropic chipset cards

10.1.7 FDDI

- DEC DEFEA (EISA) / DEFPA (PCI) (kernel 2.0.24 and later)

10.1.8 Amateur radio (AX.25)

- Gracilis PackeTwin
- Ottawa PI/PI2
- Most generic 8530 based HDLC boards

10.1.9 PCMCIA cards

- See Appendix B for complete list

10.2 Others

10.2.1 ISDN

- SpellCaster's Datacomute/BRI, Telecomute/BRI (ISA)
  `<ftp://ftp.franken.de/pub/isdn4linux/>`

10.2.2 ATM

- Efficient Networks ENI155P-MF 155 Mbps ATM adapter (PCI)
  <http://lrcwww.epfl.ch/linux-atm/>

10.2.3 Frame Relay

- Sangoma S502 56K Frame Relay card
  <ftp://ftp.sovereign.org/pub/wan/fr/>

10.2.4 Wireless

- Proxim RangeLan2 7100 (ISA) / 630x (OEM mini-ISA)
  <http://www.komacke.com/distribution.html>

10.3 Unsupported

- Xircom adapters (PCMCIA and parallel port)
- IBM PCI Token Ring cards (all of them)
- Sysconnect / Schneider & Koch Token Ring cards (all of them)

11 Sound cards

11.1 Supported

- 6850 UART MIDI
- Adlib (OPL2)
- Audio Excell DSP16
- Aztech Sound Galaxy NX Pro
- Crystal CS4232 (PnP) based cards
- ECHO-PSS cards (Orchid SoundWave32, Cardinal DSP16)
- Ensoniq SoundScape
- Gravis Ultrasound
- Gravis Ultrasound 16-bit sampling daughterboard
- Gravis Ultrasound MAX
- Logitech SoundMan Games (SBPro, 44kHz stereo support)

- Logitech SoundMan Wave (Jazz16/OPL4)
- Logitech SoundMan 16 (PAS-16 compatible)
- MPU-401 MIDI
- MediaTriX AudioTriX Pro
- Media Vision Premium 3D (Jazz16)
- Media Vision Pro Sonic 16 (Jazz)
- Media Vision Pro Audio Spectrum 16
- Microsoft Sound System (AD1848)
- OAK OTI-601D cards (Mozart)
- OPTi 82C928/82C929 cards (MAD16/MAD16 Pro/ISP16/Mozart)
- Sound Blaster
- Sound Blaster Pro
- Sound Blaster 16
- Turtle Beach Wavefront cards (Maui, Tropez)
- Wave Blaster (and other daughterboards)

11.2 Others

- MPU-401 MIDI (intelligent mode)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/sound/mpu401-0.2.tar.gz>
- PC speaker / Parallel port DAC
  <ftp://ftp.informatik.hu-berlin.de/pub/os/linux/hu-sound/>
- Turtle Beach MultiSound/Tahiti/Monterey
  <ftp://ftp.cs.colorado.edu/users/mccreary/archive/tbeach/multisound/>

11.3 Unsupported

The ASP chip on Sound Blaster 16 series and AWE32 is not supported. AWE32's onboard E-mu MIDI synthesizer is not supported.

Nathan Laredo <laredo@gnu.ai.mit.edu> is willing to write AWE32 drivers if you send him a complimentary card. He is also willing to write drivers for almost any hardware if you send him free samples of your hardware.

Sound Blaster 16's with DSP 4.11 and 4.12 have a hardware bug that causes hung/stuck notes when playing MIDI and digital audio at the same time. The problem can happen with either Wave Blaster daughterboards or MIDI devices attached to the MIDI port. There is no known fix.

12 Hard drives

All hard drives should work if the controller is supported.

(From the SCSI HOWTO) All direct access SCSI devices with a block size of 256, 512, or 1024 bytes should work. Other block sizes will not work (Note that this can often be fixed by changing the block and/or sector sizes using the MODE SELECT SCSI command).

Large IDE (EIDE) drives work fine with newer kernels. The boot partition must lie in the first 1024 cylinders due to PC BIOS limitations.

Some Conner CFP1060S drives may have problems with Linux and ext2fs. The symptoms are inode errors during `e2fsck` and corrupt file systems. Conner has released a firmware upgrade to fix this problem, contact Conner at 1-800-4CONNER (US) or +44-1294-315333 (Europe). Have the microcode version (found on the drive label, 9WA1.6x) handy when you call.

Certain Micropolis drives have problems with Adaptec and BusLogic cards, contact the drive manufacturers for firmware upgrades if you suspect problems.

- Multiple device driver (RAID-0, RAID-1)
  `<ftp://sweet-smoke.ufr-info-p7.ibp.fr/public/Linux/>`

13 Tape drives

13.1 Supported

- SCSI tape drives
  (From the SCSI HOWTO) Drives using both fixed and variable length blocks smaller than the driver buffer length (set to 32k in the distribution sources) are supported. Virtually all drives should work. (Send mail if you know of any incompatible drives.)
- QIC-02 drives

13.2 Others

- QIC-117, QIC-40/80, QIC-3010/3020 (QIC-WIDE) drives
  Most tape drives using the floppy controller should work. Various dedicated controllers (Colorado FC-10/FC-20, Mountain Mach-2, Iomega Tape Controller II) are also supported
  `<ftp://sunsite.unc.edu/pub/Linux/kernel/tapes>`

13.3 Unsupported

- Emerald and Tecmar QIC-02 tape controller cards - Chris Ulrich `<insom@math.ucr.edu>`
- Drives that connect to the parallel port (eg: Colorado Trakker)

- Some high speed tape controllers (Colorado TC-15)
- Irwin AX250L/Accutrak 250 (not QIC-80)
- IBM Internal Tape Backup Unit (not QIC-80)
- COREtape Light

14 CD-ROM drives

For more information on CD-ROM drives check the CDROM-HOWTO at `<http://sunsite.unc.edu/LDP/HOWTO/>`.

14.1 Supported

Common CD-ROM drives

- SCSI CD-ROM drives
  (From the CD-ROM HOWTO) Any SCSI CD-ROM drive with a block size of 512 or 2048 bytes should work under Linux; this includes the vast majority of CD-ROM drives on the market.
- EIDE (ATAPI) CD-ROM drives (IDECD)

Proprietary CD-ROM drives

- Aztech CDA268-01A, Orchid CDS-3110, Okano/Wearnes CDD-110, Conrad TXC, CyCDROM CR520ie/CR540ie/CR940ie (AZTCD)
- Creative Labs CD-200(F) (SBPCD)
- Funai E2550UA/MK4015 (SBPCD)
- GoldStar R420 (GSCD)
- IBM External ISA (SBPCD)
- Kotobuki (SBPCD)
- Lasermate CR328A (OPTCD)
- LMS Philips CM 206 (CM206)
- Longshine LCS-7260 (SBPCD)
- Matsushita/Panasonic CR-521/522/523/562/563 (SBPCD)
- MicroSolutions Backpack parallel portdrive (BPCD)
- Mitsumi CR DC LU05S (MCD/MCDX)

- Mitsumi FX001D/F (MCD/MCDX)
- Optics Storage Dolphin 8000AT (OPTCD)
- Sanyo H94A (SJCD)
- Sony CDU31A/CDU33A (CDU31A)
- Sony CDU-535/CDU-531 (SONYCD535)
- Teac CD-55A SuperQuad (SBPCD)

14.2 Others

- LMS/Philips CM 205/225/202
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/cdrom/lmscd0.4.tar.gz>
- NEC CDR-35D (old)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/cdrom/linux-neccdr35d.patch>
- Sony SCSI multisession CD-XA
  <ftp://tsx-11.mit.edu/pub/linux/patches/sony-multi-0.00.tar.gz>
- Parallel Port Driver
  <http://www.torque.net/linux-pp.html>

14.3 Notes

PhotoCD (XA) is supported. The hpcdtoppm program by Hadmut Danisch converts PhotoCD files to the portable pixmap format. The program can be obtained from
<ftp://ftp.gwdg.de/pub/linux/hpcdtoppm> or as part of the PBM utilities.

All CD-ROM drives should work similarly for reading data. There are various compatibility problems with audio CD playing utilities. (Especially with newer low-end NEC drives.) Some alpha drivers may not have audio support yet.

Early (single speed) NEC CD-ROM drives may have trouble with currently available SCSI controllers.

Also many CD-Writers are supported by Linux now. For a list of CD-Writers supported check the CD-Writing mini-HOWTO at <http://sunsite.unc.edu/LDP/HOWTO/mini/CD-Writing>. The X-CD-Roast package for Linux is a graphical front-end for using CD writers. The package can be found at <ftp://sunsite.unc.edu/pub/Linux/utils/disk-management/xcdroast-0.95.tar.gz>.

Finally, most IDE CD-ROM Changers are supported.

15 Removable drives

All SCSI drives should work if the controller is supported, including optical (MO), WORM, floptical, Bernoulli, Zip, Jaz, SyQuest, PD, and others.

- Parallel port Zip drives
  <ftp://gear.torque.net/pub/>
- Parallel port Avatar Shark-250
  <http://www.torque.net/shark.html>

Removable drives work like hard disks and floppies, just `fdisk/mkfs` and mount the disks. Linux provides drive locking if your drives support it. `mtools` can also be used if the disks are in MS-DOS format.

CD-R drives require special software to work. Read the CD-R Mini-HOWTO.

Linux supports both 512 and 1024 bytes/sector disks. Starting with kernel 2.1.32 Linux also supports 2048 bytes/sector. A patch to kernel 2.0.30 is available at <http://liniere.gen.u-tokyo.ac.jp/2048.html>.

The 2048 bytes/sector support is needed for

- Fujitsu magneto-optical disk drives M2513

16 Mice

16.1 Supported

- Microsoft serial mouse
- Mouse Systems serial mouse
- Logitech Mouseman serial mouse
- Logitech serial mouse
- ATI XL Inport busmouse
- C&T 82C710 (QuickPort) (Toshiba, TI Travelmate)
- Microsoft busmouse
- Logitech busmouse
- PS/2 (auxiliary device) mouse

16.2 Others

- Sejin J-mouse
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/console/jmouse.1.1.70-jmouse.tar.gz>
- MultiMouse - use multiple mouse devices as single mouse
  <ftp://sunsite.unc.edu/pub/Linux/system/misc/MultiMouse-1.0.tgz>

16.3 Notes

Touchpad devices like Alps Glidepoint also work, so long they're compatible with another mouse protocol.

Newer Logitech mice (except the Mouseman) use the Microsoft protocol and all three buttons do work. Eventhough Microsoft's mice have only two buttons, the protocol allows three buttons.

The mouse port on the ATI Graphics Ultra and Ultra Pro use the Logitech busmouse protocol. (See the Busmouse HOWTO for details.)

17 Modems

All internal modems or external modems connected to the serial port should work.

A small number of modems come with DOS software that downloads the control program at runtime. These can normally be used by loading the program under DOS and doing a warm boot. Such modems are probably best avoided as you won't be able to use them with non PC hardware in the future.

All PCMCIA modems should work with the PCMCIA drivers.

Fax modems need appropriated fax software to operate.

- Digicom Connection 96+/14.4+ - DSP code downloading program
  `<ftp://sunsite.unc.edu/pub/Linux/system/serial/smdl-linux.1.02.tar.gz>`
- ZyXEL U-1496 series - ZyXEL 1.4, modem/fax/voice control program
  `<ftp://sunsite.unc.edu/pub/Linux/system/serial/ZyXEL-1.5.tar.gz>`

18 Printers/Plotters

All printers and plotters connected to the parallel or serial port should work.

- HP LaserJet 4 series - free-lj4, printing modes control program
  `<ftp://sunsite.unc.edu/pub/Linux/system/printing/free-lj4-1.1p1.tar.gz>`
- BiTronics parallel port interface
  `<ftp://sunsite.unc.edu/pub/Linux/kernel/patches/misc/bt-ALPHA-0.0.1.module.patch.gz>`

18.1 Ghostscript

Many Linux programs output PostScript files. Non-PostScript printers can emulate PostScript Level 2 using Ghostscript.

- Ghostscript
  `<ftp://ftp.cs.wisc.edu/pub/ghost/aladdin/>`

18.1.1 Ghostscript supported printers

- Apple Imagewriter
- C. Itoh M8510
- Canon BubbleJet BJ10e, BJ200
- Canon LBP-8II, LIPS III
- DEC LA50/70/75/75plus
- DEC LN03, LJ250
- Epson 9 pin, 24 pin, LQ series, Stylus, AP3250
- HP 2563B
- HP DesignJet 650C
- HP DeskJet/Plus/500
- HP DeskJet 500C/520C/550C/850C/1200C color
- HP LaserJet/Plus/II/III/4
- HP PaintJet/XL/XL300 color
- IBM Jetprinter color
- IBM Proprinter
- Imagen ImPress
- Mitsubishi CP50 color
- NEC P6/P6+/P60
- Okidata MicroLine 182
- Ricoh 4081
- SPARCprinter
- StarJet 48 inkjet printer
- Tektronix 4693d color 2/4/8 bit
- Tektronix 4695/4696 inkjet plotter
- Xerox XES printers (2700, 3700, 4045, etc.)

18.1.2 Others

- Canon BJC600/800 color printers
  `<ftp://petole.imag.fr/pub/postscript/ghostscript/bjc600/>`

19 Scanners

For scanner support there is the package SANE (Scanner Access Now Easy) (<ftp://tsx-11.mit.edu/pub/linux/packages/sane/>). This is a universal scanner interface. It comes complete with documentation and several frontends and backends.

19.1 Supported

- A4 Tech AC 4096 / AS 8000P
  <ftp://ftp.informatik.hu-berlin.de/pub/local/linux/a4scan/a4scan.tgz>
- Adara Image Star I
  <http://fb4-1112.uni-muenster.de/ffwd/>
  <ftp://fb4-1112.uni-muenster.de/pub/ffwd/mtekscan-0.2.tar.gz>
- Epson GT6000
  <ftp://sunsite.unc.edu/pub/Linux/apps/graphics/capture/ppic0.5.tar.gz>
- Fujitsu SCSI-2 scanners
  contact Dr. G.W. Wettstein <greg%wind.UUCP@plains.nodak.edu>
- Genius ColorPage-SP2
  <http://fb4-1112.uni-muenster.de/ffwd/>
  <ftp://fb4-1112.uni-muenster.de/pub/ffwd/mtekscan-0.2.tar.gz>
- Genius GS-B105G
  <ftp://tsx-11.mit.edu/pub/linux/ALPHA/scanner/gs105-0.0.1.tar.gz>
- Genius GeniScan GS4500 handheld scanner
  <ftp://tsx-11.mit.edu/pub/linux/ALPHA/scanner/gs4500-2.0.tar.gz>
- HP ScanJet II series SCSI
  <ftp://sunsite.unc.edu/pub/Linux/apps/graphics/capture/hpscanpbm-0.3a.tar.gz>
- HP ScanJet IIc, IIcx, IIp, 3c, 4c, 4p, 5p, 5pse, plus
  <http://www.tummy.com/xvscan/>
- Logitech Scanman 32 / 256
  <ftp://tsx-11.mit.edu/pub/linux/ALPHA/scanner/logiscan-0.0.4.tar.gz>
- Microtek ScanMaker E3, E6, II, IIXE, III and 35t models
  <http://fb4-1112.uni-muenster.de/ffwd/>
  <ftp://fb4-1112.uni-muenster.de/pub/ffwd/mtekscan-0.2.tar.gz>
- Mustek M105 handheld scanner with GI1904 interface
  <ftp://tsx-11.mit.edu/pub/linux/ALPHA/scanner/scan-driver-0.1.8.tar.gz>
- Mustek Paragon 6000CX
  <ftp://sunsite.unc.edu/pub/Linux/apps/graphics/capture/muscan-2.0.6.taz>

- Nikon Coolscan SCSI 35mm film scanner
  <ftp://sunsite.unc.edu/pub/Linux/apps/graphics/capture/coolscan-0.2.tgz>
- UMAX SCSI scanners
  <ftp://tsx-11.mit.edu/pub/linux/ALPHA/scanner/umax-0.5.5.tar.gz>

20 Other hardware

20.1 VESA Power Savings Protocol (DPMS) monitors

Support for power savings is included in the Linux kernel. Just use `setterm` to enable support.

20.2 Joysticks

Joystick support is in the latest XFree86 distributions (3.3.x) and in kernel versions 2.1.xx. For older kernels the links below are usefull.

- Joystick driver
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/console/joystick-0.8.0.tgz>
- Joystick driver (module)
  <ftp://sunsite.unc.edu/pub/Linux/kernel/patches/console/joyfixed.tgz>

20.3 Video capture boards / Frame Grabbers

- Data Translation DT2803
- Data Translation DT2851 Frame Grabber
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/dt2851-2.01.tar.gz>
- Data Translation DT3155
  <http://krusty.eecs.umich.edu/people/ncowan/linux/welcome.html>
- Diamond DTV2000 (based on BT848)
- Dipix XPG1000/FPG/PPMAPA (based on TI C40 DSP). Most add-on cards are supported.
  <http://www.thp.Uni-Koeln.DE/~rjkm/linux/bttv.html>
- Epix SVM
- Epix Silicon Video MUX series of video frame grabbing boards
  <http://www.ssc.com/lj/issue13/npc13c.html>
- FAST Screen Machine II
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/ScreenMachineII.2.0.tgz>

- Hauppage Wincast TV PCI (based on BT848)
  <http://www.thp.Uni-Koeln.DE/~rjkm/linux/bttv.html>
- Imaging Technology ITI/IC-PCI
  <ftp://ftp.gom-online.de/pub/IC-PCI/icpci-0.3.2.tar.gz>
- ImageNation Cortex I
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/cortex.drv.1.1.tgz>
- ImageNation CX100
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/cxdrv-0.86.tar.gz>
- ImageNation PX500 (being worked on). Ask for current status
  rubini@linux.it
- Imaging Technology Inc. IC-PCI frame grabber board
  <ftp://gandalf.expmech.ing.tu-bs.de/pub/driver/icpci-0.2.0.tar.gz>
- Matrox Meteor
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/meteor-1.4a.tgz>
- Matrox PIP-1024
  <http://www.powerup.com.au/~sobeyp/pip_tar.gz>
- Miro PCTV (based on BT848)
  <http://www.thp.Uni-Koeln.DE/~rjkm/linux/bttv.html>
- MuTech MV1000 PCI
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/mv1000drv-0.33.tgz>
- MuTech MV200
  <http://www.powerup.com.au/~sobeyp/mu_tar.gz>
- Philips PCA10TV (not in production anymore)
  <ftp://ftp.il.ft.hse.nl/pub/tv1000/pctv1000.02.tgz>
- Pro Movie Studio
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/PMS-grabber.3.0.tgz>
- Quanta WinVision B&W video capture card
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/fgrabber-1.0.tgz>
- Quickcam
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/qcam-0.7c-5.tar.gz>
- Sensus 700
  <http://www.robots.com/s700.htm>
- Smart Video Recorder III (based on BT848)
  <http://www.thp.Uni-Koeln.DE/~rjkm/linux/bttv.html>

- STB TV PCI Television Tuner (based on BT848)
  <http://www.thp.Uni-Koeln.DE/~rjkm/linux/bttv.html>
- Video Blaster, Rombo Media Pro+
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/vid_src-0.6.tgz>
- VT1500 TV cards
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/vt1500-1.0.9.tar.gz>

20.4 UPS

- APC SmartUPS
  <ftp://sunsite.unc.edu/pub/Linux/system/ups/apcd-0.5.tar.gz>
- APC-BackUPS 400/600, APC-SmartUPS SU700/1400RM
  <ftp://sunsite.unc.edu/pub/Linux/system/ups/apcupsd-2.2.tar.gz>
- UPS's with RS-232 monitoring port (genpower package)
  <ftp://sunsite.unc.edu/pub/Linux/system/ups/genpower-1.0.1.tgz>
- A daemon to shut down and up computers connected to ups's. It's network aware and allows server- and client-mode
  <ftp://sunsite.unc.edu/pub/Linux/system/ups/powerd-2.0.tar.gz>
- various other UPS's are supported, read the UPS HOWTO

20.5 Multifunction boards

- Pro Audio Spectrum 16 SCSI / Sound interface card

20.6 Data acquisition

The Linux Lab Project site collects drivers for hardware dealing with data acquisition, they also maintain some mailing lists dealing with the subject. I have no experience with data acquisition so please check the site for more details.

- Linux Lab Project
  <http://www.llp.fu-berlin.de/>
- CED 1401
- DBCC CAMAC
- IEEE-488 (GPIB, HPIB) boards
- Keithley DAS-1200
- National Instruments AT-MIO-16F / Lab-PC+

- Analog Devices RTI-800/815 ADC/DAC board
  contact Paul Gortmaker <gpg109@anu.edu.au>

20.7 Miscellaneous

- Mattel Powerglove
- AIMS Labs RadioTrack FM radio card
  <ftp://sunsite.unc.edu/pub/Linux/apps/sound/radio/radiotrack-1.1.tgz>
- Reveal FM Radio card
  <ftp://magoo.uwsuper.edu/docs/radio.html>
- Videotext cards
  <ftp://sunsite.unc.edu/pub/Linux/apps/video/videoteXt-0.6.tar.gz>

21 Related sources of information

- Cameron Spitzer's hardware FAQ archive (??)
  <ftp://ftp.rahul.net/pub/cameron/PC-info/>
- Computer Hardware and Software Vendor Phone Numbers
  <http://mtmis1.mis.semi.harris.com/comp_ph1.html>
- Guide to Computer Vendors
  <http://guide.sbanetweb.com/>
- System Optimization Information
  <http://www.dfw.net/~sdw/>

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23 Appendix A. S3 cards supported by XFree86 3.3.1.

CHIPSET	RAMDAC	CLOCKCHIP	BPP	CARD
801/805	AT&T 20C490		16	Actix GE 32 / 32+ 2Mb
				Orchid Fahrenheit 1280(+)
801/805	AT&T 20C490	ICD2061A	16	STB PowerGraph X.24
801/805				Del S3 805
				Miro Crystal 8S
				Orchid Fahrenheit VA
				VL-41
805	S3 GENDAC		16	Miro 10SD VLB/PCI
				SPEA Mirage VLB
801/805	SS2410	ICD2061A	8	Diamond Stealth 24 VLB
801/805	AT&T 20C490	Ch8391	16	JAX 8231/8241, SPEA Mirage
801/805	S3 GENDAC			Miro Crystal 10SD
805i				Actix GE 32i
				ELSA Winner 1000 ISA
928	AT&T 20C490		16	Actix Ultra
928	Sierra SC15025	ICD2061A	32	ELSA Winner 1000 ISA/VLB/EISA
928	Bt485	ICD2061A	32	STB Pegasus VL
928	Bt485	SC11412	16	SPEA(/V7) Mercury VLB
928	Bt485	ICD2061A	32	#9 GXE Level 10/11/12
928	Ti3020	ICD2061A	32	#9 GXE Level 14/16
928				928Movie
				Diamond Stealth Pro
				ELSA Winner 1000TwinBus
				ELSA Winner 1000VL
				ELSA Winner 2000
				Miro Crystal 16S
864		ICD2061A		Miro Crystal 20SD (BIOS 2.xx)
864	AT&T 20C498	ICS2494	32	Miro (Crystal) 20SD (BIOS 1.xx)
864	AT&T 20C498/	ICD2061A/	32	ELSA Winner 1000 PRO VLB/PCI
864	STG1700	ICS9161		MIRO 20SD (BIOS 2.x)
				ELAS Winner 1000 PRO
864	STG1700	ICD2061A	32	Actix GE 64 VLB
864	AT&T 20C498/	ICS2595	16	SPEA(/V7) Mirage P64 DRAM (BIOS 3.x)
	AT&T 21C498			
864	S3 86C716 SDAC		32	ELSA Winner 1000 PRO
				Miro 20SD (BIOS 3.x)
				SPEA Mirage P64 DRAM (BIOS 4.x)
				Diamond Stealth 64 DRAM
				Genoa Phantom 64i
				Miro Crystal 20SD VLB (BIOS 3.xx)
864	ICS5342	ICS5342	32	Diamond Stealth 64 DRAM (some)
864	SDAC			Diamond Stealth 64 Graphics 2001
864	AT&T 20C498-13	ICD2061A	32	#9 GXE64 PCI
864				ASUS Video Magic PCI V864
				VidTech FastMax P20

CHIPSET	RAMDAC	CLOCKCHIP	BPP	CARD
964				ELSA Winner 2000 PRO-2,4
				spider Tarantula 64
964	AT&T 20C505	ICD2061A	32	Miro Crystal 20SV PCI/40SV
964	Bt485	ICD2061A	32	Diamond Stealth 64
964	Bt9485	ICS9161A	32	SPEA Mercury 64
964	Ti3020	ICD2061A	8	ELSA Winner 2000 PRO PCI
964	Ti3025	Ti3025	32	#9 GXE64 Pro VLB/PCI
				Miro Crystal 40SV
964	IBM RGB		32	Hercules Graphite Terminator 64
868	S3 86C716 SDAC		32	ELSA Winner 1000AVI
				Miro Crystal 20SD PCI
868	AT&T 29C409			ELSA Winner 1000AVI
868				Diamond Stealth Video DRAM
				Diamond Stealth 64 Video 2120/2200
				ELSA Winner 1000PRO/X
				#9 FX Motion 531
				VideoLogic GrafixStar 500
968				Diamond Stealth 64 Video 3200
				ELSA Gloria-4/8
				ELSA Winner 2000AVI
				ELSA Winner 2000PRO/X-2/X-4/X-8
				Genoa VideoBlitz III AV
				Hercules Graphite Terminator Pro 64
				LeadTek WinFast S430
				LeadTek WinFast S510
				Miro Crystal 80SV
				Miro Crystal 20SV
				#9 FX Motion 771
				VideoLogic GrafixStar 700
				WinFast S430/S510
968	TVP3026		32	ELSA Winner 2000PRO/X
				Diamond Stealth 64 Video VRAM
968	IBM RGB		32	Genoa VideoBlitz III AVI
				Hercules Terminator Pro 64
				STB Velocity 64 Video
				#9 FX Motion 771
				Diamond Stealth 64 Video 3240/3400
968	TI RAMDAC			Diamond Stealth 64 Video 3240/3400
732	(Trio32)		32	Diamond Stealth 64 DRAM SE
				(all Trio32 based cards)
764	(Trio64)		32	SPEA Mirage P64 (BIOS 5.x)
				Diamond Stealth 64 DRAM
				Diamond Stealth 64 Graphics 2xx0
				#9 FX Vision 330
				STB PowerGraph 64
				(all Trio64 based cards)

CHIPSET	RAMDAC	CLOCKCHIP	BPP	CARD
	(Trio64V+)			DSV3326
				Diamond Stealth 64 Video 2001
				DataExpert DSV3365
				ExpertColor DSV3365
				MAXColor S3 Trio64V+
				ELSA Winner 1000TRIO/V
				Hercules Terminator 64/Video
				#9 FX Motion 331
				STB Powergraph 64 Video
				VideoLogic GrafixStar 400
	(Trio64V2)			ELSA Winner 1000/T2D
	(ViRGE)			Canopus Co. Power Window 3DV
				DSV3325
				DataExpert DSV3325
				Diamond Multimedia Stealth 3D 2000
				Diamond Multimedia Stealth 3D 2000 PRO
				Diamond Stealth 3D 2000
				Diamond Stealth 3D 2000 PRO
				Diamond Stealth 3D 3000
				ELSA Victory 3D
				ELSA Victory 3DX
				ELSA Winner 3000-S
				Expertcolor DSV3325
				Hercules Terminator 64/3D
				LeadTek WinFast 3D S600
				MELCO WGP-VG4S
				#9 FX Motion 332
				Orchid Tech. Fahrenheit Video 3D
				STB systems Powergraph 3D
				WinFast 3D S600
	(ViRGE/DX)			Hercules Terminator 3D/DX
	(ViRGE/GX)			STB Nitro 3D
	(ViRGE/VX)			ELSA Winner 2000AVI/3D
				ELSA Winner 3000
				ELSA Winner 3000-L-42/-M-22
				MELCO WGP-VX8
				STB Systems Velocity 3D
911/924				Diamond Stealth VRAM
924	SC1148 DAC			

NOTE: for the ViRGE/VX,DX,GX,GX2 chipsets you need XFree86 3.3.1. You should use the XF86_SVGA server.

24 Appendix B. Supported PCMCIA cards

These cards are supported by David Hinds' PCMCIA package and this list is taken from his web page.

24.1 Ethernet cards

- SMC, Megahertz and Ositech cards use the smc91c92_cs driver
- 3Com and Faralloncards use the 3c589_cs driver
- Fujitsu, TDK, RATOC, CONTEC and Nextcom cards use the fmvj18x_cs driver

All other cards use the pcnet_cs driver. Other NE2000-compatible cards that are not on the list are also likely to work with pcnet_cs.

- 3Com 3c589, 3c589B, 3c589C, 3c589D
- Accton EN2212, EN2216 EtherCard
- Allied Telesis CentreCOM CE6001, LA-PCM
- Asante FriendlyNet
- AST 1082 Ethernet
- CeLAN EPCMCIA
- CNet CN30BC, CN40BC Ethernet
- Compex/ReadyLINK Ethernet Combo
- Connectware LANdingGear Adapter
- CONTEC C-NET(PC)C
- Danpex EN-6200P2 Ethernet
- Datatrek NetCard
- Dayna Communications CommuniCard E
- Digital DEPCM-AA Ethernet
- Digital EtherWORKS Turbo Ethernet
- D-Link DE-650
- Edimax Technology Ethernet Combo
- EFA InfoExpress 205, 207 Combo
- Eiger Labs EPX-ET10T2 Combo

- ELECOM Laneed LD-CDWA, LD-CDX, LD-CDNIA
- EP-210 Ethernet
- Epson Ethernet
- Explorer NE-10000 Ethernet
- EZLink 4109 Ethernet
- Farallon Etherwave
- Fiberline FL-4680
- Fujitsu FMV-J181, FMV-J182, FMV-J182A
- Fujitsu Towa LA501
- Gateway 2000 Ethernet
- Genius ME3000II Ethernet
- Grey Cell Ethernet
- GVC NIC-2000P Ethernet Combo
- Hitachi HT-4840-11 EtherCard
- Hypertec HyperEnet
- IBM CreditCard Ethernet Adapter
- IC-Card Ethernet
- Infotel IN650ct Ethernet
- I-O Data PCLA/T
- Katron PE-520 Ethernet
- Kingston KNE-PCM/M, KNE-PC2
- LANEED Ethernet
- Lantech Ethernet
- Linksys EtherCard
- Logitec LPM-LN10T, LPM-LN10BA Ethernet
- Longshine Ethernet
- Macnica ME-1 Ethernet
- Maxtech PCN2000 Ethernet

- Megahertz XJ10BT, CC10BT Ethernet
- Melco LPC-TJ, LPC-TS
- Micronet Etherfast Adapter
- NDC Instant-Link
- Network General "Sniffer"
- New Media Ethernet
- NextCom NC5310
- Novell/National NE4100 InfoMover
- Ositech Four of Diamonds
- Panasonic CF-VEL211P-B
- Planet SmartCom 2000, 3500
- PreMax PE-200 Ethernet
- Proteon Ethernet
- Ratoc REX-9822, REX-5588A/W
- Relia RE2408T Ethernet
- RPTI EP400 Ethernet
- SCM Ethernet
- SMC 8020BT EtherEZ (not the EliteCard)
- Socket Communications Socket EA LAN Adapter
- Surecom Ethernet
- SVEC PN605C
- TDK LAC-CD02x, LAK-CD021, LAK-CD022A, LAK-CD021AX Ethernet
- Thomas-Conrad Ethernet
- Trust Ethernet Combo
- Volktek NPL-402CT Ethernet

24.2 Token-ring adapters

You should at least have kernel 1.3.72

- IBM Token ring Adapter
- 3Com 3c689 TokenLink III

24.3 Wireless network adapters

- AT&T GIS / NCR WaveLAN version 2.0
- DEC RoamAbout/DS
- Xircom creditCard Netwave

24.4 ISDN

- ELSA PCMCIA

24.5 Modem and serial cards

Virtually all modem cards, simple serial port cards, and digital cellular modems should work. Also ISDN modems that emulate a standard UART are supported.

- Advantech COMpad-32/85 dual serial
- Quatech, IOTech dual RS-232 cards
- socket Communications dual RS-232 card

24.6 Memory cards

All SRAM cards should work. Unsupported flash cards can be read but not written.

- Epson 2MB SRAM
- IBM 8MB Flash
- Intel Series 2 and Series 2+ Flash
- Maxtor MobileMax 16MB Flash
- New Media SRAM
- TDK Flash Memory SFM20W/C 20 MB

24.7 SCSI adapters

- Adaptec APA-1460, APA-1460A SlimSCSI
- Digital SCSI II adapter
- Eiger Labs SCSI
- Future Domain SCSI2GO

- IBM SCSI
- Iomega ZIP Card
- IO-DATA PCSC-II, PCSC-II-L
- IO-DATA CDG-PX44/PCSC CD-ROM
- Logitec LPM-SCSI2
- Logitec LCD-601 CD-ROM
- MACNICA mPS110, mPS110-LP SCSI
- Melco IFC-SC2, IFC-DC
- NEC PC-9801N-J03R
- New Media Bus Toaster SCSI
- New Media Toast 'n Jam (SCSI only)
- Panasonic KXL-D740, KXL-DN740A, KXL-DN740A-NB 4X CD-ROM
- Pioneer PCP-PR1W CD-ROM
- Qlogic FastSCSI
- Raven CD-Note 4X
- RATOC REX-9530 SCSI-2
- Simple Technologies SCSI
- Sony CD-ROM Discman PRD-250
- Taxan ICD-400PN
- Toshiba NWB0107ABK, SCSC200B

24.8 ATA/IDE CD-ROM adapters

You should at least have kernel 1.3.72

- Argosy EIDE CD-ROM
- Caravelle CD-36N
- Creative Technology CD-ROM
- Digital Mobile Media CD-ROM
- EXP CD940 CD-ROM
- IO-DATA CDP-TX4/PCIDE, CDP/PCIDE, CDP-TX10/PCIDE, CDV-HDN6/PCIDE, MOP-230/PCIDE
- H45 Technologies Quick 2x CD-ROM

24.9 Multifunction cards

You should at least have kernel 1.3.73

- 3Com 3c562, 3c562B, 3c563B, 3c562C, 3c563C
- IBM Home and Away Card
- Linksys LANmodem 28.8, 33.6
- Megahertz EM1144, EM3288, EM3336
- Motorola Marquis
- Ositech Jack of Diamonds

24.10 ATA/IDE card drives

These card drives are supported starting with kernel 1.3.72. Both Flash-ATA cards and rotating-media cards are supported.

24.11 Miscellaneous cards

- Trimble Mobile GPS (uses serial/modem driver)

24.12 Working on ...

People are working on the following cards:

- Nat'l Inst DAQCard (Eric Gonzalez root@colomsat.net.co)
- IBM Smart Capture (Koij Okamura oka@nanotsu.kobe-u.ac.jp)
- Roland SCP-55 MIDI (Toshiaki Nakatsu ir9k-nkt@asahi.net.or.jp)
- CyberRom CD-ROM (David Rowntree rowntree@dircon.co.uk)
- IO DATA PCSC-II (Katayama Nobuhiro kata-n@po.iijnet.or.jp)
- Macnica mPS-1x0 (Katayama Nobuhiro kata-n@po.iijnet.or.jp)
- FORTEZZA encryption (Rex Riggins rriggins@radium.ncsc.mil)
- Harris PRISM/AM79C930 (Mark Mathews mark@mail.absoval.com)
- IBM Etherjet (Danilo Beuche danili@cs.tu-berlin.de). The driver can be found at `<http://www.first.gmd.de/~danilo/pc-driver>`
- Teles PCMCIA

24.13 Unsupported

- Adaptec/Trantor APA-460 SlimSCSI
- CanonCompaq PCMCIA floppy drive
- Motorola Mariner
- New Media .WAVjammer and all other sound cards
- All 100baseT ethernet adapters
- Panasonic KXL-D720, KXL-D745
- SMC 8016 EliteCard
- Telxon/Aironet wireless adapter
- Xircom ethernet and ethernet/modem cards

25 Appendix C. Plug and Play devices

For people having trouble getting Plug and Play devices to work, the ISA PnP utilities written by Peter Fox are available. Quote from the README:

```
These programs allow ISA Plug-And-Play devices to be configured
on a Linux machine.

This program is suitable for all systems, whether or not they
include a PnP BIOS.
```

Commands have been taken from the Plug and Play ISA specification Version 1.0a. (`<ftp://ftp.redhat.com/pub/pnp/docs/>`)

More information on ISA PnP utilities can be found on the website of Peter Fox:
`<http://www.roestock.demon.co.uk/isapnptools/>`

Please let me know about hardware (not normally supported under Linux) which can be put to work with the aid of these utilities. A list of this hardware will be put in this appendix.

26 Appendix D. Linux incompatible Hardware

Some hardware manufacturers have created devices which are compatible with MS-Dos and Windows 95 only. Specification on these devices are not presented to the world so it is almost impossible to write drivers for these devices. Below a list of devices reported as being Linux incompatible will be given.

- All Hewlet Packard HP Deskjet 820xx printers

- The Multiwave Innovation CommWave V.34 modem (<http://www.multiwave.com/>)
- USR WinModem ??