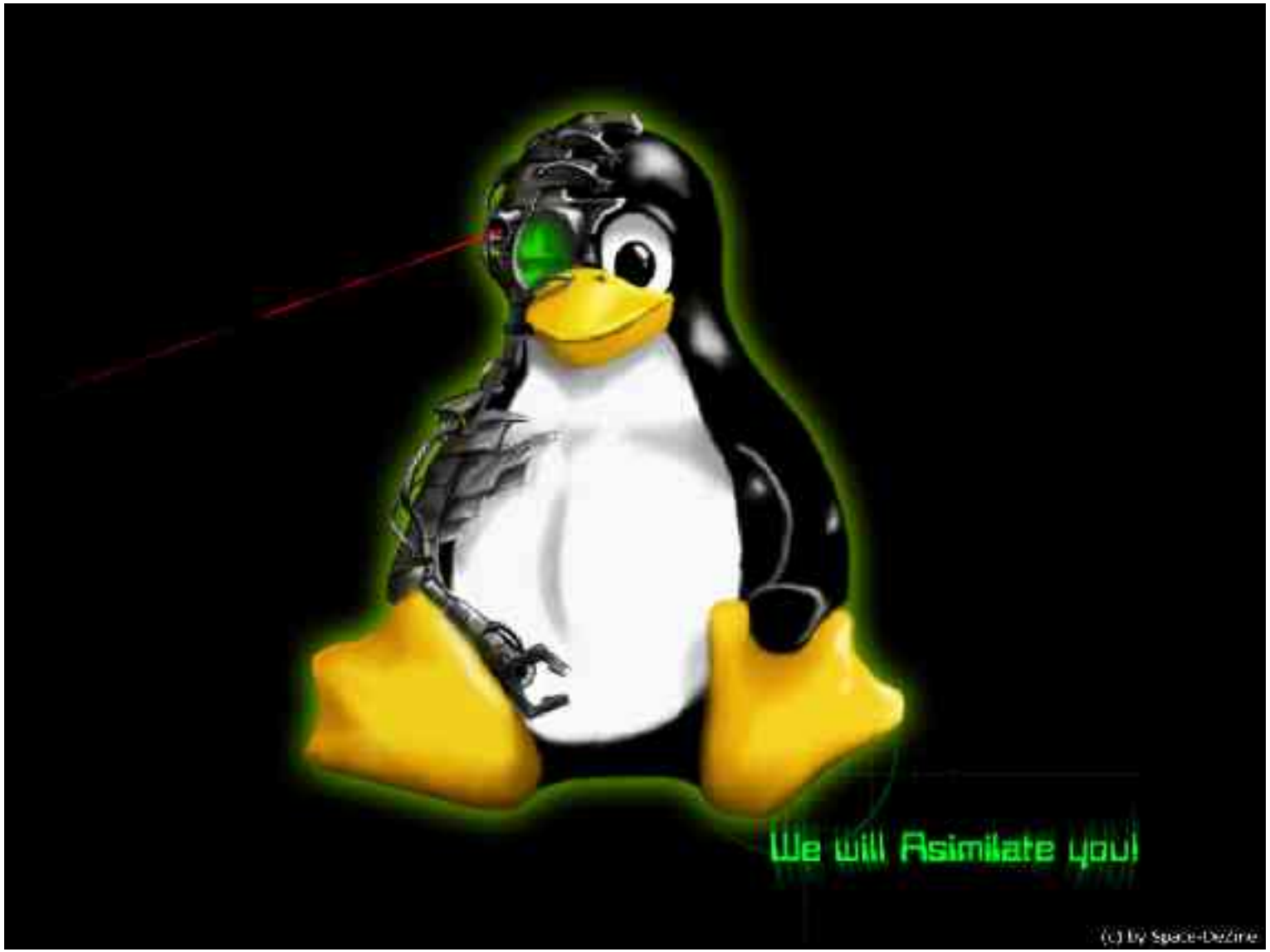
Hardware einbinden



Hardware einbinden - Übersicht

- **Welche Hardware?**
- Welches Kernelmodul?
- Module automatisch laden
- Hotplug anpassen

Hardware einbinden - Welche Hardware?

- **PCI**
- USB
- PCMCIA
- Firewire
- Peripherie

Hardware einbinden - Welche Hardware?

```
** -:[/root]#> lspci
0000:00:00.0 Host bridge: Silicon Integrated Systems [SiS] SiS645DX Host & Memory & AGP Controller
0000:00:01.0 PCI bridge: Silicon Integrated Systems [SiS] 5591/5592 AGP
0000:00:02.0 ISA bridge: Silicon Integrated Systems [SiS] SiS962 [MuTIOL Media IO] (rev 04)
0000:00:02.1 SMBus: Silicon Integrated Systems [SiS]: Unknown device 0016
0000:00:02.3 FireWire (IEEE 1394): Silicon Integrated Systems [SiS] FireWire Controller
0000:00:02.5 IDE interface: Silicon Integrated Systems [SiS] 5513 [IDE]
0000:00:02.6 Modem: Silicon Integrated Systems [SiS] Intel 537 [56k Winmodem] (rev a0)
0000:00:02.7 Multimedia audio controller: Silicon Integrated Systems [SiS] SiS7012 PCI Audio Accelerator
(rev a0)
0000:00:03.0 USB Controller: Silicon Integrated Systems [SiS] 7001 (rev 0f)
0000:00:03.1 USB Controller: Silicon Integrated Systems [SiS] 7001 (rev 0f)
0000:00:03.2 USB Controller: Silicon Integrated Systems [SiS] 7001 (rev 0f)
0000:00:03.3 USB Controller: Silicon Integrated Systems [SiS] SiS7002 USB 2.0
0000:00:04.0 Ethernet controller: Silicon Integrated Systems [SiS] SiS900 10/100 Ethernet (rev 90)
0000:00:09.0 CardBus bridge: ENE Technology Inc CB1410 Cardbus Controller
0000:00:0a.0 Network controller: Harris Semiconductor Prism 2.5 Wavelan chipset (rev 01)
0000:01:00.0 VGA compatible controller: nVidia Corporation NV17 [GeForce4 440 Go 64M] (rev a3)
```

```
** -:[/root]#> lspci -v
0000:00:0a.0 Network controller: Harris Semiconductor Prism 2.5 Wavelan chipset (rev 01)
        Subsystem: Askey Computer Corp.: Unknown device 7000
        Flags: bus master, medium devsel, latency 128, IRQ 11
        Memory at a0000000 (32-bit, prefetchable)
        Capabilities: [dc] Power Management version 2
```

Hardware einbinden - Welche Hardware?

- PCI
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Hardware einbinden - Welche Hardware?

```
** -:[/proc/bus/usb]#> cat devices

T:  Bus=04 Lev=00 Prnt=00 Port=00 Cnt=00 Dev#=  1 Spd=480 MxCh= 6
B:  Alloc=  0/800 us ( 0%), #Int=  0, #Iso=  0
D:  Ver= 2.00 Cls=09(hub  ) Sub=00 Prot=01 MxPS= 8 #Cfgs=  1
P:  Vendor=0000 ProdID=0000 Rev= 2.06
S:  Manufacturer=Linux 2.6.3-gentoo-r1 ehci_hcd
S:  Product=EHCI Host Controller
S:  SerialNumber=0000:00:03.3
C:* #Ifs= 1 Cfg#= 1 Atr=40 MxPwr=  0mA
I:  If#= 0 Alt= 0 #EPs= 1 Cls=09(hub  ) Sub=00 Prot=00 Driver=hub
E:  Ad=81(I) Atr=03(Int.) MxPS=   2 Ivl=256ms

T:  Bus=03 Lev=01 Prnt=01 Port=01 Cnt=01 Dev#=  2 Spd=12  MxCh= 0
D:  Ver= 1.10 Cls=00(>ifc ) Sub=00 Prot=00 MxPS=16 #Cfgs=  1
P:  Vendor=0aec ProdID=3050 Rev= 1.00
S:  Manufacturer=Generic
S:  Product=USB Storage Device
S:  SerialNumber=20021201000921660
C:* #Ifs= 1 Cfg#= 1 Atr=80 MxPwr=100mA
I:  If#= 0 Alt= 0 #EPs= 2 Cls=08(stor.) Sub=06 Prot=50 Driver=usb-storage
E:  Ad=01(O) Atr=02(Bulk) MxPS=  64 Ivl=0ms
E:  Ad=82(I) Atr=02(Bulk) MxPS=  64 Ivl=0ms

T:  Bus=02 Lev=01 Prnt=01 Port=01 Cnt=01 Dev#=  2 Spd=1.5 MxCh= 0
D:  Ver= 1.10 Cls=00(>ifc ) Sub=00 Prot=00 MxPS= 8 #Cfgs=  1
P:  Vendor=045e ProdID=0040 Rev= 3.00
S:  Manufacturer=Microsoft
S:  Product=Microsoft 3-Button Mouse with IntelliEye(TM)
C:* #Ifs= 1 Cfg#= 1 Atr=a0 MxPwr=100mA
I:  If#= 0 Alt= 0 #EPs= 1 Cls=03(HID  ) Sub=01 Prot=02 Driver=hid
E:  Ad=81(I) Atr=03(Int.) MxPS=   4 Ivl=10ms
```

Hardware einbinden - Welche Hardware?

```
** -:[/root]#> tail -f /var/log/kern.log
May  7 16:40:04 ariel kernel: usb 2-2: new low speed USB device using address 3
May  7 16:40:05 ariel kernel: input: USB HID v1.10 Mouse [Microsoft Microsoft 3-Button Mouse with
IntelliEye(TM)] on usb-0000:00:03.1-2
```

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Hardware einbinden - Welche Hardware?

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- **Firewire**
- Peripherie

Hardware einbinden - Welche Hardware?

```
** -:[/root]#> tail -f /var/log/kern.log
May  7 16:50:17 ariel kernel: ohci1394: $Rev: 1097 $ Ben Collins <bcollins@debian.org>
May  7 16:50:17 ariel kernel: ohci1394: fw-host0: Unexpected PCI resource length of 1000!
May  7 16:50:18 ariel kernel: ohci1394: fw-host0: OHCI-1394 1.0 (PCI): IRQ=[10]  MMIO=[f4000000-f40007ff]
Max Packet=[2048]
May  7 16:50:18 ariel kernel: ieee1394: Host added: ID:BUS[0-00:1023]  GUID[0040d00100109644]
May  7 16:50:29 ariel kernel: raw1394: /dev/raw1394 device initialized
```

Hardware einbinden - Welche Hardware?

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- **Peripherie**

Hardware einbinden - Übersicht

- Welche Hardware?
- **Welches Kernelmodul?**
- Module automatisch laden
- Hotplug anpassen

Hardware einbinden - Welches Kernelmodul?

```
** -:[/usr/src/linux/Documentation]#> ls
```

00-INDEX	dvb	kbuild	paride.txt	smp.txt
arm	early-userspace	kernel-doc-nano-HOWTO.txt	parisc	sonypi.txt
as-iosched.txt	eisa.txt	kernel-docs.txt	parport-lowlevel.txt	sound
basic_profiling.txt	exception.txt	kernel-parameters.txt	parport.txt	sparc
binfmt_misc.txt	fb	kobject.txt	pci.txt	speakup
BK-usage	filesystems	ldm.txt	pm.txt	specialix.txt
block	firmware_class	lirc	pnp.txt	spinlocks.txt
BUG-HUNTING	floppy.txt	locks.txt	power	stallion.txt
cachetlb.txt	ftape.txt	logo.gif	powerpc	SubmittingDrivers
cciss.txt	hayes-esp.txt	logo.txt	preempt-locking.txt	SubmittingPatches
cdrom	highuid.txt	m68k	ramdisk.txt	svga.txt
Changes	hw_random.txt	magic-number.txt	README.DAC960	sx.txt
cli-sti-removal.txt	i2c	mandatory.txt	README.moxa	sysctl
CodingStyle	i386	mca.txt	riscom8.txt	sysrq.txt
computone.txt	ia64	md.txt	rocket.txt	telephony
cpqarray.txt	ide.txt	memory.txt	rpc-cache.txt	tipar.txt
cpu-freq	initrd.txt	mips	rtc.txt	uml
cris	input	mkdev.cciss	s390	unicode.txt
crypto	ioctl-number.txt	mkdev.ida	SAK.txt	usb
devices.txt	IO-mapping.txt	moxa-smartio	sched-coding.txt	VGA-softcursor.txt
digiboard.txt	io_ordering.txt	MSI-HOWTO.txt	sched-design.txt	video4linux
digiepca.txt	iostats.txt	mtrr.txt	scsi	vm
DMA-API.txt	IPMI.txt	nbd.txt	serial	voyager.txt
DMA-mapping.txt	IRQ-affinity.txt	networking	serial-console.txt	watchdog
dnotify.txt	isapnp.txt	nfsroot.txt	sgi-visws.txt	x86_64
DocBook	isdn	nmi_watchdog.txt	sh	xterm-linux.xpm
driver-model	java.txt	oops-tracing.txt	smart-config.txt	zorro.txt

Hardware einbinden - Welches Kernelmodul?

```
** -:[/usr/src/linux]#> grep -i prism .config
# Prism GT/Duette 802.11(a/b/g) PCI/PCMCIA support
# CONFIG_PRISM54 is not set
```

Hardware einbinden - Welches Kernelmodul?

```
** -:[/lib/modules/2.6.3-gentoo-r1/kernel/drivers]#> ls *
acpi:
ac.ko  asus_acpi.ko  battery.ko  button.ko  fan.ko  processor.ko  thermal.ko

block:
compressloop.ko  cryptoloop.ko  floppy.ko  loop.ko

char:
agp  genrtc.ko  lp.ko  rtc.ko

ieee1394:
ieee1394.ko  ohci1394.ko  raw1394.ko

net:
dummy.ko  irda  mii.ko  sis900.ko  wireless

parport:
parport.ko  parport_pc.ko

pcmcia:
ds.ko  pcmcia_core.ko  yenta_socket.ko

scsi:
sd_mod.ko  sg.ko  sr_mod.ko

usb:
class  core  host  input  storage
```

modprobe ohci1394

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- Welche Hardware?
- Welches Kernelmodul?
- **Module automatisch laden**
- Hotplug anpassen

Hardware einbinden - Module automatisch laden

```
** -:[/etc/modules.autoload.d]#> cat kernel-2.6
sis900
snd-intel8x0
ac
battery
button
fan
processor
thermal
```

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- **Hotplug anpassen**

Hardware einbinden - Hotplug anpassen

```
** -:[/etc/hotplug]#> cat usb.usermap
# usb module        match_flags idVendor idProduct bcdDevice_lo bcdDevice_hi bDeviceClass bDeviceSubClass
usbcam              0x003       0x054c   0x004e    0x00         0x00         0x00         0x00
usbcam              0x003       0x40a    0x132     0x00         0x00         0x00         0x00
```

Hardware einbinden - Ende

Vielen Dank für Eure Aufmerksamkeit