



Thorsten Leemhuis | **LIT** 2.6.38 Hauptentwicklungs Zweig | **Status** Ausblick

Batched Discard | Radeon 6xxx - 68xx | Ext4-Optimierungen | XEN Net Backends | Heise Zeitschriften Verlag GmbH&Co. KG | stable | longterm | XEN DOMO | Staging | XPS | Stabilisierungsphase | Poulsbo/US15W | 2.6.37 | 2.6.39 | Transparent Huge Pages (THP) | BKL End game | LZ0 für Btrfs | 26.03.2011 | Linux-Kerne | thl@ct.de | Samstag | Thorsten@leemhuis.info | ip set Radeon 69xx | Wunderpatch aka Group Scheduling | Augsburg | Entwicklungszyklus | Thorsten Leemhuis | Kernel-Log-Talk – #LIT11 – http://bit.ly/kernellogtalk-lit2011

Forced Interrupt Handlers | 12:00 Uhr | VFS | Fermi 3D | Status | Ausblick

Whoami



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Die nächsten 45 Minuten

- Die wichtigsten Neuerungen der letzten Zeit
 - Linux 2.6.36, 2.6.37 und 2.6.38 sowie Ausblick auf 2.6.39
- Einige Exkurse
 - Staging-Treiber, Grafiktreiber-Stack, Entwicklungsmodell
 - Wichtige Änderungen in Kernel-nahen Programmen
- Weitere Hintergründe nach Publikumsinteresse
 - Weitere Hintergründe zu einigen der erwähnten Innovationen?
 - Details zum Entwicklungsprozess oder den Stable-Kernen?
 - RT-Tree? Linux-Next? Xen vs. KVM? Btrfs?
 - Proprietäre Treiber?
- Hoffentlich viele Fragen aus der Zuhörerschaft!



Zielpublikum



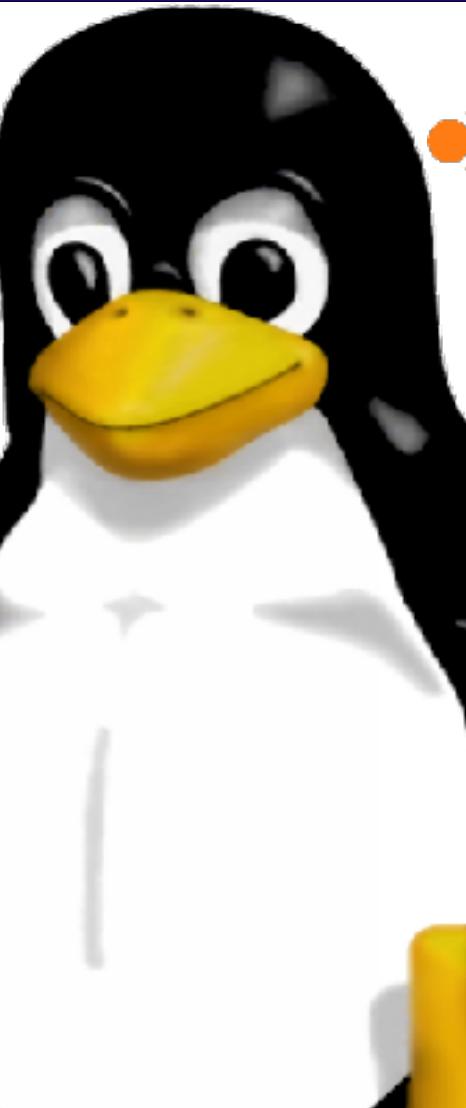
redhat



CentOS



debian



ubuntu



fedora

slackware
linux



...und die Nutzer vieler
andere Linux-Distributionen
für Notebooks, Desktops und Servers



Wie sieht mein Zielpublikum aus?



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interessieren!



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Wie sieht mein Zielpublikum aus?



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**Linux auf Desktops
und Notebooks**
interessieren!



Wie sieht mein Zielpublikum aus?



...wenn Sie anderen
den Unterschied zwischen
**Linux, Linux-Kernel, Linux-
Distribution und Android**
erklären können!



Wie sieht mein Zielpublikum aus?



...wenn
Ihnen Begriffe wie

**Radeon, GeForce, Phenom, Core
i7, Quad-Core, Sandybridge**
geläufig sind!



Wie sieht mein Zielpublikum aus?



...wenn
Ihnen Begriffe wie
**KMS, Nouveau, KVM, DM, MD,
DRM, MAC80211, CFQ**
bekannt sind!



Wie sieht mein Zielpublikum aus?



...wenn Sie häufiger
das Kernel-Log
oder LWN.net
lesen!



Wie sieht mein Zielpublikum aus?



...wenn Du ein
Kernel-Hacker
bist!

"Bullet-Points sparsam verwenden!"



- diese
 - Präsentation
 - enthält
 - nur
 - wenige
 - bullet
 - points

"Bullet-Points sparsam verwenden!"



- diese
 - Präsentation
 - enthält
 - nur
 - wenige
 - bullet
 - points

Wer unbedingt welche braucht, der findet
einige in den Notizen dieses Dokuments:
<http://bit.ly/kernellogtalk-clt2011>



Wo wir stehen

The Linux Kernel Archives

Welcome to the Linux Kernel Archives. This is the primary site for the Linux kernel source, but it has much more than just Linux kernels
[Frequently Asked Questions](#)

Protocol	Location
HTTP	http://www.kernel.org/pub/
FTP	ftp://ftp.kernel.org/pub/
RSYNC	rsync://rsync.kernel.org/pub/

Latest Stable Kernel:

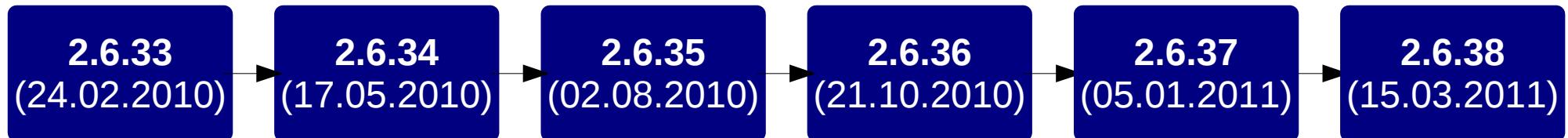


[2.6.38.1](#)

linux next: next-20110321	2011-03-24	[Patch] [View Patch] [Gitweb]
snapshot: 2.6.38-git14	2011-03-24	[Patch] [View Patch]
mainline: 2.6.38	2011-03-15	[Full Source] [Patch] [View Patch] [Gitweb] [Changelog]
stable: 2.6.38.1	2011-03-23	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
stable: 2.6.37.5	2011-03-23	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
stable: 2.6.36.4	2011-02-17	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
longterm: 2.6.35.11	2011-02-06	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
stable: 2.6.35.9	2010-11-22	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
longterm: 2.6.34.8	2011-01-06	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
longterm: 2.6.33.8	2011-03-21	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
longterm: 2.6.32.35	2011-03-24	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]
stable: 2.6.32.28	2011-01-07	[Gitweb]
longterm: 2.6.27.50	2011-02-09	[Full Source] [Patch] [View Patch] [View nc.] [Gitweb] [Changelog]



Unstable-Series kommt nicht wieder



GMANE

From: Linus Torvalds <torvalds <at> linux-foundation.org>
Subject: Re: From 2.4 to 2.6 to 2.7?
Newsgroups: gmane.linux.kernel
Date: 2008-07-15 02.22.04 GMT

Or Mon, 14 Jul 2008, Stoyan Gaycarov wrote:

>
> Second I wanted to talk about the linux 2.7.x kernel, whats in the
> making or maybe even not started

Nothing.

I'm not going back to the old model. The new model is so much better that
it's not even worth entertaining as a theory to go back.

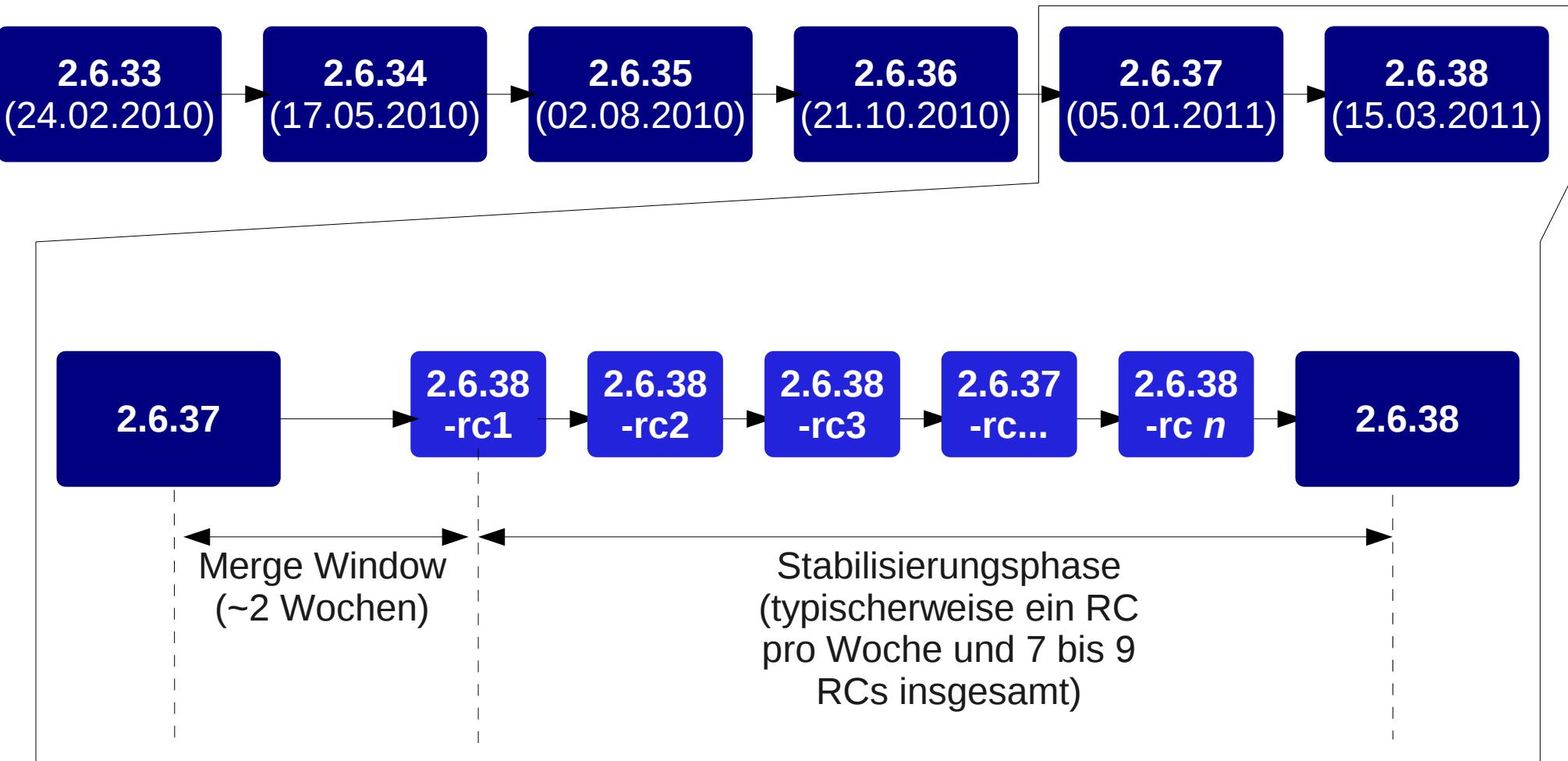
That said, I am considering changing just the numbering. Not to go back
to the old model, but because a constantly increasing minor number leads
to big numbers. I'm not all that thrilled with "26" as a number: it's hard
to remember.

So I would not dismiss (and have been thinking about starting) talk about
a simple numbering reset (perhaps yearly), but the old model of 3-year
development trees is simply not coming back as far as I'm concerned.

From the linux-kernel@vger.kernel.org mailing list



Entwicklungszyklus





Statistik

Linux- Version	Anzahl Dateien ¹	Zeilen Quelltext ² (Ohne Dokum.)	Entwicklungs- zeitraum	Anzahl Commits ³	Diffstat ⁴
<u>2.6.34</u>	32297	13320934 (11861616)	82 Tage	9443	11154 files changed, 609854 insertions(+), 278958 deletions(-)
<u>2.6.35</u>	33316	13545604 (12250679)	77 Tage	9801	8889 files changed, 691927 insertions(+), 467252 deletions(-)
<u>2.6.36</u>	34301	13499457 (12539782)	80 Tage	9501	9202 files changed, 582139 insertions(+), 628362 deletions(-)
<u>2.6.37</u>	35191	13996612 (13006967)	76 Tage	11446	11104 files changed, 1093202 insertions(+), 598350 deletions(-)
<u>2.6.38</u>	35877	14294439 (13294464)	69 Tage	9542	9133 files changed, 747809 insertions(+), 455603 deletions(-)

¹ find . -type f -not -regex '\.git.*' | wc -l

² find . -type f -not -regex '\.git.*' | xargs cat | wc -l (find . -name *[hcS] -not -regex '\.git.*' | xargs cat | wc -l)

³ git log --no-merges --pretty=oneline v2.6.(x-1)..v2.6.(x) | wc -l

⁴ git diff --shortstat v2.6.(x-1)..v2.6.(x)



Grafik-Hardware: AMD



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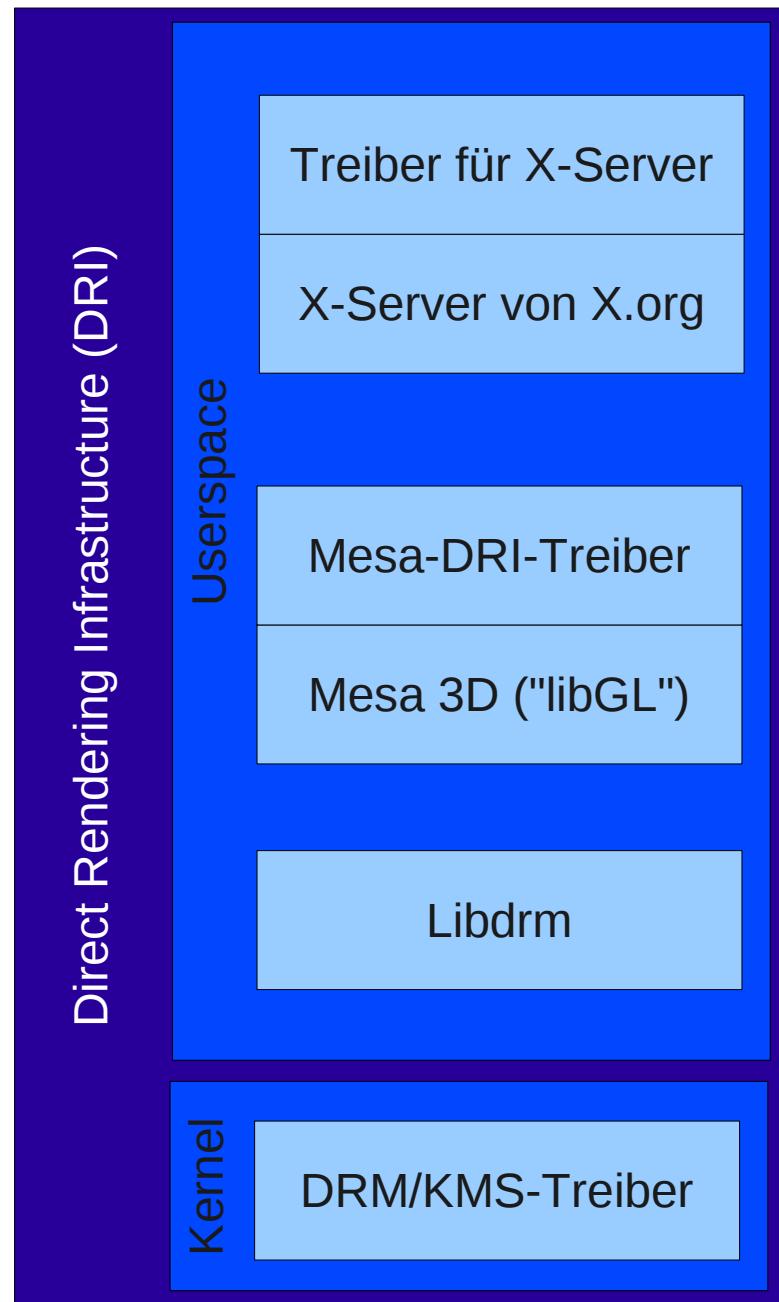
[Shop SAPPHIRE HD5570](#)

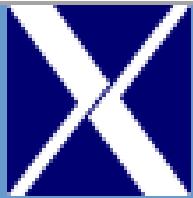
[Learn More](#)

[Desktop Graphics Help Me Choose](#)

(c) Screenshot von amd.com

Exkurs: DRI-Grafiktreiber-Stack





Linux Graphics Drivers from Intel

Open Source Graphics for the masses

Main Menu

- [Home](#)
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- [Development Team](#)
- [Download](#)
- [License](#)
- [Testing](#)
- [Feedback](#)
- [Hardware Matrix](#)
- [Related projects](#)

Intel 2010Q4 graphics package components

2D driver: [xf86-video-intel 2.14.0 release](#)

3D driver: [mesa 7.10](#)

Libdrm: [libdrm-2.4.23 release](#)

Kernel: [2.6.37 release](#)

Cairo: [cairo-1.10.2 release](#)

Libva: [libva-1.0.7 release](#)

(xserver-1.9.3 is recommended to use with this package)

Check [Download page](#) for where to get the source git tree.

new features

Fully support the 2nd Generation Intel® Core™ processor family (codenamed **Sandy Bridge**), including render acceleration, 3D, compositing, Xv, and [H.264/MPEG2 decoding](#).



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Grafik-Hardware: Nvidia

NVIDIA Home > GeForce Family

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GeForce Graphics Processors

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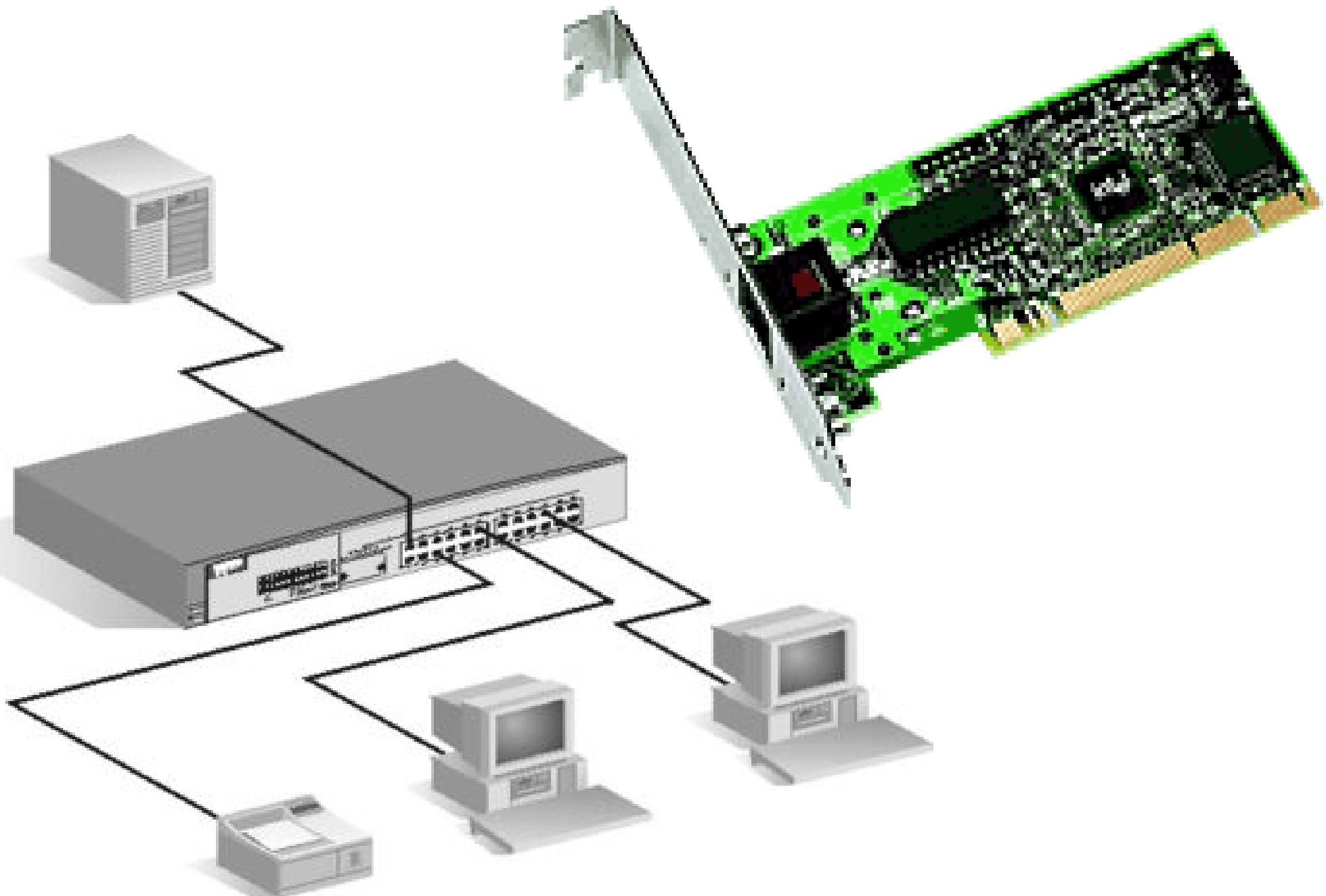
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PRODUCTS

GEFORCE GTX	GEFORCE GTS AND GT	GEFORCE
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Desktop	Desktop	Desktop
GeForce GTX 560 GeForce GTX 570 GeForce GTX 560 Ti (TBA) GeForce GTX 480	GeForce GTS 450 GeForce GT 440 (new) GeForce GT 430 GeForce GTS 250	GeForce 310 GeForce 420 GS



Netzwerk





Tue Feb 23, 2:23 PM

Wired Networks
disconnected

Wireless Networks

FloydsCoffee  Disconnect

Available

Brown 

Dead Johnny's Grave 

Doublescoop Central 

dow 

GETADRINK 

More networks >

VPN Connections >

Connect to Hidden Wireless Network...
Create New Wireless Network...



Exkurs: Linux-Staging

From: Greg KH <greg <at> kroah.com>

Subject: [ANNOUNCE] linux-staging tree created

Newsgroups: gmane.linux.kernel.next, gmane.linux.kernel,

Date: 2008-06-10 19:05:40 GMT

PURPOSE

The linux-staging tree was created to hold drivers and filesystems and other semi-major additions to the Linux kernel that are not ready to be merged at this point in time. It is here for companies and authors to get a wider range of testing, and to allow for other members of the community to help with the development of these features for the eventual inclusion into the main kernel tree.

This tree will be included in the daily linux-next builds, and will get testing by all users of that tree.

The rules of what can be included here is as follows:

- the code must be released under a Linux kernel-compatible license
- the goal of the developers must be to merge this code into the main kernel tree in the near future, but not for the next kernel release.
- the code must build properly on the x86 platform
- this is not a tree for bugfixes or rewrites of existing kernel code, this should be for new features, drivers, and filesystems.
- the patches included must detail exactly what is needed to be completed in order for them to be included into the main kernel tree.
- there must be some email address associated with the patch that can be used for bug reporting and questions about cleanups and testing the code.

Linux-Staging: Die andere Seite



<http://bit.ly/dcbw-staging-justsayno>

Dan Williams' blog

Moving you on the work since 2004

* Public Service Announcement: Don't believe the internet
Wanted: Samsung SWC-100 WLAN/Bluetooth ExpressCard *

Few Surprised at New Evidence of Staging Driver Suckage



Thomas Johnson (High School Junior)

"On yeah, we seen that code. It's worse than what I clear up in the bathrooms after Prom or Homecoming. The kids go high and drunk and carry around and puke all over the place. I deal with enough vomit from 7:30 to 6; I wouldn't touch the staging drivers with a mop twice as long as the one I have at work."

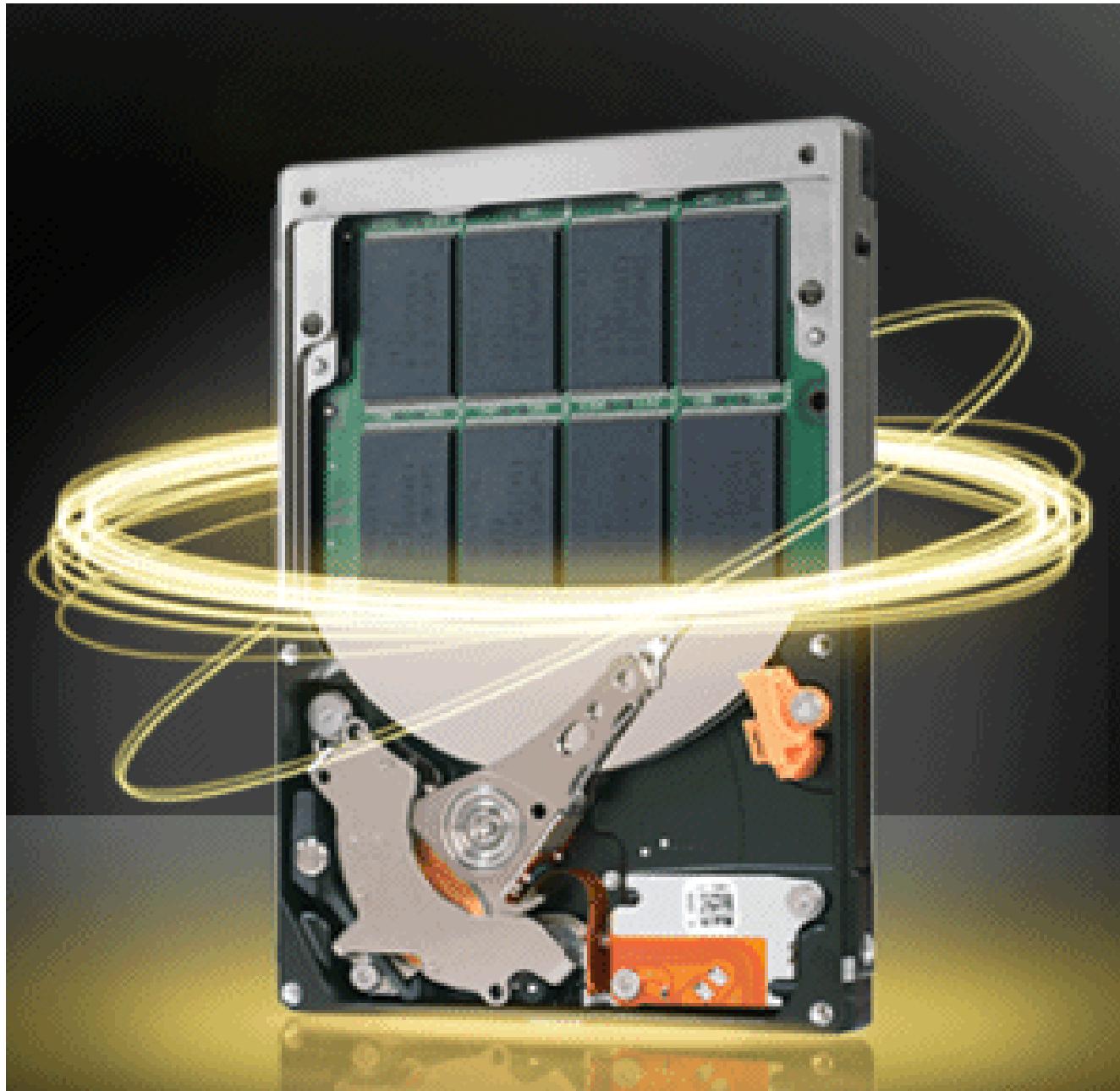
Just Say No

The TAs just found out that none of the "staging" WiFi drivers will work with hidden access points because they don't set the IW_SCAN_CAPA_ESSID capability bit. Furthermore the most popular "staging" drivers (for the Ralink hardware used in many netbooks) don't even have specific ESSID scanning capability at all.

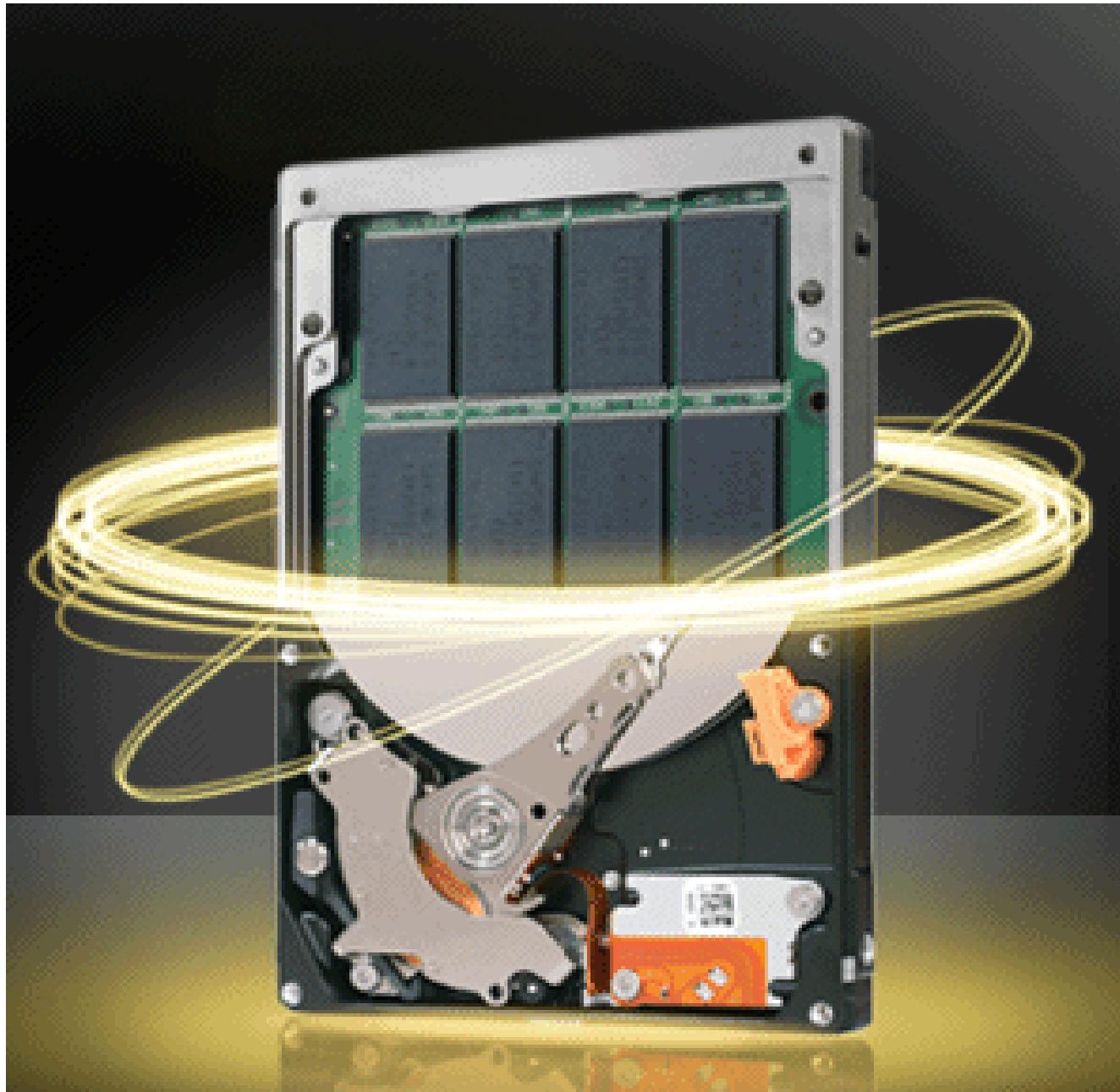
Why do you care? Hidden APs don't broadcast their network ID which misinformed people think is more secure (think it's not). Before a driver can associate to the network, it needs to discover available APs and capabilities, which requires a probe request which exposes the network ID to everyone anyway. But that requires driver support which none of the staging drivers have.

I fixed this issue upstream [two years ago](#) by adding IW_SCAN_CAPA_ESSID to Wireless Extensions. Of course the staging WiFi drivers that many distros enable never got fixed because the vendor it came from doesn't bother to work with the community in the first place. And people wonder why they don't work.

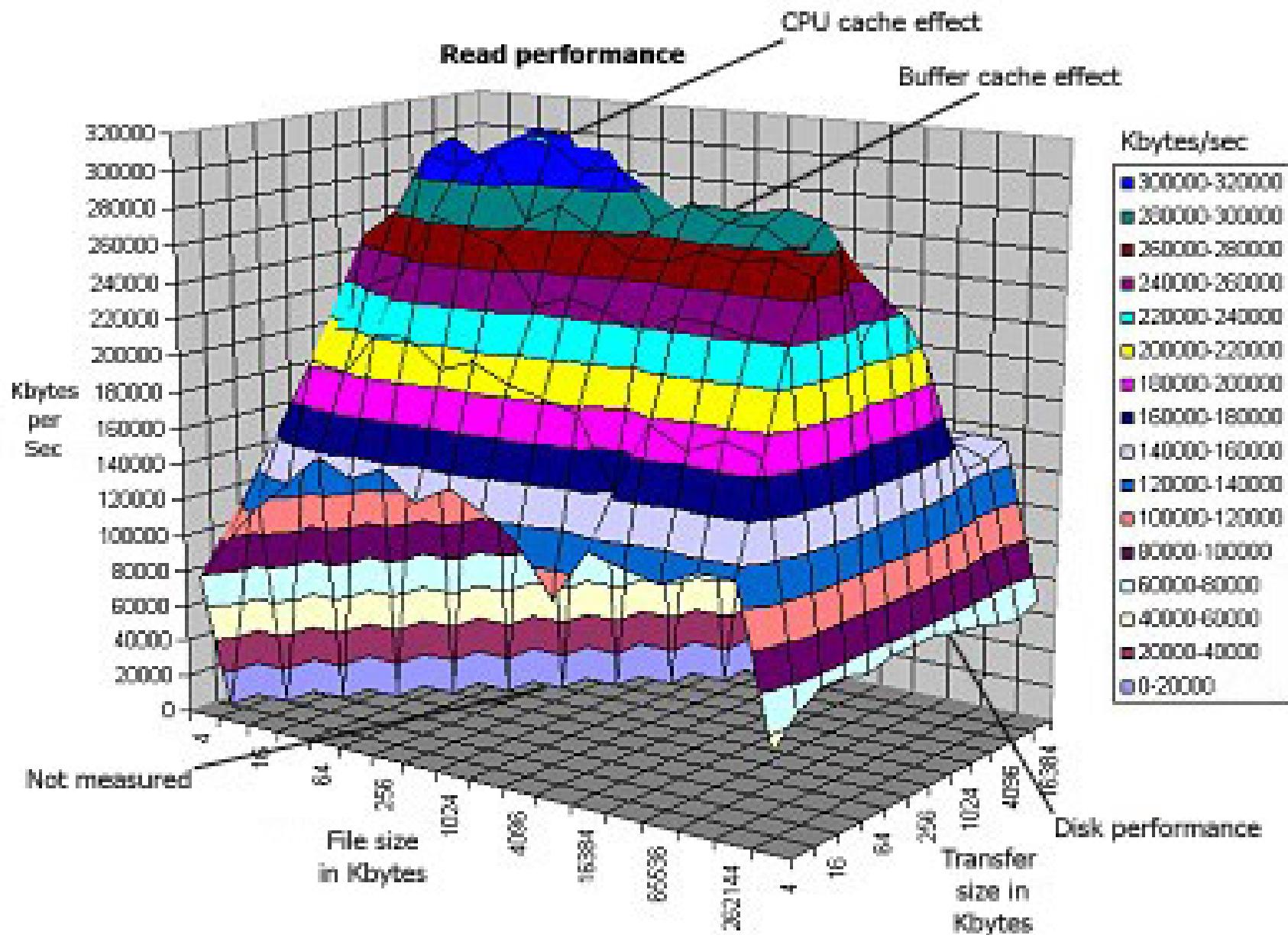
Storage



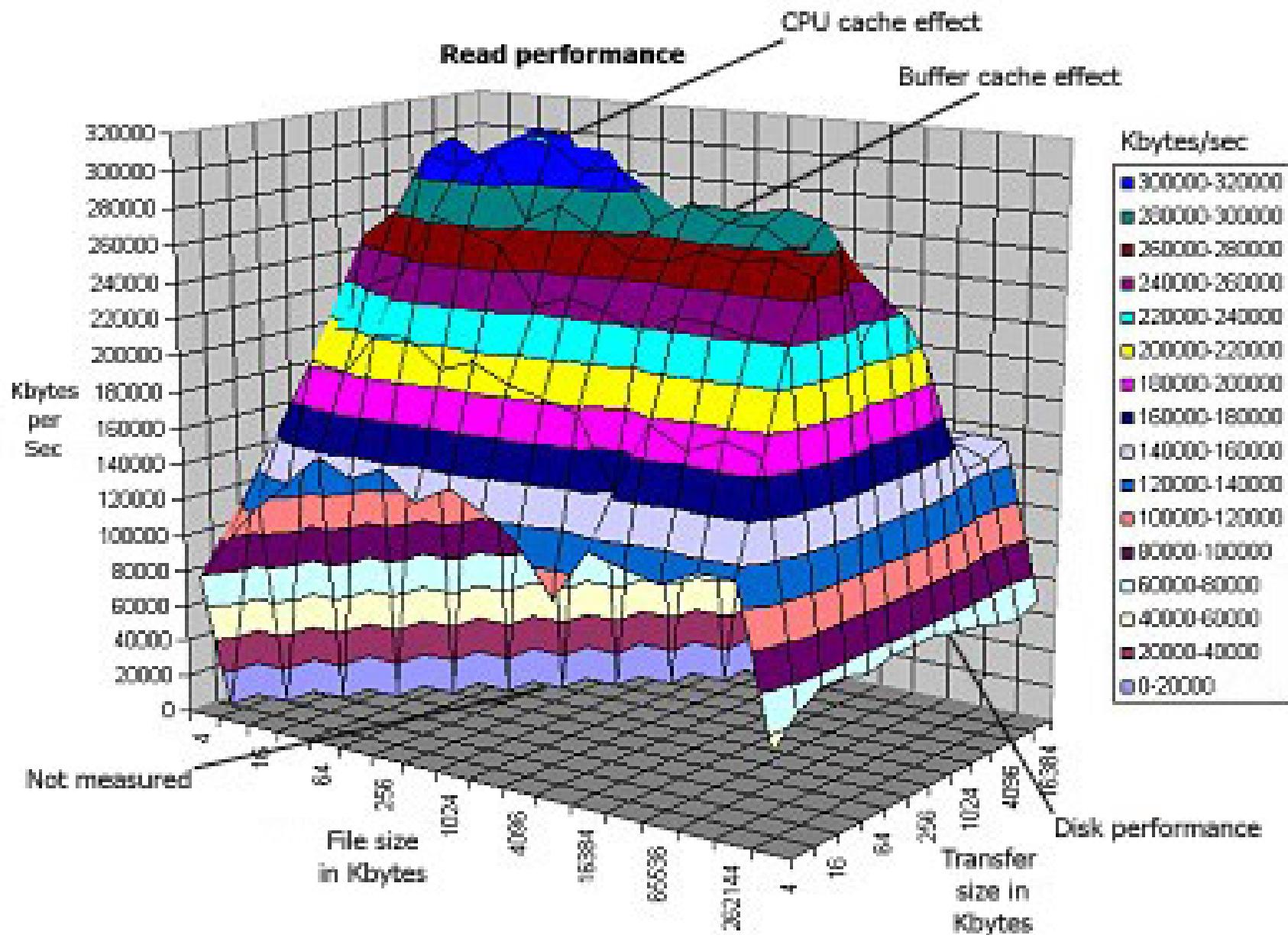
Storage



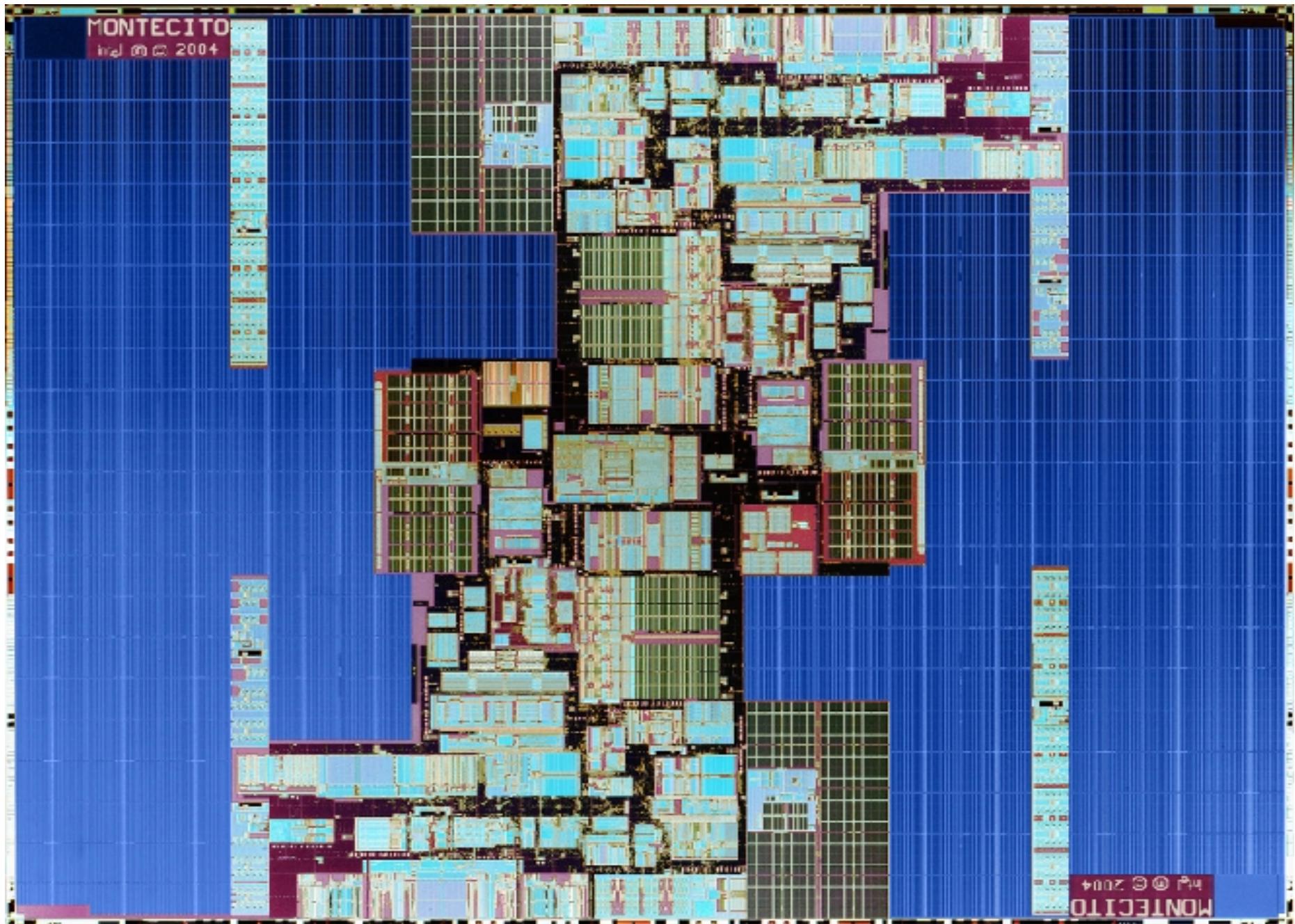
Dateisysteme



Dateisysteme



Architektur-Code



(c) Screenshot von intel.com



Virtualisierung

thl@ankh-morpork:~/tmp/tmp

- □ ×

```
[thl@ankh-morpork tmp]$ modinfo kvm
filename:      /lib/modules/2.6.35.4-28.fc14.x86_64/kernel/arch/x86/kvm/kvm.ko
license:       GPL
author:        Qumranet
srcversion:    4819CF9603D4535B68C5ED9
depends:
vermagic:     2.6.35.4-28.fc14.x86_64 SMP mod_unload
parm:          oos_shadow:bool
parm:          ignore_msrs:bool
[thl@ankh-morpork tmp]$ modinfo kvm-intel
filename:      /lib/modules/2.6.35.4-28.fc14.x86_64/kernel/arch/x86/kvm/kvm-intel.ko
license:       GPL
author:        Qumranet
srcversion:    3733E64B0127064F5398119
depends:       kvm
vermagic:     2.6.35.4-28.fc14.x86_64 SMP mod_unload
parm:          bypass_guest_pf:bool
parm:          vpid:bool
parm:          flexpriority:bool
parm:          ept:bool
parm:          unrestricted_guest:bool
parm:          emulate_invalid_guest_state:bool
parm:          ple_gap:int
parm:          ple_window:int
[thl@ankh-morpork tmp]$ █
```



Sicherheit

Linux Kernel v2.6.36-rc4 Configuration (auf thl.ct.heise.de)

File Options Help

Back Load Save Single Split Full Collapse Expand

Options

- Pseudo filesystems
 - Miscellaneous filesystems
 - Network File Systems
- Partition Types
- Native language support
- Distributed Lock Manager (DLM)
- Kernel hacking
 - Tracers
 - Sample kernel code
 - KGDB: kernel debugger
- Security options
 - Self test for hardware accelerated r
- Cryptographic API
 - Hardware crypto devices
 - Virtualization
- Library routines

Options

- Socket and Networking Security Hooks
 - XFRM (IPSec) Networking Security Hooks
 - Security hooks for pathname based access control
 - Enable Intel(R) Trusted Execution Technology (Intel(R) TXT)
 - Low address space for LSM to protect from user allocation
- NSA SELinux Support
 - NSA SELinux boot parameter
 - NSA SELinux boot parameter default value

NSA SELinux Support

CONFIG_SECURITY_SELINUX:

This selects NSA Security-Enhanced Linux (SELinux).
You will also need a policy configuration and a labeled filesystem.
If you are unsure how to answer this question, answer N.

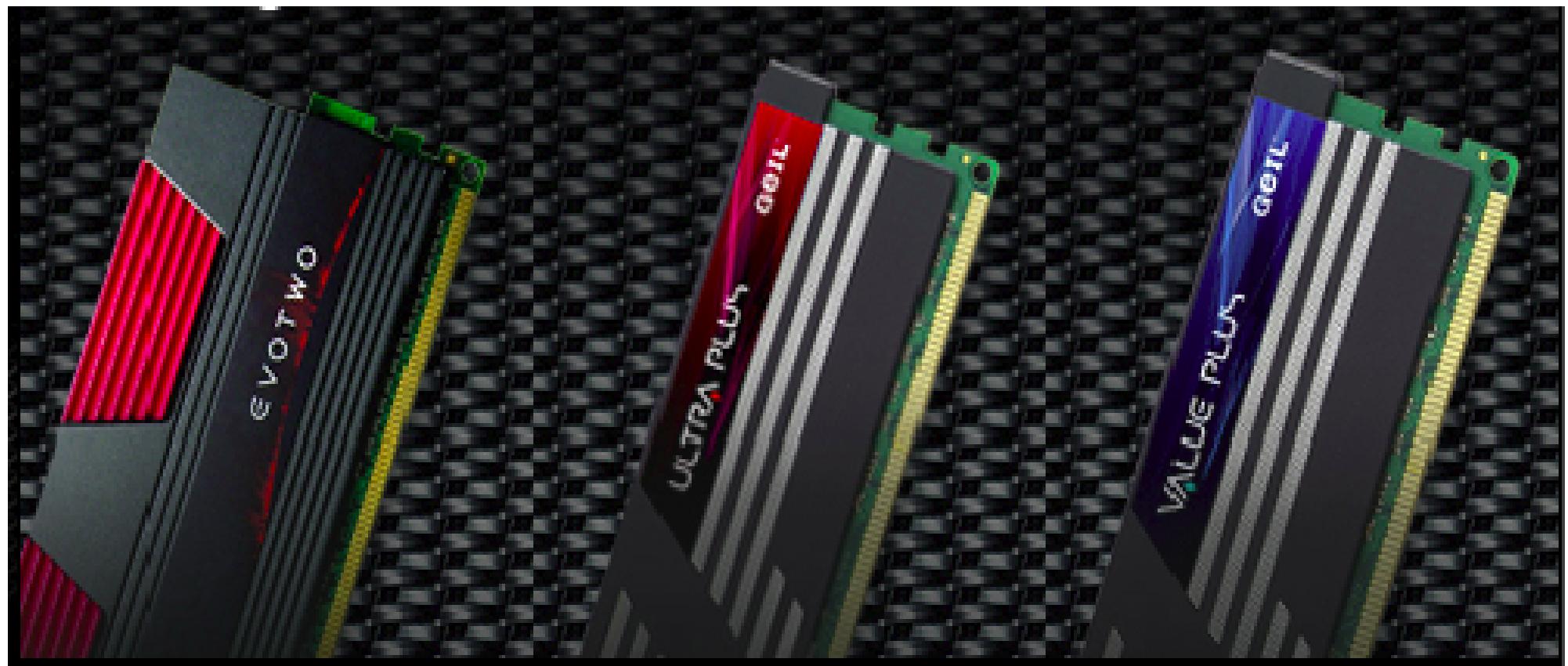
Symbol: SECURITY_SELINUX [=y]
Type : boolean
Prompt: NSA SELinux Support



Tracing und Debugging

```
thl@ankh-morpork:~/tmp/tmp
[thl@ankh-morpork tmp]$ sudo perf record -- /bin/ls /sys/class/block/char
[ perf record: Woken up 1 times to write data ]
[ perf record: Captured and wrote 0.008 MB perf.data (~333 samples) ]
[thl@ankh-morpork tmp]$ sudo perf report
# Events: 13 cycles
#
# Overhead  Command      Shared Object  Symbol
# .....  .....
#
#      50.83%    ls  [kernel.kallsyms]  [k] mem_cgroup_update_file_mapped
#      42.27%    ls  [kernel.kallsyms]  [k] trace_hardirqs_off_caller
#       6.00%    ls  [kernel.kallsyms]  [k] slab_pad_check
#       0.73%    ls  [kernel.kallsyms]  [k] native_write_msr_safe
#       0.18%    ls  [kernel.kallsyms]  [k] trace_hardirqs_on
#
# (For a higher level overview, try: perf report --sort comm,dso)
#
[thl@ankh-morpork tmp]$
```

Memory Management (MM)



Power Management (PM)





Treiber

thl@cd-rom:~/linux-2.6

[thl@cd-rom linux-2.6]\$ ls drivers/

accessibility	cpufreq	hwmon	Makefile	oprofile	s390	uio
acpi	cpuidle	i2c	mca	parisc	sbus	usb
amba	crypto	ide	md	parport	scsi	uwb
ata	dca	idle	media	pci	serial	vhost
atm	dio	ieee1394	memstick	pcmcia	sfi	video
auxdisplay	dma	ieee802154	message	platform	sh	virtio
base	edac	infiniband	mfд	pnp	sn	vlyinq
block	eisa	input	misc	power	spi	wl
bluetooth	firewire	isdn	mmc	pps	ssb	watchdog
cdrom	firmware	Kconfig	mtd	ps3	staging	xen
char	gpio	leds	net	rapidio	tc	zorro
clocksource	gpu	lguest	nubus	regulator	telephony	
connector	hid	macintosh	of	rtc	thermal	

[thl@cd-rom linux-2.6]\$



Linux Kernel v2.6.36-rc4 Configuration (auf thl.ct.heise.de)

File Options Help

Back Load Save Single Split Full Collapse Expand

Options

General setup

- RCU Subsystem
 - Control Group support
 - Group CPU scheduler
 - Configure standard kernel features
 - Kernel Performance Events And Counters
 - GCOV-based kernel profiling
 - Enable loadable module support
- Enable the block layer
 - IO Schedulers
- Processor type and features
 - Paravirtualized guest support
- Power management and ACPI options
 - ACPI (Advanced Configuration and Power Interface) Support
 - SFI (Simple Firmware Interface) Support
- CPU Frequency scaling

Options

- Support for paging of anonymous memory (swap)
- System V IPC**
- POSIX Message Queues
- BSD Process Accounting
 - BSD Process Accounting version 3 file format
- Export task/process statistics through netlink (EXPERIMENTAL)
- Enable per-task delay accounting (EXPERIMENTAL)
- Enable extended accounting over taskstats (EXPERIMENTAL)

System V IPC

CONFIG_SYSVIPC:

Inter Process Communication is a suite of library functions and system calls which let processes (running programs) synchronize and exchange information. It is generally considered to be a good thing, and some programs won't run unless you say Y here. In particular, if you want to run the DOS emulator dosemu under Linux (read the DOSEMU-HOWTO, available from <<http://www.tldp.org/docs.html#howto>>), you'll need to say Y here.

Userspace



A screenshot of a Linux desktop environment, likely Kubuntu, showing several windows open. In the foreground, a terminal window displays a log message from 'jaegerandi' welcoming a lovely morning after a great night. Behind it, an OpenOffice.org Impress presentation titled 'IK2010-kernel-log.odp' is visible, showing a slide with the title 'Various: userspace'. To the left, a file manager window shows a list of files and folders. A system tray icon for 'kernel-logs' is also present.

Wo geht die Reise hin



tsamedien



(c) tsamedien; Quelle: <http://www.heise.de/ct/motive/10/11/>



Auf dem Laufenden bleiben: KL

<http://www.heise.de/open/>

Kernel-Log – Was 2.6.37 bringt (1): Grafik



Der Nouveau-Treiber verbessert das Power Management und sorgt für die GeForce 320M zu. Der Code für Intel's Grafikkerne unterstützt die Video-Einheiten der in Kürze erwarteten Sandybridge-Prozessoren und einige Änderungen am Radeon-KMS-Treiber sollen dessen Performance verbessern.

Kernel-Log: Flinker mit Prozessgruppen



Durch die automatische Gruppierung von Prozessen sollen Vdeos in Zukunft nicht mehr ruckeln und die Desktop-Oberfläche bedienbar bleiben, auch wenn viele Prozesse die CPU gehörig ins Schwitzen bringen. Derweil schreitet die Entwicklung von 2.6.37 voran und nach Stahls Kernel bringen Konsumenten die Vorgänger 2.6.35 hat indes sein Lebensende erreicht.

Hauptentwicklungsphase des Linux-Kernel 2.6.37 abgeschlossen



Die Anfang des Monats erwartete Kernel-Version bringt Grundlagen zum Betrieb von Linux als Xen-Dom0-Kernel und kann Ex4-Dateisysteme schneller erlegen. Neus sind auch Treiber für USB-Attached SCSI und das Magic Trackball von Apple.

Linux-Kernel 2.6.36 freigegeben



Der neue Kernel bringt Performance-Verbesserungen, die Sicherheitsverbesserungen ApuArmor, eine KDB-KMS-Debug Shell und hunderte neue und überarbeitete Treiber.

Kernel-Log – Was 2.6.36 bringt (4): Treiber



Erhielt eine verbesserte Unterstützung für Infrarot-Empfänger und - Empfänger, optimierte USB-3.0-Treiber und die Lösung für eines jener viel diskutierten Problems, das die Android-Entwickler – auf andere Art und Weise – schon länger gelöst haben.



Aktuelle Infos: Kernel-Log (Deutsch)

<http://www.heise.de/open/>

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News 7-Tage-News Themen Kernel-Log

heise open | Kernel-Log | Kernel-Log: Alsa-Treiber für die X-Fi-Diskussionen um TuxOnIce

Kernel-Log heise open

suche

Kernel-Log 20.05.2009 - 24:46

Thorsten Leemhuis

Kernel-Log: Alsa-Treiber für die X-Fi, Diskussionen um TuxOnIce

Der Linux-Kernel wird wohl bald einen Treiber für die X-Fi-Soundkarten von Creative enthalten. Nach langer Ruhephase diskutieren die Kernel-Entwickler wieder über eine Aufnahme von TuxOnIce.

Alsa- und Kernel-Entwickler Takashi Iwai hat von Creative einen Open-Source-Treiber für PCI-Soundkarten der X-Fi-Series erhalten, den er als gut genug einschätzt, um ihn in das [Alsa-Treiberpaket](#) und den Linux-Kernel aufzunehmen. Er habe den sind-cx21-gentoo-Treiber aber mangels X-Fi-Soundkarten nicht testen können und sei daher Besitzer der Karte auf den Treiber auszuprobieren – das machen in den vergangenen Tagen bereits einige Anwender und liefern [technisches Feedback](#).

Die Chancen stehen daher nicht schlecht, dass der neue Treiber in die nächste Version von Alsa sowie den Linux-Kernell 2.6.31 einzieht. Damit würde eine langere Odyssee um Linux-Treiber für die X-Fi-Soundkarten dann vermutlich ihr Ende finden. Anfangs hatte Creative mehrfach proprietäre Treiber versprochen, ohne welche zu liefern. 2007 erschienen dann Vorscherversionen des Treiber – die waren aber so viel raue Ficken und Kanten, dass sie sich kaum sinnvoll einsetzen ließen. Anfang 2008 erschien dann plötzlich und unerwartet ein Open-Source-Treiber für das im Linux-Bereich kaum mehr genutzte Open Sound System (OSS); es hieß zudem, dass Creative Open-Source-Entwickler mit Dokumentation für die Soundchips versorgen wollte. Danach wurde es dann aber

Arbeitsumgebung
Neue Kernel und Grafikkarten
Kernel-Log: Status quo

Reihen 1 2 *

English version

Veranstaltungen
LinuxTag 2009:
Wirtschaftskrise als
Chance für Open Source
Bericht von der
Cheimener Linux-Tage
2009

Service
Open-Source-
Dienstleister
Open-Source-Lösungen
für Unternehmen

Aktuelle Themen

Sun Web Space Server 10.0
Mit dem GlassFish Web Space Server von Sun lassen sich Portale für verschiedene Anforderungen realisieren.

GlassFish Web Space Server

Feintuning – Die Neuerungen von Linux 2.6.30
Ein ganzer Batzen der Änderungen von Linux 2.6.30 dreht sich um Dateisysteme und Datenspeicherung. Es gibt aber noch reichlich andere Neuerungen wie einen schnelleren Startvorgang, effizientere Kompression sowie hunderte neue und überarbeitete Treiber.

Vorneweg – Die Neuerungen von Fedora 11
Fedora 11 ("Leonidas") glänzt in aktualisierter Software, neuem Design und einer Reihe technischer Verbesserungen. Dazu zählt auch das neue Motoren-Modul

fedora



Aktuelle Infos: Kernel-Log (Englisch)

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10 September 2011, 16:05

Kernel Log: Coming in 2.6.36 (Part 1) - Graphics

by Thorsten Leemhuis

Various changes improve the performance and functionality of drivers for graphics chips in the latest Intel mobile processors. Nouveau now supports the Fermi chips used on recent GeForce graphics cards. The Radeon driver in 2.6.36 adds support for underscan, HyperZ and tiling. Extensions for the KDB debugger and Intel's KMS driver allow new debugging functionality.

After releasing the third RC of Linux 2.6.36 at the [end of August](#) nothing has happened in the main development tree of Linux for eight days, as Torvalds has visited [LinuxCon Brazil 2011](#). Since Tuesday the tree is moving again: the fourth RC should show up for the start of next work week if Linus Torvalds sticks to his usual work patterns.

The current developer version of 2.6.36 already closely resembles the final version, as kernel hackers have, as ever, used the merge window which opens the development cycle to merge all major changes into the main development tree. The current stabilisation phase is reserved primarily for bug-fix changes rather than major enhancements, as the attempt to introduce further bugs. Torvalds stuck to this approach [more strictly](#) in 2.6.35 and is taking a similar one in 2.6.36, [the approach never proved its worth](#).

The Kernel Log thus far now already offers a comprehensive overview of the most interesting developments in the new kernel version, calculated for release in late October.

Coming in 2.6.36 Part 1: Graphics

Introduction NVIDIA, AMD & Debugging Miner gems

Comment: The hype is over

Comment: The hype is over

The "best open source software for business" list contains almost exclusively well-known contributors. Is there no more new open source?

GCC - "We make free software affordable"

Kernel Log: New X Server, 3D drivers for Radeon 5000 and new stable kernels

Kernel Log: New X server, 3D drivers for Radeon 5000 and new stable kernels



Aktuelle Infos: Linux Weekly News

<http://lwn.net/>



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Welcome to LWN.net

LWN featured content

[\[\\$\] What ever happened to chunkfs?](#)

[Kormi] Posted Jun 17, 2009 12:25 UTC (Wed) by jcke

Guest author Valerie Aurora is frequently asked about chunkfs, which is a prototype file system implementing "repair-driven" file system features. Her answer: "Chunkfs works, the overhead is reasonable, and it is only practical if it is part of the file system design from the beginning, not tacked on after the fact. I just need to write up the paper summarizing all the data." That paper is now available, subscribers only, from this week's Kernel page.

[Full Story \(comments: 25\)](#)

[\[\\$\] FreedomHEC Taipei 2009](#)

[Front] Posted Jun 16, 2009 15:31 UTC (Mon) by corbet

FreedomHEC (Freedom Hardware Engineer's Conference) Taipei was held June 10 and 11 in, unsurprisingly, Taipei, Taiwan. The event, sponsored by the governmental Institute for Information Industry, followed the huge Computex conference in the hope of attracting hardware developers who are interested in supporting Linux. LWN Executive Editor Jonathan Corbet spoke at FreedomHEC; the following report (subscribers only) gives a look at the conference and what it accomplished.



What is LWN.net?

LWN.net is a reader-supported news site dedicated to producing the best coverage from within the Linux and free software development communities. See the LWN FAQ for more information, and please consider subscribing to gain full access and support our activities.

Current news

[OpenSource World Unlocks the Word on Keynote Speakers \(Linux Journal\)](#)

[Press] Posted Jun 18, 2009 23:02 UTC (Tue) by rjw

Linux Journal looks forward to the OpenSource World conference, previously known as LinuxWorld. "Keynote speakers are always a highlight of any conference, and OpenSource World is no exception. The expo's main speaker will be California Secretary of State Debra Bowen, who is known to the Open Source community for understanding and advocating Open Source software. Additionally, there will be a keynote panel, 'Assessing the Real Market Opportunities and Obstacles for Making Cloud Computing Mainstream,' lead by CloudWorld conference chairman Jeffrey Kaplan and including discussion and debate by panelists Joe Weinman of AT&T Business Solutions, Sam Charrington of Appistry, and James Urquhart of Cisco."

[Comments \(none posted\)](#)

[openSUSE Factory is Now Open](#)

Aktuelle Infos: Weather Forecast



<http://www.linuxfoundation.org/collaborate/lwf>

The screenshot shows the Linux Foundation website with a navigation bar at the top. The main content area features a sidebar on the left with links to User Council, Vendor Advisory Council, Technical Advisory Board, Workgroups, and Publications, along with a section for the Linux Weather Forecast. The main content area has a heading "Linux Weather Forecast" and a welcome message. It includes a summary of current kernel development, a "Forecast summaries" section, and a list of key changes in version 2.6.29. On the right side, there's a search bar, a sidebar for "Linux Weather Forecast" with a note about registration, a "Recent updates" sidebar with links to Security, Virtualization, Core Kernel, Ecosystem, Networking, Infrastructure, User Space, and Miscellaneous Topics, and a "JOIN THE REVOLUTION" banner.

THF **LINUX** FOUNDATION

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Linux Weather Forecast

Welcome to the Linux Weather Forecast.

This page is an attempt to track ongoing developments in the Linux development community that have a good chance of appearing in a mainstream kernel and/or major distributions sometime in the near future. Your "chief meteorologist" is Jonathan Corbet, Executive Editor at [LWN.net](#). If you have suggestions on improving the forecast (and, particularly if you have a project you think should be tracked), please add your comments to the Discussion page. There's a blog that records all the main changes to the forecast. You can view it directly or use a feed reader to subscribe to the blog feed. You can also subscribe directly to the changes feed for this page to see feed at [forecast.edits](#).

Forecast summaries

Current conditions: The 2.6.29 kernel was released on March 29, 2009. This development cycle incorporated nearly 12,000 changesets from almost 1200 developers; see [this article](#) for a look at where all that code came from.

Some of the key changes in 2.6.29 are:

- * Kernel-based module setting for graphics adapters. For Intel hardware in particular at this time, the addition of this code is the beginning of the end of the 16-year effort to rationalize and bring 2D graphics hardware and provide a top-quality graphics experience to Linux users.
- * The development version of the Rm driver system. Rm is today expected to become the default Linux subsystem for 3D, but there are no developmental stage currently and should not be used for production code.
- * The compressed filesystem. Squashfs is a compressed read-only filesystem used

Recent updates

Security
Virtualization
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Recent Blog Posts

From Web Freedom and Choice in Open Source Licenses: Comparing the EPL v1.0 and the GFDL
June 18, 2009

Outlining the fashion police
June 17, 2009

Aktuelle Infos: Kernelnewbies



<http://kernelnewbies.org/LinuxChanges>

 **LinuxChanges**

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LinuxChanges

List of the major changes core to each Linux kernel release. Other places to get news about the Linux kernel are [LWN kernel status](#), [LWN - list of API changes in 2.6](#), [Kernel Podcast](#) or [www.lkml.org](#). List of changes of newer releases can be found at [Linux2EChanges](#) ("you're going to add something here look first at [LinuxChanges Rules](#)!").

Discuss the latest Linux kernel changes on the [Kernel newbies web forum](#).

Linux 2.6.35 has been released on 1 Aug, 2010.

Summary Linux 2.6.35 includes support for transparent spreading of incoming network load across CPUs, Direct IO support for Btrfs, an raw experimental journal mode for XFS, the KDB debugger UI based on top of KDB, improvements to perf, H.264 and VC1 video acceleration in Intel GMA+ chips, support for the future Intel Cougar Point graphic chip, power management for AMD Radeon chips, a memory defragmentation mechanism, support for the Tunneling Protocol version 3 (RFC 3931), support for multiple multicast route tables, support for the CAPI protocol used by ST-Ericsson products, support for the ACP Platform Error Interface, and many new drivers and small improvements.

Note: Details on architecture specific and driver changes have been moved to this page: [Linux 2.6.35 Drivers/Arch](#)

1. [Prominent features \(the cool stuff\)](#)
2. [Transparent spreading of incoming network traffic load across CPUs](#)
3. [Btrfs improvements](#)
4. [XFS Delayed logging](#)
5. [KDB improvements](#)
6. [Graphic improvements](#)
7. [Memory compactor](#)
8. [Support for multiple multicast route tables](#)
9. [ZTP Version 3 \(RFC 3931\) support](#)
10. [CAPI Protocol support](#)
11. [ACP Platform Error interface support](#)
12. [Various core changes](#)
13. [Filesystems](#)
14. [Clock](#)
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20. [MD](#)
21. [CPU scheduler](#)
22. [Cooling/quietude](#)
23. [Security](#)



Regression Reports

Subject: 2.6.30-rc8-git4: Reported regressions 2.6.28 > 2.6.29
 [Bug #12190] ath5k related kernel panic in 2.6.29-rc1
 [Bug #12765] i915 VI switch with NIGLX causes X lock up
 [Bug #12681] s2ram: fails to wake up on Acer Extensa 4220 (SMP disabled)
 [Bug #12705] X200: Brightness broken since 2.6.29-rc4-58-g4cd98bc
 [Bug #12909] hoot/kernel init duration regression from 2.6.28

From: Rafael J. Wysocki
 Date: 07.06.2009... 13KB
 Rafael J. Wysocki 07.06.2009... 4KB
 Rafael J. Wysocki 07.06.2009... 3KB

Rafael.J.Wysocki@intel.com
 reply forward archive junk

2.6.30-rc8-git4: Reported regressions 2.6.28 -> 2.6.29
 07.06.2009 12:02
 Andrew Morton ★, Linus Torvalds ★, Natalie Protasevich ★, Kernel Testers List ★, Network Development ★, Linux ACPI ★, more ▾

This message contains a list of some regressions introduced between 2.6.28 and 2.6.29, for which there are no fixes in the mainline I know of. If any of them have been fixed already, please let me know.

If you know of any other unresolved regressions introduced between 2.6.28 and 2.6.29, please let me know either and I'll add them to the list.
 Also, please let me know if any of the entries below are invalid.

Each entry from the list will be sent individually in an automatic reply to this message with CCs to the people involved in reporting and handling the issue.

Listed regressions statistics:

Date	Total	Pending	Unresolved
2009-06-07	169	27	25
2009-05-31	167	27	26
2009-05-25	165	27	25
2009-05-17	162	27	25
2009-04-26	160	29	27
2009-04-06	142	37	31
2009-03-21	128	29	26
2009-03-14	124	36	32
2009-03-03	108	43	28

Fehler melden



<http://bugzilla.kernel.org/>

Kernel Bug Tracker - Main Page

version 3.2.2

Home New Search Find | Reports | New Account | Log In

This is the Kernel Bug Tracker system (based on Bugzilla) for posting bugs against the mainline Linux kernels (not distribution kernels). If you have problems or questions related to the Kernel Tracker itself, please contact the bugme admin or submit a bug report against it. You can find the answers to some of your questions in the FAQ page too. All new categories are created owned by "virtual user". You may also want to read the Kernel Bug Tracker User's Guide to find out more about Kernel Bug Tracker and how to use it.

Most common actions:

Search existing bug reports
Enter a new bug report
Summary reports and charts

Login:
Password:
 Remember this session to this IP address (using this option improves security)

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[Add to Sidebar \(requires a Mozilla browser like Mozilla Firefox\)](#)
[Install the Quick Search plugin \(requires Firefox 2 or Internet Explorer 7\)](#)

Enter a bug # or some search terms: [Help](#)

Actions: Home | New | Search | Find | Reports | New Account | Log In



Testen helfen!



<http://bit.ly/tytso-help-testing>

From: Ted Ts'o <tytso <at> mit.edu>
Subject: **Re: stable? quality assurance?**
Newsgroups: [gmane.linux.kernel](#)
Date: 2010-07-11 13:16:40 GMT (9 weeks, 4 days, 5 hours and 26 minutes ago)

On Sun, Jul 11, 2010 at 09:18:41AM -0200, Martin Steigerwald wrote:

> I still actually *use* my machines for something else than hunting patches
> for kernel bugs and on kernel.org it is written 'Latest *Stable* Kernel'
> (accertuation from me). I know of the argument that one should use a
> distro kernel for machines that are for production use. But frankly, does
> that justify to deliver in advance known crap to the distributors? What
> impact do partly grave bugs reported on bugzilla have on the release
> decision?

So I tend to use -rc3, -rc4, and -rc5 kernels on my laptops, and when I find bugs, I report them and I help fix them. If more people did that, then the 2.6.X.0 releases would be more stable. But kernel development is a volunteer effort, so it's up to the volunteers to test and fix bugs during the rc4, -rc5 and -rc6 time frame. But if the work tails off, because the developers are busily working on new features for the new release, then past a certain point, delaying the release reaches a point of diminishing returns. This is why we do time-based releases.

So if you and others like you are willing to help, then the quality of the Linux kernels can continue to improve. But simply complaining about it is not likely to solve things, since threatening to not be willing to upgrade kernels is generally not going to motivate many, if not most, of the volunteers who work on stabilizing the kernel.

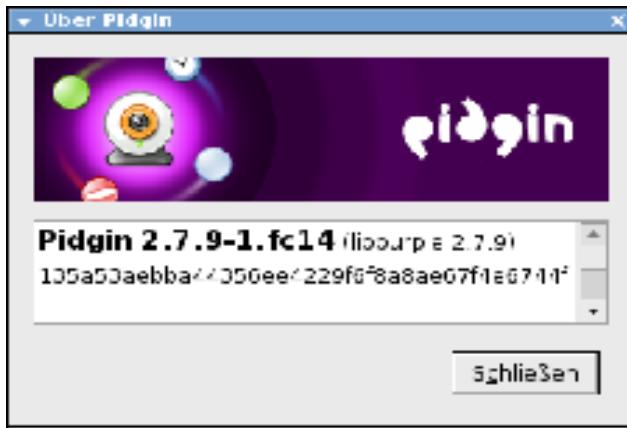
Finally ()



- Was die Kernel-Entwickler treiben ist für Nutzer aller Linux-Distributionen wichtig
- Linux 2.6.37: OpenSuse 11.4
 - Ext4-Optimierungen, VFS, Xen-Dom0-Basics, Rados Block Devices, PPTP, BKL-Free, LZO für Software-Suspend
- Linux 2.6.38: Ubuntu 11.04 (April) und Fedora 15 (Mai)
 - VFS, Group-Scheduling, Btrfs-LZO, Fermi 3D, Radeon 62xx - 68xx, XPS, Transparent Huge Pages (THP)
- Linux 2.6.39: Ende Mai/Anfang Juni
 - BKL "End Game", Forced Interrupt Handlers, ipset, Ext4-Optimierungen, neue Treiber (Radeon 69xx, Poulsbo/US15W)
- Hardware geschickt aussuchen, Staging-Treiber meiden
 - proprietäre Treiber sind eine Thematik für sich



Get in touch: Mail, IM, ICQ



Dienstlich

Email: thl@ct.de
Jabber: thl_at_work@jabber.ccc.de
IRC: knurd (freenode.net)

Privat

Email: linux@leemhuis.info
Jabber: thl_at_home@jabber.ccc.de
IRC: knurd (freenode.net)

Get in touch: Micro-Blogging



Konto	Zweck	Sprache
@kernellog	weist auf neue Kernel-Logs bei heise.de hin	Deutsch
@kernellog2	announces new Kernel Logs on h-online.com	Englisch
@kernellogauthor	typical Kernel-Log topics	Englisch
@knurd666	Eher privates aus der Fedora-Welt	Englisch
@thleemhuis	Mein "normales" Ich	Deutsch



Optionale Themen (1)

- Mehr Details zu Irgendwas, was vorher zur Sprache kam?
 - Entwicklungszyklus? (Folien verfügbar)
 - Grafiktreiber? Xen? Btrfs?
 - Wie testen oder anderweitig mithelfen?
- Motivation / "Who writes the kernel"
 - Hobby vs. Payed; gute und schlechte Firmen
 - Genauigkeit dieser Analysen
- Kernel-Serien
 - Stable-Series und Longterm (Folien verfügbar)
 - linux-next, mm-Kernel, TIP, Subsystem-Trees
 - RT-Tree
 - Kernel der Distributionen
- Roadmap



Optionale Themen (2)

- Blick hinter die Kulissen des Kernel-Logs?
 - Managen der vielen Commits, Internet-Quellen und des Traffics von LKML und Co.
 - welche Commits das KL typischerweise nicht erwähnt
- proprietäre Treiber
- wo Distributionen mehr tun müssten
- Linus Torvalds?
- LKML, Patch-Flow und Git
 - "Survival of the fittest"
- "external drivers are expensive "
- how to become a kernel hacker
 - <http://ldn.linuxfoundation.org/book/how-participate-linux-community>

Pflege: Stable- und Longterm-Kernel



- Stable-Series

- kleine Korrekturen und Verbesserungen für die jeweils neueste Kernel-Version des Hauptentwicklungszweigs (2.6.x)
- neuerdings manchmal etwas schleppende Erscheinungsweise...
- neuerdings wieder stärkerer Fokus auf die allerneuste Version und kürzere Übergangsphase zwischen neuen Major-Versionen

From: Greg KH <greg <at> kroah.com>

Subject: **Linux stable kernel release procedure changes**

Newsgroups: **gmane.linux.kernel**

Date: 2010-12-03 00:42:47 GMT

----- [...] -----

So, it's "back to our roots" time, and I'm now only going to be doing -stable releases for the last kernel released, with the usual one or two release overlap with the latest release from Linus to give people a chance to move over and have the new release stabilize a bit.

Pflege: Longterm-Kernel



- Longterm-Kernel
 - kleine Korrekturen und Verbesserungen einzelner Versionen (2.6.x) über mehrere Jahre
 - Unterschiedliche Betreuer mit leicht unterschiedlichen Ansätzen
 - Derzeit fünf:
 - 2.4.37.y – geht dem Lebensende entgegen
 - 2.6.27.y – neuerdings langsamere Pflege
 - 2.6.32.y – etabliert, Basis mehrerer Distributionskernel
 - 2.6.34.y – Serie und Betreuer müssen sich noch bewähren
 - 2.6.35.y – Serie und Betreuer müssen sich noch bewähren

From: Paul Gortmaker <paul.gortmaker <at> windriver.com>
Subject: **Announcement: Plans for v2.6.34-longterm**
Newsgroups: **gmane.linux.kernel**
Date: 2010-12-03 21:07:19 GMT

Firstly, I'd like to thank Greg for all the past work he's done on juggling all these different stable releases. Many people have reaped the benefits of them for quite some time, and it only makes sense to spread the load around as it has grown significantly.

With that in mind, it is our intention to also maintain a 2.6.34 long-term tree. Jason and I work at Wind River, which already has released products based on v2.6.34, and as such it only makes sense to have a public long-term tree that others who are also based on 2.6.34 can make use of.

From: Andi Kleen <andi <at> firstfloor.org>
Subject: **Plans for 2.6.35-longterm**
Newsgroups: **gmane.linux.kernel**
Date: 2010-12-03 09:35:20 GMT

> I already have someone lined up who wants to maintain the .35 kernel in
> a long-term manner that I trust, Andi Kleen, and I'll let him write to
> explain his goals for this kernel and what he's going to do.

Thanks Greg, for all your work on this.

I plan to maintain the 2.6.35 tree longterm for now. My employer (Intel) is interested in basing a distribution on it, and there are others (like CII) who also want to base long term trees on 2.6.35.



Stable rules

[\[linux/kernel/git/torvalds/linux-2.6.git\]](#) / [Documentation](#) / [stable_kernel_rules.txt](#)

-
- 1 Everything you ever wanted to know about Linux 2.6 -stable releases.
2
3 Rules on what kind of patches are accepted, and which ones are not, into the
4 "-stable" tree:
5
6 - It must be obviously correct and tested.
7 - It cannot be bigger than 100 lines, with context.
8 - It must fix only one thing.
9 - It must fix a real bug that bothers people (not a, "This could be a
10 problem..." type thing).
11 - It must fix a problem that causes a build error (but not for things
12 marked CONFIG_BROKEN), an oops, a hang, data corruption, a real
13 security issue, or some "oh, that's not good" issue. In short, something
14 critical.
15 - New device IDs and quirks are also accepted.
16 - No "theoretical race condition" issues, unless an explanation of how the
17 race can be exploited is also provided.
18 - It cannot contain any "trivial" fixes in it (spelling changes,
19 whitespace cleanups, etc).
20 - It must follow the Documentation/SubmittingPatches rules.
21 - It or an equivalent fix must already exist in Linus' tree (upstream).
22



"must upgrade"

From: Greg KH <gregkh <at> suse.de>

Subject: **Linux 2.6.36.3**

Newsgroups: **gmane.linux.kernel, gmane.linux.kernel.stable**

Date: 2011-01-07 22:51:25 GMT

I'm announcing the release of the 2.6.36.3 kernel.

All users of the 2.6.36 kernel series **must upgrade**.

The updated 2.6.36.y git tree can be found at:

`git://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-2.6.36.y.git`

and can be browsed at the normal `kernel.org_git` web browser:

<http://git.kernel.org/?p=linux/kernel/git/stable/linux-2.6.36.y.git;a=summary>

thanks,

greg k-h



Detaillierte und gute Analyse...

<http://lwn.net/Articles/375335/>



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2.6.32.9 Release notes

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Weekly Edition

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By **Jonathan Corbet**
February 21, 2010

Stable kernel update announcements posted on LWN have a certain tendency to be followed by complaints about the amount of information which is made available. It seems that there is a desire for a description of the changes which is more accessible than the patches themselves, and for attention to be drawn to the security-relevant fixes. As an exercise in determining what kind of effort is being asked of the kernel maintainers, your editor decided to make a pass through the [proposed 2.6.32.9 update](#) and attempt to describe the impact of each of the changes - all 93 of them. The results can be found below.

Disclaimers: there is no way to review 93 patches in a finite time and fully understand each of them. So there are ~~probably~~ certainly errors in what follows. The simple truth of the matter is that it is very hard to say which fixes have security implications; a determined attacker can find a way to exploit some very obscure bugs.

Your editor would also like to discourage anybody from thinking that this will become a regular LWN feature. The amount of work required is considerable; it's not something we're able to commit to doing for every release.



Other bug fixes

- #1: Fix potential crash with `sys_move_pages`. Fix an unreliable test which could cause a crash in the page migration code. [Update: as has been pointed out in the comments, this one is **exploitable** and should have been in the security list above.]

[...]

2.6.32.9 Release notes

Posted Feb 21, 2010 19:11 UTC (Sun) by **nelhage** (subscriber, #59579) [[Link](#)]

I'm curious why you marked '#1 Fix potential crash with `sys_move_pages`.' as non-security. I am not aware of any path to privilege escalation from this bug, but it's definitely a denial of service, and an impressively effective information leak attack (as demonstrated by spender's published exploit code). It's been assigned CVE-2010-0415 in light of this.

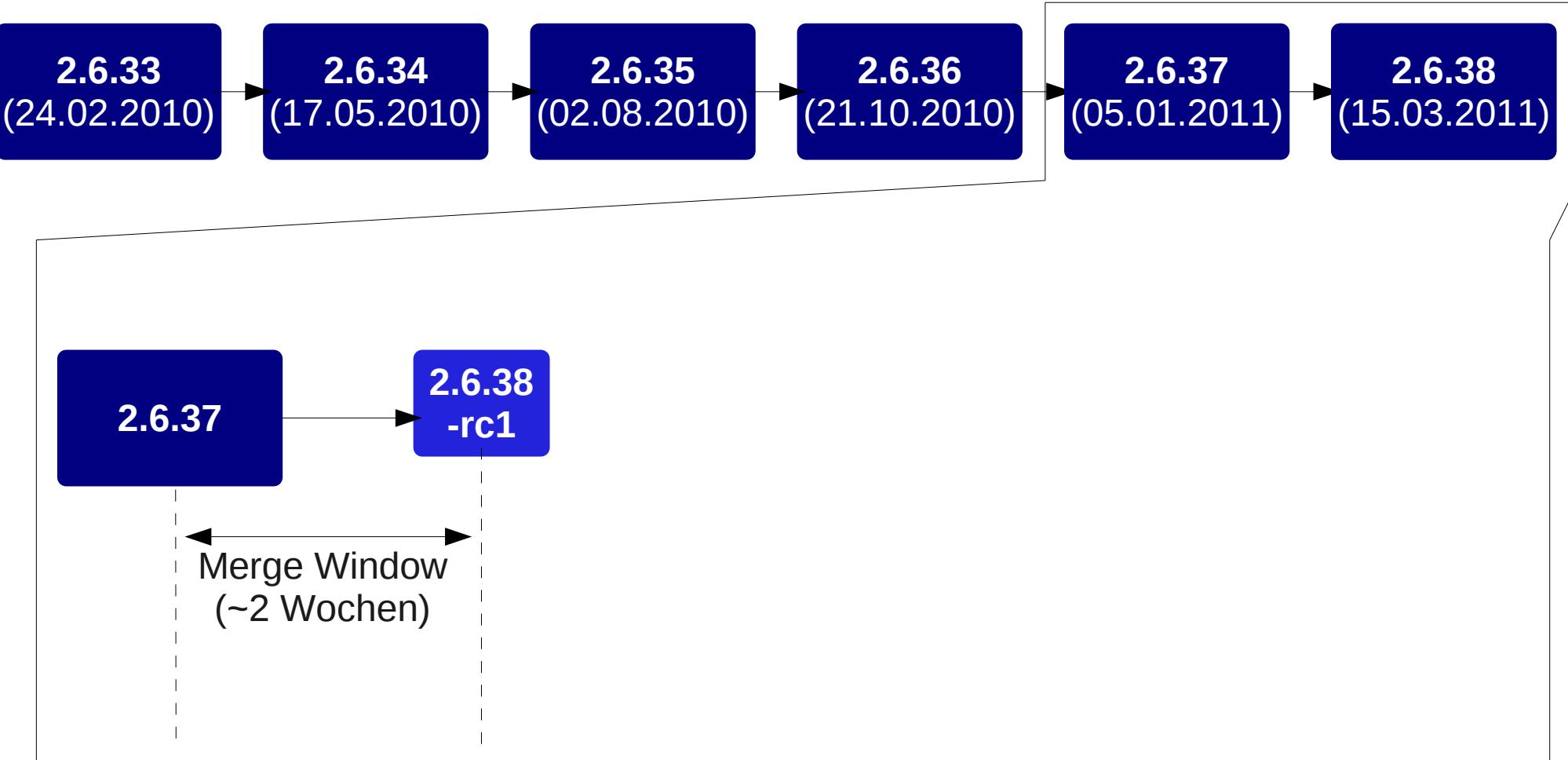
#1

Posted Feb 21, 2010 19:14 UTC (Sun) by **corbet** (editor, #1) [[Link](#)]

Because I blew it, apparently. I couldn't see any sort of reliable way to trigger it, so it just looked like a crash. Obviously, I was unaware of the exploit or the CVE number. Clearly, it's a security problem.

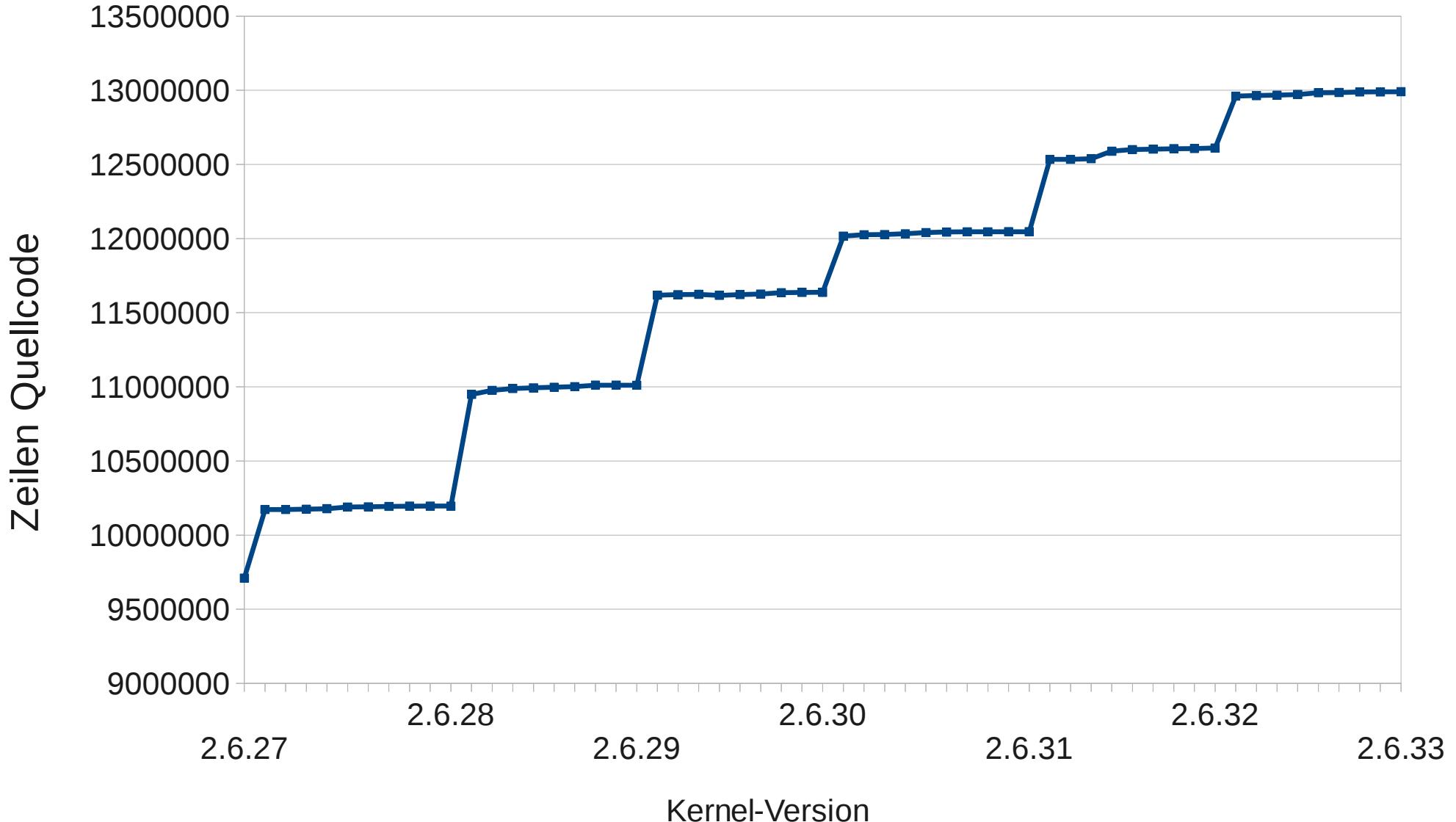


Merge Window



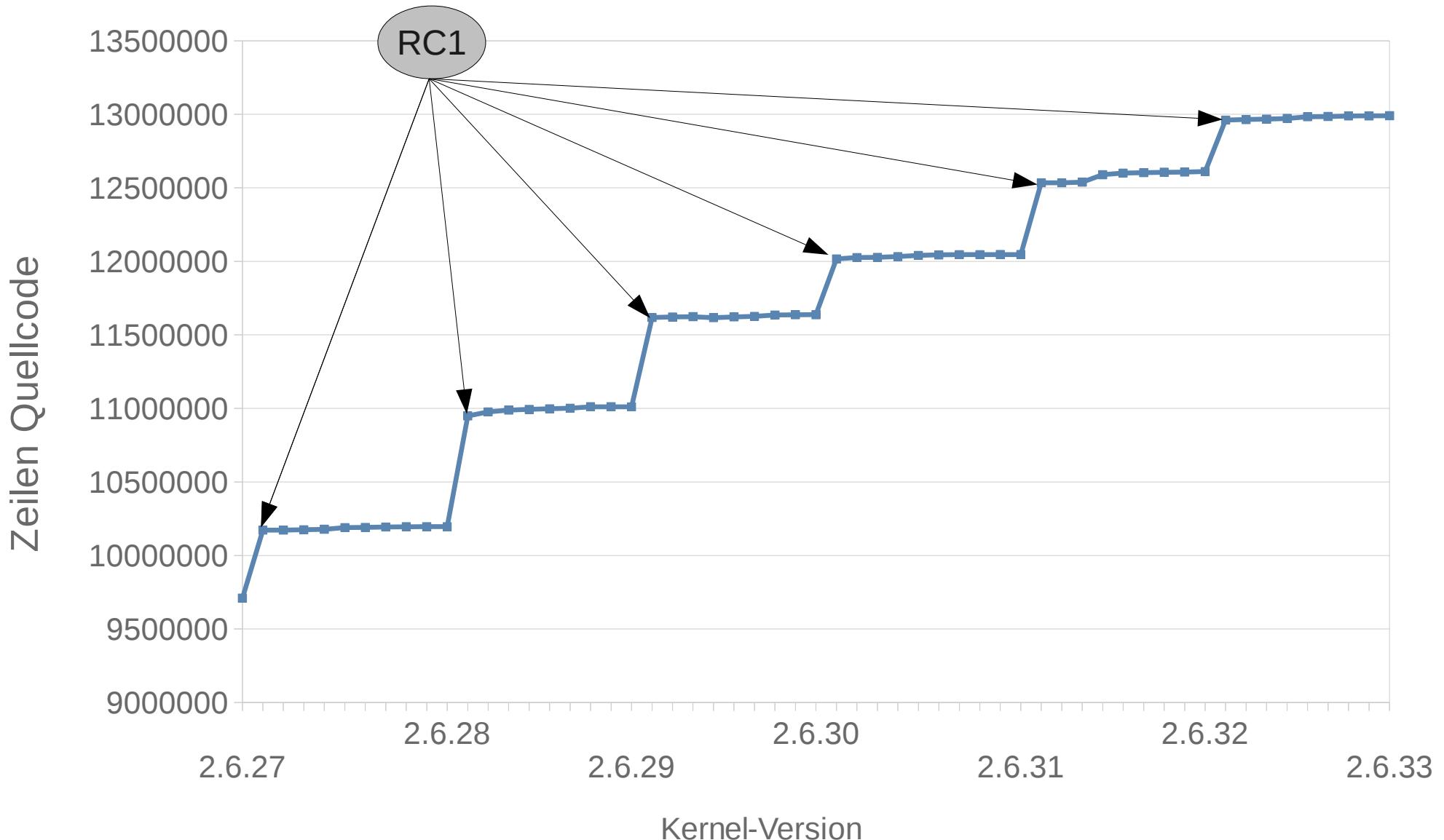


Wachstum



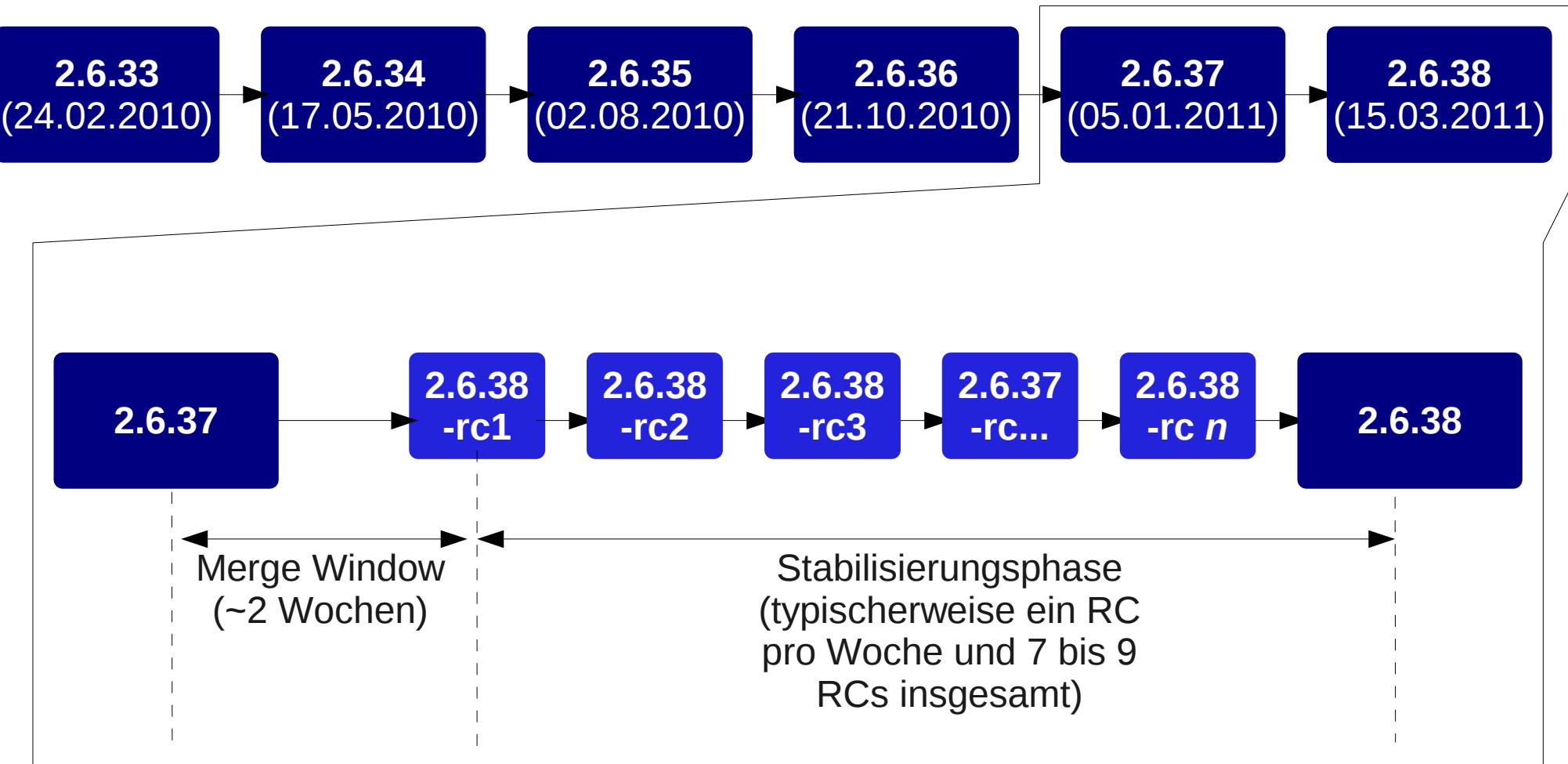


Wachstum



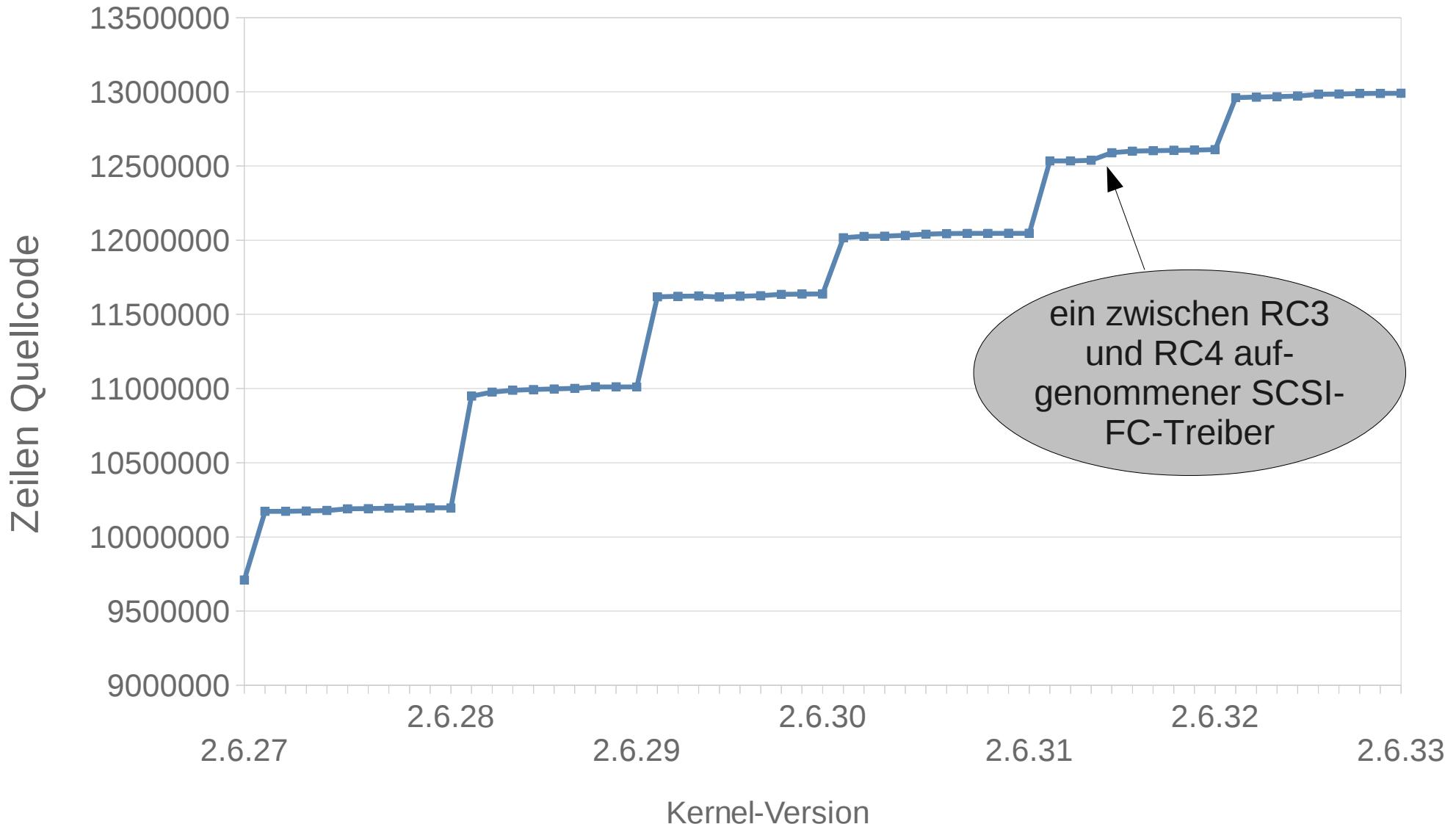


Stabilisierungsphase





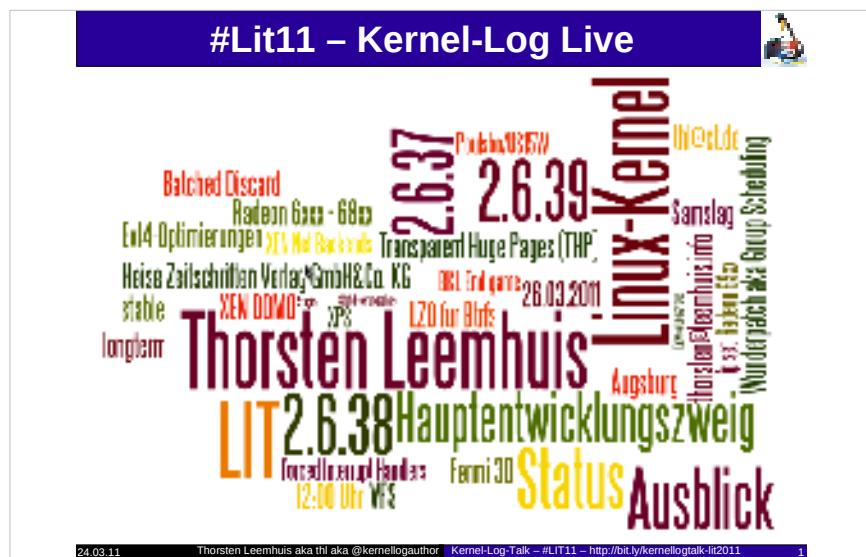
Wachstum



Informationen zur Präsentation



- Download
 - ODP - <http://bit.ly/kernellogtalk-lit2011>
 - PDF - <http://bit.ly/kernellogtalk-lit2011-pdf>
- Copyright-Hinweise
 - Einige Illustration der Präsentation sind als Screenshots von Firmenwebseiten ausgezeichnet; als Bildzitat unterliegen die eigentlichen Inhalte dem Copyright der jeweiligen Firma
 - die Wordclouds wurden mit dem Applet auf <http://www.wordle.net> erstellt und stehen unter Creative Commons Attribution 3.0 United States License
 - Alle anderen Elemente unterliegen Creative Commons Attribution 3.0 Germany (aka "Creative Commons Namensnennung 3.0 Deutschland / CC BY 3.0")



- Todo
 - front-image
 - Words for the graphics created with the applet from www.wordle.net
 - LIT:15
 - Augsburg:5
 - Samstag:5
 - 26.03.2011 :5
 - 12:00 Uhr:5
 - Thorsten Leemhuis:15
 - Heise Zeitschriften Verlag GmbH&Co. KG:5
 - thl@ct.de:5
 - thorsten@leemhuis.info:5
 - Linux-Kernel:15
 - 2.6.37 :12
 - XEN DOM0 :5
 - Ext4-Optimierungen :5
 - Batched Discard :5
 - 2.6.38 :12
 - VFS :5
 - Wunderpatch aka Group Scheduling :5
 - LZO für Btrfs :5
 - Transparent Huge Pages (THP) :5
 - XPS :4
 - Fermi 3D :5
 - Radeon 6xxx - 68xx :5
 - 2.6.39 :12
 - BKL End game :4
 - XEN Net Backends :4
 - ip set :4
 - Forced Interrupt Handlers :4



heise
Open

heise online



fedora



24.03.11

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2

- * Hannover
- * Redakteur
- * Heise Zeitschriften Verlag GmbH&Co. KG

- * c't und heise open Hauptarbeitsgebiete
- * Englische Übersetzungen bei "The H"
- * Alleiniger Autor des Kernel-Logs
- * Urlaub? Nur mir Tricks ;-)
- * Prozessorflüsterer Stiller besser organisiert
- * KLs aus privatem Interesse entstanden
- * kein Kernel-Entwickler!



heise
Open

heise online



fedora



24.03.11

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3

- * habe einiges zu Fedora beigetragen
- * Zeit knapp Interesse verloren

- * Eine Katze namens "Linus"
- * Bruder von Lucy

- * kein Steve-Jobs beim Vortragen ;-)

- * Twitter, Jabber, Icq & Co am Ende

Die nächsten 45 Minuten



- Die wichtigsten Neuerungen der letzten Zeit
 - Linux 2.6.36, 2.6.37 und 2.6.38 sowie Ausblick auf 2.6.39
- Einige Exkurse
 - Staging-Treiber, Grafiktreiber-Stack, Entwicklungsmodell
 - Wichtige Änderungen in Kernel-nahen Programmen
- Weitere Hintergründe nach Publikumsinteresse
 - Weitere Hintergründe zu einigen der erwähnten Innovationen?
 - Details zum Entwicklungsprozess oder den Stable-Kernen?
 - RT-Tree? Linux-Next? Xen vs. KVM? Btrfs?
 - Proprietäre Treiber?
- Hoffentlich viele Fragen aus der Zuhörerschaft!

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4

- * die Neuerungen der letzten Monate
- * Ubuntu 10.10 und Fedora 14 nutzen .35
- * .36 (Oktober), .37 (Januar), .38 (März)
- * .38 in Ubuntu 11.04 und Fedora 15
- * 2.6.39 (Ende Mai/Anfang Juni)
- * Entwicklung gerade begonnen
- * Exkurse zu Arbeitsweisen und Spezialthemen
- * weiter Details und Hintergründe nach Bedarf
- * Vorsicht: Überziehungsgefahr
- * hoffe auf viele Fragen



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5

- * Anwender von Linux-Distris für Notebooks, Desktops oder Server
 - * deren Kernel basieren auf denen von Kernel.org
 - * Kernel vergleichbar mit dem Motor eines Autos
- * Weiterentwicklung rasant
 - * KMS (ging vor zwei Jahren los)
 - * Wunderpatch
 - * VFS und Dmrypt Multicore
 - * Treiber! neben Grafik auch LAN, WLAN
- * Entscheidungen der Kernel-Hacker daher wichtig
 - * Linux-Welt sähe anders aus, wenn Reiser4 oder Xen aufgenommen worden wären

Wie sieht mein Zielpublikum aus?



...wenn Sie sich für
Linux
interessieren!

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* Linux

Wie sieht mein Zielpublikum aus?



...wenn Sie sich
**für Linux auf
Servern**
interessieren!

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- * Interesse
- * Linux auf Servern



...wenn Sie sich für
**Linux auf Desktops
und Notebooks**
interessieren!

- * Interesse
- * Linux auf Desktops und Notebooks



...wenn Sie anderen
den Unterschied zwischen

**Linux, Linux-Kernel, Linux-
Distribution und Android**

erklären können!

- * Unterschied
- * Linux, Linux-Kernel, Linux-Distributionen und Android



...wenn
Ihnen Begriffe wie
Radeon, GeForce, Phenom, Core
i7, Quad-Core, Sandybridge
geläufig sind!

- * Begriffe
- * Radeon, GeForce, Phenom, Core i, Quad-Core, Sandybridge



...wenn
Ihnen Begriffe wie

**KMS, Nouveau, KVM, DM, MD,
DRM, MAC80211, CFQ**

bekannt sind!

- * Begriffe

- * KMS, Nouveau, KVM, DM, MD, DRM, MAC80211, CFQ



...wenn Sie häufiger
**das Kernel-Log
oder LWN.net**
lesen!

- * Lesen
- * Kernel-Log oder LWN.net



...wenn Du ein
Kernel-Hacker
bist!

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- * Kernel-Hacker?
- * Nach dem Sport alle wach?
- * Jetzt geht es langsam los

"Bullet-Points sparsam verwenden!"



- diese
 - Präsentation
 - enthält
 - nur
 - wenige
 - bullet
 - points

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* BTW, die Notizen enthalten sicher noch viele Rechtschreibfehler oder Dreher; ich bitte das zu entschuldigen, der Kram hier ist aber ja auch vornehmlich für mich gedacht ;-)

"Bullet-Points sparsam verwenden!"



- diese
 - Präsentation
 - enthält
 - nur
 - wenige
 - bullet
 - points

Wer unbedingt welche braucht, der findet
einige in den Notizen dieses Dokuments:
<http://bit.ly/kernellogtalk-clt2011>

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* Sie sind richtig hier, auch wenn einige Notizen kleine Reminder sind,
die nur für den Vortragenden Sinn ergeben

Wo wir stehen



The Linux Kernel Archives

Archivieren Sie Ihre Dokumente mit dem besten Archivierungsformat der Welt: Tarball.



Letzte Stabile Version:

[2.6.38.1](#)

Kernel Name	Version	Date	Description
2.6.38.1	2.6.38.1	2011-03-24	Stable
2.6.38.0	2.6.38.0	2011-03-24	Stable
2.6.37.1	2.6.37.1	2011-03-23	Stable
2.6.37.0	2.6.37.0	2011-03-23	Stable
2.6.36.1	2.6.36.1	2011-03-22	Stable
2.6.36.0	2.6.36.0	2011-03-22	Stable
2.6.35.1	2.6.35.1	2011-03-21	Stable
2.6.35.0	2.6.35.0	2011-03-21	Stable
2.6.34.1	2.6.34.1	2011-03-20	Stable
2.6.34.0	2.6.34.0	2011-03-20	Stable
2.6.33.1	2.6.33.1	2011-03-19	Stable
2.6.33.0	2.6.33.0	2011-03-19	Stable
2.6.32.1	2.6.32.1	2011-03-18	Stable
2.6.32.0	2.6.32.0	2011-03-18	Stable
2.6.31.1	2.6.31.1	2011-03-17	Stable
2.6.31.0	2.6.31.0	2011-03-17	Stable
2.6.30.1	2.6.30.1	2011-03-16	Stable
2.6.30.0	2.6.30.0	2011-03-16	Stable
2.6.29.1	2.6.29.1	2011-03-15	Stable
2.6.29.0	2.6.29.0	2011-03-15	Stable
2.6.28.1	2.6.28.1	2011-03-14	Stable
2.6.28.0	2.6.28.0	2011-03-14	Stable
2.6.27.1	2.6.27.1	2011-03-13	Stable
2.6.27.0	2.6.27.0	2011-03-13	Stable
2.6.26.1	2.6.26.1	2011-03-12	Stable
2.6.26.0	2.6.26.0	2011-03-12	Stable
2.6.25.1	2.6.25.1	2011-03-11	Stable
2.6.25.0	2.6.25.0	2011-03-11	Stable
2.6.24.1	2.6.24.1	2011-03-10	Stable
2.6.24.0	2.6.24.0	2011-03-10	Stable
2.6.23.1	2.6.23.1	2011-03-09	Stable
2.6.23.0	2.6.23.0	2011-03-09	Stable
2.6.22.1	2.6.22.1	2011-03-08	Stable
2.6.22.0	2.6.22.0	2011-03-08	Stable
2.6.21.1	2.6.21.1	2011-03-07	Stable
2.6.21.0	2.6.21.0	2011-03-07	Stable
2.6.20.1	2.6.20.1	2011-03-06	Stable
2.6.20.0	2.6.20.0	2011-03-06	Stable
2.6.19.1	2.6.19.1	2011-03-05	Stable
2.6.19.0	2.6.19.0	2011-03-05	Stable
2.6.18.1	2.6.18.1	2011-03-04	Stable
2.6.18.0	2.6.18.0	2011-03-04	Stable
2.6.17.1	2.6.17.1	2011-03-03	Stable
2.6.17.0	2.6.17.0	2011-03-03	Stable
2.6.16.1	2.6.16.1	2011-03-02	Stable
2.6.16.0	2.6.16.0	2011-03-02	Stable
2.6.15.1	2.6.15.1	2011-03-01	Stable
2.6.15.0	2.6.15.0	2011-03-01	Stable
2.6.14.1	2.6.14.1	2011-02-28	Stable
2.6.14.0	2.6.14.0	2011-02-28	Stable
2.6.13.1	2.6.13.1	2011-02-27	Stable
2.6.13.0	2.6.13.0	2011-02-27	Stable
2.6.12.1	2.6.12.1	2011-02-26	Stable
2.6.12.0	2.6.12.0	2011-02-26	Stable
2.6.11.1	2.6.11.1	2011-02-25	Stable
2.6.11.0	2.6.11.0	2011-02-25	Stable
2.6.10.1	2.6.10.1	2011-02-24	Stable
2.6.10.0	2.6.10.0	2011-02-24	Stable
2.6.9.1	2.6.9.1	2011-02-23	Stable
2.6.9.0	2.6.9.0	2011-02-23	Stable
2.6.8.1	2.6.8.1	2011-02-22	Stable
2.6.8.0	2.6.8.0	2011-02-22	Stable
2.6.7.1	2.6.7.1	2011-02-21	Stable
2.6.7.0	2.6.7.0	2011-02-21	Stable
2.6.6.1	2.6.6.1	2011-02-20	Stable
2.6.6.0	2.6.6.0	2011-02-20	Stable
2.6.5.1	2.6.5.1	2011-02-19	Stable
2.6.5.0	2.6.5.0	2011-02-19	Stable
2.6.4.1	2.6.4.1	2011-02-18	Stable
2.6.4.0	2.6.4.0	2011-02-18	Stable
2.6.3.1	2.6.3.1	2011-02-17	Stable
2.6.3.0	2.6.3.0	2011-02-17	Stable
2.6.2.1	2.6.2.1	2011-02-16	Stable
2.6.2.0	2.6.2.0	2011-02-16	Stable
2.6.1.1	2.6.1.1	2011-02-15	Stable
2.6.1.0	2.6.1.0	2011-02-15	Stable
2.6.0.1	2.6.0.1	2011-02-14	Stable
2.6.0.0	2.6.0.0	2011-02-14	Stable

24.03.11

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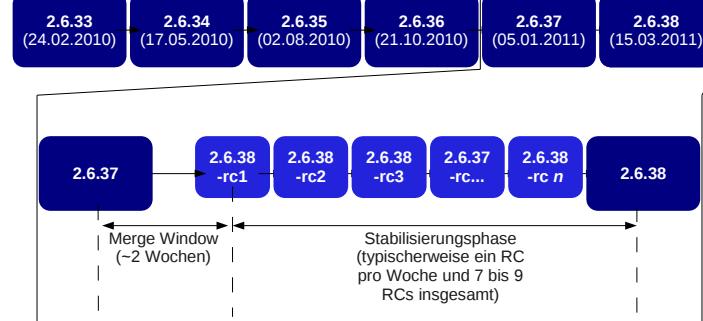
Kernel-Log-Talk – #LIT11 – <http://bit.ly/kernellogtalk-lit2011>

(c) Screenshot von kernel.org

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- * 2.6.38 Mitte des Monats Tagen erschienen
- * 2.6.39 nähert sich Ende der Hauptentwicklungsphase
- * kommt vermutlich Ende Mai oder Anfang Juni
- * hat mir Extra-Arbeit gemacht

Entwicklungszyklus



24.03.11

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- * Merge Window
- * 2 Wochen am Anfang
- * wir nähern uns derem Ende
- * Gros der Änderungen
- * daher weiß ich einige der Neuerungen von .39

- * Stabilisierungsphase
- * wöchentlich neue RCs
- * keine Unterklassifizierung in Alpha, Beta und RCs

- * jederzeit Snapshots verfügbar
- * Details später oder in Documentation/development-process

Statistik



Version	Anzahl Beiträge	Zahl Zeilen (0 aus Beiträgen)	Erstellt am	Revidiert am	Letzter Beitrag
2.6.31	39987	111.074 (12.912.010)	21 Tage	94:1	3LX41 kernel-4.1.16 [63844 revisions], [16992 contributors], [17992 commits]
2.6.32	38.129	107.558 (12.778.001)	21 Tage	100:1	3LX41 kernel-4.1.16 [63844 revisions], [16991 contributors], [17991 commits]
2.6.33	32.571	104.549 (12.612.010)	4 Tage	103:1	3LX41 kernel-4.1.16 [63844 revisions], [16990 contributors], [17990 commits]
2.6.34	37.087	106.662 (12.878.001)	21 Tage	144:1	3LX41 kernel-4.1.16 [63845 revisions], [16991 contributors], [17991 commits]
2.6.35	38.677	142.448 (13.744.010)	5 Tage	55:2	3LX41 kernel-4.1.16 [64085 revisions], [17052 contributors], [18052 commits]

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- * Wachstum pro Version:

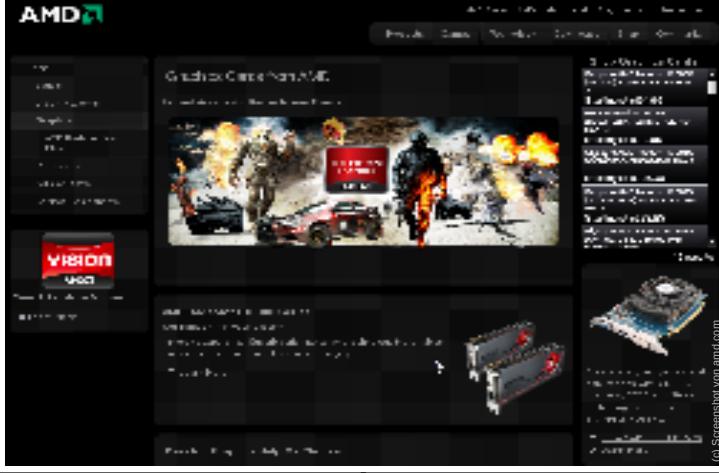
- * drei- bis fünfhunderttausend Zeilen

- * Beschleunigung

- * Linus ist in letzter Zeit strikter in der Stabilisierungsphase

- * 2.6.40 oder 2.6.41 dürften die 15-Millionen-Marke durchbrechen

Grafik-Hardware: AMD



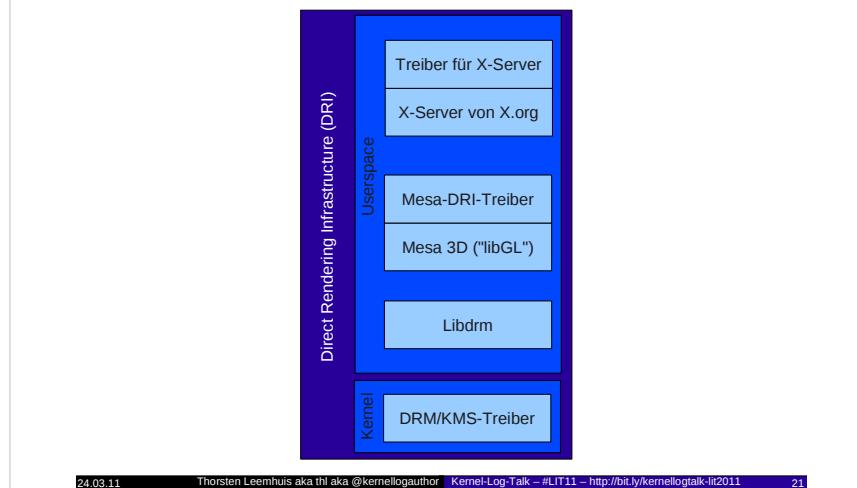
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(c) Screenshot von amd.com

- * .36 HDMI-Audio für MB-Chipsätze
- * .36 und .37 Performance-Optimierungen
- * .38 Precision Vblank Timestamps und Pageflipping
- * .38 Ontario aka APU aka Fusion
- * .38 Northern Islands (6xxx bis 68xx)
 - * beide mit 3D (Mesa 7.11 für 6xxx nötig)
- * .39 Cayman (69xx)
 - * 2D only zum Start
- * .39 tiling für r600
- * MISC
 - * Gallium3D-Treiber übernimmt
 - * KMS wird langsam Pflicht
 - * X.org-Treiber radeonhd tot
 - * schönes Beispiel, wie selbst mit der OSS-Entwicklung vertraute Firmen (AMD und Novell) es versauen können (halb so schlimm in diesem Fall)



- * für 3D Unterstützung auf mehreren Ebenen nötig
- * vereinfachte Darstellung ;-)
- * Video-Beschleunigung fehlt

- * Gallium 3D Teil von Mesa 3D
- * Phoronix nicht zu wichtig nehmen

- * der Grund, warum aktualisieren von Open-Source-Treibern so kompliziert ist

Grafiktreiber-Stack - Beispiel Intel



X Linux Graphics Drivers from Intel
Open Source Graphics for the masses

Main Menu

- Home
- Documentation
- Development Team
- Download
- Licence
- Testing
- Feedback
- Hardware Matrix
- Related projects

Intel 2010Q4 graphics package

components

- 2d driver intel 2.14.0 release
- 3d driver mesa 6.10
- libdrm libdrm 2.4.21 release
- KMS 2.6.37 release
- CRTC caino-1.10.2 release
- I965 llhxa 1.0.7 release
- (several 1.9.3 is recommended see [the packages](#))

Check [Download page](#) for other ways to download files

new features

Fully support Intel® Generation 6 & X Class™ processor family
processors: Sandy Bridge and integrated graphics 3D,
compiling 3D and H.264/H.265 decoding

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(c) Screenshot von intelinuxgraphics.org

- * Grafiktreiber aktualisieren kann so einfach sein :-)
- * gab Kritik bei der Sandy-Bridge-Einführung
- * wer es dennoch probiert bringt die Distri durcheinander
 - * Distributoren in der Pflicht
 - * tun kaum was :-(
 - * Thema für einen eigenen Vortrag



The screenshot shows a web browser displaying the Intel Graphics driver download page. The main content area features a large image of a futuristic space station or satellite. To the left is a sidebar with navigation links like 'Home', 'Support', 'Downloads', 'Software', 'Hardware', 'Community', and 'About'. Below the sidebar is a detailed description of the IronLake driver, including its features and system requirements. At the bottom of the page, there are download links for various operating systems. The footer contains copyright information and a link to the original source.

- * .34 Sandy-Bridge-Unterstützung begonnen
- * bei .37 komplett

- * .36 Ironlake Intelligent Power Sharing (IPS)
 - * aka "Turbo Boost für CPU und GPU"
- * .38 bessere Nutzung der PM von Sandy-Brige
- * .38 Precision Vblank Timestamps und Pageflipping
- * .39 fixes für alte Chips

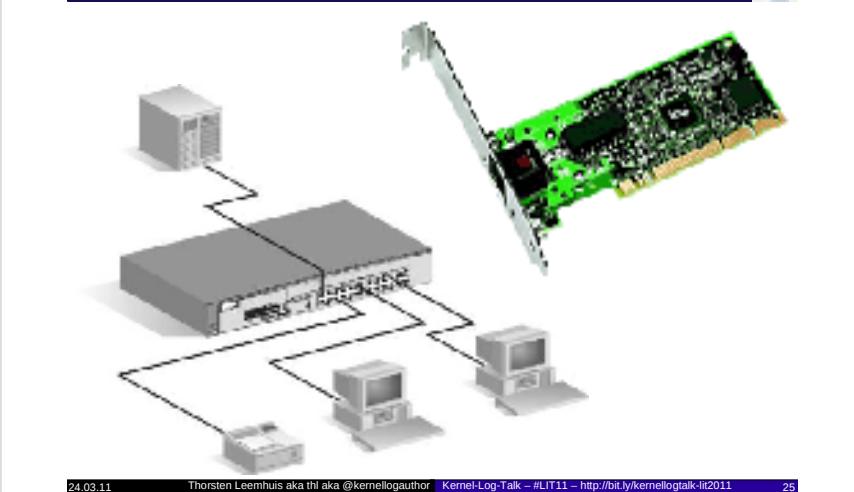
- * MISC
 - * KMS Pflicht
 - * .39 bringt einen rudimentären Staging-Treiber für den problematischen GMA500 (aka Poulsbo/US15W)
 - * vga_switcheroo unausgereift
 - * Optimus weiter problematisch

// Mauszeiger im Screenshot
Wenn die Leser wüssten.. //



(c) Screenshot von nvidia.com

- * noch jung, bei vielen Distries Standard
- * .36 Basics für Fermi
- * .37 KDB
- * .38 3D für Fermi
 - * proprietäre Firmware erforderlich
- * .38 Precision Vblank Timestamps
- * .39 Pageflipping
- * .39 Z Compression
- * MISC
 - * KMS Pflicht
 - * entwickelt sich schnell; noch viel zu tun
 - * Lüfterregelung geht nicht -> Krachmacher:-/
- * Nebenbei: "3D Support" schwammiger Begriff
 - * manche Entwickler konzentrieren sich auf Gnome-Shell und Co.
 - * Spiele und 3D-Performance nur sekundär wichtig



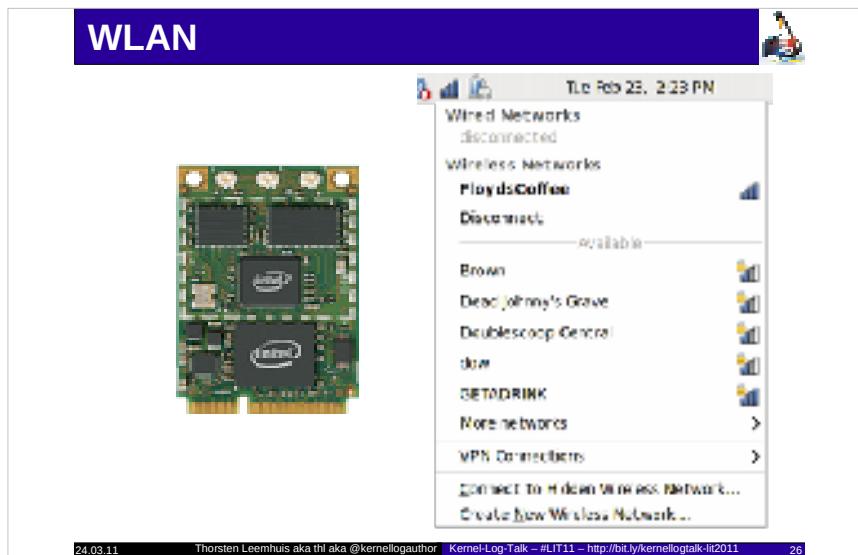
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Thorsten Leemhuis aka thi aka @kernellogauthor Kernel-Log-Talk – #LIT11 – <http://bit.ly/kernellogtalk-lit2011>

25

- * .37 in Kernel PPTP
- * .38 XPS (RPS-Äquivalent beim Senden)
- * .37/.38/.39 Performanceoptimierung im Net-Subsys und TCP Stack
- * .39 ipset

WLAN



- * .38 BATMAN ADV
- * Mesh-Implementation (AdHoc)
- * WLAN-Treibersituation deutlich besser als vor 2 Jahren
 - * Treiber für Chips aller wichtigen Hersteller im Kernel
 - * Ndiswarpper unbedeutend
 - * JUHU!
- * immer noch einiges zu tun
- * .37 und .38 Treiber für Chips von Atheros und Intel
- * Unterstützung für n-Chips von Broadcom, Ralink und Realtek wird langsam was
 - * Umrüstsichtiger beim Kauf weiter besser
 - * bislang Problematisch und Staging-Treiber nötig
 - * immer noch zu viele WLAN-Treiber sind im Staging-Bereich

Exkurs: Linux-Staging



From: Thorsten Leemhuis <thi aka @kernellogauthor>
Subject: [ANNOUNCE] - nouveau driver created
Newsgroups: gmane.linux.kernel.nouveau, gmane.linux.kde
Date: 2008-05-10 19:05:40 GMT

Message-ID:

The Nouveau driver was created to add drivers and functionality for
the Nouveau graphics card. It is a complete rewrite of the
existing X.org driver. The driver is designed to be more
efficient and to support more features than the old driver.
It is also intended to be more reliable and to have better
error handling.

The driver is currently in the experimental stage and is not yet
stable or ready for production use.

The driver is still in the experimental stage and is not yet
stable or ready for production use. It is currently being
developed by the Nouveau team and is not yet ready
for production use.

The driver is currently in the experimental stage and is not yet
stable or ready for production use.

The driver is currently in the experimental stage and is not yet
stable or ready for production use.

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stable or ready for production use.

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stable or ready for production use.

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stable or ready for production use.

(c) Screenshot von gmane.net

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- * enthält neben vielen WLAN-Treibern u.a.
- * Hyper-V-Treiber von MS und Nouveau

- * Bereich für "minderwertige" Treiber
 - * alternative Beschreibung: "Treiber die den Qualitätsansprüchen ihrer Entwickler oder der Kernel-Entwickler nicht genügen"
 - * andererseits: Kernel-Hacker verwenden gelegentlich den Begriff "crap" (Mist)
- * vielfältige Gründe für Staging
 - * Code-Qualität
 - * Hyper-V fehlte lange SMP-Unterstützung
 - * Nouveau: Schnittstellen
 - * der Broadcom-Treiber konnte hohe Übertragungsmodi anfangs nicht
 - * WLAN-Treiber nutzen teilweise den WLAN-Stack des Kernels nicht
 - * das führt zu Problemen mit Tools wie dem NetworkManager



<http://bit.ly/dcbw-staging-justsayno>

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(c) Screenshot von blogs.gnome.org/dcbw/

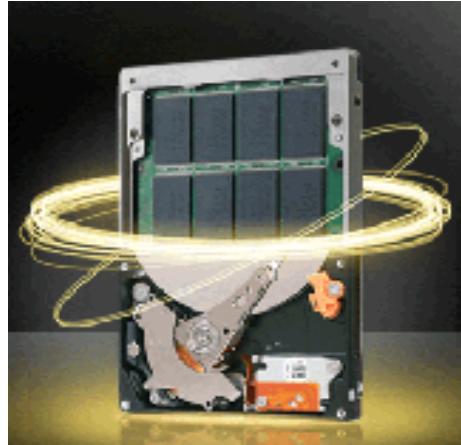
28

Dan Williams' blog



- * Entwickler des NetworkManager generiert
- * Fedora lässt viele Staging-Treiber außen vor
- * die meisten anderen Distributionen anderne liefern sie mit (gut!)
- * bislang reiften nur eine handvoll Treiber im Staging-Bereich
- * Treiber können jederzeit wieder verschwinden, wenn keiner sie pflegt
- * Neuerdings wird der Staging- Bereich ab und zu zum Rauswerfen alter Treiber genutzt

- * auf Staging-Treiber angewiesen Hardware besser meiden!



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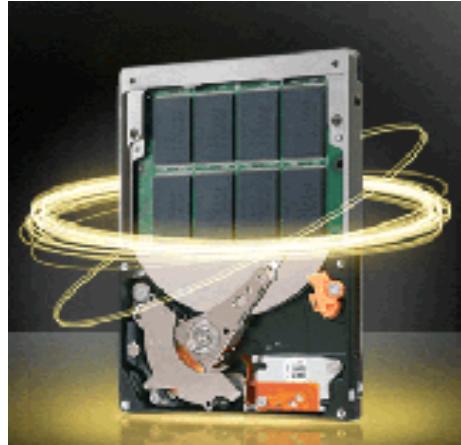
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29

- * .36 Blocking durch lahme Datenträger weitgehend behoben
- * .37 blkio bandwidth control
- * .37 4k logical support
- * .37 Barrier Reorganisation

- * .37 Batched Discard
 - * interessant für langsam trimmende SSDs
 - * Userspace: fstrim
 - * für andere richtiges Discard
 - * schon länger im Kernel, Distris nutzen es kaum

- * .38 LIO as Target
 - * ersetzt STGT
 - * SCST zog den Kürzeren
 - * Verhalten der SCST-Entwickler Mitschuld



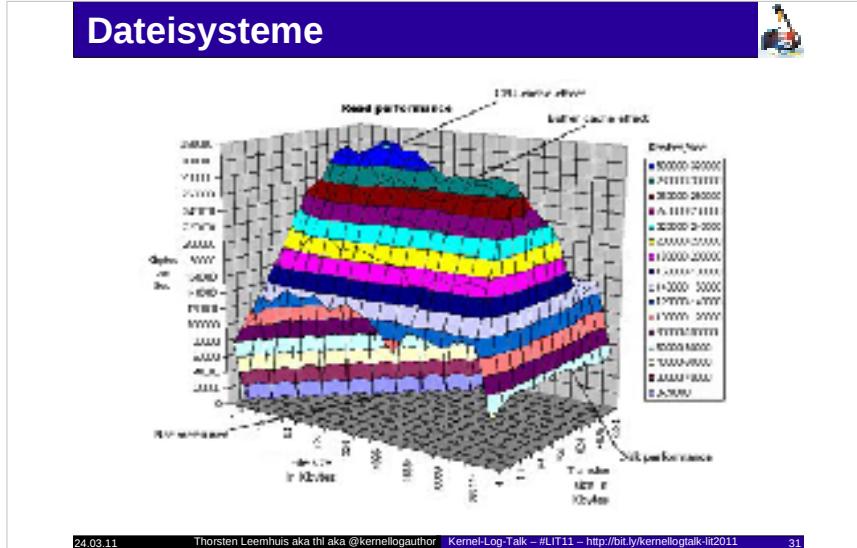
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30

- * .38 md <-> dm für RAID456
- * endlich eine Lösung für HostRAID5?
- * .38 dmcrypt scaling
- * MISC
 - * noch einiges für SSDs und Flash zu tun
 - * Alignment wichtig
 - * die neuesten Distris machen alles richtig
 - * dito: aktuelle Vers. von Fdisk, Parted und Gparted
- * GPT (teil von EFI): Kernel geht, Distributionen haben das Anpassen der Installer teilw. verpennt...
- * BTW: EFI macht auch noch viele Probleme bei Boot-Loader und dem Kernel
- * Schuld vermutlich: beide machen gewissen Dinge anders als Windows (Problem mit dem von ACPI vergleichbar)
- * Problemfeld :-/



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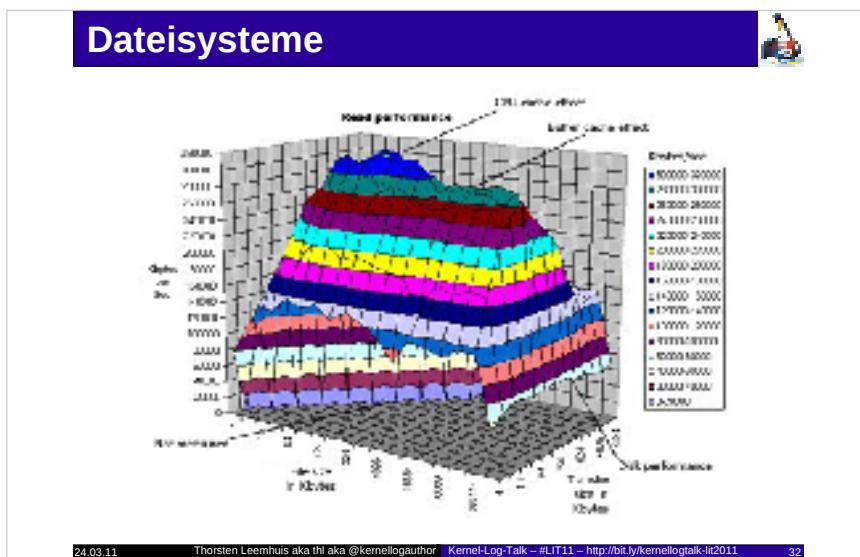
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31

- * .38: VFS Skalierbarkeit
- * Linus ist begeistert
- * macht auch Desktops schneller

- * ext4
 - * im Enterprise-Bereich angekommen
 - * .37 Lazy Inode Initialization
 - * .39 große Performance-Verbesserungen
 - * ursprünglich in .37

- * XFS
 - * etabliert, stetig weiterentwickelt
 - * ERKLÄREN: nicht unbedingt was für Desktops
 - * mehr für richtig große Kisten



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32

* Btrfs

* designiertes "Next Gen FS for Linux"

* COW

* noch experimentell

* .38 LZO Kompression

* .38 schreibgeschützte Snapshots

* missing piece: Dateisystemchecktool

* angeblich 90% fertig, nächsten Wochen erwartet

* Fedora 16 mit Btrfs als Standard? Ubuntu 11.10?

* Fehlerberichte lassen mich etwas zweifeln

* MISC

* 2.6.38 XZ (LZMA) Support für Squashfs

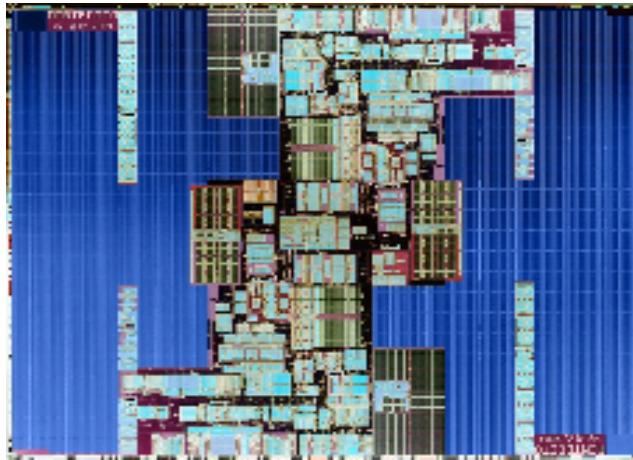
* mehr Platz auf für Live-Medien

* Union Mounts: sehr langsam köchelnd :-/

* .37 RBD/Rados Block Devices (für Cluster, Btrfs based)

* Reiserfs praktisch Tot

* Reiser4: fehlt Unterstützung, nicht mehr erst zu nehmen



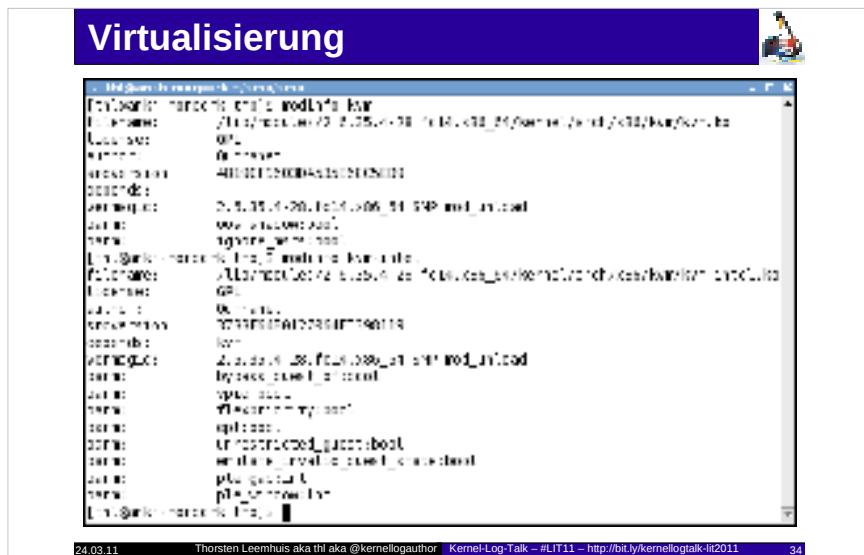
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(c) Screenshot von intel.com

- * .36 Tilera
 - * Immer: ARM- und Power-Systeme
 - * in letzten Zeit: Embedded-Kram für Intel
 - * .39 unicore32 (China-CPU)
- * In Arbeit: Device Trees für ARM?



* KVM

- * aus Kernel-Sicht geschickter/eleganter als XEN
 - * macht Funktionen wie KSM vergleichsweise einfach
 - * .37 Nested Paging Virtualization for KVM (Jörg)
 - * Zeit des Feintunings angebrochen?
 - * im Kernel tut sich nicht mehr so viel
 - * IMHO langfristig VM-Lösung Nr.1

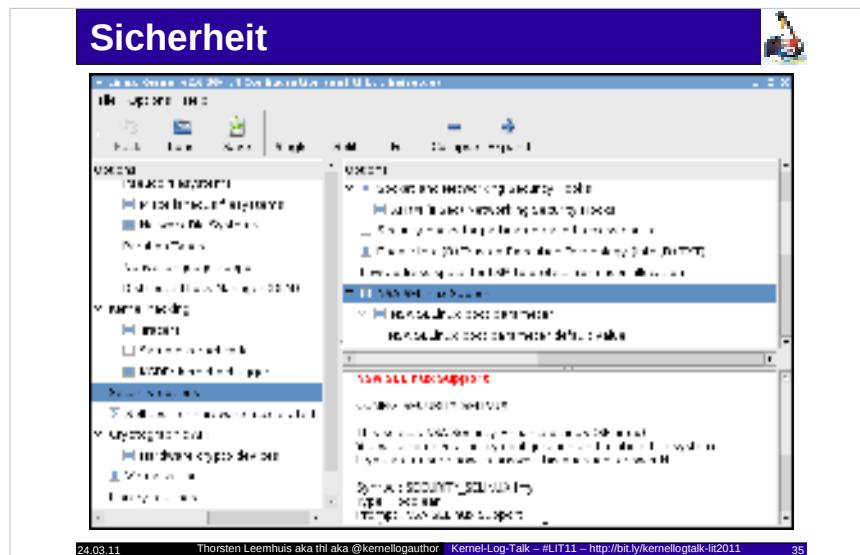
* XEN

- * Dom0-Basics haben es bei 2.6.37 endlich geschafft
 - * noch nicht vergleichbar mit Citrix-Xen
 - * Net-Backend-Treiber in 2.6.39
 - * Storage?

* LXC / Lightweight Virtualization aka Containers

- * verspätete OpenVZ -Alternative
 - * interessant etwa für Hoster
 - * bislang wenig beachtet, viel Potenzial
 - * typisches Beispiel für ein "verpenntes" Feature

Sicherheit



- * .36 AppArmor (finally)
- * .37 fanotify
- * .38 NX für Kernel und Module
- * .38 NX für Intel forced (x86-32)
- * .38 Crypto Userpace API
- * .38 Trusted and encrypted keys
- * Schutz gegen Angriffe von Außen

Tracing und Debugging



```
✓ th@thi:~/Desktop$ perf top
[...]
perf record: sleep 0.1s to write back
[...]
perf record: captured and wrote 6,000 events (100 seconds)
[...]
dtrace: exiting: top 5 total perf events
[...]
Overhead Command Shared Object Symbol
[...]
51.01% 13 [kern] [kern] [k] write_cmap_update_file
41.09% 4 [kern] [kern] [k] trace_bandwidth_update
  1.61% 1 [kern] [kern] [k] sleep_start
  0.73% 2 [kern] [kern] [k] native_write_update
  0.12% 2 [kern] [kern] [k] trace_bandwidth
[...]
dtrace: higher-level events: try perf stat -e sched-clock
[...]
th@thi:~/Desktop$
```

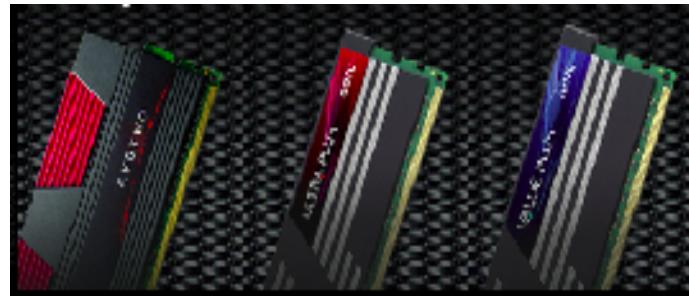
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- * trace/perf: Bereich, wo sich viel tut
- * .37 Jump Label
- * .38 An und Ausknipsen von Tracepoints
- * am Ende eine dtrace-artige Lösung?
- * vielleicht nutzt systemtap langfristig die entstehende Infrastruktur

- * .36/.37: KDB/KMS
- * Zukunft: Error reporting (Boris)



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37

(c) Screenshot von geil.com/tv

- * .38 Transparent Huge Pages (THP)
 - * für virt und DBs interessant
 - * RHEL6
- * coming
 - * zcache, cleancache
- * Dauerthema: skalieren
 - * mm preemptibility

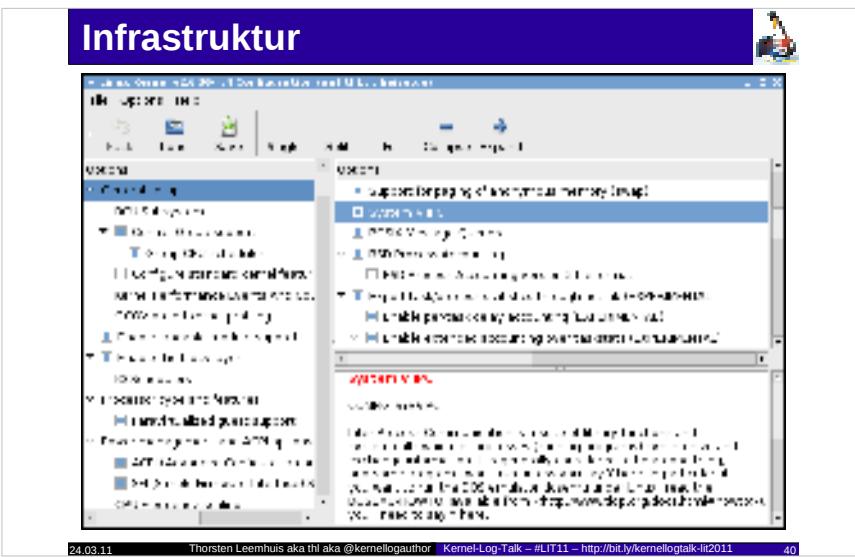


- * wird auch für Server immer wichtiger
- *` .3[5678] Runtime Device Power Management
 - * Praxiseinsatz noch gering
- * .37 komprimieren des Hibernate-Images mit LZO
 - * Frage an die Audienz: Wer nutzt Hibernate noch?

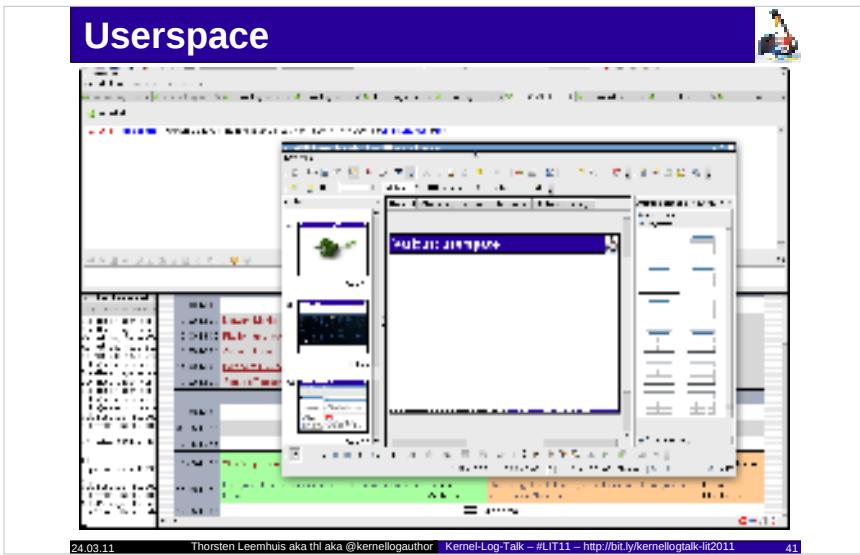


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- * zu viele, um sie hier aufzuzählen
 - * .36 LIRC-Variante (finally!)
 - * .37 alsaloop
 - * .37 UAS - flotte USB 3.0-Datenträger
 - * UASP-Problematik
 - * .38 Audio ohne Interrupts -> stromsparend
 - * In letzter Zeit
 - * Touchscreen und Multitouch
 - * Platform Driver
 - * .39 Samsung
 - * Immer: Audio-Quirks
 - * Übermitteln!



- * .38 Wunderpatch/Auto-Gruppierung
- * nur bestimmte Situationen
- * .37 bzw. .38 BKL größtenteils weg; Rest mit .39
- * nicht so wichtig
- * .38 XZ Komprimierung
- * .39 Forced Threaded Interrupt Handlers
 - * eines der letzten RT Features
- * Firmware wandert raus
- * Dauerthema: skalieren



- * Unterverzeichnis tools/ in den Kernel-Quellen

- * .38 ktest, turbostat

- * dracut

- * util-linux-ng

- * MDADM

- * Externally Managed Metadata

- * Eindeutige Namen für Netzwerkschnittstellen

- * xserver 1.10 (ABI break)

- * randr 1.4 für 1.11 X.org 7.6

- * wayland

- * gcc 4.6

- * Optimierungen für Core i & Co.

- * systemd

- * powertop2

- * zusammen mit MeeGo: Optimierung auf Power

- * UEFI (Boot-Loader, Kernel, Installer)



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(c) Isamedien; Quelle: <http://www.heise.de/ct/motiv/1011/>

42

- * Btrfs
 - * das wird härter als Ext4
 - * Hot and Cold data (alternative: bcache)
 - * LVM-like Funktionen
- * Komprimierung von Arbeitsspeicherinhalten
- * UEFI
- * Realtime
- * Deadline Scheduler
- * Checkpoint/Restart
- * Error Reporting
- * Device Tree für ARM
- * Features für die Bereiche, in denen Linux stark ist
- * ist das der Desktop?
- * Time will tell



<http://www.heise.de/open/>



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- * Achtung, Eigenwerbung ;-)
- * Online gibt es drei Typen
 - * Reguläre Kernel-Logs
 - * "Was bringt"-Kernel-Logs
 - * Kernel-Logs zu neuen Version des Hauptentwicklungszweigs
(Zusammenfassung der "Was bringt"-Kernel-Logs)
- * Teile davon in anderer Form auch in c't

Aktuelle Infos: Kernel-Log (Deutsch)



<http://www.heise.de/open/>



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* reguläres deutsches KL auf heise open

Aktuelle Infos: Kernel-Log (Englisch)



<http://www.h-online.com/open/>



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Thorsten Leemhuis aka thi aka @kernellogauthor Kernel-Log-Talk – #LT11 – <http://bit.ly/kernellogtalk-lt2011>

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- * "Was bringt/What's coming"-KL in englisch auf "The H"



The screenshot shows the LWN.net homepage. The top navigation bar includes links for Home, About, Contact, RSS, and Log In. The main content area features several news articles with titles like "Ubuntu 11.04 LTS 'Natty Narwhal' released" and "ARM Mali GPU driver for Linux 2.6.37". A sidebar on the left contains links for "LWN.net", "About", "Contact", "RSS", "Log In", "Search", and "Recent Posts". At the bottom, there's a footer with the date "24.03.11", the author "Thorsten Leemhuis aka thi aka @kernellogauthor", the topic "Kernel-Log-Talk – #LIT11 – http://bit.ly/kernellogtalk-lit2011", and the page number "46".

<http://lwn.net/>

(c) Screenshot von lwn.net

- * Wer es noch genauer Wissen will: LWN.net
- * KL verlinkt typischerweise zu LWN

- * recht kurze Zusammenfassung der wichtigsten Neuerungen einer neuen Version, weil zu den wichtigsten Dingen Hintergrundartikel existieren oder danach erscheinen

Aktuelle Infos: Weather Forecast



<http://www.linuxfoundation.org/collaborate/wf>



- * Frontpage interessant
- * andere Seiten veraltet



<http://kernelnewbies.org/LinuxChanges>

The screenshot shows a web page titled "LinuxChanges" with a sidebar on the left containing a tree view of kernel version branches. The main content area displays a large list of kernel changes, each with a blue link. At the bottom of the page, there is footer text: "24.03.11 Thorsten Leemhuis aka thi aka @kernellogauthor Kernel-Log-Talk – #LIT11 – http://bit.ly/kernellogtalk-lit2011" and "(c) Screenshot von kernelnewbies.org".

- * In einigen Belangen ähnlich wie die "Was bringt"-KLS
- * erscheint Neuerdings erst zur Freigabe einer neuen Version

Regression Reports

The screenshot shows a software application window titled "Regression Reports". The main area displays a table of bugs, each with a unique ID, title, status, and other metadata. A detailed view of a specific bug is shown in a modal dialog, which includes the bug's ID, title, description, and a large text area containing the full bug report. The bottom of the screen features a navigation bar with links to "Home", "About", "Contact", and "Logout".

ID	Title	Status	Priority
123456789	Kernel panic on boot	Open	High
987654321	Memory leak in driver	Open	Medium
567890123	Driver hangs on suspend	Open	Low
456789012	Kernel crash on resume	Open	Medium
345678901	Driver hangs on resume	Open	Low
234567890	Kernel panic on boot	Open	High
123456789	Driver hangs on resume	Open	Low

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- * Geben Überblick über die wichtigsten bekannten Fehler
- * erscheinen typischerweise an Wochenenden
- * Blick wert vor dem Testen

// * Wieder ein Mauszeiger im Screenshot :-/

Fehler melden



<http://bugzilla.kernel.org/>

A screenshot of a web browser displaying the Bugzilla interface for the kernel.org project. The page shows a single bug report with a large thumbnail image of a microchip or similar electronic component. The URL in the address bar is http://bugzilla.kernel.org/show_bug.cgi?id=11111. The page includes standard browser navigation buttons like back, forward, and search, along with specific Bugzilla controls like 'Edit' and 'Delete'.

(c) Screenshot von bugzilla.kernel.org

- * Basis der Regression Reports sind die Fehlereinträge bei bugzilla.kernel.org

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Testen helfen!



<http://bit.ly/lytso-help-testing>



(c) Screenshot von gmane.net

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51

- * Tester werden dringend gesucht!
- * eine Möglichkeit, zu danken
- * typische c't-Leser sollten beim Testen helfen können

- * Man erleichtert sich selbst und anderen das Leben
- * Möchtegern-Experten ignorieren, die undifferenziert behaupten, ein bestimmter Kernel sei "instabil"
- * jeder Kernel hat Fehler und ist auf einzelnen Systemen instabil
- * Kurztest reicht häufig schon
- * Linux und Co. achten auf testbare RC-Kernel
- * je früher man testet, desto einfacher lässt sich die Ursache aufspüren!
- * nach dem RC2 oder RC3 sind die Kernel typischerweise nutzbar
- * guter Zeitpunkt für diese Audienz: bei RC4
- * Restrisiko bleibt immer, auch beim Wechsel "finale" Versionen

Finally ()



- Was die Kernel-Entwickler treiben ist für Nutzer aller Linux-Distributionen wichtig
- Linux 2.6.37: OpenSuse 11.4
 - Ext4-Optimierungen, VFS, Xen-Dom0-Basics, Rados Block Devices, PPTP, BKL-Free, LZO für Software-Suspend
- Linux 2.6.38: Ubuntu 11.04 (April) und Fedora 15 (Mai)
 - VFS, Group-Scheduling, Btrfs-LZO, Fermi 3D, Radeon 62xx - 68xx, XPS, Transparent Huge Pages (THP)
- Linux 2.6.39: Ende Mai/Anfang Juni
 - BKL "End Game", Forced Interrupt Handlers, ipset, Ext4-Optimierungen, neue Treiber (Radeon 69xx, Poulsbo/US15W)
- Hardware geschickt aussuchen, Staging-Treiber meiden
 - proprietäre Treiber sind eine Thematik für sich

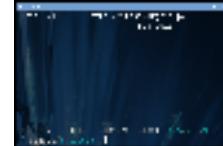
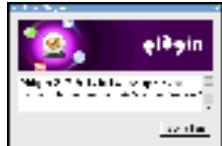
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* Ausnahmsweise stehen die Infos in der Folie ;-)

Get in touch: Mail, IM, ICQ



Dienstlich

Privat

Email:

thl@ct.de

linux@leemhuis.info

Jabber:

thl_at_work@jabber.ccc.de

thl_at_home@jabber.ccc.de

IRC:

knurd (freenode.net)

knurd (freenode.net)

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- * Tipps und Hinweise zum KL oder Artikeln gern gesehen
- * Zeit für Diskussionen und technische Unterstützung knapp
- * reguläre Arbeit will gemacht werden
- * wirke per IM und ICQ vielleicht "Kurz angebunden"
- * seltener Gast in den Heise Foren
- * bevorzuge Push-Kommunikationsformen
- * pollen ist auch auf Kernel-Ebene häufig schlecht ;-)

Get in touch: Micro-Blogging



Konto	Zweck	Sprache
@kernellog	weist auf neue Kernel-Logs bei heise.de hin	Deutsch
@kernellog2	announces new Kernel Logs on h-online.com	Englisch
@kernellogauthor	typical Kernel-Log topics	Englisch
@knurd666	Eher privates aus der Fedora-Welt	Englisch
@thleemhuis	Mein "normales" Ich	Deutsch

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(c) Screenshot von identi.ca und twitter.com

- * Ja, ich manage wirklich 2 x 5 Konten ;-)
- * Identi.ca leitet an Twitter weiter
- * Nein, ich bin nicht bei Facebook...
- * Mitbewerber folgen @kernellogauthor, daher landen dort häufig keine Dinge, über die ich zu schreiben gedenke

Optionale Themen (1)



- Mehr Details zu Irgendwas, was vorher zur Sprache kam?
 - Entwicklungszyklus? (Folien verfügbar)
 - Grafiktreiber? Xen? Btrfs?
 - Wie testen oder anderweitig mithelfen?
- Motivation / "Who writes the kernel"
 - Hobby vs. Payed; gute und schlechte Firmen
 - Genauigkeit dieser Analysen
- Kernel-Serien
 - Stable-Series und Longterm (Folien verfügbar)
 - linux-next, mm-Kernel, TIP, Subsystem-Trees
 - RT-Tree
 - Kernel der Distributionen
- Roadmap

24.03.11

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* ohh, schon wieder Infos in der Folie :-)

Optionale Themen (2)



- Blick hinter die Kulissen des Kernel-Logs?
 - Managen der vielen Commits, Internet-Quellen und des Traffics von LKML und Co.
 - welche Commits das KL typischerweise nicht erwähnt
- proprietäre Treiber
- wo Distributionen mehr tun müssten
- Linus Torvalds?
- LKML, Patch-Flow und Git
 - "Survival of the fittest"
- "external drivers are expensive "
- how to become a kernel hacker
 - <http://ldn.linuxfoundation.org/book/how-participate-linux-community>

* und nochmal ;-)

Pflege: Stable- und Longterm-Kernel



- Stable-Series

- kleine Korrekturen und Verbesserungen für die jeweils neueste Kernel-Version des Hauptentwicklungszweigs (2.6.x)
- neuerdings manchmal etwas schleppende Erscheinungsweise...
- neuerdings wieder stärkerer Fokus auf die allerneuste Version und kürzere Übergangsphase zwischen neuen Major-Versionen

From: Greg KH <gregkh@kroah.com>
Subject: Linux stable kernel release procedure changes
Newsgroups: gmane.linux.kernel
Date: 2010-12-03 00:42:47 GMT

[...]

So, it's time to our next move, and I'm now only going to be doing stable releases for the last kernel releases, with the last one or two releases混杂 with the latest releases from time to time to give people a chance to move over and have the new releases stabilize a bit.

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(c) Screenshot von gmane.net

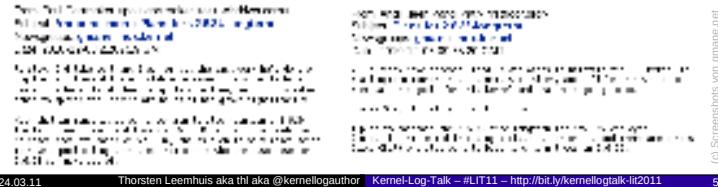
* stable series konzentriert sich jetzt wieder auf die neuen Kernel

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Pflege: Longterm-Kernel



- Longterm-Kernel
 - kleine Korrekturen und Verbesserungen einzelner Versionen (2.6.x) über mehrere Jahre
 - Unterschiedliche Betreuer mit leicht unterschiedlichen Ansätzen
 - Derzeit fünf:
 - 2.4.37.y – geht dem Lebensende entgegen
 - 2.6.27.y – neuerdings langsamere Pflege
 - 2.6.32.y – etabliert, Basis mehrerer Distributionskernel
 - 2.6.34.y – Serie und Betreuer müssen sich noch bewähren
 - 2.6.35.y – Serie und Betreuer müssen sich noch bewähren



(c) Screenshots von gmane.net

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* recht neu

Stable rules



[Browsing kernel/git/torvalds/linux-2.6.git\[1\]](#) Documentation / stable_kernel_rules.txt

- 1 Every merge you are invited to know about what's in the release.
- 2 Rules on what kind of patches are accepted, are shown here are in the file `stable.txt`.
- 3
- 4
- 5 • It must be reasonably current, are tested.
- 6 • It cannot be bigger than 1MB (now, 500k content).
- 7 • It has to be in the diff.
- 8 • It must fix a real bug that others people fixed at this could be a problem (i.e. fixes them).
- 9 • It must fix a situation that causes a valid error log, not for example memory OOM or segfault, or assert, or hang, some corruption, or crash.
- 10 • Obviously broken, or some in, which is good because it shows something different.
- 11 • New code in the kernel needs to be accepted.
- 12 • If it's not really nice until we "fixes", a "fixes" explanation of "why" the code can be accepted is recommended.
- 13 • It cannot contain any "trivial" fixes like a capitalization change, whitespace changes, etc.
- 14 • It must reflect the behavior of upstream - rightfiles cases.
- 15 • It must be equivalent to the way it's being used in Linus' tree (unless noted).
- 16
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- * gelten auch für Longterm-Kernel
- * vorgehen in der Stabilisierungsphase ähnlich

"must upgrade"



From: Greg KH<gregkh@kernel.org>
Subject: Linux 2.6.36.3
Newsgroups: gmane.linux.kernel, gmane.linux.kernel.stable
Date: 2011-01-07 22:51:25 GMT

-- announcing the release of the 2.6.36.3 kernel.

All users of the 2.6.36 kernel series [get upgrade](#).

The updated 2.6.36.y git tree can be found at:
<http://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-2.6.36.y.git>
and can be browsed at the normal kernel.org git web interface:
<http://git.kernel.org/?p=linux/kernel/git/stable/linux-2.6.36.y.git;a=summary>

thanks,

greg k-h

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(c) Screenshot von gmane.net

* besser den Distributor die Arbeit überlassen

Detaillierte und gute Analyse...



<http://lwn.net/Articles/375335/>

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2.6.32.9 Release notes

By Jonathan Corbet Published: 23.03.2011

Notable kernel security issues recently published PGP keys have a certain tendency to be followed by complaints about the amount of information which is made available. It's not that I'm being paranoid; it's just that a number of discussions which I've seen on various mailing lists have led me to believe that some people seem to have an almost pathological desire to determine whether one particular key being cited in the kernel maintenance page is valid or not. In general, the security of the system depends on making sure that the majority of keys are valid, and that most of them are not forged. This is something that I've been trying to emphasize for a long time now.

Documentation There is one way to review 90 patches in a few hours and fully understand each of them. It's to copy and paste them into a word processor. That's probably the best of the options, but it's also very hard to do which those have security implications. A determined attacker can find a way to end up with very useful tools.

Personal note I would like to encourage anybody from thinking that this will become a regular LWN feature. The amount of work required is considerable (it took me a week to write this article, for example), and it's not

(c) Screenshot von lwn.net

* LWN hat sich einen Kernel mal näher angesehen



Other bug fixes

- * [fix potential crash with sys_mmap_pages](#). (Is an unreliable test which could cause a crash in the page migration code. [Update as has been pointed out in the comments, this one is *potential* and should have been in the security list above.]

[...]

2.6.32.9 Release notes

Published Feb 21, 2010 19:32 UTC (Sun) by [mellis](#) (author, 439579) ([Link](#))

I'm curious why you marked [#1](#) "fix potential crash with sys_mmap_pages," as non-security. I am not aware of any public or private exploitation from this bug, but it's definitely a denial of service, and an impressively effective information leak attack (as demonstrated by spending published exploit code). It's been assigned CVE-2010-0415 in light of this.

#1

Published Feb 21, 2010 19:14 UTC (Sun) by [corbet](#) (author, 41) ([Link](#))

Because I know I implemented it, I couldn't see any sort of reliable way to trigger it, and just checked from a crash dump, I was unaware of the exploit in the CVE number. Clearly, it's a security problem.

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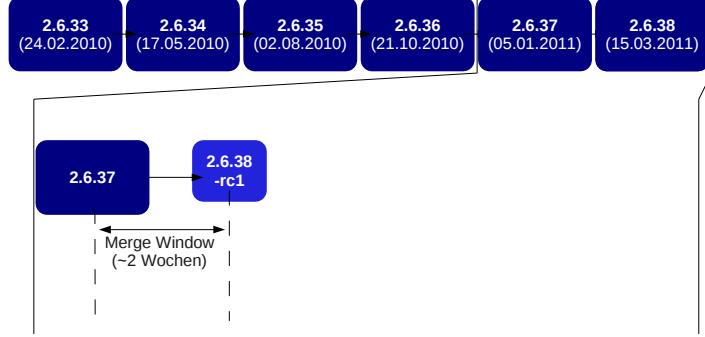
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(c) Screenshot von ion.net

* selbst Corbet hat einen großen, bereits öffentlichen Fehler übersehen

Merge Window

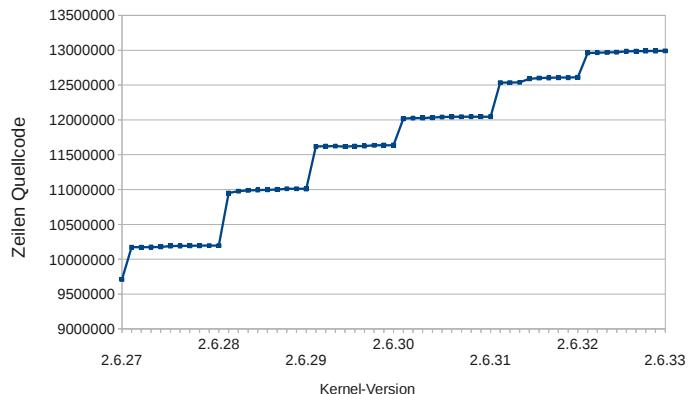


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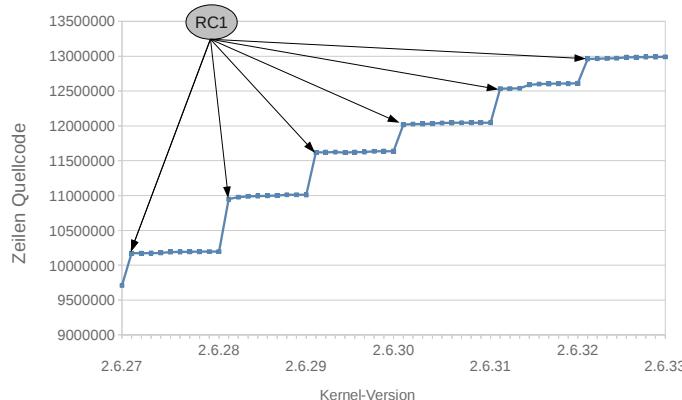
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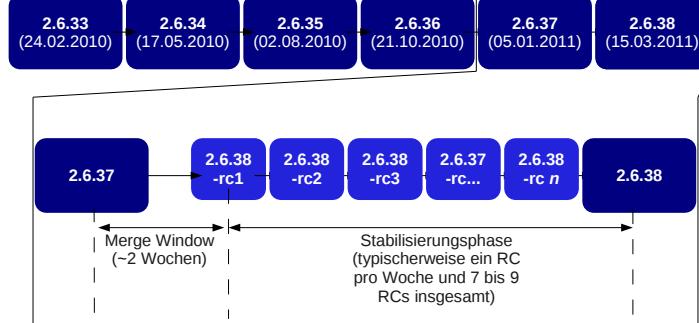
- * direkt nach der Veröffentlichung von 2.6.n beginnt die "Merge Window" genannte Hauptentwicklungsphase für 2.6.(n+1)
- * alle großen Änderungen werden in dieser Zeit integriert
- * ungefähr zwei Wochen lang
- * rc1 markiert das Ende
- * einige Nachzügler zwischen rc1 und rc2



- * etwas ältere Aufstellung
- * Situation in Großen und Ganzen gleich
- * jeder Punkt ein Release (RC oder Final)



Stabilisierungsphase

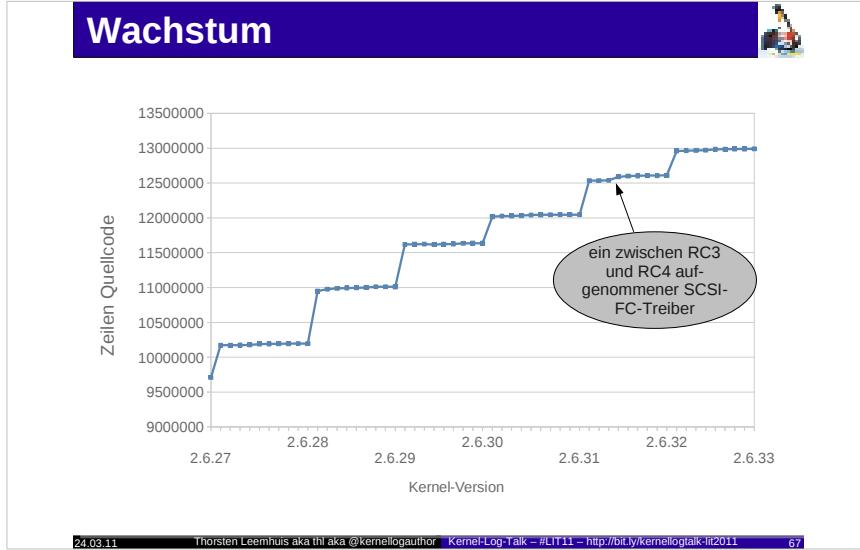


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- * ungefähr 8 bis 9 Wochen lang
- * kleine, ungefährliche Änderungen
- * Linus ist in letzter Zeit etwas strikter
- * neue RCs wöchentlich
 - * Snapshots verfügbar
- * es gibt nur RCs und keine Klassifizierung in Alpha, Beta und RCs
- * Details: Documentation/development-process



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- * nur selten wird nach dem RC2 noch was deaktiviert oder wieder rausgeschmissen
- * die dargestellte Aufnahme des SCSI-FC-Treiber zwischen rc3 und rc4 wäre dieser Tage wohl nicht mehr drin
- * ähnlich wie bei Stable-Kerneln (später mehr) werden neue PCI-IDs aber durchaus auch spät integriert

- * RCs sind recht stabil
 - * Linus will es sich nicht mit den Testern verderben
 - * rc1 etwas mit Vorsicht zu genießen
 - * bei rc2 bzw. rc3 und seinen Nachfolgern Gefahr gering
 - * mehr später
 - * Restrisiko besteht immer -- Backups ;-)

Informationen zur Präsentation



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