

Xen in Linux (aka PVOPS update)

Konrad Rzeszutek Wilk
konrad.wilk@oracle.com

XenSummit

Aug 2-3, 2011
Santa Clara, CA, USA

Agenda

- Current state
- Roadmap
- Distributions
- How you can help
- Future
- QA

Current state

We are done!!

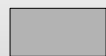
<http://blog.xen.org/index.php/2011/06/14/linux-3-0-how-did-we-get-initial-domain-dom0-support-there/>

Right?

Linux 3.0 – How did we get initial domain (dom0) support there?

Current state – completed

Feature/Kernel	2.6.37 or earlier	2.6.38	2.6.39	3.0	3.1	future
Xen SWIOTLB	Maintainer happy	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written
ACPI/MSI	Maintainer happy	Needs work	Needs work	Needs work	Needs work	Needs work
Xen PCI	Maintainer happy	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written
KMS(framebuffer),Watchdog	Hasn't been written	Maintainer happy	Needs work	Needs work	Needs work	Needs work
netback	Hasn't been written	Hasn't been written	Maintainer happy	Hasn't been written	Hasn't been written	Hasn't been written
blkback	Hasn't been written	Needs work	Needs work	Maintainer happy	Needs work	Needs work
pciback	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Maintainer happy	Hasn't been written
VGA text	Hasn't been written	Needs work	Needs work	Needs work	Maintainer happy	Needs work
debugfs MMU tracing API	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Maintainer happy	Hasn't been written
Memory hotplug (balloon driver)	Hasn't been written	Needs work	Needs work	Needs work	Maintainer happy	Needs work
Tmem/self-ballooning	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Maintainer happy	Hasn't been written
TTM (3D graphics, or 32bit cards)	Hasn't been written	Needs work	Needs work	Needs work	Needs work	Needs work
Oprofile/ftrace	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Hasn't been written	Needs work
PV ticket spinlocks	Hasn't been written	Needs work	Needs work	Needs work	Needs work	Maintainer happy



Hasn't been written



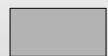
Needs work



Maintainer happy

Features we would like in future

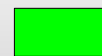
Kernel/Feature	2.6.37 or earlier	2.6.38	2.6.39	3.0	3.1	future
Netback zero-copy (aka PG_foreign)						Maintainer happy
Netback NAPI						Hasn't been written
Netfront SG coalescing						Hasn't been written
frontswap						Needs work
Blkback/front DIF/DIX (Data Integrity Extensions)						Hasn't been written
Blkback/front TRIM/DISCARD						Hasn't been written
Blkback/front serial numbers (VPD)						Hasn't been written
Hugepages (PV)						Needs work
PV Audio (GSOC 2011) – userspace front/black daemons						Needs work
PV USB (or use QEMU's USB 3.0 to be written stack)						Needs work
ACPI S3 (and hibernate)						Needs work
ACPI Cx/Px						Needs work
EFI						Hasn't been written
Kexec for Dom0 and PvonHVM (GSOC 2011)						Needs work



Hasn't been written



Needs work



Maintainer happy

Roadmap – 3.1, 3.2..

- All essential patches for initial domain (dom0) are in 3.0.
- The **big** (backends) patches are in.
- Focus to make Xen work in desktop:
 - 3D Graphics (TTM)
 - ACPI S3, Hibernate
- And providing enterprise features:
 - DIX/DIF, TRIM, better scalability of netback/blkback
- And bug hunting/fixing.

In other words

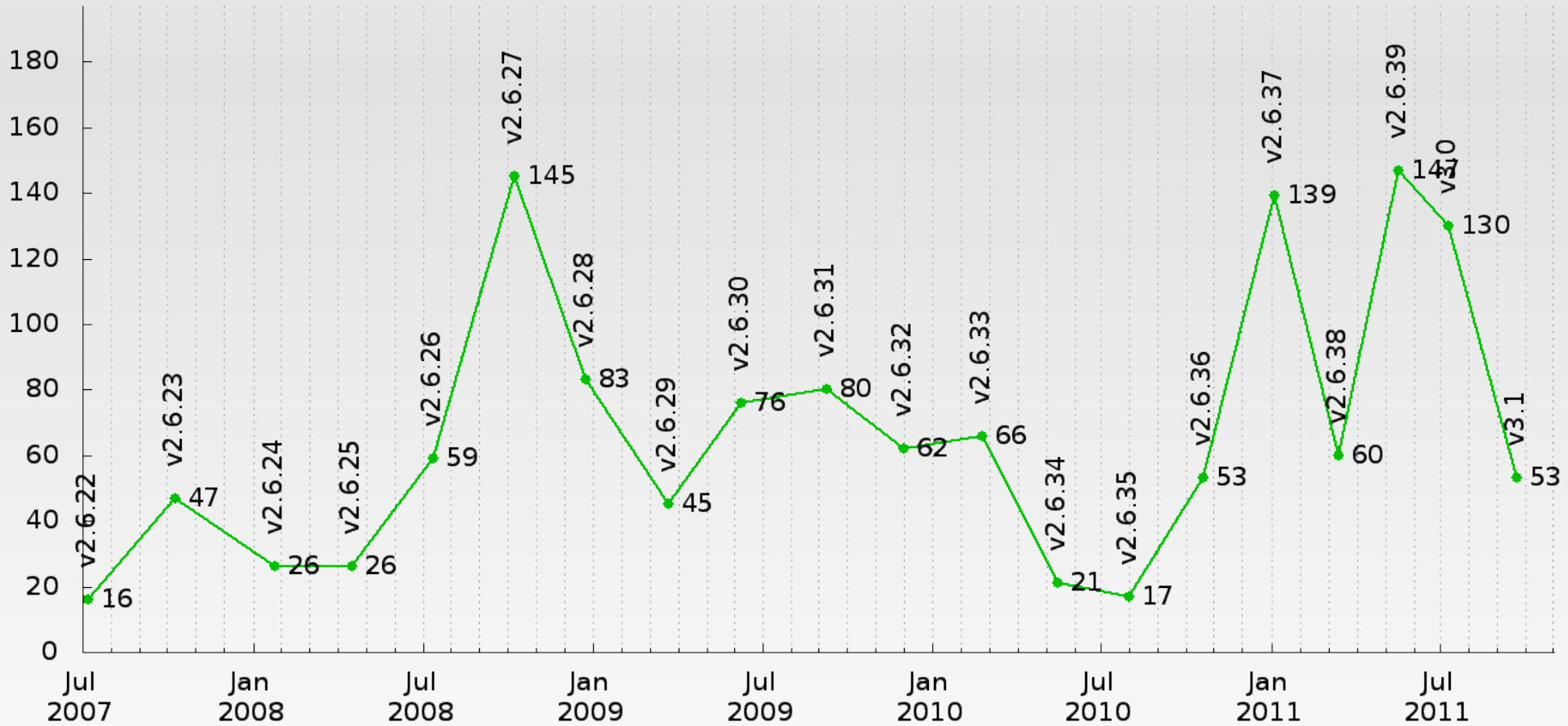
- Features to enhance **existing** functionality
- Bug fixes

Are we slowing down? (commits)

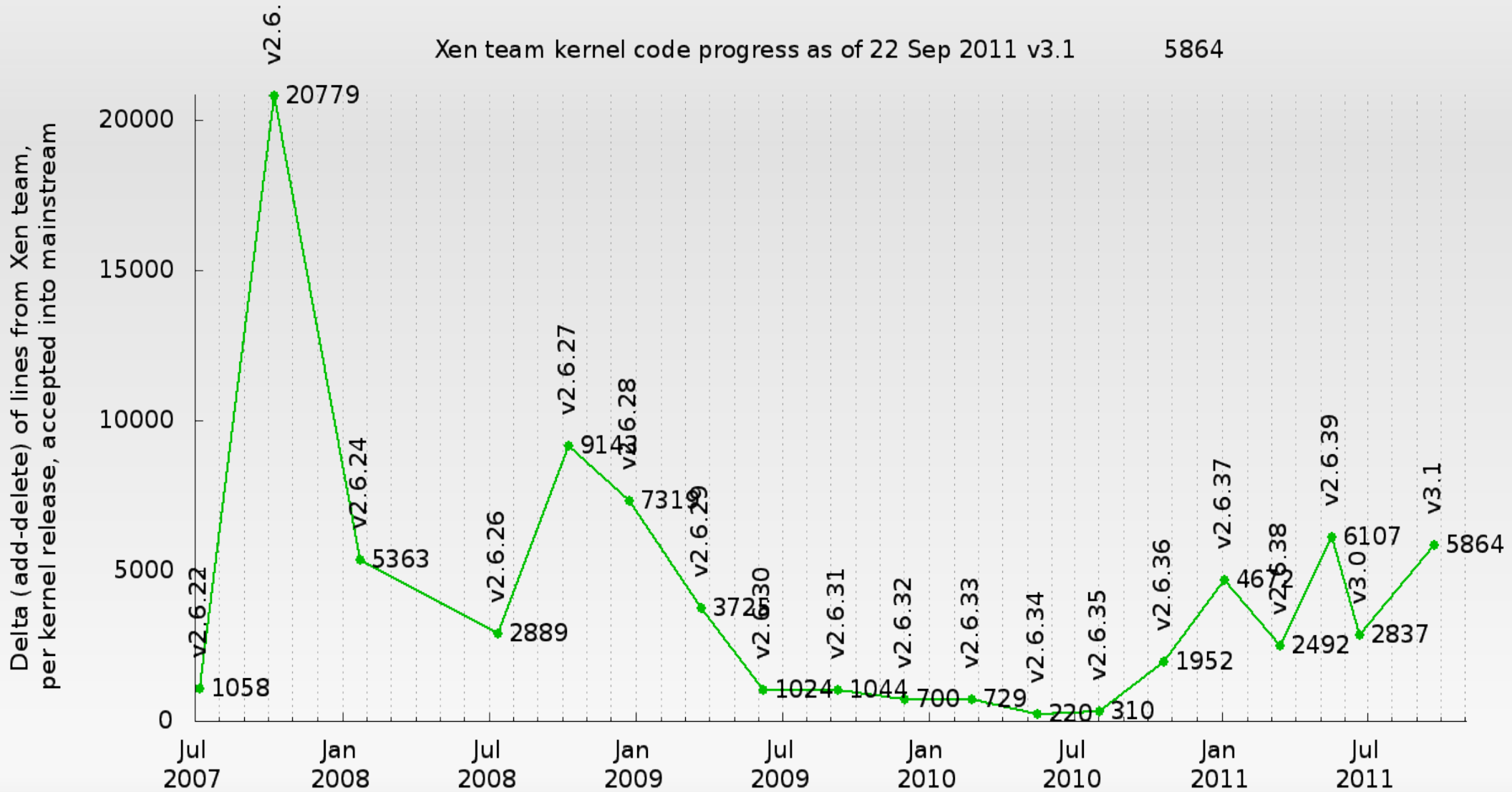
Xen team kernel code progress as of 22 Sep 2011 v3.1

53

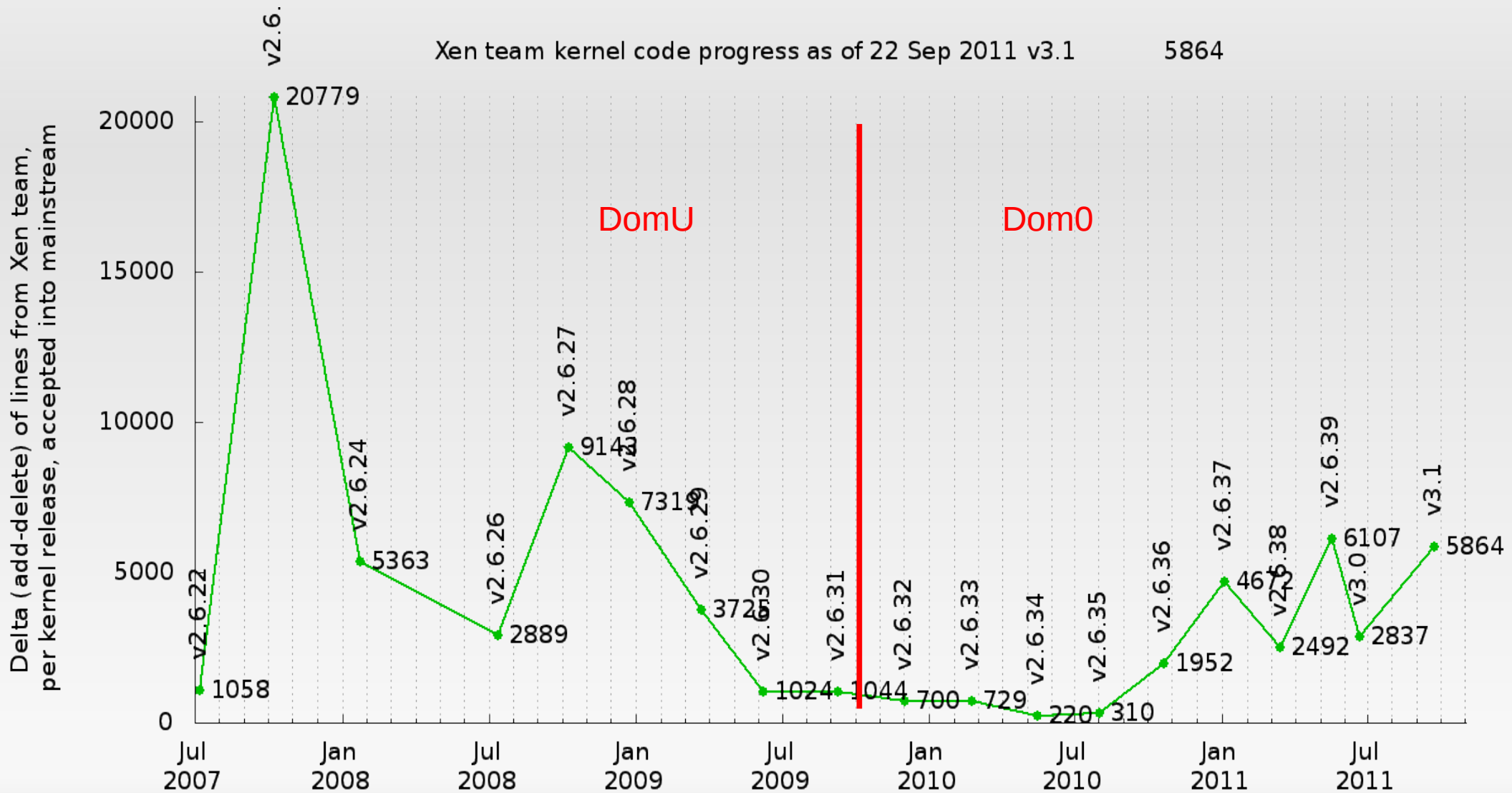
Number of patches with 'xen' in them per kernel release, accepted into mainstream



No we are not. KLOC



Time lines



Executing roadmap

- No more "dom0" branches in either Jeremy or Konrad's git tree! All development is against Linus's kernel.
- Patches are now against stock kernel.

OK, so upstream has stuff.

- So I can just install <favorite distro> and use Xen?
 - Yes! (when distributions start shipping 3.0 kernel)
 - For details visit [XenDom0Kernels](#)
 - Some distros don't enable all backends – please open distro bugzilla's
- Or you can build the v3.0 Linux kernel with Xen 4.1.1 on existing distro.
 - Details, explanations, etc: [XenParavirtOps Wiki](#)

How you can help

- Take [linux-3.0.tar.bz2](#) for a spin with [xen-4.1.1.tar.gz](#)
- Run it first without Xen to establish a baseline
- Then run it under Xen and see what happens
- Please send e-mail to xen-devel with what works and with what does not.
- As always: [XenParavirtOps](#)

Bugs in 3.0

- VGA text support missing. Patch backported
- dom0_mem=max:XG is ignored. We allocate too many pages. Workaround: mem=XG
- 32-bit graphic cards (ATI ES1000) with Xorg do not work. Has to revert two patches..
- ... other which are documented in:
http://wiki.xensource.com/xenwiki/Linux_30_bugs
- Please report on xen-devel so we can reproduce

Ideas for future work

- Merging more of KVM and Xen functionality (example: KVM's and Xen's PCI backend)
- Had been moving PV functionality in HVM (PVonHVM)
 - Drivers, spinlocks, timers, console
- Do the inverse: HVM → PV functionality
 - Future: Page table manipulation (use hardware assisted paging for PV)
- Seperate device driver domains:
 - Dom0 is just a "control" domain with XenStore/toolstack

QA