

The Ubuntu Kernel



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ubuntu

Agenda



- What this talk is not...
- Kernel Team Overview
- Kernel Team Responsibilities
- Process/Procedure
- Whats Different in the Ubuntu Kernel
- Whats new for Karmic Koala
- Q & A

What this talk is not...



- A gripe session about your favorite bug
- A debate over upstream policy or technical decisions
- A distro bashing session

Why this talk?



Transparency

Kernel Team



Kernel Team

Kernel Team



- Made up of 3 distinct parts
 - Canonical Paid Employees working on the Ubuntu Platform (9)
 - Canonical Paid Employees working on Partner Contract work (8)
 - Community Contributors

Canonical Employees



- Canonical Kernel Team consists of two sub-teams:
 - Platform
 - Works on the mainline Ubuntu distro
 - Enables reference platforms & devices
 - Hardware Enablement
 - Enables device specific enablement
 - Mostly contract work for partners, OEMs & ODMs
- Located globally across 7 countries (Finland, US, UK, Germany, Taiwan, China, Australia)

Kernel Team - Community



- Community consists of:
 - Upstream Developers
 - Partners & Vendors
 - Volunteers
 - Developers
 - Testers
 - Bug Handlers
 - Documentation

Responsibilities



Kernel Team Responsibilities

Responsibilities

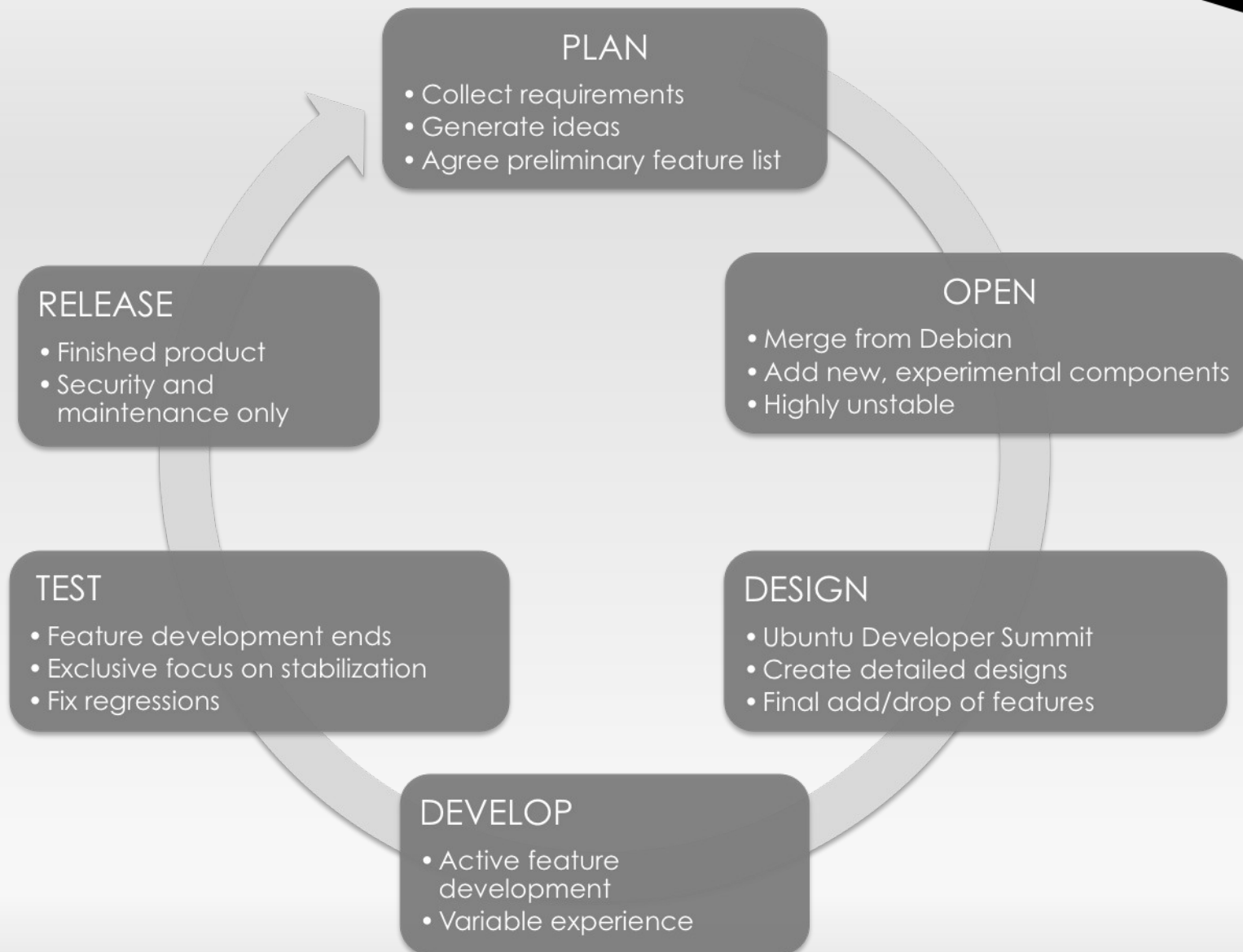


- Develop in an open model, in collaboration with community and upstream.
- Enable a wide range of hardware
- Maintenance of the Linux Kernel for Ubuntu on supported architectures
- Development standards & collaborative development support for the Ubuntu kernel tree
- Care and feeding of: Kernel git tree, Ubuntu kernel-team mailing list, Bug Policies, Documentation
- Automated Vanilla Linux Kernel Builds and packaging
- Selection of the Linux Kernel Version for Ubuntu Releases
- Serve as the interface to the Linux Kernel Upstream
- Conduct weekly public Ubuntu Kernel Team IRC meetings
- Ubuntu Kernel Roadmaps for new releases
- Develop & conduct Kernel tracks at the Ubuntu Developer Summit (UDS)



Kernel Development

Development Lifecycle



Development Schedule



Nov	Dec	Jan	Feb	Mar	Apr		
A1	A2	A3	A4	A5	A6	Beta	Release
8.10	UDS		Sprint	Feature Freeze		9.04	
Planning	Designing	Development		Stabilization			



- Kernel Bug Handling
- Hardware DB workshop
- Kernel Config Review
- Kernel Mode Setting
- Newer Kernel on LTS
- Review of non-upstreamed code
- Kernel SRU Policy Review
- Android Kernel Components
- Kernel Decision Session
- Sponsoring /staging drivers
- SSD Performance
- Suspend Resume
- Wifi Improvements

Kernel Team Communications



- IRC – Freenode #ubuntu-kernel
- Mailing List – kernel-team@lists.ubuntu.com
- Weekly IRC Team Meeting: 1700 UTC on Tuesdays on FreeNode in #ubuntu-meeting

Kernel Differences



Kernel Differences

Ubuntu Kernel Differences



- Very small delta from Linus' tree
- Differences are referred to as “Sauce” patches.
- Differences are in the following areas:
 - Distro integration patches
 - Support for live cd filesystems (aufs)
 - Differentiated System Description Table (DSDT)
 - Limited backports of newer upstream drivers or patches for problematic hardware (linux-next)
 - Security: AppArmor
- All changes from mainline can be found in the Ubuntu Kernel Tree under the **/ubuntu** directory



Kernel Team Policies

Kernel Team Policies



- What goes into Stable Release Updates (SRU)?
 - Long Term Support (LTS) Releases:
 - Hardware Enablement
 - Critical Bug & Security Fixes
 - Non LTS Releases:
 - Critical Bug Fixes
 - Security Fixes
- SRUs release schedule is quarterly except security with is asynchronous

Kernel Team Policies



- Operate as close as possible to upstream
 - Mailing list operation
 - Patch review
 - Patch submission

Kernel Packages



Kernel Packages

Kernel Packages



- Ubuntu Released Kernels
 - generic & server
 - <= Hardy: x86, x86_64, PPC, SPARC, HPPA, IA64
 - Intrepid: x86, x86_64
 - Jaunty: x86, x86_64, ARM (imx51, ixp4xx, versatile)
 - Karmic: x86, x86_64, ARM (imx51, versatile)
- Upstream Mainline Builds
 - No Sauce patches
 - Ubuntu Configs
 - No supporting packages (LBM, LUM, LRM)

Kernel Packages



- Daily Tip
 - Daily build of Linus' tree
 - No Sauce patches
 - Ubuntu Configs
 - AKA: crack of the day (c-o-d)
 - No supporting packages (LBM, LUM, LRM)

L?M – Status



- Linux Restricted Modules (LRM) have gone away as of Karmic
 - Drivers in LRM are now DKMS packages
 - fglrx
 - nvidia
 - wl

Whats in Karmic



Whats in Karmic

Whats in Karmic...



- 2.6.31 Kernel
- KMS default
- Grub2
- Ext4 default
- Removal of AUFS
- AppArmor upstream in .31 merge window
- Android kernel support
- Better wifi support
- Focus on suspend/resume
- Auto tuning of SSD media (kernel & installer)



Questions?