



How is the Fedora kernel different? *Or is it not?*

Presented by:

Levente Kurusa

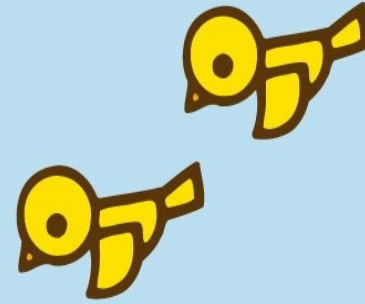
Software Engineering Intern

Red Hat

08/06/2014 Prague, Flock 2014



Topics





Topics

1 Introduction

2 Extra patches

3 Configuration

Introduction

fedora ™



Disclaimer

1 These don't make a distribution better than an other one.

2 No, really.

3 It is just an overview.



What is this not

- # 1 A list of differences as output by the tool diff.
- # 2 A list of ALL differences.
- # 3 A way to determine who is better



Distributions

1 Fedora

2 OpenSUSE

3 Ubuntu

4 Arch Linux



Target users

- Arch Linux => tinkers, developers
- Ubuntu => Desktop (and Server)
- Fedora => "Bleeding" users
- OpenSUSE => "Safely bleeding" users

Extra patches



Arch Linux

1 (*EFI PE/COFF stub extension*)

2 kernel message verbosity



1 ACPI quirks for various devices

2 SysRQ for disabling SecureBoot

3 DRM fixes



OpenSUSE

1 RichACL!

Rich set of extra ACLs. (ext4)

2 OverlayFS

Combines two filesystems

3 Xen and Apparmor patches

Configurations



- # 1 SELinux (MAC)
- # 2 AppArmor (Path-based)
- # 3 TOMOYO (MAC)
- # 4 Smack (Path-based)



Memory allocator

This hands out memory chunks.

Possible choices:

1 SLAB *(legacy)*

2 SLUB



Differences

Fedora: SLUB

OpenSUSE: SLAB

Arch Linux: SLUB

Ubuntu: SLUB

**SLAB has been here for a longer time,
SLUB is generally accepted as the better
choice**



Schedulers

Linux ships the following:

1 SCHED_FIFO

2 SCHED_BATCH

3 SCHED_IDLE

4 SCHED_OTHER (=> CFS)

5 SCHED_RR



Sched frequency

OpenSUSE:	HZ_1000
Ubuntu:	HZ_250
Fedora:	HZ_1000
Arch Linux:	HZ_300



Kernel preemption

Allows preemption (scheduling) in kernel space.

1 PREEMPT_NONE

2 PREEMPT_VOLUNTARY

3 PREEMPT



Differences

OpenSUSE: Full kernel preemption

Fedora: Voluntary!

Arch Linux: Full kernel preemption

Ubuntu: Voluntary!



Controls the CPU's frequency

- # 1 Performance
- # 2 Userspace
- # 3 Powersave
- # 4 Conservative





Default governor

Fedora:	ONDEMAND
OpenSUSE:	ONDEMAND
Ubuntu:	PERFORMANCE
Arch Linux:	ONDEMAND



Why configuration sucks?

Yes, this is a pet peeve of mine. Our configuration phase is absolutely **the** single worst part of the kernel, [...]

Christ, even **I** find our configuration process tedious. I can only imagine how many casual users we scare away.

This cavalier attitude about asking people idiotic questions **MUST STOP**. Seriously. This is not some "small harmless bug". This mindset of crazy questions is a major issue!

– Linus Torvalds

Questions?

Levente Kurusa

 <lkurusa@redhat.com> <levex@linux.com>

 @ilevex

 +LeventeKurusa

 <http://ilevex.eu/>

Have a wonderful Flock 2014!