

Backporting Linux mainline drivers

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Problem

- make Linux driver from recent Linux kernel versions (e.g. 3.19) work on older Linux kernels (e.g. 3.0)
- hardware which is only supported in recent Linux kernel versions
- board support package with an old kernel
- enterprise Linux distributions

Linux drivers backports project

- compat-wireless and compat-drivers named before
- automatically generate tar with drivers compatible with kernel 3.0 to 3.19
- contains about 700 kernel modules
 - Wireless LAN, ieee802.15.4, NFC, Bluetooth, Media, WWAN and some Ethernet drivers
 - new drivers and subsystems can be added
- support for kernel versions back to 3.0
 - some drivers need a more recent kernel version

using Linux backports tar

- we ship one tar with all drivers from a specific Linux kernel version, which builds against kernel 3.0 to 3.19
 - we generate tars based on latests rc-X kernels from Linus, some Linux stable kernels and Linux-next kernel
- go to <http://drvbp1.linux-foundation.org/~mcgrof/rel-html/backports/>
- download the version with the version number you want the drivers from
- run `make menuconfig` or
- run `make defconfig-*` (see `make defconfig-help`)
- run `make` and `make install`

generating Linux backports tar

- generation based on linux-next
 - fetch backports git from
`git://git.kernel.org/pub/scm/linux/kernel/git/backports/backports.git`
 - fetch linux-next git from
`git://git.kernel.org/pub/scm/linux/kernel/git/next/linux-next.git`
 - run
`./gentree.py /patch/to/linux-next/ /patch/to/result/`

- make it easy to take new driver code from a recent Linux kernel version
 - driver code gets copied from Linux kernel and then patched
 - semantic patches (Coccinelle)
 - normal patches
 - header files maintained by backports project
 - backports alters the include hierarchy
 - new header files are added
 - new stuff is added to existing header files
 - backport-include/linux/kernel.h
 - `#include_next <linux/kernel.h>`
 - C-Code for backports layer

final thoughts

- upstream your code
- if you can not use a recent upstream kernel, use backports and get recent upstream drivers
- if you are a driver developer, upstream your code and use backport to provide your costumers with a recent mainline driver for legacy kernel versions

Questions?

- Web: `https://backports.wiki.kernel.org`
- irc: `#kernel-backports@irc.freenode.net`
- Q & A