All types of wireless in Linux are terrible and why the vendors should feel bad

Linux Plumbers Conf 2022
IoTs a 4-Letter Word Mini Conf

September 2022
Dublin, Ireland

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Who Am I?

Peter Robinson
Linux user since 1996
Arm Linux since ~ 2010
Red Hatter since 2012
Red Hat lead of Device Edge and IoT since 2016
Why am I talking about Wireless

Maintainer of linux-firmware in Fedora

Maintainer of aarch64 kernel in Fedora

Working on numerous Edge and IoT devices

Enabling 100s of Arm / Edge / IoT devices with upstream Linux / generic distros
What is this talk?

Not a rant

A discussion

The Linux wireless experience is not pleasant!
The “main” wireless vendors/drivers

iwlwifi - Intel
brcmfmac - Broadcom/Infineon(Cypress)/Synaptics
mwifiex - Marvell/NXP
rtlXXXX - Realtek
athXXk - Qualcomm
mt7xxx - Mediatek
iwlwifi
Used to be the “best wifi for linux”

Bluetooth firmware updates regularly break WiFi

“But it’s fixed in -next”

Err, but it’s rc1 so it won’t be fixed in stable releases for ~ 6 months?!?!?

Regularly stop supporting older devices for CVEs
The “ménage à trois” of WiFi
AKA the Good, the Bad and the Ugly!
Broadcom sold to Cypress, then again to Synaptics
Good: Cypress updated firmware regularly, now part of Infineon they’ve gone quiet.
Bad: Broadcom “every time we update firmware we need to speak to legal”
Ugly: Synaptics “We don’t sell to Linux vendors so we don’t have to support firmware on Linux”
Terrible: Bluetooth!!
mwifiex

Old HW support only

Sold the IP to NXP but Marvell is still producing new IP

Forks of similar but not the same NXP modules not supported upstream

Similar to the prior trio of HW IP
rtlwifi

More hardware, more drivers tossed into staging

Newer rtw88/89 improving but only PCI

Still no firmware for a lot of the modules

No drivers, not even in staging for a lot of SDIO

Firmware regularly regresses stable kernels
athXX and mt7xxx and others

Firmware regularly regresses stable kernels

Firmware regularly just crashes for things like WPA3, 5Ghz, if you look at them the wrong way
How do we fix these?

How do we fix issues with vendors?

How do we encourage them to care about general Linux users for stability and vulnerabilities?

How do we remove the terrible “Stockholm syndrome” with Linux wireless?