

Regarding section 46 of 15-170 and the proposal to expand the scope of the SDR-related requirements:

I personally have used a variety of open-source 3rd-party firmwares (OpenWrt, Tomato, and DD-WRT) on my home wireless routers over the years because they provide more capabilities and greater security than the firmware that came pre-installed.

While I appreciate the FCC's role as a steward of the public's spectrum, preventing consumers from using these open-source firmwares would extend the security disaster we are currently living through with these devices. The firmware that comes installed on home wireless routers is almost always out-of-date and insecure, and there is never an upgrade channel to fix these issues. The open-source firmwares have thrived because they have dedicated teams of volunteer experts who patch security holes and bugs. This process happens in the open where anybody can inspect their work, unlike the manufacturers' firmware. The best manufacturers' firmware, judged on security and stability, are based on 3rd party open-source firmware.

Another consideration is that not allowing open-source firmwares means that end users can't be certain of what's running on their devices. Given that the NSA has previously intercepted and modified new routers en route to users (<http://arstechnica.com/tech-policy/2014/05/photos-of-an-nsa-upgrade-factory-show-cisco-router-getting-implant/>), users need to be able to install their own firmware to avoid being (illegally) surveilled by any number of bad actors. Just as the NSA have modified devices for their purposes, we should expect that Chinese authorities have modified devices built on their soil before shipping them to us here in USA. Do you really want to mandate that American consumers cannot protect themselves from the spy agencies of the world? And where do we draw the line between foreign spies and criminals?

Not being able to install 3rd party firmware on most/all newer devices will make setting up my home network far more frustrating the next time I upgrade my hardware. And on a broader scale, it'll stifle competition—upstart manufacturers will have trouble selling their solutions because businesses won't want to migrate to new software. If OpenWrt eventually becomes defunct because no new devices support it, then the situation will be even worse, because new manufacturers won't have a reference point to base their firmwares off of. So these new regulations are actually very anti-competitive given the place open-source firmwares like OpenWrt play in the market.

The internet and computing revolution has succeeded to the degree it has because of open-source. Linux exists, so every operating system vendor does not need to reimplement a kernel from scratch. They are freed to focus on solving new problems, and if they have a novel solution to something kernel-related, they can share it with the world through Linux. Likewise, the 3rd-party wireless router firmwares serve a similar purpose. Innovation in this area will grind to a halt if vendors have to reimplement the firmware from scratch and not share improvements with each other. The open-source firmwares provide a common workspace so that we can stop reinventing the wheel and continue solving new problems.

Allowing end-users to install open-source firmwares is really important. Please don't broaden the restrictions on custom firmwares, and please consider reversing existing restrictions.

Regards,
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