GRUB2 license issues

GRUB mini-summit 2020

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Discuss problems that current GRUB2 license may cause to embedded firmware market

- Current GRUB2 license effectively limits its adoption in various applications
- Limiting usage of GRUB2 may cause decrease in contributions and community size
- License should be clear and easy to understood if we want to be
 - inclusive for non-English speaking
 - programmers friendly

Disclaimer

- I'm not a lawyer
- This talk should not be about politics, philosophy and religion
- This presentation is not for starting flame war, but to show different perspectives on the topic
- We believe that any copyright holder can apply whatever license he/she wants
- We believe that freedom and ownership have to be associated with responsibility
- We represent position of commercial consulting company working in embedded firmware sector
- There are way better talks about GPLv3 then this ;)

GRUB2 license

- GRUB2 code is licensed using GPLv3 since June 2007
 - previously it was GPLv2
- License was changed probably as part of massive FSF license modification, when new version of GPL was published

- GPL-licenses are focused on end user protection
- GPLv3 simplifies way yo combine GPL and code under other licenses (e.g. Apache v2.0)
- GPLv2 is about code and GPLv3 is about code, but also implications of using it in products
- Stats

GPLv2	339	2968
GPLv3	674	5644
MIT	26	175

- GPLv3 is not as well exercised as GPLv2
 - it exist shorter on market
- Key point of GPLv3 is to protect users against vendor actions which limit user freedom in scope of software modification

https://www.gnu.org/licenses/gpl-3.0.en.html



You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

• GPLv3 can be used in commercial products, but puts some requirements for seller e.g. delivery of source code and tools needed to compile and install

Section 6 of GPLv3

- User Product definition is not clear
- Vendor of User Product may refuse to provide support, warranty or updates if user modified firmware
- Interestingly does not apply to BootROMs which has no update mechanism

Tivoization

- We can't talk about GPLv3 without (anti-)tivoization
- Term was created by Richard Stallman referencing TiVo GNU GPLv2 software delivered on company DVRs
- TiVo by design blocked users from running modified software
- Torvalds commented TiVo case by saying that all he cares is that they contribute back modifications
- Tivoization clause in GPLv3 was limited in further drafts of specification and in final version seem to exclude use case as medical devices or voting machines
- Various Linux maintainers raised their concerns about GPLv3 since it may limit adoption of Free Software in comparison to GPLv2

Embedded firmware market

- In may ways proving given hardware-based application work requires software stack hardware alone is useless
- GPLv3 from beginning was very controversial
- It is hard to explain all nuances and even lawyers are confused
 - just to cover possible mistake they suggest to avoid new license
- Any Embedded Systems manufacturer would have to extend compliance tests to meet GPLv3 update ability requirements
 - what implications of modifying every GPLv3 component in system can cause?
- Conclusion is typically: let's avoid GPLv3
- We are aware of effort that clarifies GPLv3 usage in embedded systems, but our role is to convince customers

Regulatory issues

- Products from below markets are not User Products since those were not created for customer use, but it is worth to discuss what implications use of GPLv3 may cause for those markets
- Automotive
 - easily it may be illegal to ride a car with not-certified software (=update according to GPLv3)
- Military
 - U-Boot is more often used in this environment
- Medical
 - we leveraged BITs in medical robot environment for self-test purposes
 - this code could never go into production even as debug mode, because of GPLv3



Regulatory issues

- Security
 - combining S-CRTM and DRTM give best security results on x86
 - GRUB2 is reference bootloader for TrenchBoot, but it cannot be used in User Product when combining with S-CRTM
- Strict rules about software deliverables and update, which most often are in conflict with GPLv3



Secure/Verified/Measured boot

• TBD

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Violation and enforcement

- Are we sure that any Linux laptop, which use GRUB2 as bootloader comply with GPLv3 requirements?
 - because requirements are hard to fill and maintain for long run most vendors probably does not do that
 - maybe no one tried to enforce requirements related to binary form delivery



Pros and Cons

- Pros
 - users gain lot of rights with GPLv3, if someone will deliver devices with it
 - we can use GPLv3 in read-only memory, of course that has drawbacks
- Cons
 - we should not be surprised about rise of alternative options for booting Linux e.g. CONFIG_EFI_STUB
 - how many developers really want to provide contribution under GPLv3, research seem to indicate that GPLv3 projects are in decline

- It seem to be simple from hardware (physical item) perspective
 - ownership is title typically obtained by purchasing
 - it typically give us right to modify, use and even destroy
- Our systems came with ton of firmware in binary form (binary blobs)
 - systems are typically useless without those binary blobs
 - not matter if we are aware of that we are typically just licensor with right to use under certain conditions
- Some may argue that if you don't have full control over every components of system (including firmware) then you not really own it
- More to that system that you can't own and audit is not trustworthy
- Further despite you not fully own you computer system, real owners of binary blobs takes no responsibility for potential damage their code may cause to you
- In some environments computer system vendor have to take responsibility for their software (e.g. automotive, military, medical)



Change of license

- Feasibility
 - all contributors have to agree, did it happen when moved from GPLv2 to GPLv3?
- In 2019 permissive licenses reached 67% market share
- **MIT** is most popular license with 27% market share
- Of course **MIT** would be revolution to which, probably, most would not agree, but **GPLv2** was way better for embedded firmware market then recent version





class: center, middle, outro

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