



Turris MOX

Another Open Souce HW



Ondřej Filip • 17 Apr 2018 • RIPE-76 • Marseille



Project Turris

- Started 2013 – project of shared cyber defence
- Security research, improve the situation of SOHO routers
- First two generations – Turris 1.0 and Turris 1.1 – (2x1000) mainly in Czech Republic
- Later crowdfunding campaign – Turris Omnia
- Presented at RIPE-68, RIPE-71 and RIPE-74
- Open Source SW and HW



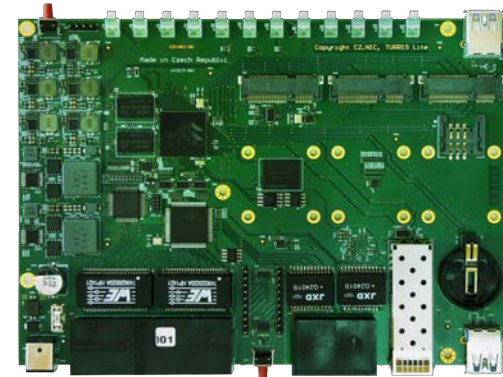
Turris 1.0



Turris 1.1



Turris Omnia



Turris Omnia



- Open source SW & HW, powerful HW
- Turris OS - (based on OpenWRT) – **automated updates** and security fixes
- Secure configuration – crypto chip
- Many security features – honeypots, flow analysis, adaptive firewall, VPNs, ...
- Many other features – IPv6, LXC, ...



Turris Omnia is great, but...



- Complex device – many HW features
- Higher price
- Not all features required
- Not flexible for special projects



- New project – modular router – Turris MOX – and again crowdfunding



Turris MOX

- Modular design – 4 (+3) boards - “router like a sandwich“
- Multiple use – router, AP, NAS, media converter, IoT GW,...



Turris MOX – first batch of boards



Turris MOX – CPU module

- CPU – Marvell Armada 3720@1.2Ghz, dual core, Cortex-A53 ARMv8
- Memory: 512/1024 MB
- USB3, 2x eth (1x RJ45, 1x 2.5Gb - bus), SDIO (WiFi), 1x PCIe - bus, microSD slot
- CPU module power consumption – 2-3W
- Full 1Gbps through-put
- PoE ready



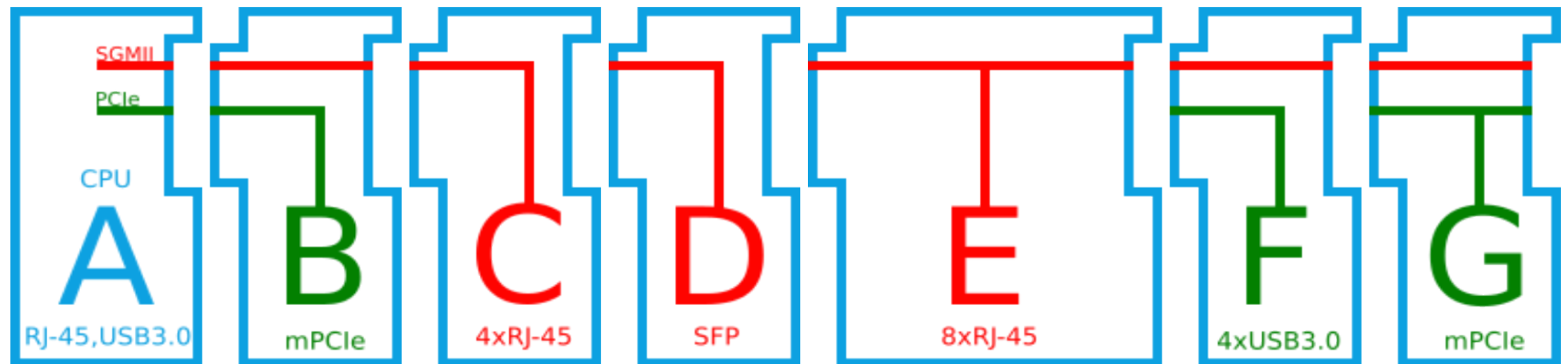
Turris MOX – later in the campaign

- Communication with supporters
 - **8x Ethernet** module (double size) – can be added multiple times, compatible with SPF and 4x Ethernet module
 - **4x USB3** module – partnership with Nextcloud – easy RAID and Nextcloud setup
 - **miniPCle** pass-through – compatible with simple miniPCle and 4xUSB
- MOX configurator

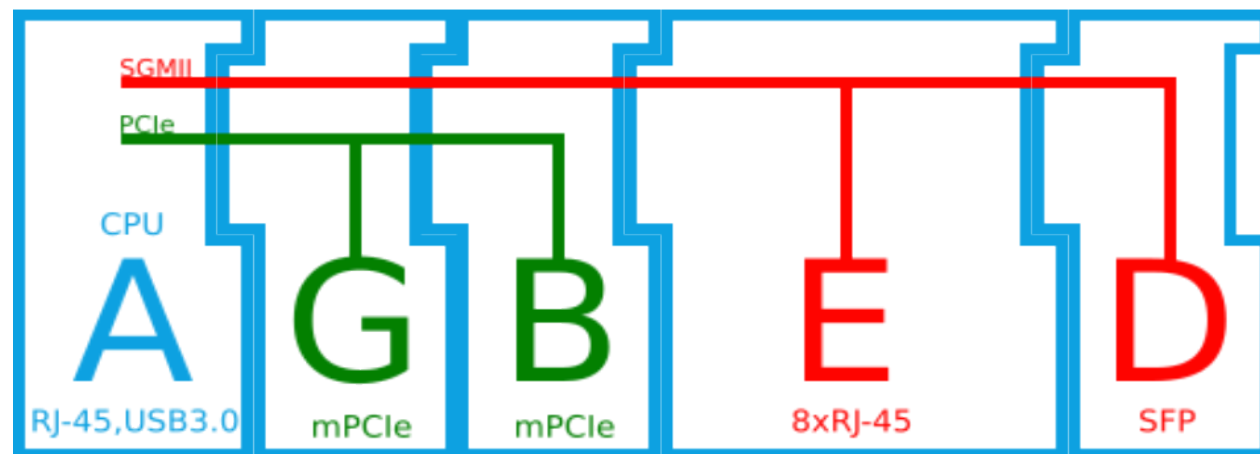
- <https://mox-configurator.turris.cz/>

Turris MOX configurator

Modules



Result



Overview

RJ-45	9x
SFP	1x
mPCIe	2x
USB 3.0	1x



Software challenges

- Support of common linux distributions
- OpenWRT upstreaming – modular configuration – number of combination
- Secure setup – LAN/WAN problem
- Diskless boot & slave APs



**THANK
YOU!**



Ondřej Filip

<https://mox.turris.cz/en/>

