Freeing networks where we need freedom most

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Kullan, araştır, paylaş, geliştir!

Özgür Yazılım Derneği

Introduction

Turkey, is a transcontinental country located between Asia and Europe. Asian and European parts of Turkey are split by Bosphorus and Dardanelles, and Turkey is bordered by Greece and Bulgaria to its northwest, the Black Sea to its north, Georgia to its northeast, Armenia, the Azerbaijani exclave of Nakhchivan and Iran to its east, Iraq and Syria to its southeast, the Mediterranean Sea to its south, and the Aegean Sea to its west.
The largest city of Turkey is *Istanbul*, and the capital is *Ankara*.

Who are we?

We are a group of people who found common ground around hacker culture. Some of us are tech professionals but for most of us, computers are just an amazement.

We aim to carry Free Software to wider adoption and fight against freedom hostile social structure starting with computing freedom.

Who are we?

Figure: Hidden message in FSF 35th anniversary video but nobody had decoded `u.oyd.org.tr/tc35fsf`

Every kind of profession and interest can be found among us.

- Some of us are amateur radio enthusiast
- Some of us liked the smell of solder when they were child.
- Some find roots of computational injustice in their own working fields

Who we are not?

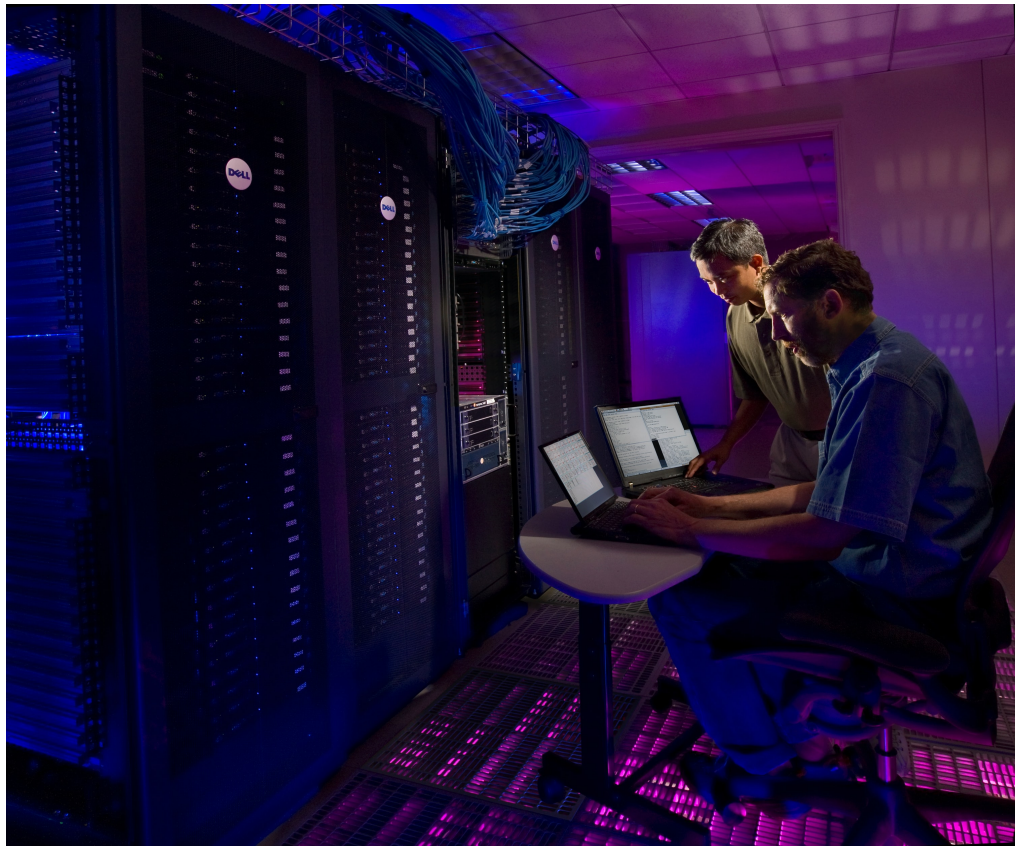


Figure: sysadmins/netadmins

- Not network specialists
- Not RF engineers
- Not heavily organized
- Do not have money to spill around

What we have is a set of personal tools and enough resources to muster for an ambitious project and will to make it.

A wireless spectre is haunting Istanbul

Figure: Laika, the very first node of Freifunk Istanbul

Around hacker communities in Turkey, mesh networking is almost an urban myth.

- Everybody wants it,
- Everybody thinks it is possible,
- Everybody has an idea,

But nobody have tried it even remotely.

Why?

Figure: Deciding if antennas will face up or down.

- Procrastinating?
- Expenses?
- Lack of community?
- Perhaps talk is cheap?

A major obstacle

Figure: Actual photo of Istanbul surveillance center monitoring thousands of cameras

- Turkey is politically evolving in technological spheres. This path has social and cultural ramifications.
- Turkey has one of the most surveilled and censored network in the world.
- Netizens do not feel empowered for a long time. Governing of network is far away from being democratic.

This issue caused by an ongoing trend of controlling the information and to that extend the medium the information is flowing by the state. To fortify that control even the most generic users of The Internet is under risk.

5651 and numbers

Figure: Is it illegal to stick this?

- In simple terms, 5651 or Internet Act – read as Censorship Act – codified in 2007 to regulate right to be forgotten, personal rights protection and regulation of criminal prosecution.
- It is appended several times and became a major weapon to censor anything online even against ECHR ruling.
- Law mandates broadband registration for users and logging of assigned and connected IP addresses up to 2 years. This information can be used without juridical oversight and it is effectively killing anonymity.
- It also forces anyone who share their sub network with Internet access to log and filter.

What it makes is a mess of definitions and bring a lot of impossible and unjust obligations. 5651 is hastily written, poorly planned and adversely executed law which has only central infrastructure and censorship in mind.

More Numbers

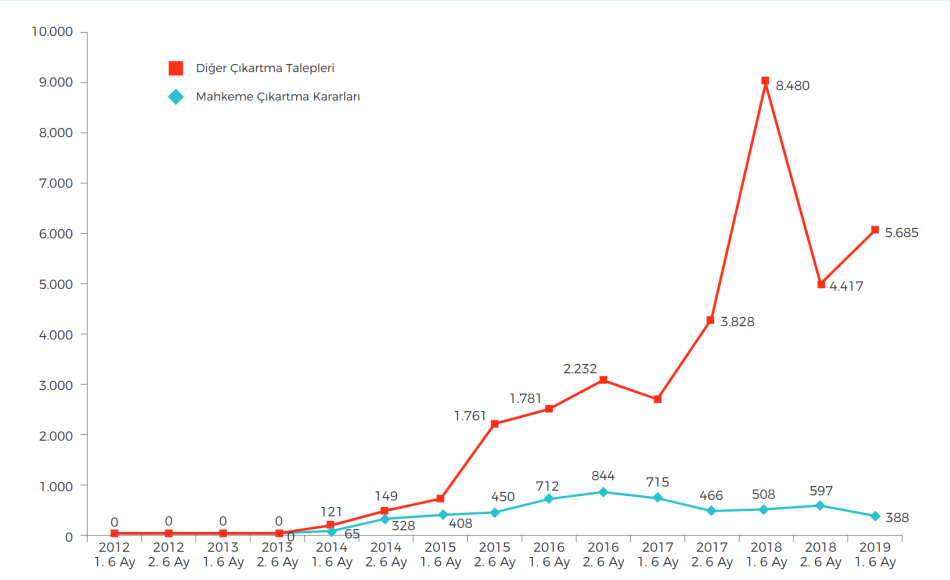


Figure: Twitter block requests

According to Freedom of Expression Association of Turkey currently a lot is banned:

- 450K domain name
- 140K URL
- 42K Tweet

This includes news agencies, political websites/Twitter accounts, LGBTIQ+ related sites etc. These statistics are gathered by probing the connections.

Enter Bylock era

In 2016, Turkey has faced a military coup d'etat attempt. What matters is that attempt had organized through a unique encrypted messaging app. State did not like that.

Afterwards the coup's failure, an IP hunt had begun. Logging all Internet traffic en masse became handy. Hundreds of people have been massively arrested for allegedly pinged Bylock servers by their assigned IP addresses. Prosecution has forgotten basic tech and even arrested people behind NAT's.

What left behind was a veil of fear and fortified acceptance of surveillance as a proof of innocence.

Do not think this is a local problem

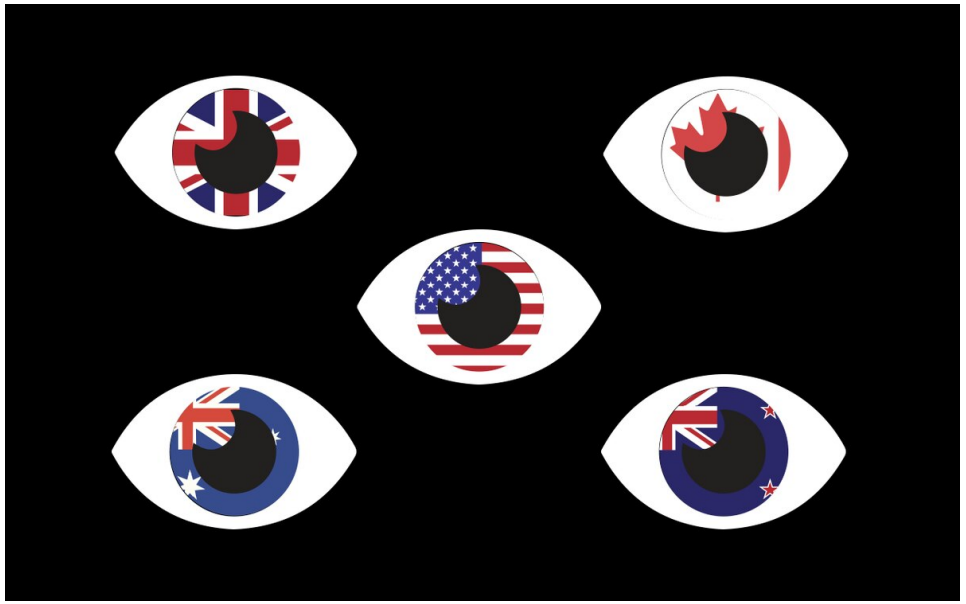


Figure: 5 Eye that watches

You might be thinking this is a problem in a far away country with a silly name.
Let's check:

- Endless pursuit of US Broadband operators to end net neutrality
- Almost relentless digital surveillance ~~**cough NSA ICE cough**~~
- Nationalistic network ideas: China, Russia, Iran, DPRK
- Huge colourful companies sucking up social resources including WWW
- EU try to make a censorbot and single data market

Special thanks to...

This is all possible because we still cannot shake the idea of centralized things

- All early internet technologies were decentralized
- All early democratic institutions were decentralized
- All early human and social connections were decentralized

Perhaps we humans suck at keeping democracies? What we are good at is ingenuity and revolution!

Early FAQ

Figure: We couldn't find any photo to put here

- **Q: Is Starlink going to end this?**
  Nope it is just another central infrastructure from bitcoin buying, astronomy killing, hype creator.
- **Q: X app is so cool why do you hate innovation?**
  X app is cool because it steals from society and fortify the idea of centralization.
- **Centralization is only natural and it is better.**
  Nope, it is not. While some having gigabit connections there are still 56K usage and lack of any connection in this planet. Centralization divides not unite.

Why?

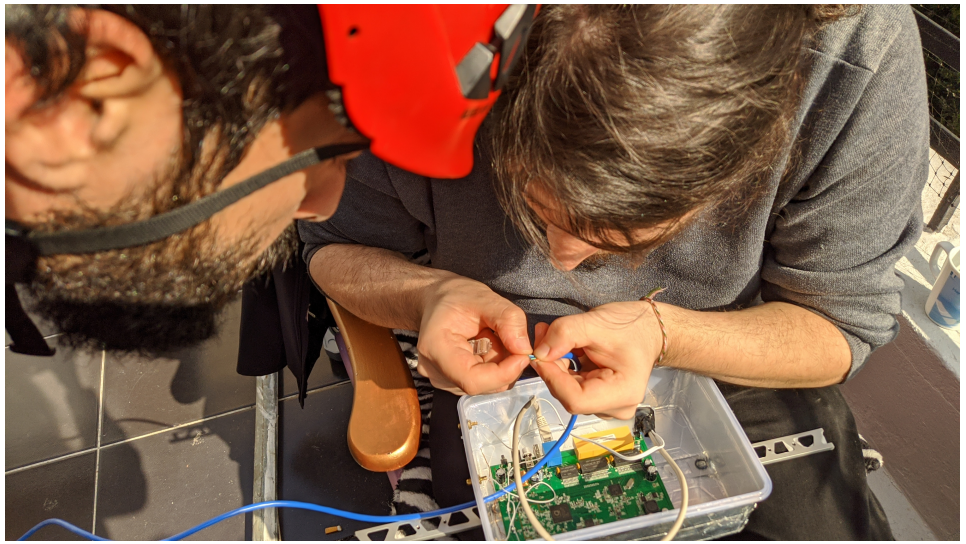


Figure: Orange white, orange, green white, blue ...

Simple answer is, why not?
There are a lot of fundamentally broken things in this reality.

- Sharing and connection is quite human
- Me talking to you should be normal
- Everyone talking to anyone should be normal too

When did we decided anyone but us be the arbiter of our communication?
In a place where power is unquestioned, infrastructure is controlled, information is weaponized no body can stay human for long. We build our mesh network for fun but it will serve a point.

Isn’t it, you know, illegal?

Figure: Illegal?

Yes and no. Law practice feeds on uncertainty but entropy bites you in the order.
Law system of Turkey has hit max entropy. *(Statistical physics kind)*
Input should but does not relate to the outcome.

Legal Shenanigans

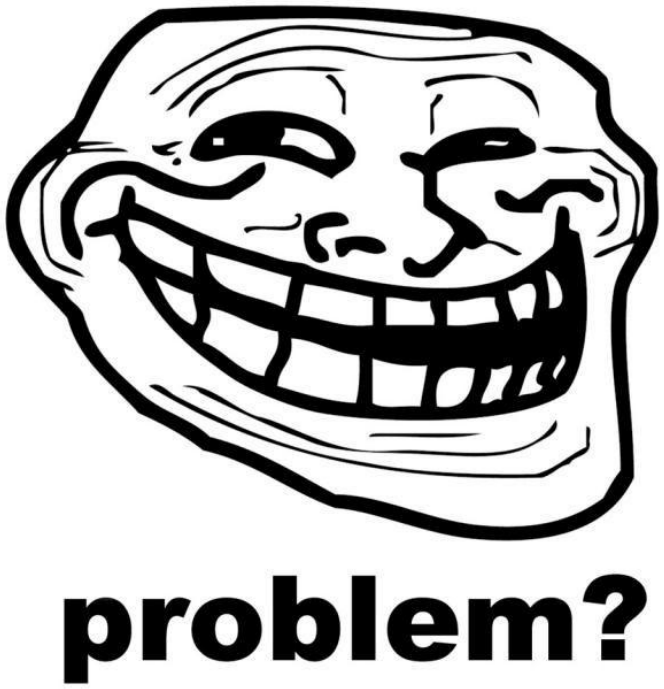


Figure: Problem law?

Law is full of alternative interpretations and holes:

- if you do not officially charge anybody for connection, law do not specify any penalty for this circumstance.
- If our mesh is officially offline and someone decides to supply WAN connection to it, what happens?
- What if we do not connect it to the Internet but keep everything local then what?
- What is the Internet anyway?

Furthermore

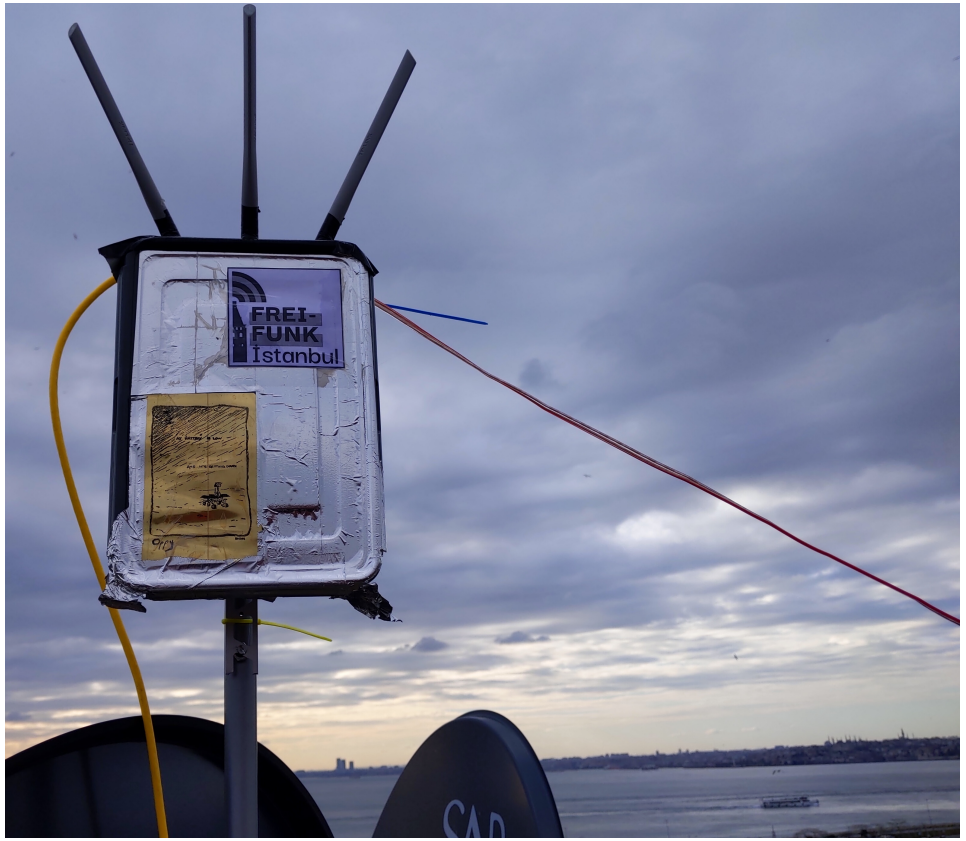


Figure: Oppy: In memory of Opportunity

Any codification which has a short term, short sighted aim misses a lot of things. This is sometimes called loopholes.

But to have a hole one needs to have a loop first. We don't. So we are creating our own loop to see if it will have a hole in it.

There is not much high court decisions about this quite intrusive and wide used law. Any high court ruling relating to wireless networks are positive for our mesh network implementation.

Freifunk Istanbul

Figure: Designed by our member Neslihan Turan

Our main goal is build a pilot network to shed some light around mesh networking myth. Since convincing perhaps hundreds of connection fearing people to setup rather expensive equipment in their houses is tough. So we decided to build ”super nodes” which will connect a wide area and get isolated people involved easily. This requires:

- High rooftops in line of sight
- Secure access, power and network
- Courage and understanding

What have we done?

We did not do much actually.

- Found people who has access to a high roof in our neighbourhood
- Gathered libre firmware capable devices
- Packed them airtight cheaply
- And lots of manual labor

We thank our friends at Freifunk Ulm community who provided us their infrastructure for testing.

What do we aim to do?

Figure: Khalkedon, modern Kadıköy where FF IST's first target

Reduce the entry barrier to the network. So people can test, use and perhaps like the idea of talking each other. Since there will be backbone of interconnected nodes one does only need to setup their router and they will have access to all area. We hope it will promote;

- Proliferation of nodes so backbone will be useless
- Locally served services which do not need The Internet
- Happy people having LAN parties all night long

Precautions

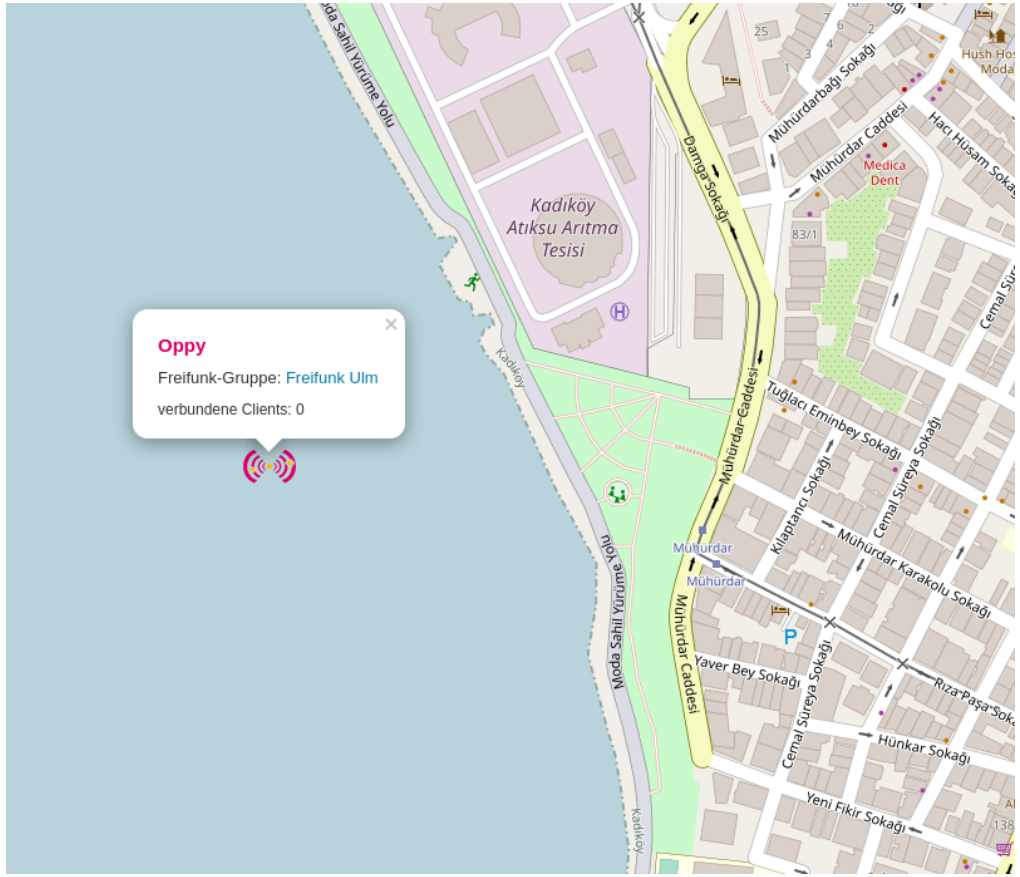
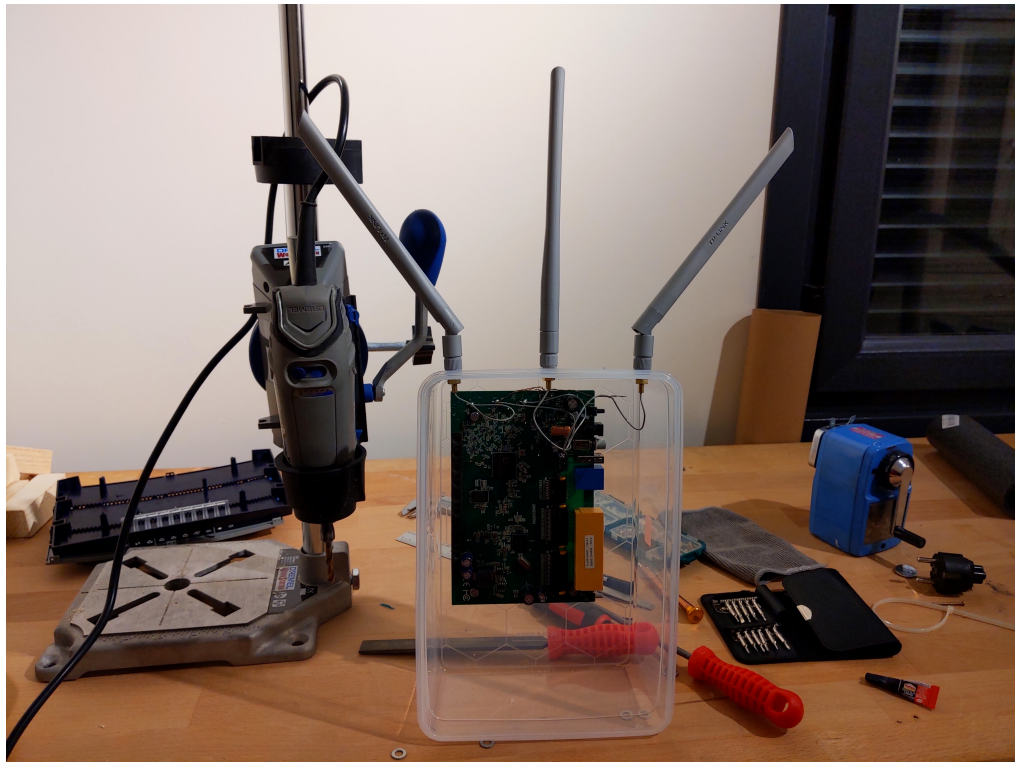


Figure: Oppy is alone waiting for others to join =’(

A legally untested system in such hostile environment require some precautions.

- Like our German fellow had to use VPN against a legal barrier we also have to use a VPN to secure the connection but also we need to keep the operators of nodes anonymous. Since just joining the network might possibly seen illegal. We hope to modify our firmware to simply use Tor. We are not sure what that computationally would means for our cheap hardware yet.
- It is most probably not feasible to hunt down every user of Freifunk but our super-nodes and people who host them might face pressure. At this uncertain moment we just claim the hardware our own and hopefully relieve them from state pressure if it happens.
- We really wished to map the nodes and their connection states but that would be a high risk move. So we position our nodes unrelated spaces but keep them close if one day we have the chance to move them where they belong safely (=

Improvements



Setting up the nodes are rather easy. We do not want to make a very complicated gateway to regular internet. Our aim is to have this network local first. Also Istanbul is under imminent threat of a devastating earthquake and we are not prepared enough. So we wished to have:

- UPS support for at least 72H on super nodes and solar charging
- Street level reach of super nodes in case all other nodes fail
- Low-bandwidth web based local messaging and sharing services

Obstacles

Figure: Bosphorus is wide and crowded.

- Young demography of the pilot area means that there are a lot of people who spent their lives believing one must either pay or ask for permission to do something.
- Low apartment ownership rates mean more people to ask for permission and less desire to invest into infrastructure.
- Lack of access to public infrastructures like central and high buildings. Municipalities are almost state-like when it comes to something unusual.
- İstanbul is HUGE. We do not think reasonably cover even a small part anytime in future.
- Wi-Fi interference is a pain. Especially 2.4 GHz. A lot of old, over powered, excessively used Wi-Fi devices around.
- We do not know any reliable technology to bridge Bosphorus wirelessly. Lasers? Microwave? Guerilla fiber optic cable!!!

Cost

Figure: 79 USD, but it's 25% of the minimum wage in Turkey

Turkey's down spiralling economy makes even the cheapest hardware expensive.

- a spool of Cat6A cable is half of minimum wage
- a second hand capable router is 1/10th of minimum wage
- PoE supporting outdoor routers are 1/4th of minimum wage

Worst, any hardware normally be thrown or given away before is now for sale. This drives the second hand market higher, sometimes illogically identical level to brand new.

Lack of hardware

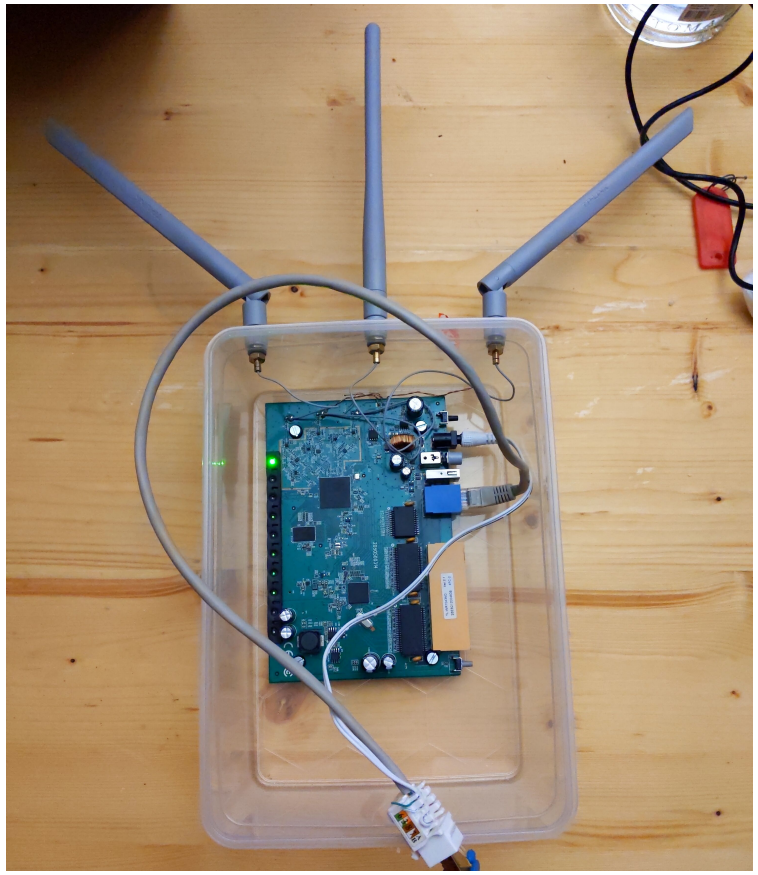


Figure: This was a food box initially

Worst part of everything is lack of hardware. We want to use exclusively libre firmware compatible routers with removable antennas such as TP-Link TL-WR1043ND and TL-WR842ND or Netgear WNDR3800. Turkey is still living DSL age and most households have ADSL/VDSL modem routers which are not supported by OpenWRT/LibreCMC. In order to find hardware, we have to hunt for routers everyday on second-hand websites.

Thank you!

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