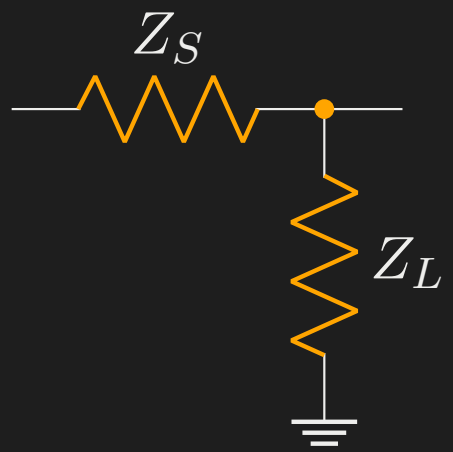
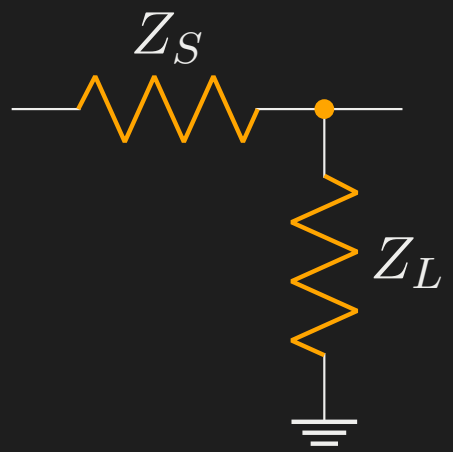


>>> Self Sovereign Communications Infrastructure?

Name: Chandran

Datum: September 29, 2023

>>> Outline



1. Brittle Infrastructure
2. Tradeoffs
3. Message Value and Cost
4. Next Steps?

>>> Hierarchy in the internet?

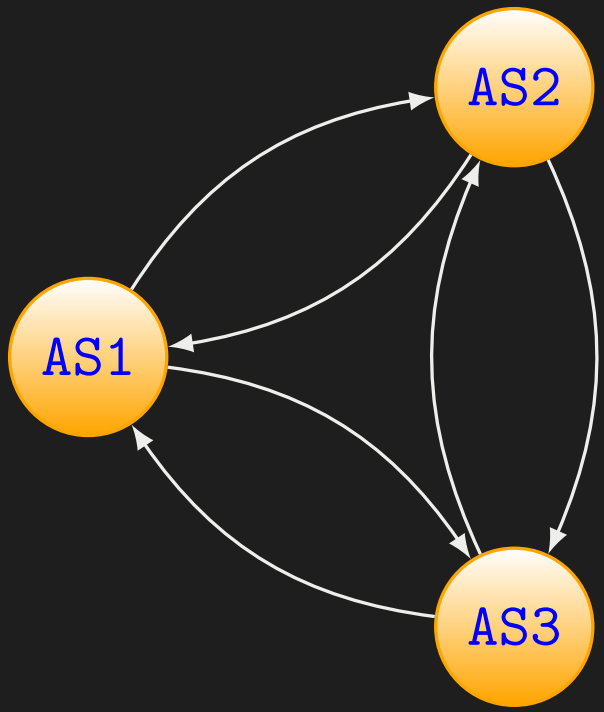
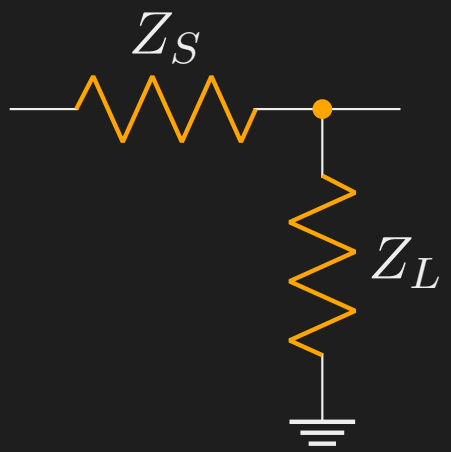


Figure: The internet



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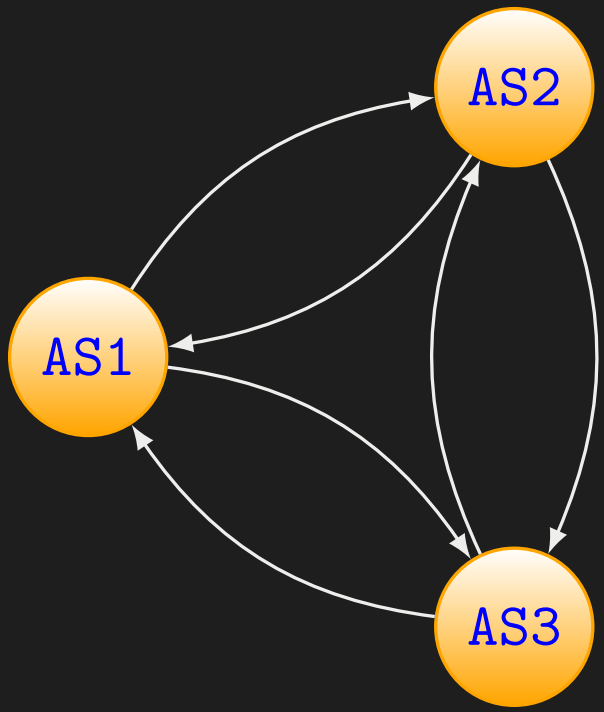


Figure: The internet

Term	Explanation
AS	Autonomous System (AT&T Services, Inc.)
IXP	Internet Exchange Point (DE-CIX)
T1	International ISP (CenturyLink)
T2	Regional ISP (Orange)
CDN	Content Delivery Network (Cloudflare)
CP	Content Provider (Netflix)
T3	Local ISP
P	Pleb

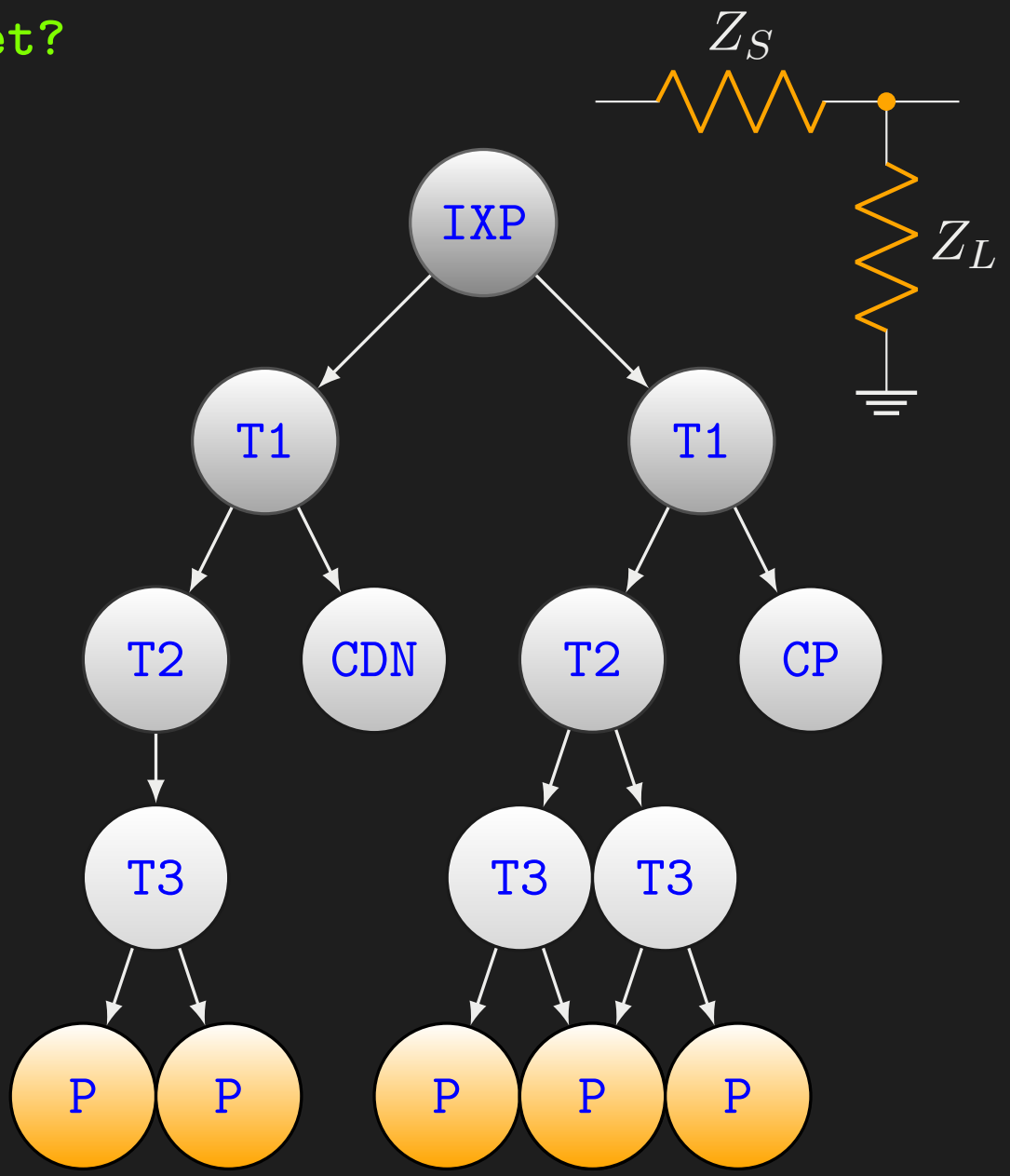
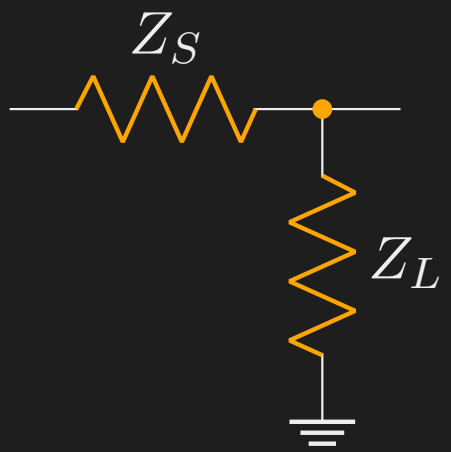


Figure: Also the internet

>>> The tradeoffs that got us here..



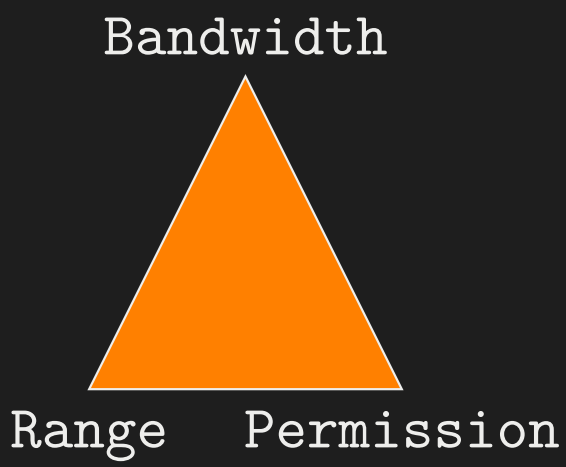


Figure: Maximum two at a time

Table:
Examples (Omni-Directional & encrypted)

Permission	Bandwidth	Range	Example
Yes	Yes	No	WiFi
Yes	No	Yes	LoRa
No	Yes	Yes	Ham Radio

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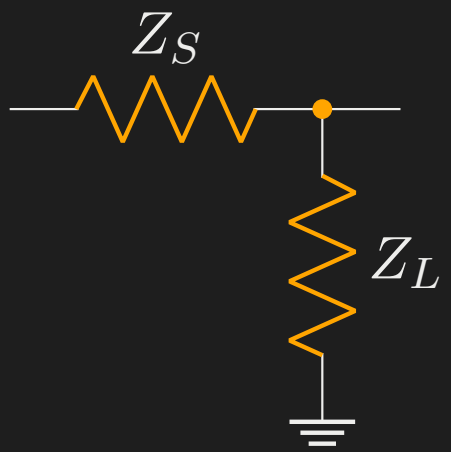

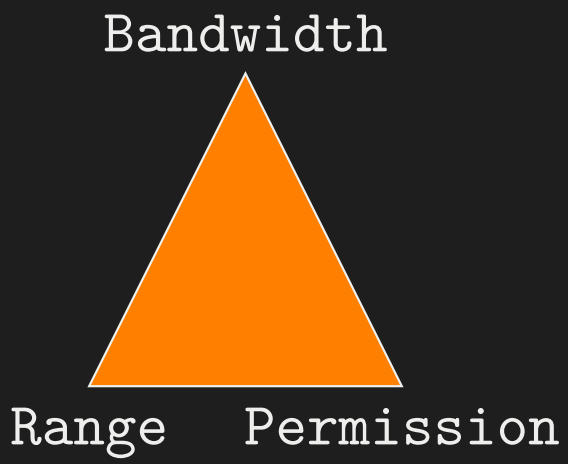

* Why no permission?

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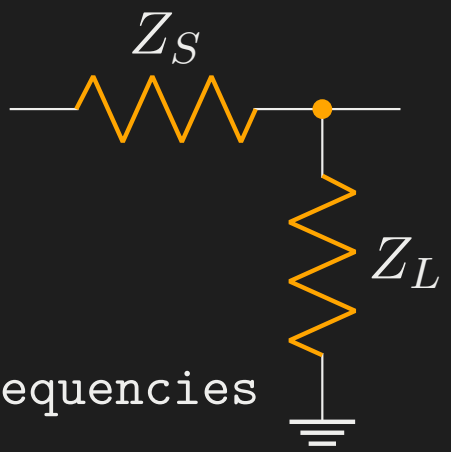

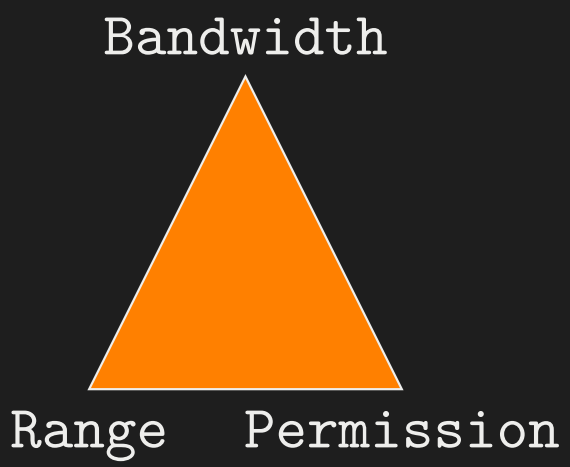

* Why no permission?
  - Yelling on all frequencies

Figure: Maximum two at a time

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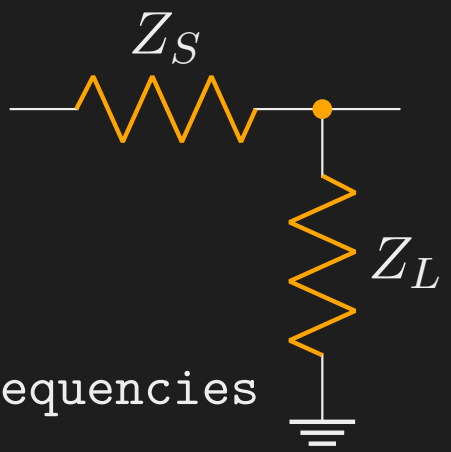

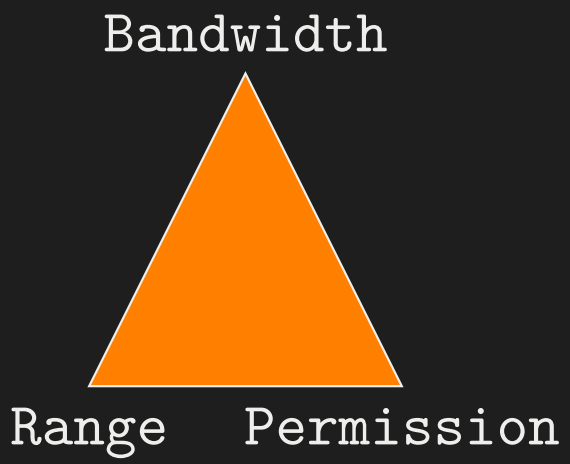

* Why no permission?
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* How do we solve this?

Figure: Maximum two at a time

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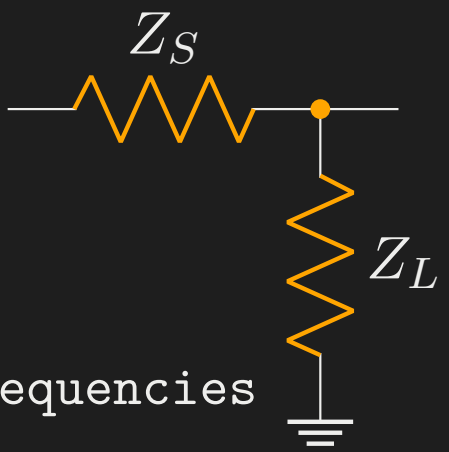

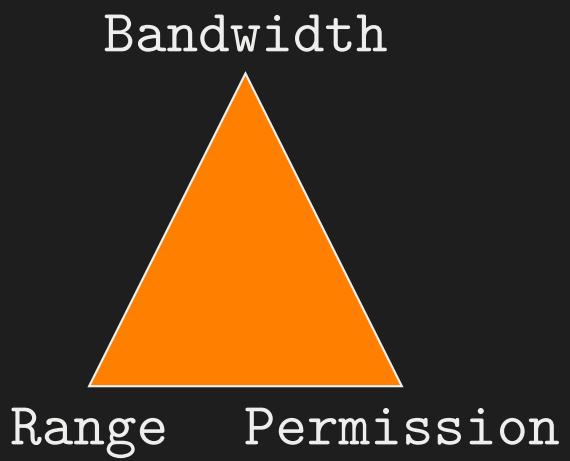

Figure: Maximum two at a time

* Why no permission?
  - Yelling on all frequencies
* How do we solve this?
  - Directional links and cables
* Cost of directional links:
  - How much do you communicate?
  - Cost of link to each peer
  - $\Rightarrow$ Hierarchy with encryption

Table:
Examples (Omni-Directional & encrypted)

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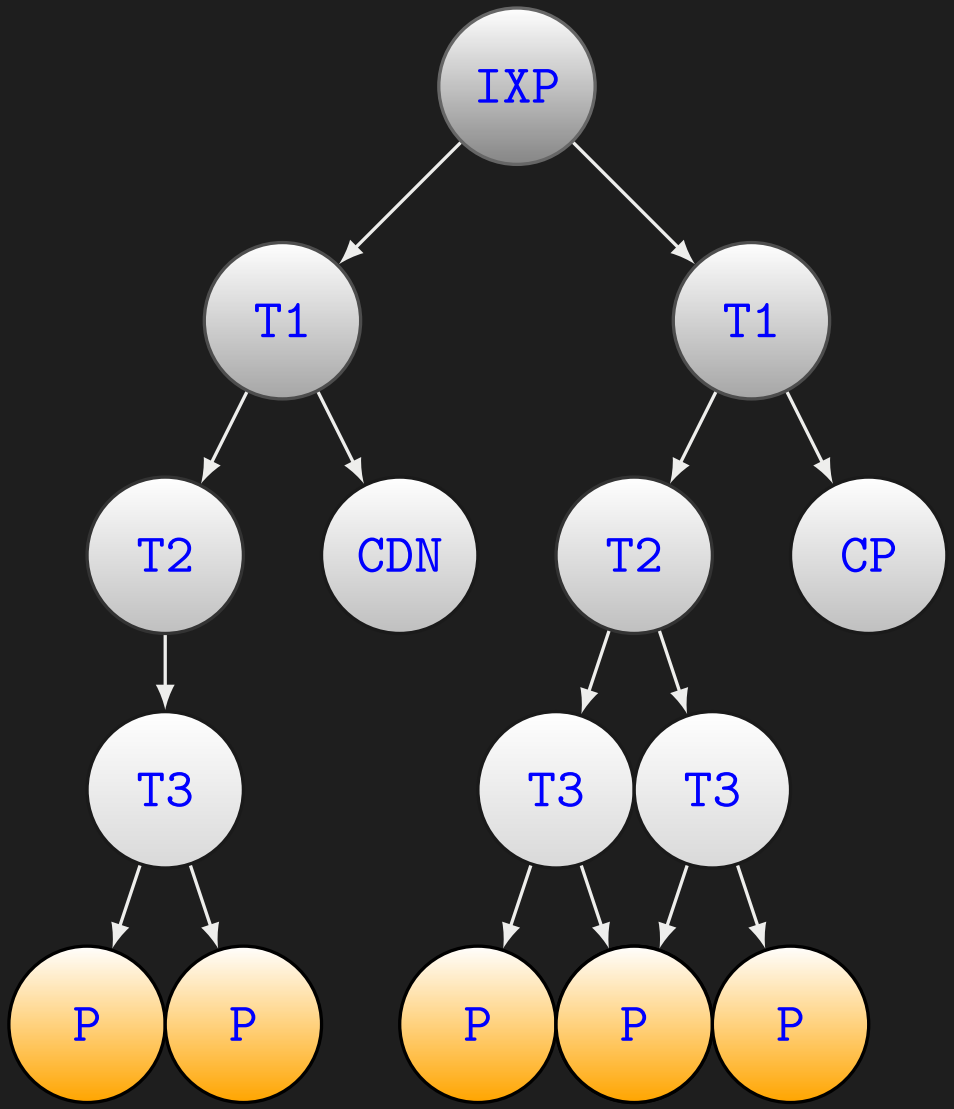
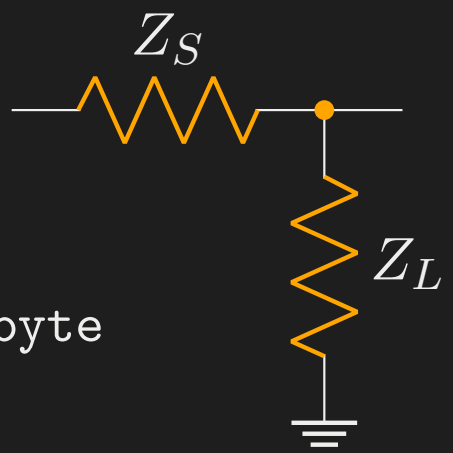
>>> Optimized for Netflix, used for PSBTs

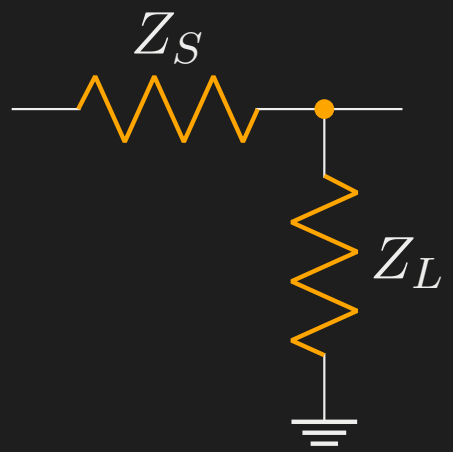




* low value per byte
  - netflix
  - youtube
  - dropbox
* high value per byte
  - radio clock
  - PSBTs, mining nonces, block hashes

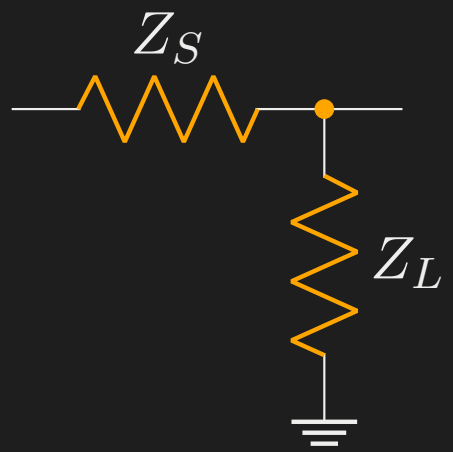
$\Rightarrow$ Plebs can afford their own infrastructure!

>>> What tools do we already have?



* Mesh tooling
  - Router based: WiFi & LAN (BATMAN)
  - ESP32 based: LoRa (meshtastic), WiFi (esp-mdf), Bluetooth (esp-ble-mesh)
* Interesting tools
  - Reticulum (Cross network routing)
  - Silent.link (E-Sim gateway that takes sats)
  - MQTT (Message Queue)
* LOT49
  - Stream sats P2P for routing services

>>> Thank you for your attention!



What do you think is most needed right now?