**Connecting From a Distance**

**Boosting your range**

Wifi usually requires a line of sight and gets attenuated by building or walls or bad weather

* Higher upo you are, the more signals you can receive and send
* Less built up the area, the further the signal will travel
  + But more built-up area helps anonymity

Need to boost signal to work at a distance

* Wi-Fi dongle/chipset with good antenna that works with your OS
* Kali/Debian
  + Atheros
  + Ralink
  + Realtek

**Two Types of Antennas**

Omni-Directional

* Emits signals in all directions
* Lower gain than directional antenna
* Good for when moving as signals are in all directions

Directional

**dBI (Decibels relative to Isotropic radiator)**

A measurement of how well the radiator (antenna) sends the equally strong in all directions (omni-directional)

Or a measurement of how well the antenna can focus the signal in one direction (directional)

* Directional will often have higher gain and range
* Usually bigger than omni-directional though and may draw attention

**How Wi-Fi users can be geo-located**

The point of locating from a distance is to mitigate this

Direction hunting with an antenna

* Moocherhunter, a device like a metal detector that is a real-time on-the-fly geo-location tool that searches for signals

OSWA is how you can test Wi-Fi geolocating yourself

Use 3 or more geographically distant antennas to correlate distance and power together to get a more accurate location

* Signal strength triangulation

NIGHTSTAND hardware

QubesOS or Whonix with network VM/adapter for better isolation and anonymity

Mobile direction finders can be used in vehicles

* These can be called flying dirtboxes

Another mitigation that can be done is physical isolation

* Separate yourself from the antenna and device connecting to hotspot
* So when the antenna or router is finally found, you are not there
* This will require a long-range repeater which connects to router and provides a separate network that we then connect to (just another router)
* Could use OpenWRT on a custom router with an antenna as a repeater if you want to set it up yourself