So, you want to be a Node?

Personal Telco receives many emails from individuals and businesses containing the same question: "What does it take to 'become a node'? I think I want this, but how do I do it?". We're happy you asked -- read on!

These documents are part of a Wiki, a web-page that anyone can edit. If you think you can improve it, please do so! If you still have questions after reading this document, see the PotentialNodeOwnerFaq.

Contents

Have/Get Internet

First things first, Personal Telco does not provide you internet. When you are a node, you are providing internet to others. As such, in order to fulfill this act of generosity, you will need an internet connection with which to be generous.

Cable

In order to stay out of trouble with obnoxious terms of service, you should not use residential class cable internet service. If you are willing to get a business-class service, and specifically get 'this is for a hotspot' in writing, you should be in the clear. Otherwise, look for local DSL-based ISPs, which generally have much more liberal terms-of-service.

DSL

DSL (digital subscriber line) is a technology that uses the old copper wires that have historically provided telephone (voice) service to your house/business. There are a few DSL Internet Service Providers (ISPs) that we can recommend (they have at some point indicated that they are "sharing friendly").

- Speakeasy
    - Website: http://www.speakeasy.net/
- DSL-Only
    - Website: http://www.dsl-only.net/
- Spiretech
    - Website: http://www.spiretech.com/
- Easystreet
    - Website: http://www.easystreet.com/
- Integra (business-only)
    - Website: http://www.integratelecom.com/

Phone Line

In addition to an ISP, you will need to have a phone line to carry the DSL service. You don't necessarily need landline telephone service, but you need the wires to carry the DSL service to your building. Most likely you already know who your phone company is. CenturyLink (formerly Qwest) and Frontier (formerly Verizon) are the local "consumer" phone companies, and have seperate territories. In any one location, you can get service from one or the other, not both:

- CenturyLink
    - Website: http://www.centurylink.com/
- Frontier
    - Website: http://www.frontier.com/

WiMax

In the last few years, another internet service vehicle has appeared in the market, that being WiMax. Clear (and a few others reselling Clear infrastructure) now offers a wireless internet connection at somewhat lower cost. Unless you have a strong signal though, Clear can provide disappointing service. If there are too many subscribers in your area, you might also have problems getting a fast connection. However, we have a number of nodes running off of Clear and they work okay.

Stephouse Networks can also provide fixed-wireless service in some areas. They have been a generous supporter of Personal Telco over the years. They donate the internet connection that serves our Mississippi Avenue network.

3G/4G services *might* be usable, but due to bandwidth caps, this is probably not a viable route for a long-term node.

Wireless Hardware

This used to be more of a problem than it is now. Personal Telco has hardware that we can loan for new Personal Telco nodes. The primary choice is whether you want an outdoor network, or want to start with or stick with an indoor network. We are happy to build indoor networks, but we prefer setting up outdoor networks because they spread the network farther than an indoor network can: wireless signals reach more people unimpeded by walls and ceilings. Depending on the expected size of the network, we have a variety of hardware that might be suitable.

1. The OpenWrt Buyer Guide should help you find a suitable device.
2. See if you want to replace the Antennas on that device.
3. And finaly you may want a **weather-proof outdoor enclosure**: e.g. FreiFunk Outdoor Box

Indoor networks

For indoor networks, these days (late 2013) we are recommending the Buffalo WZR600DHP. In fact, we generally have some of these in stock and can flash our

software on them and get one to you on short notice. The downside is that these cost us money and so we generally ask node hosts to re-imburse our costs (around $70) for them. They are a wonderful improvement to our earlier devices (below) with dual-band radios, with much faster processors and much more memory. There are a few other similar devices that can work, but we have standardized to some degree on these and have software ready to go for them. We can provide one or more of these, on indefinite loan:

- Netgear WGT634U
  - a classic 802.11b/g router, with a WAN port and 4 LAN ports
- Accton MR3201A
  - a single ethernet, 802.11b/g access point

however, these have been becoming less viable as gateway routers, due to gradual increases in the features we are deploying. They can still do reasonable duty as indoor mesh nodes.

If you'd like 802.11n capability, we would recommend a Ubiquiti AirRouter, which is inexpensive (~$39). We would need you to fund these, since we don't have an existing supply.

Outdoor networks

For outdoor networks, we have a supply of equipment salvaged from the old MetroFi network, the aborted municipal wireless network that once covered patches of Portland. MetroFi failed because the company's management was incompetent - their wireless devices, though large, heavy, and sometimes difficult to mount, seem to work reasonably well when deployed densely enough. We have one network so far (2012) of a few of them near Arbor Lodge Park in North Portland, and another network on the way. We'd love to restore this hardware to again serve the public. We might need help with funding the mounting hardware for these.

Four or five years ago, we recommended Soekris-based AccessPoints - $500 per device, complete with radios and antennas. In 2012, there are better cheaper options. These days, we would recommend a Ubiquiti Bullet M2HP (~$80), an 802.11n-capable device that can screw right onto an outdoor antenna. We would need the node host to fund these. However, they work well and are much easier to mount than a MetroFi SkyPilot device -- and less apt to pull your chimney down.

We have a limited supply of Alix 2D13 hardware that can be used for indoor "gateway" devices for outdoor networks. With funding, we can buy more (~$115).

Management Software

The Personal Telco Project develops and deploys its own custom firmware for its networks. This software allows us to manage the networks, to keep track of how heavily the networks are being used, and to identify and block "abusers". This is the primary "value-add" that Personal Telco can provide over self-managed networks.

In our experience, and open wifi networks become more and more rare, open networks will eventually be abused by one or more users. Typically the abuse will be in the form of BitTorrent or similar peer-to-peer software. The "abuser" typically doesn't understand that they are making the network difficult or even impossible for others to use. Our capacity to block them provides a feedback mechanism that helps them realize their activity is rude and inconveniences others. We've found that people are usually quite happy to have access to an open wifi network, and that withdrawing that access is a powerful corrective. Once network abusers learn the error of their ways, they can return to productive co-existence with their neighbors.

Our newer firmware deployments also provide IPv6 connectivity, a "splash page", and a "virtual mesh network" of participating Personal Telco nodes. The splash page provides a way of identifying the host of the network, so visitors on your node know who to thank!

[CategoryDocumentation]

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