



# Build Your Own Internet

1st edition

# **BYOI: the zine**

**1<sup>st</sup> edition**

produced by  
the People's Open Network  
and  
**BuildYourOwnInter.net**

**CC-BY-SA 4.0**

# TABLE OF CONTENTS

- ☛ Introduction
- ☛ How to Crimp Ethernet Cable...
- ☛ Public Relations: a step-by-step guide
- ☛ Three Flavors of Nodes
- ☛ Mesh the Farm
- ☛ BYOI: 4 simple steps

**Today, the internet** is controlled by a handful of corporate internet service providers (ISPs). Companies like Comcast, AT&T, and Verizon actively lobbied, and succeeded, in unraveling net neutrality protections in the United States — rules that were critical for protecting the free and open internet. These are the same companies that are failing to provide affordable internet access to low-income communities across the Bay Area, preventing already disenfranchised peoples from participating in the lucrative tech economy.

Meanwhile, digital platform monopolies such as Google and Facebook, while supporters of net neutrality, have a business model based upon surveilling and collecting massive amounts of personal data on all of their users. These companies are far from transparent about what they are collecting and how they are using the information.

We need to build more resilient alternatives. We need to build an internet made up of local networks that are fundamentally open, democratic, and decentralized — networks that center around the needs and rights of the communities that rely on them.

The People's Open Network is one such network, providing a liberating, people-powered alternative to the top-down, corporate status quo. It is a mesh network, meaning that the more who join the network, the more resilient it becomes. Even if one home drops out, the network will route around the damage — maintaining connections and enabling communication even if the Big Internet goes down due to an earthquake or censorship. We are not alone. Around the world, there are mesh networks that are thriving — from Catalonia to Detroit, Argentina to South Africa.

Our closely affiliated partner, Sudo Mesh, has developed free and open source firmware that enables people to mesh their connections through

their wifi routers and share their internet bandwidth with others. The hardware to enable this (i.e. home routers and roof-mounted antennae) has become more affordable than ever, costing between \$20-\$80 per device.

We have the technology. Now it's up to us to connect with other members of the East Bay community to build this network. We need to talk to our neighbors, as well as local organizations and businesses, about the potential of community networks, like People's Open, and convince them to become a node on the network by setting up a router in their home or place of work.

### This is how we build our own internet...

By empowering people with the knowledge, tools, and ideas so they can build their own.

peopleopen.net  
Guifi      wlan slovenja      Pitt Mesh  
freifunk  
Tomesh      Philly Mesh  
Red Hook      Ninux      Saranta  
WiFi      funkfeuer      Poro  
Aftermundi      Wireless Leiden  
Network Bogota      Boston  
CassCo WiFi      Meshnet

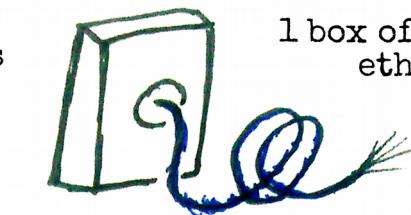
# HOW TO CRIMP ETHERNET CABLE

## Materials.

1 pair of scissors

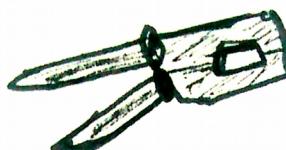


2 RJ-45 jacks



1 box of CAT6  
ethernet cable

1 pair of crimpers

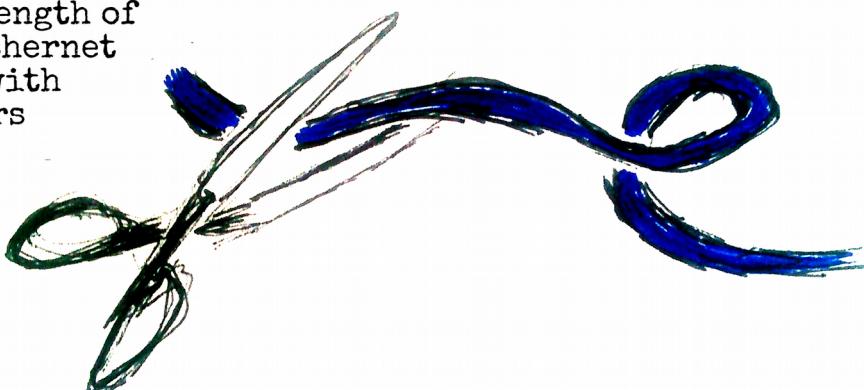


1 cable tester



## Step 1.

cut a length of  
CAT6 ethernet  
cable with  
scissors



## Step 2.

strip end of cable  
using scissors or  
by pulling the  
built-in string



## Step 3.

straighten twisted-pairs as shown below



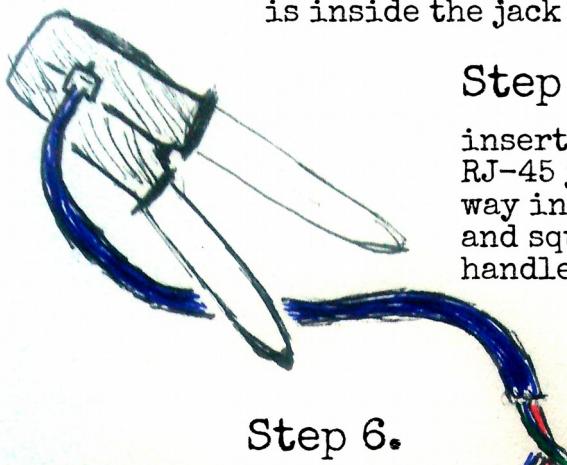
1. white-orange
2. orange
3. white-green
4. blue
5. white-blue
6. green
7. white-brown
8. brown

Pin: 1 2 3 4 5 6 7 8



## Step 4.

looking at the "bottom" of an RJ-45 jack, insert straightened pairs into a the jack in the order shown, making sure the outer cable shield is inside the jack

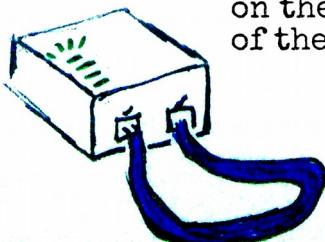


## Step 5.

insert the prepared RJ-45 jack all the way into the crimper and squeeze the handles firmly

## Step 6.

repeat steps 2-5 on the other end of the cable



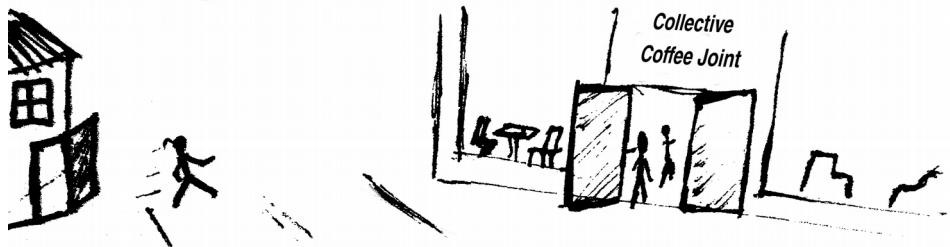
## Step 7.

don't forget to test the cable after crimping both ends

# PUBLIC RELATIONS

## A STEP-BY-STEP GUIDE

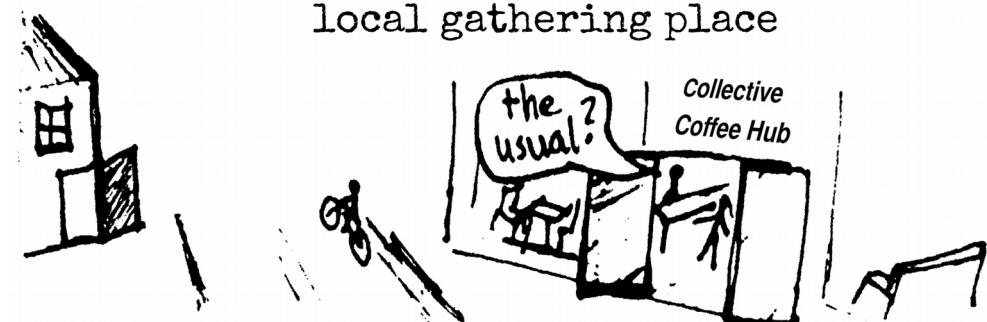
**Step 1.** go to local gathering place



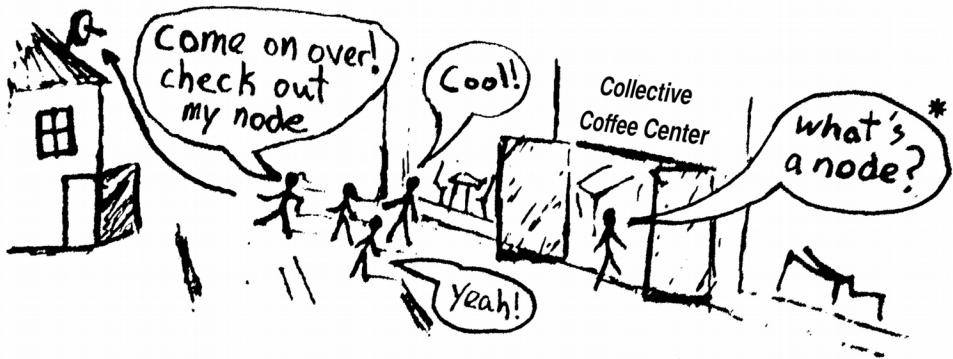
**Step 2.** repeat "Step 1" over the course of several years



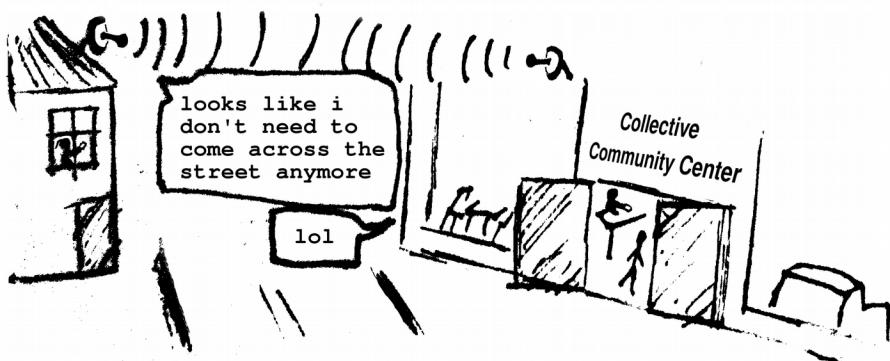
**Step 3.** befriend community members at local gathering place



## Step 4. build trust in the community



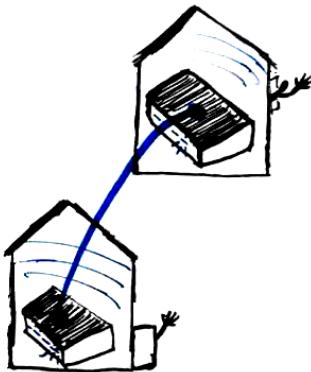
## Step 5. mesh the community



\* "what's a node?" If you find yourself asking this question, don't worry, you're not alone. For more info about **the 31 flavors of nodes**, see the next page -->

# 31 FLAVORS OF NODES

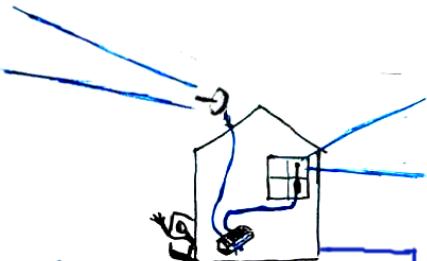
## Home Node.



- any networked device (e.g. router or computer)
- place in your home
- communicate with other nearby home nodes
- provide an open WiFi network

## Extender Node.

- a directional WiFi antennae
- mount on roof or in window
- point toward another node
- bridge large distances with high bandwidth connections



## Exit Node.

- 
- a server at a local internet service provider (ISP)
  - connect to via extender node or just plain old fiber lines
  - talk to other networks outside of your own (e.g. "The Internet")

...stay tuned for the other 28 flavors,  
or just come up with own. personally,  
we like coconut flavored nodes...yum

# MESH ON THE FARM

There once was a large farm out in the middle of nowhere — it was miles away from the closest place with an internet connection. But this farm was special. Despite its massive size, the inhabitants figured out a clever way to communicate and coordinate their respective farm duties.

Chicken was one of the animals that lived on the farm. It was month of May, and Chicken had been waiting the whole year for her birthday. Finally, the day came! She invited Pig, Goose, and Dog over to her cozy coop for a party. Most of all, Chicken was excited to share her favorite dish: creamed corn.

As she prepared her home for guests, the day escaped her -- she realized it was already well past noon. "Oh no!" Chicken thought to herself, "I still need to go get milk from Cow but I have so much to do and she lives all the way across the ravine..." Then a solution suddenly occurred to her. "Of course! I'll just connect to Cow's house through our mesh network and see if Cow has any milk to spare."

See, Chicken, Cow, along with Pig, Goose, and Dog, shared a mesh network together. Each of them had a wifi router in their respective homes that connected to each other, instead of connecting to a centralized Internet Service Provider (ISP). Essentially, they had their own local internet on the farm, just between themselves.

Chicken ran over to her laptop and sent a message to Cow. In between their homes was a deep ravine that took nearly an hour to cross. But Chicken and Cow were close friends, an affinity that was sparked over their shared enthusiasm for morse code. They each had lights installed on their

houses, directed at one another, which they used to blink messages back and forth.

Since Cow recently delivered a new calf, Chicken knew she would be home.

"Hey friend," she morse coded with the light. "I forgot to ask you earlier if you had any spare milk for me to make my favorite dish."

Chicken could see the light flashing from Cow just a few minutes later.

"Of course, buddy. I have plenty leftover. Can you come by to get it?"

"Excellent. Well I'm still getting my coop ready. Goose should be here any minute now so I'll ask him to fly over and pick it up."

"Sounds good." Cow blinked back.

Goose eventually did arrive, and didn't need any persuading to get the milk from Cow's house. Creamed corn was also, in fact, his favorite dish.

---

In a city some miles away, lived Tortoise and her roommate, Pigeon. They were big fans of community mesh networks. Their favorite pastime was playing around with morse code machines. Tortoise, being more of a homebody, would sit in her shell and code late into the night, tweaking and reconfiguring her machine.

Once in awhile, she'd develop a new way accessing secret settings and wanted to securely tell all her friends. Not trusting their internet connection, provided by H.A.R.E. Corp.\* , the only telecom company left in existence, Pigeon would fly all over the city, relaying Tortoise's discoveries to others. After awhile, Pigeon got tired of all the flying and bought a shiny new morse code antennae.

---

\* H.A.R.E. Corp. = Hare, A Really Evil Corporation

"Hey, Tortoise!" showing her the antenna, "Look what I got! You think you can hack it to talk morse code to other antennas?."

"Of course." Tortoise replied.

Immediately, Tortoise took the antenna into her shell and began fiddling with it. Days went by. Finally, Tortoise poked her head out of her shell and yelled "I got it!"

"Really?!" replied a shocked Pigeon.

"Well, yes, but there's this one problem where a bug might crawl into the dish and cause a..."

This explanation went on for some time and Pigeon quickly lost interest. While Tortoise was a brilliant hacker, she couldn't do it by herself. Knowing this, Pigeon flew around the city dropping off antennas along with a copy of the hacked code to all their friends. Together, this community of hackers, artists, and writers, slowly worked out the kinks and spread the word about this new way of communicating by pointing antennas at one another. Testing new features or debugging connections, Tortoise would often send Pigeon on to the roof to adjust an antenna. This was no big deal to Pigeon because she made her roost up there amongst her new best friends, a plethora of radio antennas.

One day, as they pivoted their dish antenna looking connections, they saw a mysterious signal. Tortoise quickly decoded the messages coming in. What they found was a website for a cow selling its raw, non-GMO, grass-fed milk!

To be continued...

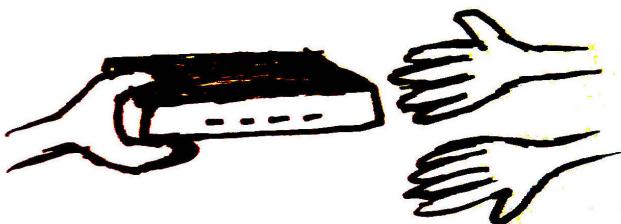
in the second edition of **BYOI: the zine**

# BYOI: 4 SIMPLE STEPS

Step 1. Get a node  
for yourself, and get it  
to blink



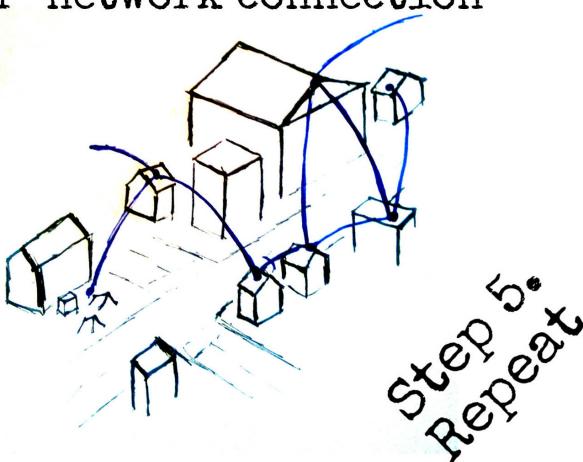
Step 2. Give a node  
to a neighbor, friend, or  
family member



**Step 3. Mesh the nodes  
wirelessly between,  
apartments, homes, community  
centers, etc**



**Step 4. Build a network  
in your neighborhood, talk to  
nearby communities to build an  
inter-network connection**



Thanks for reading!

Stay in touch for the next edition of

**BYOI: the zine**

[peoplesopen.net/zine](http://peoplesopen.net/zine)

[buildyourowninter.net](http://buildyourowninter.net)