Vermont Digital Economy Project
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Questions on free, public downtown Wi-Fi zones, as implemented by the Vermont Digital Economy Project:

- How do users access the internet through this type of zone?
- Is the internet in this zone accessible to the public?
- What exactly is an Access Point?
- How far is the reach from each Access Point?
- Who is responsible for the network?
- What does this responsibility entail?
- How does the "Cloud Controller" work?
- How much time does monitoring the network take?
- What if an access point breaks, or if the monitor has a question about how to use the cloud controller?
- Who is responsible for illegal use on the network?
- Will this Wi-Fi zone take away business from an ISP (Internet Service Provider?
- How do ISPs feel about broadcasting their internet over a large portion of the town?
- What are the actual costs associated with this project?
- How do most towns pay for this? Who do they choose as a "fiscal sponsor"?
- Why would a town be interested in having a downtown Wi-Fi zone?
- What happens if the town later on wants to expand the network?
- What if the town wants a faster internet speed for the zone?

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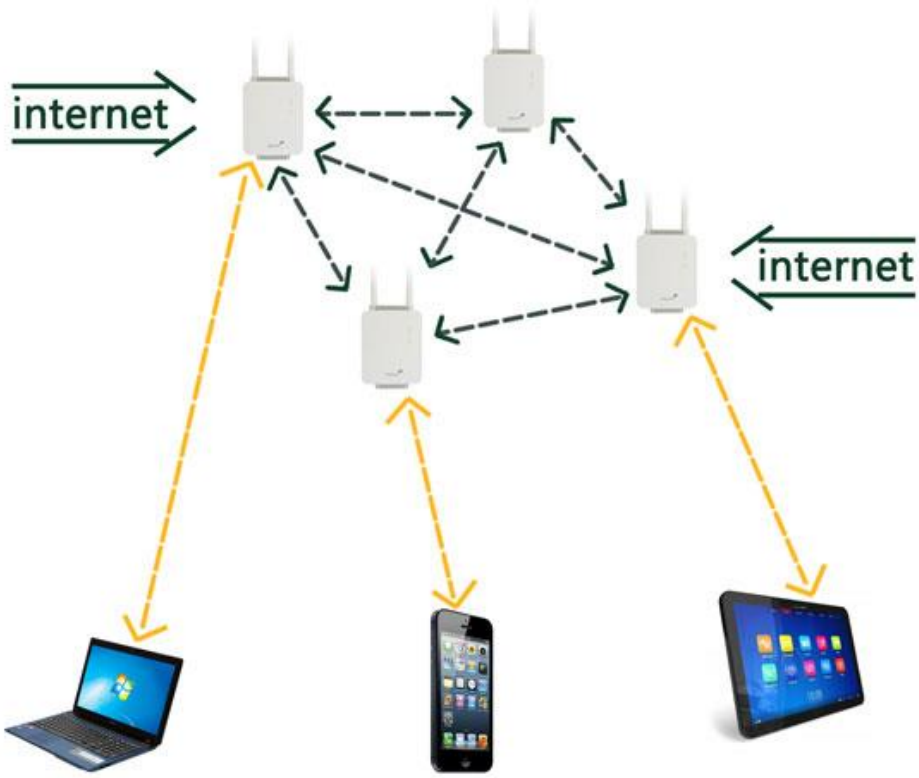
How do users access the internet?

Computers connect to a specific Access Point, which either connects directly to the internet, or repeats a signal from another access point that is connected to the internet. Users can therefore see the internet, and chat with others over the internet, but they cannot see any other devices on the network.



Is it accessible to the public?

Yes – anyone can access this internet, provided that they have a device that can access Wi-Fi, and they are within reach of the signal from an Access Point.

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What exactly is an Access Point?

An Access Point is a piece of hardware – in this case, an MR62, produced by Meraki – that can function as a Gateway (bringing in Internet), a Repeater (repeating internet that was brought in by a Gateway) and/or an Access Point (allowing users to connect to the internet through it.) The MR62 can withstand temperatures between -4°F and 122°F, and consumes a maximum of 6.5 Watts of energy. (Regular light bulbs are usually around 40 or 60 Watts each.) You can find the full specs on this piece of equipment here.

How far is the reach from each access point?

Each access point can reach about 200 yards in diameter from where the access point sits. The exact reach is dependent on what is around the access point (for instance buildings, large numbers of trees, etc.)

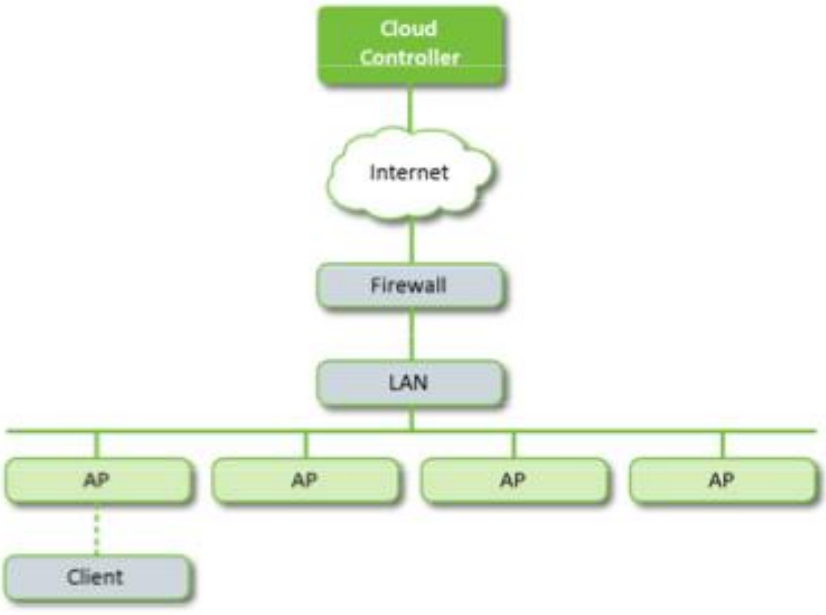
Who is responsible for the network?

Each town selects one individual who will be the main point-person in town for the network.

What does this responsibility entail?

The network can be monitored by a cloud controller. You can find a primer on the cloud controller that is used in conjunction with the Meraki equipment here: http://www.youtube.com/watch?v=2dNU_HnJ5Nw

How does the "Cloud Controller" work?



The cloud controller is password protected, and can be accessed through any browser. The controller can:

- monitor access points:
  See what the load on each access point is, and flag when there is any issue associated with that access point.

- track usage:
  Delve down to individual IPs and see who is using what site, as well as how long each IP is on the network for. This means that it is possible to find and potentially block abusers of the free network. (For instance if a user is downloading illegal music, he/she can be kicked off or blocked completely from the network.) It also means that it is possible to see which sites are most popularly visited on the network. Is it used mostly for checking email, or for reading restaurant reviews?

- track number of clients:
  This is helpful in monitoring when the busiest times of the day are. For example, you can see spikes during town festivals. It is also tracked per access point, so you can see how many people are connected to each individual access point.

- track speed:
  See what the upload and download speed on the network is, as well as on each access point, and change it if necessary.

- track OS, manufacturers, clients:
  See exactly what types of devices people on the network are using. If it is mostly phones, for instance, then maybe creating more responsive web design is in order for optimized usage.

- configure access control:
  Change access to the network based on individual IPs, or by Access Point. There is even the option of creating a private network on a single Access Point that is completely separate from the public network. You can also set the network to time people off every thirty minutes, for example, so they have to log back in to continue using the free internet.

- administrate splash page, etc.:
  Create a splash page that makes each user agree to the terms and conditions of using the public internet. This page can also advertise those individuals or businesses who are donating bandwidth. It can redirect to whatever landing page is decided on. These landing pages often advertise the town, for instance: http://wirelesswoodstock.org/

There is a lot that can be achieved with this cloud controller. How much time does monitoring take?

Monitoring the system can take as much or as little time as the monitor wants to put into it. With many towns, once the network is set up so that a few key sites or types of content are blocked, and a few security measures are put in place, the network can run by itself. In many towns, the monitor checks in weekly to make sure there is no abuse. Others who are more interested may choose to spend more time analyzing the network and adjusting the usage, but once it is set up, this isn't necessary. The network is set up to email the monitor once a month with a report, and will also email if an Access Point goes down. This is when the monitor will need to check the problem and see whether the internet or power has gone down, and whether the Access Point needs to be restarted or if Meraki should be called.

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What if an access point breaks, or if the monitor has a question about how to use the cloud controller?

The equipment producer, Meraki, offers 24/7 support for their controller and equipment, so there is always somebody on hand to help in the case of any issue. There is also a lifetime guarantee associated with each piece of equipment, as long as the license on that piece of equipment is kept current (when this equipment is installed, it will have an initial 5-year license).

Who is responsible for illegal use on the network?

The individuals who pay the Internet Service Provider are ultimately responsible for illegal use on their bandwidth within the network. However, with a monitor in place, as well as the ability to block pages by content and to block abusers, this should not be an issue.

Will this Wi-Fi zone take away business from an ISP (Internet Service Provider), because people can simply use the free network instead of purchasing their own private internet?

It should not, for several reasons:

1. The downtown Wi-Fi zone is free and open to the public. In the initial splash page it is very clear that all use is monitored, and some uses are blocked. It is also clear that abusers will be kicked off of the network. Few users are comfortable with the idea of sharing their whole browsing history with a monitor on a public network.
2. Certain uses of the internet can be made much more difficult: The network can be set up to make video streaming very slow, so that although checking email is quick, streaming a youtube video takes ten minutes. This discourages people from using this network as their prime source of personal internet.
3. A time-out function can be implemented: This stops people from seamlessly using the internet for hours on end, as one would in the home. Every 30 minutes (or whatever time is set up,) the user can be made to go back through the splash page to return to what he or she was doing. It is also possible to shut the network down during certain times of day, such as in the middle of the night.

How do ISPs feel about broadcasting their internet over a large portion of the town?

By purchasing a business connection instead of a personal connection, it is clear that this internet will be servicing more people than in a private residence. Because the town is distributing this for free, and not making money off of the network, the zone does not violate the terms of service from the ISP. (Think of the zone as a very large coffee shop that offers free Wi-Fi.)

What are the actual costs associated with this project?

The Vermont Digital Economy Project is supplying the equipment for the network as well as the labor costs of setting it up, and five-year licenses for the equipment. It can also supply a template for a landing page, if desired. The town will need to either find one or more fiscal sponsors to pay for the cost of a dedicated internet connection, or find several businesses willing to “donate” bandwidth. There may also be a cost for hosting a landing page (if there is not already a website to which the town wants to direct traffic.) In addition, in five years when the licenses on these products need to be renewed, the town will have to pay for these renewals. These licenses cost around $150 per device per year. The total cost to the fiscal sponsors for the first five years of use if a dedicated internet line is installed, therefore, will be around $1,000 a year. After this, it will be the $1,000 a year, plus the cost of licenses for each device.

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How do most towns pay for this? Who do they choose as a "fiscal sponsor"?

It is a good idea to find somebody willing to cover the first year's worth of costs. This could be a downtown revitalization committee, the town itself (it can be a line item in the town's budget) or a generous business in town. After the first year, it is up to the town to decide how to continue to pay for the service. It can be paid for through the purchasing of ad space for businesses in town who want to promote themselves on the landing page, or through donation solicitations. There are several models for creating advertising revenue, including a fixed "sponsorship" rate as well as a "pay-per-click" rate for banner ads. This is something the town can decide.

Why would a town be interested in having a downtown Wi-Fi zone?

See this article.

What happens if the town later on wants to expand the network?

This is very easy to do. A new access point can be added to the existing network with minimal hassle. All-told, the current cost of equipment for each access point is around $1400.

What if the town wants a faster internet speed for the zone?

There is a way, with the Access Points, to portion off a part of a local business's internet connection's bandwidth. It would be completely separate and is PCI compliant. This extra "injection" of bandwidth would be given over to the wireless network zone, increasing the zone's overall speed. This small portion of the bandwidth taken from businesses would not affect the speed of the business's internet, nor would it be a security risk, since it would be on its own, separate, firewall-protected network. This would, of course be discussed in great detail with the business in question, and the business would be thanked for its bandwidth donation on the splash page or landing page for the network.