Althea

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Goals

• Last mile network without a centralized ISP.

• Routers form an “incentivized mesh” network, routing over several hops.

• Not client to hotspot (e.g. Fonera, Comcast Wifi).

• Not building hardware. There is a lot of excellent hardware out there.

• Not making a new blockchain. Lots of projects out there and we will use the best available.
Logical architecture

- **User nodes mostly just use data**
- **Intermediary nodes carry data**
- **Gateway nodes have a physical connection to the internet**
- **Exit node is in a data center near to the physical network**
- **Traffic leaves Althea network and goes to internet destination, appearing to come from exit node**
- **Routing protocol chooses which gateway node is cheapest+best to get to chosen exit node**
Hello, neighbors
Nodes charge each other for forwarding.
Distance-vector with additional price field

I will forward packets to destination C, at quality $x$, for cost $n$
Quality estimation with destination to verify neighbor's accuracy

Quality was actually, y

Hello/IHU
User node pays upstream
Exit node pays downstream on behalf of user node
Oregon test deployment

- A local mesh group wants to bring better connectivity to their small town.

- Deborah is a leader of the group and has a resalable high bandwidth connection at her business.

- It’s very rural, but the group is doing a lot of work on getting the physical layer set up with long range directional radios.
Buffalo test deployment

- Frank wants to sell internet to his neighbors.
- Paul wants to sell internet to his tenants and adjacent property owners.
- Backhaul is provided by a wireless ISP which services businesses now, but will be able to make money from retail service by selling into the incentivized community mesh.
For community meshes

- Who want a system which automatically compensates members for running hardware.
- No need to deal with bank accounts or billing software.
- Built-in incentive for commercial ISPs to provide backhaul to the network.
For ISPs

• Attractive to regional, wholesale, and business-oriented ISPs.

• Someone else may be able to pay the upfront install cost for the connection to the mesh.

• No need to worry about supporting retail customers.