



STEVENS
INSTITUTE *of* TECHNOLOGY
THE INNOVATION UNIVERSITY

Homework 1

January 25, 2013

CPE-322, Engineering Design VI

Paul Di Santi

I pledge my Honor that I have abided by the Stevens Honor System.

Paul Di Santi x_____

Homework 1

Abstract

Today, the average American household has many different land line based solutions for connecting to the internet such as cable, fiber, DSL, and in some cases, dedicated lines such as T1 connections. Despite this, many homes in rural parts of the country still don't have access to any land line based solution and are forced to resort to the slowness and outdated use of 56k connections or the high latency and limited bandwidth of satellite internet. With the rise of 4G LTE technology as well as the rapid roll out currently being implemented by America's #1 cell phone companies such as Verizon and ATT, new options for connecting these rural homes to the internet in a cheap and reliable manner are now becoming available. With an advertised 4G LTE coverage of over 95% of Americans by the end of 2013 for Verizon and 2014 for ATT (as well as a commitment from Verizon to rural America [1]), many people in rural America will now be able to connect to the internet faster, more reliably, and with a lower latency than ever before. Unfortunately, most consumer routers are designed for typical land line based solutions of taking Ethernet connections from modems and sharing the internet across a network of any size.

The Product

The proposed product would be a custom router designed to take the input of a 4G LTE USB modem of any carrier and share its internet connection across a network of computers.

Technical Specifications

- Linux based – for cheaper costs
- Along with routing traffic, the product would also have DHCP, NAT, Packet Filtering, the ability to use multiple data/internet connections at once as well as other features included in today's average consumer router
- Hardware used could be something as simple as a server running on an Intel Atom based platform for both power efficiency as well as cost efficiency. Eventually, a more compact and efficient solution with multiple Ethernet ports as well as USB ports could be developed or used from another company

Product Sales Targets

- For homes that wish to use 4G LTE cellular data connections as their primary internet connections
- For 3rd world countries such as Haiti or certain countries in Africa where constant relief efforts require active data connections and land line based connections are impractical

References

[1] - <http://aboutus.verizonwireless.com/rural/Overview.html>
