

Advanced WiFi Capture

How to Improve WiFi Reception in the
Mobile Environment

Jack Mayer
jackdanmayer.com

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Why?

- You need multiple sources for Internet when travelling
- Cellular and WiFi together give you good access
- Many RV parks and stores have decent WiFi – if it is available, you want to use it

Cellular Router

The *Heart* of Your Network

- A “regular” router, expanded to use Cellular OR WiFi as the backhaul to the Internet



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Terminology/Acronyms

- **CPE** – Customer Premises Equipment
- **Backhaul** – The connection to the Internet
- **WiFi “Hotspot”, AP (Access Point)** – a radio device broadcasting a WiFi signal that connects you to the Internet
- **WISP** – Wireless Internet Service Provider
- **WiFi as WAN** – in a router, use of a wifi hotspot for backhaul
- **WFR** – WiFiRanger product (generic)
- **Cellular Router** – a router that also supports a cellular modem as a source of backhaul

Issues With WiFi Connections

The issues are simple – the solutions are complex.....

- Line of sight (LOS) – this is the biggest issue
 - Other RVs
 - Trees
 - Hills
- Metal/Water
 - Your RV skin
 - Other RVs
 - Wet leaves
- Distance

Methods of Signal Improvement

- With your laptop
 - A better radio set – get a superior external wifi adaptor
- Utilizing *WiFi as WAN* router
 - A better antenna – MIMO, external
 - More power – a better transmitter
 - Antenna positioning – put it higher
- A CPE



Methods of Signal Improvement



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What's a CPE ?

... and Why Would I Want One

- ***“Customer Premises Equipment”*** - a separate WiFi radio and Antenna
- The CPE captures a wifi signal and communicates with your router, typically via Ethernet
- A CPE addresses all of the issues associated with WiFi signal capture
 - Can be positioned on the roof
 - Has an advanced antenna
 - Has a superior radio (receive and transmit sensitivity) with higher power

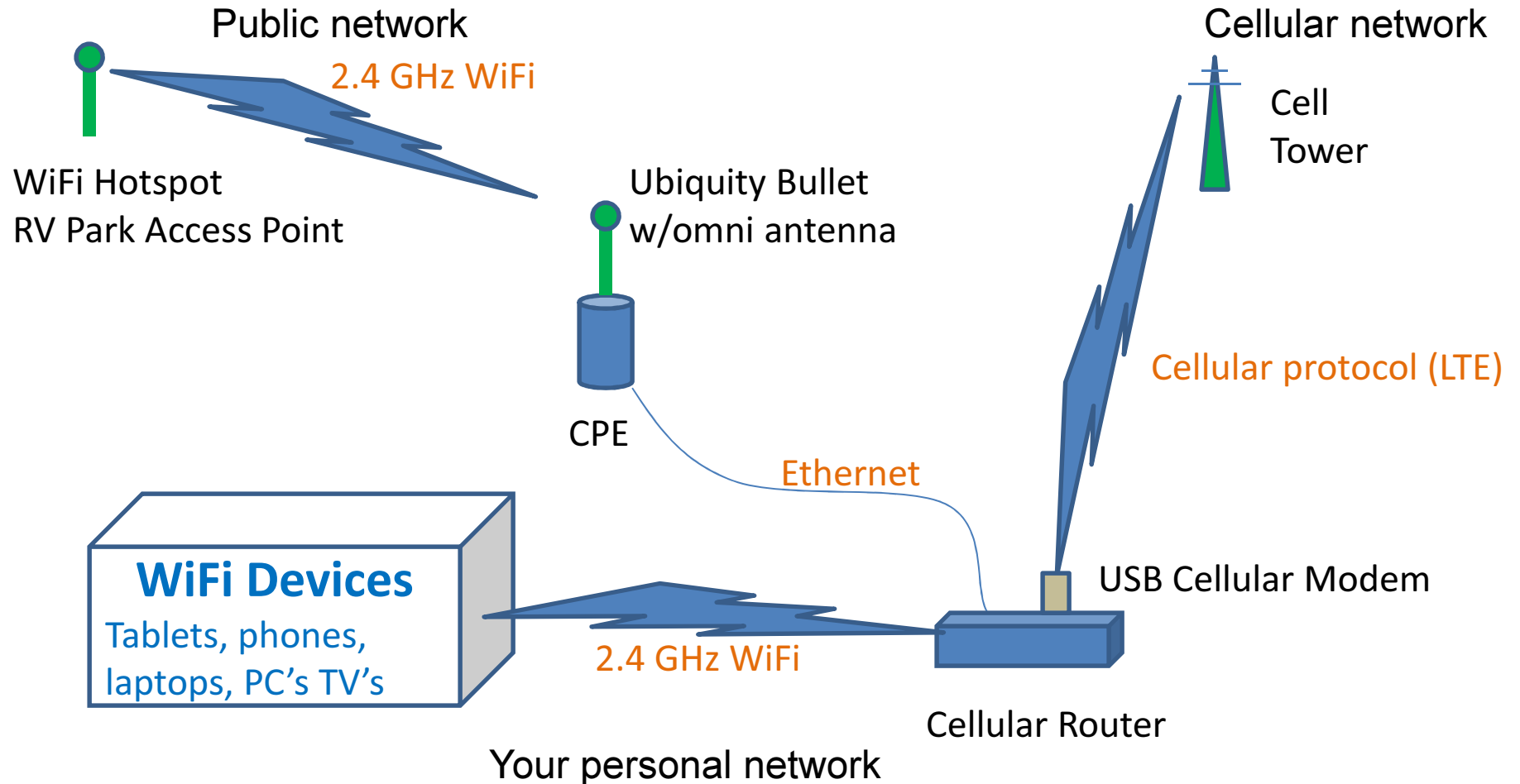
What's a CPE ?

Examples Utilizing a Ubiquiti Bullet



The Complete System

Your *Best* Chance at Getting Internet



The Solution

Attributes that Maximize WiFi Signal Capture

- Issue: Line of Sight
 - Solution 1: Antenna on your roof
 - Solution 2: Better radio
- Issue: Signal is blocked – Metal or Water
 - Solution 1: Get above it
 - Solution 2: Blast through it
- Issue: Distance
 - Solution 1: Antennas – External antenna, directional antenna
 - Solution 2: Better radio

Solutions boil down to better radios, and better antenna technology positioned high for best Line of Sight.

Cellular Routers

What Attributes Do You Look For?

- Reliability
- Ease of Configuration and Management
- Completeness
- Signal Range
- WiFi As WAN
- LAN ports for physical connection
- Cellular Modem Support
- Works with a CPE, or has add-on CPE
- Support

Resources

- The Mobile Internet Handbook -
<http://www.technomadia.com/internet/>
- Building A WiFi Capture Device
- Pepwave Surf SOHO Review
- Pepwave Surf OTG Review
- WiFiRanger Review
.....all on
<http://jackdanmayer.com/communication.htm>