

Internet on the Road

Improving Your Internet in the Mobile Environment

Jack Mayer
jackdanmayer.com

In the Beginning.....



.... there was POCKETMAIL

Pocketmail Modem Connection



Jack Mayer - HDT Rally, 2019

Terminology/Acronyms

- **Backhaul** – The connection to the Internet
- **Cellular Router** – a router that supports a cellular modem as a source of backhaul
- **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; not physically tethered
- **Tethered** – physically connecting a cellular “Jetpack” to your router with a USB cord (typically)
- **CPE** – Customer Premise Equipment. A radio that enhances your connection to an Internet source.
- **WFR** – WiFiRanger product (generic term)
- **Converge** – a WiFi Ranger product that merges cellular, wifi, and TV/Radio into one rooftop unit.
- **POE** – “Power over Ethernet”. Typically used to power a CPE.
- **Bands** – Cellular radio bands used to provide connectivity. Variety of bands by each provider.

Your Best Resource for All Mobile Connectivity Info and Training



Mobile Internet
RESOURCE CENTER

www.rvmobileinternet.com

\$5 OFF with Code **JackMIA**

\$10 OFF with Escapees Membership

Connecting on the Road

- Cellular
 - You pay “dearly”
 - Data “in-motion”
 - Lots of providers; Verizon, ATT, etc.
 - Almost ubiquitous
 - 4G is the “standard”
 - 5G will be “game changing” but years away
- WiFi
 - Usually Free
 - Stationary access only
 - Campgrounds/businesses
 - Getting better, but you can’t count on it

Your Investment Strategy?

You need them BOTH....BUT....

- Park WiFi may be poor. Mainly from overloading and poor backhaul.
- Recommendation: Maximize your cellular technology investment first.
 - Have a good data plan
 - Consider multiple carriers
 - Use excellent cellular equipment: Routers, antennas, amps

**Only when you have a good cellular solution
should you invest in WiFi Enhancements**

Do I Need a Cellular “Booster”?

- With MIMO technology, possibly NOT !!
 - Typically better speeds with MIMO antennas than with boosted connection.
- External MIMO antennas are best
 - Rooftop or pole mount is ideal
 - The Netgear Window mount works better than you expect.
- Best Booster – weBoost Reach



What Are the “Deals”?

- For Cellular Data: TOGO is one of the best deals currently. www.runswithtogo.com
 - \$399.00 for Device, \$360/year Service
 - ATT unlimited/unrestricted data plan,
 - Winegard Roadlink



Consider this a Two-to-Three year solution

Why Use WiFi?

- You need multiple sources for Internet when travelling – don't limit your options
- Cellular and WiFi together give you good access
- Some RV parks and stores have decent WiFi – if it is available, you want to use it. Significant improvement in the past two years.

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

Antennas

- Directional
 - Focuses energy in a narrow band – around 30 degrees (typically)
 - Must be pointed at signal source
 - Typically not ideal for Rvers
- Omnidirection
 - 360*
 - Requires no pointing
 - Not as much gain/performance...but ideal for RVerS

What's a CPE ?

... and Why Would I Want One

- “***Customer Premise Equipment***” - a separate WiFi radio and Antenna
- The CPE captures a wifi signal and communicates with your router (or computer), 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

WiFi Ranger products incorporate a CPE in their architecture

Mobile Router

The *Heart* of Your Network

- Allows multiple devices to connect to one Internet source – via a LAN
- In your house, typically a cable or DSL Modem/router combined
- In the mobile environment: Hotspot (Jetpack, MiFi, phone), cellular router, WiFi as WAN

The Mobile Environment Requires Management of More Internet Sources

Cellular Router

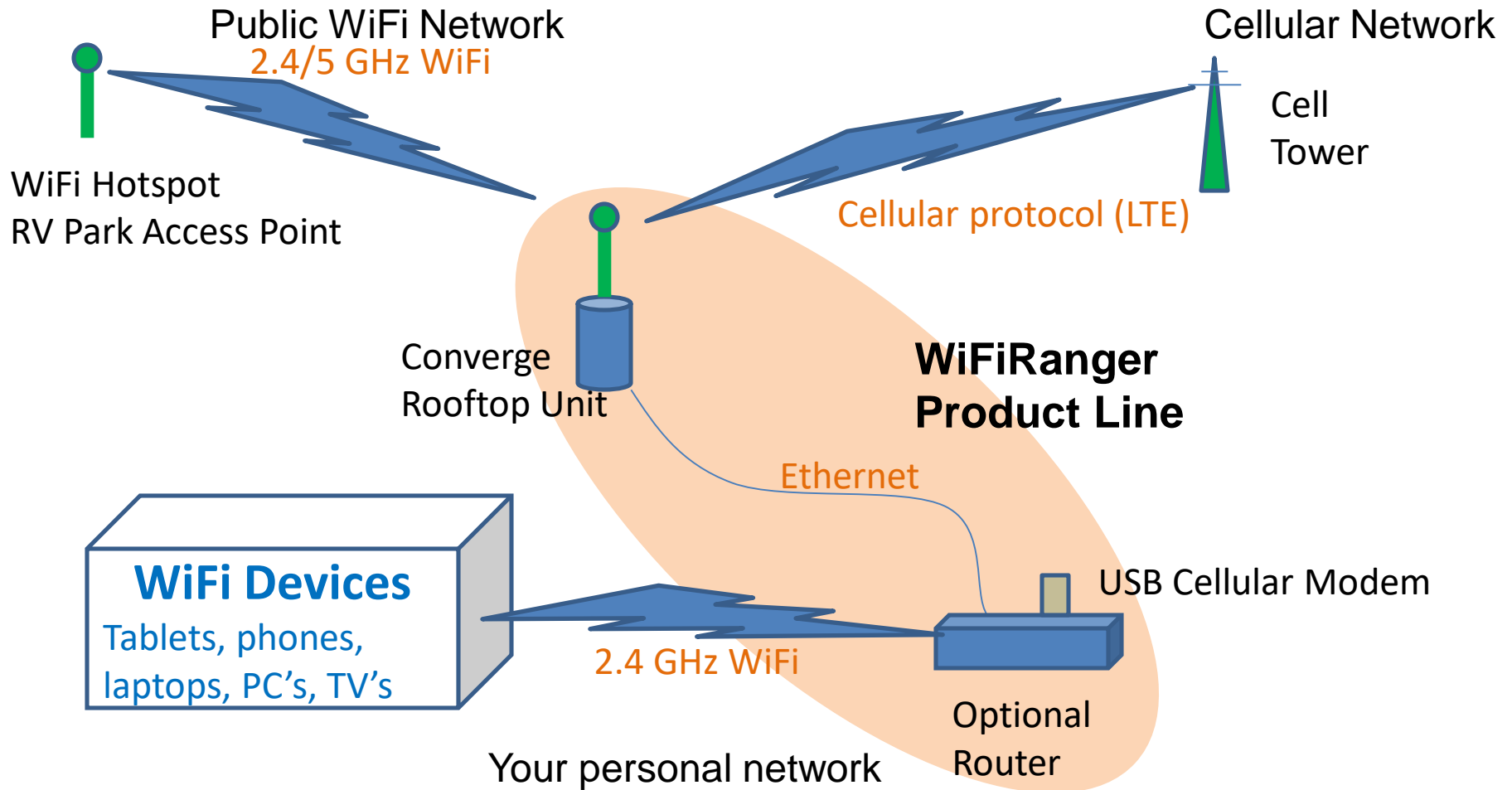
The *Heart* of Your Network

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



The Complete System

Your **Best** Chance at Getting Internet



Advanced Mobile Router's

- Allow for more backhaul types: cellular, WiFi, etc.
- Can dynamically switch: *failover* between sources
- Can “merge” speeds of two sources (cellular and wifi) “bonding” connections
- Can track total data usage by source

**Additional Features do add
Management Complexity**

Advanced Mobile Router's

Who are the “Players”

- WiFiRanger: oriented to Rver's; most advanced
- Peplink
 - MAX BR1 Mini, Pro, ENT
 - Pepwave Surf SOHO: solid performer
 - Pepwave MAX OTG: compact router
- Cradlepoint: mostly oriented to Business/Enterprise; IBR900, IBR1700
- MoFi: business oriented with advanced capabilities
- Others: Alpha, JefaTech, PDQ Connect

The Solutions

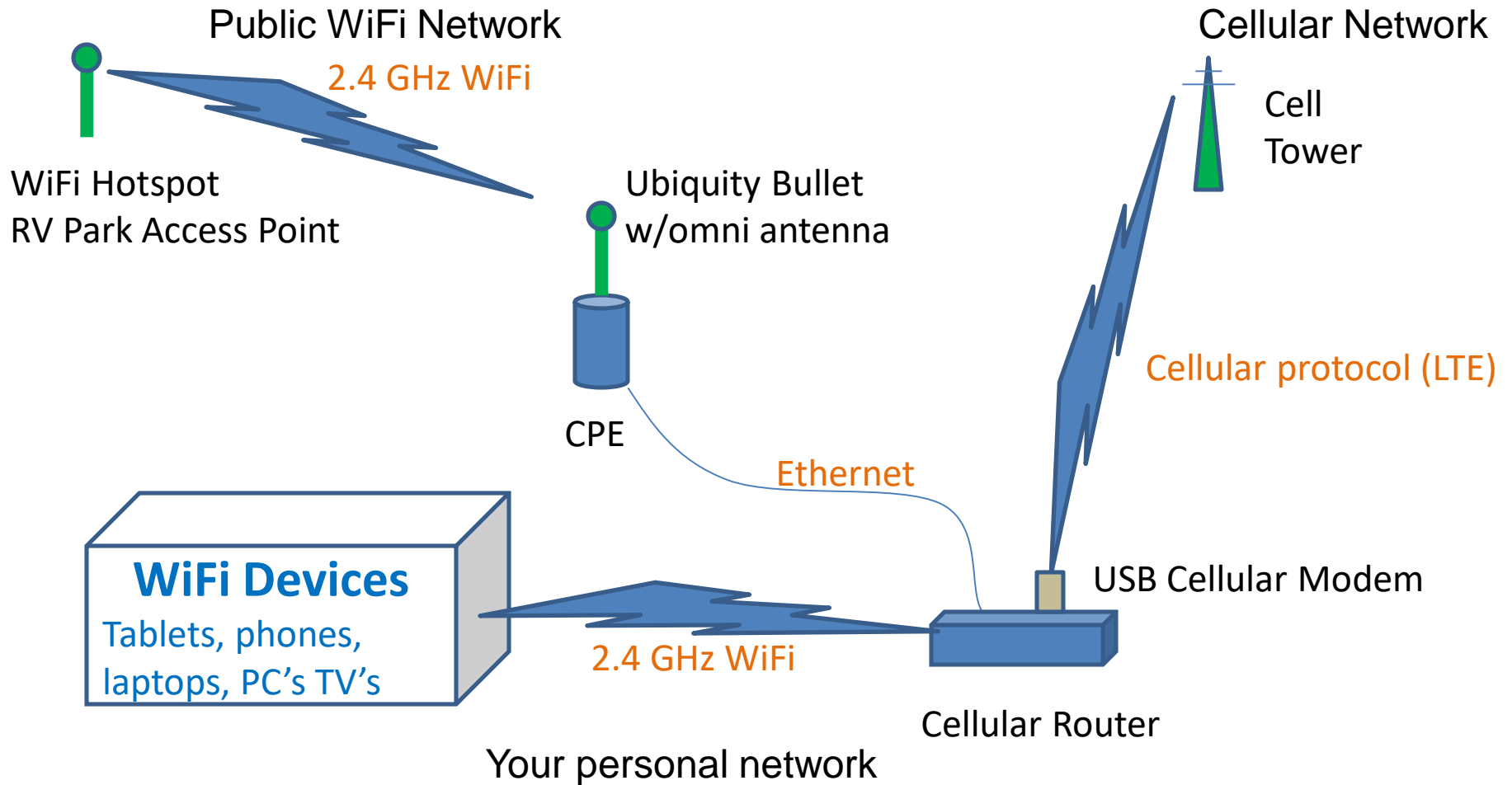
Attributes that Maximize WiFi Signal Capture

- 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.

The Complete System

Your **Best** Chance at Getting Internet



WiFi Ranger Converge Line



WiFi Ranger Converge Line

Three Versions

- Teton/Teton LTE (Sky 4)
 - \$129/\$199 w/LTE
 - 802.11 N
 - Add-ons: LTE, AM/FM, HDTV
- Denali
 - Better hardware, AC WiFi, \$449
- Everest
 - Best Hardware, \$799
- Routers
 - Poplar +\$65, Spruce +\$90, Aspen +\$95, Sequoia +\$120

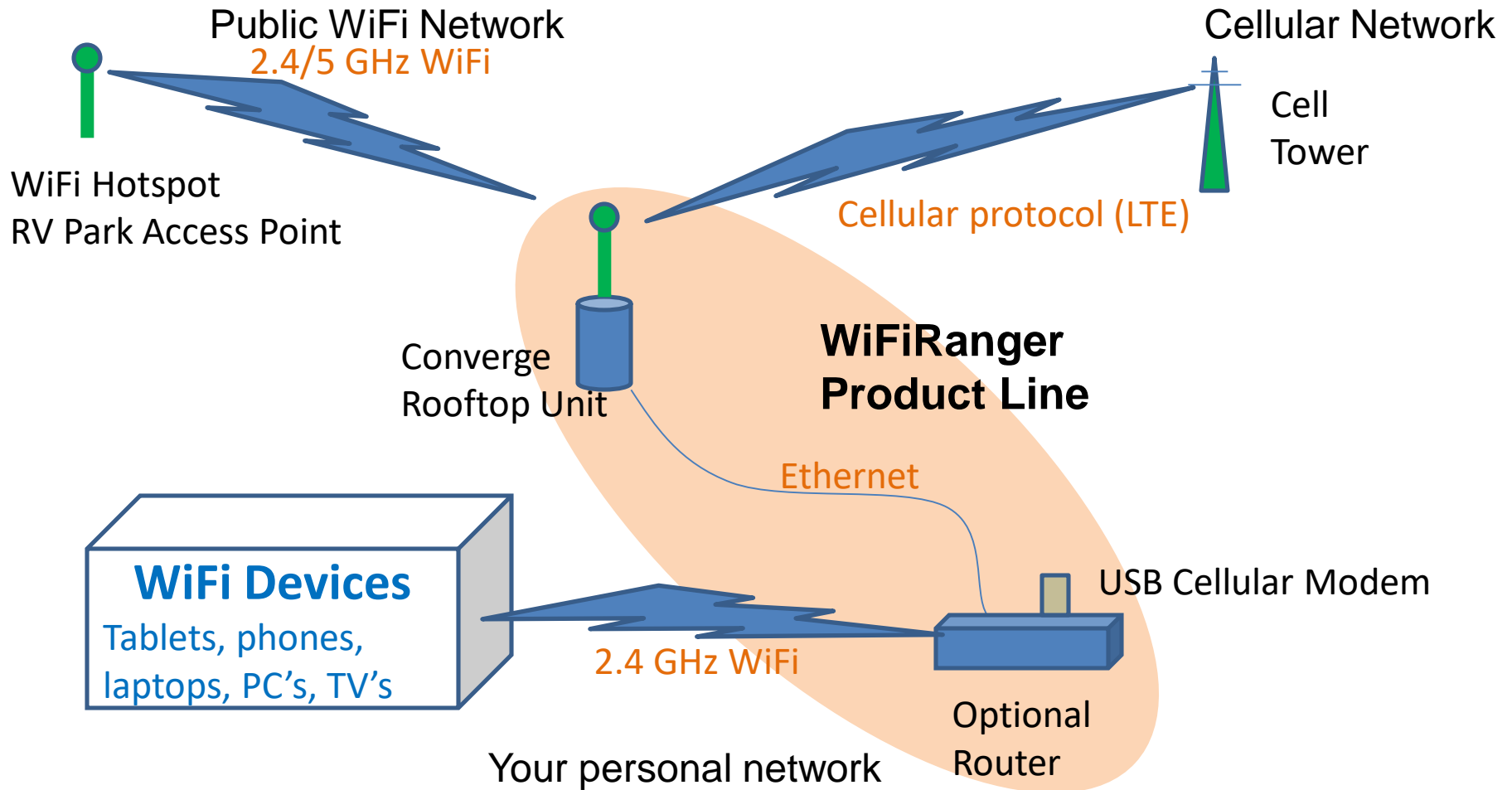
Rooftop Unit

Swapable trays for simple upgrades



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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

Technology Solutions

Categories of solutions

- WiFiRanger product family: Elite, Sky 2, Go2 Router
 - “Best in Class” solution
 - Lots of capability and range
- Rouge Wave
 - Range is similar to WiFiRanger, but less capabilities/features
 - Simpler to use than WFR
- Homebuilt Solutions
 - Typically built around a Ubiquity CPE paired with a Cellular router.
- USB adaptors, Pepwave CPE’s and other “inside-the-RV” solutions
 - Can enhance performance but not to the extent of externally mounted solutions
 - Good if you can see the Access Point from your RV Window

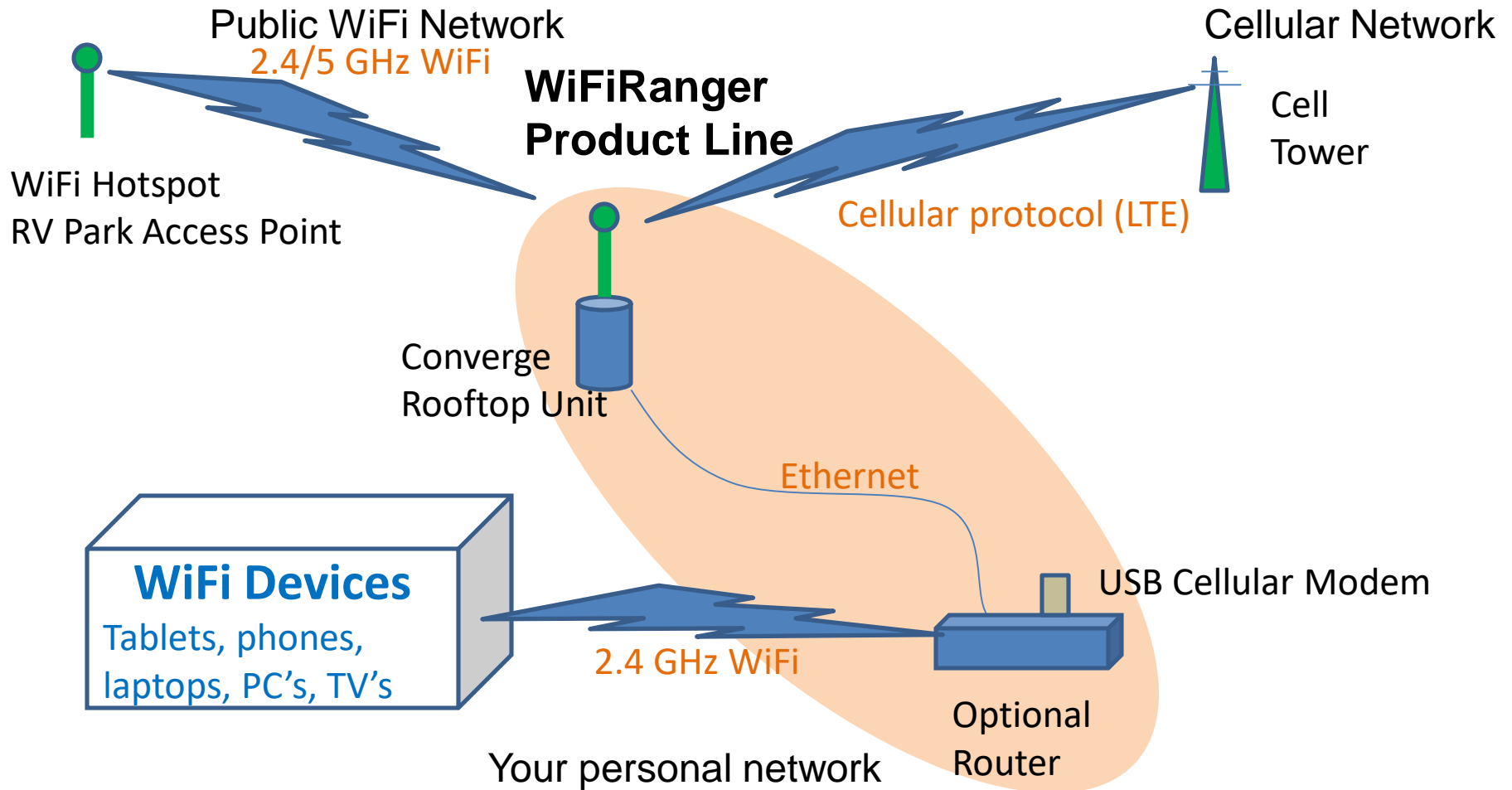
OK – This is totally Confusing

Just Tell me what I should do....

- If you need the BEST solution for the least work (and most money)
 - WiFiRanger Family does it ALL
- For a DIY Solution: CPE with router
 - Ubiquity Picostation with Pepwave Cellular Router
- For Less Flexibility but less complexity and cost
 - Rouge Wave with any consumer router (non cellular solution)

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Resources

- Join **RVMobileInternet.com** as a premium member
 - You get **The Mobile Internet Handbook**
 - Latest reviews – including all of mine
 - News and training articles