Understanding your Parks WIFI Requirements

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COURSE OBJECTIVES

- Understand the needs of your guests.
- Consider possible modifications to increase guest satisfaction related to WiFi.
- Better understand the technology behind Wi-fi and its capabilities

WHO AM I?

- 2nd Generation owner of Pride of America
- Youngest of 3
- "IT Manager"
- Petehagen@camppoa.com

PROFESSIONAL CAREER

- BSME – University of Wisconsin 1989
- 10 Years Mechanical Engineering and Machine control.
- 19 Years IT administration University of Wisconsin Bock Labs
  - 50 Employees
  - More than 150 network devices
  - 1 full time IT person

SHOW OF HANDS

- How many currently have WIFI?
- How many currently charge?
- In-house or 3rd party?

THE STATE OF WIFI

- It has become a necessary amenity
- For some customers it is a "Must Have"
- There are a lot of technical issue we have as an industry*
- People have WAY too high of expectations*

WHAT I PLAN TO COVER

- Technical issues for WiFi @campgrounds
- Political issues
  - Free or Charge?
  - Customer expectations
  - Methods to diffuse bad experiences
- Non-technical hardware overview

TECHNICAL ISSUES

- A lot of area to cover (delivery system)
- Limited bandwidth available due to rural location (supply line)
- Customers sitting in the perfect radio insulator
- Non-tech people onsite for support

LARGE ARE - RADIOS ARE CHEAP

- More radios means better coverage
- Design to minimize hops
  - Consider spoke design
  - Multiple "supply drops" if possible

HOPS ARE BAD

- Wireless N is capable of a theoretical 150 Mbps. In practice it is more like 40 and down to 20 for moderate signal levels.
- With hops: Speed = (1/n)*Max
- So for 4 hops: Speed = ¼*Max = 10

AREA – POA 2013

AREA - POA 2014

AREA - 2015

AREA - TODAY

TECHNICAL ISSUES

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LIMITED BANDWIDTH AVAILABLE (SUPPLY LINE)

- The *Size of the Pipe*
- Rural setting means no cable and SLOW DSL
- Everyone can get a T1
  - Very reliable
  - 1.5 Mbps
  - Very expensive!

LIMITED BANDWIDTH AVAILABLE (SUPPLY LINE)

- POA had 2 T1's (3 Mbps) that cost about $1100/mo
- I have Charter at home. 60 Mbps for $40
- In July of 2015 installed EOC line. Same price as 2 T1's for 10 Mbps. Upgradable to at least 20 Mbps

TECHNICAL ISSUES

- ~~A lot of area to cover (delivery system)~~
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THE PERFECT INSULATOR –TIN FOIL HAT

THE PERFECT INSULATOR

SOLUTION…

- Education!
- Explain the problem
- Suggest trying to use device:
  - Near window
  - Outside under awning
- Recommend they buy a booster (but…. this adds a hop)

TECHNICAL ISSUES

- ~~A lot of area to cover (delivery system)~~
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NON-TECH PEOPLE

- Have a device that you know how to use
- Go to the area of the problem and see if it will connect
- Get some tools to measure "real" signal
- Not all devices are created equal
- Have some troubleshooting guides available

On Windows Vista or Windows 7 computer open the network connection pane by either clicking on this system tray icon:

...or by going to **Control Panel**, **Network and Internet**, **Network and Sharing Center** and selecting **Connect to a network** link:

On this connection pane find your network, click it, and then click the **Connect** button:

Note: Pick the radio with the strongest signal. All of our radios begin with POA.

Wait while Windows registers within the network. You will see a system tray icon with a spinning wheel during this time:

After a spinning wheel is gone, you're connected. You can check if you're actually connected by bringing up the connection pane again and checking a status of your network. You should see the **Connected** label there:

Open up a web browser by clicking on the

Enter your username and password in the page that is displayed.

POLITICAL ISSUES

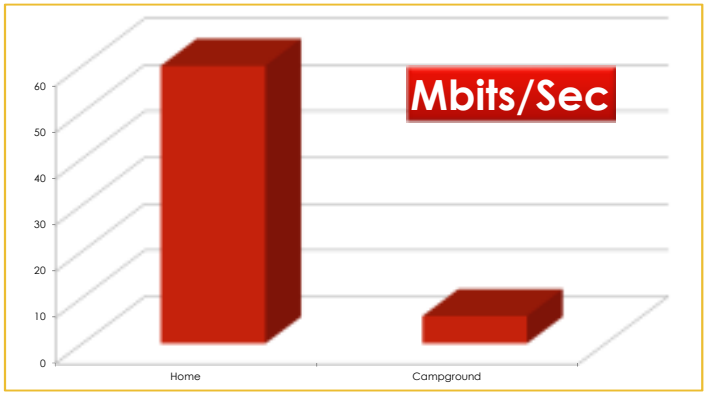
- Free or Fee?
- Customer expectations
- Customer education
- Provide alternatives
- Always offer a refund

YOU MUST CHARGE FOR WIFI

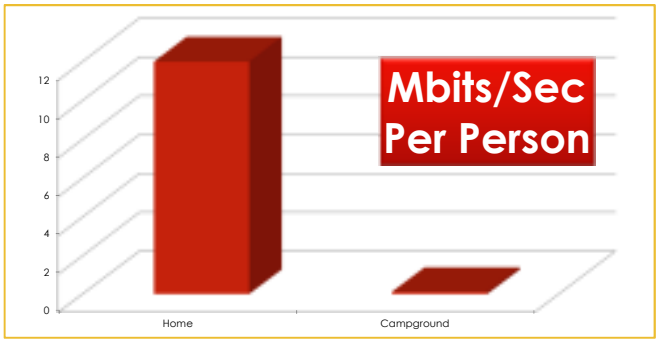
- Can you really rely on the excuse of "At least we don't charge you for it?"
- People think-If you have it, it should work
- Do you charge for you pool? If the pool is not working are people ok "since it was free?"
- Simple supply and demand…

SUPPLY AND DEMAND

SUPPLY – VERY LOW



FACTORING PEOPLE

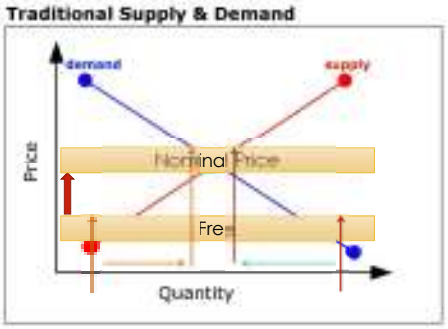


DEMAND – VERY HIGH

- Nearly everyone over 12 has a smart phone
- Lots of families have a laptop and or multiple tablets
- All of these device "see" you WiFi network and want to connect and start talking

WHEN NOT CHARGING

RAISE THE PRICE



EFFECTS ON DEMAND

- A LOT of devices not connecting just *because they can*
- People who really need the service are willing to pay
- *Appreciation weekend analogy*

POLITICAL ISSUES

Fee

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CUSTOMER EXPECTATIONS/EDUCATION

- LOWER EXPECTATIONS
  - The service the park gets is slower
    - 10 time slower than home service
    - 50 times more people using it
    - We pay BIG $ for what we have and can't get more
  - Explain why we charge
    - Keep kids off
    - Only people who need it are using it
  - Give them a CLEAR understanding of what the service will do and NOT do

POA WiFi Service

The bandwidth that POA is able to obtain is limited due to our rural location. Therefore, the service should NOT be expected to be the same as you have at home or work.

Will work:

- Checking and sending email
- Surfing the web
- Posting to Facebook (pictures may take a while)

May work (depending on how many other people are on)

- You tube videos
- Remote connection to work computer

Will probably not work

- Streaming movies or TV shows
- Online action gaming

POLITICAL ISSUES

Fee

- ~~Free or Fee?~~
- ~~Customer expectations~~
- ~~Customer education~~
- Provide alternatives
- Always offer a refund

PROVIDE ALTERNATIVES

- I let people know that the signal will always work down by the bar
- In emergency I let people "plug in"
- For Seasonals I explain alternatives
  - Cell Data Plan for $50/mo
  - Satellite service for $50/mo

POLITICAL ISSUES

Fee

- ~~Free or Fee?~~
- ~~Customer expectations~~
- ~~Customer education~~
- ~~Provide alternatives~~
- **Always offer a refund**

HARDWARE

Terms

- 802.11n
- 23db
- 2.4 Ghz

MHZ EXPLAINED

- Why does it matter?

GHZ EXPLAINED

- 2.4 was the standard
- 5 is now available to reduce over-crowding and increase bandwidth
- Many new devices support both
- 2.4 should be around a long time
- The standard does not depend on the frequency!
  - 802.11a thru 802.11n
  - Analogy: the standard is the language the frequency is the type of phone

THE LAWS OF PHYSICS

- The higher the frequency
  - The more bandwidth it can carry
  - The worse it is at penetrating objects
- Why I use 900 Mhz (or .9 Ghz) radios for my spoke
  - I need tree penetration
  - Bandwidth is still enough since I only have 6 leaving the park
  - ONLY good for backhaul since nobody else has 900 Mhz gear

THE LAWS OF PHYSICS WHAT ABOUT POWER?

- FCC regs allow for 1W (30db) with small antenna
- Most laptops have a lot less transmit power
- Increased Power output is NOT the answer
- WIFI is 2-way communications.
- Bigger antennas!

SUMMARY

- You need to provide 2.4 Ghz right now
- You can offer 5 Ghz now
- If you don't have LOS, consider 900 Mhz point to point
- Don't fall into the "super high power" trap
- Consider higher gain antennas

HOW TO PROVIDE?

- Do it yourself
  - Buy radios direct
  - Go through 3rd party (e.g. check box systems)
  - Find a 3rd party turnkey provider

BUY DIRECT MIKROTIK – WHAT I STARTED WITH

Show Item

- Advantages
  - Very flexible
  - Very powerful
  - Lower cost
  - Multiple configurations
- Disadvantages
  - Extremely high learning curve to program
  - Difficult to set each one up
  - I have not successfully configured a working Mesh

BUY DIRECT MIKROTIK – CONTINUED

- I still use them, phasing them out as end point radios
- I will continue to use them for backbone haul
- Good point to point applications
- 900 Mhz capable
- Configurable power output

BUY DIRECT OPEN MESH - ADVANTAGES

Show Item

- Open-mesh (http://www.open-mesh.com/)
- ~$100 per access point
- Cloud based management (Link)
- VERY easy to set up
- Can be configured to charge via vouchers or paypal (http://goo.gl/QLIjXS)
- Outage alerts

MOUNTED

POWER

BUY RADIO'S DIRECT - DISADVANTAGES

- No support
- Requires some expertise
- Problems are all on you (no scape goat)
- You need to engineer the layout

HOW TO PROVIDE?

- Do it yourself
  - ~~Buy radios direct~~
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3RD PARTY

- Advantages
  - Mount and go
  - You have a scape goat
  - Setup of software done for you
- Disadvantages
  - You still need to engineer the layout
  - Higher cost ($500* per point instead of $100)

3RD PARTY TURNKEY (IF THEY EXISTS)

- Advantages
  - Everything done for you
  - You have a scape goat for problems
  - You also have a scape goat for why you charge
  - No upfront cost
  - Tech support
- Disadvantages
  - Lost revenue

COURSE OBJECTIVE REVIEW

- Understand the needs of your guests.
- Consider possible modifications to increase guest satisfaction related to WiFi.
- Better understand the technology behind Wi-fi and its capabilities

UNDERSTANDING YOUR PARKS WIFI REQUIREMENTS

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