

1 Requirements

Coverage:

- Area to cover
- Optimize for 2.4 (lower cost) or 5GHz (capacity)?
- Use VoIP, video or data?

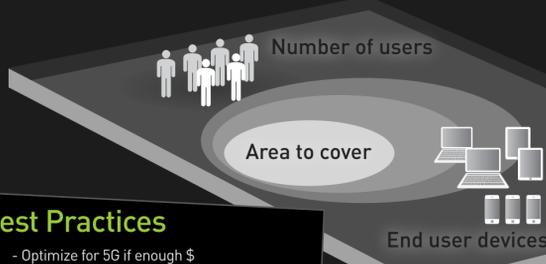
Capacity:

- Number of end user Wi-Fi devices
- Applications run on each device type

3.3

The average number of connected devices per knowledge worker by 2014

Cisco IBSG Network BPCO and Virtualization Survey Report



Best Practices

- Optimize for 5G if enough \$
- Data: -75dBm
- VoIP: -67dBm
- RTLS: 3APs at -75dBm, corner placement
- Talk to the network users!

Applications to use

- HD video
- E-mail
- Web browsing / FTP
- Skype,...

Global Mobile Data Traffic will increase

13X from 2012 - 2017.

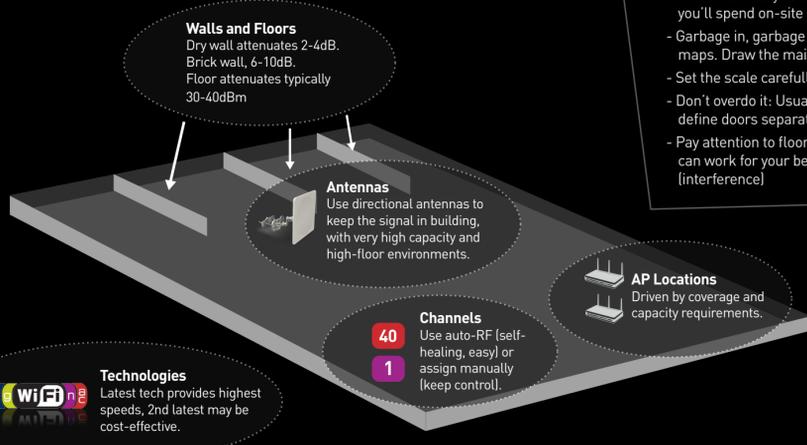
Cisco Visual Networking Index Global Mobile Data Traffic Forecast for 2012 to 2017

2 Wi-Fi Planning - Predictive Survey

Figure out where to place the APs, and how to configure them.

Best Practices

- The more time you use to plan, the less you'll spend on-site
- Garbage in, garbage out: Use high-quality maps. Draw the main walls
- Set the scale carefully, using a long wall
- Don't overdo it: Usually you don't need to define doors separately
- Pay attention to floor-to-floor RF leakage: It can work for your benefit, or against you (interference)

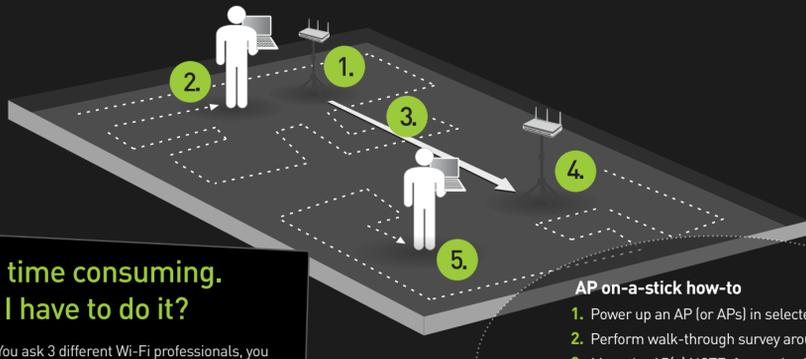


Technologies

Latest tech provides highest speeds, 2nd latest may be cost-effective.

3 Pre-Deployment Site Survey "AP on a stick"

Use one or a couple of APs to make real-world signal measurements prior to purchasing all infrastructure.



It's time consuming. Do I have to do it?

You ask 3 different Wi-Fi professionals, you get 3 different answers.

We'd say, do at least 2 of these 3

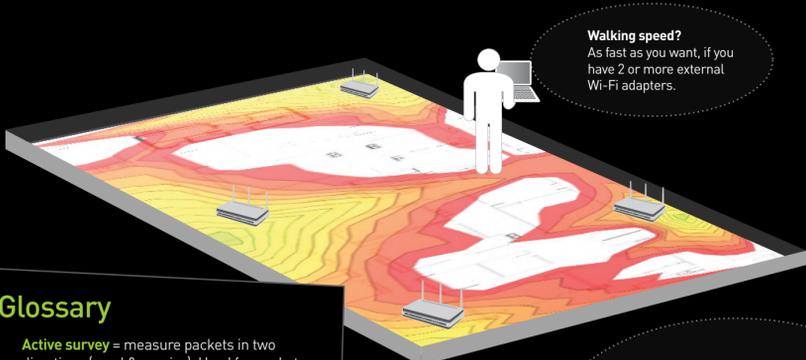
- Predictive design
- Pre-deployment survey
- Post-deployment survey

AP on-a-stick how-to

1. Power up an AP (or APs) in selected locations
2. Perform walk-through survey around the AP(s)
3. Move the AP(s) NOTE: freeze the APs in the survey tool when moved
4. Power up the AP
5. Perform walk-through survey around the AP(s)

4 Validation Site Survey aka Post-Deployment Survey

Verify coverage, connectivity and capacity with a single walk-through throughout the site - after Wi-Fi has been deployed.



Glossary

Active survey = measure packets in two directions (send & receive). Used for packet loss, packet delay,...

Passive survey = listen to probes & beacons passively. Used for coverage & SNR maps, etc.

Hybrid survey = passive & active simultaneously

Make Your Surveying Life Easier

1. Cut your surveys in short segments
2. Use touch screen
3. Get a lighter tablet or laptop
4. Get several people to survey
5. Use a Segway ;)

5 Troubleshooting

Verify coverage, connectivity and capacity with a single walk-through throughout the site - after Wi-Fi has been deployed.

Eliminating Wi-Fi interference (Co-channel and adjacent channel)

- Perform a quick survey
- Check channel separation
- Reduce AP Tx power
- Stagger APs between floors
- Neutralize interfering rogue APs
- Play nice with your neighbors

Resolving capacity problems

- Move to 5GHz
- Reduce SSIDs
- Ensure channels are OK
- Add APs
- Use directional antenna
- Migrate to newer techs

How to identify?

- Customers complaining
- APs monitoring the network
- Dedicated sensors
- Periodic site surveys / S.A.
- NEW: client-side monitoring

Troubleshooting Tools

- Wi-Fi infrastructure tools (NCS, Airwave, etc)
- Spectrum Analyzer (Ekahau, Metageek)
- Packet Analyzer (WildPackets)
- Site Survey Tool (Ekahau)
- Android Tool (Ekahau)
- Packet visualizer (Metageek)

Eliminating Non-Wi-Fi Interference

- Fire up spectrum analyzer
- See what's 802.11 and what's not
- Identify non-802.11
- Locate interferer
- Smash it or cope with it

Interference Sources

- Microwave ovens
- Wireless cameras
- Wireless mics
- Bluetooth
- Zigbee
- Wireless speakers
- Cordless phones

Top 10 Tips for High-Performance Wi-Fi

1. Minimize the number of SSIDs
2. Line of sight is king. Don't place APs in a box, avoid false ceilings
3. Get some help
4. Use 5GHz as much as possible
5. Use the right tools
6. Teach yourself Wi-Fi
7. Talk to network users
8. Be nice to people
9. Coverage is king
10. Capacity is the new coverage

(A big thank you to Jim Florwick and Keith Parsons for contributing to the tips)

Go to www.ekahau.com/wifidesign to learn more about Ekahau Wi-Fi Tools.

Download a free Ekahau Site Survey Evaluation Version at www.ekahau.com/wifidesign/ekahau-site-survey