Your Guide to Better Wi-Fi

The Do's and Don'ts of Wi-Fi Design

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Wi-Fi matters. Here's why.

Companies increasingly rely on Wi-Fi to connect people, devices and equipment across the globe. Whether it's mobile point-of-sale terminals, healthcare equipment, inventory systems, manufacturing sensors or the Internet of Things (IoT), Wi-Fi is an integral part of most organizations' daily operations.

Wi-Fi is a critical investment in a business's digital future. When deployed correctly it can result in:

Streamlined workflows across multiple enterprise verticals

- Mobile data access for staff dispersed across large geographical locations
- Voice services operating over Wi-Fi deliver untethered mobile possibilities
- Stock/ inventory consolidation across multiple mobile end-points
- Bring Your Own Device policies reduce the need for expensive corporate device purchases

Increased customer loyalty

- According to a survey conducted by hotels.com, 49 percent of business travelers consider free Wi-Fi a deciding factor when it comes to their choice of hotel. It's also a deciding factor for customers choosing restaurant and coffee establishments.
- Wi-Fi analytics platforms can provide insights on customer foot traffic, dwell time and visitation frequency
- Wi-Fi can be a vehicle for offering customer-exclusive content like guides, maps, lookup service, unique discounts and voucher codes

Multiple new engagement opportunities

- Location services for asset and staff optimization, wayfinding

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One of the core drivers of Wi-Fi adoption has been its ability to streamline existing processes or services, while delivering a far more flexible and mobile experience at the same time. Take for example the mobility freedom achieved with voice communications over Wi-Fi. Staff are no longer tethered to their desk to conduct business and can move and work throughout their workplace.

In many industries, Wi-Fi is a mission-critical necessity. According to Statista.com:

23 billion

IoT connected devices utilizing Wi-Fi as their primary communication medium

75+ billion

projected increase by 2025

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Wi-Fi is essential to customer satisfaction and employee expectations.

Offering free Wi-Fi for hotel guests and restaurant customers has become the norm. In retail, Wi-Fi allows companies to better compete, not just because customers want wireless access but because the data it gathers enables marketers to better anticipate and satisfy customer demand.

Employees also have a basic expectation that they will have access to Wi-Fi, with many organizations offering Bring Your Own Device programs delivering work email and network access to a singular employee-supplied device.

The fact is, most people expect Wi-Fi availability and easy access to the Internet wherever they go. If it doesn't work right, or isn't available, they won't be shy about letting you know and going elsewhere to get it.

This demand has pushed organizations to seek reliable Wi-Fi networks like never before.

When Wi-Fi doesn't work….

While most businesses have systems in place to maintain operations in the event of a Wi-Fi outage, those systems are typically highly manual. The impact to existing workflows can result in **reduced operational efficiency, diminished productivity, and lost profits.**

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If it's so important, why is Wi-Fi undervalued in organizations?

Part of the reason stems from a fundamental lack of understanding on how the medium works and the pitfalls of enterprise deployment compared to residential Wi-Fi. Take for example the Wi-Fi router we've all set up at home, something that can usually be done in minutes. These typically work well, with few performance issues. In light of this experience, most people expect similar requirements to set up an enterprise network. But the typical home doesn't need to accommodate more than four or five users, nor does it span tens of thousands of square feet.

An enterprise network on the other hand must perform across several floors, buildings or even campuses, and often must support thousands of concurrent devices. In this complex environment, a "plug and play" router simply cannot satisfy enterprise requirements, and this is something not widely understood. In order to deploy an effective Wi-Fi network, a wireless expert often needs to be engaged to spend time and resources creating a custom design for the company's network, taking into account the various requirements necessary.

Other reasons Wi-Fi may be undervalued:

It often gets the blame for poor client performance, when really the problem may be the result of limited Internet backhaul, an ineffective client on-boarding policy, or a cumbersome captive portal.

Often people assume the solution to enterprise Wi-Fi network issues is to simply throw more access points at the problem, with the thought being "More Wi-Fi = Better Wi-Fi" but this isn't always the case. With a limited amount of useable airspace – especially in crowded enterprise environments – the design must undertake a delicate balancing process. AP type, antenna type, transmit power and channel selection are just a few elements that require design scrutiny.

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The Risks of Spotty or Failing Wi-Fi

As people and organizations come to rely more and more heavily on Wi-Fi networks, the risk of their failure becomes increasingly significant. These risks impact a variety of industries including Retail, Healthcare, Warehousing/Manufacturing and Government.

Retail

Wi-Fi in retail allows merchants to better orient their offerings directly to the customer and to provide a more engaging in-store shopping experience, including:

- Customer location and way finding
- Stock check
- Price and competitive comparisons
- Digital signage
- Coupons
- Loyalty systems

These "sticky" engagements enhance loyalty and enable collection of customer analytics data. Plus, most stores' ability to complete the transaction is highly dependent on Wi-Fi, as is stocking, ordering and inventory control functions.

Wi-Fi failure in retail creates significant and very expensive problems:

- All transactional, stock and inventory operations must be completed manually – if that's even possible. Many modern small business storefronts simply do not have manual systems

- Timelines on even trivial tasks expand exponentially

- Streamlined workflows become labor-intensive inconveniences at best, and more likely cripple a store's ability to transact business

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According to Google:

82% of smartphone users say they consult their phones on purchases they're about to make in a store. They get ideas, look up information, and make decisions, all from their smartphone anytime, anywhere.

Healthcare

For care providers, Wi-Fi is not merely a matter of business or customer satisfaction; timely access to data saves lives. Care providers need reliability and bandwidth to connect critical applications across a variety of facilities - hospitals, long-term care facilities, mobile clinics:

- A myriad wireless devices and technologies used to streamline healthcare workflows

- A wide range of Wi-Fi clients:

  - Voice, text and paging communications

  - Patient diagnostic machines such as X-Ray and patient monitoring

  - Food ordering systems

  - Asset and inventory management

  - Remote temperature and humidity monitoring

Without reliable Wi-Fi to enable these technologies, hospital functions grind to a halt:

- Care providers are unable to communicate effectively and must struggle to care for patients

- Finding a nurse or orderly for patient transfer requires searching corridors and patient rooms

- Paging emergency staff is impossible

- Sending and receiving critical patient care information is reduced to manual paper processes

- Staff safety is put at risk

Reliable Wi-Fi provides access to real-time analytical data about patients, enabling doctors to boost both the quality and standard of care.

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Warehousing/Manufacturing

The warehousing vertical was one of the first to embrace Wi-Fi as a complimentary delivery medium to their existing workflows, pioneering the use of 802.11 technologies due to a highly mobile workforce. Warehousing environments are heavily reliant on Wi-Fi as a delivery medium:

- To streamline inventory and stock production lines

- For voice and communication services

- For location devices that enable asset and inventory analytics in real time

- To enable handheld devices that track inventory

A Wi-Fi failure in logistics results in:

- Manual work efforts for stock location, shipping manifests and other forms of communication

- Incomplete analytical information

- Hobbling – or entirely bringing down – manufacturing lines

- Delays in stock completion & shipping times

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Government

Government departments, similar to other enterprise businesses, operate a significant portion of their daily services off of Wi-Fi. Government departments also support local events and businesses by offering Wi-Fi services to local and visiting parties. This results in increased economic benefits for the local municipality. Government Wi-Fi networks can also be leveraged for a variety of services:

- 📁 Data/ network access
- 🎤 Voice services
- 📋 Stock/ inventory status
- 📍 Location services
- 🔒 Security services
- ✓ "Free Wi-Fi" services

Each of these services are leveraged to varying degrees depending on the government department, while some services are combined in an effort to maximize expenditure. For example, many government municipalities are rolling out free Wi-Fi in conjunction with district CCTV services.

Without stable Wi-Fi infrastructure, government systems are either severely hampered or will cease operating entirely:

- ▌ Offline public free Wi-Fi
  - ▌ Impact to economic benefits

- ▌ Staff data and voice services are tethered to a desk– mobility and productivity hampered

- ▌ Inventory and stock systems must be manually logged
  - ▌ Manual "by hand" entry rather than automated hand scanner entry

- ▌ Location and security services utilizing Wi-Fi as a communication medium effectively "offline"

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How
Wi-Fi Fails

Since its original deployment for basic data connectivity, the use and popularity of Wi-Fi has grown – including the use-cases associated with modern networks.

In many cases of "failed Wi-Fi", it's not an outright failure but a single (or even series) of localized issues causing performance degradation which translates to an overall slower Wi-Fi experience.

A variety of factors can contribute to Wi-Fi's overall effectiveness:

- Spectrum interferers operating within the unlicensed 2.4 & 5GHz range, including:

  - wireless cameras

  - non-Wi-Fi IoT devices

  - microwaves

- Channel contention

  - adjacent

  - co-channel interference

- Misconfigured APs

- Sticky clients

- Roaming issues

Mitigating these factors requires striking the right balance between organizational goals for Wi-Fi, system requirements and the environment in which the network will be implemented.

Without the right tools, accurately reading that environment is very difficult, which means implementing a network that functions effectively is extremely challenging – if it's possible at all.

For example, RF signals can create significant interference with Wi-Fi. These are around us all the time but – outside the list of available SSIDs – are completely invisible. Visualization instruments help see where RF signals could create issues, which is key to designing, validating and troubleshooting a complex network.

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The 5 Big *"Don'ts"* of Wi-Fi Design

1

Skip the Design Step

Wi-Fi has to be designed, not just installed.

It's tempting to just put up some APs and hope your network will perform well enough. Back in the day when wireless networks were relatively simple and "nice to have" instead of mission-critical, this sometimes worked.

But today, Wi-Fi is too high-stakes for this approach. Your network must be reliable, and it has to keep up with the demands of modern applications like voice-over IP and video streaming.

If You Don't Spend Enough Time on the Design Step:

- You're just guessing

- It's likely you'll have areas with not enough signal

- You might deploy too many APs, causing excessive co-channel interference, which hurts performance

- You'll probably have channel overlap, which negatively impacts network capacity and performance

- Users will experience plenty of issues, including:

  Poor connectivity
  Slow service
  Lack of reliability
  Random disconnects

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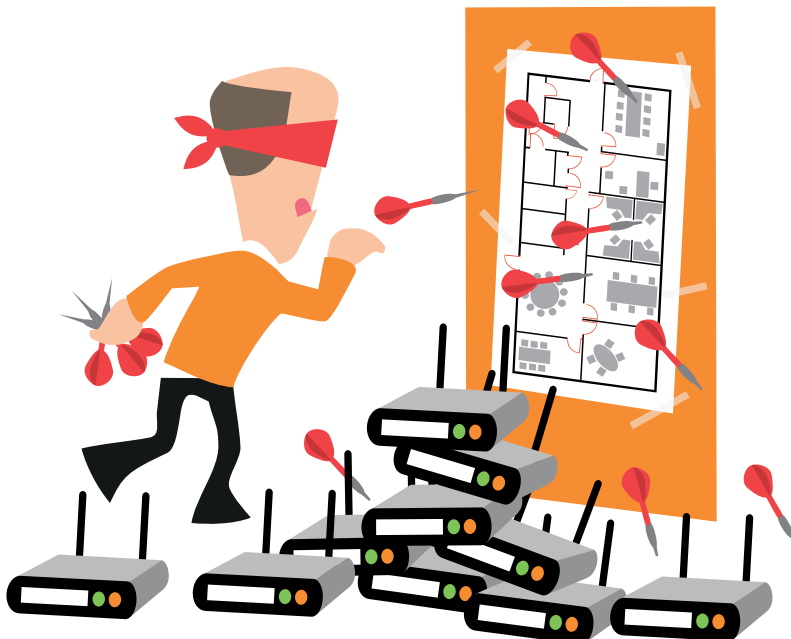
2

Fail to Ask What's Required of Your Network

These Are Questions You MUST Answer Before Designing Your Wi-Fi

▰ How many devices?

▰ What devices are they?

▰ What applications will users need?

▰ Where do they want Wi-Fi?

▰ In what areas is Wi-Fi not needed?

Whenever a true professional makes something, he designs it to meet a specific set of requirements. For example, a team of engineers designing a car will ask dozens of questions before they begin, for example:

What kind of car will it be?

Does it need towing capacity?

How many people does it need to seat?

Should it prioritize fuel, economy, or speed?

They know that their requirements will vary widely depending on the kind of car they're building. A minivan prioritizes family dynamics, but also offers limited towing capacity. A truck makes towing capacity the priority at the expense of fuel economy. A high-end sportscar is miserable to get car seats in and out of and throws fuel economy out the window in favor of speed.

Requirements vary widely with Wi-Fi too. A network for a few barcode scanners in a warehouse will be very different from a network designed to support a densely-packed auditorium. It's critical for Wi-Fi designers to interview users and customers to find out exactly what they need so they can design the network accordingly.

If You Don't Gather Requirements:

The network won't meet the customer's/user's specific needs

Customers/users will be frustrated

The network will require troubleshooting

You'll likely need to do a re-design soon after you launch

Extensive rework will be necessary, creating unpleasant fallout like: having to move access points and associated cabling; expensive and time-consuming patching of drywall and ceilings

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3

Ignore the Need to Determine Hard Requirements

Zig Ziglar says, "If you aim at nothing, you'll hit it every time." This is true in many aspects of life. Personal and professional goals, personal finances, and... Wi-Fi design.

If you don't know what you're designing the Wi-Fi network to achieve, it's impossible to have a successful implementation because you don't know what success is. It's important to decide, up-front, precisely what the network is going to achieve. If you don't have a clear target, how can you hit it?

A bad set of requirements looks like this:

▰ Wi-Fi everywhere

▰ Super fast

A good set of requirements looks like this:

▰ Minimum -67 dBm of signal strength

▰ Minimum signal to noise ratio of 20 dB

▰ Minimum data rate (signaling rate) of 24 Mbps

▰ Minimum of two APs audible at -75 dBm

▰ Maximum of two APs sharing the same channel above -85 dBm

If You Don't Set Hard Requirements

You won't know whether you met your goals

You won't know if the Wi-Fi is any good until it breaks -- and trust us... it will break eventually

If users start to demand more from the network down the road, you'll have no way to prove that your network was adequately designed – in other words, you won't be able to protect yourself

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4

Rely Exclusively on a Virtual Design

Doing a virtual network design sounds cool. You save travel time and it feels efficient. You use a building map to guide you, but... is that wall really a brick wall? Or is it just drywall?

A picture of the facility is never enough. It's absolutely critical to do a real-world visit of the building.

You'll need to ask questions about scale and possible sources of interference. You'll need to look for mistakes in the floor plan, check walls to ensure you know what material they're made of. And you need to measure how different types of walls affect or weaken signal strength (the technical term here is "attenuate" the signal, which means to decrease it). You input those values into your predictive model to make it more accurate

If you skip this step, you risk designing a network for a building that doesn't exist anymore. Walls get moved, added, and removed all of the time. Sheetrock hides brick walls. Maps have mistakes.

If you don't spend time in the building:

▼ You may mistake sheetrock for brick walls... or worse

▼ Your network may fail because it was designed for the building in the map, not the building as it is today

▼ You'll have to guess how much each wall attenuates

We don't want to design a network that's based on guesses. We want to design based on hard facts.

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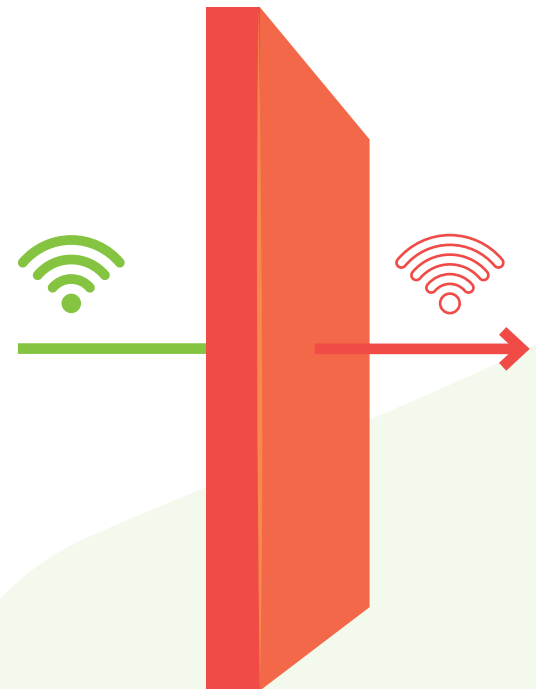
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Skip Network Validation

You took the time to complete a thorough design and you're eager to implement it. But as tempting as it is to deploy the network and call it a day, there's another critical step: validating the network that you just deployed with a site survey. Performing a site survey involves going on site after the network has been deployed and taking real-world measurements on a map with a site survey tool. This will output the exact same type of maps as the predictive network design did, except this time, the maps are based on real-world data.

Don't skip visiting the building and taking real-world measurements to make sure your design or predictive model (if you did decide to do a virtual design) matches the real world.

With a Wi-Fi network design tool, you can develop extremely accurate predictive models - but they're never absolutely perfect. That's why you need to gather real-world data with a site survey to make sure the network meets your requirements and validate the network.

If You Don't Validate Your Design:

You won't know whether the network meets requirements or not

You can't prove to your boss or customer that the network is/was healthy when you deployed it

You won't know whether your Wi-Fi is good or bad

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The *DOs* of Wi-Fi Design

1

Involve All Stakeholders in Your Wi-Fi Project

To ensure they fully understand the project – and to ensure you fully understand what success looks like from stakeholders' point of view – you'll need to ask a lot of questions.

A good place to start is with the basics:

- What is the budget of the project?
- What is the purpose of the Wi-Fi?
- What problem is Wi-Fi going to solve?
- Why are we installing Wi-Fi?
- What is the reason for this Wi-Fi equipment to be upgraded?
  - Is there some feature or use case that the current system is not able to support?
- Why are we upgrading?
  - If it turns out that we're upgrading because "now is the time to upgrade," but everything is working acceptably, then the upgrade may not be necessary

If some of these questions sound a little repetitive, that's by design. Asking the same question in a different way helps your customer think more carefully about project goals, their ideal outcomes and what aspects are most critical to achieving those.

SECURITY

2

Manage Expectations

Asking plenty of detailed questions up front, and documenting what you learn, can head off expensive project creep problems.

This is the key to a happy outcome for your Wi-Fi project. If each stakeholder thoroughly understands the goals, what is required to reach those goals, and their specific role in helping the team be successful, everybody can work together more effectively and with less stress.

A great way to set expectations is using the process of gathering project requirements as an opportunity to also explain details, logistics and realities of implementation. Here is a list of questions to help you do that.

What is the scope of the project? Answering this one means you need a clear definition of:

- Who is responsible for the LAN infrastructure?

- Who is responsible for the installation of the equipment?

- Who is responsible for conducting an audit of the existing infrastructure?

- Do we have up-to-date floor plans?

  - Do we have any floor plans?

  - Do we need to devote some time on-site to validate the floor plans?

  - Do we need to create floor plans for this project?

  - Do we need to increase the project fee if floor plans need to be created?

  - Manipulate floor plans before the site-survey work begins if at all possible

A statement as small and simple as "Wi-Fi is required in this remote area" can necessitate large-scale LAN infrastructure upgrades. Remember to manage expectations **before** the project kicks-off.

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3

Continue to Ask Questions

Note: Independent cost analysis for some areas may be required. Explain to your customer how and why some areas are more demanding and therefore more expensive to install.

More questions for accurately setting project scope:

▰ Specifically define the areas that require Wi-Fi:

  ▰ Is Wi-Fi expected to permit seamless roaming between floors?

  ▰ Are there any exclusion areas? Is Wi-Fi expected to work in

    ▰ Restrooms/ toilet stalls
    ▰ Stairwells
    ▰ Entrance lobby
    ▰ Waiting room
    ▰ Break room
    ▰ Indoors only

    ▰ Courtyard
    ▰ Gathering places
    ▰ Outdoor areas

▰ Where outside of the building?

▰ How far from the building do you need reliable access to Wi-Fi?

▰ Are there areas between buildings where users need to remain connected as they move about?

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Dig Deep for All the Info You Need

As a Wi-Fi professional, you are the leader of the design and implementation project. It falls to you to be sure all the detailed information necessary to install an effective WLAN is discovered, collected and alive in the design.

Consider this hypothetical scenario:

Meeting with key stakeholders, you discuss project scope and areas requiring Wi-Fi access:

> **Mr. or Mrs. Customer, where would you like the Wi-Fi?**
>
> **Well, everywhere please.**

At this point, it's your responsibility to extract more detail from them:

> Okay, you say everywhere. What exactly do you mean by everywhere? Do you mean in the bathroom stalls? Do you mean along all of the corridors? How about the maintenance rooms and storage areas? I suspect there are some areas that do not require Wi-Fi...

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Where would you like the Wi-Fi?

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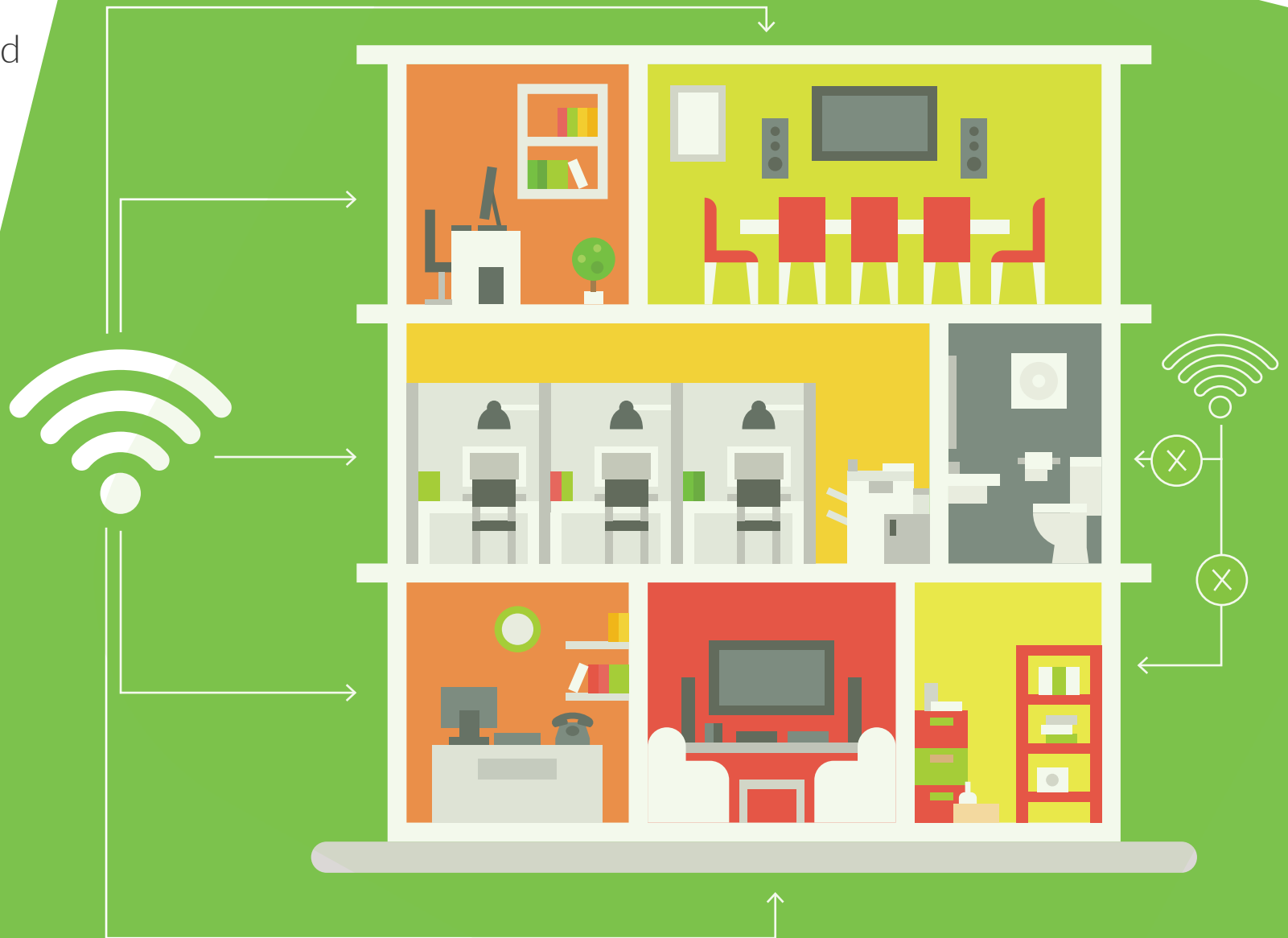
Keep Asking Questions

The bottom line regarding project scope is: Never assume anything. Ask as many questions as needed to document every single aspect of your customer's requirements and desired use cases.

You need to get good at prompting customers to fully consider what they're asking for – and also to make sure you understand how a particular business may be unusual. For example, your customer may actually need a connection in areas you wouldn't expect:

> " This maintenance corridor: would anybody need Wi-Fi in there?

Yes, our maintenance team will be issued VoIP handsets so they can use Wi-Fi to communicate and to track man-down situations so we can dispatch a team to help if needed.

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4

Hold Your Ground When It Comes to Fundamentals of Good Design

Once you've determined project scope, it's time to get a handle on restrictions. This is a good place to remember you are responsible for educating customers about the limitations of the technology.

You may find yourself having an awkward conversation when you say:

66 I'd like to place an AP right here.

No, no you can't do that.

66 But why not?

Because it would look ugly.

66 If you want reliable Wi-Fi for your customers/ employees, then we need to put an AP somewhere in this area.

Help your customer understand why this is necessary. The goal is to strike a balance between reaching a compromise with your customer, but without hindering performance of the Wi-Fi.

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5

Ask Thorough Questions About Restrictions

Place APs close to the clients they're serving. Fire-preventative water sprinklers are installed in the optimum positions for extinguishing a fire, and because of their location they are effective. The same is true with Wi-Fi. You should place your APs close to the clients they are intended to serve, when at all possible.

Be sure to ask follow-up questions as needed to ensure you and your client fully understand what you're doing and why:

- Where can we physically install necessary equipment?

- Are there aesthetic requirements?

  Are there regulatory requirements?

  - Is the site a listed building?

  - Are there surfaces where we cannot add holes?

- In order to meet specific aesthetic requirements, you may need to:

  - Investigate custom mounting solutions

  - Imagine novel AP mounting locations

  - Discuss where can we hide these APs while NOT compromising the effectiveness of the AP

- Understand the density of users and devices

- How many users are you expecting to serve with this new Wi-Fi deployment?

- How many devices do we expect each person to carry?

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6

Conduct an Audit of the Existing Infrastructure

Be mindful of internet backhaul! Is your connection sufficient for the applications and user device density needed? As Keith Parsons has explained, it's not possible to fix inadequate backhaul with great Wi-Fi design. Re-designing your Wi-Fi will not make your internet connection any faster.

Locate network cabinets (CABs) and the currently installed APs. While we don't want to allow current AP locations to dictate where new ones should go, knowing current infrastructure locations is often valuable, potentially reducing work and cost during installation.

Good questions to ask:

- Can we reuse any of the existing infrastructure?

- What are the current CAB locations?

- What standard of cabling has been installed?

- Can we reuse it?

  - PoE capability?

  - Maximum data rate capability?

- Do we need to run Cat6?

Is this Wi-Fi project a good opportunity to upgrade some of the surrounding infrastructure? (This is probably not the Wi-Fi professional's decision, but you should absolutely bring this to the table)

When it comes to cable length, the distance between CAB and AP is important. Often, existing cabinets can be reused but it may be necessary to install new (additional) cabinets – and beware: this could impact your budget. New CABs can quickly escalate project cost and connecting CABs together can (in some scenarios) require new optical fiber links and the installation of new switches.

7

Use a Laser Measure or a Tape Measure to Scale Your Map

- Don't use a doorway

- Use the appropriate equipment for setting the scale in your project. Consider Google Earth or Google Maps if you do not have access to the building

- Scale your floor plan in the most accurate way you possibly can

8

Simulate the Wi-Fi Environment

- A simulation of the Wi-Fi is better than no plan

- Measure the wall attenuation if you have the opportunity

- Perform AP-on-a-stick (APoaS) survey to validate your simulation – or at least a sample set of APs to validate your design

- APoaS survey data is the best way to prove or disprove the accuracy of your simulation

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9

Install the Equipment Professionally

Take pride in your work: Always keep cable routing neat and tidy!

Although a poorly installed access point probably won't affect how well the Wi-Fi operates, whoever is installing the equipment should take pride in their work. This inspires the confidence of your team/stakeholders and reduces mistakes.

- Use the appropriate mounting hardware

- Do the research before the equipment arrives

- Plan in advance for AP installation. Do not un-box an AP and then realize you don't know how to attach it to the ceiling

- Document the installation so that in the future you don't have to scramble trying to figure out which cable goes where

- Perform a post-installation/deployment survey

- Label everything so it can be appropriately identified in the future

- Create post-deployment documentation. In some situations, this material should be assembled into a deliverable report document at the end of a project. Include:

  - AP locations

  - Patch panel IDs

  - Switch ports

  - AP height

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10

Use the Latest and Greatest Survey Equipment

▸ Use a professional rig for performing your APoaS surveys

   ▸ Buy manufactured products off the shelf

   ▸ Or build your own using instructions from industry experts, for example: https://nickjvturner.com/2016/11/08/how-to-modify-manfrotto-ranker-stand-for-apos/

▸ When performing APoaS survey use the AP model and antenna that you are proposing to install

▸ Use a battery pack to avoid having to plug and unplug the AP every time you move between rooms

▸ Consider the configured transmit power of your test AP and - depending on your regulatory domain - also consider which channel band you are broadcasting within. The maximum transmit power differs between the channel bands in many regulatory domains.

▸ Don't overthink the APoaS configured channel between AP locations. In a site survey tool, you can alter the AP channel after the survey is complete. It's crazy to manually change the channel between each AP location – don't do it.

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11

Compensate for the Possible RSSI Offset Between Your Target Devices and Your Survey Equipment

The equipment you use to perform your survey may be more sensitive than the target hardware you intend to use on-site after deployment. For example, Ekahau Sidekick® has enterprise-grade radios with large and effective antennas which will likely report a greater signal strength than physically smaller devices with smaller antennas. There may be a significant receive sensitivity offset between the two, so be sure to investigate, document and compensate for this.

12

Consider New Ways to Maximize Your Workforce

With new advances in technology, there are more ways than ever to make your team much more efficient. For example, with the right equipment, less-skilled workers can gather data while the more experienced engineers analyze and plan. In this scenario, it's easy to train an IT admin on data collection. He or she can make the site visit and send information back to the engineer to do analysis. This conserves the time of an expensive Wi-Fi professional.

13

Conduct a Post-Deployment Validation Survey

This is critically important so that you have documentation proving that your design – as built – meets the requirements agreed upon at the beginning of the process.

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14

Familiarize Yourself with Wi-Fi Design Best Practices

Consult the Wireless LAN Association (WLA), which lays out industry best practices and quality assurance in the delivery of Wi-Fi networks. The WLA is currently creating standards for WLAN design, assessment, implementation, and validation which will benefit the WLAN industry as a full life-cycle standard.

15

Even if You're Not an Expert, Learn the Core Fundamentals of Wi-FI

Network owners will see huge benefits from learning the fundamentals. You don't have to become an expert but troubleshooting common Wi-Fi issues is much less stressful when the owner of the network has a good grasp of the basics. We strongly recommend reading the CWNA book. Even if you don't plan to take the exam, the book contains invaluable knowledge.

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Troubleshooting Wi-Fi Problems

Maybe you weren't fortunate enough to have the time or tools to design your Wi-Fi using our "do's" and "don'ts", or maybe you inherited a problematic network in a new job. Whatever the reason, many IT professionals find themselves wrestling with an unreliable WLAN. Determining the cause – or causes – is complicated. You could be experiencing:

▼ Coverage holes

▼ Extensive channel interference

▼ A problematic client device trying to join the network

▼ Wi-Fi network infrastructure configuration problems

Diagnosing the problem requires collecting data from the Wi-Fi network on-site, which starts with investigation into Wi-Fi infrastructure vendors management systems – like Cisco or Aruba for example. These measure infrastructure performance in the ceiling and help you answer the questions:

▼ Are the access points up?

▼ What other nearby access points are the access points seeing?

▼ Are the Ethernet cables connected to the access points and working properly?

The situation looks different from the access point perspective versus what's happening on the floor level. Piecing it together requires an expert who can walk the floor level to measure site survey data or packet captures. Tools that enable these site surveys – especially packet capture or analysis – typically require a seasoned professional, requiring a Wi-Fi expert to travel on site.

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Find a Wi-Fi Expert

This is easier said than done.
Unfortunately, there are only about 300 Certified Wireless Network Experts (CWNE) in the world and they're in high demand. Juggling Wi-Fi networks across numerous sites, they're overloaded and traveling most of the time.

Maybe the problem can be solved via phone conference or remotely. If not, the expert will need to travel to your site to collect data and then troubleshoot.

Wi-Fi Expert Booked Solid for the Next Five Weeks?

Your IT admins can try to tear themselves away from all of their other responsibilities to attempt to resolve the problem. It's unlikely, however, that they'll have the time needed to learn the complex, expert-level Wi-Fi tools that would quickly identify the issue and enable them to fix it.

And without the time or expertise to maintain the system appropriately, the IT admin is looking at even more challenges in the future.

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But What if Wi-Fi Experts Could Collaborate Remotely with Your IT Admin?

In a survey of 200 network engineering professionals:

45%

cited lack of collaboration as a key challenge in securing and troubleshooting networks -- State of the Network Engineer: Toward an Automated Future, NetBrain April 2017

By enabling near real-time collaboration between your Wi-Fi expert and IT admin, your company can enable a dynamic duo of Wi-Fi design, implementation, maintenance and repair.

Today's technology is beginning to enable more efficient use of the rare Wi-Fi expert by making it easy for them to work remotely with IT admins from wherever they are.

Thanks to easier-to-use tools, admins can perform simpler tasks such as validation, site survey and walk-throughs. They can then transfer data they collect directly to experts in near real time, helping minimize the necessity of remote site visits.

The future of Wi-Fi project workflow is to help over-tasked wireless engineers keep pace with increased network demands. Enabling seamless collaboration between Wi-Fi experts and non-experts, both can work jointly to get more done in less time.

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Ekahau Can Help

Ekahau Connect™ is a suite of Wi-Fi tools that enable you and your team to design, optimize and troubleshoot any Wi-Fi network faster and easier than ever before.

- Design reliable, high capacity Wi-Fi networks

- Validate a new Wi-Fi deployment or optimize an existing Wi-Fi network

- Analyze and troubleshoot Wi-Fi issues in real-time

Learn more about how Ekahau can help you design, validate, analyze, report and troubleshoot Wi-Fi networks:

[Learn more]

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Ekahau Connect™
The All-in-One Product Suite for Better Wi-Fi

Ekahau Pro™ - the industry standard tool for designing, analyzing, optimizing and troubleshooting Wi-Fi networks

Ekahau Sidekick® - precise Wi-Fi diagnostic and measurement device used by professionals for site surveys, spectrum analysis and packet capture

Ekahau Survey™ - first ever professional Wi-Fi site survey and analysis tool for iPad
Requires Ekahau Sidekick, Ekahau Pro and Ekahau Cloud

Ekahau Capture™ - easy to use packet capture tool helps anyone detect complex problems without waiting for a Wi-Fi expert
Requires Ekahau Sidekick

Ekahau Cloud™ - choose a collaboration method that works best for you - cloud or local

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What Can Ekahau Do for Your Organization?

35%

of Fortune 500 companies run their networks with Ekahau Wi-Fi planning and measurements solutions.

We are recognized for delivering the easiest-to-use, most reliable solutions for Wi-Fi planning, site surveys, troubleshooting and optimization.

Our solutions minimize network deployment time and ensure sufficient wireless coverage – across all industries, project sizes, building infrastructures and level of complexity.
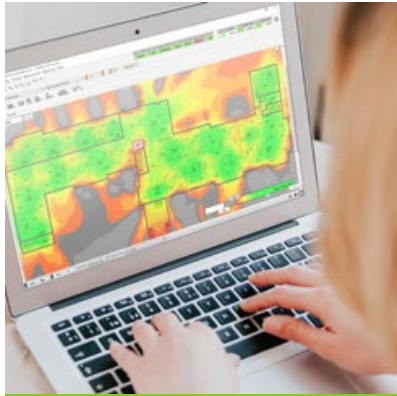
Our enterprise tools are ideal for wireless professionals designing and deploying small to large Wi-Fi networks and troubleshooting Wi-Fi issues.

Schedule a demo today to see the complete Ekahau Wi-Fi toolkit in action.

Schedule a demo

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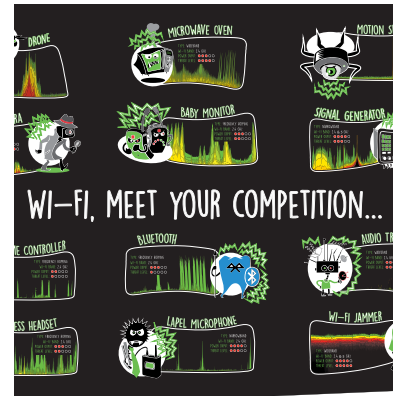# Additional Resources

Guide

A Beginner's Guide to Wireless Tools

White Paper

Designing Good Wi-Fi: It's Not Just Plug-and-Play

Infographic

Wi-Fi, Meet Your Competition

Case Study

Healthcare Provider Improves Wireless Network

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About Ekahau

Ekahau is the global leader in solutions for enterprise wireless network design and troubleshooting. More than 15,000 customers, including 35% of Fortune 500 companies, run their networks with Ekahau's Wi-Fi planning and measurement solutions. Our software and hardware solutions design and manage superior wireless networks by minimizing network deployment time and ensuring sufficient wireless coverage across all industries, project sizes, building infrastructures and levels of complexity. We are recognized for delivering the easiest-to-use, most reliable solutions for Wi-Fi planning, site surveys, troubleshooting and optimization. Whether a corporate office, hotel, hospital or university – if the Wi-Fi works well, it has likely been built using Ekahau's Wi-Fi Design solutions.

Ekahau is headquartered in Reston, Virginia and has much of its R&D and product related functions in Helsinki, Finland.

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