www.ekahau.com

5 Steps to Better Hotel Wi-Fi





As is the case in other verticals, hospitality wireless networks have evolved greatly over the past few years. Gone are the days of just throwing a bunch of equipment up in hallways and linen closets. The Wi-Fi network is vital to hotel operations. It needs to support not only critical business functions, but also provide guests with a comparable experience to home, or better. Investing time performing a proper site survey increases the likelihood of a successful deployment and produces a network that leaves staff and guests satisfied.

Understanding the Requirements

The most crucial step of any network design is to understand the requirements. Therefore, have a conversation with stakeholders prior to arriving on site to discuss what the expectations are for the network. Many different technologies can come into play, from VoIP to IPTV, security systems; even digital signage or Point of Sale (PoS) systems can rely on the network that will be deployed. Understanding how these devices access the network, whether they be wired clients or wireless stations that add to RF overhead, will help ensure your design is robust enough to handle the demand.

Gathering Documentation

Obtaining any available documentation at this early stage will also be beneficial. Blueprints or floorplans are extremely helpful and can be used to determine which areas of the property need wireless coverage. Different spaces in the property can have different demands of the system. For example, larger conference spaces will have different requirements, from an RF perspective, than the gym. These large areas need to be designed with care, ensuring the wireless system is deployed and configured to maximize capacity. One method to gain an understanding of how many devices could be in a given area is to take the maximum occupancy rating, and multiply that by 2. While you want to be as accurate as possible to keep costs from being astronomical, it is always better to err on the side of caution and ensure the system is robust enough to handle the worst-case scenario. Tools like **Ekahau Site Survey** offer Capacity Planning, which can be used to simulate this demand and help ensure your design holds up.

Formulating a Plan

Using the provided documentation, along with a clear understanding of the requirements, the next step should be to formulate a plan for the site survey. Predictive modeling can help highlight areas you may want to more closely scrutinize while on site. Developing this plan ahead of time ensures efficiency. Accessing rooms, whether common space or guest rooms, can sometimes be challenging in a fully booked hotel. Save time and make your survey more productive by communicating with staff on site ahead of time and relaying which specific areas you will need access to.

The Design Process - on Site

When on site, it is time to begin putting the pieces together. Verify that the documentation you were provided is accurate. Do the blueprints match up? Are the communications closets where you think they are? If there is existing Wi-Fi, can any of those cable runs be re-used? Hotel construction can vary greatly, which can cause challenges when running cables. Hard ceilings (sheetrock, etc.) can require access hatches to be cut in order to get the cable to the proper location. This requires specific tools, as well as additional labor, so it is important to take notes when surveying.

In most cases, it is best to break the survey into two parts: the common areas (lobby, gym, pool, meeting spaces, etc.) and the guest rooms.

While you may not perform a pre-deployment RF survey throughout the entire hotel, you should at least visually inspect each area to ensure you understand the characteristics of each space. Taking pictures can be helpful for future reference.

When looking over each common space, take note of ceiling height, as this could determine which type of antenna you will use. Wi-Fi in rooms with ceilings over 15' usually performs better using directional patch antennas than using omnidirectional APs placed on the ceiling.

This is because of the way an omnidirectional antenna propagates energy. The higher an omnidirectional AP is placed from the ground,



the larger the coverage hole is directly under the AP. Standard indoor omnidirectional APs will perform best in areas with an average ceiling height of 8-10'. In order to maximize the coverage area from an omnidirectional AP, you should look to deploy closer to the center of the room as opposed to tucked into a corner. Omnidirectional antennas propagate energy evenly in all directions in the horizontal plane, so some of the signal could be wasted if you do not place the AP in the proper location.

As you begin to look at the guest-room floors of the property, you need to determine the type of AP you will be installing and where you will be installing it. The preferred method of deployment has shifted away from stringing APs along the hallway, and towards trying to get the APs closer to the guest (i.e., into the guest rooms). Most vendors offer a wall-plate style AP that mounts over a gangbox in the guest room. Using these APs requires a data cable to exist in the room, but many offer additional Ethernet ports that support multiple in-room connections such as phones, television set top boxes (STBs), or guest facing hardwire connections. Some even provide power-over-ethernet (PoE) to power these devices. The downside to these APs is that they are generally less robust than their ceiling mounted counterparts (2x2 vs. 3x3 or 4x4), and adding one to every guest room can cause RF issues like co-channel interference (CCI), especially in the 2.4 GHz band. This usually leads to disabling radios on APs to improve airtime utilization, which is one of the main factors in well-performing Wi-Fi.

If the guest room does not have an existing data connection, be sure to scout out potential cable paths from any existing communications closet to your desired location. Once again, hard ceilings are a factor you must be aware of, as they could add significant labor to your cable runs.

In order to understand how the signal propagates throughout a hotel, it is a good idea to perform some type of RF survey. There are different ways to accomplish this. One method is to just test for wall attenuation in a few areas, then complete a predictive design based off that data. It is always helpful to have your own testing equipment, particularly a test AP. The reason for this is that you have total control of any mitigating factors, such as the transmission power the AP is set to. Having this type of control allows you to get consistent results — that you can trust. To determine how well the Wi-Fi penetrates through a wall, set up a test AP at least 10-15' away from the wall being tested. The Free Space Path Loss formula shows us that RF energy degrades on a logarithmic scale, meaning that the greatest amount of attenuation occurs in the first few meters, even if the signal is unimpeded. Taking your measurements from further away narrows your margin for error when measuring the loss through a wall.

With your test AP set up and broadcasting, use your testing device (laptop, phone, tablet, etc.) and get a signal reading on the same side of the wall as the AP (measurement A). This can be accomplished with anything from a simple Wi-Fi scanner that shows dBm readings — all the way up to full heatmapping software. Note the reading on your scanner, then move to the other side of the wall and take another measurement (measurement B). Subtract measurement A from measurement B, and the difference is your loss calculation for wall attenuation. It is a good idea to perform this test in a few different areas; this will help ensure consistency. These numbers, along with

an understanding of free space path loss, can now be used to predictively design your Wi-Fi deployment.

The other method is to use professional-grade heatmapping software and walk a survey path around your test AP. This gives you a clear picture of how well the AP is covering a space and usually yields more reliable results that allow you to design your network more confidently. You should try to obtain a sampling of a few different spaces in the common areas, moving your test AP around to different spots. You should also try to survey at least one section of guest rooms. While occupancy can make it difficult to access guest rooms, your goal should be able to gain access to a few rooms on three consecutive floors of the property: the room where you test AP is deployed and the rooms on either side, plus one room above and one room below the test room. While this seems tedious, it is always better to have too much data than not enough. The more data you have, the more confidence you can place in your final design.

Completing the Design

Now that you have compiled all of your data, you can complete your design. While it is common for changes to happen and issues to pop up during your deployment, putting the effort into performing a proper site survey and doing your homework ahead of time limits these changes and enables you to confidently handle any changes that may arise.

What Can Ekahau Do for Your Organization?



Today, 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.

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.

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

