



Wireless Network Design Kit

Frequently Asked Questions

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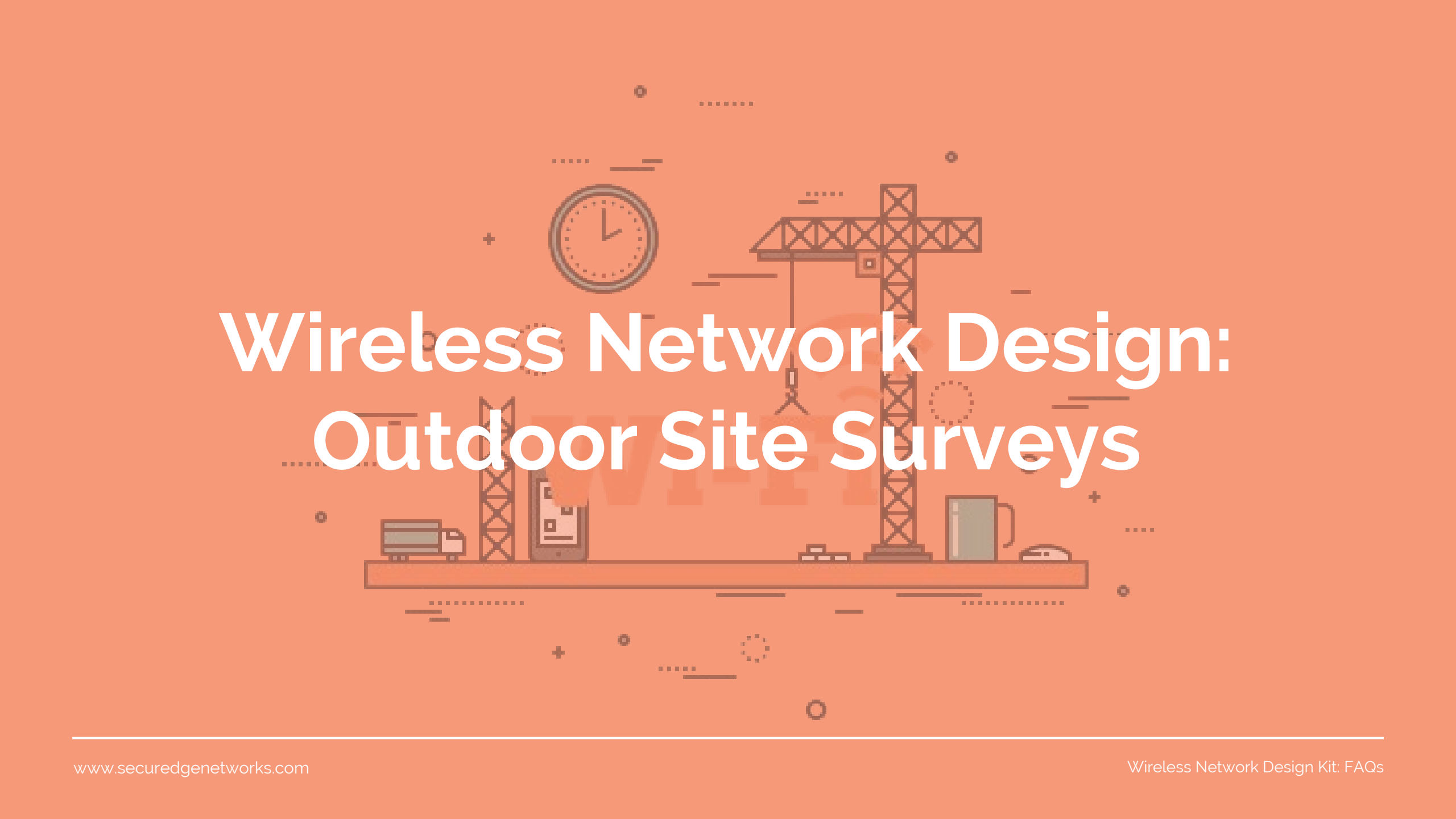
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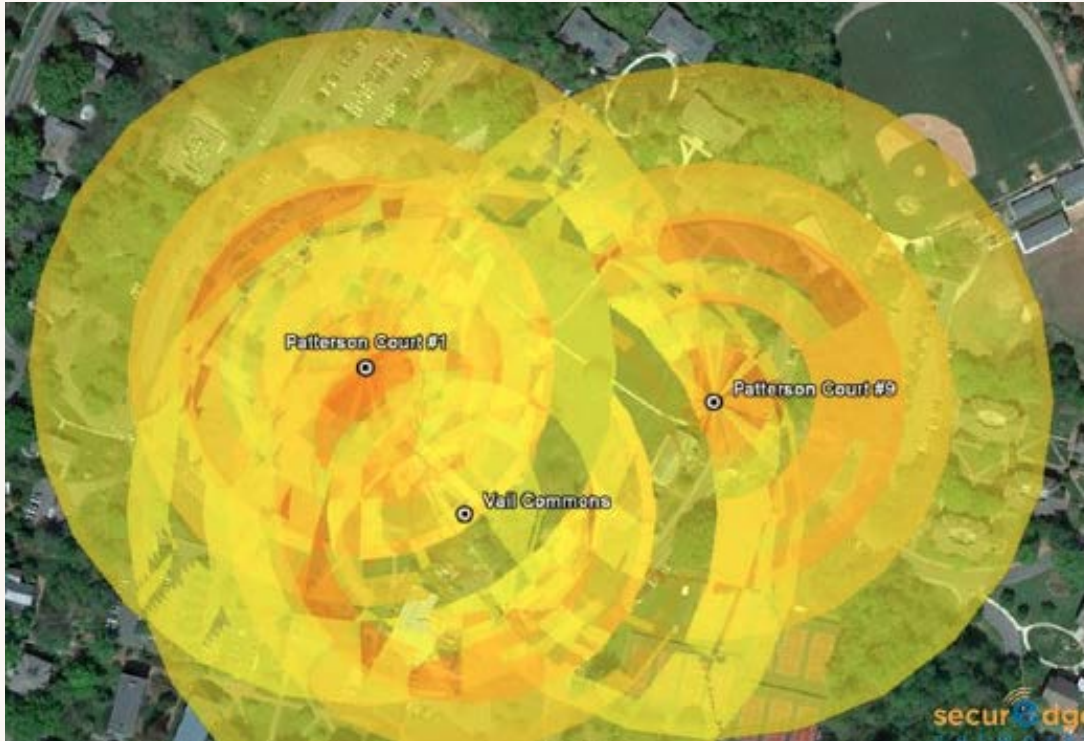
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SecurEdge Subscriptions

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Wireless Network Design: Outdoor Site Surveys

Wireless Network Design: Outdoor Site Surveys



What is an outdoor site survey?

An outdoor site survey is a survey of the exterior / outdoors of your facility or campus for wireless coverage. An outdoor site survey can happen in two forms; a predictive site survey and a physical site survey.

Because of the complexity of an outdoor site survey due to requirements such as mesh or bridge links, we suggest doing a predictive survey first and then conduct a physical survey to verify coverage or mesh/bridge links of the access points.

The predictive portion of an outdoor site survey using planning tools will tell us where the access points should be located for proper coverage and whether the mesh or bridge links we have designed will work with the distance, the antennas and access points we are using to create the links.

A physical outdoor survey is performed similar to an indoor physical survey with an access point being installed at a particular point and then the coverage is measured by walking the area with a laptop using survey software.

Wireless Network Design: Outdoor Site Surveys

What information is needed for an outdoor site survey? To perform the predictive site survey we will need to know the following;

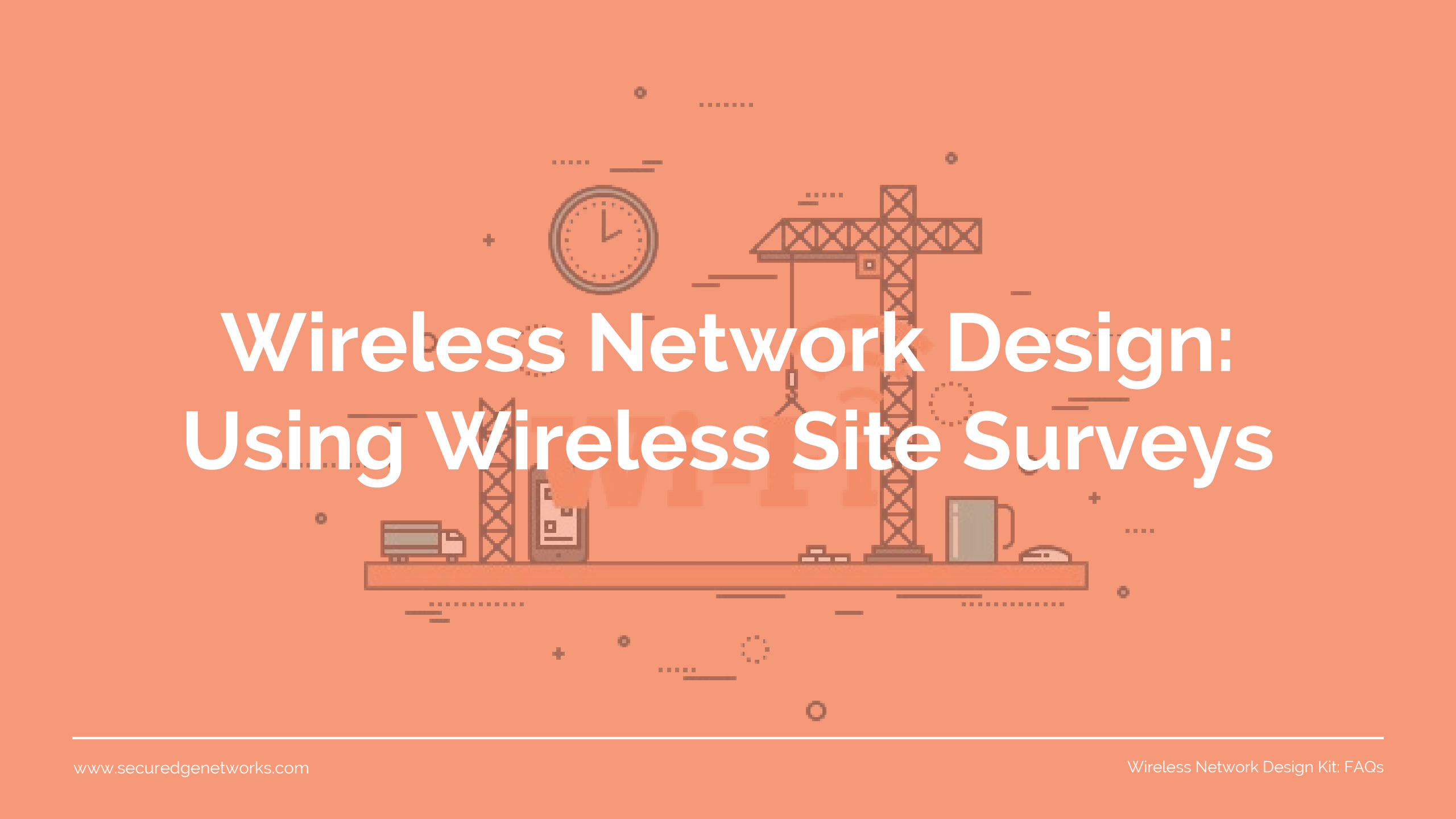
- Campus or facility areas needed to be covered (Google Earth markups are great for this)
- Buildings that need to be linked by a wireless bridge
- Height of any of the buildings, light poles, etc.... that are to host an access point for bridging
- Indicate any areas where trees, foliage, hills or other obstacles may interfere with the line of sight (LOS) between access points.
- The types of applications or the desired bandwidth to be carried over the bridge or by the access points. (What kind of traffic will be traversing the network between buildings or from outdoors to indoors?)
- Availability of power at each building, light pole, or outbuilding to power the access points.
- Availability of data connectivity at each building, light pole or outbuilding to connect the access points to.

What can I expect to receive from an outdoor site survey? The predictive outdoor site survey will provide the following;

- A map layout of the facility or campus with locations where the access points or bridge links will be installed.
- A list of which locations will need power and data or just power.
- A proposal with predicted costs, materials and labor.

The physical outdoor site survey will provide the following:

- A map layout of the facility or campus with confirmations or adjustments of the locations for where the access points or bridge links will be located.
- A spreadsheet listing the intended installation locations and what will be needed at each location; power & data or just power.
- A proposal with firm costs, materials and labor.
- A statement of work detailing what will be delivered and how.
- Project plan process showing the steps from analysis, design, deployment to support.

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Wireless Network Design: Using Wireless Site Surveys

Wireless Network Design: Using Wireless Site Surveys

What is a wireless site survey?

A wireless site survey is an actual physical site survey done onsite using various RF measuring tools to analyze the propagation of RF signals within your facility. In contrast to a predictive site survey a physical site survey is done in real-time and in a real world RF environment, which allows for analysis of RF interference and simulations of the applications you plan to use.

Is a physical site survey better than a predictive site survey?

A physical site survey is more accurate because you're evaluating a live environment vs. a virtual environment. But it's not always necessary. If your building environment has a lot of interference (hospital or manufacturing for example) or you want to support latency sensitive applications like Voice over WLAN then you need a physical site survey.

Do I still need a predictive site survey if I have decided to go with a physical site survey?

Yes. We suggest a predictive site survey first along with a design discussion about what applications need to be supported as well as an evaluation of the building environment.

When would you decide that a physical site survey is necessary?

After discussing with the client how they plan on using their wireless network (i.e. what they plan to support) and what type of environment it will be operating in we can make that determination.

Some examples where we would decide to perform a physical site survey are: very busy hospitals where there are all sorts of WiFi obstacles and interference (lead lined walls, multiple radio signal generators, large pieces of equipment that get moved around, etc...). Manufacturing environments (high humidity, floating metal particulates) are also tricky and would cause us to consider a physical site survey.

How is a wireless site survey performed?

A physical site survey is performed by walking the intended location and using site survey tools to measure the RF from an access point set up specifically for the survey. The access point will be moved to several locations intended to have coverage and the measurements taken there as well. After all measurements have been taken the site survey tool will provide an overall view of RF performance in the environment.

Wireless Network Design: Using Wireless Site Surveys

What tools are needed to perform a wireless site survey? Here is what we use on a physical site survey:

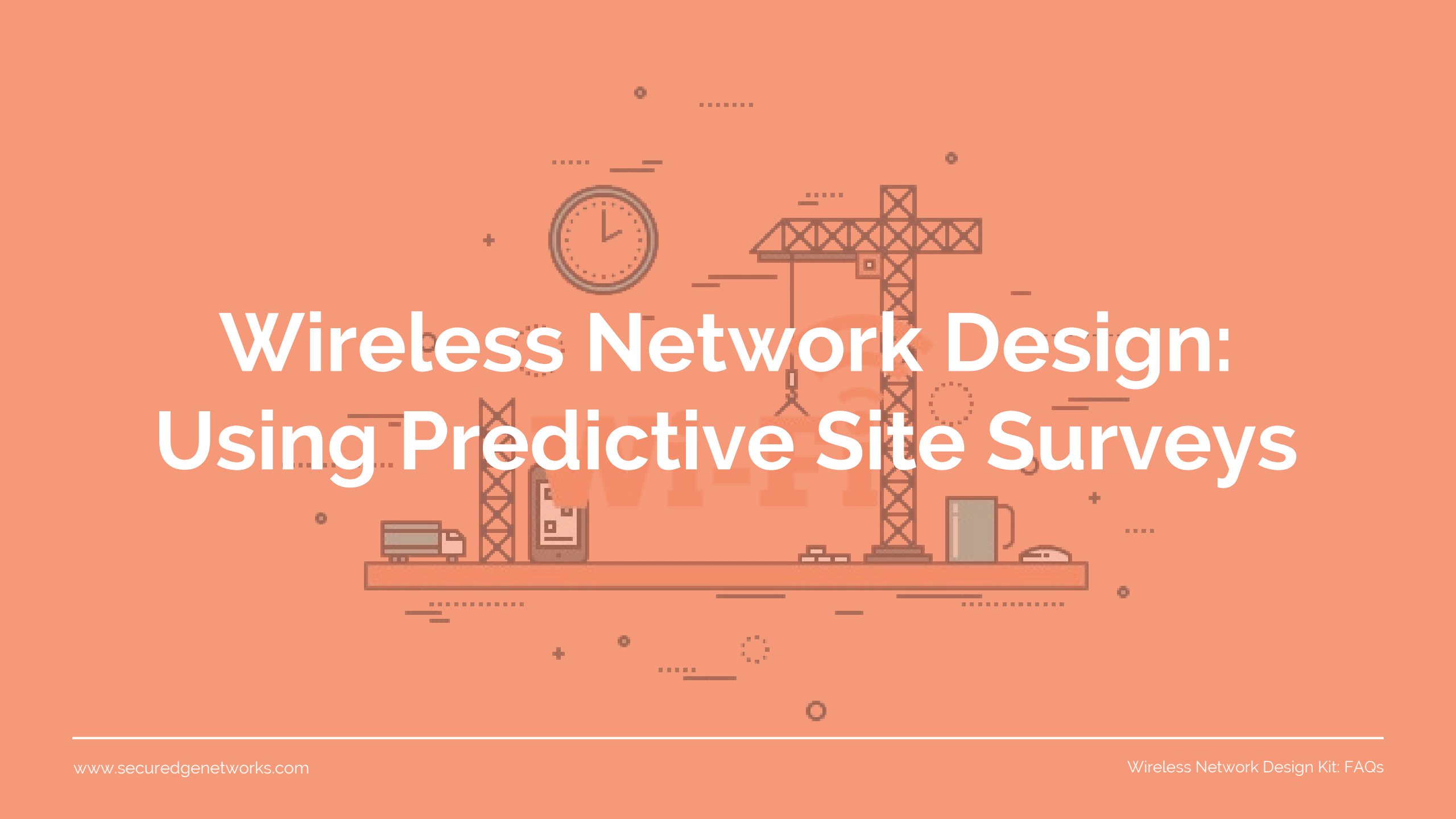
- Laptop with site survey software (Ekahau as an example)
- RF spectrum analysis software (Air Magnet or WiSpy)
- Access point configured to operate in a survey mode
- Tripod to mount and elevate the access point to desired heights
- Portable battery with PoE/PoE+ to power the access point
- A mobile cart to roll the laptop around on (ever try to carry a 6 pound laptop around for 8 hours so you can continuously see the screen?)
- Various markers (stickers, tape, flags) to mark the access point locations
- Digital camera to document specific locations

What is needed from the client to begin the process of engaging SecurEdge Networks in a physical site survey? From our clients we ask for the following:

- A meeting to discuss the intended use and application for the wireless network including discussing the environment the wireless network will operate in.
- Floor plans of the facility(s) or campus maps
- Access to the facility or campus with a point of contact or escort to provide access to locked or gated areas.

What should I expect to receive from a wireless site survey? After completing a wireless site survey SecurEdge Networks provides its clients with the following:

- Report showing the facility walk with detailed analysis of the access point locations
- Map showing the RF coverage of the access points
- Spectrum analysis report, if conducted, shows channel and frequency utilization and a list of non-WiFi interferers (microwave ovens, baby monitors, blue-tooth devices, etc...)
- Wireless network proposal including costs, materials and labor
- Statement of work detailing what will be delivered and how
- Project plan process showing steps from analysis to design to deployment to support

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Wireless Network Design: Using Predictive Site Surveys

Wireless Network Design: Using Predictive Site Surveys

What is a predictive wireless site survey?

A predictive site survey is a virtual survey of your site or facility that uses pertinent information about the environment and its intended use to plan the wireless network.

Typically this means the building floor plans are loaded into predictive site survey software to develop a wireless network design. Predictive site survey tools will account for building materials, square footage, and the number of wireless users, types of applications, antenna models and other variables to provide a reliable predictive wireless plan for your site or facility.

Is a predictive site survey better than a physical site survey?

A predictive site survey is preferred in some situations to a physical site survey for a number of reasons:

1. A predictive survey is quicker in most cases to a physical survey and can assist in turning around a quote for a wireless project much quicker.
2. A predictive survey is also a lot less expensive than a physical survey. Since a physical survey involves many man hours and lots of measurements the time factor gets expensive.
3. Predictive surveys are also much more efficient at predicting channel assignments, power settings and AP placement than physical surveys.

Can a predictive site survey replace the need for a physical site survey?

In many cases the answer is yes. This is especially true when the physical site survey is being done as a "dog and pony" show.

Some wireless vendors break out all the survey gear to "Wow" the client with a show. However, we evaluate each request on an individual basis and determine which survey type is beneficial and necessary.

In some cases we will perform the predictive survey to turn around very solid budgetary numbers and a plan quickly. Then we will do a physical survey in targeted spots to confirm our numbers.

We have been at this a long time and have seen the transition from the days when all there existed was a physical survey to today when we have both types to choose from.

Wireless Network Design: Using Predictive Site Surveys

How accurate is a wireless design based on a predictive site survey?

Predictive site surveys are surprisingly very accurate. We find that on the whole we see about a 5 – 8% margin for error and we can adjust for this several ways through the way we analyze, design and deploy. Here are a few things we do to allow for adjustments during the deployment phase:

1. During the predictive site survey, we design the system using access point power settings at 50% to allow for adjustments onsite. This allows us to increase signal strength to fill in any coverage challenges in the real in environment. Some wireless vendor platforms will even self-adjust signal strengths to fill in holes and coverage areas as well as load balancing wireless clients, making the deployment process seamless.
2. Our wireless installers leave 10 – 15' loops in the cabling for each AP to allow for some physical adjustments after everything is installed. Sometimes there are obstacles no one knew about in the facility and this foresight comes in very handy.
3. We ask a lot of questions about your site or facility to have a better understanding of what type of building environment we are working with.
4. We've deployed wireless in office parks, hospitals, schools, universities, airports, museums, industrial buildings, and even large outdoor environments. We developed formulas from our extensive deployment experience to account for many variables and minimize the error of margin.

What information do you need to conduct a predictive site survey?

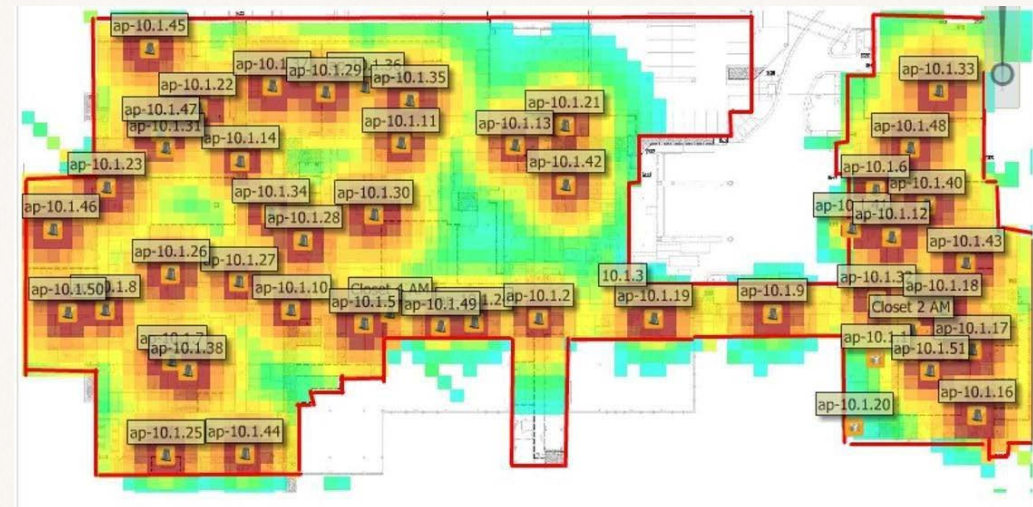
The more information provided to us the better the plan outcome will be. With this in mind here is a list of the information needed for the survey.

1. Floor plans or Campus maps in electronic format. CAD files are the best followed by JPEG and at the least a PDF can work in a pinch.
2. Floor plans or Campus map print outs or electronic files marked up with areas of desired coverage. All areas where coverage is not desired are beneficial. Also include in the plans or maps areas where there will be high concentrations of wireless users (libraries, media centers, auditoriums, large classrooms, conference centers, nurse stations, etc.).
3. Building or Campus dimensions (length x width). This will give us the square footage of the building or the Campus area for coverage. We can use Google Earth sometimes to get these dimensions but they are not always the most accurate.
4. Building construction materials; concrete, brick, steel, wood 2x4, glass, drywall. Each of these materials affects RF in a different way and knowing where they exist in the facility will ensure an efficient design.
5. Knowing the number of wireless users on the planned network will help us to make sure there is enough capacity to accommodate everyone.
6. The types of applications; streaming video, high resolution graphic downloads, bandwidth intensive applications, Wireless VoIP (VoFi), etc., intended to be utilized on the wireless network allow us to plan adequate bandwidth.
7. How many classrooms are in the facility and approximately how many students per classroom? This information allows us to plan for AP allocation throughout the facility.

Wireless Network Design: Using Predictive Site Surveys

What can I expect to receive from a predictive site survey? I can't speak for all managed WiFi providers when it comes to this, but here is what SecurEdge Networks will provide with our surveys;

1. AP placement/coverage maps of your facility or campus.
2. Wireless network proposal including costs; materials and labor
3. Statement of work detailing what will be delivered and how
4. Project plan process showing steps from analysis, design, deployment to on-going management and support.



The background is a solid orange color. It features a stylized illustration of construction cranes, a clock, and a smartphone. The cranes are positioned on either side of the central text. The clock is located above the word 'Predictive'. The smartphone is positioned below the word 'VS'. The entire illustration is composed of simple geometric shapes and lines in a darker shade of orange.

Predictive Surveys VS On-Site Surveys: What Do I Need?

Predictive Surveys VS On-Site Surveys: What Do I Need?

How do you know if you need a predictive site survey or physical site survey?

A predictive site survey is just what it sounds like -- predictive.

It can take into account a lot of factors: building materials, square footage, number of wireless users, types of applications, antenna models and other variables. It can provide basics for the access point layout and expected speeds and today's site survey software is pretty darn accurate from our experience. The huge advantage of a predictive survey is that it's much quicker than onsite designs and of course it costs much less.

Predictive Site Surveys are great for customers with simple wireless connectivity needs.

Perhaps you want to provide guest access in your conference rooms or in a handful of areas around campus. No challenge for predictive site surveys. Many schools can benefit from predictive site surveys as long as they have an experienced wireless deployment partner.

There are challenges with high density areas and students streaming YouTube type applications....But a good wireless consultant can figure that into a predictive plan.

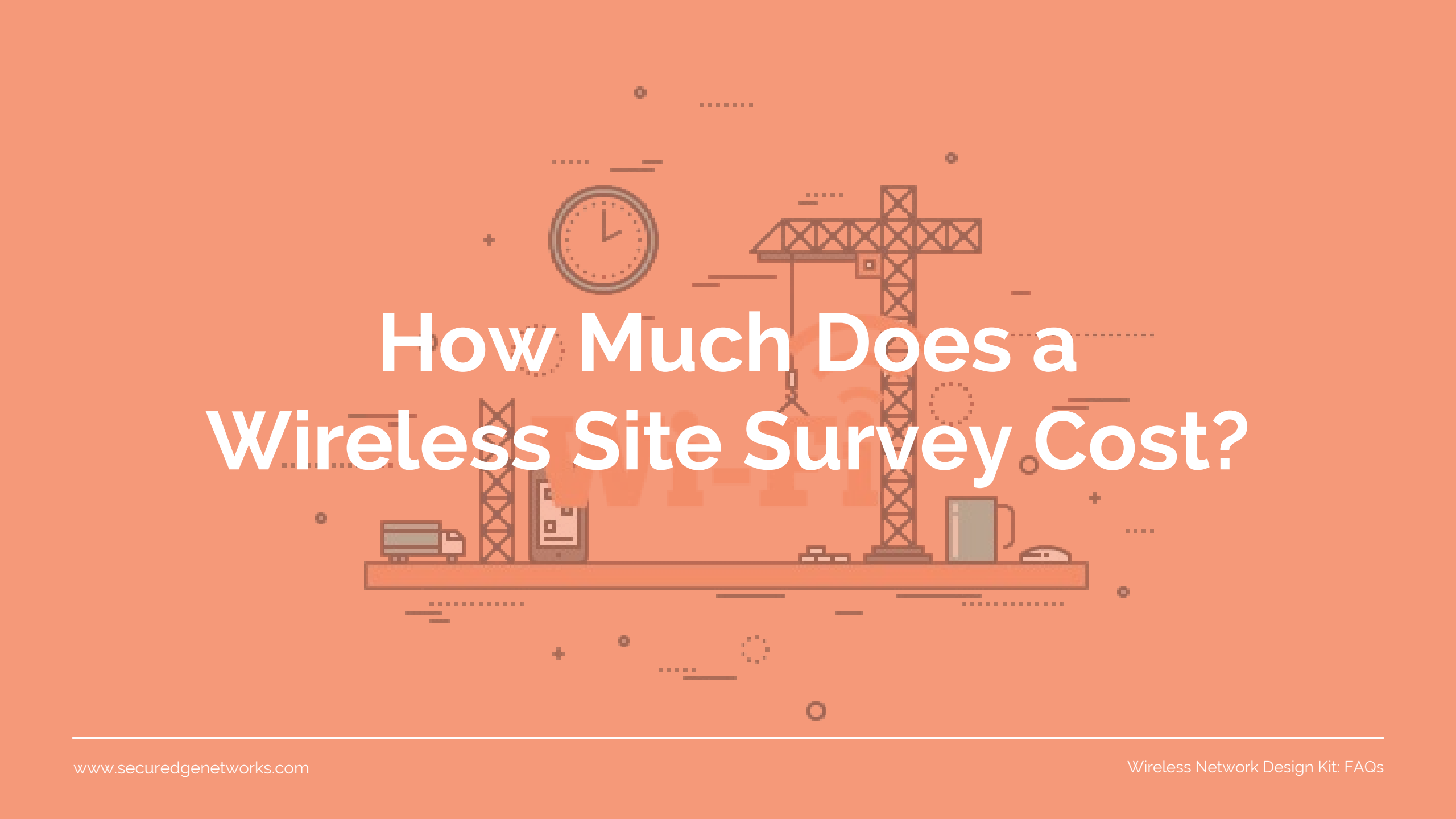
Onsite Surveys are recommended for anyone doing complex wireless functions. Complex wireless functions are applications that roam from access point to access point and/or are latency sensitive. For Example:

- Wireless VoIP
- MultiMedia over Wireless
- Wireless Video Surveillance
- IPTV over Wireless
- Real Time Location Services (RTLS)
- Advanced Data Applications

During an Onsite Survey, an engineer takes the predictive site survey results and tests the wireless design to prove the design in a real world environment.

The wireless engineer should be looking for interference (noise), which can only be measured onsite of course.

Our wireless engineers also have software to simulate things like wireless VoIP and streaming media to make sure they will work seamlessly in your environment.

A stylized illustration on an orange background featuring a clock, a crane, a truck, a building, a coffee mug, and a train, all rendered in a flat, geometric style. The text "How Much Does a Wireless Site Survey Cost?" is centered in white. A large, semi-transparent "W-N-D" watermark is visible behind the text.

How Much Does a Wireless Site Survey Cost?

How Much Does a Wireless Site Survey Cost?

Predictive Wireless Site Surveys

A predictive site survey is a virtual survey of your site or facility that uses pertinent information about the site to plan the wireless network. Typically this means the building floor plans are loaded into predictive site survey software to develop a wireless network design. Predictive site survey tools will account for building materials, square footage, and the number of wireless users, types of applications, antenna models and other variables to provide a reliable predictive wireless plan for your site or facility.

Normal Cost: \$0-\$2,500 per building depending on the building size and how many locations you'll need.

SecurEdge Cost: We provide these as no charge to many customers to help them put together a project cost (Schools, Universities and Hospitals for example).

Onsite Wireless Site Surveys

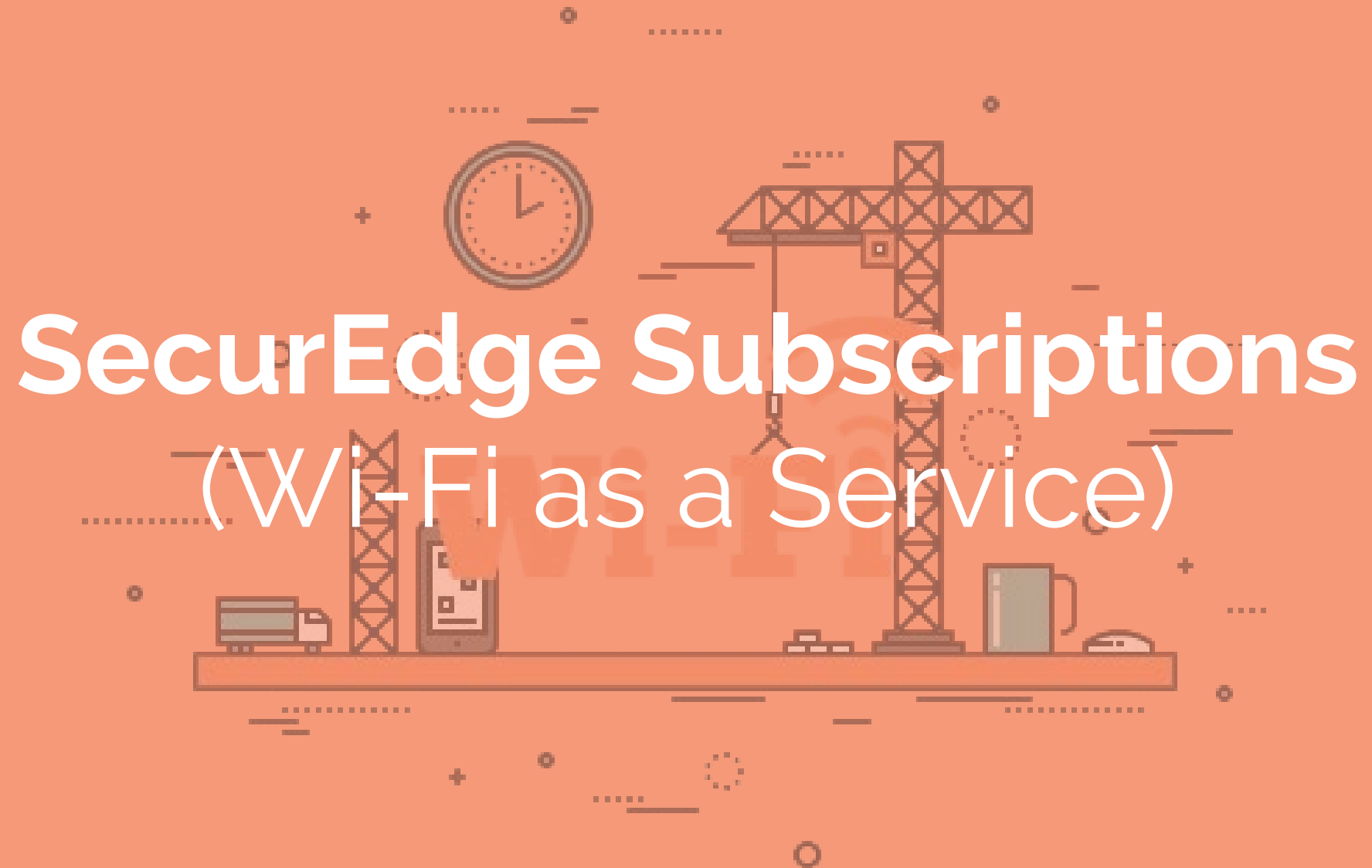
If a customer is doing complex wireless functions (Wireless VoIP, RTLS, Multimedia over wireless) or it's in a potentially high interference environment an onsite survey should be used.

During an Onsite Survey, an engineer takes the predictive site survey results and tests the wireless design to prove the design in a real world environment. Things like interference (noise) can be measured onsite where as a predictive design obviously can't do that.

An onsite survey can identify any devices that may be causing interference and pinpoints its location and verify a proper wireless design. We also have software to simulate things like wireless VoIP and streaming media to make sure they will work seamlessly in your environment.

Cost: \$2,500-\$10,000 per building depending on the building size, how many locations you'll need, and what type of applications you want to work on your wireless network.

SecurEdge Policy: Many times we can provide the site survey documentation to help with the wireless design but offer discounts from the overall project if you decide to work with us on the wireless deployment.

A stylized illustration in a flat, geometric style. It features a large crane in the center, a clock face in the upper left, and various construction-related items like a truck, a smartphone, a mug, and a hard hat on a base. The background is a solid orange color with scattered geometric shapes like circles, lines, and plus signs.

SecurEdge Subscriptions (Wi-Fi as a Service)

SecurEdge Subscriptions (Wi-Fi as a Service)

What subscription lengths are available with Wi-Fi as a Service?

We like to answer this question by asking another question: When was the last time you bought a new smartphone? Probably within the last 18 months to 2 years, right? And typically, after 2 life cycles, the technology in your hands is completely different.

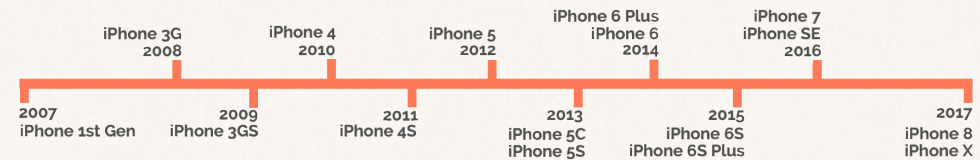
To the right is an illustration that shows just how fast technology changes, making it difficult for our wireless networks to keep pace—and this is only one type of device from one brand.

With this life cycle in mind, we generally recommend a **60-month term with a 48-month refresh cycle**. This allows us to upgrade your network somewhere around the 4-year mark with the newest technology.

Remember, as the devices change, so must the network.

We match your subscription term with the life cycle of the mobile devices (technology) people are using, so your customers/employees can bring their shiny new devices onto your network and enjoy optimal WiFi performance every time.

DEVICE MATCHING PROBLEM: IPHONE GENERATION TIMELINE



SecurEdge Subscriptions

(Wi-Fi as a Service)

Can my business purchase the hardware/WiFi infrastructure and then use a subscription to purchase the managed WiFi services? If so, do you recommend this approach?

Sure. This is one way to go, if you already have the capital assigned and you feel strongly about your business owning the networking equipment.

But frankly, this is one of those examples of "just because you can, doesn't mean you should." Rather than getting fixated on the idea of owning the infrastructure, take a step backward and consider what that will entail. Here are the three main drawbacks to this approach:

- It's very costly up front, and you'll need to prepare for another large capital expenditure in 4-5 years, when it'll be time to upgrade your entire system again. By contrast, WaaS is an ongoing operational expense, allowing you to always have what you need over-time.
- The equipment you own will grow obsolete and will need to be replaced (i.e., after 4-5 years the infrastructure you own won't be worth anything). When you sign on with SecurEdge, we build a refresh cycle into your agreement so that your equipment can be upgraded before it becomes outdated.
- If something goes wrong with your equipment, that's between you and the manufacturer. But when you bundle everything together through a subscription, we carry the liability for every aspect of your wireless network. If there are performance issues or some of the equipment needs to be reconfigured or swapped out, that's on us.

If you can get past the idea of owning the infrastructure, you'll find that packaging everything together as an end-to-end service is far more budget-friendly, keeps your network up-to-date, and covers your you-know-what in case anything goes wrong or your network needs to be scaled up or down.

SecurEdge Subscriptions

(Wi-Fi as a Service)



Our comprehensive monthly subscription includes all aspects of a high-performing wireless network, falling under three main categories: hardware, software, and managed WiFi services.

- From access points to firewalls, and even your ISP if needed, your subscription includes all of the infrastructure components required to create a fast and secure wireless system.
- **Note:** Wireless network design is a highly specialized, very technical skill set. It's unlikely your company has someone in-house with the necessary training and certifications in wireless to get it right. SecurEdge engineers and technicians are experts in designing and deploying wireless networks because it's all we do. Every subscription is built on the foundation of proper WLAN design.
- Second, we provide network management centralized network management with real-time visibility, a captive portal customized captive portal for your end-users to access the network, business intelligence options, location services, and reporting.
- The third aspect of our WaaS subscription is a service-level agreement that includes all the managed WiFi services for your system: 24/7 remote monitoring and troubleshooting of configuration issues; executive dashboards with weekly/monthly reporting; firmware upgrades; and advanced options such as onsite support SLAs and application level bandwidth controls/analytics.



Have questions about your current wireless network
or would you like to talk about an upcoming project?

Contact one of our mobility specialists today!

Talk to Sales