ekahau
WIRELESS DESIGN

Best Practices for Wireless Requirements in Education

Basic WLAN requirements in EDU can be difficult to find. By interviewing the right people, end users, instructors, and students; the answers start showing themselves. Requirements come down to identifying how the WLAN is expected to be used.

Gathering Requirements

A successful WLAN requires thorough planning. How does one begin planning for the implementation of a WLAN infrastructure? Start by asking questions about outcomes.

Business requirements exist for K12 and higher EDU. Support staff has different needs from teachers/professors and students. Management often takes on the vision approach, creating an overarching goal of how they see the WLAN working for a campus. It's important to gather this information to create a design.

What information do you collect? There are business requirements which allow support staff and instructors to perform their work responsibilities. There are end-user requirements, which are not always the same as business requirements. Applications used on the WLAN need to meet specific requirements to facilitate uninterrupted service. There are technical requirements such as the throughput, latency, PoE, and more.

But most importantly, what outcomes are expected? The answer to requirements questions may come from this simple question. And you may need to ask more questions to get the specifics.

These outcomes should never be dictated by a salesperson. This creates a budget conundrum. A 1-AP Per Classroom is a marketing concept, not a design. By stating each classroom needs an access point without determining the actual requirements first is skipping the most important step; planning.

Start with defining what the expected outcomes should be to determine a list of requirements to begin a design. Understanding what applications are going to be used along with how many devices and what types will help formulate the number of access points needed as input into the design phase.

Design

The biggest mistake in EDU is failing to come up with requirements for a design. The design comes after gathering the necessary information. Understand what device types will be using the WLAN. Manufacturer's, such as Apple, define basic wireless requirements for mobile, tablet, and laptop devices.

Today's wireless networks must be designed for 5 GHz to take advantage of available spectrum. Most 2.4 GHz radios are disabled to minimize the amount of co-channel contention which can lead to wireless issues such as low throughput.

Many networks have to deal with a certain amount of channel overlap. With a channel plan, it can be managed. Whether a dynamic or static channel plan is used, it is important to monitor the WLAN continuously.

> "The biggest mistake in EDU is failing to come up with requirements for a design."

The transit power difference in 2.4 GHz and 5 GHz is focused on delivering service primarily on 5 GHz. While many of us would like to see 2.4 GHz eliminated, the reality in EDU is it is here to stay as long as manufacturers continue to make 2.4 GHz only devices. In a design, the transmit power

for 5 GHz should be at least 3 dB higher than 2.4 GHz. And for devices that cannot use 5 GHz, it is recommended to use a 5 GHz USB adapter.

Take building materials into consideration as it affects RF characteristics. Building materials can be tested for their attenuation loss with a small access point and receiver. These values are then used in the design phase to create a predictive design. A common mistake is to place all the access points in the hallway. This has a negative impact on dynamic radio management algorithms. Take these features into consideration and build them into the design. A strong understanding of how dynamic radio management features work is a must. Additionally, tuning is needed outside of the default settings. Avoid having all access points in the hallway. Place access points closer to the users, who need the connectivity.

When it comes to selecting an architecture, take onsite IT expertise into consideration. Will there be enough manpower to maintain a controller-based architecture? Will IT understand the impact of changing settings on the controller? If ease of management is required, consider a cloud-managed wireless architecture. It simplifies management but may not have the flexibility of a WLAN controller.

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When it comes to working on a design within Ekahau, auto-planner is a good start to place access points on the floor plan. From there, manual intervention is needed to move access points to the correct locations to meet requirements. Utilize other heatmaps in Ekahau to adjust the design. Ensure your floor plans are scaled for accuracy. Remember, Garbage In Garbage Out.

Conclusion

Always create a design after gathering outcomes and requirements from stakeholders. No planning is planning for failure or a plethora of support tickets. Validate the design after installation. This is to confirm configuration matches the design and access points have been installed in their correct locations. These are rule of thumb.

Learn more about Ekahau's solutions to design, optimize and troubleshoot Wi-Fi networks at **www.ekahau.com** or contact us at **1-866-435-2428.**