Smart WLAN Deployments in Educational Facilities and Campuses

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Gone are the days of chalk boards, textbooks and notebooks. Digitization and unwavering connectivity requirements in schools continue to evolve. They must adapt to a variety of new technology platforms both indoor and outdoor. Schools must adapt to a variety of new technology platforms both indoor and outdoor including different digital platforms for interactive and collaborative learning, electronic systems for real-time grading and record-keeping, as well as virtual reality (VR), augmented reality (AR) and artificial intelligence (AI). Additionally, schools now have a plethora of devices, tools, and other resources that all depend on a Wi-Fi network to operate reliably to provide the connectivity needed to support them. The demands of students and faculty using bandwidth-saturating applications on other personal and school-issued devices is also soaring.

Bridging it all together is the wireless network. The proper installation of wireless access points (APs) is key to ensuring that the school's Wi-Fi network can deliver stability, reliability, and performance. But when it comes to optimizing performance and satisfying key operational goals, considering AP technology trends and following industry best practices and guidelines for implementing the wireless APs is imperative.

Below are a few wireless AP trends to consider during the network planning phase:

- AP upgrades are inevitable as wireless technology evolves at a much faster pace today than what the industry has experienced in the past
- New Wi-Fi enabled devices and applications continue to emerge and saturate networks
- AP throughput continues to increase by a factor of 10x every five years
- Power over Ethernet (PoE) requirements of APs continue to increase
- AP form factors continue to evolve, requiring intentional planning for physical security and adaptation
- Wireless LANs continue to provide additional services requiring more bandwidth
- The need for high density AP deployments is on the rise, particularly in educational facilities

In light of the current trends, re-thinking AP installation methods is gaining global momentum. Modern methods of deploying wireless APs are progressively becoming part of the wireless infrastructure design planning phase, and for good reason. **Below are a few industry guidelines and recommendations to consider:**

- The wireless AP infrastructure physical design should consider consistency, compatibility, and ease of operational support while lowering overall cost.[1]
- Design costs should consider both initial installation costs as well as operational costs.[1]
- Consider the ease of operational support and consistency. [1]
- Consider maintenance and security of the access points.[2]
- The use of an enclosure is recommended in areas where physical security is a concern.[2]

Additionally, in many historic educational facilities, maintaining aesthetics is crucial. The need to integrate new technology into old buildings is especially common in colleges and universities. These structures were often built hundreds of years before modern technology was adopted. However, it's important to incorporate technology systems into these spaces with the goal of providing robust service while simultaneously preserve the aesthetics as much as possible. This is proven true for new modern building architecture as well. Exposing wireless AP's is undesirable and most often not permitted in architecturally sensitive spaces. This is becoming more common as a result of increased amount of AP's required through out the facility. Therefore, wireless professionals are tasked with hiding them, or otherwise blending them into the surroundings. The key is to not jeopardize performance while doing so. These examples demonstrate spaces in which the AP's were not permitted on the wall, and also not permitted on the modern ceiling design. Oberon's Model 1008-00-BK with Oberon's Black Access Point Cover was the perfect fit for this application. *(Figures 1 & 2)*

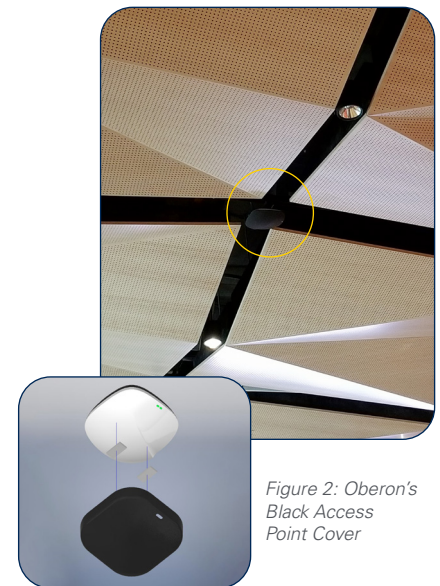*Figure 1: Oberon's Model 1008-00-BK*

Figure 2: Oberon's Black Access Point Cover

In an evolving Wi-Fi landscape continuously shaped by rapidly emerging technologies, wireless professionals must navigate not only the complexities of optimizing the network performance, but also streamline their critical operational objectives. **This means implementing physical AP deployment methods that should:**

- Offer quick and easy serviceability of the AP and cabling components
- Provide a consistent look and maintenance functionality throughout the facility
- Offer a cost-effective migration path to next-generation technologies

Adopting these techniques will help to maximize investment protection as well as the flexibility of the school's network in the future.

These examples demonstrate enclosures and mounts with lockable, interchangeable trims and doors that can easily be swapped out are satisfying several operation and functional requirements—such as Oberon's Wi-Tile™ 1047 Series *(Figure 3)* locking suspended ceiling tile Wi-Fi AP enclosure with interchangeable doors or Oberon's H-Plane™ 1007 Series *(Figure 4)* right-angle AP wall mount, which mimics a lighting wall sconce with an interchangeable trim to allow installers to recess APs from all the leading vendors into the wall sconce itself. AP installation methods should include an adaptable platform, preparing for NextGen networks.

Interchangeable doors

Figure 3. Oberon Model 1047 Series

Interchangeable trims

Figure 4. Oberon Model 1007 Series

But what about ensuring network coverage in other indoor spaces (like laboratories or gymnasiums) and outdoors? Beyond the classroom, particularly in higher education and on college campuses, it has become just as important to provide ubiquitous network infrastructure in places like parking garages, outdoor courtyards and common areas, as well as sports venues and stadiums where thousands of people congregate throughout the school year.

In these spaces, APs and associated cabling components still need to provide optimal wireless coverage, but must be physically secured, protected from the elements, often times impact-resistant, receptive to wash down, and perhaps above all, aesthetically blended into the environment. For these needs, Oberon offers a wide range of NEMA-rated, UV-resistant enclosures designed with aesthetics in mind, including the SkybarTM 1020 Series *(Figure 5,)* Skybar™ 1021 Series, and Skybar 1022 Series (Figure 6) which can mounted under seats, on walls and overhangs for maximum space savings and durability.

Figure 5. Oberon Model 1020 Series

Figure 6. Oberon Model 1022 Series

Meanwhile, Oberon's NetPoint™ Wireless Bollards *(Figure 7 and 8)* supports robust wireless coverage while protecting the AP, antenna and connectivity components in green spaces or any other location of need and come in a wide range of colors and heights to blend seamlessly into any outdoor environment.

Figure 7. Oberon Model 3032 Series

Figure 8. Oberon Model 3032 Series

References

[1]ANSI/BICSI 008 – Wireless Local Area Network (WLAN) Systems Design and Implementation Best Practices

[2]TIA/TSB-162-B – Telecommunications Cabling Guidelines for Wireless Access Points

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