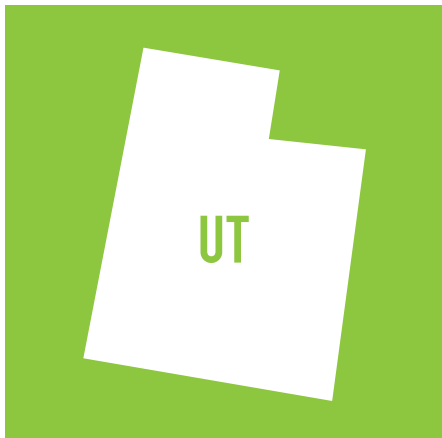# Facilitating Connections Among Utah's Legislative and Education Communities to Create Equitable Internal Broadband Connections

The Utah Education Network (UEN) connects all Utah schools and higher education institutions to a robust network and quality education resources. The organization is making a concerted effort to promote equitable access to quality internal broadband connections among all its education communities.

SUPPORTING ITS SCHOOLS' MISSIONS

The organization is focused on identifying wireless services that will benefit Utah's schools as well as securing statewide contract pricing for those services. "We want to help increase the opportunities for our schools to leverage E-rate funds to make improvements," says Jeff Egly, the UEN's associate director. The state serves as a resource for its schools and is committed to bringing various groups together to push the wireless conversation forward. The UEN hosted its annual Technical Summit this past summer and brought in different professional development and training resources around internal broadband connections. The organization offered a wireless certification course for education technology leaders and staff members that was very popular and well-received.

LEVERAGING GOOD ENGINEERING TO PRODUCE QUALITY WI-FI

Like many other states, Utah is analyzing the quality of its schools' Wi-Fi networks and determining how to establish best practices for its districts.

"**Our wireless penetration is approximately 98 to 100 percent, but that doesn't mean all of our schools have access to quality Wi-Fi. So much depends on the engineering when it comes to wireless connectivity. The easy approach is to deploy one AP per room, but that's not necessarily the right approach because so many variables come into play with Wi-Fi, including building architecture, technical support, authentication, WAN/LAN access, signal strength, AP management, the age of the equipment, and the application and use of the network.**"

— Jim Stewart, Chief Technology Officer, Utah Education and Telehealth Network

To help guide its schools, the UEN regularly brings together subject-matter experts from around the state to discuss and share ideas surrounding internal broadband connections and what qualifies as "quality" Wi-Fi. However, it has been difficult for the group to create a definitive set of benchmarks because of the variables in play.

RESOURCE

[Utah Education and Telehealth Network (UETN) WAN, Wi-Fi, Security and Content Filtering Engineering Study & Road Map](#)

> **There is no cookie cutter method when it comes to Wi-Fi. The standards can vary depending on so many factors—the size of the district, the number of students per classroom, the building design, the particular use case, is the network supporting a myriad of devices, Chromebooks, or Apple TVs? The overall message the UEN is communicating with their schools is that good engineering is required to support their students' digital learning needs."**

— Jim Stewart,Chief Technology Officer, Utah Education and Telehealth Network

CLOSING THE ACCESS GAP OUTSIDE OF THE CLASSROOM

Aside from serving as a thought leader in the wireless space for its schools and higher education institutions, the UEN is also striving to bridge the digital access equity gap through its relationship with Eduroam. Eduroam is a global wireless network access service for research and education. Users can access participating institutions' Wi-Fi networks using their home institution credentials. "Eduroam is mostly used in the higher education setting right now, but we've developed several use cases for the K–12 community," says Stewart.

Students who travel to different schools as part of their extracurricular activities often find it difficult to authenticate on the guest network. With Eduroam, they immediately authenticate, enabling them to access their digital resources and complete their assignments in their downtime. The UEN team is hoping to expand Eduroam's presence within the state. "Delivering equitable access outside of the school building is a challenge everybody is struggling with," says Stewart.

The UEN team believes Eduroam can potentially help fill that gap. They are talking to Salt Lake City and the city's airport and aquarium about hosting the service. Because the city has so many students who regularly take trains and buses, it would be immensely beneficial if they could automatically authenticate to the city's wireless network and complete their assignments during their commutes.

COLLABORATE AND COMMUNICATE

Although the UEN team is the first to admit that they still have more work to do when it comes to wireless access, they do emphasize the importance of collaboration. "Communication is key," says Egly. "I believe the greatest benefit we've provided our education community is acting as a facilitator among vendor partners, the state legislators, and our schools."

The UEN has found it is much more effective and efficient for Utah's school districts to collaborate and form statewide consortiums rather than trying to figure it out for themselves. The state has some very strong education technology leaders, but they still discover gaps and oversights when making infrastructure upgrades. The UEN has been able to build a strong statewide collaborative community that encourages and enables education technologists to learn from each other and share their successes.

RECOMMENDATIONS FOR OTHER STATES AND SCHOOL DISTRICTS

The state of Utah is making great strides in promoting equitable internal broadband access among its schools. The UEN leadership team has shared some of the lessons they have learned from working with their K–12 technology leaders, vendor partners, wireless experts, and members of the higher education community:

- **Don't make assumptions.**
- **Don't pretend to be Wi-Fi savvy if you aren't.**
- **Collaborate and communicate!**
- **Don't underestimate the complexity of Wi-Fi.**
- **Invest in good engineering.**
- **Choose your vendors carefully, and don't take what they say at face value. Vendors need to understand how your students and teachers are using your network, what applications and devices are being supported, your specific building architecture, and your budget to design and build a robust solution that meets your needs.**

Connected States — Lessons Learned

As illustrated in these four case studies, building equitable internal broadband opportunities for school districts vary from state to state. Although the Wi-Fi penetration rate in almost all the above interviewed states is nearly 100 percent, the stumbling block seems to be the quality of the Wi-Fi present in their schools.

Building and maintaining a wireless network is complicated, expensive, and time-consuming for school personnel. Unfortunately, no universal standards exist that schools can turn to for assistance when deploying or upgrading their wireless systems. As a result, many are seemingly relying on the blanket "one AP per room" approach for their Wi-Fi implementation, which may not adequately serve their school's individual needs.

Instead of focusing on the equipment, perhaps the best approach to ensure students have access to quality Wi-Fi is to first identify the specific teaching and learning needs of students and teachers. Once identified, good engineering is required to ensure that the wireless network is designed, implemented, and managed to support those current and future digital learning objectives and goals.

TOP TEN CONSIDERATIONS

Factors for School Districts to Evaluate When Building or Assessing Their Wi-Fi Network

1. **Instructional adoption**

2. **Client or device selection for teachers, students, and staff**

3. **Capacity for the growing number of devices and mobility access**

4. **Current infrastructure and bandwidth access**

5. **Wired versus wireless needs**

6. **Flexibility and scalability**

7. **Wireless network security**

8. **Visibility of users, devices, and applications**

9. **Wi-Fi as a Service and/or the ability or time to self-monitor and manage**

10. **Budget and return on investment**

Wi-Fi Increasing Customer Value by Reducing Operational Efficiency