How Utah School Districts are Shrinking the Homework Gap

Utah Education and Telehealth Network

Introduction

The Utah Education and Telehealth Network (UETN) focuses on providing broadband connectivity solutions for school districts, higher education, libraries, and healthcare institutions within Utah. UETN's a leading organization within the United States, providing critical infrastructure, resources, and guidance to these fundamental societal services.

Two school districts in Utah are driving forward with a plan to show the viability of a private LTE network to connect their students. The Murray City School District and the Wasatch County School District, both located in Utah and working closely with the UETN, are at the forefront of ensuring that all their students have access to reliable, high-speed internet. The project to provide all students with internet took root in 2019, just a couple of months before the COVID pandemic, and blossomed as the world entered a period of quarantine. This unprecedented time showcased the value of a private LTE network for a school district.

The Problem

Murray City School District is unique in its innovative and forward-thinking approach when tackling problems that they foresee growing into larger issues in the future. For instance, the school took note of the growing number of applications that required students to connect to the internet, so in 2019 the school provided all of its students with Chromebooks. Doing so provided the students with a way to access the internet and participate in their classes' online assignments.

"We had been [researching] and talking for a few years on how we could provide digital access for our students," said Jennifer Covington, Superintendent of schools for the Murray City School District. "It quickly became apparent that simply providing the Chromebooks to the students wouldn't be a sufficient solution to the problem. The school had overlooked that many students didn't have access to reliable internet, so the Chromebooks lost their value as soon as the students left the campus.

Pew Research reported in 2020 that up to 58% of 8th-grade students require the use of the internet on a daily basis to complete their homework, with only 6% reporting they never need to use the internet to complete assignments.

This same report states that roughly 35% of children residing in a household with an annual income of $30,000 or less do not have access to the internet, compared to only 6% of children residing in households that make over $75,000 a year.

As Murray School District's Technology Supervisor, Jason Erye explained,

"Murray School District is very different. We have a municipal fiber network so we had multiple [Internet] providers and yet we still had certain barriers in certain places to Internet access."

The school district started looking at ways how they could start providing this internet connectivity to their students. Based on their research, and the suggestions of UETN and other partners, a fixed wireless, private LTE network was determined to be the path forward. This was due to LTE's potential to transition to 5G, the standards-based technology which would allow the network to connect to other hardware vendor solutions, and the increased security due to the use of SIM cards.

The Solution

Murray and Wabash School Districts were working with UETN and started testing Baicells equipment in 2019. The school district was leveraging funding made available by the Coronavirus Aid, Relief, and Economic Security (CARES) Act, a federal program to help schools close the homework gap.

To begin broadcasting internet to students, the school districts purchased Baicells Nova436Qs to mount on rooftops to reach students. Students' residences received pre-configured Atom ID04 CPEs to connect to the private LTE network. The devices needed to operate within the district's filtering policies and needed to provide insight into students' usage so the school could monitor the network to insure it was being used only for educational purposes.

"What we want to do, and the goal of [the LTE network] is to provide Internet connectivity for students who don't have it at their house," said Tom Ackerson, the Wasatch County School District Network Supervisor.

"We started working with UETN and looking at where we could put radios on our rooftops, what would work best, where could we get the most coverage. All the traffic comes back to our local district and is part of our local content filtering policy, and we have the ability to see the devices and know what's connected. This capability gives us more visibility into what the students are doing if they're having issues, and we can better secure and protect the students as far as content goes."

Cost, availability, and a network that was easy to deploy and maintain were other important considerations the district required of the devices as they needed to provide a wide range of coverage with limited budget and human resources.

“It doesn’t require ten million dollars to set up a site with Baicells,” Ackerson continued. “It’s easily obtainable, it’s super easy to configure, and with our initial training, we found it to be way more simple than we thought it would be.”

“In April 2019, the only devices we could buy to receive [fixed wireless LTE] were Baicells,” according to Jason Eyre. “We worked with our reseller to get the indoor CAT4 CPE , and we were really pleased that we could do some of the advanced networking things like port forwarding on those Baicells receivers.”

Equally important was the equipment’s ability to operate to the global standard of LTE. UETN is working to establish a robust infrastructure that can be utilized across the state, and that means using devices that interopt with one another dependent on the deployment scenario and use case.

The standard not only provides the districts with the benefit of being able to mix and match between different vendors LTE devices, but also gives the network the ability to switch to 5G technology in the future to make sure that today’s technology dollars will still be relevant tomorrow.

Jason stated, “The great thing about the LTE technology is that we don’t have to have one flavor, or one end-to-end solution from one vendor. We’re able to involve an entire community of vendors with private LTE and it is written to a standard. For us, that was important because different vendors have different business cases and different business challenges.“

Ultimately, without Baicells the school districts' may not have been able to provide all their students with an equal opportunity to access the internet as it now does. The devices' cost, availability, ease-of-use, and standards-based approach met the organizations' requirements to deploy a private LTE network to begin to provide students within their district with reliable Internet access.

"The Baicells equipment was really instrumental," says Covington. "We were able to order [the base stations and CPEs], get them here, installed and hung up so we could begin providing this important connectivity to our students."

The schools' next steps are to continue educating other districts of the potential of a private LTE network so students in other districts will be able to benefit from a reliable internet connection.

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