Accelerating K-12 Digital Growth with Private Mobile Networks

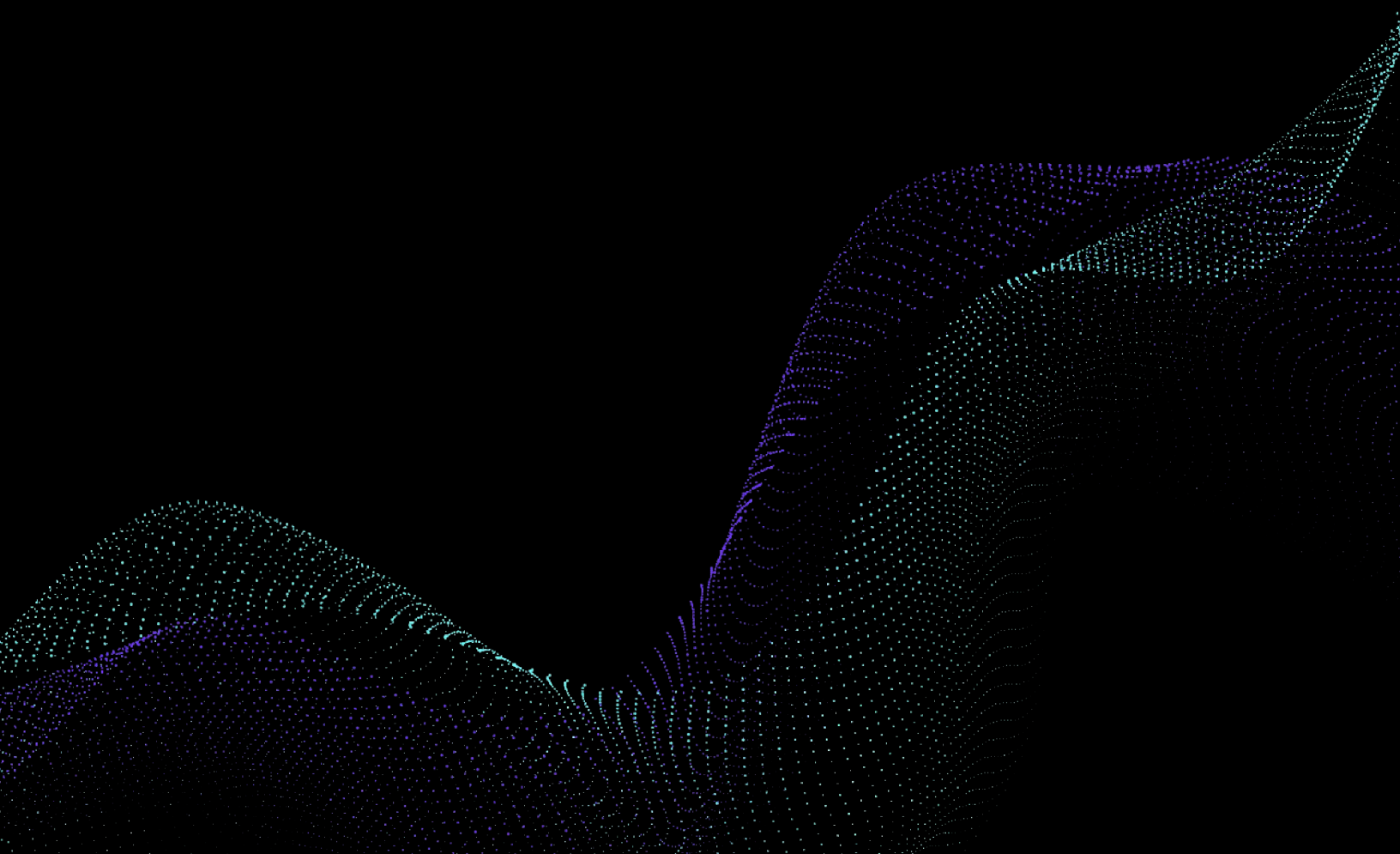


Table of Contents

Private mobile networks are increasingly becoming an essential part of many K-12 schools. They offer a secure and reliable platform for K-12 students and staff to interact, collaborate, and share data. Private mobile networks can provide numerous benefits to school districts, such as closing the homework gap, creating smarter classrooms, enhancing digital collaboration, improving transportation & building management, increasing campus and data security, and keeping track of school resources.

The need for private 4G/5G mobile networks in the K-12 market was exposed early in the 2020 COVID pandemic when schools were closed, and students were expected to keep up with their classroom attendance and homework with online tools. Unfortunately, for many students, reliable broadband internet service wasn't available at their homes, and trips to a local library or coffee shop with free Wi-Fi weren't practical on a regular basis. School Wi-Fi systems didn't reach far enough into neighborhoods, and local ISPs couldn't find a sufficient ROI to justify the time and equipment needed to help the children. Although most students have now returned to their classrooms, the benefits of private mobile networks in K-12 are now widely apparent.

Why Mobile Networks Are Strategic to School District's Digital Growth

Providing equitable access to school's networks with high-speed broadband connectivity to students outside of school continues to challenge schools, districts, and states. One report says roughly 9-12 million students "lack adequate internet access at home for broadband learning." Providing off-campus connectivity allows these students to attend class when remote education is available and they cannot make it to school in person, and do their homework, which has increasingly shifted online. Nearly sixty percent (58%) of U.S. eighth-graders use the internet daily to complete their homework.

Schools have tried to solve this challenge in many ways. For example, schools have deployed Wi-Fi-enabled school buses, installed community Wi-Fi, and provided students with cellular-connected devices and Wi-Fi hotspots. They have even worked with local ISPs to offer subsidized connectivity to students and staff. All these solutions have their downsides, such as high recurring costs, lack of access control to the network, and insufficient broadband speed and coverage.

Private mobile networks that use the freely available shared CBRS spectrum present a lower-cost option for school districts to solve their on-campus and off-campus high-speed broadband connectivity challenges, meet their digital equity goals, and have a scalable connectivity platform to support their emerging digital learning and smart building initiatives. K-12 schools can leverage their under-utilized fiber backbone that already connects their school buildings and building infrastructure (roof, ground, existing Ethernet network infrastructure) to deploy their own LTE & 5G network that 1) provides adequate wireless broadband connectivity to the hundreds and thousands of students' homes in the neighborhood; and 2) provides their students and staff with better, more reliable, and secure campus-wide mobile connectivity for enhanced collaboration.

As the school owns the cellular network, school administrators have greater control over who can access the network and can better protect their data from malicious actors. Private mobile networks also allow the school to monitor and control the type of traffic going through the network, ensuring that students and staff are not engaging in any risky online activities. Private mobile networks are often less expensive to build and maintain. They don't require the school to pay mobile operators recurring fees for each student, for metered data usage, and for additional services or features they may not need. This can help the school save money in the long run, as they can better control their costs.

In addition to enhanced coverage for students, many other use cases for K-12 make the idea of a private cellular network attractive to educators.

Why Mobile Networks Are Strategic to School District's Digital Growth (Continued)

In addition to enhanced coverage for students, many other use cases for K-12 make the idea of a private cellular network attractive to educators.

- Connected digital billboards to efficiently provide updates to students, teachers, and staff
- Immersive classroom learning, such as using AR and VR, helps students learn better. Smart classrooms, connecting whiteboards, lights, and podiums, assist teachers with presentations.
- Asset tracking, which allows schools to track the location of mobile equipment
- Enhanced safety, using HD-video surveillance, environmental sensors, such as smoke detectors, and smart ID cards, tracking who is inside a building at any given time
- Building optimization allows for easy monitoring of utility usage, such as water or power
- Staff communications, using Push-to-Talk (PTT) or Push-to-Video (PTV), helps teachers and staff stay in better touch
- Point-of-Sale (POS) terminals for lunchrooms and vending machines are used to further contactless encounters

Any implementation of a private mobile network for a school must be simple to deploy and manage, provide complete security control to school IT administration, and be financially feasible. Schools need to not only get a cellular network up and running with minimal expense but also keep it running over the years without breaking the bank.

To provide K-12 schools with the connectivity they need for their students, teachers, and staff, Alef offers a private mobile network solution that is simple, secure, and affordable.

The Alef Private Mobile Network Solution

Alef's Private Mobile Network solution is simple to deploy, seamlessly integrating with existing school district firewalls. No on-prem hardware, besides the radio access points, is needed for the private mobile core network. The solution is easily scalable when one school needs to upgrade or additional schools need to be added to the network.

Schools can be assured that Alef's Private Mobile Network infrastructure is secure. It can be aligned with the existing school IT ecosystem, meaning users and devices can be easily authenticated with current methods. Many other private network solutions require a parallel identity management system to be used for network access, adding complexity when trying to maintain consistent security policies. The Alef system is also positioned behind the school firewall, providing fully controllable configuration and customization of applications. Also, Alef's near-prem hosted edge platform keeps data local, providing better data security than cloud-based networks and a better price-performance ratio than on-premises solutions.

Alef's Private Mobile Network as a Service (MNaaS) solution is affordable, as there is no need for additional on-prem equipment, so valuable internal real estate is conserved. This alone makes Alef more affordable than alternate providers. Usage is paid on either a pay-as-you-go or monthly bundle, with groundbreaking unit economics based on our distributed edge cloud architecture that hosts private mobile network software. Alef's PMNaaS can also reduce or eliminate the surcharges incurred from Wi-Fi-enabled buses or hot spots. Rather than using a public cellular network for backhaul, the bus or hot spot can use a cellular (e.g., CBRS)-enabled router to connect directly to the new private mobile network's access points.

Alef's Private Mobile Network is eligible for various funding programs totaling billions of dollars that the U.S. government has made available for accelerating broadband deployment, including the Emergency Connectivity Fund and the Affordable Connectivity Program, while many states are using funds from the CARES act for educational broadband purposes. Additionally, Congress has passed the Infrastructure Investment and Jobs Act which provides $65B for broadband infrastructure. This includes the Broadband Equity, Access, and Deployment (BEAD) Program and funding for middle-mile connections, homes and businesses that lack high-speed internet, and grants for tribal areas that lack broadband access.

The Alef solution also allows schools to expand wireless coverage into hard-to-reach areas and improve performance for latency-sensitive applications such as learning with AR and VR.. Cellular based wireless connectivity goes much further than that of Wi-Fi at the same power, meaning fewer access points are needed for the same coverage area. Finally, the additional traffic provided by broader coverage and new applications will make better use of the school's fiber backbone.

Case Study: A Large Public School District

A large public school district in the southern United States has over 50 schools and a student population of nearly 20,000 living in an area covering over 100 square miles.

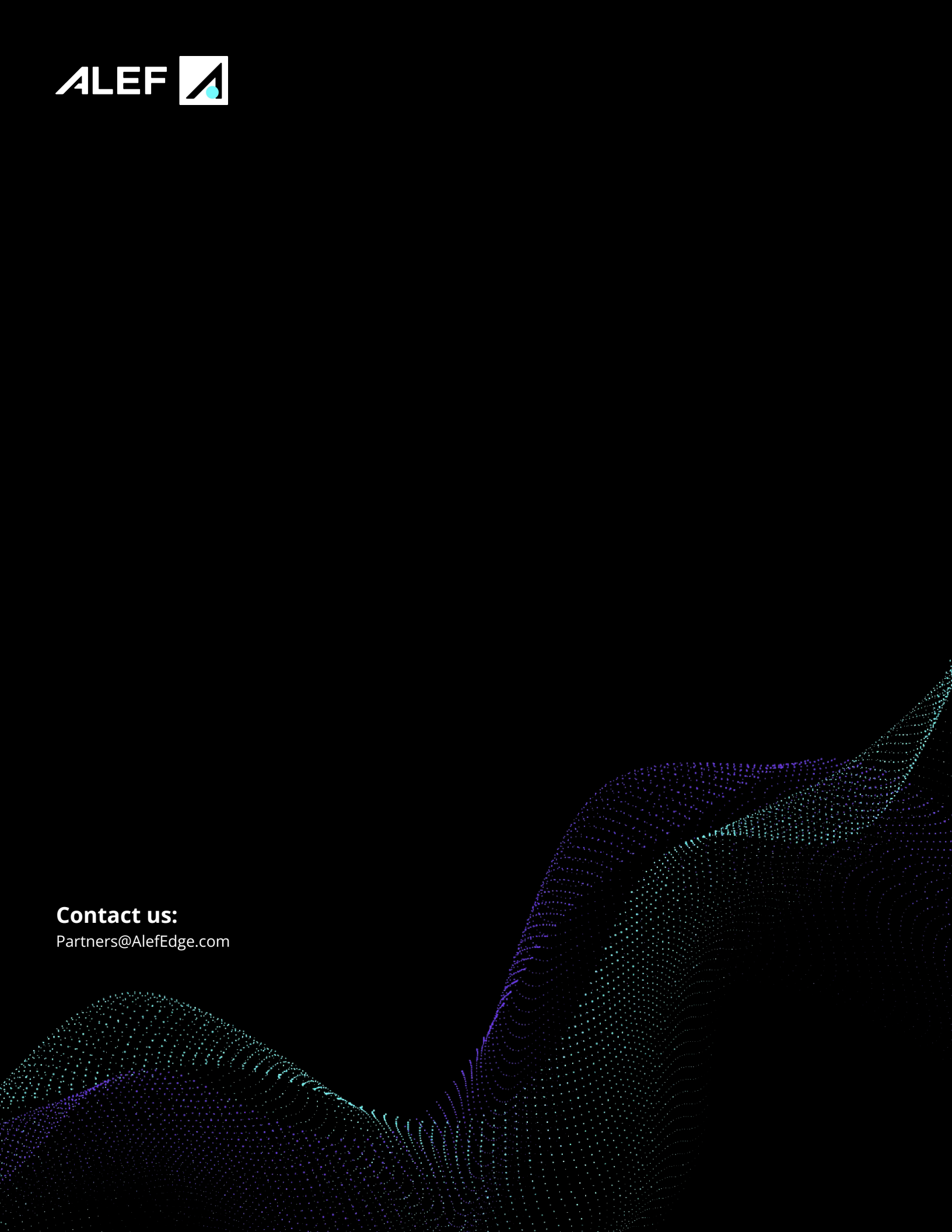
Over the last few years, the district, like others, realized it needed a plan to help its students, whether fully remote, on a hybrid schedule, or those returning to the classroom on a full-time basis. Even for the latter, there was the question of the 'homework gap,' or how students at home with unreliable or slow internet would keep up with their homework, which has increasingly gone online.

The district turned to Alef for a private mobile network. Alef provided the schools with a way to keep their initial costs down by providing a solution that didn't require any on-prem hardware and is integrated seamlessly with the district firewall, and with their ongoing costs, by letting the schools use a throughput pricing model as opposed to an expensive, on-going, monthly fee.

The Alef solution met the district's security concerns with an open architecture that integrates with their existing Nokia RAN equipment and by filtering all their content for Children's Internet Protection Act (CIPA) compliance.

Conclusion

K-12 schools nationwide are turning to private mobile networks, enabling students to learn at home when necessary and providing new and exciting educational tools for teachers. Staff are using the networks to run their schools more safely and efficiently. With solid connectivity in place, schools can rest easy knowing they're prepared for the future. Alef is front and center, providing K-12 schools with a private wireless solution that is simple to deploy, secure, and cost-effective.



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