FROST & SULLIVAN

Kajeet

2022
NEW PRODUCT INNOVATION

Global Private Wireless Networks for Education Industry

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Kajeet excels in many of the criteria for private wireless networks for education.

AWARD CRITERIA

New Product Attributes	Customer Impact
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

Profile and Background

Headquartered in McLean, Virginia, Kajeet is a managed Internet of Things (IoT) connectivity services provider that supports many industries globally, including the education sector. According to Kajeet, they "provide nearly 3,000 global businesses and public sector entities with reliable connectivity, robust security, and comprehensive management and support services." Recently the company expanded into private wireless networks that include both 4G and 5G capabilities: Kajeet builds, installs, and manages these networks for their customers.

Companies have long employed private wired networks and private wireless networks (primarily Wi-Fi), as well as other network types, for their data needs, but why would an organization employ a private 4G or 5G network for data? A private cellular network is a dedicated network that restricts the devices that connect to it. Only relatively recently have enterprises begun to utilize cellular network capabilities beyond their traditional voice capabilities. Many private cellular networks are currently operating with 4G, but 5G networks offer new capabilities that will drive enterprises to upgrade over time.

Wireless networks (of any type) add a level of flexibility not available with wired networks. To move a connected device with a wired network may involve moving the network as well. This process is often expensive, and in certain situations not possible. Wi-Fi works great in many situations, but it cannot scale to the same levels that cellular achieves. Cellular network technology provides several advantages, including being designed for mobility (moving devices) and connection reliability, supporting greater coverage, and allowing for much higher device density. 4G or 5G networks are not likely to replace Wi-Fi

and wired networks entirely; instead, they will cover use cases that the other technologies do not cover, or do not cover well.

Frost & Sullivan has written extensively about private 4G and 5G networks and has often used manufacturing as an illustration of where these new networks are proving essential. Manufacturing is now using different types of moving robots to increase efficiency and cellular (especially 5G) is designed to work with moving devices much more effectively than Wi-Fi. Manufacturers also have much higher device densities, which again requires 5G. While manufacturing provides a good example, private 4G and 5G networks are making inroads into many different sectors including oil and gas, transportation and logistics, mining, airports and seaports, medical, education, and more.

However, this award is specifically around the educational sector. Why would Kajeet focus on this area and how do Kajeet's solutions, including private cellular networks, support education?

Founded in 2003, Kajeet has focused on education since the beginning. The company supports many industries, but their biggest customer base is within education—they claim approximately 2000 school districts as customers. Given that the educational sector is their sweet spot, it makes sense that the initial focus for their new product—private 4G and 5G networks—would be for education. (Kajeet was quick to point out that their solutions are industry-agnostic; they can be utilized by any industry.)

Why does the education sector need managed IoT connectivity in general and private 4G/5G networks in particular? The term IoT sounds industrial, but it really is all about connecting devices (of all sorts) to the internet. Those devices include laptops, tablets, and desktop computers, which are devices that students of all ages use.

Doesn't everyone already have access to the internet? Unfortunately, no. While this problem started long before the recent pandemic, the closing of schools and businesses due to COVID-19 quickly highlighted the issue globally. Internet connectivity went from important, but maybe possible to get around, to absolutely essential for remote learning and remote work. This actually may be a bigger problem than most would assume. According to the White House, "than 30 million Americans live in areas where there is no broadband infrastructure that provides minimally acceptable speeds – a particular problem in rural communities throughout the country."[1]

There are many reasons why someone would not have internet access. Perhaps they cannot afford it. They may not have stable housing in general. Maybe there are no providers where they live. Often this is thought of as more of a rural problem, but even in urban areas there are certain pockets without internet.

Whatever the reason, almost every school district will have a certain percentage of students that struggle with access to the internet. School districts, of which there are almost 14,000 public school districts in the United States alone, try their best to provide the same educational opportunities to all their students.

Every student that lacks access to the internet when they are outside of school is at a disadvantage. And, as the pandemic has demonstrated, it is very possible that schools could be forced to operate remotely

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[1] https://www.whitehouse.gov/bipartisan-infrastructure-law/#internetaccess

unexpectedly. The students that lack internet access quickly move from disadvantaged to unable to participate in school completely.

So how does Kajeet help school districts solve these problems so that all students have access to the internet? How does Kajeet level the playing field, while at the same time, not introduce new issues?

Managed Wireless Connectivity and Kajeet Sentinel Platform

The first step is by providing managed wireless connectivity, utilizing Kajeet's Sentinel Platform.

What does the Sentinel Platform provide? Everything necessary to provide managed connectivity:

- Control: A single console to manage everything, including which devices to enable (or disable) and data management. This may also include content filtering.
- Connectivity: Kajeet works with local communication service providers (CSPs) to provide connectivity and also, in some cases, acts as mobile network operator to provide cellular connectivity utilizing 4G and 5G.
- Security: The single console provides centralize threat management and proactive protection for devices and the network.
- Optimization: Sentinel provides advanced analytics to optimize performance.
- Support: Kajeet provides comprehensive support and services for its customers utilizing the Sentinel Platform.

Most of the approximately 2000 school districts that are customers of Kajeet utilize the Sentinel Platform with connectivity provided using public cellular. (All of Kajeet's solutions work across industries, but as this award is focused on education in particular, most of the discussion will be around that sector.)

For a school district, there are a number of ways this plays out. It could be by providing Wi-Fi on school buses. (The Wi-Fi hotspot on the school bus is connected to the internet by cellular using the Sentinel Platform.) Perhaps, laptops and/or tablets provided to students that connect to the internet via 4G or 5G (and Kajeet's Sentinel Platform.) Or if students have devices that can connect via Wi-Fi, mobile hotspots (connected to the internet by cellular) for the student's home can be provided.

However, there could be issues that come with providing this internet access. The school district, if in the United States, is mandated by the Children's Internet Protection Act (CIPA) to provide a "safe" environment for kids on the internet, meaning that access is filtered. While there are mandated filters, each school district may go beyond the minimum requirements. With that in mind, what is acceptable for a student to access? What happens if one device is using much more bandwidth than others? If a household is provided a hotspot, are other members of the household allowed to use the internet and to what extent?

Questions such as these (and many more) are policies that the school district must decide about and enforce. With Kajeet's Sentinel Platform, they can provide connectivity, but also provide the controls, the security, the optimization, and the support to make that connectivity work well.

Kajeet Private 5G (and 4G)

While Kajeet's solution running over public wireless networks can address the connectivity and collaboration needs of schools, there are various ways in which private networks can deliver a vastly superior connectivity experience. In many cases, private networks may be the ONLY option available for connectivity. In other situations, a hybrid public/private network option may be used.

There may be specific areas within the district where public cellular networks have issues. These could be potential areas to cover with private wireless networks. (Wi-Fi could be utilized, but cellular technologies can operate at higher power, making coverage of large areas less expensive.) Kajeet's private wireless solution utilizes the Sentinel platform, so managed IoT connectivity can be provided utilizing public *and* private wireless. Frost & Sullivan believes this hybrid approach is a strong differentiator for Kajeet.

Another potential use of private cellular networks in the education sector is with universities or schools that have a campus. A private 4G or 5G network can cover the entire campus and all students (and teachers) could have access. This would enable internet access at the dorm or in the classroom or outside on the lawn.

Kajeet builds, installs, and manages these private wireless networks for their customers, but they are not alone on this journey. Kajeet partners with leading radio access network (RAN) suppliers, including Samsung and at least 3 additional suppliers. (Having multiple choices for RAN suppliers that each support open interfaces provides options for customers, eliminating vendor lock-in.) Samsung supplies RANs to large global CSPs but has also been moving aggressively into private wireless networks. The Kajeet and Samsung collaboration will focus first on education and already the companies are working to deliver a 5G private network solution to multiple school districts. The collaboration will use Citizens Broadband Radio Spectrum (CBRS). (CBRS is available in the United States in the valuable mid-band spectrum. CBRS is shared spectrum with a dynamic access mechanism that enables the reliability of licensed spectrum *without* the large expense normally associated with licensed spectrum.) For more information, see the press release at https://www.kajeet.net/kajeet-and-samsung-collaborate-to-deliver-smart-private-5g-network-solutions/.

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> *- Troy M Morley,*
> *Industry Principal*

Kajeet has also partnered with Google, which provides a number of advantages. Google has long been involved with education, providing Chromebooks and software for use in classrooms. In addition, Kajeet's software solutions can run on Google Cloud and Google Distributed Cloud Edge. (5G is designed to run end-to-end in the cloud and/or on the edge cloud.) For more information, see the press release at

https://www.kajeet.net/kajeet-to-bring-next-gen-private-5g-to-schools-students-across-america-in-partnership-with-google-cloud/.

New Product Innovation Award Criteria

Kajeet excels in most of the criteria for private wireless networks for education. The criteria include 5 around new product attributes and 5 related to customer impact. (The criteria are show in the diagram above and detailed on the following pages.)

Kajeet already provides excellent managed IoT connectivity to its education customers utilizing public cellular networks. Offering private cellular network connectivity, utilizing the same Sentinel platform, becomes a huge advantage and positions Kajeet to be an obvious choice for school districts around the world.

Combined with their turnkey managed services, which include private 5G network design and installation, along with private 5G network as a service, Kajeet makes a private 5G network an excellent option for school districts to consider.

For nearly 2 decades, Kajeet has been working with its largest customer base, the educational sector, to solve the issues they face. The company's new private wireless solution continues this tradition, providing a continued match to needs for its customer base looking to provide connectivity to all their students, with a high level of reliability and quality.

Every industry requires security and threat protection in their networks and education is no different. Kajeet and its Sentinel platform actively protect users, applications, and data on the network. Content filtering is not as common in other industries, but education is required by governments to make sure the content is safe for students. (In the US, the network is CIPA-compliant.) Kajeet also uses machine learning and artificial intelligence to keep the network safe, secure, and running reliability.

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One way Kajeet is reducing costs for its customers is by strategically utilizing open source software from the Open Networking Foundation.[2] This enables a continually improving, carrier-grade solution that is affordable for education (and other industries.)

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[2]   https://opennetworking.org/news-and-events/press-releases/onfs-aether-private-5g-open-source-platform-selected-by-kajeet-to-build-a-enterprise-private-5g-network-offering/

The company also has Open RAN support on their roadmap. This will potentially reduce costs, but also enable increased automation in the network—which means better performance and reduced energy expenditures.

With many years of experience providing connectivity for education and a continually growing customer base, Kajeet's customers know the Kajeet brand and trust it. When a company has thousands of customers in a specific industry and more coming on board regularly, they are doing something quite well. Customer bases only expand when the combination of purchase experience, ownership experience, and service experience are excellent.

Conclusion

Kajeet is a provider of managed IoT connectivity solutions utilizing both public and private cellular networks. While their solutions are used in many industries, the company has worked with educational sector since its founding almost 2 decades ago. Kajeet counts thousands of school districts around the world as its customers. This award focuses on Kajeet's private wireless solution which builds upon its existing solution that utilizes public cellular networks; this hybrid approach is a significant differentiator that makes Kajeet a top choice to help solve the digital divide in education.

With its strong overall performance, Kajeet earns Frost & Sullivan's 2022 Global New Product Innovation Award in the private wireless networks for education industry.

What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

New Product Attributes

Match to Needs: Customer needs directly influence and inspire product design and positioning

Reliability: Product consistently meets or exceeds customer performance expectations

Quality: Product offers best-in-class quality with a full complement of features and functionality

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

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Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.
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- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**