



**make it
amazing**

Amdocs overview

Amdocs helps those who build the future to make it amazing. With our market-leading portfolio of software products and services, we unlock our customers' innovative potential, empowering them to provide next-generation communication and media experiences for both the individual end user and enterprise customers. Our 31,000 employees around the globe are here to accelerate service providers' migration to the cloud, enable them to differentiate in the 5G era, and digitalize and automate their operations.

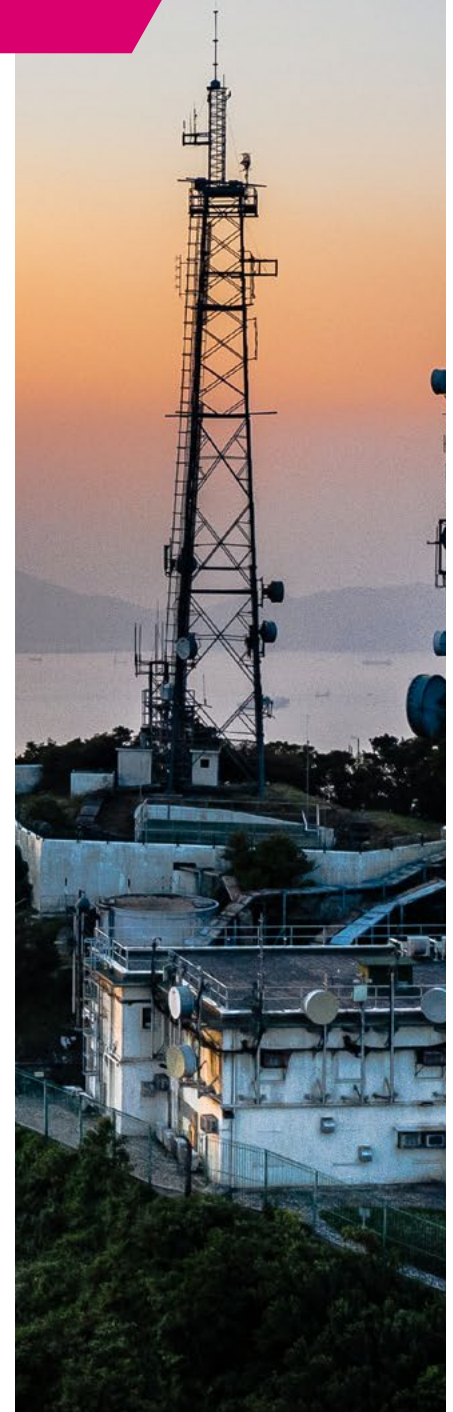
Amdocs is the trusted network partner to mobile service providers worldwide. We offer proven and scalable solutions, powered by advanced expertise and equipment-independent software and services to help manage network performance and customer network experience, while enhancing operational efficiency and increasing network return on investment.

We have offices in over 30 countries on six continents and development centers in Brazil, Canada, Cyprus, India, Ireland, Israel and the United States. We operate outsourcing centers in Australia, Canada, India and the United States.

Amdocs in CBRS ecosystem

The introduction of Citizen Broadband Radio Systems (CBRS) band in the US has allowed organizations to access to cellular spectrum on a shared basis, while creating the ability to have their own private LTE/5G networks. Yet accessing this spectrum and minimizing interference with incumbent or licensed band users requires a Spectrum Access System (SAS) administrator. Furthermore, due to the shared nature of CBRS, spectrum access can only be enforced through FCC-certified SAS companies.

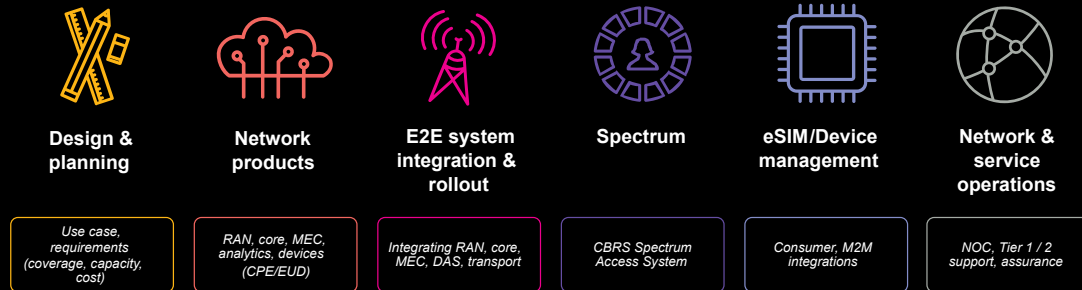
Amdocs is one of few SAS administrators currently operating in the market. Our involvement in CBRS began as early as 2016, as one of the first applicants to join the initial wave of FCC SAS administration operators. In 2020, after several years working in the ecosystem, during which we conducted tests and deployments with technology partners, we received FCC authorization to operate SAS on a commercial basis. Since then, Amdocs has on-boarded many customers, providing them with access to CBRS spectrum.



Amdocs private LTE/5G offerings

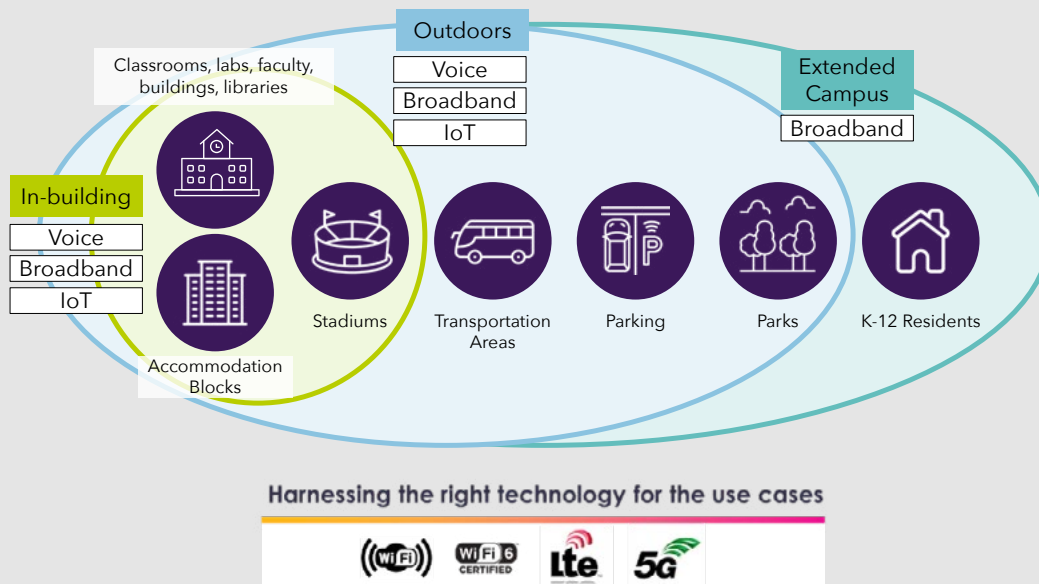
Amdocs Private LTE / 5G Networks

End-to-end solution & services with partner ecosystem



CBRS private LTE/5G for K-12

The education sector has been an important adopter of CBRS private LTE/5G. The global pandemic highlighted the digital divide that separates students with internet access from those who cannot get online without visiting a public place. Recognizing that home internet access is foundational to academic success, US schools and municipalities began allocating funds to provide connectivity to unserved and underserved students.



Campus and private wireless networks; diverse environments and use cases

Several key factors make CBRS private LTE/5G an attractive value proposition for school districts:

- They are a financially viable and operationally efficient option for some outdoor areas (extended campus), where the commercial cellular service provider business case doesn't justify building new towers
- It provides sufficient network speeds for student-oriented educational use cases
- Its ability to control student devices and policies that are in line with ISDs

Key use cases for campus private LTE/5G networks:

- Today: Fixed wireless broadband as a reliable, secure and scalable alternative to outdoor Wi-Fi
- Future: Smart campus (security, IoT), real-time e-sports, neutral host, roaming to public networks (mobile network operators) for seamless experience

Amdocs experience & key learnings deploying CBRS private networks

Case study: Private LTE deployment for a school district

A large school district in the US state of Texas was looking to leverage CBRS to provide internet connectivity to unserved and underserved areas. The objective was to provide students living in school vicinities with access to online educational resources, as well as the ability to attend classes via remote sessions.

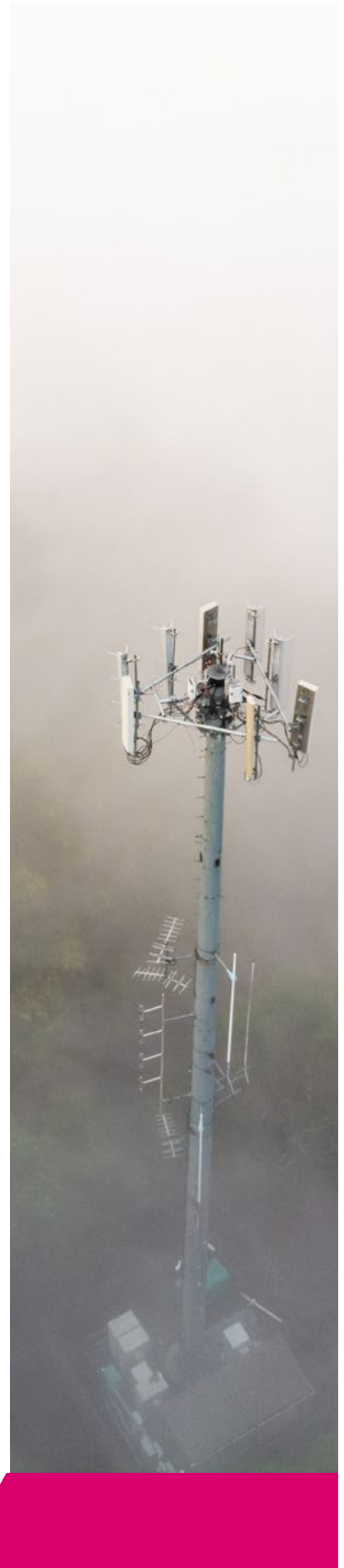
To answer this need, Amdocs deployed an outdoor CBRS LTE network for connectivity services, which was bridged to the school district's data centers and wide area network. Student homes were subsequently assigned either high-powered customer premises equipment (CPE) that could connect to a Wi-Fi router or CBRS LTE dongles that connected directly to school-provided laptops.

To implement the solution, Amdocs collaborated with RAN, core, CPE and cloud partners, while also leveraging vendor transport and backhaul solutions.

For private network testing and acceptance, Amdocs performed testing in accordance with the test plan agreed with the school district. This included collecting field measurements and reviewing network key performance indicators (KPIs) from network management systems. Focus was placed on validating the user experience to achieve optimum throughput, as well benchmarking the RAN in various scenarios (e.g., carrier aggregation combinations).

Key learnings

- Select right spectrum mix and equipment vendors based on use case type
- Select right site location, while considering regulatory, zoning and accurate planning, based on end-user locations
- Select right UE/CPE; e.g. considerations for deploying high-gain CPEs to provide additional gains but may lead to extra installation costs
- Plan for transport and consider aspects such as fiber runs, backhaul and fallback options
- Consider system integration aspects: customer network IP plan; end-to-end integration into customer premises, overcoming lack of topology
- Optimize performance, considering multiple factors such as latency, throughput, provisioning, load balancing and failover improvement
- Leverage service providers and mobile network operators to support roaming outside campus areas



Amdocs' added value

Amdocs enabled the school district to maximize benefits of private networks through:

- End-to-end network testing and benchmarking services performed at Amdocs innovation labs or at customer locations
- Recognized leadership taking telco to the cloud through strategic partnerships with cloud hyperscalers
- Private network support models that include 24x7x365 support and monitoring of RAN, CBRS SAS and core network; full ownership of monitoring, escalation and resolution; SLA compliance with escalation matrix for different care severities

Amdocs' capabilities & differentiators



For more information, visit [Amdocs Mobile Private Networks](https://www.amdocs.com)

How to boost the student experience with private LTE/5G networks

Design, deploy and manage multi-vendor multi-use case enterprise LTE/5G networks

Solutions. Services. Automation.

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