Shared Spectrum

The Engine of Enterprise Innovation in the U.S.

Today's businesses require networks supporting mobility for workers and equipment, seamless automation across operations, and real-time data processing for immediate decision-making. These requirements represent a significant shift in how connectivity serves business operations. At the OnGo Alliance, we've witnessed how modern enterprises face evolving connectivity demands that traditional approaches simply can't meet.

Traditional connectivity options present significant limitations for these advanced use cases. Public cellular networks prioritize broad coverage over dedicated enterprise performance, while Wi-Fi lacks the reliability, security, and quality guarantees needed for business-critical industrial applications. These limitations force enterprises to make compromises that constrain their digital transformation ambitions and global leadership.

Private 4G or 5G networks using dedicated or shared spectrum transform connectivity from a commodity utility into a strategic asset that drives innovation. They enable enterprises to deploy infrastructure precisely aligned with their operational requirements, maintain complete control over network resources and security policies, and ensure consistent performance for essential applications. This foundation of reliable connectivity for enterprises becomes the platform upon which U.S. leadership can be built across industries.

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CBRS Success: Delivering Enterprise Value Today

Building on this foundation of private networks, the Citizens Broadband Radio Service (CBRS) framework has enabled deployments that deliver tangible value across multiple industries. By making mid-band spectrum accessible through an innovative sharing approach, enterprises can deploy private wireless networks tailored to their specific needs.

In manufacturing, CBRS networks support factory-wide automation, connecting robotic systems, autonomous guided vehicles (AGVs), and worker devices with consistent performance. Major manufacturers report significant production reliability and efficiency improvements, with automated quality inspection systems and predictive maintenance applications eliminating costly downtime. The return on investment

(ROI) for these deployments is compelling, with manufacturers seeing revenue increases from improved throughput and quality, cost savings through better capital efficiency, increased operational efficiency, as well as enhanced worker safety. These networks provide the high-capacity, low-latency connectivity needed to support real-time control applications previously impossible with traditional wireless technologies. Research with early adopters found that 79% of organizations implementing private wireless networks saw an ROI within 6 months, with 21% of that group seeing an ROI within just one month.

A study by Mobile Experts found that CBRS-based private wireless networks can deliver 50-75% annual savings for industrial use cases by eliminating network-related production disruptions, with some organizations achieving ROI within just 3 months.

Logistics operations leverage CBRS to automate warehouse processes and track inventory in real time. Distribution centers deploy private networks that connect scanning systems, sorting equipment, and autonomous mobile robots across vast facilities with challenging RF environments. At ports, CBRS networks extend from the dock to container yards, enabling remote crane operations, AGV coordination, and real-time cargo tracking that improve throughput and safety. Educational institutions implement CBRS to create secure campus-wide connectivity supporting distance learning, innovative building applications, and enhanced safety systems.

CBRS is also transforming building connectivity through cost-effective neutral host networks (NHNs). These networks provide multi-operator cellular coverage at a fraction of the cost of traditional distributed antenna systems (DAS), making enhanced connectivity economically viable for mid-sized venues.

"ROI comes through the efficiencies that we're building. It's coming through the new ways of doing business workflow changes. ROI is not just the dollar saved at the end of the day, it's also the dollar saved in the long run."

Rishma Khimji,
Chief IT Officer, Las Vegas International Airport

"The primary reason they're [utilities] going to private networks is reliability, security, and just having that real-time visibility into their grid."

Curt Ahart,
VP of Corporate Business Development at Digi International

The flexibility of CBRS allows organizations to deploy NHNs initially to address immediate connectivity needs, then incrementally add private network capabilities as operational requirements evolve, providing a future-proof investment path that aligns with both budget constraints and expanding use cases. The reverse path is also true, as NHN functionality can easily be added once a private network is in place.

Shared spectrum should be recognized as a fundamental pillar of the U.S. national innovation strategy. As digital innovation becomes a primary driver of productivity growth, enterprises across manufacturing, logistics, seaports, education, and other critical sectors increasingly depend on private wireless networks to implement advanced applications that drive productivity and create competitive advantage.

Technical Evolution: CBRS 2.0 and the Maturing Ecosystem

While initial deployments proved successful, CBRS 2.0, launched in the summer of 2024, represents a significant advancement in our shared spectrum framework. We've developed enhancements that dramatically improve spectrum availability and reliability for enterprise deployments by working with federal partners, including the NTIA, Department of Commerce, FCC, and Department of Defense. Smaller protection zones around military radar installations expand the areas where CBRS can operate without interruption from 78% to 97% of the country for indoor deployments. The extended "heartbeat" interval allows devices to maintain operation for up to 24 hours without Spectrum Access System (SAS) reauthorization, enhancing reliability for critical applications.

The device ecosystem has expanded substantially, with equipment available across all essential categories. Enterprise-grade access points, ruggedized CPE devices, specialized industrial equipment, and IoT modules provide virtually any deployment scenario with options. Major smartphone manufacturers now include CBRS support in their devices, simplifying mobility use cases while emerging specialized equipment addresses industry-specific requirements like industrial automation controllers and medical devices.

Deployment innovations have reduced implementation complexity and costs for enterprises. Managed service providers now offer turnkey solutions that eliminate the need for specialized RF expertise, while SAS providers have streamlined spectrum access processes. GAA coexistence mechanisms allow for voluntary coordination between users operating in the same area, promoting more efficient spectrum utilization in areas with dense deployments. These advances have transformed CBRS from a promising technology into a mature platform ready for even the most demanding enterprise applications.

Global Perspectives: Enterprise Spectrum Models That Work

In countries outside the U.S., local or campus licenses represent a growing trend in spectrum policy. Like our CBRS framework, these approaches allow enterprises to operate private networks within defined geographic areas such as factories, ports, or campuses. They enable private networks tailored to specific operational requirements without interference from other users.

Germany's reservation of 100 MHz of mid-band spectrum (3.7-3.8 GHz) for industrial use has enabled over 250 private industrial networks. The UK's shared access license framework offers enterprises direct access to spectrum in multiple bands, with Ofcom having issued over 1,600 licenses since 2020. France has allocated spectrum in the 3.8-4.0 GHz band for industrial applications, while Sweden has reserved spectrum in the 3.5 GHz band for enterprise deployments.

"Virtual parts inspections and digital borescopies have clearly gained acceptance in our company. The [private] 5G-based video streams have helped us enormously. In the past, such inspections often had to be planned several weeks in advance. Now we can schedule inspections at very short notice, which our customers really appreciate."

Michael Kirstein,
Vice President Operations Engine Services at Lufthansa Technik.

These international examples, alongside the U.S. CBRS model, confirm a critical insight: enterprises with access to dedicated spectrum resources invest significantly in connectivity infrastructure that drives operational innovation. These networks become platforms for implementing automation, real-time analytics, and advanced applications that enhance productivity and competitiveness.

The European private 5G network market is forecast to grow at a CAGR of over 54% from 2025 to 2033, reaching over $150 billion.

Control extends to all network parameters, from security policies to traffic prioritization, allowing enterprises to optimize performance for their specific applications instead of accepting the generic parameters of public networks.

Technical Advantages of Spectrum Sharing

Beyond enabling diverse international approaches, the CBRS sharing framework offers significant technical advantages over traditional spectrum allocation models. By allowing dynamic coordination between users through the SAS, shared spectrum achieves efficiency gains that static allocations cannot match.

Private networks using shared spectrum provide enterprises with precise coverage, complete control, and guaranteed quality of service that traditional connectivity models cannot deliver. Coverage can be designed specifically for an enterprise's physical environment, addressing challenging indoor locations, expansive outdoor areas, or complex multi-building campuses. Control extends to all network parameters, from security policies to traffic prioritization, allowing enterprises to optimize performance for their specific applications instead of accepting the generic parameters of public networks.

Shared spectrum frameworks like CBRS complement rather than replace public cellular networks. They allow enterprises to maintain public network access for broad mobility needs while deploying private infrastructure for mission-critical applications requiring guaranteed performance. This complementary relationship enables a hybrid approach where each connectivity technology serves the applications best suited to its capabilities, creating a comprehensive communications fabric that addresses all enterprise requirements.

Enhanced security represents another key advantage of shared spectrum deployments. Private networks established on CBRS bands can implement enterprise-specific security controls, maintain data localization within facility boundaries, and isolate critical operational technology (OT) systems from public networks. This control, combined with inherent wireless reliability improvements from interference coordination and guaranteed spectrum access, creates a foundation for implementing sensitive applications with strict performance and security requirements.

Counterarguments: Addressing Potential Concerns

While shared spectrum frameworks like CBRS offer compelling advantages, it's important to address common questions and concerns that stakeholders may have:

Complexity and Technical Expertise

Some organizations perceive CBRS deployments as requiring specialized expertise beyond their IT capabilities. This concern has mainly been addressed through the ecosystem's maturation, with turnkey managed service offerings now available that handle spectrum management, network design, and ongoing operations. These solutions enable enterprises to focus on applications rather than infrastructure management, making CBRS accessible even to organizations without dedicated wireless expertise.

Spectrum Availability in High-Demand Areas

In dense urban environments with multiple enterprises nearby, questions arise about GAA spectrum availability when numerous private networks operate in the same area. The SAS coordination system was specifically designed to address this scenario through automated coordination and dynamic frequency assignment. Additionally, the voluntary GAA coexistence mechanisms introduced in CBRS 2.0 allow neighboring networks to optimize spectrum use. At the same time, Priority Access Licenses (PALs) remain an option for enterprises requiring guaranteed spectrum access in congested areas.

Federal Spectrum Reclamation Concerns

Some stakeholders worry that federal incumbents could reclaim shared spectrum, undermining long-term investments. This concern overlooks the framework's demonstrated stability with over 400,000 deployed CBRS devices and 1,000+ GAA license operators. The FCC has consistently strengthened rather than restricted the framework, evidenced by the $4.5 billion PAL auction with 228 winning bidders. CBRS 2.0's reduced protection zones and the proven effectiveness of the SAS system further demonstrate the framework's durability and federal commitment to its long-term success.

Future-Proofing and Technology Evolution

Some stakeholders question whether investments in today's CBRS technology will remain relevant as wireless standards continue to evolve. The framework was deliberately designed with technology neutrality in mind, allowing deployments to migrate from 4G to 5G and beyond without changing the underlying spectrum access model. Equipment providers have committed to upgrade paths that protect initial investments while enabling the adoption of future capabilities as they become available.

The Path Forward: Policy, Innovation, and Competitiveness

Given these compelling technical advantages and proven deployments, modern spectrum policy must evolve to recognize the critical role that enterprise wireless connectivity plays in national innovation and competitiveness. Traditional approaches that allocate all mid-band spectrum to either exclusively licensed or unlicensed use fail to address the growing demand for enterprise-specific wireless infrastructure. Per the Global Supplier Association, 10 of the 11 leading countries (China being the exception) in private network deployments have dedicated spectrum for industry. We advocate for balanced policies that include dedicated mechanisms for enterprise access to spectrum resources, whether through sharing frameworks like CBRS or direct access models as implemented in other countries.

Digital innovation has become the primary driver of productivity growth in the modern economy. Studies consistently show that enterprises implementing advanced connectivity infrastructure experience significant efficiency gains through IoT implementations and automated processes that multiply worker efficiency and eliminate operational bottlenecks. The CBRS framework enables this transformation by providing enterprises with the reliable, low-latency connectivity these applications require.

Shared spectrum should be recognized as a fundamental pillar of the US national innovation strategy. Enterprises across manufacturing, logistics, healthcare, and other critical sectors increasingly depend on private wireless networks to implement advanced applications that drive productivity and create competitive advantage. By ensuring these businesses have access to the spectrum resources they need, policymakers can accelerate digital transformation across the entire economy, creating ripple effects far beyond the wireless industry.

The global competition for industrial leadership increasingly depends on connectivity infrastructure supporting advanced applications like AI-driven automation, computer vision, and collaborative robotics. Countries that provide enterprises with access to spectrum resources position their industrial sectors for leadership in emerging technologies and applications. The economic benefits extend beyond individual businesses to strengthen national competitiveness through improved productivity, new business models, and accelerated innovation cycles.

Looking ahead, the next wave of enterprise applications - including AI-powered automation, edge computing frameworks, and advanced robotics - will place even greater demands on wireless infrastructure. Spectrum frameworks must evolve to meet these growing requirements, providing the capacity, reliability, and performance guarantees these applications will demand. By establishing flexible spectrum access models today, we lay the foundation for continued innovation in these critical technologies that will drive economic growth in the coming decades.

"Evidence suggests that, by opening spectrum to competition among a diverse group of operators, CBRS-style sharing fosters greater innovation and novel uses."

Principles of Spectrum Sharing: Understanding the Value of Shared Spectrum, The Brattle Group, 2023

Conclusion: A Call to Action

With these future opportunities on the horizon, shared spectrum has proven itself as a foundational element of enterprise innovation and competitiveness. The OnGo Alliance has witnessed firsthand how access to dedicated spectrum resources enables businesses to implement transformative applications that were previously impossible, creating tangible operational improvements and unlocking new business models across diverse industries.

The CBRS model demonstrates how shared access can drive real outcomes while efficiently utilizing valuable spectrum resources. Our members have deployed networks that support advanced manufacturing systems, automate logistics operations, enhance healthcare delivery, provide new broadcast opportunities, and create safer, more connected educational environments. These deployments provide concrete evidence that shared spectrum frameworks deliver value not just in theory but in practice across the American economy.

Future growth depends on embracing dynamic, flexible spectrum models that recognize the diverse needs of different users. We invite policymakers, regulators, technology providers, and enterprises to join us in advancing shared spectrum frameworks that support continued innovation. By working together to evolve these models based on real-world experience and emerging requirements, we can ensure that spectrum resources become an enabler rather than a constraint for the digital transformation of American industry.

About the OnGo Alliance

The OnGo Alliance is an industry consortium that promotes the development, commercialization, and adoption of LTE and 5G solutions for the US 3.5 GHz Citizens Broadband Radio Service (CBRS), and evangelizes shared spectrum globally. Formerly the CBRS Alliance, this 95+ member group accelerates the buildout of effective and efficient CBRS networks, using 4G and 5G solutions. There are over 405,000 CBRS Access Points across the U.S. currently broadcasting wireless signals on the CBRS spectrum, via private and fixed wireless networks, spanning various sectors including enterprise IT, industrial IoT, smart cities, rural broadband, transportation, hospitality, retail, and real estate. The Alliance has also established a product certification program for OnGo equipment in the CBRS band ensuring multi-vendor interoperability. For more information, please visit www.ongoalliance.org and follow the OnGo Alliance on LinkedIn and Twitter.

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