CBRS Gives IT Leaders Access to Once-Exclusive Cellular Spectrum

If you could access something highly compelling yet, previously, off-limits to all but an exclusive group – such as purchasing pre-IPO shares of the next unicorn company, or scoring tickets for the hottest new musical since Hamilton*, or flying private instead of commercial – you'd jump at the chance, right?*

That time is now for owners, operators and tenants who have the opportunity to use carrier-grade cellular frequencies for their building or campus wireless networks. It's called CBRS, and its significance cannot be overstated.

Until now, cellular frequencies have been within the reach of only those having the deepest pockets to obtain a license. To quantify, we're talking about investments in the tens of millions, hundreds of millions and, even, billions. That essentially narrows it down to wireless carriers who use these frequencies for their public networks or Fortune 100 companies who use them for special private networks. But with CBRS, virtually any "enterprise" organization regardless of size and location can leverage carrier-grade cellular frequencies without applying for an FCC license to set up their own wireless network and reap benefits superior to Wi-Fi including performance, security and cost.
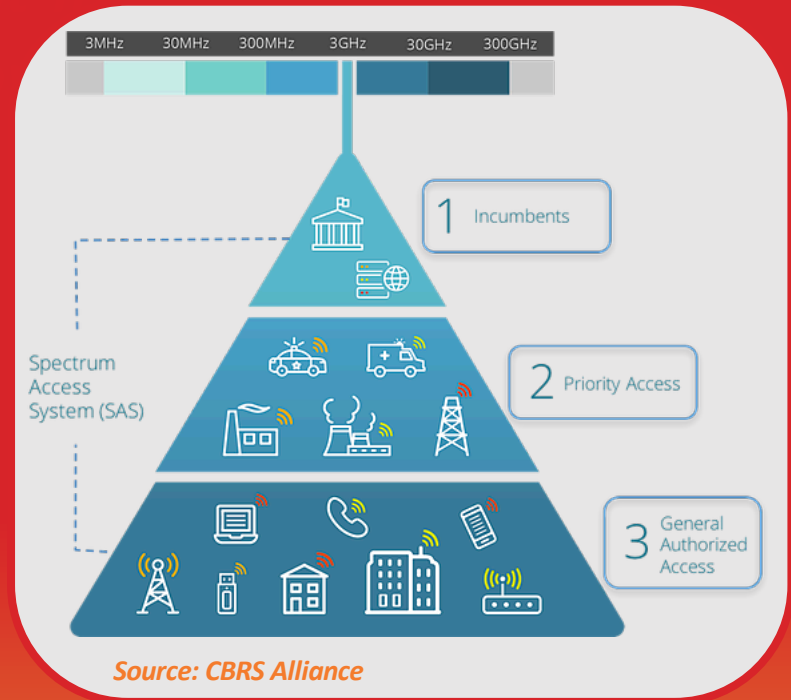
So, what are you waiting for?

Read on to learn more about CBRS including benefits, use cases and industry applications.

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What is CBRS?

CBRS stands for Citizens Band Radio Service. It's also referred to as OnGo™.

CBRS is an initiative conceived by the Federal Communications Commission (FCC) to solve for the shortage of frequencies available for wireless communications. In September 2019, CBRS was commercialized following the development of specifications and certifications as well as field trials and market pilots.

What's unique is CBRS frequencies are shared among stakeholders using a three-tiered hierarchy that prioritizes users in higher tiers and protects them from interference from users in lower tiers. Equally significant, lower tier users don't require a license per se; by meeting certain requirements identified by the FCC, these users are "lightly-licensed" to use a CBRS frequency band. This approach not only democratizes access to the tranche of spectrum but, more importantly, is what puts it within economic reach of IT Leaders with organizations.

Source: CBRS Alliance

Fast Facts…

- The National Telecommunications and Information Administration (NTIA) identified the 3.5 GHz spectrum in 2010 for possible shared use.
- The FCC proposed the Citizen's Broadband Radio Service (CBRS) in December 2012, and finalized the proposal in April 2014.
- In 2015, the FCC adopted rules for shared commercial use of the 3550-3700 MHz band (3.5 GHz band).
- In September 2019, the FCC, NTIA and Department of Defense (DoD), approved the start of CBRS commercialization.
- January 2020 marked the full commercialization.

Sources: CBRS Alliance & FCC

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What are the Benefits of CBRS?

CBRS delivers stand out *performance, security and cost benefits* for wireless networks.

Performance

First and foremost, CBRS provides considerable capacity and low latency performance which is ideal for mission-critical and business-critical services and applications. Likewise, CBRS enables wireless networks to cover large spaces. In addition, CBRS provides very high quality-of-service (QoS) and mitigates interference. Finally, CBRS ensures smooth handoffs when users and objects move throughout the facility. Collectively, these performance indicators make for a network is that is both highly predictable and reliable.

Security

As a protocol, LTE is inherently secure; Wi-Fi, not so much. CBRS also enables networks to be architected to be private, so data traffic stays inside the building. That means the traffic between devices and servers doesn't touch the public internet, and vice versa.
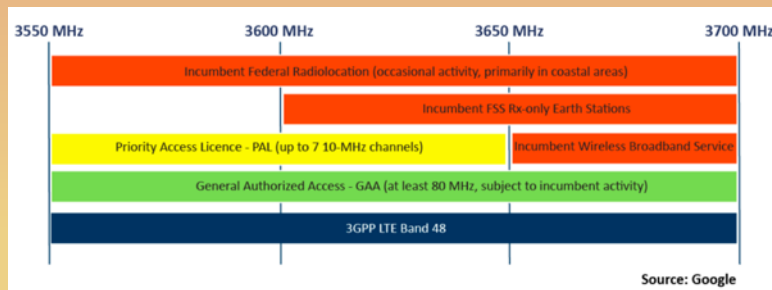
Cost

Carrier-grade cellular spectrum is within the reach of nearly any organization. Depending on the approach, costs typically consist of monthly core network and access network expenses which comprise the CBRS license, management of the license known as Spectrum Access System (SAS), backhaul, and the radio access network. Costs often are in line with ISP expenses but with the aforementioned performance and security benefits. In fact, CBRS can be less expensive than Wi-Fi networks to cover larger areas.

Fast Facts…

The amount to spectrum available through CBRS is simply astounding. The 150 MHz of spectrum between 3550–3700 MHz that comprises CBRS eclipses that of a major wireless carrier that uses about 130 MHz for all its networks combined!

3550 MHz	3600 MHz	3650 MHz	3700 MHz
Incumbent Federal Radiolocation (occasional activity, primarily in coastal areas)			
	Incumbent FSS Rx-only Earth Stations		
Priority Access Licence - PAL (up to 7 10-MHz channels)		Incumbent Wireless Broadband Service	
General Authorized Access - GAA (at least 80 MHz, subject to incumbent activity)			
3GPP LTE Band 48			

Source: Google

What are the Key Use Cases for CBRS?

CBRS is poised to enable three notable use cases which include: private networks, Internet of Things (IoT) connectivity, and in-building cellular coverage.

You are already familiar with *private networks* which you've likely architected with Wi-Fi to keep data within only your facility. CBRS, however, takes private networks to the next level to support nearly an infinite array of business applications.

For instance, CBRS is a better approach for covering large spaces such as a warehouse or data center. CBRS low-latency excels in connecting unmanned ground vehicles (UGVs) or assembly line machines in manufacturing plants. Similarly, CBRS high bandwidth is peerless in connecting untethered surveillance cameras. For safeguarding sensitive information in healthcare, research, financial or other corporate facilities, CBRS can't be beat. Plus, CBRS private networks relieve strained Wi-Fi networks and empowers organizations to be more strategic about wireless network planning and management.

As more and more sensors are deployed to monitor, control, analyze and optimize real estate operations as well as unlock new big data opportunities, *IoT connectivity* requirements also increase. CBRS is ideal for supporting IoT devices across vast areas and providing secure and uncompromising connectivity that neither requires additional infrastructure nor conflicts with other services on the network. CBRS is, therefore, advantageous compared to public cellular, Wi-Fi or single-purpose specialty networks like Low-Power Wide Area Network (LPWAN) operators.

Finally, although *smartphone enablement* ranks near the top of the list of priorities for nearly all IT Leaders, many buildings and campuses are left without cellular coverage because wireless carriers won't provide a signal source for an in-building wireless network. Or it's too expensive and complicated for IT groups that are already spread thin.

CBRS may eventually provide multi-operator cellular connectivity inside buildings by removing the need for a carrier-initiated signal source and making network management more accessible. And, because CBRS is based on cellular, there exists an upgrade path to 5G.

Fast Facts...

- The CBRS Priority Access License (PAL) auction (Auction 105) which offered 22,631 offered licenses was the largest number of spectrum licenses ever put on the block in an FCC auction.
- The auction closed after 76 rounds and raised more than $4.58 billion in bids.
- Buyers included wireless carriers, cable multiple-system operators (MSOs), wireless internet service providers (WISPs), enterprises, local governments, telcos and investors.

Source: AGL Media Group

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What are Compelling Industry Business Cases for CBRS?

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Offices & Office Campus
Tenant retention, asset monetization, workplace productivity, energy management, BYOD support, access control

Hospitals
Quality of care, PHI HIPAA compliance, mobility, physician retention, Wi-Fi relief

Education
Attract students & faculty, reduce digital divide, digital record keeping, campus safety

Factories, Warehouses, Logistics Centers
Uptime reliability, quality assurance, reduced operating costs, security and theft deterrence

Retail
Attract tenants, enhanced consumer experience, reduced connectivity infrastructure expense, security

Gaming & Casinos
Rich data analytics, guest experience, improved communications and security

Data Centers
DCIM enablement, operational efficiency, environmental monitoring, security

Hotels & Resorts
Guest experience, data analytics, reduced critical services costs, information privacy

Public Venues
Fan experience, point of sale, visitor analytics, security, Wi-Fi relief

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If you have even an inkling of the value of what we've just described, the time is now to evaluate and architect your wireless network strategy to incorporate CBRS!

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