

# CBRS Powers Seamless Broadcasting

The summer of 2024 saw two of America's most prominent arenas transformed into hubs of political activity and technological innovation. The Republican National Convention, held in July at Milwaukee's Fiserv Forum (home to the NBA's Bucks and Marquette Golden Eagles), and the Democratic National Convention, held in August at Chicago's United Center (home to the NBA's Bulls and NHL's Blackhawks), each welcomed approximately 50,000 attendees over the course of three days. These sports venues showcased the capabilities of Citizens Broadband Radio Service (CBRS) technology in meeting the complex communication demands of large-scale political events.

## Challenge

Political conventions require seamless, high-capacity wireless communications for various activities, from logistics coordination to live broadcasting. Traditionally, broadcasters relied on licensed Mobile Network Operator (MNO) spectrum, but this proved problematic during peak moments when thousands of attendees simultaneously used their mobile devices, creating severe network congestion that compromised broadcast quality. While extensive Wi-Fi networks sufficed for general attendees and staff use, they struggled with the bandwidth-intensive demands of live video streaming. Broadcasters needed the freedom to roam with cameras, capturing dynamic footage without cable constraints or unreliable connections. The challenge was implementing a solution providing robust, mobile, high-bandwidth connectivity for live streaming in a crowded, interference-prone environment.

## Solution

The solution to the conventions' communication challenges came in the form of CBRS-based private networks spearheaded by LiveU. This New Jersey-based company specializes in providing broadcasters with technology for reliable live video transmission over wireless cellular networks. While LiveU has traditionally enabled broadcasters to transmit live video feeds over public cellular networks, the CBRS implementation opened up new possibilities that weren't feasible with typical licensed spectrum. For example, reporters could now access live return feeds on their mobile devices, enabling them to see real-time broadcasts while on the move - a capability previously limited by traditional network constraints. These networks were designed to coexist with the venues' existing Wi-Fi infrastructure, which continued to serve attendees and staff for general internet access. The CBRS networks, operating in the 3.5 GHz band and available to all, were used explicitly for high-bandwidth video streaming applications, addressing the specific needs of broadcasters and media teams.

## The implementation of the CBRS solution involved several key partners in addition to LiveU:



**Pente Networks** contributed their cutting-edge Private Network Core in the Cloud. This cloud-based infrastructure served as the backbone of the CBRS network, managing user authentication, session control, and data routing. The cloud-based nature of this core allowed for rapid deployment and scaling, which is crucial for the temporary nature of the conventions.



**Baicells** provided the Radio Access Network (RAN) components, including the CBRS small cells deployed throughout the venues. These small cells were strategically placed to ensure comprehensive coverage across the entire convention space, including areas traditionally challenging for wireless signals, such as backstage areas and underground passages.

Each convention venue was equipped with two Baicells small cell access points, each utilizing 20 MHz of the CBRS 3.5 GHz band. This configuration provided ample capacity for multiple high-quality video streams for simultaneous broadcasting at each event.

The deployment process was a testament to the flexibility of CBRS technology. Unlike permanent indoor setups typically managed by venues, these CBRS networks were rapidly deployed as "pop-up" installations. The entire system, from the core network to the small cells, was set up in a matter of days leading up to the conventions and dismantled equally quickly afterward. This approach, more commonly seen in outdoor events like fairs and concerts, demonstrated the adaptability of CBRS technology in meeting temporary, high-demand scenarios.

“Political conventions present a perfect storm of challenges for broadcasters. You have sudden surges in network demand and the need for unparalleled agility to capture unexpected moments like impromptu press conferences or backstage interviews – without compromising overall network performance. This level of flexibility and security was amazing, allowing us to deliver broadcast-quality feeds from areas that were previously off-limits due to connectivity or security concerns. CBRS private network didn't just solve our existing problems; it opened up new possibilities for comprehensive convention coverage.”

**Daniel Pisarski**  
CTO, LiveU

## Key benefits of the CBRS solution included:



**Mobility:** Broadcasters could move freely throughout the convention spaces with their mobile-enabled cameras, unencumbered by cables or the need to stay within range of specific Wi-Fi access points.



**Reliability:** The dedicated CBRS spectrum and purpose-built network ensured consistent connectivity, even in crowded areas where traditional Wi-Fi might falter.



**Quality:** With ample bandwidth and low latency, the CBRS network supported high-definition and even 4K video streaming, meeting the quality standards of modern broadcast media.



**Security:** The nature of private CBRS networks, separate from public networks, provided an additional layer of protection for sensitive communications and media content, with its native encryption and access granted only to approved devices.



**Scalability:** The network could easily accommodate fluctuating demand throughout the conventions, from quiet moments to peak activity during prime-time speeches.

This CBRS implementation enabled unprecedented coverage of the conventions, from real-time streaming of keynote speeches to impromptu floor interviews and behind-the-scenes glimpses. Its success highlighted CBRS's potential in other high-density, high-bandwidth scenarios beyond political events, with applications ranging from music festivals and sporting events to corporate conferences, tactical deployments, and emergency response situations.

## Conclusion

The successful deployment of CBRS-based private networks at the 2024 national political conventions demonstrated the technology's effectiveness in high-density, high-bandwidth scenarios. This implementation showcased CBRS's ability to provide superior mobility, reliability, and security for mission-critical applications by addressing the challenges of live video streaming in crowded venues. The success of these temporary installations highlights CBRS's potential for a wide range of events and industries requiring robust wireless connectivity, paving the way for broader adoption in both temporary and permanent installations.

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