Broadcast Without Boundaries Using Private 5G

Introduction

The demand for flexible, high-quality live broadcasting has never been higher. Whether it's breaking news in remote areas, sports events in large stadiums, or live concerts in urban centers, today’s media environment requires ultra-reliable, high-bandwidth connectivity—anywhere and on demand. Traditional solutions like satellite uplinks, public LTE/5G, and Wi-Fi often fall short due to latency, congestion, and a lack of network control.

Portable private 5G networks offer a transformative solution. With compact, rapidly deployable systems, broadcasters can now create high-performance networks within minutes—without relying on existing infrastructure. One pioneering example is Acromove's Edge Cloud & Private 5G Appliances, a turnkey private 5G solution built in partnership with Askey.

The Problem with Traditional Connectivity in Broadcasting

- Cellular Congestion: Public 4G/5G networks are prone to traffic overload during major events.
- Satellite Latency: Satellite uplinks can introduce high latency and costly, making them unsuitable for real-time live streaming applications.
- Wi-Fi Instability: Wi-Fi operates on unlicensed spectrum, which means it cannot transmit at high power due to regulatory constraints. Furthermore, it's vulnerable to interference from nearby public devices.
- Wi-Fi Mobility: Wi-Fi does not support seamless handover between AP, causing data stream to drop when moving from one AP to another disrupting the quality of the broadcast signal.
- Lack of Control: Without ownership of the network, broadcasters have no guarantees on quality of service (QoS), security, or latency.

Where Portable 5G Shines

- Live Sports: Sideline cameras, bodycams, and drone footage all demand low-latency uplink and consistent bandwidth.
- Disaster Reporting: In areas with damaged or nonexistent infrastructure, portable 5G enables quick deployment for emergency broadcasts.
- Events & Festivals: High device density requires private network with dedicated bandwidth that only a private 5G setup can provide.
- Government or Military Streams: Sensitive environments require secure, isolated networks.

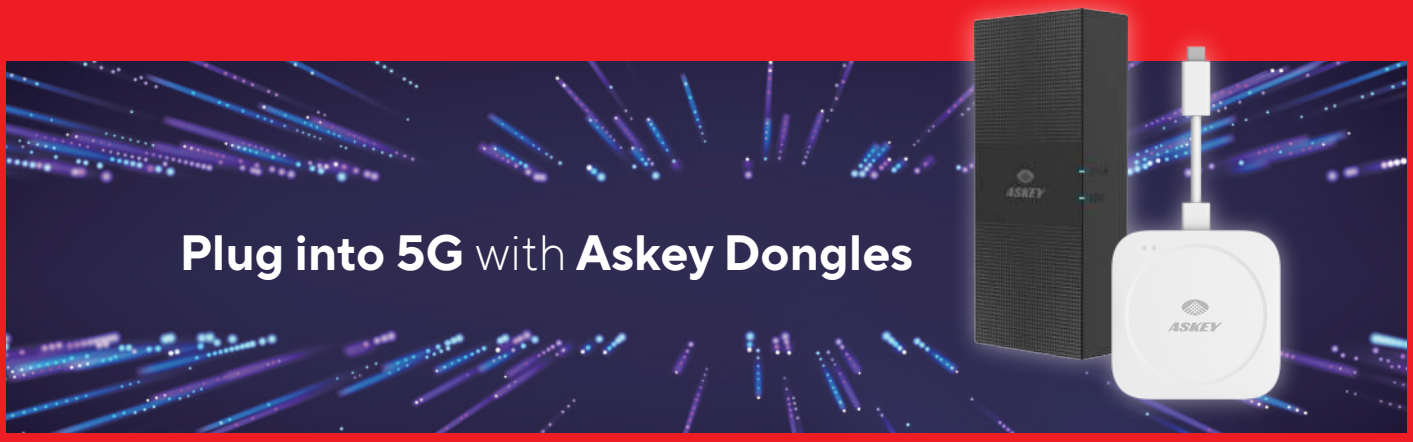
Anatomy of a Pop-Up 5G Broadcast System

Acromove's Edge Cloud & Private 5G Appliances encapsulates everything needed for a broadcast-ready network in a ruggedized flight case:

- Askey gNodeB (Radio Unit): Delivers licensed/private spectrum coverage (e.g., n48 (CBRS), n77, n78).
- Edge Core Network: Built-in 5G core with UPF, AMF, and slicing support for traffic prioritization.
- Backhaul Options: Supports Ethernet, fiber, public mobile 5G/4G network, and even satellite to connect to the internet.
- Built in Storage: Up to 144TB for storing videos capture locally for post-processing.
- Edge Compute: Optional processing node for AI-driven content filtering, encoding, video post-processing or analytics.
- Backup Battery: Capable of supporting up to 2 hours of operation without power input.

Deployment takes less than 15 minutes and can be powered by standard AC, battery pack, or generator.

Making Devices 5G-Ready with Askey Dongles



Most broadcasting gear—cameras, laptops, and encoders—don't have built-in 5G. The Askey 5G dongle solves this by delivering plug-and-play 5G access:

- USB/Ethernet Interface: Works with encoders like Haivision Pro460, TVU One, and LiveU Solo.
- Band Support: Compatible with n48 and n77/n78.
- SIM/eSIM Ready: Easily configured for private network access.

Broadcasters can connect legacy equipment to a private 5G network in seconds without hardware overhauls.

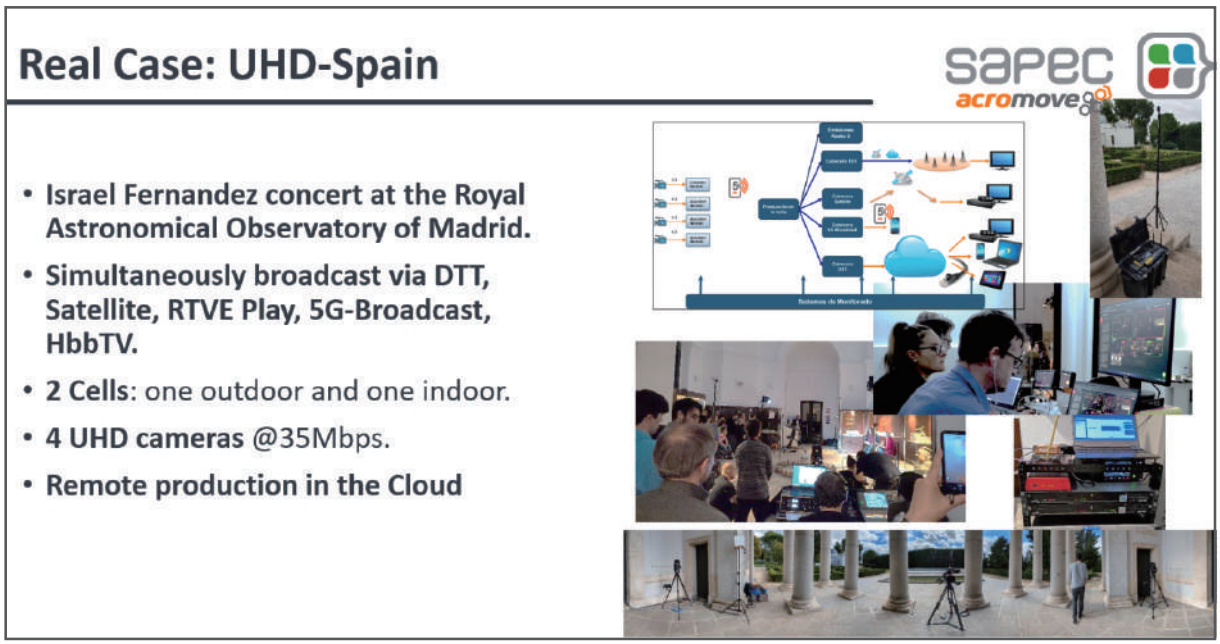
Benefits of Portable 5G for Broadcasters

- Latency as Low as 80 ms glass-to-glass: Suitable for live commentary, remote production, and real-time switching.
- Reliable Uplink Performance: Ideal for 4K/8K video streams and multi-camera feeds. Up to 300Mbits for 100MHz cell configuration and 90Mbits for 40MHz cell configuration.
- Good Uplink Coverage: In open environments, each small cell typically delivers reliable high-capacity uplink coverage within a 150–200 meter radius. Under ideal conditions, coverage can extend up to 300 meters. Range performance is influenced by antenna height (with 6 meters recommended for outdoor events), physical obstructions (e.g., walls, buildings), and antenna type. Using bidirectional antennas can further enhance range and signal stability.
- Seamless Handover: Ability to perform seamless handover in between small cell ensuring smooth broadcasting experience and reduce packet losses during mobility.
- Private, Isolated Network: Ensures media teams are protected from public network failures or attacks.
- Scalability: Each gNodeB supports up to 32 devices; multiple units can be meshed.
- Control & Customization: Broadcasters can manage QoS, user access, and traffic policies directly.

Case Study 1:
Private 5G-SA Deployment at a Live Violin Concert

Cellnex and Sapec Labs deployed a private 5G Standalone (SA) network at a live violin concert, powered by Acromove's ServerPack Edge system. Operating in the 3.2GHz–4.2GHz (N77) band, the system used two MIMO 2x2 antennas—one indoors and another outdoors to extend coverage, offering secure, stable connectivity with a 200-meter range for real-time data transmission.

The ServerPack Edge acted as an all-in-one data center, integrating a 5G small cell, network switch, compute server, and Wi-Fi access point. GPS synchronization and PTP enabled low latency and precise data management. Backhaul was via FTTH to the cloud. This deployment demonstrated the integration of private 5G in cultural events, showcasing its potential for media streaming, remote collaboration, and real-time performance analytics.



Case Study 2:
Ludwig's Streamer Games Live Production Powered by Acromove Edge & Private 5G

At Ludwig's Streamer Games, Acromove deployed its Edge DataCenter and Private 5G solution to support high-bandwidth media operations. When mobile network operators struggled with heavy attendee traffic, the Acromove system seamlessly took over the video stream, ensuring uninterrupted coverage.

The setup included a self-contained Edge DC with an integrated 5G small cell, switch, server, GPS-synchronized PTP timing, and advanced fiber connectivity. This portable infrastructure enabled real-time, low-latency media transmission from mobile cameras over distances up to 800 feet. Multiple modems operated simultaneously, both indoors and outdoors, ensuring stable uplink performance and efficient network handovers. This deployment demonstrated how Acromove's mobile edge platform can streamline setup and performance in demanding live events.

***Ludwig's Streamer Games** is a competitive livestream event hosted by Ludwig Ahgren, attracting top internet streamers and creators to compete in various challenges, streamed on platforms like YouTube and Twitch.

Conclusion

Portable private 5G networks are redefining how and where live media can be produced. By leveraging compact systems like the Acromove's Edge Cloud & Private 5G Appliances and enabling seamless device access with Askey 5G dongles, broadcasters can achieve professional-grade live production from virtually anywhere—without compromise.
From sideline interviews to frontline reporting, the message is clear: the future of live broadcasting is mobile, secure, and powered by private 5G.

About Acromove

In today's data-driven era, the growing need for real-time data processing, driven by IoT sensors and AI/ML applications, has outpaced traditional centralized cloud infrastructures. Acromove is at the forefront of this shift, offering purpose-built Edge Cloud solutions that address the low-latency, high-bandwidth demands of modern enterprises.

Unlike traditional systems that retrofit legacy data centers for edge use, Acromove's solutions are designed from the ground up. Compact, rugged, and mobile, they enable immediate deployment in remote or mission-critical environments, providing full compute, storage, networking, and AI capabilities at both the near and far edge.

Acromove's Edge DataCenter Appliance integrates compute, 5G/4G, Wi-Fi, and UPS in a compact form factor, deployable across various environments—from smart cities to industrial sites and emergency zones. Offered as a fully managed service, customers can scale easily without dealing with complex hardware, software, or network management.

Acromove's solutions are transforming industries, from retail to live broadcasting and defense, by delivering high performance, security, and flexibility at a lower cost. In collaboration with industry partners, Acromove's private 5G infrastructure, featuring the ServerPack Edge platform, is reshaping the broadcast industry by enabling seamless private network deployment for high-resolution content streaming and processing at the edge.

Together with Askey, Acromove is pioneering the future of broadcasting with agile, secure, and high-performance edge computing integrated with next-generation connectivity.

Communication for the future

About Askey

Askey Computer Corporation is headquartered in Taipei, Taiwan with offices across the globe and within North America. Founded in 1989, Askey Computer Corporation is a member of AsusTEK (Asus) Computer Inc., and leveraging 35 years of telecommunication development has created an industry leading portfolio of global 5G and private 5G end-to-end network solutions for modern business environments to enhance their digital transformations. As a manufacturer of rugged mobile computing solutions since 2001, Askey has produced over 20M mobile devices to date and has helped shape Enterprise mobile computing.