

Meeting Short-Term Cellular Demand with Satellite Service



Events such as the Glastonbury Festival, Sturgis Motorcycle Rally, and Coachella are known for drawing hundreds of thousands of fans together. Although these events take place off the beaten path, their attendees still want to connect to friends and family members elsewhere by sending photos and videos, making calls, and more. In short, they expect the same high level of cellular service they enjoy at home.

This demand for connectivity wherever and whenever presents challenges to mobile network operators (MNOs) and event planners who want to keep their customers happy. That's because networks designed for only a few thousand year-round residents can quickly get bogged down in the deluge of seasonal traffic, equivalent to the demands of a small city.

At the same time, permanently building out capacity to meet such demand can prove prohibitively costly. "The more rural and remote you get, the less likely that there is a business case to be made for installing fiber infrastructure or even microwave," Raghu Ramaiah, senior principal product manager at Intelsat, says of cellular backhaul infrastructure.

Cellular backhaul is what connects cell towers and mobile phone users to wider networks. And while MNOs can roll out temporary cell sites, it's not so easy to beef up cell backhaul infrastructure, which typically requires laying miles of cable or installing expensive microwave antennas and supporting infrastructure.

However, there is an alternative: cellular backhaul provided by satellites.

MNOs around the globe use satellite-based backhaul to deliver 2G, 3G, and 4G/LTE services to millions of customers each day, providing a user experience across text, voice, video, and data applications that is typically indistinguishable from that provided by terrestrial infrastructure.



Rising Customer Demand For Anywhere Connectivity

Keeping cellular users happy and meeting their expectations for data and voice service has become increasingly challenging as social media, streaming services, and other bandwidth-intensive options proliferate.

The problem becomes especially acute in locations that may not be easily or cost-effectively serviceable using traditional cellular network backhaul infrastructure. For example, running fiber to a less populated area may not make sense to meet peak demand that lasts only a few months and does not generate enough traffic to justify fullscale network installations.

Monuments, national parks, and campsites present similar challenges to providing high bandwidth and high-quality cellular connections because their locations attract a large number of visitors at peak times of the year. For example, Yellowstone National Park hosts approximately four million visitors during a typical year, but visits are concentrated during the summer months. More than a million visitors came to the park in July 2021 alone. "One of the biggest challenges we hear about from MNOs is the high cost associated with building and maintaining terrestrial backhaul solutions, like fiber, over long distances," says Rhys Morgan, regional vice president for Europe at Intelsat. "It's even costlier to do this in difficult terrain such as mountains, valleys, or heavily forested areas." It's also time-consuming, delaying potential revenues as the buildout happens. And for areas with seasonal peak demand, realizing a return on investment may take a long time.

In such scenarios, satellite backhaul services represent an ideal solution. In fact, MNOs around the globe use satellitebased backhaul to deliver 2G, 3G, and 4G/LTE services to millions of customers each day, providing a user experience across text, voice, video, and data applications that is typically indistinguishable from that provided by terrestrial infrastructure.

According to Ramaiah, "Customers ask, 'I've got an event that I need to cover once a year in a particular place, and I've got three cell towers on wheels. Can we do that?'" Yes, they can, with space-based cellular backhaul.

High-Quality Service From Space

Satellite cellular backhaul services can help fill coverage and capacity gaps in terrestrial infrastructure. They can prove especially useful in areas that don't require full-time coverage—for example, at large event venues and in times of unexpected demand such as during and after natural disasters. After MNOs place temporary cell towers, users connect to those towers just as they would to any other terrestrial infrastructure. Then, traffic is routed through temporary satellite infrastructure to connect customers to the internet and the broader telecom network.

Satellite services offer a plethora of benefits, including:

• Cost-effectiveness

For permanent sites in remote regions, satellite-based backhaul can help MNOs avoid the capital expense associated with long-haul fiber or microwave backhaul, not to mention the time savings for deployment. For occasionally trafficked locations, MNOs can engage services when they need them instead of paying for them during non-peak times. That means MNOs can prepare for seasonal demand without installing and maintaining expensive infrastructure.

• High reliability

Whether used as primary or backup backhaul, satellites are not impacted by local fiber cuts, so services continue to run regardless of outages that can interrupt fiber- and microwave-based options.

Efficient bandwidth distribution

Capacity can shift from tower to tower according to real-time voice, SMS, and data demands, preserving quality-of-service requirements as backhaul resources automatically m

Wide coverage

Although different satellite constellations may have different footprints, satellites can cover 99% of the world's populated areas. That means they can reach less populated locations and places whose terrain makes laying fiber or building microwave sites economically challenging.

Quality service on any type of network

Satellites allow MNOs to deliver the same quality of service that users expect at home, even at remote venues, across all service types (3G, 4G/LTE, 5G), without the large dishes of the past. Features include lower deployment costs, faster installation, and smaller on-site footprints.



Selecting a Seasonal Satellite Backhaul Solution

The connectivity at an event or seasonal destination plays a pivotal role in the experience attendees have—and could impact their decision to return in the future or recommend it to others. The necessity of a satellite-based backhaul is clear, but how to decide on a service provider may not be.

Here are five critical features to look for in a service provider:



Expert design and implementation services

Up-front investigation and planning help MNOs scope out what services they need and when they need them. Network planning and design should incorporate the business and service-level goals of the MNO with the experience of the satellite service provider. Determining the expected amount of traffic for a given location is part of the process. Engineering and installation services can further lighten the load for MNOs.



Auxiliary backhaul to augment terrestrial infrastructure

For MNOs that deliver lower bandwidth in remote locations most of the time, the ability to boost service to higher levels during times of peak traffic is essential. The service provider should help the MNO understand how satellite services will complement existing cellular infrastructure if it is already in place, and how it will provide services to new locations if towers are not yet deployed.



4G and 5G coverage

Thanks to advanced technologies that deliver signal optimization and acceleration without geographic limitations, satellites should offer the same consistent level of service customers are accustomed to and expect at home. In other words, MNOs should look for the ability to extend the range and quality of their existing networks, not just provide "good enough" service.

Cost-effectiveness

Seasonal backhaul services provide coverage for peak demand times without requiring more expensive permanent towers, fiber or microwave transmitters, and other infrastructure. A seasonal-service solution should also provide the flexibility for MNOs to pay for connectivity only when they need it.

Service reliability

Event planners know that connectivity impacts the overall experience attendees have at their venues; they don't want people to love their events but complain about unreliable connectivity at them. Service providers should consider the proven ability of geosynchronous satellite capacity to provide greater network reliability and service consistency than what may be offered by newer lowearth-orbit satellite solutions.

CellBackhaul Ready From Intelsat

Intelsat's CellBackhaul provides end-to-end managed satellite backhaul service that enables MNOs to deliver cost-efficient cellular coverage anywhere via the world's largest integrated satellite and terrestrial network. Tier-1 MNOs today use CellBackhaul to cost-effectively extend service to regions outside the reach of their terrestrial network infrastructure.

"CellBackhaul is a solution that can help MNOs quickly connect new cell sites and begin generating revenue sooner," Morgan explains.

CellBackhaul Ready leverages the core components of the flagship CellBackhaul offering to provide a solution tailored to seasonal or temporary requirements, leapfrogging terrestrial infrastructure gaps. Guaranteed service-level agreements and 24/7 network operations enable MNOs to provide the quality of service their customers expect—even in remote, temporarily high-traffic areas—quickly and affordably.

Learn more

Find out how satellite-based cellular backhaul can help MNOs meet seasonal demand for connectivity at intelsat.com/cellbackhaul.



