Sagenet
Empowering Connections
Inspiring Possibility

WHITE PAPER

Business Use Cases for Satellite

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EXECUTIVE SUMMARY

The satellite communications era officially began in 1962 with the launch of Telstar 1, the first satellite to successfully relay signals from Earth to space and back. However, satcom remained a largely government-driven technology for some 50 years due to the costs and challenges involved with building satellites, launching them into space and keeping them in orbit.

That has changed. Privatized space flight, increased satellite capacity and enhanced data transmission technologies have helped create a healthy commercial marketplace. According to ABI Research, the market for satellite communication services will be worth $141 billion by the end of the decade.

More importantly, satcom is creating immense economic benefits by providing access to information and communications infrastructure. Deloitte analysts say it could generate more than $2 trillion in economic growth and create more than 140 million new jobs by extending Internet access to developing economies.

While traditional wired and wireless broadband remain the most practical and economical connectivity options in most circumstances, the satellite enables growing numbers of business use cases. In this white-paper, we'll examine some of the ways satellite services support specific use cases and the connectivity and communication needs of companies across a broad swath of industry verticals.

REMOTE BROADBAND

Wired broadband is the preferred connectivity option for enterprise wide-area networks (WANs), but that's not always an option in today's increasingly distributed network environments. Many remote users and locations can't be reached by physical connections such as cable, DSL and fiber-optic lines. That's particularly problematic in critical industries such as oil and gas, agriculture, maritime and mining that depend heavily on remote operations.

Offering nearly global reach, satellite solutions are very dependable connectivity alternatives in such situations. Because they receive and send signals via a satellite transponder orbiting Earth, they don't require land-based connections to transport voice or data. In fact, many portable plug-and-play solutions need little more than a power source to function.

Even where other wired or wireless broadband options exist, satellite plays a key role for organizations using software-defined networks. SD-WANs combine multiple connectivity options — including satellite — to create a more flexible network architecture that optimizes traffic and improves application performance among branch offices, remote users, data centers and cloud resources.

POINT-OF-SALE CONNECTIVITY

Point-of-sale (POS) systems do a lot of heavy lifting for multisite businesses such as retailers, convenience stores and restaurant chains. In addition to processing customer transactions, they are often leveraged for important functions such as sales reporting, inventory management, employee scheduling and payroll services.

Satellite supports POS systems in several ways. One is by enabling remote and off-grid stores to connect with payment processor networks to validate and process huge numbers of credit and debit card transactions. This is essential in an increasingly cashless society — according to the Federal Reserve Bank, payment card transactions now account for 82 percent of all in-person purchases in the U.S. Satellite also creates redundancy for stores with more conventional wired and wireless connections, ensuring they can still accept card payments in the event of an outage.

Satellite is also an efficient way to backhaul data generated at POS systems to a central data center for distribution over the network. Cellular networks are commonly used for backhauling, but the technique creates latency issues that can significantly degrade communications. Using satellite as the primary backhaul transport reduces congestion on cellular networks and improves efficiency.

DISASTER RECOVERY/BUSINESS CONTINUITY

Communication is a critical element of disaster recovery and business continuity planning. Satellite delivers a dependable alternative communications backbone during natural disasters and other events that could cause problems for terrestrial networks such as optical fiber, cable, MPLS circuits and broadband DSL.

Although organizations commonly plan to failover to cellular networks during outages, that's not an entirely reliable plan. Despite being a wireless service, cellular is heavily dependent on terrestrial infrastructure. Cell towers require a power source and backhaul through terrestrial circuits in order to function. Although most cell towers have batteries and/or fuel generators to provide extended backup, they can still go down if they are damaged or flooded.

Satellite solutions have comparatively modest infrastructure requirements. They need little more than a power source to function, and they don't need terrestrial connections to transport voice or data. They don't require physical proximity to infrastructure such as cell towers because they receive and send signals via a satellite transponder orbiting the earth. Even if satellite antennas are disabled, they can usually be repaired, replaced or reconfigured in less than an hour.

MULTISITE NETWORKING

IP networks predominantly operate on a unicast or point-to-point basis, which means that data is transmitted from a single source to a single destination. However, satellite solutions enable IP multicasting, a resource-efficient technique that enables one-to-many and many-to-many communications over IP networks. Satellite multicasting can simultaneously serve up to 5,000 separate communication channels.

Multicasting has a number of use cases for multisite businesses. It is used to simultaneously transmit policy updates, promotions and other corporate information across the entire organization. The ability to distribute real-time video without impacting Quality of Service is useful for distance learning and telemedicine initiatives as well as corporate communications such as all-hands company meetings, employee training, product launches, analyst conferences and sales seminars.

Satellite multicast is also ideally suited for delivering content to digital signage systems. Standalone signage systems require a content server running software that organizes, schedules and delivers content to a media player. Multicasting eliminates the need to have content servers and players connected to every display, and it helps ensure consistent messaging across all locations.

INDUSTRIAL CONTROL SYSTEMS

Oil and gas companies, electric utilities, manufacturing plants, water and sewage treatment facilities, chemical plants, mass transit systems and building management companies rely on Supervisory Control and Data Acquisition (SCADA) systems to monitor and control critical infrastructure. SCADA systems gather real-time data on a variety of metrics and link that data with back-office applications for rapid analysis.

Although cellular networks are frequently used for SCADA connectivity, they aren't always practical due to the remote nature of many industrial operations. For example, oil and gas pipelines often span long stretches of harsh environments where there are no nearby cell towers or where geographic features such as trees and mountains cause intolerable signal interference. In addition, extreme weather events, cable cuts and power outages can put cell towers out of commission.

Satellite transmissions bypass the physical barriers to cellular signals and offer very reliable service for remote operations. Because SCADA systems generally transmit only small amounts of data, such as alerts or status updates, satellite is an extremely cost-effective communication option. Security is also improved because data is transmitted via a satellite gateway rather than Internet-based systems.

INTERNET OF THINGS

IoT devices typically use cellular or Wi-Fi connections to send data across private networks or the public Internet to the cloud for processing and analysis, but there are coverage limitations in areas with limited or nonexistent infrastructure. Satellite IoT has no such limitations.

Until recently, scalability was considered a barrier due to the limited number of available satellites. That is changing with increased deployment of small, low-cost satellites designed specifically to support IoT connections. So-called "smallsat" IoT constellations comprising dozens of satellites weighing as little as six pounds support machine-to-machine communications with IoT assets in even the most inaccessible locations.

The smaller satellites are deployed in low earth orbits, which produces other benefits for IoT applications. The shorter distance lowers communication delays to only about five milliseconds and reduces power requirements for IoT devices to about half a watt. That's ideal for applications such as asset tracking and fleet monitoring.

CONCLUSION

The launch of Telstar 1 initiated a revolution in global communication possibilities, but for decades commercial use of the technology was limited to a few narrow, specialized applications due to high costs and access constraints. However, recent improvements to satellite technology and delivery systems now make satcom more affordable, available and practical for a broad range of business uses.

Although traditional wired and wireless connectivity remain more affordable options in most cases, a strict dollar-by-dollar comparison doesn't accurately reflect satellite's real value. With the ability to extend service to areas where communication infrastructure is either limited or nonexistent, satellite resolves otherwise impossible connectivity challenges and opens the door to exciting business opportunities.

About SageNet

SageNet is passionate about trusted connections. The company believes that by creating, discovering and nurturing trusted connections with its customers, associates and community, SageNet enhances the world that connects us all.

As a leader in managed network and digital experience solutions, SageNet connects, manages and protects technologies and devices across the enterprise. SageNet's collaborative approach provides peace of mind and systems-confidence that empowers an organization to focus on its core mission.

The company offers world-class service and support via its three US-based 24/7 Network Operations Centers (NOCs) and Security Operations Centers (SOCs), geographically-diverse teleports, a central National Logistics Center, multiple data centers, and a nationwide field service organization.

With a three-decade track record in managed services, SageNet boasts a long-term customer base that includes the nation's largest retail, convenience store, quick service restaurant, utilities and energy organizations. SageNet manages communications at more than 430,000 endpoints. Headquartered in Tulsa, SageNet has regional offices in Atlanta, Toronto and Washington D.C.