IIoT, Utilities, Mines, Lottery, ATM Banks, O&G - Application Note

Internet-of-Things (IoT)/ Machine-to-Machine (M2M)
SpaceBridge understand the challenges of running complex SATCOM operations, especially providing links of highly varied speeds and SLAs. We've designed ASAT™ System to as a multiservice solution to ease these pains. ASAT™ System manages entry-level links such as consumer satellite terminals alongside high-end trunking and SOTM terminals, allowing both common management as well as complete bandwidth sharing that provides operators with optimal network-wide bandwidth utilization.

The proliferation of IP-enabled industrial things, or "objects," equipped with sensors, processors and network capabilities means that more and more remote device functions and operations can and will be reported, controlled and automated via the Internet and IP networks. The business benefits from IIoT can be large across many industries. They range from cost and downtime reductions, to efficiency and productivity gains, to better asset tracking and resource management, to new revenue opportunities.

SpaceBridge products and technology can uniquely address Industrial IoT / Machine-to-Machine data networking requirements for a wide variety of Industrial IoT (IIoT) applications. These include: Smart Infrastructure | Logistics | Healthcare | Smart Utilities & Energy | Insurance | Mining | Agriculture | ATM Networks | Lottery Networks | Kiosk & Signage | and many more.

Satellite networking advantages

Two-way satellite VSAT networks can provide major advantages for large-scale Industrial IoT (Internet of Things) data networks. VSAT have proven to be a very reliable and cost-effective technology for collecting and distributing data to/from large numbers of geographically distributed locations. As a wireless bypass technology, VSATs can deliver uniform QOS network availability and managed network performance standards — across multiple countries, or telecoms provider territories.

SpaceBridge VSAT solutions offer major advantages for powering Industrial IoT (IIoT/M2M) systems that require large-scale IP data networks, particularly those with:

- Geographically dispersed networks
- Many sites: our VSAT solution cost-effectively scales from a handful of locations to hundreds of thousands
- Remote locations: VSAT terminals can be rapidly set up to connect IoT traffic from remote locations that have no telecoms.

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ASAT System

ASAT System for IoT

The SpaceBridge ASAT™ VSAT network can address industrial IoT data network requirements across many industries.

The solution typically includes:

- SpaceBridge VSAT HUB
- ASAT™ Built-for IoT/M2M VSAT C7700 Terminal

SpaceBridge VSAT HUB:

- The HUB for IoT manages network parameters across the network of remote VSAT terminals, and routes data to the customer's central IoT system.
- It can set up and run optimal satellite capacity use parameters based on the IoT data traffic requirements.
- It may be co-located with the customer's IoT system at Corporate location, or connected to a data center, or the Cloud.

Solution Overview

SpaceBridge provides a solution for connecting IP-enabled devices, located anywhere within a broad satellite footprint, to an organization's central IoT system.

A VSAT terminal/router is installed at any given remote location and connected to IoT "Objects" such as sensors, meters, digital displays, or other devices. IoT device data, such as telematics, controls, content, status, etc., is routed via this VSAT terminal to the main system via satellite.

IoT devices can be directly connected to at the remote VSAT router by a LAN, or traffic can be received from downstream source devices via wireless methods such as Wi-Fi, LTE, RFID, low-power radio, etc.

A VSAT terminal can also aggregate traffic from local devices, routers, other "edge nodes", other VSATs, and downstream network spokes, for final long-distance connectivity to the central IoT system.

Once connected over the VSAT data network, Edge Nodes become accessible to the central IoT management system.

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ASAT ™ Built-for IOT/M2M VSAT Terminals:

SpaceBridge™ IoT/M2M terminal is an ultra-compact satellite terminal for end-to-end satellite communications Internet of Things (IoT).

The **C7700 ASAT™** terminal is designed specifically to deliver the best value-to-cost mix . This includes:

- Meeting IoT requirements for compact sizing, Low power consumption, and highly reliable, maintenance-free operation.
- Reliable broadband duplex IP communications channel Forward / Return link at IP speeds up to 20/1 Mbps (up / down). For even higher throughput, the C7700 adds blazing-fast Forward / Return link speeds up to 100 / 10 Mbps (up / down) and increased IP networking features.

SpaceBridge ASAT ™ IoT/M2M Advantages

Guaranteed polled access: From pipelines, to ATMs, from video surveillance to Smart Grids—provision network resources to meet varying traffic demand and priorities and optimize capacity. From bursty transactions, to occasional polling, to video streaming, or daily bulk data uploads, our dynamically configurable space segment access method enables configuration to the exact polling needs of an IoT application.

The SpaceBridge WaveSwitch™ seamlessly optimizes the system's satellite access method to suit varying customer application requirements in real time. This industry-first VSAT System with "on-the-fly" waveform switching, allocates bandwidth to sites or groups in real-time from a common pool of space segment. WaveSwitch™ dynamically selects from SpaceBridge's industry leading RCSX™ choice of waveforms – ASCPC™, MF-TDMA, SCPC DVB-S2, and DVB-S2X access technologies.

Powered By WaveSwitch™

From Low-Bit Rate to Broadband:
Deliver a range of services – from multi-megabit data for Smart Grid or surveillance to low-bit-rates for machine-polling — and reduce or optimize satellite costs.

Flexible Architecture:
Star, Mesh and Point to Point network typologies can all be supported in the same system, which comes with IP satellite link acceleration, optimization, Network Management and QOS tools, and industrial-grade IP security.

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Our Verticals

Oil, Gas, and Utilities

Electrical power, gas, and water utility infrastructures traverse locations that can be remote, and beyond terrestrial wire line or cell coverage—from pipelines to substations, to other transmission and distribution plants. Satellite networks provide salable and efficient data networks for electrical power, gas, and water utilities to obtain critical visibility, by monitoring and enabling remote control of their distribution and transmission systems and infrastructure. Today's growth in smart systems, implies an even greater need for data and bandwidth. Making the potential benefits of satellite networks all the more vital for utilities of the future.

The SpaceBridge ASAT ™ VSAT for Internet of Things / Machine-to-Machine can meet diverse Oil and Gas and Utility network requirements for increasingly high-speed data networks connecting devices in the field and corporate locations.

This ultra-compact, all-outdoor weatherized terminal pack in powerful capabilities from Low-Bit Rate to Broadband. It delivers a range of services – from multi-megabit data for Smart Grid or surveillance to low-bit-rates for machine-polling — all while minimizing and optimizing satellite costs.

Utilities, Mines, Lottery, ATM & Banks

Mines

Mine sites can be far beyond the reach of mobile phones and terrestrial telecoms. Lack of access to timely data analysis, expert advice, and decision-making can create hardships and increased expenses for a mining operation. When your remotest mining operation is live and securely online with your central scientific, analytical and corporate network functions, the improvements in control, reporting and operations can be big.

For mining businesses, the SpaceBridge **ASAT ™ Built-for-IOT VSAT** system can also link critical IoT applications as well as monitoring of mine site security, access control, CCTV surveillance, and asset tracking and management all from thousands of miles away.

Retail IoT Networks

Retail banks, financial, insurance, retail service, ATM networks, Lottery, and Betting businesses are among those that can require data networks to scale to hundreds or thousands of remote locations in a centrally managed, secure corporate network. Industrial IoT/ M2M applications can range from transaction processing network connectivity to video surveillance, to digital kiosks and signage distribution.

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VSAT networks can efficiently broadcast data to virtually unlimited numbers of locations within a satellite footprint, while providing uniform QOS for financial and other transactional IP data networks.

Unlike terrestrial lines, satellite bandwidth can be shared across all sites in point-to-multi point networks – offering significant per-site bandwidth cost efficiencies for some types of IoT networks. For example, for transactional services that require only small amounts of "bursty" data, such as ATMs, the satellite capacity can be reliably shared across hundreds of terminal locations — making the per-site cost lower than terrestrial in some regions.

In addition, for nationwide retail chains and networks, VSATs are easily installed in rural and remote sites where landlines or cell service is not available or affordable.

For ATM networks, financial lottery and similar requirements, the SpaceBridge C7700 IoT VSAT using an ASAT IITM VSAT network offer configurations for low-data-rate transactional behavior with minimal jitter and reduced delay.

For very high-speed IP capacity the U7780 and U7800modems deliver even higher throughput, and additional IP network performance and management features.

SpaceBridge WaveSwitch™ technology seamlessly optimizes the selected satellite access method to suit varying customer application requirements in real time. This industry-first VSAT System with "on-the-fly" waveform switching, allocates bandwidth to sites or groups in real-time from a common pool of bandwidth space segment. WaveSwitch™ dynamically selects from SpaceBridge's industry leading RCSX™ choice of waveform – ASCPC™, MF-TDMA, SCPC DVB-S2 and DVB-S2X access technologi es.