Solution Brief



Space-Based Sensor and Communications Architecture for Multi-Domain Success



A New Approach to SATCOM is Needed

As government and defence agencies transition military communications to support multidomain operations, they are acknowledging the importance of satellite communications (SATCOM) capabilities. There is wide recognition that the siloed communications systems and proprietary technology that has served them in the past will not be sufficient to support today's integrated warfighters gathering, sharing, and exploiting data from land, air, sea and space. Advanced SATCOM capabilities will not only enable ubiquitous connectivity and interoperability to all domains, but it will also enable end-to-end network visibility and bandwidth control across operations.



Proprietary systems cannot talk to each other



Poor end-to-end network visibility and control



Lack of interoperability across domains

Standards-Based Carrier Class Network of Networks for Multi-Domain Operations

Intelsat's Unified Network is a space-based sensor and communications architecture that was designed and is being built to be "Future Force Ready" for All-Domain success. Having a fully interoperable, seamlessly connected global software-defined satellite (SDS) and terrestrial software-defined network (SDN) gives armed forces ultra resilient, flexible, scalable, and virtualized connectivity with traffic prioritization, quality of service (QoS), and bandwidth surge capabilities anywhere, anytime, on-demand. Intelsat has designed the Unified Network to distribute encrypted digital IP data packets at machine speeds to/from users enabling reliable and secure delivery of mission-critical voice and video communications, geospatial imaging, sensor data, and Al-infused intelligence. Intelsat managed services delivered over the Unified Network, such as FlexMove and FlexAir for Government, simplify bandwidth provisioning and management. Scale bandwidth across operations up/down to meet changing mission requirements now and in the future.

Always Future Force Ready

Being "Future Force Ready" means service members have the Al-driven decision-making, precision targeting, and advanced command, control, communications, computers, cyber, and intelligence, surveillance, and reconsaissance (C5ISR) capabilities needed to win against near peer adversaries - every time. Blended bandwidth from LEO, MEO, and GEO satellites, fiber, LTE, and 5G networks provides unprecedented resiliency and can be easily aggregated and managed system-wide from a single interface.

Software-defined satellites (SDS) and terrestrial software-defined network (SDN) in a unified architecture means users can select from single or multiple paths through the network to accomodate different security and application needs across land, air, sea, cyber, and space domains. Commercial teleport integration, hardware virtualization, and service orchestration across network segments deliver additional levels of resilience and security at a lower cost.

Virtualized, Standards-Based End-to-End SATCOM Solutions

Intelsat's standards-based architecture features the components and capabilities below.

Software-Defined Satellites	Multi-Orbit/ Network	Software-Defined Networks	5G-Standard Based	Smart Edge Terminals
HAR.		ිමි	5G	
Dynamic Capacity driven by automated resource management: Beam Shape Capacity and Power Coverage Frequencies	Seamless Integration into a single solution: LEO MEO HEO GEO HAPS Terrestrial Networks	Virtualized Network cloud- native functions orchestrated via software: Service Chains Teleport & Platforms Terminals Fiber Network OSS/BSS Private/Public Clouds	End-to-End 5G leveraging new NTN standards: Core Network Radio Access (NTN) Edge Terminal End-User Devices	Empowering the Edge to create new values: Flat-panel ESAs Auto- commissioning Virtual Modems Edge Cloud Integrated Customer Apps

Benefits at-a-Glance



Future Force Ready: Multi-layer (GEO, MEO, HEO, LEO, HAPS, fiber, cellular), space-based sensing and communications architecture for all-domain comms-on-themove and -halt (COTM/COTH)



Resilient:

Carrier-class global SATCOM network with path diversity, failover for RF and network traffic, and teleport redundancy



DoD Secure: Hardened edge devices/ terminals/modems use cloudnative (containerized) Virtual Network Functions (VNFs)



5G Roaming Worldwide: Dual-stack terminals can roam into 3rd-party SATCOM networks with 5G-NTN waveforms

Remove Racks of Equipment: No longer needed in aircraft and on ground segments







62 Teleports and PoPs



100,000+
Fiber Miles

Multi-Orbit Connectivity with 5G Roaming

- Software defined-satellites and networks intelligently automate bandwidth management from end-to-end
- Follow-me beams provide uninterrupted connectivity for manpacks, ships, planes, and vehicles via a large selection of qualified antennas
- Seamless integration, virtualization, and orchestration of LEO, MEO, HEO, GEO, HAPS, and terrestrial networks delivers true resiliency.

Future Force Multi-Domain SATCOM

- Seamless orchestration across satellite and ground networks for optimal access and performance
- Widest multi-orbit satellite coverage available
- Standards-based, interoperable architecture is future proof so the U.S. government is always Future Force Ready.



About Intelsat

Intelsat's global team of professionals is focused on providing seamless and secure, satellite-based communications to government, NGO and commercial customers through the company's next-generation global network and managed services. Bridging the digital divide by operating one of the world's largest and most advanced satellite fleet and connectivity infrastructures, Intelsat enables people and their tools to speak over oceans, see across continents and listen through the skies to communicate, cooperate and coexist. Since its founding six decades ago, the company has been synonymous with satellite-industry "firsts" in service to its customers and the planet. Leaning on a legacy of innovation and focusing on addressing a new generation of challenges, Intelsat team members now have our sights on the "next firsts" in space as we disrupt the field and lead in the digital transformation of the industry.

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