HUGHES

Defense Competencies

Satellite Communications for Tactical Defense

As the field of defense communications grows in sophistication, its use of advanced technology, high-tech satellite communications is taking on an increasingly more important role in network-centric warfare. Military organizations around the world need reliable, secure communications to keep troops connected, whether they are on land, in the air, or at sea. Just as vital is the ability to quickly deploy and manage a scalable command and control network that meets the tough requirements of military missions.

Tactical SATCOM for a Range of Military Missions

Tactical satellite communications (SATCOM) systems provide the backbone for the war fighter's communications networks. Whether they use manpacks in South America or maritime-ready terminals in the Indian Ocean, military organizations need to link tactical ground units with command and control centers and defense information networks.

The demanding requirements of today's military missions call for a tough breed of secure, advanced communications that can meet any difficult conditions they may encounter. An effective arsenal of tactical SATCOM solutions must support the full range of defense communications requirements, including fixed, at-the-halt, and on-the-move.

Also critical is the network coverage and capacity necessary to maintain net-centric communications to ensure mission success globally. To meet these requirements, militaries typically rely on a range of SATCOM solutions, including fixed terminals for permanent site installations, deployable terminals for field use, and on-the-move terminals for command and control applications, supporting the full scope of intelligence, surveillance, and reconnaissance missions.

Hughes Solutions for Tactical SATCOM

As the worldwide leader in broadband satellite technology and services, Hughes supports the missions of defense organizations, assisting in the implementation of a net-centric vision through multiple technology platforms. From high-performance fixed terminals and handheld devices to sophisticated hybrid fixed and mobile, satellite and wireless systems, Hughes delivers proven, industry-leading technologies and experience to support the missions of defense organizations globally.

Fixed Communications

Hughes offers a range of semi-permanent to permanent terminals for the military's fixed communications needs. Hughes broadband satellite terminals operate globally and are available in models to suit specific missions:

- Transitional and semi-permanent applications with a small footprint – small 74 to 98cm terminals are lightweight with a compact form factor and optional Ku-band or Ka-band versions.
- Permanent or semi-permanent edge applications – medium-sized 1.2m terminals offer higher availability for applications in which higher throughput with a smaller footprint is required.
- Permanent infrastructure, command posts, and trunking applications – large 1.8 to 2.4m terminals deliver high throughput and high availability.

Transportable Communications

Easy-to-use, transportable terminals are vital for rapid deployment and robust communications in the field. Hughes partners with multiple providers to deliver integrated, ruggedized equipment for a total solution that enables superior communications in any environment.

Communications on the Move

Satellite is the ideal technology to provide reliable beyond-line-of-sight (BLoS) broadband communications to troops on the move. But supporting continuous broadband satellite connectivity to terminals in motion presents significant challenges, including compensating for shifting transmission paths and blockage by obstacles, and deploying high-performance antennas with tight volume and height constraints.

Hughes offers satellite broadband products and services to address the key requirements and challenges of mobile applications. Offering global coverage, Hughes communications-on-the-move (COTM) solutions have been extensively tested in military programs for mobile SATCOM.

Comprehensive Mobile Capabilities

Hughes COTM solutions offer a full suite of mobile capabilities with built-in, enhanced security in a comprehensive range of network topologies:

- Star and full mesh
- Single-hop and peer-to-peer
- C-, Ka-, Ku-, and X-bands

Advanced Technical Features

Whether the mobile application is airborne, maritime, land mobile—or all three at the same time—Hughes COTM solutions can be used for critical or complex military communications missions globally.

- Compliant with the industry-leading IPoS/DVB-S2 standard, including ACM (adaptive coding and modulation)
- Adaptive inroute selection (AIS)
- TDMA channel spreading
- Doppler compensation
- Outbound flywheel and fast reacquisition

Airborne

Hughes mobile satellite broadband solutions are ideal to meet military communications requirements for comprehensive, net-centric airborne communications around the world, delivering voice, video, and high-speed data services to and from airborne platforms anywhere.

Hughes solutions are D0-160-certified and enable sophisticated, real-time IP applications such as airborne intelligence surveillance reconnaissance (AISR), including streaming live video links back to operating centers at multi-megabit data rates. Working with third-party antenna manufacturers to provide full system integration of hatch-mount, fuselage-mount, and tail-mount antennas, Hughes can support any airborne system.

Maritime

Whether ship-bound or on an expeditionary mission, sailors and special operations forces traveling on the seas need continuous connectivity with command and control centers to successfully complete their missions. Hughes broadband, on-the-move maritime solutions enable those aboard vessels and at other edge locations to maintain high-quality connectivity with command centers in what is often a harsh, challenging communications environment.

Land Mobile

Hughes commercially proven COTM solutions are designed for rapid recovery during the intermittent connectivity typical of mobile applications. Hughes COTM solutions enable joint military communications and ensure that ground-based troops remain connected whether they are stationed at a military base or deployed in an area of operations.

Hughes COTM solutions operate in harsh environments and have endured rigorous military testing. FIPS 140-2 compliant, Hughes solutions are highly secure and provide beyond-line-of-sight (BLOS) communications even in the varied mountainous terrain or urban landscapes typical of today's conflict zones.

Hughes Platforms for Tactical Defense Applications

Hughes leading-edge broadband solutions encompass both mobile and fixed satellite systems for complete, end-to-end IP-based networks for defense applications. Operating with both processed and transponded satellites, Hughes systems are IP-compliant and deliver the highest-throughput satellite links for beyond-line-of-sight communications (BLoS).

- Intelligence, surveillance, and reconnaissance (ISR) links
- Data to command and control centers
- Full-motion video to the troops
- Backhaul of large trunks of data
- Prioritization of traffic

Ranging from handheld satellite phones and lightweight manpacks, to multi-megabit solutions for large teleports, Hughes low-latency communications solutions deliver voice, data, and video to support the entire defense organization.

The HX System—High-performance IP Routing

Built on a solid foundation of IP features and functionality, the HX system is the ideal solution for satellite routing where full IP functionality is required together with performance. Designed and optimized for carrier-grade IP broadband networking and specialized applications such as mobility and mesh networking, the HX System is a comprehensive broadband satellite system with an economical gateway earth station and high-performance remote terminals.

Efficiency and flexibility in utilizing satellite bandwidth are core to the design of the HX System. Each link, in star or mesh mode, can be configured to provide a quality of service (QoS) tailored for an individual remote terminal. And each remote link can be independently configured with unique Commited Information Rates (CIRs), thereby allowing the development of services tailored to specific requirements. In addition, the HX System bandwidth allocation scheme is designed so that idle terminals can be configured to release all bandwidth assignments, ensuring optimal bandwidth utilization.

Key features include:

- Compact hub configuration
- Intelligent, protocol-sensitive bandwidth assignment for optimum performance and efficiency for each application
- Dynamically assigned CIRs per remote or group of remote terminals
- High-performance IP feature set
- End-to-end network security
- Advanced network management capabilities including detailed remote diagnostics
- Active redundancy for all critical components
- Optional mesh controller for supporting single hop remote-to-remote connectivity

BGAN Transportable Terminals

The Inmarsat Broadband Global Area Network (BGAN) is the gateway to global communications. Hughes BGAN terminals allow the simultaneous transmission and receipt of IP packet and circuit switched data via USB, Ethernet, ISDN, RJ-11 local loop, and WLAN interfaces over the BGAN satellite network.

- Rugged, Transportable Terminals - The rugged design of the 9201 BGAN Inmarsat Terminal allows outside installation in extreme weather conditions for extended periods. Multiple user support allows an entire team to share a single 9201 simultaneously, and the terminal's small size and weight allows users to easily move it from site to site and be connected again within minutes.
- Mobile Satellite Terminals for Simultaneous Voice, Video, and Data - The Hughes 9350 enables collaboration with staff back at headquarters using video, voice, and data simultaneously. With the 9350, users can create a wireless hot spot for users on the scene using the built-in Wi-Fi Access Point. The terminal is IP compatible and offers selectable, dedicated quality-of-service levels.

Thuraya Satellite System

Hughes developed the Thuraya satellite system gateway and supplies dual-mode GSM cellular/satellite handsets and ThurayaIP data terminals. The ThurayaIP advanced mobile satellite terminal packs high-bandwidth with streaming capability into a package half the size of a laptop computer. The ThurayaIP satellite modem offers broadband data service through a highly compact, ultra-lightweight, and advanced satellite terminal. As the world's first mobile satellite service to support 384 Kbps streaming IP, ThurayaIP offers superior "always- on" rapid Internet access even from the remotest regions in more than 120 countries.

Case Studies in Mobile Defense Applications

In 2009, Hughes deployed mobile defense solutions for nearly 300 remote sites for three customers in South America. Since security and mobility with on-the-pause synchronization were top requirements in all three cases, Hughes provided its HX platform, which enables encrypted voice and data communications over IP. The turnkey Hughes solution includes hubs, fixed remote terminals, and manpacks with mobile antennas.

The flexible solution enables military organizations to meet their requirements using small transportable antennas. Mobile manpacks allow military units to transport a full antenna, install it quickly where needed, transmit the necessary information, and then uninstall and move it to another location. In addition, the mobile terminals can be synchronized with the hub and with fixed antennas throughout the country. Secure, reliable, and easy to install, the mobile terminals are ideal for areas without electricity or with limited resources.

Similarly, the Indian Navy needed to establish a command and control network to connect all its moving platforms, including maritime and airborne. Hughes is delivering its HX System for the baseboard portion of a total satellite communications solution furnished by integrator Bharat Electronics Limited. The comprehensive solution provides broad capabilities, including wide beam coverage, spread spectrum for small antenna operation, star and mesh communications, and COTM across multiple platforms. Planned for deployment in 2010, the Hughes system provides a command and control network that links all disparate platforms and provides tactical visibility of the complete area of defense.

Certifications and Standards

Hughes cutting-edge broadband satellite products are based on global standards approved by the TIA, ETSI, and ITU standards organizations, including IPoS/DVB-S2 with ACM (adaptive coding and modulation); RSM-A; GMR1-3G; and FIPS 140-2.

Why Hughes?

Hughes Defense and Intelligence Systems Division (DISD) has a deep history of supporting defense and intelligence communities. Hughes is the world's leading provider of broadband satellite networks and services, with over 2.2 million systems shipped to customers in more than 100 countries. The company's core expertise ranges from design of advanced components, terminals, and broadband systems, to the development and turnkey operational management of complex communications networks. Hughes is owner and operator of Ka-band SPACEWAY® 3, North America's highest-capacity commercial satellite system and the first with onboard switching and routing.

Hughes stands alone as both a leading broadband technology and systems supplier and fully integrated broadband service provider. In the defense market, Hughes supplies a wide range of military broadband communications, including SATCOM on-the-move for land, sea, and air; modem technology for disadvantaged, or edge, terminals; and mobile satellite systems and terminals for defense applications.

Headquartered in Germantown MD, just outside Washington D.C., which encompasses its engineering and development facilities, Hughes owns and operates broadband service businesses in North America, Brazil, Europe, and India, and offers global service coverage for the defense and intelligence community through its base of operating partners on every continent. Hughes can provide U.S.-based, full lifecycle program management that is staffed by cleared personnel in a cleared facility.

For more information about Hughes Satellite Communications for Tactical Defense, please contact the sales office in your region or email globalsales@hns.com.

Proprietary Statement