



Base Communications Powered by
Integrated Multi-transport Connections

HUGHES[®]
An EchoStar Company

www.hughes.com

In the rapidly evolving digital communications landscape of the modern military base, the need for systems that can seamlessly integrate multiple pathways while ensuring high levels of security and performance has never been more critical. Enter Hughes, delivering hybrid, intelligent, multi-path, secure, resilient, reliable, and high-performance communications. Our innovative solution encapsulates efficiencies for traditional applications and the core attributes that are required for cutting-edge communication networks of the future with many distributed systems and rapid decision making.



Performance Areas Improved by Modern Communications Infrastructure

Aircraft Maintenance

5G communications revolutionize aircraft maintenance and diagnostics on military bases by enabling real-time data transmission, remote monitoring, and predictive analytics. This leads to faster issue detection, reduced downtime, and enhanced operational efficiency, ensuring aircraft are mission-ready and maintenance processes are streamlined.

Robotic Service Equipment

5G communications enable autonomous vehicles and service equipment on military bases by providing ultra-low latency and high-speed connectivity. This facilitates precise control, real-time data exchange, and efficient coordination of unmanned systems—enhancing operational effectiveness, reducing human workload, and ensuring swift and accurate mission support.

Security Surveillance

5G communications enhance security surveillance on modern military bases by providing real-time, high-definition video feeds and rapid data transmission. This allows for immediate threat detection and swift response, ensuring comprehensive monitoring and quick decision-making. The ultra-low latency and high-speed connectivity improve the overall situational awareness and operational security.

Communication and Coordination

5G communications revolutionize coordination on military bases by providing secure, reliable, and resilient connections. Enhanced real-time data sharing and ultra-low latency ensure swift, coordinated responses, and heightened situational awareness. Robust security measures maintain confidentiality and integrity, fostering seamless collaboration amongst dispersed teams.

Next-Gen Integrated Connectivity for Operational Excellence

While 5G represents a significant leap forward, enabling unprecedented connectivity and operational efficiency, extraordinary circumstances may still arise. In such situations, the ability to expand into multi-transport and multi-orbit communications is crucial. This adaptive infrastructure ensures continuous connectivity and mission readiness, even in the face of disruptive events. By leveraging diverse communication pathways, modern military bases can maintain robust command and control capabilities, ensuring that critical operations and strategic objectives are met without compromise.

Hughes offers a paradigm shift in how we approach communication networks. A Hughes network supports multi-orbit and multi-transport combinations and a robust Network Management System (NMS) with Smart Network Edge (SNE) capabilities. Hughes delivers today's technology and is ready to engage the technology of tomorrow. There are fundamental characteristics that are necessary to meet the demands of modern connectivity:

Hybrid

Hybrid systems integrate various communication technologies and methodologies. By combining wired, wireless, satellite, and other forms of connectivity, these systems offer unparalleled flexibility and redundancy. Hughes provides a multi-layered approach that seamlessly integrates available transports and ensures that communication can be maintained through multiple channels, significantly reducing the risk of complete network failure.

Intelligent

Hughes uses advanced capabilities to adapt to varying network conditions and user demands, including mission-specific constraints. By employing sophisticated algorithms and artificial intelligence, Hughes can dynamically optimize data routing, manage bandwidth efficiently, and predict potential disruptions before they affect performance. This intelligence ensures the communication network is robust and adaptive—providing unmatched service, reliability, and efficiency and picking the proper transport for the delivered mission data.

Multi-path

Routing communication through multiple channels simultaneously allows Hughes to optimize network traffic, enhance overall throughput, and minimize latency. Hughes dynamically adapts to changing network conditions by utilizing diverse pathways, ensuring that data reaches its destination as efficiently as possible, which includes real-time replanning.

Secure

Security is paramount in any communication system, and Hughes strongly safeguards data integrity and privacy. Advanced encryption methods, secure protocols, and robust authentication mechanisms form the backbone of the Hughes security framework. These measures protect against unauthorized access, data breaches, and other cyber threats, ensuring that sensitive information remains confidential and secure.

Resilient

Hughes performs real-time optimizations to reduce costs and provide resiliency, ensuring it can withstand and recover from physical, cyber, or environmental disruptions. Redundant infrastructure and failover mechanisms, combined with adaptive algorithms that can handle diverse situations, contribute to a resilient network. With Hughes, uninterrupted communication is possible, even when facing unexpected challenges.

Reliable

Reliability is a critical aspect of a communication network, providing consistent and dependable communication services at the core and edge to meet mission requirements. Hughes implementations are built through meticulous design and rigorous testing to minimize downtime and ensure that users can rely on the network for communication requirements.

High-Performance

High-performance communication includes exceptional speed, bandwidth, and efficiency. Hughes ensures that users experience seamless and rapid data transmission by leveraging state-of-the-art technologies and optimizing network resources. This high level of performance is essential for applications that demand real-time communication and large-scale data transfer.

Preparing for the Future Now

Communications will undoubtedly evolve as technology advances to meet new challenges and opportunities. Researchers and developers are constantly exploring innovative ways to enhance the capabilities of the Hughes systems, from improving encryption techniques to developing more efficient routing algorithms.

One area of development is the integration of Artificial Intelligence (AI) and Machine Learning (ML) into Hughes networks. These technologies can analyze network conditions in real-time, optimizing performance and ensuring the most efficient use of resources. Advancements in edge computing and communication further revolutionize the Hughes solution, providing unprecedented security and speed.

Hughes represents the future of communication networks, embodying the essential qualities of hybrid integration, intelligent networking, multi-path routing, security, resilience, reliability, and high performance. As we continue to push the boundaries of what is possible in digital communication, Hughes stands as a beacon of innovation and excellence, ready to meet the demands of an increasingly connected military.

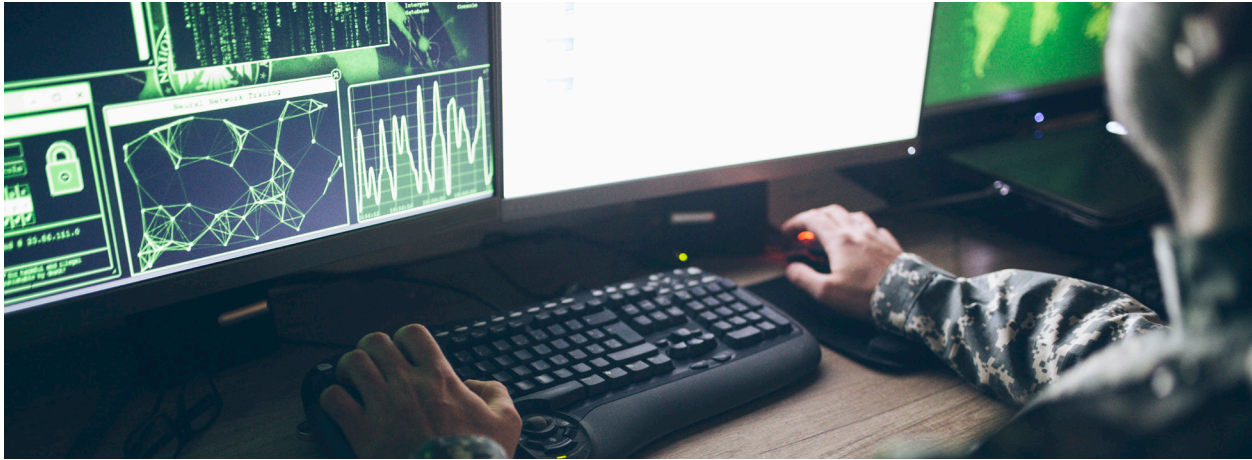
Hughes offers a comprehensive vision for the next generation of communication systems. We build networks that are capable of handling today's challenges, and we are prepared for tomorrow's advancements and communication requirements.

Supporting the United States Military Vision for Integrated Communication

Accelerating Innovation

The Hughes solution empowers the Department of Defense (DoD) by integrating advanced commercial technologies and embracing agile development methodologies. This approach accelerates the pace of innovation, allowing the DoD to rapidly adapt to emerging threats and opportunities. By leveraging the latest in artificial intelligence, machine learning, and edge computing, Hughes ensures that the DoD can enhance its communication infrastructure with unmatched speed and efficiency. This strategic synergy between commercial advancements and military needs positions the DoD at the forefront of technological evolution, ensuring superior performance and reliability in defense operations.





Improved Interoperability

Seamless, standards-based integration across different platforms and systems removes communication silos and creates interoperability. By leveraging open standards and protocols, we ensure that various communication networks can work together harmoniously, enhancing collaboration and information sharing. This approach not only breaks down barriers between disparate systems but also promotes a cohesive and unified communication environment. Our solution provides a robust framework for interoperability, enabling more efficient and effective operations across all levels of the organization.

Meeting the Requirements for Flexibility, Reliability, and Resiliency

A multi-transport and multi-orbit network provides the necessary foundation for flexibility, reliability, and resiliency that the DoD seeks in military communication networks. By utilizing multiple transport layers and orbital paths, Hughes systems ensure continuous connectivity and robust performance under varying conditions. This diversified architecture mitigates potential failures and enhances redundancy, securing communication lines even in contested environments. Such a network architecture not only adapts to dynamic operational demands but also enhances the capacity to support a wide range of applications, making it an indispensable asset for modern defense operations.

Proprietary Statement

All rights reserved. This publication and its contents are proprietary to Hughes Network Systems, LLC. No part of this publication may be reproduced in any form or by any means without the written permission of Hughes Network Systems, LLC, 11717 Exploration Lane, Germantown, Maryland 20876.

HUGHES
An EchoStar Company

11717 Exploration Lane
Germantown, MD 20876 USA

www.hughes.com

BASE COMMUNICATIONS

©2025 Hughes Network Systems, LLC.

All information is subject to change. All rights reserved.

H72434 JAN 25