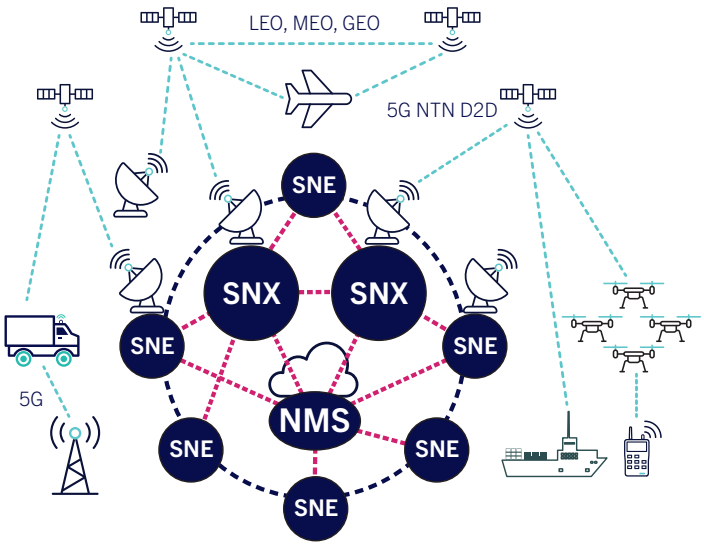
HUGHES
An EchoStar Company

Resilient Connectivity

Hughes delivers comprehensive, mission-grade network resiliency through a three-tier architecture that is designed to ensure continuous, secure, and high-performance connectivity across contested, degraded, and denied environments. This modular, open-system architecture supports commercial, government, and defense missions worldwide. The Hughes resiliency framework spans enterprise management, transport exchange, and network edge layers and combines three components at the enterprise, tactical and exchange layers. While deployable individually to deliver resiliency, these components together provide comprehensive policy-driven routing, situational awareness, cybersecurity, and autonomous operation across heterogeneous network transports (including GEO, MEO, and LEO satellite, terrestrial fiber, and 4G/5G). A device on one user network can securely communicate with devices on another network through a chain of nodes, with policy-based routing, QoS, and reporting.



Capabilities

- **End-to-End Resiliency:** Coordinated resiliency across enterprise, edge, and transport layers
- **Transport Agnostic Operations:** Seamless use of satellite (GEO/MEO/LEO), 4G/5G, fiber, and future transports
- **Policy-Driven Networking:** Primary, Alternate, Continency, Emergency (PACE)-based policies with priorities.
- **Autonomous Mission Continuity:** Intelligent local decision-making when centralized control is unavailable
- **Integrated Security:** Zero Trust Access (ZTA)-based routing, next-generation firewall, and Commercial Solution for Classified (CSfC)
- **Situational Awareness:** Cyber, network, and RF telemetry collection at the edge, backbone, enterprise
- **Scalable and Extensible Architecture:** Modular microservices designed for future transport types

Benefits

- Addresses contested, congested, or denied environments
- Provides mission effectiveness with deterministic behavior
- Reduced operational risk via automated failover and traffic
- Unified visibility from enterprise to the tactical edge
- Rapidly integrates new transports and technologies
- Future-ready architecture extending from ground to space

Hughes Network Management System (NMS), Smart Network Edge (SNE), and Smart Network Exchange (SNX) together form a holistic resiliency solution—delivering enterprise control, edge autonomy, and transport-layer adaptability. This three-tier framework enables organizations to maintain secure, high-performance communications across any environment, any transport, and any mission condition.

Enterprise-Level Orchestration – Network Management System (NMS)

At the top tier, Hughes provides centralized visibility, orchestration, and policy control across the entire network ecosystem. NMS enables operators to define priorities, policies, and performance objectives while maintaining end-to-end situational awareness. Key functions include:

- Global monitoring of network assets and transports
- Comprehensive PACE and dynamic resource planning
- Resiliency FCAPS analytics and reporting
- Cyber, network, and RF situational awareness
- Integration with existing enterprise tools and workflows

Backbone Aggregation– Smart Network Exchange (SNX)

The Hughes Smart Network Exchange (SNX) forms the resilient transport fabric between edges and enterprises. SNX is a virtualized, mesh-based exchange router built on a modular microservice architecture with resilient routing and a packet processing engine.

SNX creates a transport-agnostic, secure mesh that interconnects disparate user networks and enables policy-driven routing.

- Mesh-based routing across space and terrestrial links
- Policy-driven traffic routing, aggregation, and orchestration
- Active per-link monitoring with QoS enforcement
- Next-generation firewall and integrated security services
- Local user interface for transport-based situational awareness
- Communication across heterogeneous networks

Edge-Level Intelligence – Smart Network Edge (SNE)

At the operational and tactical layer, the Hughes SNE delivers local decision-making, transport awareness, and autonomous resiliency at fixed or mobile sites. SNE intelligently selects and manages available links to maintain mission continuity—even during loss of centralized control.

- Real-time WAN link monitoring and performance
- Policy-based traffic steering and application prioritization
- Support for space and terrestrial access technologies
- Secure edge enforcement of enterprise resiliency policies
- Real-time link monitoring and performance assessment
- Autonomous operation during contested scenarios
- Secure edge enforcement of enterprise resiliency policies

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