Gilat Defense

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White Paper

# Tactical Transportable and Re-Deployable SATCOM Ground Stations

Release Date: 26 October 2026

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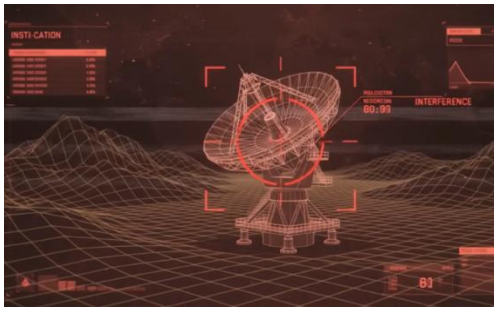
# 1 Introduction

Satellite communications (SATCOM) is a critical enabler of modern defense and government operations, providing secure, reliable, and resilient connectivity across diverse environments. As threats evolve, however, fixed antennas and ground stations in known locations are increasingly vulnerable to jamming and physical attack. Maintaining operational continuity therefore requires geographically redundant ground infrastructure, rapid deployment to ad hoc locations, and the flexibility to adapt to changing mission conditions.

# 2 Challenges of Fixed SATCOM Ground Stations

Most SATCOM ground stations are located at known sites, making them vulnerable to attack. Because these stations are essential to mission assurance, their exposure creates a significant risk to communications continuity.




# 3 The Solution: Independent & Mobile Point of Presence (POP)

Gilat DataPath, a wholly owned subsidiary of Gilat Satellite Networks and part of the Gilat Defense Division, addresses these tactical challenges with a standalone, transportable ground station paired with a compact hub solution from Gilat Defense. Together, they form an independent Point of Presence (POP) that supports operational continuity through a physically and administratively separate communications path. This architecture reduces single points of failure and enables rapid failover if primary sites, terrestrial backhaul, or host-nation dependencies are degraded or denied. It also supports rapid deployment and relocation, alternative frequency, gateway, and teleport options, and tighter control over site access, emissions, and data handling to better protect sensitive operations.

## 3.1 Solution Use Cases

- Antenna, RF and Gateway Redundancy
- Disaster Recovery
- Forward Command Post in Deep Operations (on land or at sea)







## 3.2 System Architecture Overview

The solution is built on two complementary pillars that maximize capability while minimizing physical footprint.

1. Gilat DataPath's military-grade DKET transportable ground stations, which support autonomous, independent operation
2. Gilat Defense's compact hub system, mechanically designed for installation and operation on a transportable platform, comprising:
    a. Outbound – Low-rate DVB-S2X outbound for robust broadcast control and synchronization.
    b. Inbound – eSCPC or TDMA inbound that can be reassigned dynamically by terminal or mission phase, enabling high throughput from remote devices with smaller antennas.
    c. Gilat's SkyEdge IV system provides sophisticated orchestration of profiles, resources, security, and waveform modes.

The operational model supports hundreds or thousands of remote terminals across multiple frequency bands, orbits, and waveforms.

### Military-Grade Deployable Ground Terminal (DKET)

Gilat DataPath has developed transportable ground systems since 1996 and is the creator and Original Equipment Manufacturer (OEM) of the DKET family of transportable SATCOM terminals, available on 463L-compatible skids and 20-foot ISO pallet-based platforms. These multi-band terminals support both fixed and transportable military enterprise applications, providing a secure, reliable mission hub in a single-skid earth terminal. Gilat DataPath's tactical DKET terminals can establish network connectivity in remote locations with minimal manpower.

DKET terminals support multiple frequency bands from S through Ka and multiple orbits, including LEO, MEO, GEO, and HEO, with antenna sizes ranging from 3.4 to 6.3 meters. This flexibility, combined with capacity, connectivity, rapid deployability, and operator control, supports demanding communications in remote locations.

Gilat DataPath is also evolving the DKET portfolio to include optical SATCOM terminals designed to support existing and future commercial and government satellite constellations equipped for optical communications.

The autonomous, field-proven DKET family is engineered for rapid, tool-free deployment in less than two hours. The terminals support military and commercial frequency bands, enabling operators to use available satellite assets. They can include onboard backup power, such as a generator or UPS, to sustain independent operations in harsh environments, or they can draw power from the military power system.

The terminals are also available with Gilat DataPath's MaxView® Network Management System, which manages the entire network, controls multi-vendor devices, automates complex service tasks, and consolidates disparate systems into a single view. MaxView Enterprise provides secure, web-enabled, multi-platform access, allowing operators to manage the system from virtually anywhere.

#### SWaP-Optimized Compact Hub

The compact hub is ruggedized and designed for low-power operation on space-constrained mobile platforms. Key features include:

1. **Robust Forward Link:** Uses efficient, sub-noise-floor outbound transmission to reduce the probability of detection by adversaries.
2. **Dynamic Dual-Waveform Return Links:** Supports both bandwidth-efficient TDMA configurations for large terminal populations and dedicated eSCPC links for high-priority command-and-control communications.

## 3.3 Core Operational Advantages

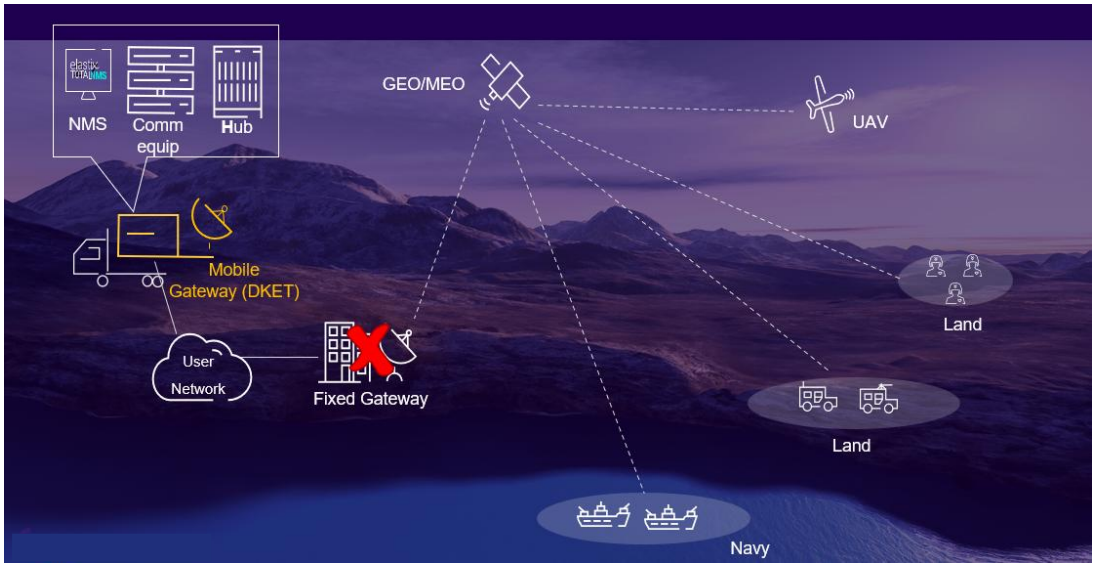
**Dynamic Link Agility (Fast Mode Switching):** A primary operational differentiator is the system's ability to switch remote terminals seamlessly between TDMA and eSCPC modes in real time without service interruption. Guided by automated mission policies and current electronic warfare conditions, this capability allows the network to:

- Automatically protect priority communications under intense jamming
- Instantly scale up bandwidth when a node escalates to a high-priority mission
- Conserve spectral resources during routine telemetry phases

**Comprehensive Cyber & EW Resilience:** The platform integrates robust physical and digital security architectures to safeguard sensitive operations in contested environments:

- Pre-Approved Security: Compliant with government and defense cybersecurity frameworks (NIST 800-53 Rev. 5) via the Infrastructure Asset Pre-Assessment (IA-PRE) program
- Advanced Encryption: Features robust Transmission Security (TRANSEC) and end-to-end payload encryption (COMSEC AES-256) to prevent data interception or network spoofing
- Electronic Warfare Countermeasures: Utilizes frequency agility and low Signal-to-Noise Ratio (SNR) operation to evade active adversarial jamming and extraction efforts

**Intelligent Network Management:** An advanced orchestration layer removes the burden of manual configuration from field operators. The network management system utilizes predictive analytics and policy-based Quality of Service (QoS) to automatically enforce mission priorities, maintain link quality, and scale to support thousands of remote terminals seamlessly.




# 4 Conclusion

As SATCOM evolves across multiple orbits, frequency bands, and technologies, including optical communications, ground systems must be designed to continually evolve with it. Gilat DataPath's DKET development roadmap focuses on transportable multi-orbit RF and optical ground terminals, including support for higher-frequency Q- and V-band capabilities to see broader future use.

The SkyEdge IV Compact Hub combines a ruggedized hub, VSATs, and intelligent terminals protected by advanced cybersecurity mechanisms. Optimized for size, weight, and power (SWaP), it provides the agility and scalability needed to support multi-band, multi-orbit, multi-waveform, and multi-application networks as operational and technological requirements evolve.

By pairing mobile, deployable hardware with an intelligent, cyber-hardened management layer, the solution reduces traditional single points of failure. It provides high-assurance, transportable beyond-line-of-sight connectivity that supports operational continuity for warfighters across air, land, and sea domains.