

# **NETWORK CENTRIC WAVEFORM RESILIENT (NCW-R)**

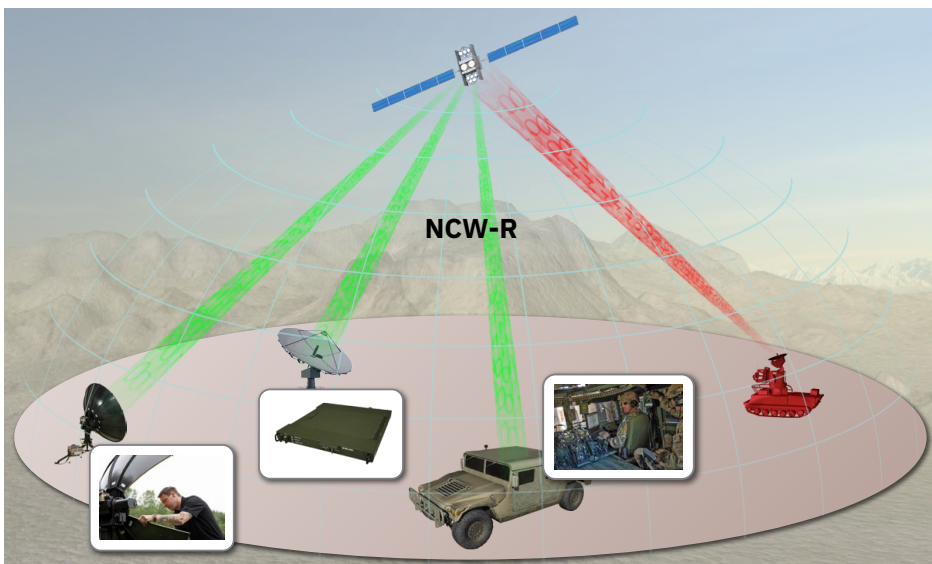
## **The Next Generation Anti-Interference Network Waveform for Full Mesh IP Over Super High Frequency (SHF) Satellite Communications**

NCW-R provides an Automated Anti-Interference Satellite Communications (SATCOM) Networking Technology for Tactical and Mobile Warfighter Platforms with Built-in Real-time Spectrum Situational Awareness (SA). The NCW-R supports a mixed network, ranging from large-aperture strategic terminals to small-aperture tactical/mobile terminals employing satellite communications on the move (SOTM).

### **PRODUCT DESCRIPTION**

NCW-R is built on the foundation of the US Army's proven Network Centric Waveform (NCW) and available from L3Harris as a software upgrade to NCW network controllers and modems. This solution delivers powerful, cost-effective, full-mesh IP networking with real-time situational awareness and automated application of anti-interference techniques, resulting in an adaptive, secure, and survivable communications system for use in the most challenging tactical environments.

An NCW-R network consists of a set of up to 255 SATCOM terminals, each equipped with an NCW/NCW-R modem. Centralized network management is performed at the NCW-R Network Controller. Certain network members, depending on terminal configuration and performance capabilities, may be able to assume the network controller function, and can also serve as a store and forward hubs to assist the network members that cannot close single-hop.



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Full mesh IP Network  
for Strategic, Tactical  
and Mobile Terminals  
(Military and Commercial)

### **KEY ADVANTAGES**

- > Overcomes most interference threats and delivers reliable and assured connectivity in a Denied, Degraded Command and Control Environment (D2C2E)
- > Reduces satellite resources to enable peer-to-peer communications without routing through a large hub
- > Enables mixed mesh communications between user terminals of different sizes and capabilities
- > Reduces the delays associated with two-hop communications
- > Open/non-proprietary technology
- > Targets an efficient solution in both contested and uncontested environments
- > Full mesh with automated hub-assisted provisioning where needed

### **SUPPORTED HARDWARE**

- > RMPM-1000
- > MPM-2000
- > MPM-3000

### **NETWORK TOPOLOGY**

- > Point-to Point
- > Full Mesh
- > Hub-Spoke
- > Hybrid Architecture

## RESILIENT

NCW-R provides anti-interference protection to military user communities using SATCOM, where communication is highly vulnerable to electronic interference. NCW-R provides automated protection against a broad range of interference scenarios including hostile stationary/hopping/pulsing/sweeping uplink interference, unintentional uplink interference, and downlink interference, including adjacent satellite interference (ASI) encountered at small-aperture terminals. Protection against network analysis by a downlink observer is also provided via traffic flow security mechanisms.

## EFFICIENT

NCW-R is unique in that if the Network Controller becomes unavailable (i.e. is disrupted, terminal goes down, etc.) the rest of the network can automatically heal itself by having another node take over the network control function. This adaptability provides more resilience in a DCDE environment than a traditional hub and spoke network.

## ECONOMIC BENEFITS

NCW-R is an automated system both in terms of situational awareness and resource management, removing human-in-the-loop decision making and spectrum planning. This automation significantly improves operational costs. Additionally, because NCW-R modems (RMPM-1000 and MPM-3000) include the network controller capability, there is no need for specialized/expensive network controller or reference terminal hardware often required in other systems. This significantly reduces the NCW-R system's start-up cost in comparison to other solutions, an especially critical consideration for operators of small networks.

## WIDEBAND GLOBAL SATCOM (WGS) FEATURES

NCW-R supports WGS capabilities such as a fan-in/fan-out configuration, capable of creating single networks operating over multi-beams/bands with dis-contiguous spectral allocations.

### Network Centric Waveform Resilient (NCW-R)

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