Solution Brochure

# Virtual Network Operator Offerings

Powered by SkyEdge II-c

## Benefits

- Supports any business model
- Applies to all vertical markets
- Optimized for spot-beam High Throughput Satellites
- Reduces TCO

Among the many changes we're witnessing within the satellite industry is how we view the satellite value chain. The growth of spot beam satellites has transformed many of the long-standing business models, including Virtual Network Operators (VNOs). Traditional VNO models do not always scale well to HTS spot beam architecture. X-Architecture for SkyEdge II-c was designed to address both traditional VNO models as well as new models suited to HTS-based space segment capacity.

With the introduction of software-defined networks (SDN), a path has been cleared for Host Network Operators (HNOs) to offer innovative VNO models. Coupling SDN with cloud architectures enables service providers to offer a new breed of dynamic services to their subscribers.

## VNOs: A Tale of Three Models

By supplying VNOs with a separate network and independent management capabilities, HNOs can offer VNOs the opportunity to run their own services without requiring upfront investment in teleport infrastructure. VNOs can either share network resources or invest in dedicated hardware components to gain physical network separation. Here are three types of VNO models that enable HNOs to deliver B2B VNO wholesale services:

- **Hardware VNO** – VNO service utilizing dedicated Tx/Rx hardware components with inbound and outbound MHz capacity
- **Software VNO** – VNO service utilizing shared hub resources with inbound and outbound Mbps capacity
- **Cloud VNO** – VNO service over multiple spot beams and satellites, leveraging a shared pool of network functions, data processing, and space segment spectrum

Let's look at these options in greater depth:

For satellite service providers requiring full control over their network operations, **Hardware VNO** is an ideal solution. With this model, the VNO controls satellite resources, software version scheduling, and configuration of all hardware elements.

To achieve a lower price point for satellite capacity and reduce CAPEX, a **Software VNO** solution fits well. Software VNO is a managed network, supporting applications from broadband to mobility. The VNO does not invest in hardware, rather it uses the HNO's infrastructure and selects service options covering QoS, rate and quota.

For VNOs looking to enter HTS-driven networks with minimal overhead, **Cloud VNO** is an optimal point of entry. Cloud VNO guarantees QoS across beams and satellites. It enables rapid introduction of new services and business models, and scales as the business grows. Cloud VNO offers access to some of the most powerful features of modern networks, such as capacity on demand.

## Business-driven Network Management

Powering these various VNO models is TotalNMS. This service-oriented network management system has been designed to rapidly introduce services, effortlessly maintain the network, and optimize network resource utilization. With TotalNMS, HNOs can quickly create VNO entities, effectively provide managed services and guarantee the VNO service level. By accessing TotalNMS, VNOs can simply operate their network and concern themselves with business decisions rather than the technicalities of running a satellite-based system.

For process automation and system integration, TotalNMS provides comprehensive SOAP and SNMP northbound interfaces to operational and business support systems (OSS/BSS). In addition, detailed data records per terminal enable usage-based billing for end customers.

## Something for Everyone

Which VNO model does your network need? The answer might be that several types are needed, depending on business imperatives and how your network is structured. At Gilat we believe that the trend toward network virtualization will eventually lead to demand for predominately Cloud VNO models. But this process will be gradual. In the meantime, satellite operators can benefit from the variety of VNO models supported by Gilat's SkyEdge II-c.

## VNO Models – Portfolio Summary

| CUSTOMER PURCHASE | HARDWARE VNO | SOFTWARE VNO | CLOUD VNO |
|---|---|---|---|
| FWD Capacity | MHz | Mbps | Multi-Beam Mbps |
| RTN Capacity | MHz | Mbps | Multi-Beam Mbps |
| FWD Modules | | | |
| RTN Modules | | | |
| L2-L7 Servers | | | |



20/12/2023