OpenSpace®

SpectralNet Wideband
Carrier Grade Digitizer for Assuring QoS and SLAs

SpectralNet Wideband (front of unit)

SpectralNet Wideband (back of unit)

With High Throughput Satellites (HTS), 5G networks and higher frequency bands, the increasing bandwidth drives the need for wideband RF digitizers that support the next generation of signals, networks and satellite links. OpenSpace SpectralNet serves as a carrier grade digitizer that eliminates the distance constraints of RF transport. With the wideband model, SpectralNet digitizes up to 500MHz of RF spectrum from the antenna in real-time, converts the RF signals into network-ready IP packets using the VITA 49 standard and transports the data in an assured manner over private and public IP networks.

With this approach high-bandwidth RF signals can be transported over any distance and any IP network, costs can be lowered with a reduced infrastructure footprint at the ground sites and less expertise is needed to maintain the antenna sites.

Applications
SpectralNet supports a range of wideband applications from virtual ground station operations, RF over IP transport, to RF monitoring and analytics.

Virtual Ground Station Operations – On-Ramp to the Cloud
As ground station operations evolve and move toward more digital and virtual infrastructures, SpectralNet serves as the on-ramp by converting RF signals into digital IP packets. The digital stream can then be transported reliably and accurately for signal processing in virtualized and cloud-based environments to take advantage of cost and scale efficiencies.

SpectralNet serves as the digitizer for Kratos' OpenSpace Platform, the first fully digital, virtualized, software-defined
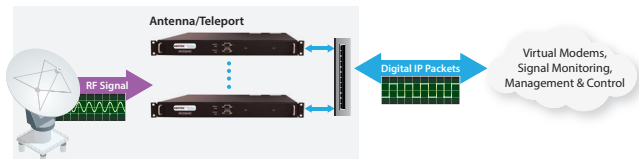
*SpectralNet digitizes the RF into IP for processing in the OpenSpace virtualized ground station.*

and orchestrated platform in the satellite industry. The OpenSpace Platform dynamically supports multi-satellite, multi-orbit, multi-payload and multi-band operations.

RF over IP Transport – Transport High-Bandwidth RF over any Distance and any IP Network
SpectralNet enables operators to transport signals efficiently, assuring a high quality of service, while also reducing costs by eliminating expensive RF signal processing equipment at every ground station. SpectralNet enables redundancy as well as new backup and disaster recovery scenarios to meet stringent SLA requirements.
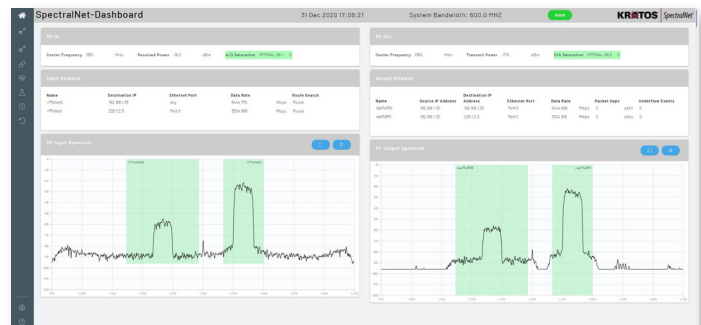
SpectralNet displays the RF input and output of the digitized stream.

- **N+1 Failover – Assure Redundancy and Resilience**
  In case of a hardware failure, SpectralNet automates critical system redundancy and resilience by providing N+1 failover capabilities. If the primary SpectralNet digitizer stops operating, the system automatically fails over to a hot standby redundant SpectralNet digitizer.

- **Site Diversity – Assure QoS and SLAs**
  When RF signal loss occurs due to rain fade, equipment outage, interference, or maintenance issues, SpectralNet enables operators to cost effectively switch between two geographically diverse sites seamlessly in real-time, independent of distance and delay to support site diversity.

## Carrier Monitoring – Monitor and Protect Signal Quality

SpectralNet provides the latest in digital signal processing to unlock the full potential of the industry leading Monics® Carrier Monitoring and Interference Detection System. With 300 MHz of instantaneous bandwidth, an operator can monitor a carrier and determine the modulation type, symbol rate, measured Es/No and analyze any interfering signals lurking underneath. This enables Monics to improve visibility into RF operations, monitor signal quality and help assure SLAs.
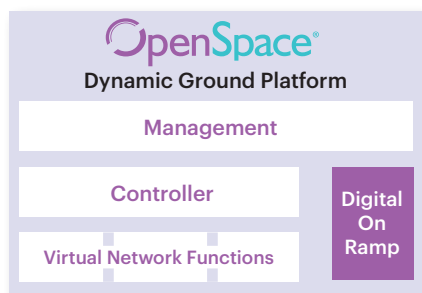

SpectralNet enables DSP measurement capabilities with Monics to deliver sophisticated interference detection capabilities.

Signal Geolocation – Locate RF Interference Faster and More Accurately

SpectralNet supports the digital signal processing for satID, an accurate, fast, all-in-one solution for locating and identifying sources of interference, including VSAT/TDMA terminals. With satID, operators are able to locate RF interference faster and more accurately.
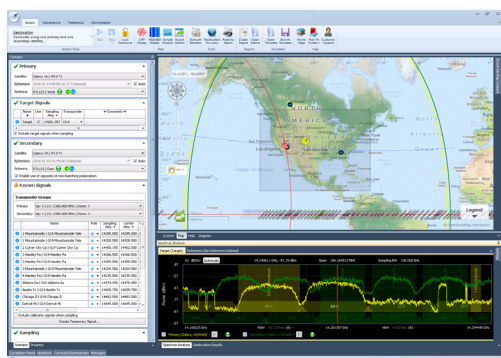
satID offers the capability to geolocate within 5 km of the interfering signal.

Technical Specifications

Frequency • 900 MHz to 2450 MHz	**Transport Delay** • Deterministic latency is selectable up to 750 msec with an accuracy of +/- 4 nsec
Instantaneous Bandwidth • Up to 500 MHz per card • Up to 2 cards per chassis	**Common Dimensions** • 1U rack-mountable – 19 in / 48.26 cm • Depth: 12 in / 30.48 cm • Weight: 11 lbs / 5 kg
Sub Band Channels • 2 independent RFIN data streams • 2 independent RFOUT data streams	**Power (Typical)** • 100/240 VAC, 200 watts • 50/60 Hz • Internal redundant power supplies
Input/Output Levels • -60 to 0 dBm input range • -40 to 0 dBm output range	**Environmental** • Operating temp: 0° to 40°C (32° to 104°F) • Operating relative humidity: 0% to 85% non-condensing
Sampling • 4 through 16 bits per sample • 2 x 750 Msps	**Mean Time Between Failure** • 82.7k hrs with one (1) Atlas module installed (SNWB 1 RF) • 49.5k hrs with two (2) Atlas modules installed (SNWB 2 RF)
Time and Frequency References • IRIG-B • IRIG-DC • 1 PPS • 10 MHz • Internal GPS module	**Options** • Up to 7:1 failover • SNWB site diversity
Data Transport • 3 x 10 Gbps SFP+ ports (ethernet or fiber optic) • UDP unicast or multicast • VITA-49	**Regulatory Certification** • CE • RoHS compliant
Management • RJ-45 1 Gbps ethernet port • REST API • GEMS • Web-based GUI	

Dynamic Ground Platform

Management

Controller

Virtual Network Functions

Digital On Ramp

OpenSpace SpectralNet serves as the digitizer for the OpenSpace platform, the industry's only fully virtual and software-defined satellite ground system. The OpenSpace platform includes Virtual Network Functions for signal processing in the cloud or on premise. The OpenSpace Controller administers how service chains are deployed and OpenSpace OpsCenter provides unified management across the entire satellite ground system.

KRATOS
READY FOR WHAT'S NEXT™