

# SpectralNet Wideband

Transport high-bandwidth RF signals over any distance and any IP network



Today's rapidly evolving high-bandwidth technological environments—from HTS to multi-constellations to multi-cast video streaming to IoT applications—are placing a greater demand on ground station operators. The challenge is transporting these high-bandwidth RF signals over an IP network with no analog performance degradation. But how can an operator reliably transport data and reduce expensive, complicated signal processing devices while at the same time delivering the high quality service customers require?

## Faster Data Transfer with High-bandwidth Solution

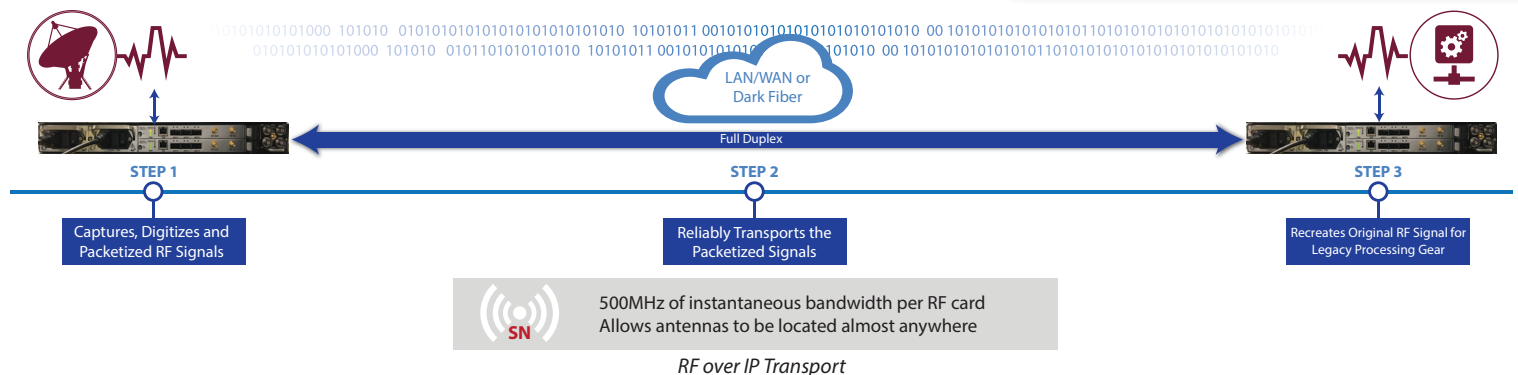
SpectralNet Wideband eliminates the distance constraints of RF transport by digitizing up to 500MHz of RF spectrum for transport over IP networks. The 500MHz can be digitized anywhere between the 300MHz to 3.6GHz of licensed broadcast spectrum. SpectralNet Wideband preserves both frequency and timing characteristics through the analog to digital and digital to analog conversion. This provides a more cost effective solution for the ground station by eliminating duplicate and analog equipment at the antenna site.

## Assured Data Delivery with RF over IP Transport

First, SpectralNet captures, digitizes and packetizes RF signals. Then the packetized signals are accurately and securely transported over a LAN/WAN or dark fiber. Finally, the original RF signal is recreated for processing on analog gear.

## Advantages of Analog Data to IP-based Networks

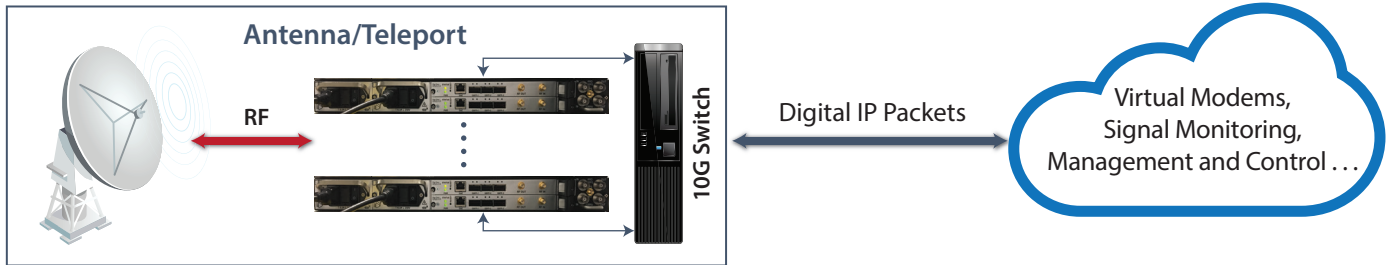
- Maximize your infrastructure investments
- Avoid service interruptions caused by rain fade
- Lower the cost of antenna sites by placing them at optimal locations—over any distance
- Increase flexibility by moving the digitalized spectrum anywhere over an IP network
- Improve reliability and simplify disaster recovery
- Enhance resilience with N:1 failover ensuring system availability in the event of component failure
- Deliver better depth for wider spectral channels
- Improve integration with other VITA 49 compliant products



## Virtual Ground Station with SpectralNet

SpectralNet Wideband is at the core of the emerging technology, Digital IF (Intermediate Frequency), that enables a more flexible, dynamic ground station. By enabling the virtualization of the ground station functions, Digital IF is the on ramp to the virtual ground station.

Advances in signal processing have opened the door for a shift from hardware-centric to software centric networks. This allows satellite ground stations to leverage Virtual Network Functions (VNF), which refers to the process of separating network functions from hardware to create a virtualized network that can run on commodity hardware, allowing networks to be more pliable and more cost-effective. This is ideal for complex signal processing applications that require consistent, low-latency, guaranteed packet delivery such as satellite and Unmanned Aerial Systems (UAS)-based sensor data streams.



*SpectralNet is the on ramp to the virtual ground station*

Technical Specifications	
<b>RF INTERFACES</b>	<b>NETWORK INTERFACES</b>
<b>FREQUENCY</b> <ul style="list-style-type: none"> <li>900 MHz to 2450 MHz</li> </ul>	<b>SIGNAL</b> <ul style="list-style-type: none"> <li>10 Gigabit QSFP+ Ethernet Port (Qty. 3)</li> <li>UDP</li> <li>VITA-49</li> </ul>
<b>INSTANTANEOUS BANDWIDTH</b> <ul style="list-style-type: none"> <li>Up to 500 MHz per card</li> <li>Up to 2 cards per chassis</li> </ul>	<b>CONTROL STATUS</b> <ul style="list-style-type: none"> <li>RJ-45 1 Gbps Ethernet Port</li> <li>TCP-IP</li> </ul>
<b>SUB BAND CHANNELS</b> <ul style="list-style-type: none"> <li>2 independent RFIN data streams</li> <li>2 independent RFOUT data streams</li> </ul>	<b>TRANSPORT DELAY</b> <ul style="list-style-type: none"> <li>Deterministic Latency is selectable up to 750 msec with an accuracy of <math>\pm 10</math> nsec</li> </ul>
<b>INPUT/OUTPUT LEVELS</b> <ul style="list-style-type: none"> <li>-60 to 0 dBm Input Range</li> <li>-40 to +10 dBm Output Range</li> </ul>	<b>CONTROL STATUS</b> <ul style="list-style-type: none"> <li>REST API, GEMS</li> <li>Web-based GUI</li> </ul>
<b>SAMPLING</b> <ul style="list-style-type: none"> <li>4 through 12 Bits Per Sample</li> <li>16 bits for OSDI</li> <li>750 Msps Max Rate</li> </ul>	<b>COMMON DIMENSIONS</b> <ul style="list-style-type: none"> <li>1U Rack-Mountable - 19 inch</li> <li>Depth 12 inches</li> <li>Weight: 11 lbs.</li> </ul>
<b>TIME &amp; FREQUENCY REFERENCES</b> <ul style="list-style-type: none"> <li>IRIG-B</li> <li>IRIG-DC</li> <li>1 PPS</li> <li>10 MHz input</li> <li>Internal GPS module</li> </ul>	<b>POWER (TYPICAL)</b> <ul style="list-style-type: none"> <li>110/220 VAC, 200 Watts</li> <li>50/60 Hz</li> </ul>
<b>REDUNDANCY</b> <ul style="list-style-type: none"> <li>Redundant fans and power supplies</li> </ul>	<b>ENVIRONMENTAL</b> <ul style="list-style-type: none"> <li>Operating Temp: 0° To 40°C (32° To 104°F)</li> <li>Operating Relative Humidity: 0% To 90% non condensing</li> </ul>
<b>OPTIONS</b> <ul style="list-style-type: none"> <li>N+1 Failover</li> <li>SNWB Site Diversity</li> </ul>	<b>REGULATORY CERTIFICATION</b> <ul style="list-style-type: none"> <li>CE</li> <li>RoHS Compliant</li> </ul>