

MANAGED WIRELESS SOLUTIONS

The benefits of a private network at an affordable cost

Managed Wireless Solutions allows the customer to package their data plan and hardware into one easy to order, full turnkey solution. Receive the private network experience without the financial commitment to acquiring spectrum, infrastructure, and technical resources.

Device provisioning, monitoring, and management is performed by the Network Operations Team located in Rochester, New York. No customer data is stored, monitored, or intercepted by GE Vernova. The solution leverages a fully redundant cloud-based infrastructure that provides the security and flexibility to evolve as customer's requirements change.

Addressing Industry Challenges

- High infrastructure and staffing investment required to install and manage privately owned networks
- Inability to capitalize services
- Stringent security requirements

Key Benefits

- Cost effective with the ability to package data plans and hardware together
- Hardware proactively monitored for outages
- Vendor agnostic: Can be offered with GE Vernova and other vendor hardware
- Managed firmware upgrades
- Support for legacy MDS systems (including x710/x790, SDx, iNET/iNET-II, TransNETs)
- The Orbit cellular router is FirstNet™ certified and supports AT&T band 14†
- Can support networks of any size

†The Orbit cellular router is FirstNet™ certified and supports AT&T band 14. FirstNet customers will provide SIM and data plan. GE Vernova can assist in final SIM provisioning and management of hardware and NMS.



Annualized Data Collection

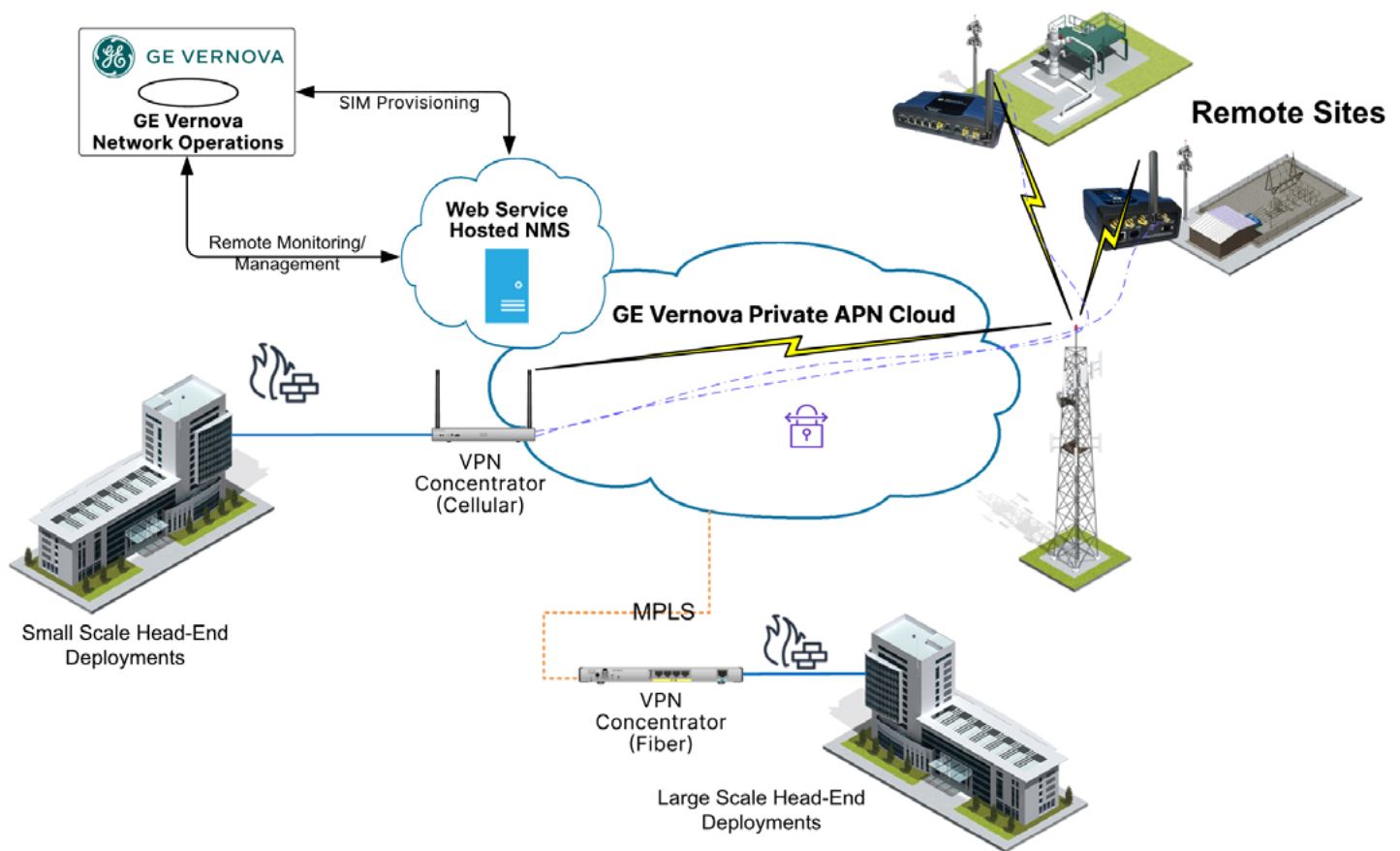
- All-inclusive annualized Service Level Agreement.
- Customizable solutions based on customer overall data requirements.

Expansive Security

- Your data protected by a comprehensive security suite that is designed to meet NERC-SIP guidelines.

Installation and Management

- Installation services available.
- Supported by AT&T Wireless and Verizon.
- GE Vernova's Network Operations Team monitors and manages hardware 24/7/365.



Small Scale Deployments With cellular hub as the VPN concentrator

For SCADA environments up to 250⁺ remote locations, GE Vernova will provide dedicated appliance(s) for use in the customer's network. Managed Wireless Solutions' Private APN can be accessed using 5G⁺ cellular technologies encapsulated with firewall-based VPN concentration. As an additional service, GE Vernova can provide customers with head-end integration assistance to provide a seamless solution.

Large Scale Deployments For networks greater than 250 units

For SCADA environments >250 units, GE Vernova will provide the same services as Small Scale Deployments; dedicated appliances, deploy a private cellular APN, firewall rules to secure the connection, and manage the end-to-end link for a seamless customer data collection. Such deployments will utilize MPLS circuits at the customer's data center along with a VPN concentrator. As an additional service, GE Vernova can provide customers with head-end integration assistance to provide a seamless solution.

^{*}Check with local sales representative for availability.

Standard Offerings

CONFIGURATION	ETHERNET PORTS	SERIAL PORTS	CELLULAR MODEM	MOUNTING	IMAGE
MXCX4GBNNNNNS3FGDUNM	4	2	4GB	DIN-Rail	
ECR4GBNNNNNS1D3USUNNM	1	1	4GB	DIN Rail	

MODEL/REGION	ECR	MCR	PROTOCOL/FREQUENCIES	FALLBACK SUPPORT	APPROVALS/CERTIFICATIONS	MAX RATE DOWN/UP Mbps	DUAL SIM	GPS
4GB 4G LTE-A Pro, 3G, FirstNet Ready™, CBRS, US	Yes	Yes	• LTE-A Pro Cat-12 • LTE FDD Bands: 1, 2, 3, 4, 5, 7, 8, 9, 12, 13, 14, 18, 19, 20, 26, 29, 30, 32, 66 • LTE TDD Bands (Cat-6): 41, 42, 43, 46, 48 • UMTS/DC-HSPA+ Bands (42/11 Mbps): 1, 2, 4, 5, 6, 8, 9, 19	3G	AT AT&T, Verizon, CBRS, FCC, IC, PTCRB, FirstNet Ready™	600 [†] /150 [†]	Yes	Yes

[†]Max system rate ~90 Mbps

Standard Offerings

TYPE	PART NUMBER	DESCRIPTION	INPUT RANGE	OUTPUT RANGE	WATTAGE
Power Supply	01-3682A02	Indoor, AC to DC Power Supply, 12V, 30W	90-264VAC, single phase	12 VDC	30 W
TYPE	PART NUMBER	DESCRIPTION	ANTENNA TYPE	FREQUENCY	GAIN
Antenna - Indoor	97-2485A04	Indoor Cell Antenna, 698-2700 MHz, SMA Male	Omni	698-2700 MHz	2 dBi
Antenna - Outdoor	97-4278A109	TROOPER 5G-GPS Antenna with Pole Mount and 25FT x3 Coax	Omni	617-5950 MHz	2.2-8.6 dBi (dependent on frequency)
Antenna - Mobile	97-4278A110	TROOPER 5G-GPS Antenna 5FT x3 Coax NM Assembly	Omni	617-5950 MHz	2.2-8.6 dBi (dependent on frequency)
TYPE	PART NUMBER	DESCRIPTION	ETHERNET PORTS	SERIAL PORTS	IMAGE
Router [†]	MXXXNNNNNNNS3FFDUNN	Orbit as a Router (no wireless radios installed)	4	2	

[†]Additional, non-Orbit router options available.

Looking to add a radio enclosure? View the available [brochure](#) for more details.

MDS Orbit Router Technical Specifications

Networking

- Routing IPv4 static routing with failover OSPF, RIPv2, VRRP
- Ethernet IEEE 802.3, 802.1Q/VLANs, IGMP, STP, 64 VLANs
- Concurrent bridging and routing
- Tunneling layer 2 (Ethernet) and layer 3 GRE
- High availability failover between any two wireless/Ethernet interfaces, performance-based failover (latency and packet loss)
- Quality of Service 16 egress queues, priority queuing, fair queuing, traffic shaping, classification based on DSCP, 802.1p and layer 2-4 classifiers
- IP Protocols TCP, UDP, ARP, DHCP, ICMP, NTP, FTP, SFTP, TFTP, DNS, configurable HTTP and HTTPS, SSH
- Serial TCP server, Modbus/TCP, Modbus RTU, TCP client, UDP Unicast and Multicast, BSAP, and DNP3
- Dual APN, VRF, Open VPN, FlexVPN, and VPN DPD[†]

Cybersecurity

- IPSec VPN Server (responder) and Client (initiator)
- Authentication public key, EAP TLS, Pre-Shared, IKE 1-2
- Encryption 3DES, AES 128/192/256, CBC, CTR, CCM, GCM, SHA 256/384/512 HMAC
- Firewall stateful L3-4 Access Control List, Layer 2 MAC Filtering, NAT, Source NAT (Masquerading), Static NAT, Port Forwarding
- Device Security Secure Boot, Secure Firmware, Digitally Signed Hardware and Software, Magnetometer Tamper Detection
- Certificate Management X.509, PEM, DER, RSA, and SCEP with auto renewal/re-enrollment
- User Authentication Local RBAC, AAA/RADIUS
- FIPS 140-2 (Level 2) compliant[†]

Network Management

- Secure device management via HTTP/HTTPS (GUI) and Juniper-style CLI via SSH or local console
- Support for MDS LaunchNET with 'Zero-touch' or 'One-touch' for easy field provisioning
- Event logging, Syslog over TLS
- Iperf throughput diagnostic
- NETCONF
- SNMPv1/v2c/v3, MIB-II, Enterprise MIB
- MDS PulseNET NMS Support

Electrical and Power Consumption

- Input Voltage 10 to 60 VDC
- Orbit ECR and MCR Power Consumption Calculations (with nominal 25C).

WITH 4G LTE	POWER	13.8V
Connected (Idle)	4.0W	292mA
Typical download	4.3W	310mA

Physical Interfaces

- 10/100 Ethernet RJ45
- RS-232/RS-485 Serial RJ45
 - ECR: 1 Ethernet + 1 Serial
 - MCR: 4 Ethernet + 2 Serial
- USB Management: 1 x Mini-USB 2.0 port on MCR and ECR
- Antenna Connectors: Cellular: SMA | GPS: SMA female
- LEDs PWR, ETH, COM, NIC1, NIC2

Agency Approvals/Standards

- FCC Part 15, 90, 80, 101, 27, 95 and IC
- ETSI / CE, EN 300.113, EN302.561
- IEEE 1613^{††}
- CSA Class 1, Div. 2, CSA C22.2 No. 142-M1987 & 213-M1987
- ANSI/ISA 12.12.01 2015, UL 916, 5th Ed., EN60950
- EMS EN 301 489-5, EN 301 489-1
- EMP: MIL-STD-461G, RS105 Electro Magnetic Pulse
- Shock: MIL-STD-810F Method 516.5
- Vibration: MIL-STD-810F Method 514.5
- Shock and Vibration: EIA RS374A
- Storage Temp: Mil-Std 810F Section 501.4 with 1 week soak test
- IP 40/41 per IEC 60529 for Vertical Falling Water and Pollution 3 for Dust
- IEC 60068-2-1 Cold; IEC62262 & IEC60068-2-75 Shock; IEC 60068-2-2 Dry Heat; IEC 60068-2-2-38 Composite temperature/humidity cyclic

Environmental and Mechanical

- Operating Temp -40° to +70° C (-40° 158°F)
- Storage Temp -40° to +85° C (-40° 185°F)
- Humidity 95% at 60° C (140°F) non-condensing
- Case die cast aluminum
- Mounting Options Integrated DIN Rail mount and Standard Mounting bracket
- No Fans, No Moving Parts
- HALT & HASS Testing
- MCR Dimensions:
 - 1.75 H x 8.0 W x 4.8 D inches
 - 4.5 H x 20.3 W x 12.2 D cm
- MCR Weight 2lbs (0.91 Kg)
- ECR Dimensions:
 - 2.1 H x 4.3 W x 4.6 D inches
 - 5.4 H x 10.9 W x 11.7 D cm
- ECR Weight 1.45lbs (0.66 Kg)

GPS

- Available with cellular models
- GNSS, GPS, Glonass
- Maximum 30 channels (16 GPS, 14 GLONASS), simultaneous tracking
- NMEA 0183 V3.0
- Acquisition Time: Hot start 1s, Warm start 29s, Cold start 32s
- Accuracy: Horizontal < 2 m (50%); < 5 m (90%) Altitude: < 4 m (50%); < 8 m (90%); Velocity: < 0.2 m/s.

Warranty

- 5-year standard manufacturer warranty

[†]Check with local sales representative for availability.

^{††}For full GE Vernova MDS Orbit Platform series brochures, please visit our website at www.gemds.com.



For more information
visit www.gevernova.com/grid-solutions

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