Grid Solutions

PRIVATE CELLULAR SOLUTIONS

Complete, Cost-Effective 4G/5G Private Cellular Networks for Utility and Critical Infrastructure

GE Vernova's Grid Solutions business offers a tailored, complete private 4G/5G cellular solution including ePC/5GC (evolved packet core) and e/gNodeB (RAN/radio heads). Coupled with GE Vernova's Grid Solutions business' MDS Orbit edge devices and service offerings, we support our customers in enabling their networks achieve greater reliability, security, lower latency, and greater speeds to support a wide range of applications.

Key Benefits

- Purpose built solution for critical infrastructure - Easier to setup, deploy, and operate compared to more complex consumer focused solutions
- Lower cost of ownership:
  - No recurring end user device licensing fees
  - Backed and supported by a full 2-year warranty
- Tailored solutions, available in different packaging and as a pure e/gNodeB version
- Configuration and scale flexibility to meet existing and future applications
- Easy-to-use network management system (NMS)
- Tested with MDS Orbit cellular routers and works with all compatible 3GPP UE/edge devices

Features

- 3GPP Compliant and 5G ready functionality including AMF, AUSF, SMF, UPF, NG interface to several gNodeBs and RX for external IMS server
- Flexible configuration options including compliant NB-IoT and LTE-M Cat 1 release 15
- Supports mission-critical services including Push-To-Talk (MC-PTT), dynamic group calls, group assignment, emergency calls, SMS and MMS, voice and video group calls in multicast (eMBMS), geolocation

End-to-End Network

- ePC (evolved packet core) options including cost-effective and powerful industry leading computing platform
- 4G/5G e/gNodeB supporting up to 3 sectors per cell site
- US: Anterix band 8/106 & CBRS band 48*
- 450MHz and others available by region
- MC-PTT and other services available
- A la carte and customized full design, implementation, and support services

Secure and Reliable

- Secures the network with AES, SNOW, ZUC integrity and ciphering support, standard MILENAGE and TUAK authentication and HSS encryption
- Available redundancy for added network resiliency with second Core
- 2-year standard all-inclusive warranty lowers total cost of ownership*

Flexible Deployment

- Ruggedized IP67 rated e/gNodeB for indoor or outdoor use (optional)
- Compact & lightweight < 30kg
- Available in different configurations to meet application requirements: standard 19" fixed rack mount or transport case options

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Orbit Core Technical Specifications & Ordering Options

Standard	3GPP release 15 & NR Release 16
Features	**LTE Features:** • Roaming • Billing • Support for NB-IoT and CAT-M devices • Handling of UE procedures: attach, authentication, security configuration, detach, tracking area update, service access, radio bearer establishment, paging • Supports 1 to 100's e/gNodeBs with standard S1 interface (S1AP and GTP-U protocols) • Supports S6a, Rx interface, and sending of Public Warning System messages (ETWS/CMAS) • Multi-PDN support to/from different APNs and built-in dynamic ERAB setup for easy VoLTE/IMS • Configurable APN, PDN, IP range, DNS and E-RAB QoS • Implements one MME and built-in SGW, PGW and PCRF • Implements secured HSS Auc (Authentication Center), with EIR (Equipment Identity Register) • Optional MBMS-GW **5G Features:** • Equivalent features as for 4G, plus slicing • Built-in support for resilient (local to isolated radio site) and network redundant ePC/5GC
Mission Critical Features	Optional applications can be hosted on same hardware including Push-to-talk (MC-PTT), group management, emergency calls, SMS or MMS, voice and video group calls, multicast (eMBMS), geolocation can be embedded, and customer provided applications.
NMS	Management of the entire network, including the Core, plus any GE Vernova MDS provided RANs, as well as management of the IMSIs/IMEIs within private HSS
Security	NAS integrity check and encryption using the AES, Snow3G and ZUC algorithms. Ciphering support is now subject to export rules (authorization depending on country where system is operated). Supports USIM cards using the XOR, MILENAGE or TUAK authentication algorithms
Core Ordering Options	• Orbit Core 4G (software upgradable to 5G SA) • Orbit Core 5G SA (support 5G only) • Orbit Core Max 4G (software upgradable to hybrid 4G/5G)*** • Orbit Core Max 5G NSA (supports hybrid 4G/5G)*** • Orbit Core Max 5G SA (support 5G only)*** • Orbit Core Cloud**

Capacity*	Provisioned Devices	Concurrent Devices	Number of CPU Cores	Max Throughput (Gbps)
Orbit Core	10,000	1000	6	3
Orbit Core Max	250,000	5000 / CPU Core	8, 16, 32	35

Power Supply	100-240V for Orbit LTE Core and Core Max
Connectivity	Gigabit Ethernet ports (RJ45/SFP+) , USB 3.0
Dimensions / Weight	Orbit Core: 3.465 H (2U) x 16.93 W x 10.629 D inches, 8.8 lbs (8.8 × 43 × 27 cm, <4Kg) Orbit Core Max: 1.693 H (1U) x 16.93 W x 25.197 D inches, 28.7 lbs (4.3 × 43 × 64 cm, 13Kg)
Operating Temperature	5º to 45º C (41º to 113º F)
Packaging Options	Orbit Core: 19" rack, fixed, or transport case Orbit Core Max: 19" rack

** Typical based on average data usage profile. Check with GE Vernova's Grid Solutions business Sales Representative to discuss your specific capacity planning requirements*

*** Planned for release in 2024. Please contact the sales team for updated availability information.*

**** Available with 8, 16, or 32 CPU Cores*

Orbit Base Technical Specifications

Standard	3GPP Release 15 for 4G 3GPP Release 16 for 5G
Available Bands* / Max Power	MIMO 2×2 (2×20W): Band 1, 3, 5, 7, 8(106)[1], 20, 28, 30, 31, 38, 39, 40, 41, 42, 43 MIMO 4×4 (4×4W): Band 48[1], N48
Tx, Rx	B106: 2T/2R B48: 2T/2R, 4R/4R
TPM (typical)	<600W (with Orbit LTE Base 4G with 1*Radio Head)
Security	All 3GPP standard security included: AES, SNOW, ZUC algorithms support. Standard integrity and ciphering support. Standard MILENAGE and TUAK authentication support. HSS encryption
Capacity (typical, based on average call profile)	Several 1000 active UEs + several 1000 NB-IoT/LTE-M based on average traffic profile and numbers of RRUs
Range (typical)	Up to 10 kilometers* *Depending on frequency band, antennas position/type and environment
Power Supply	100-230V (48V DC as an option)
Connectivity	Gigabit Ethernet (RJ45), USB 3.0, GNSS, RF antennas
Dimensions / Weight	19" x depth 450mm (without case) – 1U Core Network – 1U digital e/gNodeB ('BBU') – 1U optional 220AC/48VDC Less than 30 kg without the case
Packaging Options	Fixed, transport case or rack Specific packaging: IP67 and -40°C/55°C operational for all elements with 1 to 4 Radio Heads

Order Options

Orbit Base 4G	4G RAN(eNodeB) only
Orbit Base 4G/5G	4G/5G RAN(e/gNodeB) only

[1]FCC certification in process

** Local regulatory certification may be required.*

Check with GE Vernova's Grid Solutions business' Sales Representative for details.

Offering A La Carte And Customized Full Design, Implementation, and Support Services for Both GE Vernova's Grid Solutions business branded and 3rd Party Networks

Network analysis and design

- Private network infrastructure analysis and design*
- Propagation studies and site surveys
- Traffic engineering
- Onsite system optimization and configuration

Pre and Post Deployment Services

- Design validation with field and lab testing
- Deployment process and development **
- Staging, kitting, and equipment configuration
- SIM provisioning and installation
- Site installation and commissioning
- Premium tech support packages

OnSite and Remote Preventative Maintenance

- System traffic checkup
- Network health checkup
- Best practices analysis

Other Value Added Services

- Resource management
- Onsite and remote custom training
- System drawings and diagram services
- Network management system (NMS) services
- Full project management
- Custom services available upon request

**Including GE Vernova Grid Solutions business branded and third party UE radios*
***Including safety precautions, site surveys, and commissioning*

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

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