

# PRIVATE CELLULAR SOLUTIONS

## 4G/5G Private Cellular Networks Designed for Utility and Critical Infrastructure

GE Vernova now offers a 3GPP compliant and scalable private 4G/5G wireless network solution. The solution includes single or redundant packet cores, e/g NodeBs, multi-sector radio access network (RAN) equipment, a simplified network management system (NMS) and integrated MC-PTT features, including geo-location and video. The solution provides greater reliability, resiliency, lower latency and higher network data transfer speeds for a much broader range of applications, all easily migrated to 5G if needed in the future.

GE Vernova's Orbit Private Cellular solution may be coupled with MDS Orbit edge devices or other 3GPP compliant devices and supported by our professional services team.

### Key Benefits

- Purpose built solution for critical infrastructure - Easier to setup, deploy, and operate compared to more complex telco-built focused solutions
- Scalable (start small and grow): available in tailored configurations to meet existing and future applications and growth requirements
- Easy-to-operate network management system (NMS)
- Tested with MDS Orbit cellular routers and works with compatible 3GPP UE/edge devices

### Features

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



### End-to-End Network

- ePC (evolved packet core) options including cost-effective and powerful industry leading computing platform
- 4G, 5G SA, 5G NSA
- 4G/5G e/gNodeB supporting up to 3 sectors per cell site
- Support for bands 8/106, 48, 28, 31, 87 and more
- 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 or distributed architecture

### 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



## Orbit Core Technical Specifications

Standard	3GPP release 16 & NR Release 17
Features	<p><b>LTE Features:</b></p> <ul style="list-style-type: none"> <li>• Roaming</li> <li>• Billing</li> <li>• Support for NB-IoT and CAT-M devices</li> <li>• Handling of UE procedures: attach, authentication, security configuration, detach, tracking area update, service access, radio bearer establishment, paging</li> <li>• Supports 1 to 100's e/gNodeBs with standard S1 interface (S1AP and GTP-U protocols)</li> <li>• Supports S6a, Rx interface, and sending of Public Warning System messages (ETWS/CMAS)</li> <li>• Multi-PDN support to/from different APNs and built-in dynamic ERAB setup for easy VoLTE/IMS</li> <li>• Configurable APN, PDN, IP range, DNS and E-RAB QoS</li> <li>• Implements one MME and built-in SGW, PGW and PCRF</li> <li>• Implements secured HSS Auc (Authentication Center), with EIR (Equipment Identity Register)</li> <li>• Optional MBMS-GW</li> </ul> <p><b>5G Features:</b></p> <ul style="list-style-type: none"> <li>• Equivalent features as for 4G, plus slicing</li> <li>• Built-in support for resilient (local to isolated radio site) and network redundant ePC/5GC</li> </ul>
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 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
Capacity*	Orbit Core is configurable and scalable to support varying network sizes. The number of provisioned devices, active devices and supported throughput is determined in part based on the configuration including RAM and number of CPU cores (standard 8, 16, or 32).
Power Supply	100-240V AC
Connectivity	Gigabit Ethernet ports (RJ45/SFP+) , USB 3.0
Server Dimensions / Weights	<ul style="list-style-type: none"> <li>* 2.52 H (1.5U) x 19 W x 8.07 D inches, 8.8 lbs (6.4 x 4.82 x 2.05 cm, &lt;4Kg)</li> <li>* 1.693 H (1U) x 16.93 W x 25.197 D inches, 28.7 lbs (4.3 x 43 x 64 cm, 13Kg)</li> </ul>
Operating Temperature	0° to 45° C (31° to 113° F)
Packaging Options	19" rack

\* Check with GE Vernova's Grid Solutions business Sales Representative to discuss your specific capacity planning requirements

## Orbit Base Technical Specifications

<b>Standard</b>	3GPP Release 16 for 4G 3GPP Release 17 for 5G
<b>Available Bands* / Max Power</b>	MIMO 2x2 (2x20W): Band 1, 3, 5, 7, 8(106)1, 20, 26, 28, 30, 31, 38, 39, 40, 41, 42, 43, 71 MIMO 4x4 (4x4W): Band 48, N48, N77, N78
<b>TPM (typical)</b>	<600W (with Orbit Base 4G with 1*Radio Head)
<b>Security</b>	All 3GPP standard security included: AES, SNOW, ZUC algorithms support. Standard integrity and ciphering support. Standard MILENAGE and TUAK authentication support. HSS encryption
<b>Capacity (typical, based on average call profile)</b>	Several 1000 active UEs + several 1000 NB-IoT/LTE-M based on average traffic profile and numbers of RRUs
<b>Range (typical)</b>	Up to 10 kilometers (depending on frequency band, antennas position/type and environment)
<b>Power Supply</b>	100-230V (48V DC as an option)
<b>Connectivity</b>	Gigabit Ethernet (RJ45), USB 3.0, GNSS, RF antennas
<b>Dimensions / Weight</b>	2.52 H (1.5U) x 19 W x 8.07 D inches, 8.8 lbs (6.4 x 4.82 x 2.05 cm, <4Kg)
<b>Packaging Options</b>	19" rack

\* 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 **www.gevernova.com/grid-solutions**