

Private LTE Network

Cost-effective alternative to Wi-Fi and Public Networks for Educational Campuses



Private cellular network for seamless communication among students, staff

Most universities and colleges still rely on public networks for everyday communication. Naturally, public networks are over-loaded with civilian traffic, especially when a large number of students gather in the campus at the same time, congesting entire networks and reducing quality of service. Or, some institutes may be located on the outskirts of a city, where high-speed throughput on public networks has not been planned for, leaving educational institutes bereft of ICT advantage.

With smartphone usage on the rise in colleges and universities, and e-learning taking the front-seat across the education industry, campuses and institutes need a dedicated private cellular network with capacity and coverage to handle traffic load, or to control and manage their own private network, without depending on public networks.

VNL's Private LTE network for Educational Campuses enables today's high-tech educational institutes with high-speed, wireless LTE coverage across the entire campus, no matter the size of the premises. From classes and conference halls to sports ground, you stay connected without being bound to old-school intercoms.

The entire solution is a single-box system, with radio as well as the core network mode functionality, delivering a sense of end-to-end LTE network, best not just for day-to-day education, but also for running secure communications with staff members across different parts of the campus. Control of the network remains with campus authorities, with no dependency on commercial mobile networks.



LTE System

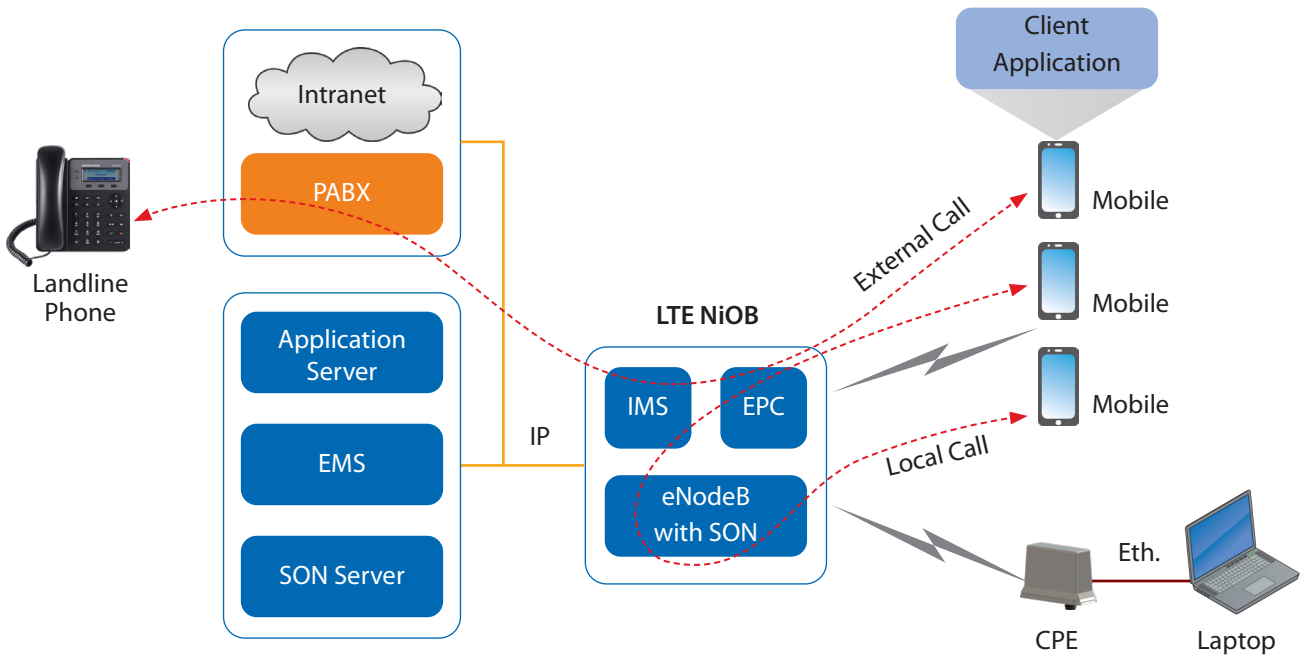
BENEFITS

- One, common private network for the entire campus, even its branches
- Conduct e-education, distance learning with service guarantee
- Economical alternative to congested public Wi-Fi, cellular networks
- Markedly reduce dark spots in corridors, and dead zones in open, vast playgrounds

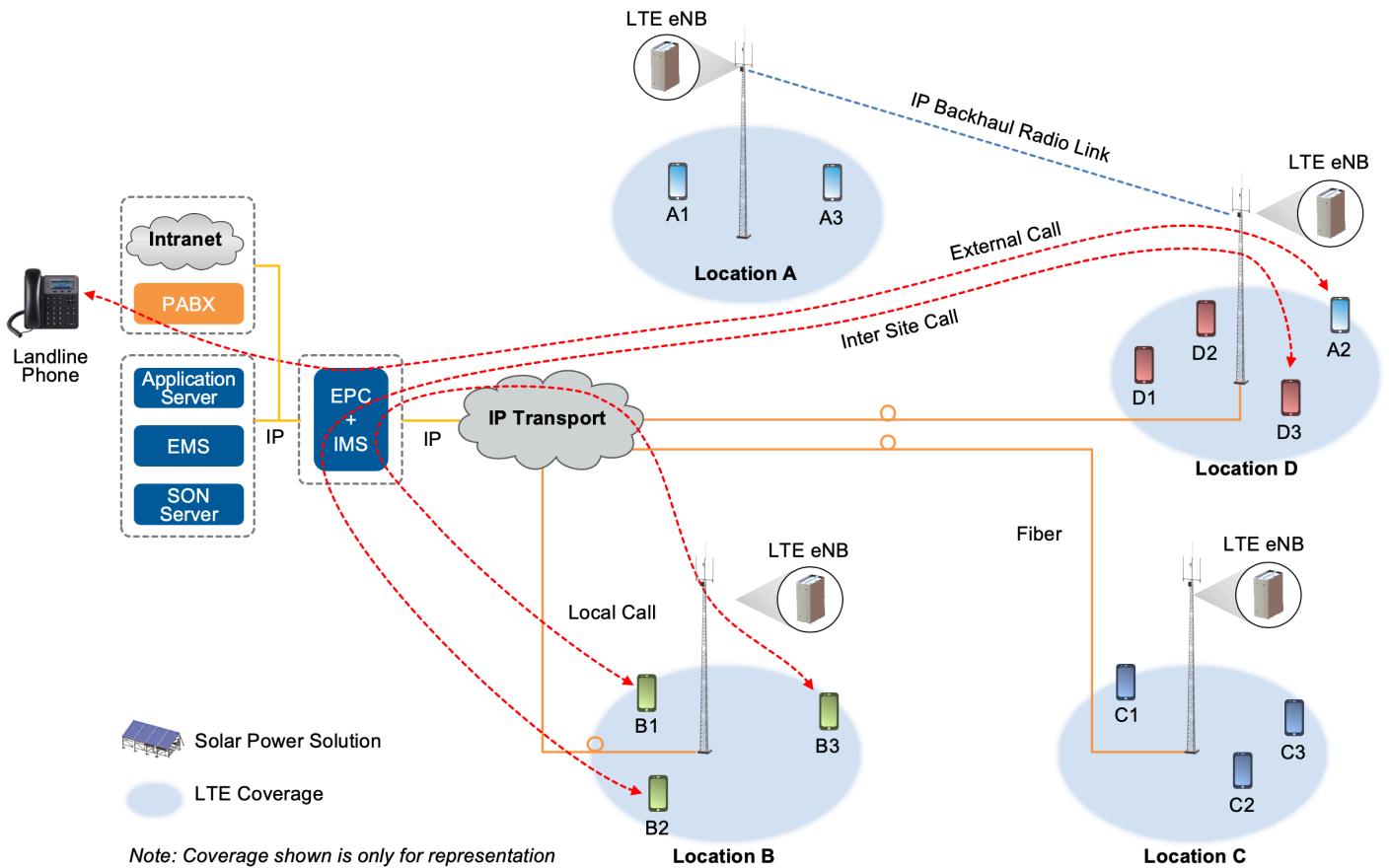
HIGHLIGHTS

- LTE network for high speed data
- Easy to install and integrate
- Full control - no dependency on commercial mobile networks
- Flexibility to design wireless network depending on data usage

APPLICATION DRAWINGS



LTE NiOB Deployment



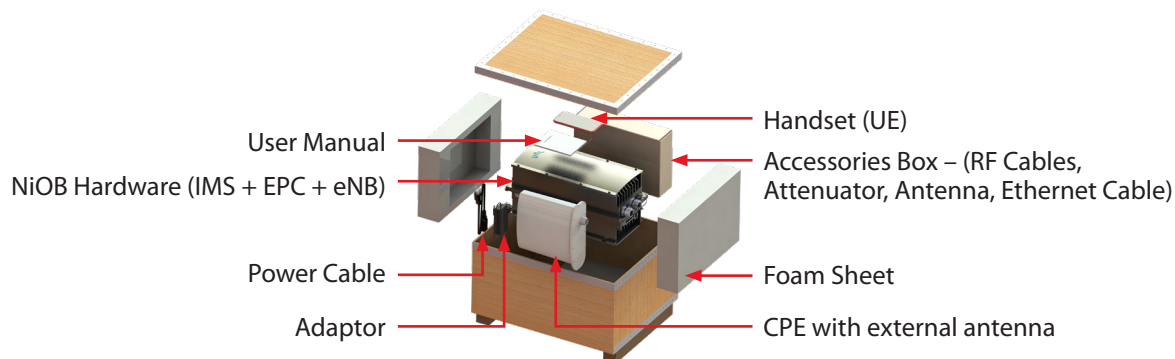
LTE Network Deployment

TYPICAL COVERAGE – 700 MHz with Different Height

LTE NiOB 2X1W (RURAL CLUTTER ,CELL EDGE DATA THROUGHPUT - 0.512 KBPS)							
	Scenarios	Height (m)	Type of Antenna	Antenna Gain (dBi)	UL Coverage (km)	DL Coverage (km)	Cell-Radius (km)
1	Table Top (Lab Setup)	1.0	Omni	0	0.14	0.16	0.14
2	Over Back of a Man	2.5	Omni	8	1.2	1.4	1.2
3	Tripod	3.4	Omni	8	1.3	1.6	1.3
4	Pneumatic Mast	4.3	Omni	8	1.4	1.7	1.4
5	Pneumatic Mast	4.7	Omni	8	1.5	1.8	1.5
6	Pneumatic Mast	4.3	Sector	16	2.3	2.7	2.3
7	Pneumatic Mast	4.7	Sector	16	2.4	2.8	2.4
8	Pneumatic Mast	12	Omni	8	2.2	2.7	2.2
9	Pneumatic Mast	15	Omni	8	2.5	2.9	2.5
10	Pneumatic Mast	12	Sector	16	3.6	4.3	3.6
11	Pneumatic Mast	15	Sector	16	4.0	4.8	4.0

CONFIGURATION MATRIX

	PACKING INCLUDES	Qty. - Configuration 1	Qty. - Configuration 2
1	LTE eNB Hardware	0	2
2	NiOB Hardware (IMS + EPC + eNB)	1	3
3	Handset (UE, CPE with External Antenna)	2, 1	6, 3
4	Editable Test SIMs	5	15
5	SIM Programmer	1	3
6	EPC Software	0	1
7	O&M Software CD	1	3
8	Power Cable & Adaptor	1	3
9	User Manual	1	3
10	Omni Antenna - 0 dBi	2	6
11	Omni Antenna - 8 dBi	2	6
12	Accessories – (RF Cables, Attenuator, Ethernet Cable)	1 Set	3 Sets



System Packaging

APPLICATIONS

1. IoT applications testing
2. Cellular security related research activities
3. LTE based applications research
4. LTE basic training
5. Location-based applications and services testing
6. LTE air interface training
7. High-speed data application testing

SALIENT FEATURES

1. **Quick and simple installation:** Easy to install; operational in a few minutes.
2. **Build your own service:** Build your own applications and services on multiple platforms like android and iOS. Test in real-time mobile broadband scenario.
3. **Multiple interconnect options:** Connect it with any VoIP server over standard SIP/RTP, with LTE as last-mile.
4. **Development enabler:** Use it to test a range of applications or scenarios that need a complete mobile network operator in a lab environment; IoT, or high-speed data applications, for example.
5. **Standards compliant:** All the network elements, collapsed interfaces and log messages are 3GPP complied.
6. **Open-source plugin:** Wireshark plugins for detailed message flows and contents.
7. **LTE configuration manual:** Check system level configuration to see changes in system behaviour (RF Output Power / EVM / MIMO etc).
8. **Add-on application server:** Offers 4-party video conference, group or one-to-one chat, file/image transfer, one-to-one voice and video call.

SPECIFICATIONS	
Technology	LTE
Bands	All 3GPP LTE Bands - TDD and FDD
Power Supply	48V DC
RF Output Power	2x1 W
Flexible Channel Bandwidth	5, 10, 15, 20 MHz
O&M	CLI, GUI, TR069
Antenna Ports	2x N-Female
Backhaul Port	RJ45: 1000BaseT, SFP (Optional): 1000BaseX
Network Scan Port	SMA-Female

SERVICES	PACKING INCLUDES	QTY.
UE Attach, Detach	NiOB Hardware (IMS + EPC + eNB)	1
Bearer Setup Default, Dedicated	Handset (UE, CPE with external antenna)	2, 1
Voice - VoLTE	Editable Test SIMs with SIM Programmer	5
Video - ViLTE	O&M Software CD	1
Data Connection	Power Cable & Adaptor	1
SMS	User Manual	1
Handover	Accessories – (RF Cables, Attenuator, Antenna, Ethernet Cable)	1 Set

For further information visit our website www.vnl.in



CORPORATE HEADQUARTERS

Vihaan Networks Limited
 21-22, Phase IV, Udyog Vihar
 Gurgaon 122 015, Haryana, INDIA
 Tel +91 124 265 7600

<http://www.vnl.in>

VNL logo is a registered trademark of Vihaan Networks Limited. Other product names, logos, and trademarks featured or referred to in this document are the property of their respective trademark holders. VNL assumes no responsibility for any inaccuracies in this document and reserves the right to revise this document without notice.

VNL-BR-Private LTE network for Educational Campus | 1st May 2020 | R1