

Empowered by Innovation

NEC

Long Term Evolution

LTE Solutions from NEC

Empowering the Next Generation of Mobile Networks

Users want more from mobile devices. LTE technology answers the call.

Worldwide demand for mobile data services is primed for explosive growth, fueled by rapidly improving quality and availability. Across the spectrum, consumers are demanding more from mobile. They want expanded services, richer multimedia experiences, easier access and greater personalization.

The key applications for the next generation of mobile users include person-to-person communications, content delivery, social networking, business services and mobile commerce.

To deliver these applications with the quality of service that customers expect, mobile networks must achieve higher performance. The prerequisites are high-speed, broadband-like access via mobile devices, delivered anywhere and at any time.

LTE (Long Term Evolution) is the best technology for mobile broadband networks because it is faster, simpler, more efficient and more cost-effective than other options. NEC is an industry leader in LTE. By increasing speed and expanding bandwidth, our LTE solution creates new services for end users and new opportunities for operators.

What end-users want from mobile evolution

Enhanced Experience with Mobile Broadband

Lower charges	Simple network connectivity
Ubiquity (Anywhere, Anytime, Any device)	Enhanced & varied services (more speed and reduced latency)

What mobile operators require for mobile evolution

Higher performance for end-users satisfaction

Data rate and latency	Higher data rate and capacity / Reduced latency for multimedia rich applications
Architecture	Greater simplicity, less protocol complexity
Mobility	Seamless handover ensuring service continuity with legacy systems
Lower Cost of Ownership	Reduced migration, CAPEX / OPEX, and protecting investments by reusing existing assets
Spectrum	Greater efficiency and flexibility

LTE : the logical next step for network operators

For network operators ready to embrace the future, the next logical step is LTE (Long Term Evolution). A worldwide technology standard adopted by 3GPP, LTE has the speed and performance to deliver a new generation of multimedia services at more than 100Mbps, while lowering costs for end-users and operators alike.

LTE enables delivery of compelling and profitable services based on emerging mobile technologies. It allows operators to differentiate themselves from competitors. The advantages of LTE result from highly efficient radio technology and a simplified all-IP network architecture featuring greater flexibility and scalability.

LTE offers :

Highly efficient radio technology

- Increased spectral efficiency and greater capacity
- Lower cost-per-bit and greater profit margins

Simplified all-IP network architecture

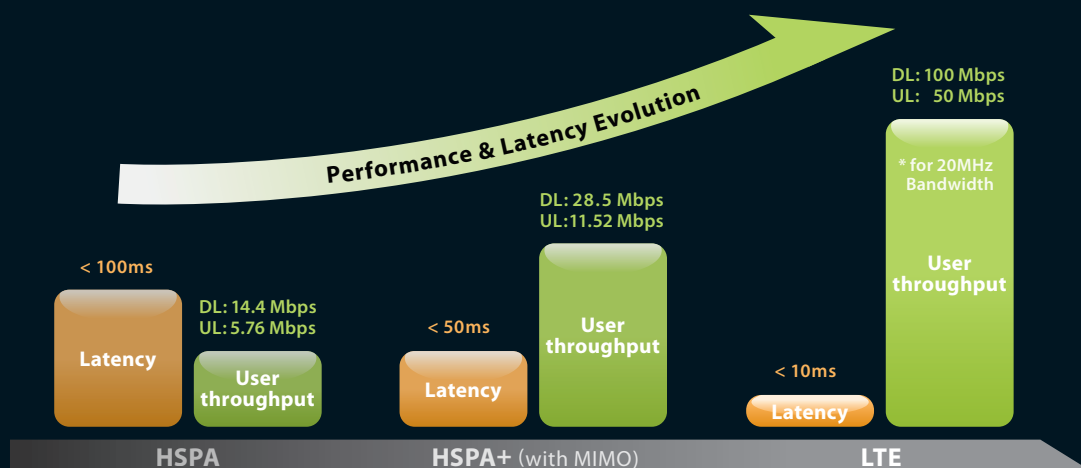
- Reduced service delay and improved end-user experience
- Easier network management
- CAPEX and OPEX savings

Flexibility and scalability

- Operation across various frequency bands and bandwidths
- Smaller initial deployments with ability to expand capacity as demand increases

Main Specification

Number of carrier / sector	3-6 sector per 1 carrier (5MHz - 20MHz)
RF bandwidth	1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
Number of transmission / receiving systems	Transmitting : 1 or 2 (Transmitter Diversity or 2x2 MIMO) Receiving : 2 (Receiving Diversity only)
Modulation scheme	DL : QPSK, 16QAM, 64QAM UL : QPSK, 16QAM
Maximum sector throughput	DL : 150Mbps (2x2 MIMO) 300Mbps (4x4 MIMO*) *Planning UL : 50Mbps
Synchronization	GPS and IEEE1588
Number of scheduled UE	200UE (5MHz) 400UE (10,15,20MHz)
Number of RRC Connected UE	1000 users per base band unit
Power consumption	MDE : 200W or lower
Weight	MDE : 5kg or lower
Redundancy architecture	Cold Redundancy



Win-win scenario for operators and end-users

NEC's LTE solutions are based on world-class expertise, technical leadership and integration skills across all relevant technologies. We provide high-capacity, secure, reliable, and cost-effective LTE networks that deliver significant benefits to operators and end-users alike.

Operator benefits :

Investment protection

- Reuse of existing assets
- Products that facilitate roll-out of future features
- Smooth migration and installation for existing and new customers

Improvements in coverage & capacity

- Modular products and solutions can be deployed according to capacity and coverage requirements
- Greater flexibility in frequency allocation
- Greater efficiency in spectrum utilization

Increase in revenues

- Deploy services at lower cost with better user experience
- Deliver richer multimedia services based on higher throughput and minimum latency
- Enhanced support for end-to-end QoS

CAPEX & OPEX reduction

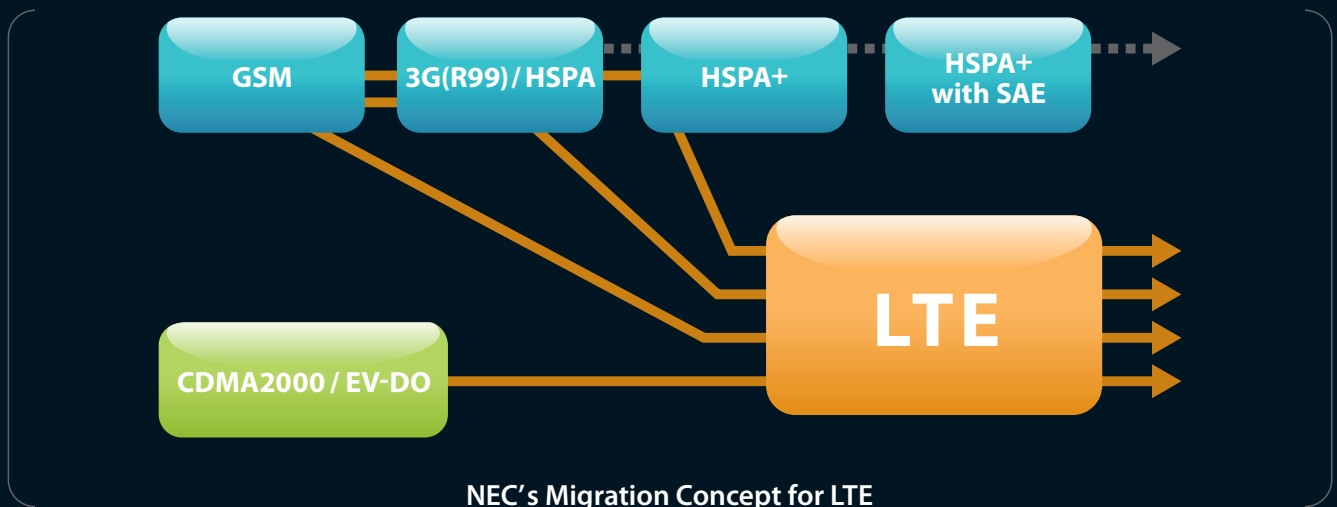
- Reduced cost-per-bit
- More flexible usage of existing and new frequency bands
- Simplified architecture; open interface
- Seamless inter-operation with 3GPP and non-3GPP networks

End-user benefits :

Better experience, better services

- End-users enjoy stress-free mobile broadband that rivals fixed broadband services
- More advanced services suit end-user needs, expectations and lifestyle

Optimum hardware/software solutions for your business needs



NEC's LTE solutions provide an extremely flexible platform that offers operators smooth, simple and seamless migration from their existing networks. We offer you many options in moving forward and choosing the optimum hardware/software deployment for your business needs.

NEC is committed to providing LTE solutions that require minimal disruptions and leverage our customers' existing network assets. Our complete range of technologies gives operators a broad choice of LTE migration scenarios.

Small, fast, and green

Flexible deployment to meet your installation needs

We offer various types of modules engineered for easy, flexible, and cost-effective installation in your existing network.

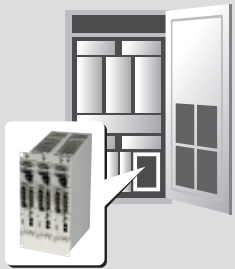
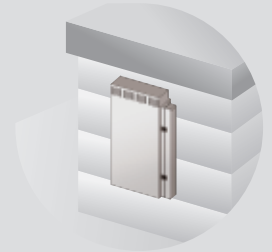


Stand-alone

- Indoor environment
- Mount on 19 inch rack or wall

Outdoor

- Mount on outdoor shelter
- Pole, wall and stand-mounting

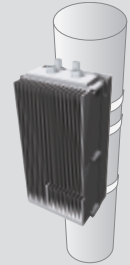


Migration

- For current Node-B / BTS
- Mount on existing rack / shelter

Multi-standard RE (Radio Equipment)

- Support both 3G (W-CDMA, CDMA) and LTE technologies
- Support up to 20MHz of spectrum bandwidth
- CPRI interface



Green solution

- Reduce power consumption by 25% compared with previous NEC products (NB880 / NB881)

Upgrade from existing 3G solution

- Expand functions via economical SW upgrades (e.g. RRH, UL MIMO, DL 4x4 MIMO, DL64 QAM / UL16QAM, etc.)

3GPP-compliant

- Interconnectivity to third-party solutions for SAE and LTE terminals
- Secure and reliable system



NEC's LTE Demonstration Center

The center enables NEC to demonstrate high quality, end to end LTE systems that are comprised of subscriber terminals, core networks, application servers and wireless access products, such as compact base stations and remote radio equipments.

NEC leading the industry in LTE

NEC is a world-leader in wireless networking. Since providing the world's first 3G network in 2001, NEC has developed and deployed some of the world's most advanced wireless networking solutions.

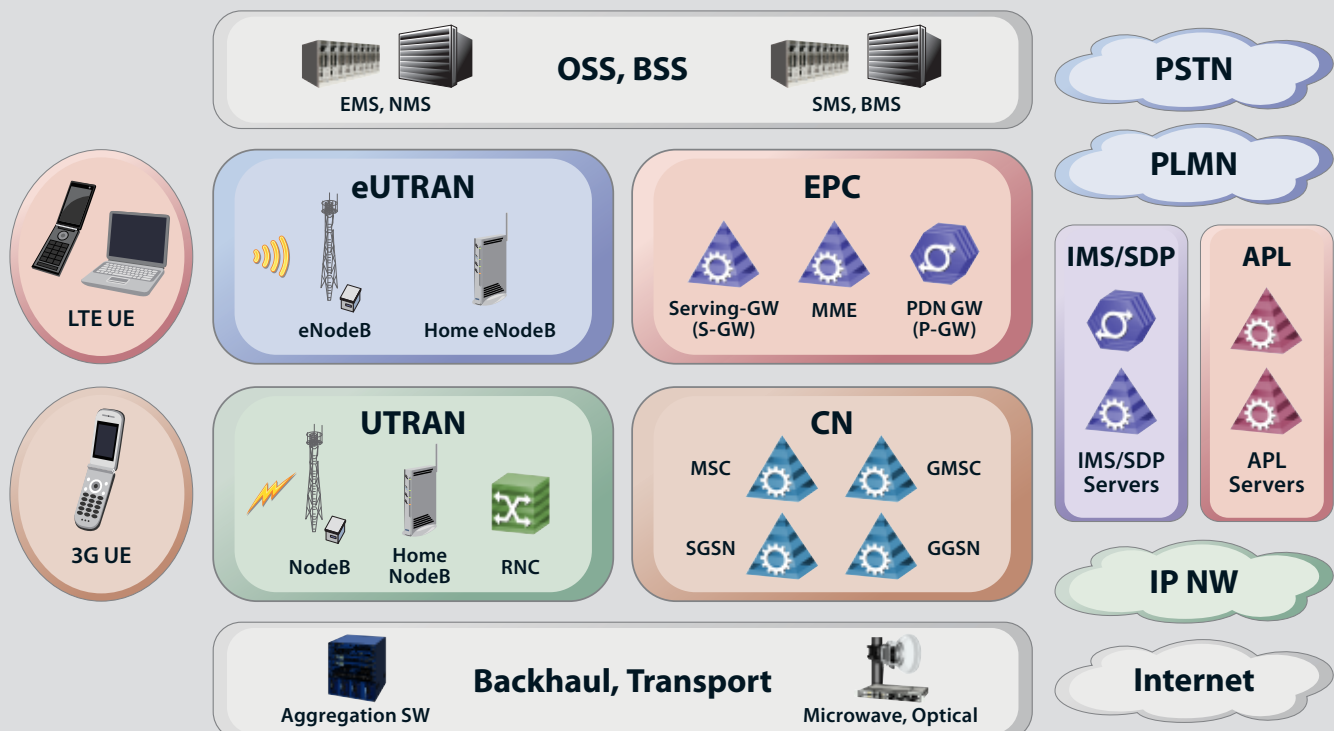
As a leading participant in the 3GPP group that developed the LTE standard, NEC is committed to LTE solutions that feature the highest levels of quality, scalability and interoperability. Our deep involvement in the standardization process is demonstrated by the fact that approximately 40 members and two vice-chairman of 3GPP come from NEC.

NEC is also contributing to various other groups working to develop and promote international LTE standards including;

- LSTI (LTE / SAE* Trial Initiative) *SAE: System Architecture Evolution
- NGMN (Next Generation Mobile Networks)

Joining with other industry leaders in LTE development, NEC has announced a mutual commitment to a framework for establishing more predictable and transparent maximum aggregate costs for licensing intellectual property rights (IPR) relevant to 3GPP LTE / SAE standards.

NEC's LTE End-to-End Solution

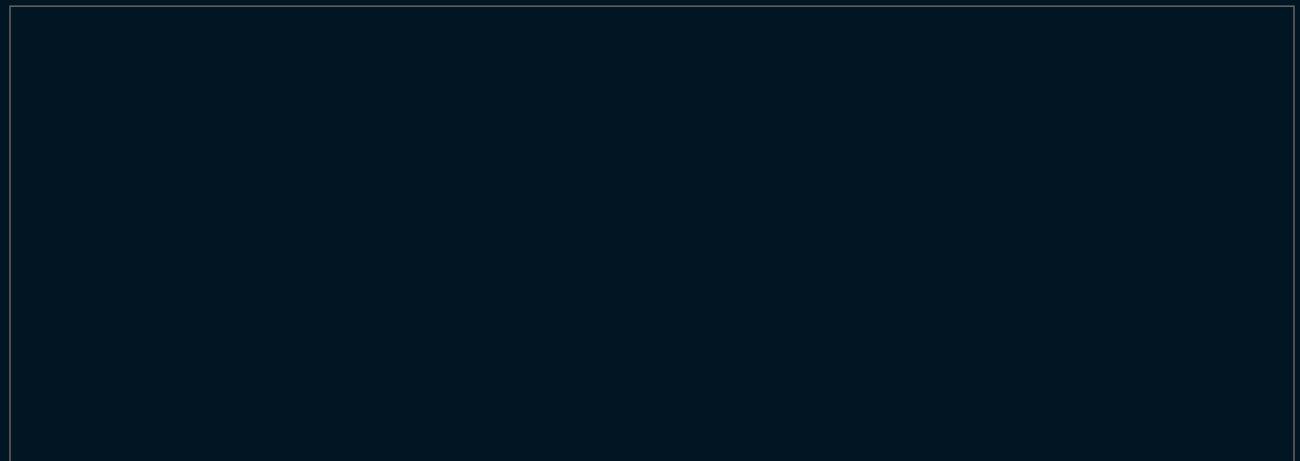


NEC Corporation

7-1, Shiba 5-chome, Minato-Ku, Tokyo 108-8001, Japan

Phone : +81-(0)3-3454-1111 Fax : +81-(0)3-3798-1510

www.nec.com/nsp/lte



* The products listed in this brochure are subject to design, specification and other changes for the purpose of improvement without advance notice.