

Alcatel-Lucent delivers the magic of 4G LTE with the industry leading end-to-end solution

Alcatel-Lucent is the end-to-end LTE solution partner of mobile service providers worldwide with the industry most comprehensive offer:

- **Leading end-to-end solution to create new business models and unique end-user experience profitability**
- **Offer unique end-user experience cost-effectively with a scalable, smart and efficient network harnessing the best of wireless and IP**
- **Unlock new revenue streams and innovative business models with a rich and open ecosystem of devices, applications and content**
- **Accelerate mobile network evolution to all-IP while mitigating risk with field-proven business and network transformation services**

Alcatel-Lucent is a global leader in LTE

Having been selected so far by fourteen customers for commercial deployments -- including two of the world's largest service providers -- and being involved in over 60 trials worldwide, Alcatel-Lucent has established a strong leadership position in Long Term Evolution (LTE).

- Our **strong top 2 position** in the market includes contracts for commercial deployments with Verizon Wireless and AT&T in the US, Etisalat in UAE and market pilot with Vimpelcom/Kartel in Kazakhstan.
- Alcatel-Lucent's LTE solution is also being trialed by major service providers such as Cox and nTelos (US) Telefonica (Spain), FT/Orange, Bouygues Telecom, SFR, (France), Telecom Italia (Italy), Singtel and China Mobile (Asia Pacific), STC (Saudi Arabia), MTS (Ukraine), Telenet (Belgium), Chunghwa Telecom (Taiwan), TEN (Texas), Vodafone Qatar, Arquva (UK)
- Almost half of our trial customers are non traditional 2G/3G customers of Alcatel-Lucent.
- Trials are being conducted in both FDD and TDD spectrum in all the major frequency bands.
- NTT DOCOMO also selected Alcatel-Lucent to build the mobile backhaul network to support its LTE service in Japan.
- Alcatel-Lucent is leading efforts to bring mission-critical communications to Public Safety. Alcatel-Lucent was first to join the Public Safety Communications Research (PSCR) demonstration network program, providing a Band 14 LTE network test bed for interoperability.
- Alcatel-Lucent was the first network supplier to showcase a commercial grade LTE network operating in the 700MHz Band 14 spectrum and to work on the development of an LTE ecosystem of devices and applications in support of public safety.
- Alcatel-Lucent is the first infrastructure provider to be a member of the APCO International Broadband Committee. The company is also a member of the Federal Communications Commission (FCC) Public Safety Advisory Committee (PSAC)

Alcatel-Lucent delivers a rich All- IP End-to-End LTE solution enabling next-gen wireless broadband Quality of Experience (QoE) and fostering new business model opportunities for Service Providers

Alcatel-Lucent's end-to end all-IP network includes LTE-enabled radio access powered by our expertise in Software Define Radio (SDR) and OFDM/MIMO, a converged 2G, 3G and LTE/4G wireless packet core, an all-IP mobile transport solution, together with an open, powerful Service Delivery Environment including a comprehensive and field-proven IMS solution, and transformation services.

- **LTE-enabled converged radio access:** Smooth evolution, maximum asset re-use and performance with zero-footprint, software-defined, self-optimizing **eNodeB that will be complemented and further enhance with recently announced lightRadio portfolio of equipment.**
- **IP-enabled mobile transport:** High-performance, service-aware, all-IP **packet core** with advanced QoS and best-in-class scalability for wireless user plane (based on the 7750 Service Router) and control plane (based on the ATCAv2 platform), with dynamic mobility and policy management.
- **Wireless Packet Core:** Service-aware **Packet Core** with advanced QoS and best in class scalability for dynamic IP, mobility and policy management, based on proven world class 7750 SR platform.
- **Integrated end-to-end network management:** for end-to-end service aware management across radio access, core and backhaul/transport domains.
- **Service Delivery Environment:** Open and field-hardened SDE including **IMS Service Delivery Platform** to efficiently blend telecom with web 2.0, enabling rich multi-media applications regardless of access technology.
- **LTE transformation services:** Alcatel-Lucent's service-driven support and integration helps our customers operationalize LTE so they can accelerate their time-to-market, maximize LTE revenue and minimize total cost of ownership (TCO).

Alcatel-Lucent is the unique end-to-end partner selected by Verizon across all strategic areas of their LTE network: Radio Access, Evolved Packet Core, IP Multimedia Subsystem (IMS) and backhaul solution.

Alcatel-Lucent has grown to become the trusted transformation partner to its customers for a smooth evolution toward LTE:

- We are helping mobile network operators transition to a more open business model with the introduction of our Application Exposure Suite and Open API Service, which are both part of our application enablement vision founded on our High Leverage Network™ architecture
- We are facilitating the introduction of new mobile applications through our ng Connect program
- We leverage IP transformation practices from over 70 major IP network transformations and integrate them with an end-to-end network solution and an open ecosystem to ensure the smoothest possible evolution toward LTE.

Leveraging our trusted leadership in broadband IP Transformation and Network Integration Services

We offer a variety of services to support our customers' network, operations, and service delivery as they move to a new all-IP wireless network. We deliver a complete portfolio of wireless transformation services that range from strategic business consulting to network quality and optimization, integration and migration, and managed services, all built around a unique wireless IP transformation methodology and tools developed by Bell Labs:

- **LTE Consulting** which focuses on areas of operations transformation, life cycle management, backhaul assessment, and technical assessment
- **Systems Integration** which helps streamline solutions architecture and program management methodology, technical services, and lab facilities ensuring services successful deployment of the LTE migration and/or overlay
- **Network Design and Optimization**- End to end as well as subsystem level design and optimization services to realize the operational promise of self organizing networks. Alcatel-Lucent's optimization portfolio includes capacity planning, assessment and QoE services, and
- **Managed Services** such as outsourcing, build, operate, and manage

Our Transformation and Integration Services are supported by four global **IP Transformation Centers** for pre-integration, testing, and migration services to reduce the cost of network transformation and minimize disruptions to the network. Coupled with our wireless service experience, we are in a unique position to accompany operators in their End-to-End network migration.

Fostering a rich and open LTE ecosystem for innovative services and business models

- Choosing Alcatel-Lucent means benefiting from our market research, business modeling and go-to-market services. It also means benefiting from our application exposure suite and open API services and platforms for innovative applications, and having full access to ng Connect, an industry program

founded by our company to drive an advanced and open LTE ecosystem of devices, content and application partners. With ng Connect, wireless broadband operators benefit from open innovation, reduced time to market with solution concepts and LTE-enabled devices, and the ability to drive innovative business models. More about ng Connect program: <http://ngconnect.org/>.

- Alcatel-Lucent is also actively involved in market-leading ecosystem initiatives including Verizon LTE innovation lab and AT&T ecosystem program.
- The company has conducted 4G LTE primary research of 1000s of consumers and corporate users to identify key applications for revenues and differentiation. Findings of an extensive pan-European study show that European consumers and businesses are ready for LTE applications: European telecommunications operators could increase consumer revenues by as much as 10 percent, and enterprise revenues by nearly 30 percent as the adoption of LTE technology matures. (Read the press release)
- We have strategic cooperation with most of LTE device and chipset providers to ensure networks, devices, and associated services are tested and up-to-speed for early trials and commercial operation, with quality of performance and user experience assured.

LTE technology and solutions from the industry's innovation powerhouse

Alcatel-Lucent delivers innovation

- Alcatel-Lucent Bell Labs and Alcatel-Lucent R&D have world-renowned breadth, depth, diversity and reach, enabling leading-edge innovation and product development.
- Alcatel-Lucent Bell Labs engineers invented MIMO and pioneered the development of OFDM
- Alcatel-Lucent has 27,600 active patents spanning a variety of technologies with a large number of them around LTE
- Alcatel-Lucent Bell Labs is conducting advanced research in Self Organizing Networks (SON), which allow “plug & play” configuration and optimization for easy network introduction & operation; Alcatel-Lucent eNodeB and 3G femto deployed already integrate SON.
- Alcatel-Lucent is a leader in Intelligent Traffic Management solutions. ITM allows operators to understand the new breed of broadband traffic that wireless networks face, while dynamically identifying and addressing anomalous events that could impact the subscribers' Quality of Experience (QoE).
- Alcatel-Lucent Bell Labs is conducting advanced research on eco-innovation for telecom equipment. The company is driving a comprehensive eco-sustainability communications transformation program: <http://Green-Touch>
- Alcatel-Lucent scored three first-place wins in the CTIA E-Tech Awards presented at International CTIA Wireless 2010®; 1) Alcatel-Lucent's LTE Small Cells In-Building Solution - the world's first LTE Pico Cell in-building solution; 2) The Alcatel-Lucent 7750 SR, the cornerstone of Alcatel-Lucent's Wireless packet core solution; 3) the LTE-enabled HumanKiosk™, developed with ng Connect Program member MediaTile, a leading provider of cellular provisioned digital signage.
- Alcatel-Lucent Bell Labs already performed LTE-Advanced (full 4G) trials in 2009 in Berlin with CoMP feature.
- On February 2011, Alcatel-Lucent unveiled lightRadio innovative approach and radio portfolio. LightRadio is a total solution including 2G,3G, 4G LTE and small cells managed as one and supporting multiple frequencies simultaneously, that strongly helps put data capacity where needed in the network and optimize global TCO.

Alcatel-Lucent has significant field experience with next-generation technologies

- We are undisputed leaders in flat IP architecture (#1 in IP access) with unique expertise in Wireless IP transformation and integration for network optimization (200+ mobile network migrations)
- We have OFDM and MIMO field experience, thanks to our strong WiMAX experience
- We participate in two of the largest LTE deployments worldwide with Verizon and AT&T. We have unparalleled field experience with our 58 trials which span TDD, FDD and all major LTE frequency bands
- We have unparalleled experience in customer transformation and migrations with 200+ mobile network migrations, 50+ mobile backhaul integrations, 70+ IP wireline transformations, +200

network assessments and optimization and 50+ operations transformations and 100k IMS subscriber migrations per week

Alcatel-Lucent is heavily contributing to LTE ecosystem development

- Leading role in defining 3GPP LTE specifications
- Leader in the LTE/SAE trial initiative (LSTI)
- Working in collaboration with Next Generation Mobile Networks Alliance (NGMN)
- LTE trials in operation since Q4 2007, covering LTE FDD and TD-LTE modes and all major LTE frequency bands
- Fostering the development of a robust LTE ecosystem and innovative new business models with the ng Connect Program.

Alcatel-Lucent has a long history of key technical firsts and major achievements in LTE, including:

- April 2011: Alcatel-Lucent demonstrated powerful field LTE trial results with Chunghwa Telecom Laboratories
- March 2011, Alcatel-Lucent was the first to achieve interoperability testing with terminal vendors for MIIT and CMCC and was first to announce it has been selected by China Mobile for the world's largest TD-LTE trial in China.
- March 2011: Altair Semiconductor and Alcatel-Lucent Jointly Deliver LTE Band Class 12 Solution in North America
- Feb 2011: Etisalat Commences Region's First and Widest LTE Network Rollout in the UAE, signs deal with Alcatel-Lucent
- Feb 2011: Alcatel-Lucent to conduct world's first live public demonstration of LTE technology for Utilities at DistribuTECH
- Feb 2011, Alcatel-Lucent introduced lightRadio, an entirely new product category for delivering mobile broadband access in support of a radical redesign of the mobile network architecture. The new architecture that will double the capacity of LTE at ½ the cost per bit. This gives operators a powerful tool with which to reach the mass market. More capacity at a significantly lower cost is paramount for an operator to be able to address this market segment.
- Dec 2010: Trials with Arqiva in West Wales demonstrates the ability of LTE technology to deliver high-speed broadband to rural communities. Network can deliver speeds of over 50Mbit/s using Neutral-host business model represents an economic means of delivering broadband to the last digitally excluded 10% of UK households.
- Nov.2010: Alcatel-Lucent wins three awards at LTE North America, recognizing excellence in LTE
- Oct 2010: VimpelCom Group and Alcatel-Lucent launches first live market pilot of LTE in 700MHz band in Kazakhstan
- Oct 2010: Alcatel-Lucent is the first to go live in the Public Safety Communications Research emergency communications demonstration network
- Oct 2010: Alcatel-Lucent and Alexandria Police Department present US first Public Safety Broadband spectrum LTE demonstration. [See the video](#)
- Oct 2010: Alcatel-Lucent moves into #1 position in worldwide IP mobile backhaul market and enhances portfolio for 'all IP' wireless transformation
- Sept 2010: Alcatel-Lucent made world's first data call over LTE network operating within public safety broadband spectrum.
- July 2010: Alcatel-Lucent and EADS Defense & Security demonstrated a public safety industry first at APCO conference: interoperability between a live broadband LTE wireless network and digital land mobile radio (LMR) commonly used by local police, fire departments and other emergency responders.
- June 2010: Alcatel-Lucent collaborates with Innofidei and ASTRI to complete the first high-definition video call over China Mobile's TD-LTE network at World Expo
- May 2010: Alcatel-Lucent LTE technology supports world's first live, on-deck video coverage of prestigious sailing race.
- April 2010: Ixia and Alcatel-Lucent Break the 100 Gigabit per Second Barrier for LTE Evolved Packet Core Mobile Gateways
- March 2010: Alcatel-Lucent receives Verizon Supplier Excellence Award.
- March 2010: Alcatel-Lucent introduced its all IP converged Ultimate Wireless Packet Core to help service providers address the explosion of mobile data services on 3G and emerging LTE networks.

- February 2010: Alcatel-Lucent introduced new converged radio technology that lets mobile service providers smoothly support any mix of 2G, 3G and 4G/LTE on the same network - The new multi-technology radio module based on software defined radio (SDR) can be introduced in more than 700,000 Alcatel-Lucent base stations already shipped worldwide, enabling a gradual shift from GSM to W-CDMA and LTE (Feb. 4, 2010).
- February 2010: Alcatel-Lucent achieved record speeds on World Expo China 2010 TD-LTE network deployed for China Mobile- Peak rates of more than 80Mbps downstream, using a single 20MHz spectrum band to accommodate both upstream and downstream traffic
- Jan 2010: Alcatel-Lucent highlighted the future of mobile broadband with live demonstrations of Long Term Evolution (LTE) and European debut of the ng Connect “LTE Connected Car”
- Jan 2010: Alcatel-Lucent and LG Electronics complete a live handoff of an end-to-end data call between Long Term Evolution (LTE) and CDMA networks
- Nov 09: Alcatel-Lucent completed the world’s first data call on a live LTE network in the 800 MHz “European Digital Dividend” spectrum band
- Oct 09: First live field test of CoMP technology (improves LTE performance and QoE) for LTE-advanced in Berlin
- Aug 2009: Alcatel-Lucent was the first vendor to receive FCC certification for LTE base stations for the 700 MHz spectrum band

Alcatel-Lucent’s LTE solution de-risks network evolution and optimizes expenditures

Benefit from a CAPEX-contained deployment, with LTE from Alcatel-Lucent

- We offer a smooth and cost-effective LTE introduction thanks to our converged portfolio of solutions.
- Our converged RAN strategy enables a maximum re-use of 2G/3G deployed equipment, thanks to SDR technology (Software Defined Radio). In addition, the Alcatel-Lucent RRH (Remote Radio Head) family is a best in class 2-radio RRH, zero-footprint solution with the best Power vs Weight ratio in the industry.
- Our converged flat-IP service-aware network includes a rich-IP Ultimate Wireless Packet Core (UWPC 2G/3G/LTE) with advanced QoS & best-in-class scalability for dynamic IP, mobility and policy management
- Our IP transport solution is an All-IP, High QoS, flexible and integrated solution for converged cost-efficient ANY-G backhaul
- Our integrated end-to-end network management provides end-to-end service-aware management across radio access, core and backhaul/transport domains.
- Our Service Delivery Environment includes a leading and comprehensive IMS solution for rich communication services creation, management and evolution.

Reduce OPEX, with LTE from Alcatel-Lucent

- Our unique Converged RAN solutions support the delivery of a wide variety of new wireless broadband services while simultaneously reducing power consumption - and carbon footprint -- and lowering operating costs
- Our Management system leverages Alcatel-Lucent’s comprehensive field-proven wireless common OAM applications (Single operational experience for 2G-3G-4G wireless network, Single-point first-alert and service assurance, including true end-to-end IP/MPLS service management)
- Our xSON solution is a multi-technology suite of global innovative tools and solutions to maintain outstanding network Quality in an automated or assisted manner both during the deployment and growth phases of a network (xSON is part of Alcatel-Lucent’s global HLN strategy)
- ALU Prime Integrator Methodology eliminates legacy network OPEX 40% faster, Operations transformation delivers \$14m savings in service fulfillment
- Reduced costs with the right managed outsourcing model for your business : Alcatel-Lucent is #2 Globally in Overall Managed Services and Outsourcing market share and in Wireless Networks Managed Services and Outsourcing market share
- Our solution includes a comprehensive range of capacity/performance monitoring/optimization tools and services (Wireless Network Guardian, PCMD-per call measurement data, Network Performance Optimizer...) and is complemented by a workforce of more than 800 experts worldwide.

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**Get more information about Alcatel-Lucent's LTE;
<http://www.alcatel-lucent.com/lte>**

**Get real-time information about LTE with LTE Buzz desktop widget:
<http://www.alcatel-lucent.com/lte/buzz>**

Press Announcements related to Alcatel-Lucent LTE

Q1 2011

- April 21: Chunghwa Telecom Laboratories and Alcatel-Lucent empower Taiwan to enter the global 4G LTE market
- April 7: nTelos Wireless and Alcatel-Lucent complete field trial of end-to-end 4G LTE network
- March 24: Alcatel-Lucent to help China Mobile deploy world's largest 4G TD-LTE end-to-end trial network
- March 23: Alcatel-Lucent's lightRadio™ receives first place award in 2011 CTIA E-Tech Competition honoring emerging mobile technologies
- March 22: Altair Semiconductor and Alcatel-Lucent Jointly Deliver LTE Band Class 12 Solution in North America
- March 17: [Media Alert] Morgan Wright, Vice President, Global Public Safety Segment at Alcatel-Lucent joins the APCO International Broadband Committee
- Feb 17: [MWC] abertis telecom and Alcatel Lucent collaborate in the development of tv web services based on LTE technology
- Feb 16: [MWC] [Audi Press Release] Audi A8 with broadband Internet connection
- Feb 16: [MWC] [Altair Press Release] Alcatel-Lucent and Altair Semiconductor enable TD-LTE solutions for emerging markets
- Feb 16: [MWC] [Sequans Press Release] Alcatel-Lucent and Sequans join forces to accelerate development of global LTE ecosystem
- Feb 15:[MWC] Etisalat Commences Region's First and Widest LTE Network Rollout in the UAE, signs deal with Alcatel-Lucent
- Feb 15: [MWC] Alcatel-Lucent and China Mobile together with Audi to bring the magic of LTE to the streets of Barcelona
- Feb 14: [MWC] Alcatel-Lucent IMS- and 4G LTE-based network supports over-the-air VoLTE demonstration using pre-commercial smartphones
- Feb 14: [MWC] Verizon Wireless and Alcatel-Lucent Show Live 4G LTE Multi-Continent Gaming Over Commercial 4G LTE Network from Mobile World Congress
- Feb 1st: [Media Alert] Alcatel-Lucent to conduct world's first live public demonstration of LTE technology for Utilities at DistribuTECH
- Jan 27: [Media Alert] Alcatel-Lucent adds LTE TDD technology to its LTE Test Center in Stuttgart
- Jan 18: [Media Alert] Ukraine, January 18, 2011 - Alcatel-Lucent demonstrates LTE capabilities for Ukraine Prime Minister
- Jan 5: Alcatel-Lucent to demonstrate LTE-enabled video communications services with Verizon Wireless at CES

Q4 2010

- Dec. 10: [Media Alert] Alcatel-Lucent under the aegis of National Communication Regulation Commission demonstrated LTE capabilities in Ukraine
- Dec. 8: [Arqiva Press Release] Arqiva and Alcatel-Lucent trial LTE for rural broadband in UK
- Dec. 7: Vodafone Qatar and Alcatel-Lucent showcase innovative solutions and deliver enhanced coverage while blending into city skylines. Furthermore they performed the first live demonstration of the LTE technology in Qatar.
- Dec. 5: [Verizon Wireless Press Release] Blazingly Fast: Verizon Wireless Launches The World's Largest 4G LTE Wireless Network On Sunday, Dec. 5
- Nov. 16: Alcatel-Lucent wins three awards at LTE North America, recognizing excellence in LTE
- Nov. 16: America Movil selects Alcatel-Lucent IP/MPLS mobile backhaul solution to deploy next-generation mobile services in Latin America
- Nov. 11: [Media Alert] ANTEL & Alcatel-Lucent showcase 4G LTE mobile technology in Uruguay
- Nov. 11: [Media Alert] Alcatel-Lucent successfully completed the first phase of SingTel Group LTE trial (nice media coverage)
- Nov. 4: Verizon Wireless awards Alcatel-Lucent contract expected to be worth US\$4 billion for ongoing 3G network expansion and LTE build out
- Nov. 4: China Mobile, China Telecom and China Unicom to sign 1.178 billion Euros framework agreement with Alcatel-Lucent
- Oct. 26: VimpelCom Group and Alcatel-Lucent launches first live market pilot of LTE in 700MHz band in Kazakhstan
- Oct. 25: Alcatel-Lucent leads way to achieving US nationwide public safety LTE broadband network
- Oct. 20: Alcatel-Lucent primary research shows that European consumers and businesses are ready for LTE applications
- Oct. 20: Chunghwa Telecom Laboratories cooperate with Alcatel-Lucent for end-to-end LTE trial in Taiwan
- Oct. 18: Alcatel-Lucent moves into #1 position in worldwide IP mobile backhaul market and enhances portfolio for 'all IP' wireless transformation
- Oct. 17: [Media Alert] Alcatel-Lucent unveils for the first time in the Middle-East the ngconnect Program's "LTE Connected Car" to highlight the future of mobile broadband in a live network
- Oct. 15: [Media Alert] Alcatel-Lucent and Alexandria Police Department present US first Public Safety Broadband spectrum LTE demonstration. **See the video**
- Oct. 6: [Verizon Wireless announcement] Verizon Launches 4G LTE In 38 Major Metropolitan Areas By The End Of The Year

See also ng Connect Program related news:

<http://www.ngconnect.org/news/index.htm>

Alcatel-Lucent Press Contacts: Christine.de_monfreid@alcatel-lucent.com -- Tel: +33 1 30 77 59 14