

Alcatel-Lucent End-to-End 4G Long Term Evolution Solution



Deliver the magic of 4G LTE™ with
the leading end-to-end solution





The Alcatel-Lucent End-to-End 4G Long Term Evolution (LTE) Solution is the industry's most comprehensive answer to unleashing wireless broadband innovation. Our industry-leading solution enables a foundation for increased revenue, reduced costs, and increased efficiency. The Alcatel-Lucent End-to-End 4G LTE Solution provides an integrated, pre-tested, end-to-end Long Term Evolution (LTE™) network; it offers an open ecosystem of devices, content and application partners, and transformation and integration services. Our goal is to deliver a unique user experience with a scalable, smart and efficient network that harnesses the best of wireless and IP, and evolves to a profitable, open, web-based business model.



Capturing the Wireless Broadband Opportunity

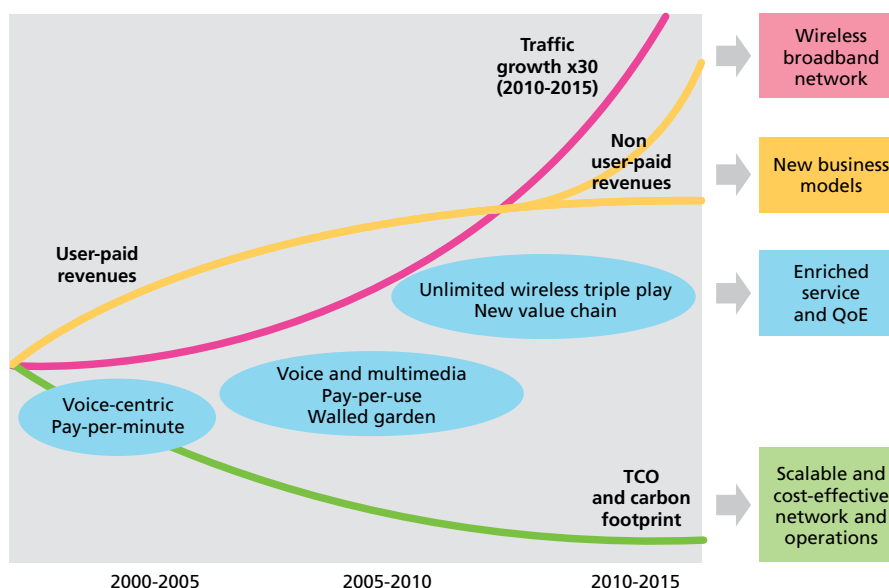
The wireless market is reaching a tipping point, driven by consumer demand for a seamless multimedia experience, an increasingly diversified competitive landscape, exponential traffic growth, and flattening subscription revenues.

In the wireless market:

- Mobile data usage continues to surge. It is fueled by the success of Third Generation (3G)-enabled laptops, ultra-mobile personal computers (PCs) and smartphones, and online video and social networking applications.
- End users are demanding enriched, personalized services with a guaranteed Quality of Experience (QoE).
- Subscriber growth rates are slowing and traditional user-paid revenues are flattening.

To address these challenging market conditions, you need an innovative business model that generates additional revenue from content providers, application providers, and other new sources. Supported by our next-generation wireless broadband network, you'll benefit from the vast scope, breadth, and potential offered by Alcatel-Lucent's Fourth Generation (4G) LTE technology. While reducing your total cost of ownership (TCO), you'll be able to address the skyrocketing demand for bandwidth and improved QoE.

Figure 1. Next-generation wireless broadband requires new business models, services and infrastructure



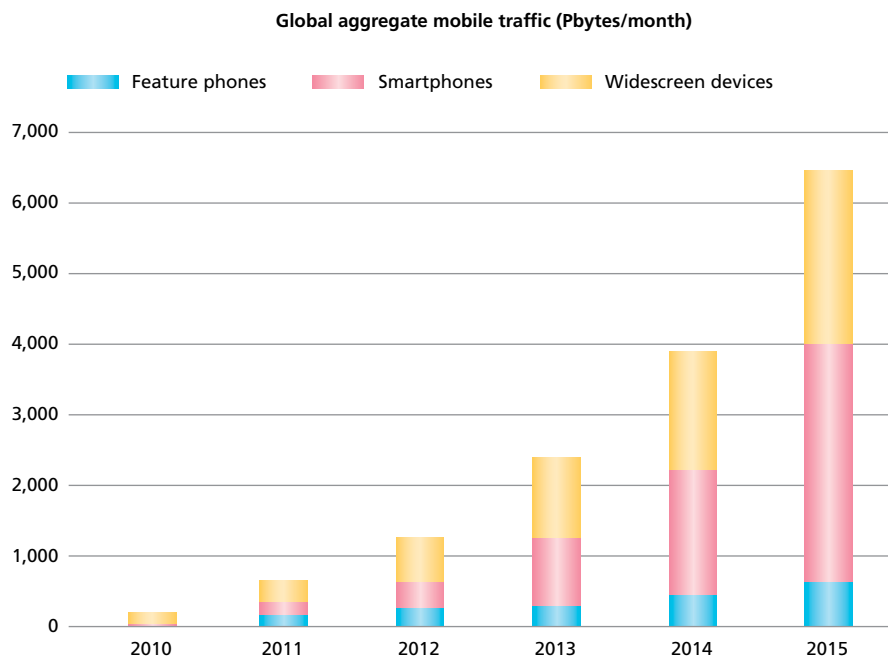
Alcatel-Lucent End-to-End 4G LTE Solution specialists pre-integrate and test an open ecosystem of applications and devices with our industry-leading all-IP service delivery network. The capabilities of our service-aware all-IP LTE network will help you deliver multi-megabit sessions with personalized QoE.

Our service delivery environment and application enablers allow you to capitalize on your assets, such as subscriber profiling and billing, to drive new service creation. This combination of openness and service intelligence

allows you to monetize your investment and subscriber base. These new capabilities help you deliver new mobile broadband service innovations at a reduced cost per megabit for a sustainable, profitable business model.

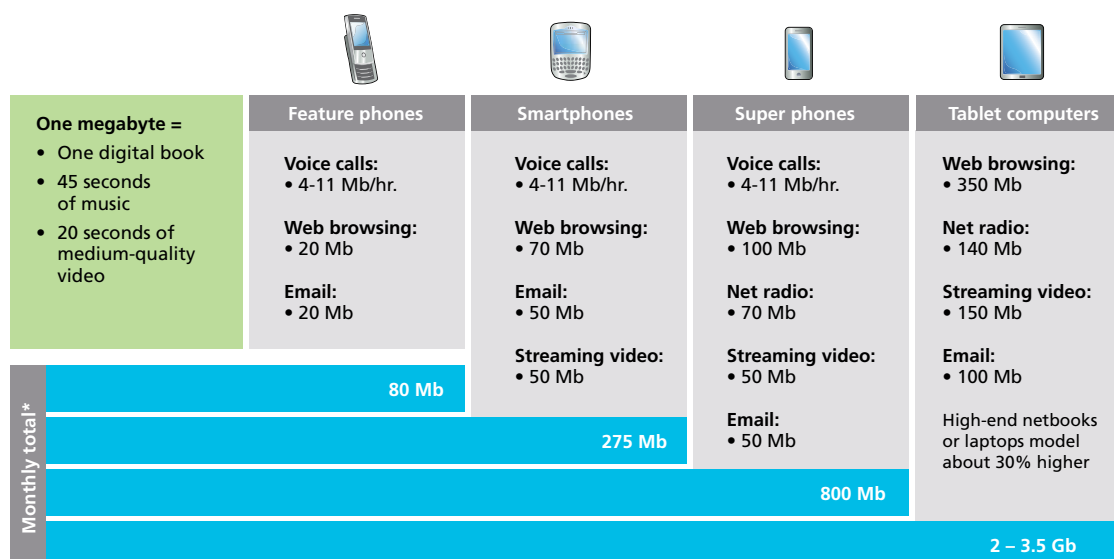
Today, end users demand enriched personalized services with a guaranteed QoE.

Figure 2. Data traffic acceleration



*Data Source: Internal Alcatel-Lucent Research

Figure 3. User behaviors reflect increasing dependence on wireless data



* Estimated Data Source: Internal Alcatel-Lucent Research

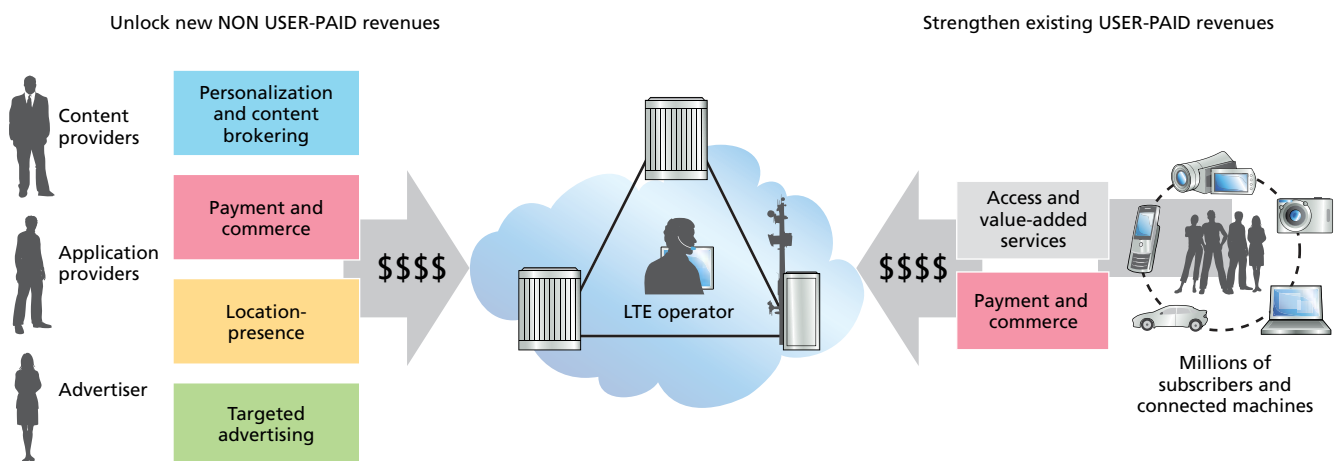


LTE technology provides unprecedented bandwidth, capacity, and low latency. As the next step in the evolution of all wireless radio access technologies, LTE opens new opportunities to offer enriched wireless broadband services, expand your business, and achieve a stronger competitive position.

LTE all-IP infrastructure provides enhanced service agility to allow for augmentation of current business models. You can strengthen user-paid revenues with new IP services, such as multi-screen video and location-based offerings, and you can generate additional revenue from non-traditional services, such as targeted advertising, content brokering, and e-commerce transactions.

The Alcatel-Lucent End-to-End 4G LTE Solution enables innovative services and business models.

Figure 4. New revenue streams with innovative business models and processes





Alcatel-Lucent End-to-End 4G LTE Solution

With an unmatched combination of next generation IP networking and LTE leadership, the Alcatel-Lucent End-to-End 4G LTE Solution delivers the magic of 4G LTE with the leading end-to-end solution by cost-effectively creating new business models and unique end-user experiences.

End-to-End 4G LTE network

Alcatel-Lucent offers profitable, unique end-user experiences with a scalable, smart, and efficient network that harnesses the best of wireless and IP.

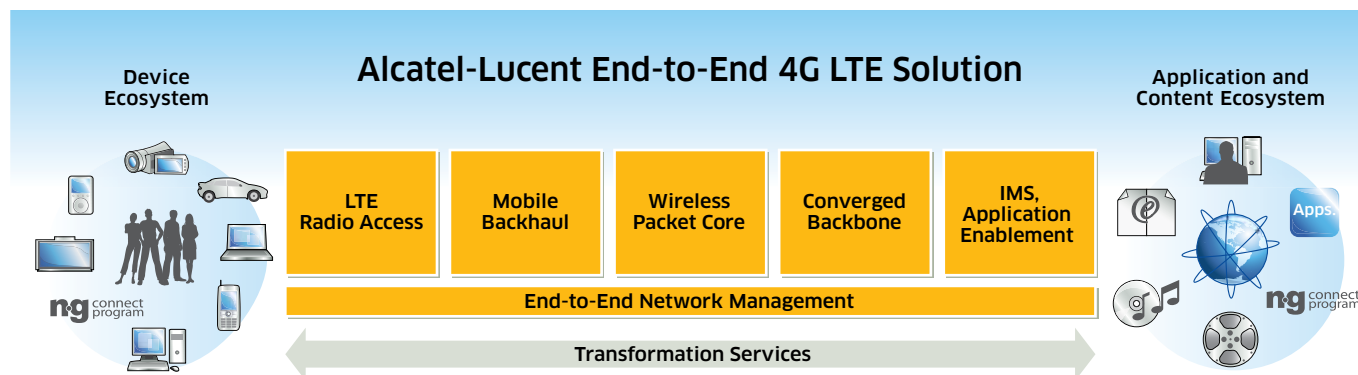
The Alcatel-Lucent End-to-End 4G LTE Solution provides a flexible, scalable all-IP service-aware network. It includes software-defined LTE radio access, a purpose-built Wireless Packet Core, a mobile backhaul and converged transport solution, and field-proven Service Delivery Environment (SDE) comprising IP Multimedia Subsystem (IMS) and applications.

Rich and open LTE ecosystem

The Alcatel-Lucent End-to-End 4G LTE Solution will unlock new revenue streams with innovative business models enabled by a rich and open ecosystem of devices, applications, and content partners. We will partner with you to offer unique, operational business model solutions and an enriched user experience.

Alcatel-Lucent Application Enablement is leading the way with open application programming interface (API) solutions to help service providers leverage their network assets to unlock new revenue streams and innovative business models with a rich and open ecosystem of devices, applications, and content.

Figure 5. Delivering the most comprehensive 4G LTE Solution





The ng Connect Program, a global initiative led by Alcatel-Lucent, brings together device, application, and content providers to drive the development of innovative services that will improve the connected user experience. The ng Connect Program members jointly develop Proofs of Concept (PoC) integrated with the end-to-end LTE network and supported by compelling business models.

IP transformation and integration services

The breadth and depth of our services portfolio and transformation expertise mitigates network deployment and evolution risks. It helps you dramatically transform and optimize your business model. With our consulting, project management, multi-vendor integration, operations, and managed network services, you can:

- Minimize the duration and cost of transforming to all-IP wireless
- Maximize operational efficiencies with time-to-market advantages for introducing new LTE services
- Accelerate mobile network evolution to all-IP while mitigating risk with field-proven business and network transformation services

The Alcatel-Lucent End-to-End 4G LTE Solution offers smooth evolution and seamless service continuity to LTE from any wireless network technology, including:

- Global System for Mobile Communications (GSM)
- Universal Mobile Telecommunications System (UMTS)
- Code Division Multiple Access (CDMA)
- Evolution-Data Optimized (EV-DO)
- Time Division – Synchronous Code Division Multiple Access (TD-SCDMA)
- Worldwide Interoperability for Microwave Access (WiMAX)



Providing Unprecedented QoE, Cost-efficiency and Service Agility

To help you profit from the 4G LTE opportunity Alcatel-Lucent provides a scalable, smart and efficient network harnessing the best of wireless and IP to cost-effectively deliver unprecedented QoE.

Alcatel-Lucent delivers a rich IP, service-aware, end-to-end 4G LTE network.

1 LTE RADIO ACCESS NETWORK (RAN)

- Offers outstanding QoE through world-class user bandwidth, coverage, and seamless continuity with Second Generation (2G)/Third Generation (3G) networks
- Reduces costs and smoothes evolution through zero footprint deployments, multi-standard software-defined modules, and unified management tools
- Provides enhanced service agility through flexible use of spectrum in any cell site
- Offers augmented suitability for LTE Frequency Division Duplex (FDD) and Time Division (TD)-LTE modes, and for all standard LTE frequency bands

2 WIRELESS PACKET CORE

- Boasts superior purpose-built converged Wireless Packet Core platforms with highly reliable and secure data, and control plane scalability
- Offers exceptional seamless mobility and interoperability with all 2G/3G architectures
- Provides advanced per-session, per-flow, per-subscriber Quality of Service (QoS) with centralized policy management and distributed enforcement
- Provides sophisticated service-awareness and session management features (including Deep Packet Inspection [DPI])

3 MOBILE BACKHAUL AND CONVERGED BACKBONE

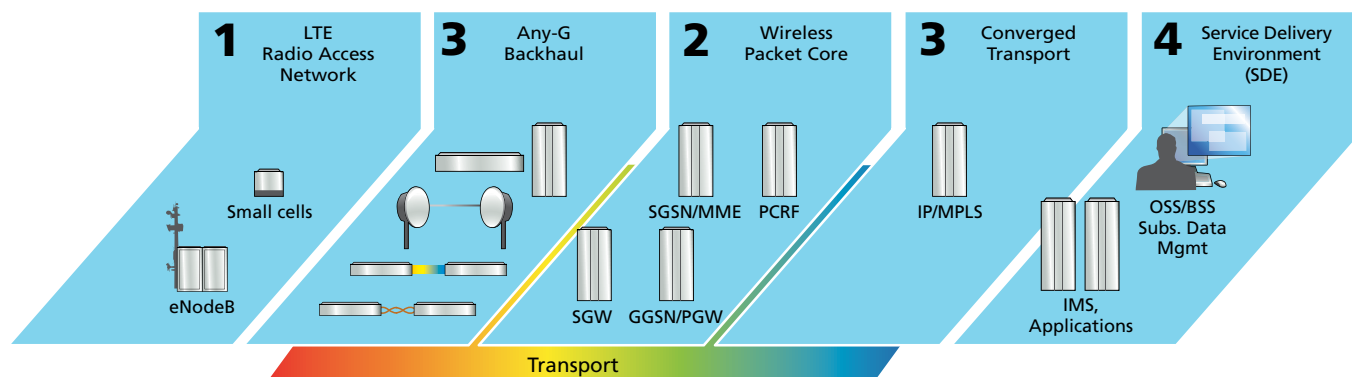
- Provides industry-leading comprehensive framework for mobile transport evolution to all-IP
- Offers enhanced full-packet transport with fine-grain QoS features and end-to-end service-aware management

- Has a highly-developed all-IP integrated and scalable any generation (AnyG) backhaul for aggregation and transport of 2G, 3G, and LTE traffic

4 SERVICE DELIVERY ENVIRONMENT (SDE)

- Offers efficient delivery of rich Session Initiation Protocol (SIP) services with personalized, interactive, and context-aware QoE, which can blend telecom IP communications, Web 2.0, and subscriber data federation services with proven billing solutions
- Provides end-to-end IMS
- Allows Applications Enablement (AE)
- Allows agile service creation and flexible configuration
- Offers a powerful converged SDE that provides a consistent multi-screen experience for communication and entertainment services

Figure 6. A rich IP, cost-effective service-aware LTE network



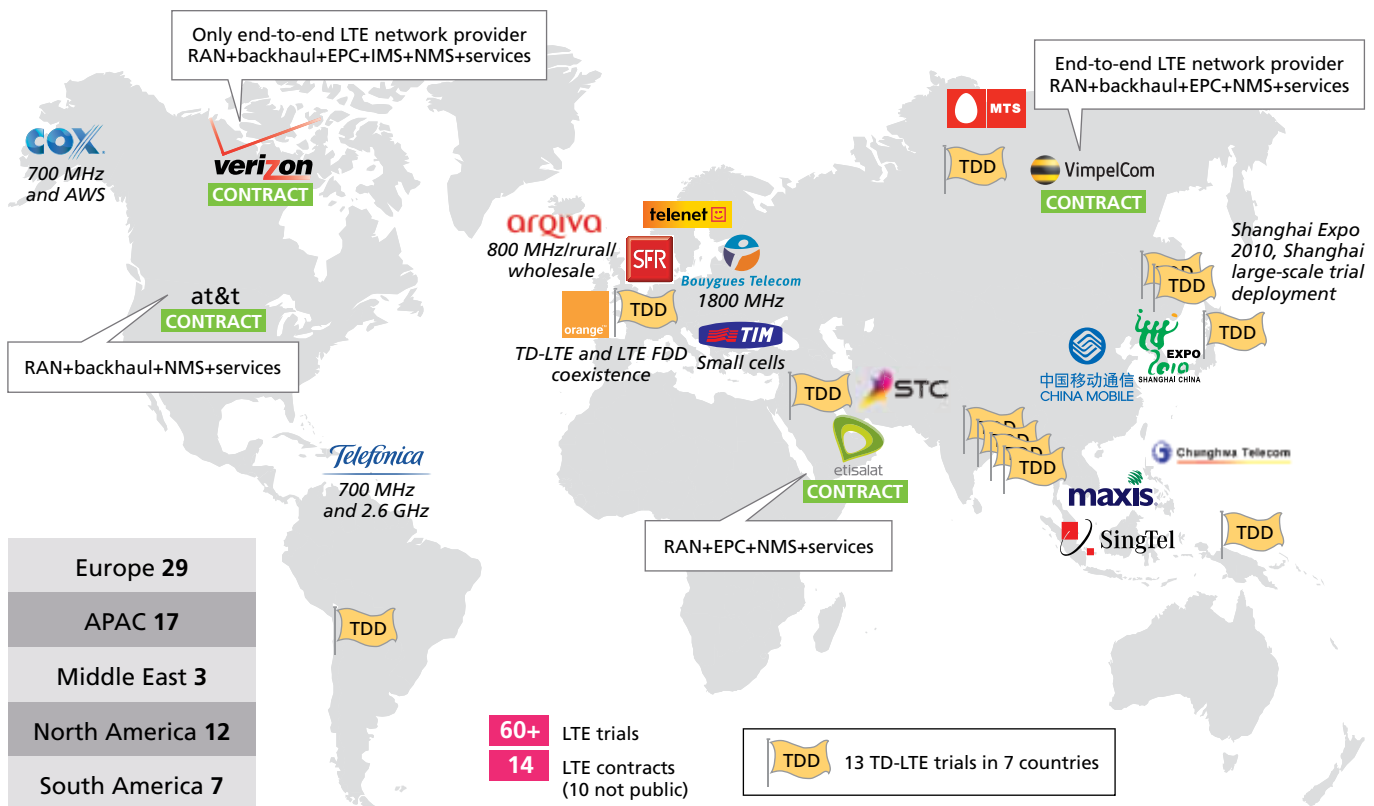
Alcatel-Lucent has established a clear market leadership position in the 4G LTE realm and has a strong wireless presence in 130 countries.

Alcatel-Lucent 4G LTE Momentum

The Alcatel-Lucent End-to-End 4G LTE Solution is based on both our leadership position in wireline IP broadband and our expertise in wireless access. We bring broadband market leadership to LTE — leadership that delivers a scalable, high performance, cost-effective solution directly to you.

Among other key commercial customer wins, two of the world's largest service providers have chosen Alcatel-Lucent to execute their national LTE deployment in the United States. Alcatel-Lucent is involved in numerous trials globally, covering LTE FDD and TD-LTE modes across all standard LTE frequency bands.

Figure 7. Alcatel-Lucent 4G LTE Momentum



*LTE references in figure 7 are accurate as of April, 2011.



Fostering a Rich and Open LTE Ecosystem for Innovative Services and Business Models

In choosing Alcatel-Lucent, you reap the benefits from our market research, business modeling, and go-to-market services. You also benefit from our application exposure suite and open API services and platforms for innovative applications. You will have full access to the ng Connect Program — an industry program founded by Alcatel-Lucent to drive an advanced and open LTE ecosystem of devices, content, and application partners. The ng Connect Program brings together 50+ key stakeholders from telecom, consumer electronics, content, advertising, applications, and retail industries. These partners are building a robust, open ecosystem of LTE-enabled devices, content, and applications pre-integrated with the end-to-end 4G LTE network. The ng Connect program enables you to accelerate services, understand impacts and broaden your landscape.

BENEFITS

- Reduced time-to-market for new services
- Innovative service creation
- Broader device landscape, including consumer goods and machine-to-machine
- Improved wireline/wireless experience for end-users
- Enhanced new business models

Figure 8. The ng Connect Program



De-risking Your Transformation to LTE

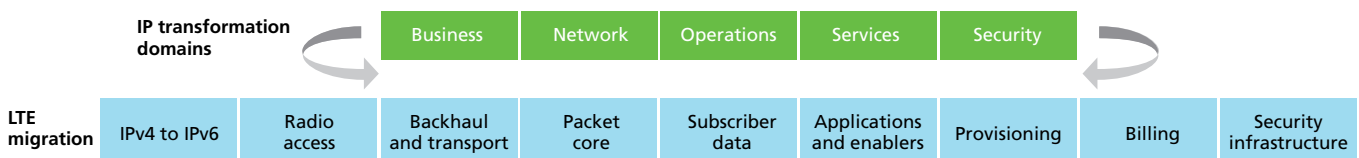
Alcatel-Lucent can help you accelerate your mobile network evolution to all-IP while mitigating risk with field-proven business and network transformation services. We will assist with each step of your LTE transformation to evolve your business with strategic planning, end-to-end network integration, and managed services. Our full suite of IP transformation services supports a streamlined, secure evolution from 2G, 2.5G, and 3G, to flat IP LTE, backed by a field-proven methodology, and transformation centers for pre-integration and testing. Drawing on 2,300 network and service migration projects involving multi-vendor platforms including IMS and wireless access, plus best practices gained in wireline broadband transformation and integration projects, Alcatel-Lucent enables a smoother and more efficient LTE deployment.

BENEFITS

- Reduced transformation risk and predictable methodologies
- Minimized integration and ongoing operations costs
- Rapid realization of an IP wireless service environment



Figure 9. End-to-end LTE Solution Cycle



Advantages of the Alcatel-Lucent End-to-End 4G LTE Solution

REDUCED EXPENSE DUE TO HIGH-SCALABILITY AND COST EFFICIENCY

- Our solution integrates converged (2G/3G/LTE) all-IP network elements from packet core, backhaul, and transport to RAN and IMS, to facilitate network evolution and reduce operational, maintenance, and services costs
- Our LTE end-to-end Operations, Administration, and Maintenance (OAM) Service Aware Management (SAM) solution provides unique advantages in terms of cost savings and efficiency
- Our capacity/performance monitoring and optimization tools and services help you optimize network, services, and operations efficiency
- Our transformation, integration, and outsourcing services minimize expenses — end-to-end

RAPID LAUNCH WITH DE-RISKED DEPLOYMENT AND EVOLUTION

- The Alcatel-Lucent End-to-End 4G LTE Solution is pre-integrated, field-proven, and used in the largest LTE networks today
- Our solution offers better service continuity and a smoother introduction of LTE because it combines interoperability with multiple technologies, our extensive experience, and a suite of tailored tools
- Our industry-leading transformation and integration services experience enable the seamless evolution to an all-IP wireless architecture

ENRICHED QUALITY OF EXPERIENCE

- Leveraging our IP leadership, we deliver unmatched policy management, service routing, and rich IP communications
- Our end-to-end QoS management and services optimization (including self-optimized LTE radio access) deliver high-performance and an enriched broadband experience, which combine to increase revenue and reduce customer churn
- Unprecedented QoE is ensured with our comprehensive SDE relying on a proven IMS solution for Voice over LTE (VoLTE) and application platforms for Rich Communication Services (RCS) and video

NEW REVENUE OPPORTUNITIES WITH NEW BUSINESS MODELS

- We deliver strategic planning and consulting for evolution to a sustainable wireless business model
- We foster a rich and open ecosystem in new market segments including enterprise and vertical markets through initiatives such as our ng Connect Program
- Our Application Exposure Suite and open API service and platform enable innovative applications
- Market research, business modeling, and go-to-market services combine Alcatel-Lucent's established Market and Customer Insights with Bell Labs modeling skills to support customers and industry initiatives



For more information, please visit:

- **LTE Solutions website:** www.alcatel-lucent.com/lte
- **LTE for Public Safety:** <http://alu.tl/ps>

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