

THE HIGH LEVERAGE NETWORK

MONETIZING THE NETWORK WITH PERSONALIZED SERVICES, APPLICATIONS AND CONTENT

STRATEGIC WHITE PAPER

Smartphones, tablets, mobile devices and a proliferation of compelling applications and content have changed user behavior and put users in command of the telecommunications services they want to buy. Users want access to personalized services and their applications and content in the cloud from anywhere, at any time, and they expect a superior customer experience.

The network provides the essential bridge between the device in the hand and applications and content in the cloud. Unfortunately, while ARPU has been declining for some time, service providers have seen a rapid increase in both the amount of data traffic in the network and the cost of carrying this traffic. Service providers have invested to build out and transform their networks to increase capacity and cope with demand. However, they have not been able to realize the full value of their investments. To solve this economic problem, service providers need to reduce OPEX and unlock value by monetizing the network.

With the Alcatel-Lucent High Leverage Network™ (HLN), service providers can monetize their networks by delivering personalized services and enabling cloud applications and content to be delivered to any device, anywhere, anytime. In addition, the all-IP HLN enables service providers to develop new partnerships and business models so that application and content providers can use network capabilities to deliver a better customer experience in exchange for a share of revenue.

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THE NEW MARKET REALITY

Users are in command

The telecommunications market is undergoing profound change: broadband traffic continues to grow thanks to affordable smart devices, ubiquitous connectivity, more compelling applications, and increasing fixed and mobile penetration. As the driving force behind these market trends, smartphones, mobile devices and personalized applications and content have put users in command of the services they want to use.

Service providers can no longer base their business models solely on the number of subscribers, minutes or broadband packages they sell. Neither can they just provide services and expect users to buy them.

A “perfect storm” has been created with the proliferation of intuitive mobile devices, compelling applications and content, and pervasive mobile broadband access networks. This combination is also driving demand for the personal cloud. Users expect to connect their devices to all their applications and content anytime, with a high level of customer experience. However, current over-the-top (OTT) offerings from Apple®, Amazon and Google™ are fragmented and non-seamless, opening up opportunities for service providers. A dramatic societal shift is taking place in which the customer experience really matters.

The tablet compared to other devices

Three similar devices provide a lens into the future: tablets; smartphones or highly portable tablets with mobile communications; and connected TVs or bigger, non-portable tablets for use at home to consume video content and media. Tablets are making a huge impact on the market because they converge:

- Behavior: When users become used to having their content available on their tablets, they want to access it on their other tablet devices, such as smartphones and connected TVs.
- Work and home: While users may be happy to carry separate smartphones for work and personal use, they are very unlikely to want to carry two tablet devices.
- Nomadic and mobile: Users want to use their tablets both at home and work as well as when commuting or travelling.
- User expectations: Tablets deliver an exceptional customer experience, and users now have high expectations of the services they use across all their devices.

The tablet may be a desirable and magical device that radically converges and changes the market, but it has limited processing power and storage capacity to meet optimum price points. The tablet is the first mass-market device that requires the cloud to provide additional processing power and storage capacity for all the applications and content that users want.

The cloud is the key to making applications and content accessible at any time, in any place and on any device. The network is required for this accessibility. The network will provide the core value proposition and help service providers to deliver an exceptional customer experience.

USERS ARE NOW IN COMMAND

Smartphones, tablets, mobile devices and personalized applications and content have put users in command of the services they want to use. Service providers can no longer provide services and expect users to buy them.

The essential bridge between hand and cloud

The tablet is likely to become the predominant handheld device, and it needs the cloud to provide the necessary processing power and storage capacity to support user applications and content. The network is therefore the essential bridge between the device in the user's hand and applications and content in the cloud (see Figure 1).

THE ESSENTIAL ROLE OF THE NETWORK

The network is the essential bridge between the device in the hand and applications and content in the cloud.

Figure 1. The essential network bridge between user devices and cloud applications and content

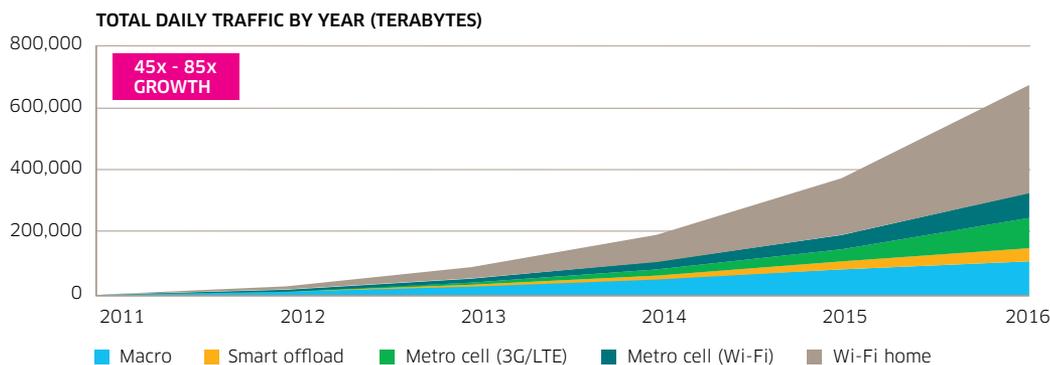


The cloud needs the network to deliver a user experience that is guaranteed and so needs to be tightly coupled with the network. Acting together, the device, network and cloud functions can build user experiences that deliver real value. In the new world of the device in the hand connecting to applications and content in the cloud, the network and the service provider are both critical to achieving the best customer experience.

Demanding effects on the network

It is useful to consider future demands on the network caused by changes in user behavior. Alcatel-Lucent Bell Labs has created a model to show the effect that millions of mobile tablet-type devices are projected to have on the network when they concurrently access cloud content and applications. The model also predicts how much future demand there could be on the network: 45 to 85 times growth based on an unconstrained demand-side model and ignoring supply-side limitations (see Figure 2).

Figure 2. Bell Labs model of future traffic demand

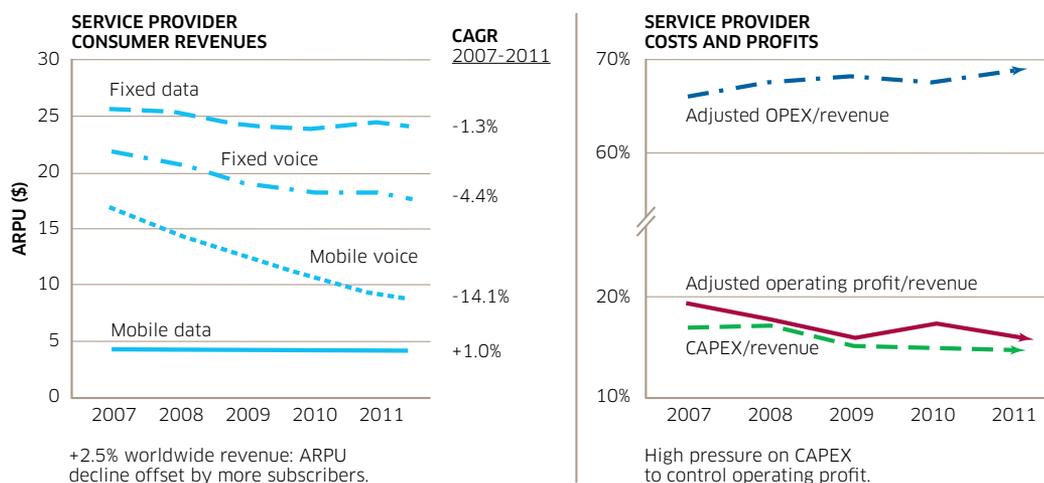


The massive growth shown in the Bell Labs demand-side model requires a new supply-side strategy and an architecture in which wireline networks, small cells, macro cells and sophisticated analytic techniques all play a role.

On the supply side, typical models project forward from the present day and predict 10 to 30 times growth. Compared to the Bell Labs demand-side model, typical supply-side models do not differ much. Essentially, we are close to a scenario in which demand is actually driving the supply side as opposed to the reverse. We need to satisfy the demand with more supply rather than constraining demand with what we can afford to supply.

The challenge is therefore to solve the economics of supply and demand. Service providers have not been capturing the full value of their networks, as shown in Figure 3.

Figure 3. Service-provider consumer revenues, costs and profits



The left side of Figure 3 shows revenue streams over the previous five years. Consumer average revenue per user (ARPU) from fixed data, fixed voice and mobile voice has been declining for some time while ARPU from mobile data has not increased commensurate with the increase in the amount of mobile data traffic in the network. Although ARPU has declined, overall worldwide revenues have increased slightly because the number of subscribers has increased.

The overall effect of the ARPU decline is shown on the right-hand side of Figure 3. Operating expenditures (OPEX) have increased as service providers build out and transform their networks to increase capacity and cope with demand. The result has been pressure on capital expenditures (CAPEX) to control operating profits. To solve the declining ARPU problem, we need to unlock the value and monetize the network.

Value clearly resides in the devices — smartphone, tablet, connected TV, and so on — and in the applications users want to access, such as Google Apps™, Facebook and YouTube. Device manufacturers derive value from the devices they sell, and application and content providers (ACPs) derive value from users, advertisers and sponsors. Service providers must provide connectivity and bandwidth to deliver applications and content from the cloud to the device, but they are not capturing the full value of their networks in doing so.

As we enter the world of computing, gaming and communicating in the cloud, these applications need to leverage the network’s intelligence and additional capabilities to deliver the best customer experience. Although the network provides the key to connecting user devices to cloud applications and delivering the best customer experience, service providers have not yet been able to fully monetize and derive real value from the network.

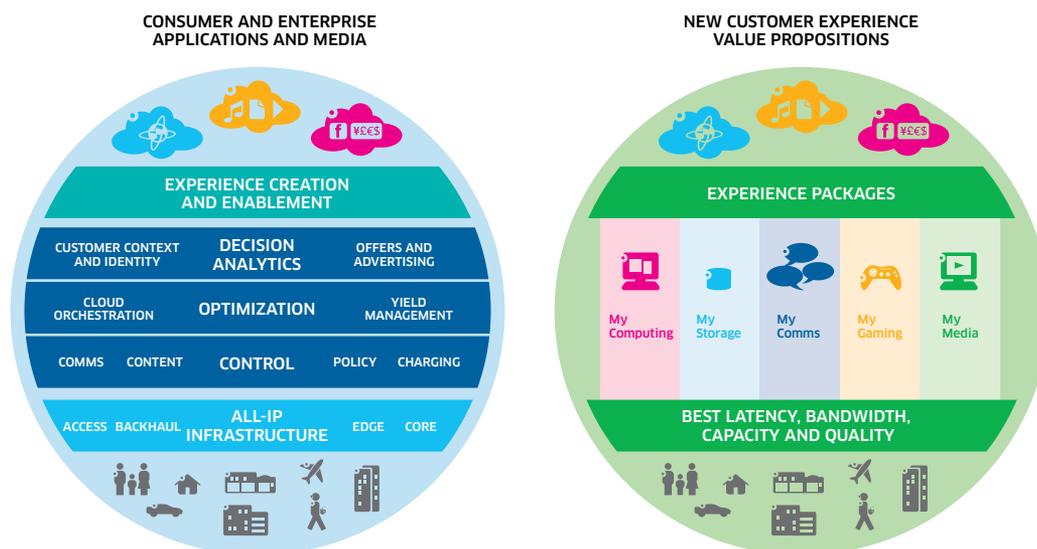
THE ALCATEL-LUCENT HIGH LEVERAGE NETWORK

Scalability with a cost-effective all-IP infrastructure

Alcatel-Lucent introduced the High Leverage Network™ (hereafter HLN) architecture in 2009: a converged, scalable, intelligent, efficient all-IP network that delivers bandwidth at the lowest CAPEX per bit and transforms network operations to help reduce OPEX. The HLN also enables service providers to partner with ACPs and to use the capabilities of the network to deliver a better customer experience in exchange for a share of revenue. This was the original Alcatel-Lucent Application Enablement approach.

Alcatel-Lucent has evolved the HLN architecture to include additional capabilities that address the new market realities of users accessing their personalized applications and content in the cloud from any device, anywhere and at any time (see Figure 4).

Figure 4. The Alcatel-Lucent High Leverage Network



“This is the clearest representation of our vision that I have seen - very compelling.”
Tier 1 Operator Executives - Feb. 2012

The HLN architecture consists of the scalable, intelligent and efficient all-IP infrastructure. Above this is the Control layer, which enables basic user connectivity and session setup as well as control of the communication, content policy and charging functions. Above the Control layer are the Optimization and Decision Analytics layers: two key layers that maximize the business value of the network and enhance the customer experience.

Leveraging network intelligence for revenue generation, the Optimization and Decision Analytics layers are key elements of the HLN architecture that enable service providers to personalize applications and deliver new services that generate new revenues.

The Optimization layer has two key elements:

- **Cloud Orchestration:** Controls virtual network and cloud resources to deliver applications with the best customer experience. This element enables the dynamic allocation and removal of resources as services and applications demand.
- **Yield Management:** Maximizes the value of the network by means of real-time payment and charging. This function offers flexible and context-specific real-time charging models for both fixed and mobile services and converged charging capabilities across applications and services running on multiple devices.

Decision Analytics is a Service Level Agreement (SLA)-centric layer that analyzes real-time network and offline data, providing analysis and decision making to optimize the SLA for the user and the application. This layer has two key elements:

- **Customer Experience:** Ensures that network and cloud resources are allocated to ensure the best user experience: the experience the user has paid for.
- **Offers and Advertising:** Intelligently orchestrates the creation and delivery of personalized service offers and targeted advertising based on user preferences.

The top layer, Experience Creation and Enablement, provides a secure application programming interface (API) exposure layer coupled with the application developer toolsets necessary to rapidly design and deliver personalized applications and services. Development can occur within the service provider's own organization or in conjunction with ACP partners. This Alcatel-Lucent Application Enablement approach enables new revenue streams and business models that increase service provider revenues and profits.

The horizontal HLN architecture layers provide an enabling platform for the creation of personalized applications and services that enhance the customer experience. On the right side of Figure 4 are personalized versions of five main categories of applications: My Computing, My Storage, My Communications, My Gaming and My Media. The network self-orchestrates and optimizes to deliver these personalized experiences to the user anywhere, anytime and on any device.

MONETIZING THE NETWORK TO INCREASE REVENUES AND REDUCE CHURN

Delivering a superior customer experience that enables users to connect multiple devices to all their applications and content in the cloud, anytime, anywhere is the key to building customer brand loyalty and increasing ARPU. Enabling more personalized services that anticipate customer needs and exceed their expectations helps enhance the customer experience and reduce churn. Meeting these requirements is the key to remaining relevant to customers, but how to do so while monetizing the network is a significant challenge.

MONETIZING THE NETWORK

Leveraging the network to deliver differentiated and personalized services enhances the customer experience, increases ARPU, retains customers and drives customer loyalty.

The HLN helps service providers to meet these objectives by providing more comprehensive, non-fragmented and seamless offerings compared to competitive and current OTT offerings. The HLN enables service providers to leverage the network to:

- Deliver personalized services and applications with the best customer experience and maximize yield by means of real-time payment and charging functions
- Analyze user behavior and make decisions that ensure and enhance the customer experience by creating and delivering personalized offers and targeted advertising based on user preferences

With the HLN, service providers can monetize their networks and break into new markets, such as content delivery, cloud services, and mobile marketing and advertising.

Supporting the Alcatel-Lucent Application Enablement vision, the HLN allows service providers to further monetize their networks by profiting from new partnerships and business models. Service providers can leverage their network intelligence and capabilities and use customer knowledge and insights to partner with ACPs to enhance the customer experience. By selectively exposing network capabilities in a managed and controlled way, service providers can differentiate using open innovation to deliver services and applications that further enhance the customer experience and ensure a fast return on investment (ROI).

Delivering differentiated and personalized consumer entertainment services

The business model in which the same basic content is broadcast to all users has driven the home entertainment business toward a commodity model as competition among cable, satellite and IPTV continues to grow. As a result, home entertainment services are changing rapidly and are no longer just based on selling TV channels for a fixed monthly subscription supported by advertising revenues. Added value now comes from premium packages, pay TV and Video on Demand (VoD).

Personalized TV and VoD

Changes are happening around TV, not to TV itself. A wide range of high-quality, high-definition content remains central to the viewing experience, but the way that viewing happens is changing. Users expect a multi-screen experience over fixed and mobile connections: instead of passive viewing, they want interactive viewing, with control to navigate, discover and watch content on companion and main screens. Users want to improve their viewing experience with context about the content, and they want to communicate with others about what they are watching.

These changes require service providers to embrace open content distribution models that deliver a full range of TV channels and an expanded VoD selection to multiple screens over fixed and mobile networks. Service providers need to change from rigid conventional network infrastructures to more flexible and agile infrastructures that are better suited to enabling and delivering differentiated and personalized entertainment services.

Multi-screen entertainment services

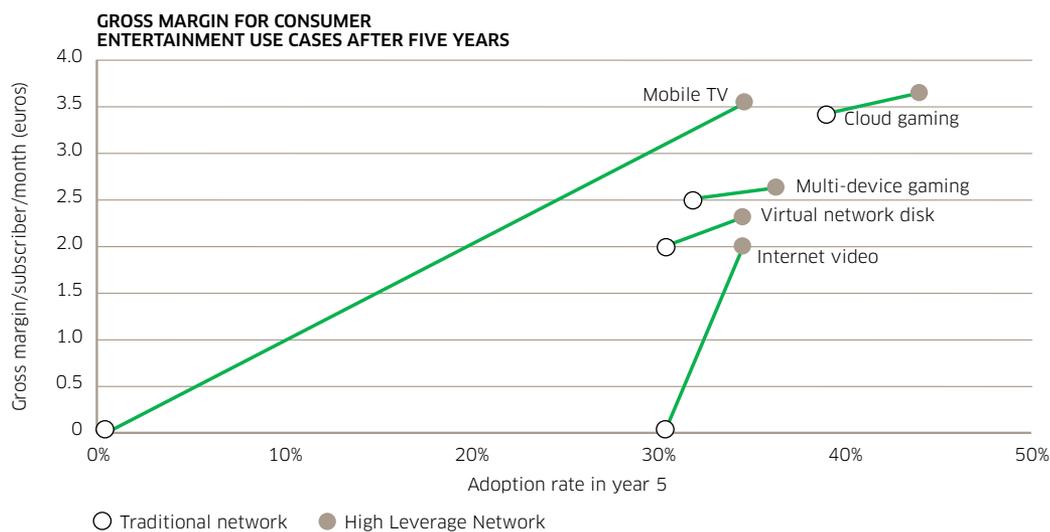
A converged HLN architecture delivers entertainment services that are difficult to deliver using conventional networks because they lack the required scalability, built-in intelligence and efficiency. The HLN also enables a consistent and seamless experience for users who want to take their entertainment services from one device to another across fixed and mobile networks. These multi-screen services require content adaptation based on device information contained in the user profile. Multi-screen can greatly improve the customer experience while attracting new users and generating new revenue.

CASE STUDY 1:

DELIVERING DIFFERENTIATED CONSUMER ENTERTAINMENT SERVICES

An Alcatel-Lucent business model developed for a customer in the Middle East shows the value of the HLN when used to deliver differentiated consumer entertainment services.¹ Figure 5 shows the business value of delivering these services for five years over a conventional network compared to an HLN. The graph shows that an HLN achieves higher adoption rates and significantly increases the gross margin per subscriber per month compared to a traditional network.

Figure 5. Leveraging the network to deliver advanced consumer entertainment services



Personalized services and new revenue sources

As an added benefit, the HLN can personalize services to enhance the customer experience. Using built-in intelligence, an HLN can identify traffic streams associated with groups of users or even individual users. These streams can then be customized based on user knowledge gained through opt-in services. For example, service providers can customize content for groups of users or individual users that is paid for by advertisers or sponsors. This new approach expands the range of interactive transactions available to users, opening up new business models and third-party revenue sources. E-commerce and personalized loyalty programs can create new value for users while reducing churn and attracting new subscribers for service providers.

¹ Alcatel-Lucent EMEA Customer Marketing, *The Customer Business Value of Consumer Entertainment Services*, September 2011

CUSTOMER INSIGHT:

DELIVERING PERSONALIZED ADVERTISEMENTS THAT INCREASE REVENUE

Advertisers particularly value media that enable interactive, measurable campaigns to large, receptive audiences. Mobile advertising is fast becoming the world's most effective advertising medium because it literally puts brands into the hands of consumers. Mobile advertising is all about connecting with the people who are driving the mobile market: today's youth.

Understanding the youth market is the key to turning users into audiences and helping advertisers to engage with these audiences. To gain such insights, the Alcatel-Lucent Youth Lab surveyed over 2,200 people between the ages of 13 and 25 from 12 countries.² Typical respondents have a mobile service (voice or voice/data) and high-speed Internet, are early adopters – their friends look to them for advice – and are mostly extroverts with a strong social network. Survey results include:

- 81 percent want to be asked for their permission before receiving ads
- 76 percent feel that ads should be interest- and preference-based
- 78 percent want control of their profile to address privacy concerns
- 63 percent are likely to use mobile advertising to purchase products from favorite brands

Engaging users with personalized mobile advertising

Service providers are ideally placed to leverage their unique position and valuable relationship with users to deliver personalized and targeted advertisements. Giving users the chance to opt in and receive valuable information, special offers and breaking news from brands they care about encourages them to share information about themselves, providing further valuable insights into their preferences. Both service providers and advertisers can ensure that their engagement with users is relevant and satisfying because users are always in control of their experience.

When Egypt's Mobinil launched its permission-based mobile advertising solution, driven by the Alcatel-Lucent Optimism™ mobile marketing solution, over one million customers opted into the service in two months.³ In Ghana, Tigo's campaign for Volkswagen® proved to be an excellent complement to print and billboard marketing campaigns.⁴ Mobile ads put contact information directly into people's hands, with 30 percent of people responding to the campaign and 90 percent of respondents wanting further information.

Enabling a better experience for any device, anytime, anywhere users

Users want a richer, more connected, more personalized experience, and service providers need to stand out and deliver market-leading customer experiences. Brand loyalty increases with offers that are simpler to buy, own and use. However, the right starting point and goals are essential. Innovations such as multi-channel care, analytics and metrics, and loyalty and yield management are required to successfully transform the customer experience. Additional factors in building a better experience are the trust earned by service providers and the attractiveness of their unique capabilities to ACPs.

² Alcatel-Lucent Optimism, Executive summary: *Enhancing the Appeal of Mobile Advertising*, 2010

³ Alcatel-Lucent Optimism, Media alert: *Permission-based mobile advertising takes off in Egypt*, June 2011

⁴ Alcatel-Lucent Optimism, Case study/Volkswagen®: *Reaching new customers quickly in Ghana*, June 2011

Multi-channel care

Users want support through diverse channels, including smartphones, the Web, e-mail, social networking and Instant Messaging (IM). Service providers must provide the same quality of information and experience through each channel.

Analytics

Analysis of technical data, such as how the infrastructure is performing, and business data, such as which services and applications users are using and for how long, provides valuable information that can help improve the customer experience. Metrics such as social media indexes, customer satisfaction ratings and Net Promoter Score (NPS) — which measures the likelihood that users will recommend services to others — are also important factors that help drive customer experience.

Loyalty management

Analytics provide information about user spending and profitability, propensity to churn, and social group influence. These critical inputs can be used to design effective retention and loyalty campaigns. Customer lifetime value (CLV) is a key metric that is used to segment and measure the profitability of customers over their service lifetime. Service providers can focus on retaining and increasing high CLV segments by targeting campaigns to increase the spending of loyal customers, rather than focusing on segments that generate high ARPU but low profitability or loyalty.

Yield management

Service providers can maximize their network capacity and use with value propositions that enhance the customer experience — for example, offer discounts to targeted users during off-peak periods, giving them the perception that they are getting more value for money. An offer could reward use of the network at night, providing more bandwidth for online gamers or enterprise backups. Another value proposition example is to offer superior Quality of Service (QoS) to premium users for specific applications and services. By combining dynamic pricing with intelligent policy management — for example, by dynamically adjusting bandwidth for video services — service providers can improve the aggregate customer experience.

Service providers' earned trust and unique capabilities

Service providers have built up trust earned from reliable service delivery, careful treatment of personal data, and respected business practices. This trust can be a key element in building a better overall customer experience. In addition, service providers' unique capabilities, such as robust infrastructures, billing systems and help desks, are attractive to partners such as ACPs. Partnerships with ACPs can drive innovation in the application space, generate new revenue, and influence the customer experience.

CASE STUDY 2:

TELFÓNICA DE ARGENTINA SIMPLIFIES THE ACTIVATION AND MANAGEMENT OF COMPLEX BROADBAND SERVICES

Telefónica de Argentina has implemented the multi-phase Motive Home Device Manager™ and Total Broadband Care Solution. As a result, incoming support calls have decreased by 60 percent and first-call resolution has significantly improved.⁵ Comparing managed devices to unmanaged devices, Telefónica has experienced an average of 22 percent reduction in incoming support calls, resulting in an average of 18 percent fewer truck rolls to provide field support. The measurable operational and economic benefits also ensure a superior customer experience.

The Motive solution provides a wealth of data that is driving operational improvements while providing Telefónica with the necessary information to develop and quickly deploy new value added services, helping to turn customer care into a revenue-generating opportunity.

Improving profit and efficiency with content delivery networks

Internet content, particularly video, is often delivered using third-party content delivery networks (CDNs) that provide caching mechanisms to improve performance. Using third-party CDNs adds to the expense of providing broadband services, but CDNs are essential to the customer experience and sometimes help to differentiate between content providers. However, third-party CDNs' locations outside service providers' networks limit the possibilities for increasing revenue and profit or improving network capacity and performance.

In an HLN environment, caching services can be integrated in the network and extended to streamed content and multimedia entertainment. This improves the customer experience and allows new, high-quality video services such as high-definition TV (HDTV) to be sold as premium options. Caching can be directly integrated into routing platforms at optimal points and can be selectively applied to traffic streams for which performance is an issue. This creates an ideal balance between user proximity and the cost of content caching. An integrated CDN enables the delivery of new services that enhance ARPU and help reduce churn by preventing users from switching to competing service providers.

CASE STUDY 3:

IMPROVING PROFITS AND ENHANCING EFFICIENCY WITH A CDN

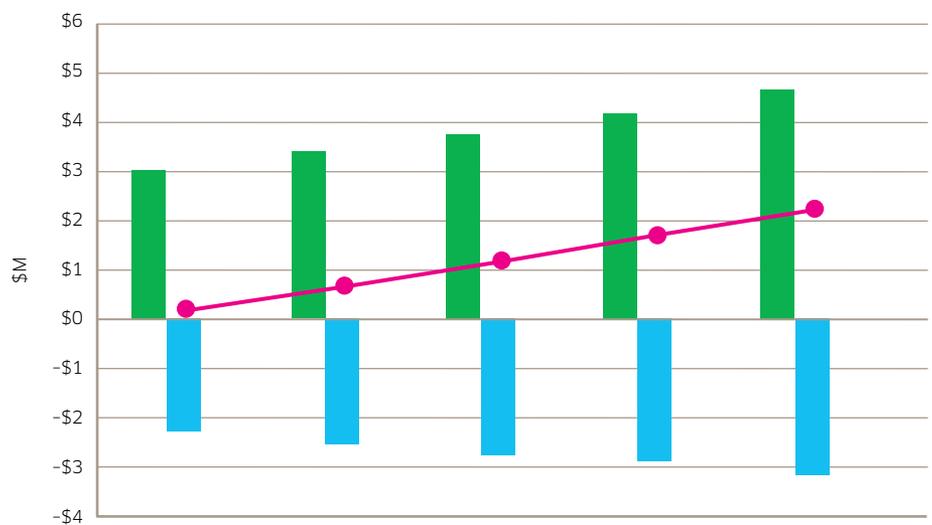
A Bell Labs case study investigated the economic benefit of a metro CDN to deliver high-quality Internet video to broadband subscribers. Study results yielded a net present value (NPV) of 2.5 million United States (US) dollars and a discounted payback period (DPP) of less than a year with initial positive cumulative discounted cash flow (CDCF) (see Figure 6).⁵ The retail subscription case exhibits comfortable profit margins, and the wholesale case improves overall ROI – even at challenging market price points. The total cost of ownership (TCO) for the network is less than three cents per gigabit on a non-amortized basis.

The results show that a typical service provider can realize a payback period of less than one year, add approximately 10 percent to flat-rate broadband subscriptions, and avoid expensive IP infrastructure upgrades. Because of significantly reduced bandwidth needs, bandwidth savings are higher in the initial year, with incremental savings in successive years. The model also shows additional savings from reduced peering and transit costs.

⁵ Alcatel-Lucent, Case study: *Telefónica De Argentina simplifies Activation and Management of Complex Broadband Services*, January 2012

⁶ Alcatel-Lucent Bell Labs, *Network Provider Metro CDN Business Case*, June 2010

Figure 6. Cumulative discounted cash flows for a metro CDN



	Year 1	Year 2	Year 3	Year 4	Year 5
Revenues	\$3.1	\$3.4	\$3.8	\$4.2	\$4.6
Expenses	(\$2.3)	(\$2.5)	(\$2.7)	(\$2.9)	(\$3.2)
Investments	(\$0.3)	(\$0.0)	(\$0.0)	(\$0.0)	(\$0.1)
CDCF	\$0.2	\$0.7	\$1.2	\$1.7	\$2.2

As video traffic continues to grow, CDN capabilities are becoming increasingly valuable as a way to manage network capacity and enhance scalability. Service providers can sell CDN services to third-party content providers that want to differentiate their offerings, retain customer loyalty and protect their brands. A network-based CDN service is also attractive to enterprises to improve performance for applications such as telepresence.

Exposing network intelligence to enable new business models

Service providers can insert themselves into the Web 2.0 value chain by providing secure access to valuable network assets and capabilities to third parties and partners with agile and innovative web development models. With secure open API framework access to these capabilities and assets, ACPs can create new and innovative applications and content while improving the performance of their existing applications and content and enhancing the customer experience. In return, ACPs can share a portion of their revenue with service providers. Because advertisers are willing to pay more to promote their brands on quality web sites that attract high numbers of users, revenues are likely to benefit all stakeholders.

Alcatel-Lucent Open API Platform

The Alcatel-Lucent Application Enablement approach includes the Alcatel-Lucent Open API Platform (OAP), an end-to-end API monetization and optimization software solution that helps service providers to turn their networks into a commercial transaction platform. The Alcatel-Lucent OAP provides the expertise, tools and services for API management, API design and creation, reporting and analytics for optimization of API programs, business model design for maximizing revenue, and service integration for fast time to market. Using the Alcatel-Lucent OAP, service providers can create and securely expose new services internally or externally and can bring new offers to market faster, at lower cost and at scale.

The Alcatel-Lucent OAP can be implemented as a complete or modular solution. Service providers that have an existing exposure framework but lack other critical features, such as reporting and analytics or the ability to create sophisticated commercial plans, can implement a modular approach. In addition, pre-integrated solutions are available:

- Alcatel-Lucent Open API QoS use case: Provides access to QoS and other assets that enable applications to control bandwidth and use the traffic management capabilities of a service provider's network — for example, to deliver IPTV with higher quality.
- Alcatel-Lucent Open API Enriched Communication use case: Exposes communication assets, allowing applications to use the communication capabilities of a service provider's network — for example, to enable web conferencing across multiple screens.

With the Alcatel-Lucent OAP, service providers remain in control of their networks, assets and capabilities but can leverage them to enable new business models and revenue sharing. Service providers can improve ARPU, lay the foundation for future services, and enable sustainable growth.

CASE STUDY 4:

GENERATING REVENUE WITH ALCATEL-LUCENT OPEN API ENRICHED COMMUNICATIONS

A Bell Labs business model based on a typical European Tier 1 mobile operator compared the potential revenues from an Alcatel-Lucent Open API Enriched Communications Solution with a standard rich communications solution.⁷ The model calculated the incremental revenue made possible by exposing communication assets. It assumed a base of 25 million subscribers, an annual subscriber growth rate of 3 to 4 percent, and a take rate of 15.5 percent of subscribers by the end of year 5, of which 40 percent generate incremental revenue. The results show:

- Full video sharing can generate 21 percent more revenue.
- Full web integration can generate 38 percent more revenue.
- Multi-screen communications can generate 53 percent more revenue.

Market research confirms these results and shows that users' willingness to pay increases by 30 percent when rich communications features are integrated with web applications.

CONCLUSION

With users now in more control of the telecommunications services they buy, service providers need to maximize customer business value and monetize their networks. They must address users' heightened expectations for a personalized, customer experience as well as deal with rapidly increasing high-bandwidth traffic and declining ARPU.

The key requirements for enhancing the customer experience, reducing churn, increasing customer brand loyalty and raising ARPU are:

- Delivering a superior customer experience with differentiated and personalized services
- Enabling users to connect multiple devices to their cloud applications and content, anytime, anywhere

⁷ Alcatel-Lucent Bell Labs, presentation: *Open API Enriched Communication Solution*, September 2010

Addressing these requirements, the Alcatel-Lucent HLN helps service providers to increase yield and maximize customer lifetime value. With an HLN, service providers can further monetize their networks by breaking into new markets and value chains to realize profit from new business models and partnerships. Through open innovation, service providers can differentiate to deliver services and applications that enhance the customer experience and ensure a fast ROI.

ACRONYMS

2G, 3G	Second Generation, Third Generation
ACP	application and content provider
API	application programming interface
ARPU	average revenue per user
CAGR	compound annual growth ratio
CAPEX	capital expenditures
CDCF	cumulative discounted cash flow
CDN	content delivery network
CLV	customer lifetime value
DPP	discounted payback period
HDTV	high-definition TV
HLN	High Leverage Network
IM	Instant Messaging
IP	Internet Protocol
IPTV	Internet Protocol Television
LTE	Long Term Evolution
NPS	Net Promoter Score
NPV	net present value
OAP	Open API Platform
OPEX	operating expenditures
OTT	over-the-top
QoS	Quality of Service
RAN	Radio Access Network
ROI	return on investment
SLA	Service Level Agreement
SMS	Short Message Service
TCO	total cost of ownership
US	United States
VoD	Video on Demand
Wi-Fi®	Wireless Fidelity

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