

The New Economics of Telecom Networks

Bringing value back to the network

Network service providers dealing with massive bandwidth demand are struggling to evolve their networks while keeping costs under control. Arriving at cost-effective, customer-oriented solutions demands a change of perspective — away from traditional operational preoccupations toward a view guided by financial and strategic business considerations. Expenditures must be reduced and revenue per transported bit increased. Informed by its extensive experience in network design, deployment, operation and migration, Alcatel-Lucent has developed a cost-transformation model to help service providers understand the new economics of their businesses and derive the greatest value from their networks.

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“For every dollar of revenue I add to the top line, I end up adding at least a dollar of cost to the bottom line.”

— GLOBAL TIER 1 CFO

A new perspective on network economics

To satisfy the ever-growing demand for high-bandwidth content and enhanced services, service providers today must evolve not only their networks but also their business models. To increase profit margins and bolster bottom lines while continuing to meet customer expectations — and while contending with a variable, often unpredictable global economic environment — service providers are having to change the way they view and approach their business.

A key issue is that connectivity no longer has the intrinsic value it once did. Customers demand added value, and they're getting it. Crossover competitors such as Google, Yahoo! and MSN have been quick to take advantage of media convergence and non-traditional business models to devour an increasing market share. Incumbent service providers need to provide the value their customers are seeking — namely, a rich communications experience. Yet doing so demands focused attention, attention that service providers preoccupied with day-to-day management of their networks can find hard to bring to bear.

Informed by its extensive experience in network design, deployment, operation and migration, Alcatel-Lucent has established a cost transformation program to help service providers evolve their businesses — through the achievement of High Leverage Networks™ and non-linear cost reductions, and by making well-informed strategic investments. The program focuses on minimizing expenses, effecting strategic, well-managed network transformations and generating new revenue opportunities.

Keeping the right balance between optimizing free cash flow and TCO as well as addressing the investment community is an immense challenge for top management.”

— DIRECTOR PLATFORM MANAGEMENT, EUROPEAN INCUMBENT PROVIDER

Pursuing growth, controlling costs: A careful balance

For many service providers, cost structures are extremely complex. The nature of the business implies high CAPEX. Operational expenses are diverse, ranging from network management, backhaul, power and heat to engineering, supply chain management, OSS/BSS, land, buildings and more. As well, they are siloed, making cost management a challenge that steals time away from the pursuit of key business objectives.

Whatever steps they take to transform their networks and businesses, service providers must lay the foundation for a healthy, profitable tomorrow. Forward thinking is critical. Simply applying rigorous CAPEX reduction strategies, for example, can increase OPEX further down the line — an ultimately counter-productive approach. A complete perspective is necessary: no cost or revenue component can be addressed in isolation as each affects the other. However, strategic investment in an evolved, next-generation network, with a carefully managed and planned transition, can ultimately not only decrease costs but also increase revenue and widen profit margins.

Leveraging technological innovations can play an important role in helping reduce operating costs while enabling value-added services and applications. To ensure viability in both the present and the future, service providers must explore ways of developing, testing, deploying, billing for and managing large numbers of new and converged services, applications, and content from multiple sources (such as the service provider itself, partners and third parties).

Getting a grip on costs

The biggest contributors to OPEX vary from network to network, depending on the size of the operator, whether the network is wireline, wireless or converged, and other characteristics. And since no two networks are exactly alike, what's important is that individual service providers understand their own specific cost structures before moving forward with a network migration.

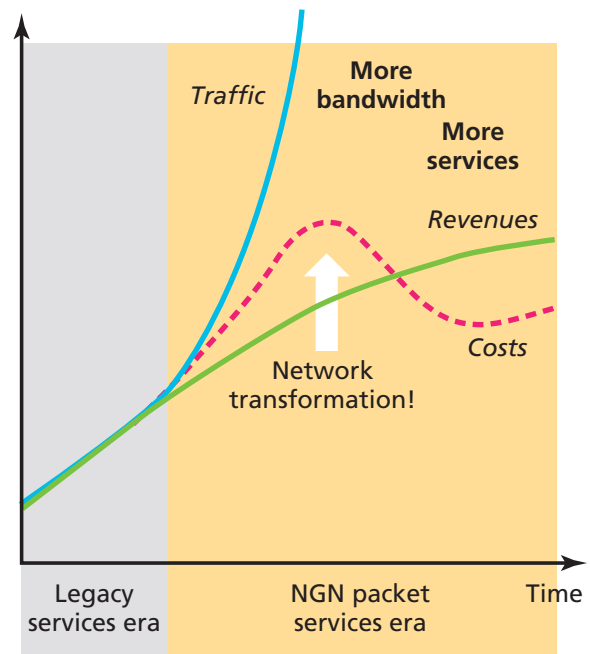
Service providers that free themselves up to consider network transformation tend to proceed with caution. Budgets are tight, the economic climate is hardly reassuring, and poor investment decisions could have deeply negative consequences. Sorely needed — though often in short supply — are reliable market intelligence and dependable business-case modeling to support genuinely strategic spending.

Even when strategic investment decisions are made, service providers often remain daunted by the sheer complexity of the task. Undertaking a mass-scale transformation carries too many risks, but the incremental alternative begs questions as well — namely, where to begin and how to manage the expense of transformation. Costs spike during the actual transition period, and with parallel management of legacy and newly deployed networks to ensure seamless migration, service providers essentially have to manage two networks at once.

While transitioning the network can take a long time, it doesn't have to. Skillful planning and expert execution can shorten the period, enabling a faster return on investment.

Ultimately, network transformation must support and be supported by an evolution of the operator's business transformation. Business models must be flexible, adaptable and attuned to customer needs. Network operations must be efficient, economical and environmentally sound, yielding cost savings through reduced energy consumption while minimizing greenhouse gas production and other environmental impacts.

Figure 1. The transformation cost spike



"We need to break away from our usual five to 10 percent OPEX reduction per year. We need geometric or non-linear OPEX reductions."

— NORTH AMERICAN TIER 1 SENIOR VP OPERATIONS

An approach to cost transformation and maximizing margins

In today's evolving marketplace, revenue is centered less in the individual user and more in the traffic transported between users: data, media, bits. Overall usage is a key measure of revenue, which Alcatel-Lucent refers to as average revenue per usage (ARPU_{usage}). To maximize margins while reducing costs, an overall goal for service providers should be to achieve the lowest total cost of ownership (TCO) per transported bit. Alcatel-Lucent's model for cost transformation involves three key areas of focus:

- Architecting based on a High Leverage Network vision
- Achieving non-linear cost reductions
- Making strategic investments

High Leverage Network

The Alcatel-Lucent High Leverage Network concept supports continuous bandwidth scaling, automation and built-in intelligence such as subscriber, service and application awareness to provide enhanced Quality of Service (QoS) and traffic optimization to provide the best possible quality of experience (QoE). This approach ensures that revenue growth can be secured while cost efficiencies are realized. Legacy networks are rigid and complex, making bandwidth scaling complex and expensive. A secure and private High Leverage Network dynamically manages bandwidth demand, scalability and reliability, reducing costs through increased efficiencies and adaptability. And by ensuring eco-sustainability, the converged, optimized, high performance IP architecture of a High Leverage Network can achieve additional savings through positive environmental impacts.

Objectives of a High Leverage Network:

- Increasing bandwidth and optimizing the network to reduce costs
- Equipping the network with intelligence at the optimum cost
- Leveraging embedded assets to deploy next-generation services
- Simplifying service offerings and infrastructure
- Accelerating legacy network phase-out

Non-linear cost reduction

Financial performance is improved through the selective adoption of cost-saving solutions and maintenance services, and the migration of legacy data networks to IP/MPLS.

Key objectives here are:

- Reducing network complexity
- Increasing ARPU_{usage} while maintaining margins
- Focusing on new services by outsourcing management of legacy networks
- Identifying operational efficiency opportunities through network assessment and consultation
- Deploying, managing and maintaining a multi-vendor network
- Sustaining the legacy network while transitioning to a High Leverage Network

Strategic investment

The objective here is to gain better returns on newly invested capital and quickly begin generating revenue after initial investments. CAPEX is an inevitability, particularly when evolving networks and migrating traffic, but it need not be crippling. Wise strategic investment can reduce OPEX and increase margins in both the short and long term.

In this case, the main goals are:

- Managing OPEX in challenging economic conditions
- Prioritizing IP transformation, starting with greatest cost reductions
- Increasing network capacity with minimal risk
- Maximizing the value of investments through best practices
- Moving to eco-sustainable networks and operations

Migration strategies

There is no “one-size fits all” solution to the challenge of increasing network value, as each operator’s network architecture and market pressures are unique. As a general rule the reduction of OPEX and CAPEX, while increasing revenue per transported bit, depends on the successful transformation of operations and IT into a next-generation, high-value network. And to remain viable, that network must be capable of providing end users with the services and applications they require at the moment, while remaining flexible and profitable far into the future. An important first step in building a transformation strategy is defining a program based on key objectives and operations.

Smart, strategic network transformations can shorten transition periods and allow service providers to realize faster returns on investment. The point is not to completely overhaul the network to realize a High Leverage Network, but to build on the existing network intelligently and strategically to address short-term requirements and pave the way to long-term value and sustainability, with a focus on decreasing expenditures and increasing profit margins.

Alcatel-Lucent Bell Labs has identified a set of best practices for assessing the ability of legacy networks to support service loads and meet business objectives. Adopting a ‘Network VP of Operations’ perspective, the Alcatel-Lucent Network Readiness Analysis examines legacy architecture and design, interoperability, scalability, economic optimization and other network aspects to diagnose critical issues and flag key steps required to maintain network stability.

Looking toward a fuller migration, Alcatel-Lucent works with service providers to determine the various cost benefits that might be gained depending on where the transformation initiative begins. Short-, medium-, and long-term timescales are all factored. Through this careful analysis, the options become clearer and their relative values more sharply defined, simplifying the decision-making process.

The economics of the transition

Alcatel-Lucent has helped providers assess their current networks holistically, from end to end, identifying opportunities for optimization and cost reduction — in the network itself, in the service providers’ service portfolios, and in related cost centers such as real estate, power consumption and maintenance. Applying its expertise, Alcatel-Lucent has helped major players reduce costs significantly. Sprint, for example, saved \$719,000 in the first year and \$2.4 million annually after Alcatel-Lucent inventoried its full set of 2,500 network elements and outlining a plan for consolidation and the elimination of excess equipment.

When migration is managed well, expenditures decrease across the board. One service provider, seeking to migrate to VoIP, faced several challenges in transitioning from legacy networks with no customer downtime. To avoid service interruptions and ensure ‘right first time’ migration, Alcatel-Lucent’s solution involved the design of a program consolidating more than 4000 project plans, and the automation of a migration process that completed the transition in 50% of the predicted time. Thousands of exchanges were moved during maintenance windows, and the automated migration exceeded customer KPIs.

In another case, while migrating and optimizing data for an operator transitioning 30 countries to IP, Alcatel-Lucent avoided costly implementation delays and transition hiccups by developing an efficient transition plan and risk-reward analysis, resulting in projected savings of more than 100 million Euros per year.

By reducing network complexity and cost, and by optimizing energy consumption and sourcing, service providers can prepare for the growth they require, increasing their agility and accelerating their time to market for new offerings.

Leveraging innovation

Technology, of course, plays a central role in cost transformation and migration strategies. Innovation in areas of eco-sustainability — micro-trenching, for instance, or the development of alternative heating and cooling systems that draw less power — not only benefits the environment, but through the cost savings associated with power reductions also contributes to a stronger bottom line.

In the context of the High Leverage Network, innovations that increase both bandwidth and efficiency are key. The Converged Backbone Transformation solution, an integral component of Alcatel-Lucent's High Leverage Network strategy, takes an innovative, integrated approach to IP and optical transport for the network core. It uses closer coordination and visibility between the IP and optical layers to optimize transport, with integration across the data plane, control plane and management plane for handling large traffic volumes at the lowest possible layer and lowest cost per bit. The net result is more economical packet-optical transport, more efficient delivery of IP-based services, and a simpler, more efficient network core that scales more cost effectively to meet the demands of continued traffic growth. Such innovations will become increasingly valuable as consumer and corporate demand for high-bandwidth multimedia, video and large-scale file sharing services continues to skyrocket.

Opening the network to new opportunities

A key strategy in the evolution of a next-generation business model is the discovery and capitalization of new sources of revenue in the operator's network. Customers demand additional services through their internet connections; devices like the iPhone are creating explosive demand for video streaming, web browsing and other data applications, and the daily number of text messages sent and received is higher than the total population of the planet. To meet these demands, service providers must adjust to the changing needs of the marketplace.

Primarily, this involves controlled, managed, and secure application enablement — adding value to the network by providing additional incentives to the end user. As recent history has shown, a closed model insulates service providers not only from competition but also from opportunities — opportunities that nimble third parties have readily exploited by going 'over the wall'. Providers must therefore partner with other companies to develop and make available to customers the types of applications they demand.

Alcatel-Lucent's vision for application enablement will help customers address new revenue opportunities in a changing marketplace. It leverages the unique capabilities of the network to support the creation of new services and, by extension, flexible, alternative business models. This allows providers to create new value by exposing their network capabilities in a managed and controlled way, facilitating new business models and improving return on investment.

Within this application enablement model, in-house teams, trusted partners and even the wider development community (in a secure and managed way) can contribute to the generation of new, value-added offerings for service providers' customers. This approach permits rapid service innovation across multiple platforms and gives providers the access to the forward-thinking, creative talents of thousands of developers. New revenue can be generated through the use of existing network capabilities. Ultimately, the operator takes on a role of greater importance within the overall value chain as the provider of real-time, context-aware information.

Dealing with the everyday

As their business models have shifted toward application enablement, several service providers have adopted managed service models, outsourcing day-to-day network operations so that they can concentrate on growing their business proactively. Managed services offerings can improve network efficiency, align processes, reduce complexity and accelerate times to market for new services.

Outsourcing has a particularly strong impact on OPEX, which typically represents the highest cost to service providers and can be very hard to track and manage — too variable to predict and plan on accurately. Many Chief Financial Officers (CFOs) would likely leap at the prospect of being able to address the bulk of their operating expenses within a single, fixed cost. Typically, the highest cost can be found here. But the managed services model provides the opportunity for significant expense reduction. In the case of one large North American carrier and Alcatel-Lucent customer, outsourcing produced a 20 percent reduction in maintenance-related OPEX, amounting to a savings of \$18 million per year.

Multi-vendor maintenance support is another important cost-transformation option for many service providers. To enjoy full flexibility in building out their networks, service providers need the freedom to choose from the offerings of all vendors. But having to rely on equally as many partners for support and service is inconvenient, unwieldy and usually expensive. Partnering with a single company that can support and perform service on the entire array of network equipment therefore provides a number of interrelated benefits.

Taking the first step

Observers throughout the industry have declared the status quo is no longer a viable option. Consumer demand and expectations are intensifying, with data, multimedia, VoIP and wireless voice traffic volumes leaping upward. Networks must evolve to deliver the kinds of services and applications users expect; service providers must invest in that evolution in ways that not only address the needs of the moment but also position them competitively and technologically for the long term; and service providers must shave costs out of their operations today, modifying their business models and achieving new efficiencies.

The lingering impression is that the move to all-IP requires massive CAPEX without any immediate return on investment. Yet the benefits — and the necessity — of going all-IP have not changed. Through their partnership with Alcatel-Lucent, several companies have leveraged cost savings in other areas to continue supporting their network transformation plans, strengthening their current capability to respond to user needs and also bolstering their market position for the economic recovery to come. Through the adoption of a High Leverage Network, non-linear cost reduction, and strategic investment, service providers can quickly and efficiently adapt to the changing needs of today, while preparing for tomorrow's challenges. And by leveraging technological innovation and shifting focus towards application enablement, service providers can open up new revenue streams, ultimately increasing profitability while providing end-users with the services they demand.

Mapping the future

Alcatel-Lucent's approach to cost transformation is measured and meticulous, grounded in solid information and years of expertise. Alcatel-Lucent works with customers to identify growth and cost-reduction opportunities, applying a deep understanding of network operations and infrastructure. The firm brings to bear a broad set of skills and extensive professional service capabilities to manage projects across all technologies and business lines, merging the domains of IT and networking.

In an environment where the traditional network operator has truly become a 'service provider', the locus for decision-making is shifting from operations to finance — to encompass the overall strategic view of the business. As partner to providers around the world, Alcatel-Lucent has the knowledge base to ensure all considerations are included, strategic, operational and technological alike. Those considerations are captured in the cost-transformation model — future-minded yet prudent investment strategies for building network capacity and realizing efficiencies; managed services, multi-vendor maintenance and the efficient migration of legacy networks; and ultimately the creation of a High Leverage Network that can support the operator's pursuit of its vision.

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