EXPERIENCE IS EVERYTHING

CUSTOMER EXPERIENCE STRATEGY FOR THE NEW MOBILE ECONOMY

STRATEGIC WHITE PAPER

Customer experience is now at the core of mobile business success. But growing churn, complexity and expectations are making it difficult for service providers to deliver an experience that can stand out from the competition, satisfy customers and boost profitability.

To improve the mobile customer experience, service providers need to understand and address it from the customer's perspective. Service providers must address each specific challenge as part of a larger customer experience vision. The point product approach of the past — addressing a single specific challenge without consideration for a broader, end-to-end solution — is no longer sustainable. It may even be detrimental to efforts to improve customer care, operational efficiencies and personalization. This calls for a complete, end-to-end view that spans every customer, device, application, service and network. With a holistic approach that incorporates key capabilities like device activation, comprehensive customer care, big data analytics and Wi-Fi offloading, service providers can turn customer experience into a differentiator that secures the loyalty of existing customers and pulls customers away from competitors.

Alcatel·Lucent

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1. INTRODUCTION

In the competitive and fast-evolving mobile market, customer experience is everything — the difference between keeping customers and losing them to the competition. Around the globe, customers are adding more devices, connecting more often and using more data.

But mobile consumers still expect more. They want easier access to content and services. Simpler interactions with retailers and brands. A connected experience that spans their work, social and personal lives. Above all else, they want a consistent service experience across all devices and at all times.

It's up to service providers to deliver. But increasing expectations, complexity and churn demand a new approach to customer experience. Service providers can address these challenges by capitalizing on their unique ability to integrate the management of networks, devices, applications and interfaces. With a holistic customer experience management (CEM) strategy that incorporates device activation, customer care, analytics use and experience optimization, providers can reduce complexity and churn, boost profitability and optimize the mobile customer experience.

1.1 Mobile broadband: The new normal

The broadband revolution is going mobile. Mobile broadband has overtaken fixed broadband, and it continues to grow at an accelerated pace. According to Infonetics, the global subscriber base for mobile broadband grew to 846 million in 2011 — a jump of nearly 50 percent compared to 2010 — and will reach 2.6 billion by 2016.[1] Business Insider projects that, in the Group of 20 (G-20) countries,[2] the ratio of mobile to fixed broadband subscribers will shift from approximately 1:1 in 2010 to 3:1 by 2015 (Figure 1).[3]

Figure 1. Broadband subscriber growth in the G-20 countries
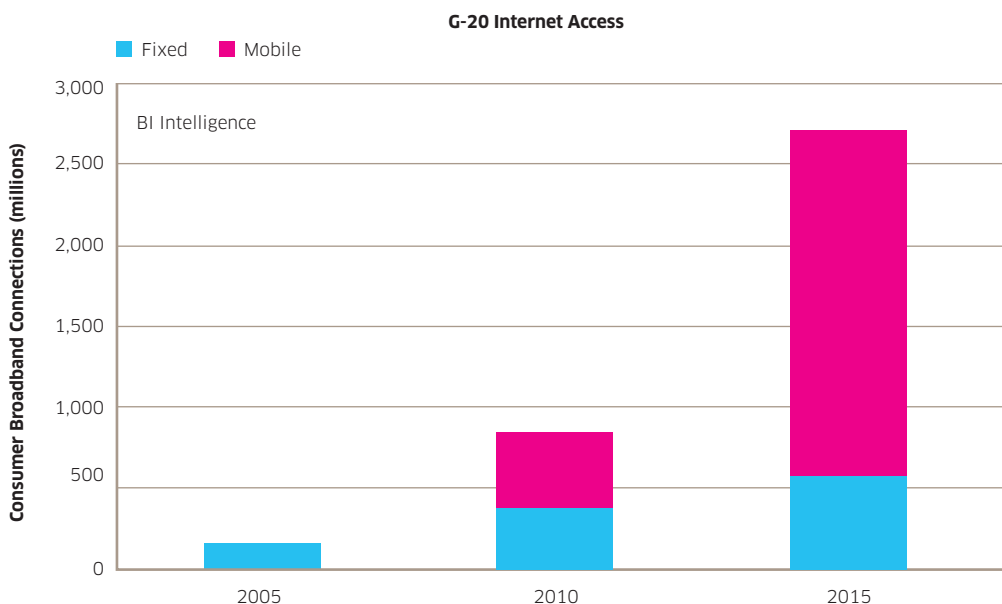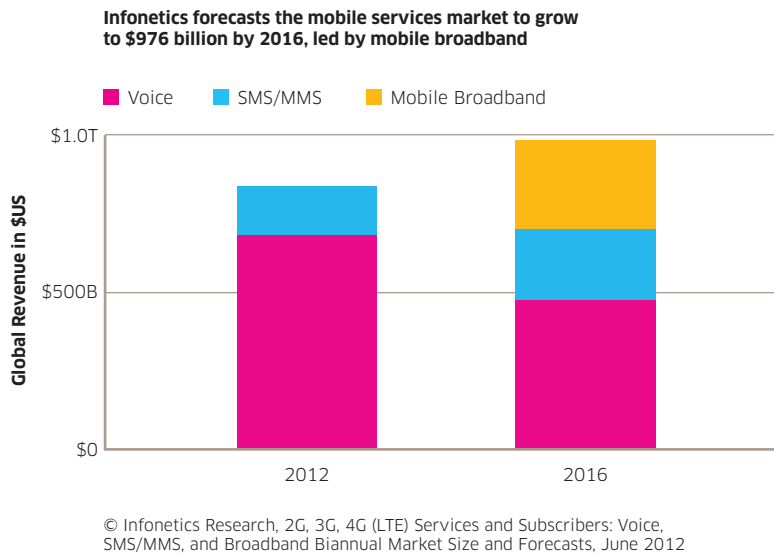

1 "Total Fixed and Mobile Subscribers Pivot." Infonetics, 2012.
2 The G-20 includes 19 countries (Argentina, Australia, Brazil, Canada, China, France, Germany, Indonesia, India, Italy, Japan, Mexico, Russia, Saudi Arabia South Africa, South Korea, Turkey, United Kingdom and United States) and the European Union.
3 "The Future of Mobile." Business Insider, 2012.

The rapid rise of mobile broadband is creating an increasingly strong mobile economy. Mobile broadband now represents the fastest-growing revenue stream for mobile operators. Infonetics predicts that global mobile services revenue will reach US$976 billion by 2016, with the majority of growth stemming from mobile broadband services (Figure 2).[4]

Figure 2. Projected growth in the value of mobile services, 2012-2016

Infonetics forecasts the mobile services market to grow to $976 billion by 2016, led by mobile broadband

© Infonetics Research, 2G, 3G, 4G (LTE) Services and Subscribers: Voice, SMS/MMS, and Broadband Biannual Market Size and Forecasts, June 2012

This new mobile economy is being fueled by skyrocketing demand for mobile data and a rapidly increasing smartphone penetration rate. This rate reached 30 percent worldwide in 2011, albeit with considerable variation from region to region (Figure 3). Business Insider projects that regional variation will continue, but that overall penetration will reach 66 percent in 2016.[5]

Figure 3. Smartphone and feature phone penetration rates by region, 2011
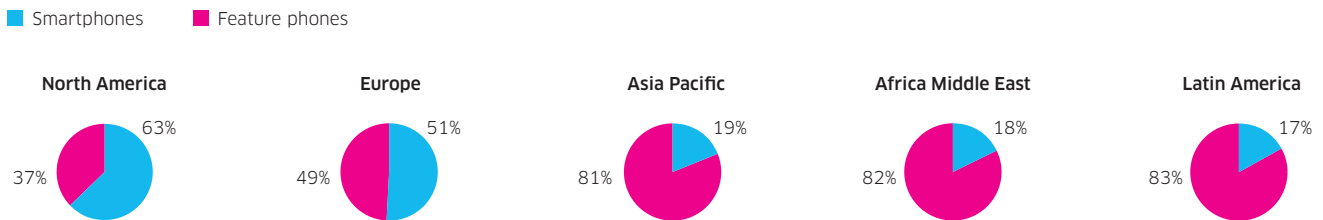
Consumers' healthy appetite for new connected devices also plays a strong role in fueling the mobile economy. In 2011, sales of smartphones slightly exceeded sales of personal computers (PCs). Business Insider expects that smartphone sales will outstrip PC sales by 2016 by a ratio of more than 3:1. Tablet sales, which were slightly below PC sales in 2011, are expected to exceed PC sales in the next two to three years.[6]

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4 "2G, 3G, 4G (LTE) Services and Subscribers: Voice, SMS/MMS, and Broadband Biannual Market Size and Forecasts." Infonetics, June 2012.
5 Ibid.
6 Ibid.

Taken together, these trends and numbers show that mobile broadband has become the new normal. Now more than ever, consumers expect ubiquitous, seamless connectivity across any device, on any network.

1.2 Mobility fuels the connected experience

In growing numbers, consumers are becoming wireless nomads who incorporate the mobile experience into their personal and professional lives. This experience is expanding to include more devices and access technologies, and even fixed technologies like Wi-Fi and femtocell. It's also evolving to accommodate employers' increasing openness toward bring your own device (BYOD) policies. Wireless nomads provide a glimpse into the way tomorrow's customers will use mobile technology.

THE WIRELESS NOMAD, TODAY'S MOST MOBILE CONSUMER

She's always connected.

From the minute her smartphone alarm goes off in the morning, she's checking her email and looking at new updates on her favorite social networking sites. On the train to work, she's juggling the phone and a laptop, and tunneling into her employer's corporate network. Over lunch, she makes voice calls to friends. On the way home, she streams YouTube clips or plays a word game. Settling in on the couch with dinner, she Skypes her sister and streams a few TV shows through Netflix on her tablet. Before turning in, she checks messages one last time, sets her phone's alarm, and gets ready to start the whole cycle over again tomorrow.

Who is she?

She's a wireless nomad. And she's defining what the next generation of users will expect from mobile technology. She represents the new standard by which service providers will have to measure themselves to ensure that they continue to delight their customers.

Several factors are converging to evolve the connected experience and enable more consumers to become wireless nomads. Yankee Group identifies several trends as catalysts for this ongoing evolution, including a growing and increasingly consumerized mobile workforce, the emergence of mobile as a popular channel for consumers, and the rapid rise to prominence of smartphones, tablets and mobile apps.[7] Figure 4 provides a closer look at these trends.

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7 "MDM is dead. Long live EMM!" Yankee Group, 2012.

Figure 4. The connected experience is fueled by mobility

Growing Mobile Workforce	Mobile as Channel for Consumers	Smartphone and Tablet Growth	Consumerization	Rise of Mobile Apps
Total size of mobile workforce continues to increase Mobile professionals and knowledge workers a growing proportion of total mobile workforce Users demanding mobile technologies	Consumers using smartphones and tablets increasingly to interact with retailers and brands Transactions, couponing, social are all key mobile interactions Mobility is becoming table stakes to compete	Smartphones and tablets will continue rapid growth iOS, Android dominating, but BlackBerry and Windows Phone will continue to challenge	Employees take increasing role in bringing devices to work Employees' desire for familiar experiences influence their choices to bring devices to work and access familiar applications	Tablets and smartphones are being viewed as legitimate computing platforms Applications will fragment beyond e-mail, extend to multiple internal and external interactions

1.3 Customer experience is critical

Today's wireless nomads will be tomorrow's typical connected consumers. Wireless nomads have high expectations that span their personal lives as consumers and their work lives within enterprises. They expect service providers to offer robust and consistent network service quality along with applications that are contextually relevant and personalized. For service providers, customer experience is now at the core of business success. By working to improve end users' perceptions and levels of satisfaction relative to service quality, providers can smooth the path to increased customer lifetime value (CLV).

The average mobile customer switches service providers every 27 months — more than twice as frequently as a decade ago. Every year, 44 percent of customers switch providers.[8] This number varies drastically between pre-paid and post-paid subscribers and between countries. For example, service providers in Canada, the US and Sweden typically experience annual churn rates of 15–20 percent. Annual churn rates in Finland, Mexico, and Central and South America fall into the 20–30 percent range. In Cambodia, Laos and Vietnam, annual churn rates exceed 100 percent.[9] Service providers can't afford to wait. They need to take action to improve subscriber retention.

To enhance the customer experience, service providers need a deeper understanding of customer perspectives and pain points. This requires an end-to-end view of the customer, one that spans the devices they own, the networks they use to communicate, and the personal or work-related applications and services they consume. Service providers' underlying network infrastructure and seamless service offerings present a unique foundation for enhancing the customer experience. And service providers recognize that customer experience represents a prime opportunity to differentiate from the competition and capture customer loyalty. But what do customers want?

8 "Global Mobile Customer Loyalty Reaches All-Time Low." Strategy Analytics, 2012.
9 Data collected by Alcatel-Lucent from annual reports of leading service providers.

Customers crave a consistently superior experience across home and mobile devices. To customers, mobility is no longer limited to the cellular network. It now includes micro technologies such as Wi-Fi, femto and metro cells. These technologies are essential tools for service providers seeking to implement policy-driven Wi-Fi strategies to address cellular congestion and optimize quality of experience (QoE).

Customers don't adjust their expectations based on whether they are connected to a mobile or fixed network. What's important to customers is to enjoy a consistent service experience across all devices all the time. Fixed mobile convergence (FMC) isn't a new concept, but it can be a key differentiator in helping service providers deliver the superior experiences customers want. For example, it can sustain and promote the customer experience by preventing customers from being transferred to different help desk agents — or forced to call different support numbers — based on the device for which they need support.

2. CHALLENGES AND OPPORTUNITES

The rapid emergence of a new mobile economy is being fueled by the many ways in which mobilization is transforming the ways people communicate, interact and do business. This ongoing transformation presents important challenges to service providers. These include high churn rates, increasingly complex technologies and customer expectations, and the need to deliver more personalized, relevant and consistent experiences. The growing trend toward mobility shines a spotlight on customer experience management as a means and opportunity to address these challenges, stand out from the competition and secure customer loyalty.

2.1 Reduce churn and boost profitability

Customer experience has a direct and significant impact on churn and revenue. In a 2011 study, Harris Interactive found that 89 percent of consumers began doing business with or purchasing from a competitor following a poor customer experience. The same study also revealed that 86 percent of consumers will pay 25 percent more for a better customer experience.[10]

These findings are highly relevant to fixed and mobile service providers. However, churn rates tend to be higher for mobile services than for fixed services like voice, high-speed Internet and video. High churn rates accentuate the challenges inherent in the hyper-competitive mobile market and force providers to ratchet up spending on customer retention and acquisition.

In 2012, Yankee Group conducted primary research into mobile consumers' attitudes and experiences relative to their mobile services and service providers. This research revealed that pricing, network service quality and discounts are top of mind for consumers in assessing their relationships with service providers.[11] These findings imply that:

• Mobile service providers are not, generally speaking, delivering optimal network service quality

• Consumers generally perceive service offerings as being equivalent from one service provider to the next

• Many service providers have trouble differentiating on anything other than price

10 "2011 Customer Experience Impact Report." Harris Interactive, 2011.
11 "The Customer Experience Conundrum for Mobile Operators." Yankee Group, 2012.

This Yankee Group research project also found that, in relative terms, loyalty programs, self-service, and retail stores are less important to consumers. However, these attributes remain very relevant as they offer mobile service providers opportunities to fully leverage their assets and fuel long-term differentiation. In the short term, issues around network service quality will overshadow lower-ranked attributes. But improved network service quality does not offer long-term differentiation, as it will eventually be considered table stakes. Over time, loyalty programs and self-service capabilities will become critical elements in efforts to improve the customer experience and reduce churn.[12]

Many markets have reached subscriber saturation, with mobile penetration rates exceeding 100 percent across Europe and in countries like Japan, the United States,[13] South Africa[14] and Brazil[15]. In response, service providers are shifting their attention from customer acquisition to customer retention. A global survey of mobile service providers by Heavy Reading and Alcatel-Lucent found that service providers are investing in CEM as a means to:

• Increase subscriber numbers and improve profitability

• Reduce operational costs

• Maximize network investment

In fact, these were three of the top five CEM drivers named by respondents to the survey. All three go hand in hand with the quest to improve the bottom line. When it comes time for service providers to build business cases for implementing CEM solutions, these factors will heavily influence their decisions.

Respondents to the Heavy Reading–Alcatel-Lucent survey also identified qualitative goals for CEM investments, such as improving brand value and perception and providing competitive differentiation.[16] While these goals are more difficult to measure, service providers clearly see CEM as an opportunity to rebuild customer trust in their brands by being perceived as doing things differently and better.

2.2 Manage increasing complexity

Mobile service and application offerings are becoming more and more complex. But consumers expect the service experience to be increasingly seamless and simple. For mobile service providers, the need to handle complexity and deliver simplicity is a daunting challenge. Service providers need the ability to manage:

• A growing assortment of devices, including set-top boxes, smartphones, residential gateways, tablets, laptops, gaming consoles and e-readers

• Devices running on a variety of operating systems and operating system versions

• The adoption of a broad range of mobile standards and protocols, such as TR-069, TR-181, OMA and XMP

• The increasing diversity and availability of network technologies, including GSM, CDMA, UMTS, LTE, Wi-Fi, Femto and Bluetooth

12 Ibid.
13 "European Mobile Industry Observatory 2011." Joint research study between the GSMA, A.T. Kearney and Wireless Intelligence, November 2011.
14 "Sub-Saharan Africa Mobile Observatory 2012." Joint research study between the GSMA, Deloitte and Wireless Intelligence, 2012.
15 "Brazil Mobile Observatory 2012." Joint research study between the GSMA, Deloitte and Wireless Intelligence, 2012.
16 "Transforming the Telco Brand through CEM: Service Provider Strategies." Joint research between Heavy Reading and Alcatel-Lucent, 2012.

The challenge isn't getting easier. Service providers now have to manage tens of thousands of combinations of devices, operating systems, standards and network technologies. A May 2012 OpenSignal study identified almost 4,000 distinct Android devices.[17] The growing list of services and applications that consumers use on a daily basis adds to the challenge. Table 1 highlights this challenge by providing a snapshot of the size and reach of the Apple App Store and Android Market.

Table 1. Sizing up the Apple and Android applications storefronts

	Apple	Android
Total Downloads	25 billion (March 2012)	11 billion (Jan 2012)
Downloads per month	1 billion	1 billion
Downloads per device	83	53

Service providers face complexity at every turn as they attempt to manage the mobile experience. They have to manage the devices, networks and service offerings and all touch points to the consumer (or employee). These touch points include customer care, self-care and campaigns offered to customers.

The need to stay on top of so many different elements makes it difficult (and expensive) for service providers to manage the overall customer experience journey. New devices, operating systems and technologies bring new intricacies and generate more calls to call center agents. These calls will be increasingly difficult to resolve.

A Yankee Group study of mobile consumers found three factors to be most important to consumers when they speak with call center agents.[18] Getting everything fixed or resolved in one call is the top factor, named by 70 percent of respondents. Reaching an agent who has the authority and tools to fix a given problem is next, named by 51 percent of respondents. Reaching an agent that can remotely diagnose and troubleshoot problems is third, with support from 49 percent of respondents.

A Heavy Reading–Alcatel-Lucent study found that 40 percent of service providers identify a "unified view of the customer" as critical to their ability to differentiate.[19] Not having this unified view can hinder the customer experience. The need for a unified view will increase as the BYOD trend gains momentum in the enterprise world. An ability to manage the end-to-end customer experience will soon become paramount to service provider success.

Service providers now place reducing customer churn, limiting complaints and queries, and accelerating the resolution of customer problems among their top objectives. However, few service providers have the technology they need to support these objectives. Many are hampered by their reliance on a network-focused view of operations and inability to adopt a customer experience-centric approach. By choosing the right CEM solutions and partnering with the right CEM vendor, however, service providers can focus their operations on customer experience and improve customer perceptions of in-service quality.

17 "The many faces of a little green robot." Visualization of Android fragmentation, OpenSignal, 2012.
    http://opensignal.com/reports/fragmentation.php
18 Ibid.
19 Ibid.

2.3 Optimize the customer experience

Mobile consumers want an experience that is consistent, transparent and personalized. They expect that the network will always be available and that it will always provide uninterrupted service. An Alcatel-Lucent-sponsored study of wireless nomads by Yankee Group asked consumers to identify the biggest areas for improvement by service providers. Network service performance ranked first, followed by fewer dropped calls and interruptions.[20]

As long as network service performance remains suboptimal, consumers will rank it as highest among areas for improvement by service providers. In addition, price will remain top of mind and block real differentiation opportunities like those highlighted in section 2.1.

2.3.1 Improve perceptions of in-service quality

In a report on optimizing the customer experience, Cerillion and Telesperience indicated that 55 percent of consumers form their opinions of service providers based on their perception of in-service quality.[21] But only 34 percent of service providers have the technology to deliver on in-service quality. Adding to this challenge is the fact that mobile networks are not designed to meet the forecasted growth in demand for mobile data. Yankee Group's study of wireless nomads projects that data demand will increase by a factor of 29 by 2015.[22]

In the near term, it is important for service providers to harness opportunities for optimizing network resources. For instance, Wi-Fi offload enables service providers to divert mobile data traffic from congested cellular networks to less congested fixed networks. These and other policy-driven connectivity management capabilities will become increasingly important elements in service providers' strategies for managing mobile data and sustaining a superior customer experience.

2.3.2 Offer transparency

Transparency is still a major concern for mobile consumers. Many fear using too much data, along with the cost they may incur in doing so. In its April 2012 US mobile broadband survey, Yankee Group cited cost as one of the top reasons that consumers avoid using the mobile internet.[23]

Service providers can address these fears and enhance the overall customer experience by making mobile data plans transparent to customers and by providing a real-time mobile data experience that puts the customer in control. This additional transparency and control will encourage consumers to buy more data when they need it. For instance, service providers are uniquely positioned to combine real-time charging with data-driven policy enforcement to support a real-time mobile data experience where the customer is in control. No other industry player can offer this experience-enhancing combination.

2.3.3 Deliver personalization and relevance

Personalization and relevance are increasingly important to mobile consumers. Consumers don't want to be bombarded with offers that are irrelevant to them. Irrelevant offers represent a wasted investment for the service provider and can be perceived as an annoyance by the consumer.

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20 "Wireless Nomad." Study by Yankee Group and Alcatel-Lucent, 2012.
21 "Optimizing the Customer Experience for SMARTs." Study by Telesperience and Cerillion, 2012.
22 Ibid.
23 "US Mobile Broadband Survey." Yankee Group, 2012.

Analytics offers mobile service providers the ability to forecast consumer behavior, anticipate service impacts and optimizing the network. Analytics can also enable service providers to personalize service offerings at an individual level and deliver more contextually relevant promotions to customers. This opens up opportunities to create compelling and contextually rich offers that are tailored to consumers' specific needs in real time. Armed with analytics, service providers can enhance the end-to-end customer experience journey and improve loyalty in turn.

3. A HOLISTIC APPROACH TO MOBILE CUSTOMER EXPERIENCE

Service providers can address their key challenges and secure business success by forging stronger and more valuable relationships with mobile customers. The key for service providers is to adopt a holistic approach that unifies decision makers, organizations, processes and strategies around a single, comprehensive vision for customer experience improvement. An ideal approach will incorporate several essential elements, including:

- Device management and service activation
- Comprehensive customer care
- Big data analytics
- Wi-Fi offloading
- Support for the growing enterprise work–play link

In choosing an approach to customer experience, service providers will want to ensure that today's investments support future change and evolution. This means ensuring that each investment becomes a key component of a fully integrated end-to-end customer experience solution. With end-to-end solutions, service providers can manage the mobile broadband experience in the home and on the go. They can remove duplication and streamline customer support by seamlessly managing fixed and mobile devices and applications. These actions will create revenue opportunities by driving device and technology acceptance and extending service providers' reach to new services.

3.1 Device management and service activation

Device management was simple in the feature phone era, mainly a matter of provisioning essential connectivity parameters on devices. But smartphones and tablets are as complicated as PCs, and it takes much more knowledge and effort to manage them. Efficient smartphone management demands in-depth knowledge of many different device management protocols and proprietary operating systems. It also calls for a solid grasp of how these elements mesh with the unique capabilities of each device. The operational complexity in managing the plethora of devices leads many providers to use device management and service activation as entry points for building CEM strategies.

To address smartphone complexity, service providers need advanced device management capabilities that support 2G, 3G and 4G networks. They also need robust tools that can provision services over the air, push configuration updates and repairs remotely, and perform large-scale actions on targeted devices. As device management protocols become less relevant, the focus is shifting to the management of specific operating systems. To ensure a high-quality customer experience, service providers need an arsenal of capabilities that can manage the diverse device, operating system and firmware revision combinations that customers use to connect to their networks.

The essential step in managing a device is to place a management agent on the device. The agent can then be used to configure the device. This is easier said than done, since there is no standardized management client that applies to all devices and platforms. Successful deployment and use of management agents requires consideration of several key areas, including:

- **Activation:** Bringing devices within the service provider's perimeter of control. Service providers can choose activation mechanisms that address specific circumstances.
- **Automatic device detection:** Automatically detecting new devices in the network and provisioning them accordingly.
- **Self-registration:** Enabling the end user to identify the device in the network using a specific portal or application.
- **Back-end system integration:** Building a system that can bulk-activate services in the most effective manner possible.
- **Linking care with activation:** Enhancing the customer experience by linking care actions such as configurations and firmware upgrades to the activation event.
- **Scalability:** Addressing rapid device deployment and scaling to support tens of millions of devices.

Service providers are increasingly interested in promoting simple and ubiquitous connectivity through value-added capabilities such as e-mail services, branded applications stores, streaming music services and Wi-Fi hotspots. They are also planning to introduce applications that can leverage technologies like Rich Communication Services (RCS). To simplify and smooth the introduction of these services, providers need a device-agnostic service management framework that can seamlessly deliver, activate, manage and troubleshoot services over the air.

The short turnaround time for new firmware versions for mobile platforms creates issues for service providers and users alike. Most of these issues are caused by outdated device firmware, which can even be present on devices when users buy them from retail outlets. To keep firmware up to date on devices (and promote a better user experience), service providers can consider upgrading it proactively, without waiting for users to complain. These proactive upgrades call for a device management platform that can perform firmware upgrades over the air, that can scale to support upgrades for millions of devices, and that has the flexibility to stagger upgrades over specific time periods to minimize the impact on regular user traffic. The result is a more seamless service offering and enhancement to the overall customer experience.

3.2 Comprehensive customer care

In the past, diagnosing service issues involved checking connectivity issues and detecting service quality degradations for voice and SMS. The service provider had firm control of these activities. With smartphones, control is more difficult to establish. For example, smartphones typically run applications from many different vendors. A specific device may behave inefficiently on a 4G network. A poorly designed application may use network resources indiscriminately and affect all the users of a particular cell site. All of these issues can hinder the customer experience and put pressure on customer care departments.

Today, a mobile device may be connected to several radio and access technologies at once. For example, it may be connected to Wi-Fi, cellular and Bluetooth, or be tethered to another device. The sheer variety of possible connections makes it much harder for call center agents to diagnose service issues. An agent often has no idea which network connection is active on a customer's device. In some cases, for example, a problem raised in a mobile call center may be caused by an incorrectly configured home Wi-Fi router.

More and more service providers are turning to device management solutions as a means to enable and enhance self- and agent-assisted customer care. These providers view device management as a means to gain greater visibility into the operation and provisioning of mobile devices, and to offer step-by-step workflows that can resolve device-related issues. A properly architected device management platform can also provide a set of pre-built capabilities that enable service providers to proactively diagnose and resolve device-specific issues over the air.

Service providers are also investing heavily in new 4G LTE networks and upgrading existing networks. However, these transitions and expansions may expose users to transient connectivity issues, specifically during inter-network handovers between 4G and 3G networks. Users may also be affected by poor network coverage or congestion in the network, both of which can impact customer experience and increase the need for customer care.

The customer care opportunity is clear: Call center agents would diagnose and resolve more service issues if they could easily determine whether a given issue was being caused by the device, an app running on the device, or the network. However, most service providers lack full-featured diagnostic tools that can give agents a holistic view of the state of a given device.

An absence of visibility and control creates a fragmented customer experience. Fragmentation makes it difficult to identify the root causes of customer issues, and nearly impossible to leverage real-time business intelligence in an effective way. Customer care agents sometimes stop short of solving a problem because they can't see or control what's occurring in the customer environment and the mobile broadband network.

The end result of fragmentation is high average handle times for support calls and low first call resolution (FCR) rates. These factors decrease the likelihood that customers will buy more services and increase the likelihood that they will churn. To keep customers satisfied, service providers need an end-to-end integrated customer care solution that uses business intelligence from all customer touchpoints to determine and proceed with appropriate corrective action.

For service providers, it's imperative to have a single interface that can automate and consolidate critical diagnostic information to help agents pinpoint and resolve subscriber issues. By extending visibility and control across the entire service delivery chain, a unified interface dramatically increases agents' ability to gather, analyze and diagnose critical information from customer devices, networks and back-office systems. This added visibility and control can help agents resolve subscriber problems faster and more accurately, the first time subscribers call. In essence, a unified interface streamlines CEM processes and reduces problem escalation by empowering agents to resolve a wider range of customer support issues.

Service providers can further improve the customer experience and reduce operational expenses by deploying customer self-service capabilities. Self-service management solutions enable providers to deliver automated service configurations OTA through an intuitive web interface. Customers can use this interface to manage their mobile services without having to contact the call center. Self-service management can also enable service providers to increase the value of their existing mobile device management, business and operations support systems (B/OSS), and network management investments.

3.3 Big data analytics

Across the telecom industry, big data analytics is viewed as a means for providers to see, understand and improve the customer experience. Recent reports from Analysis Mason and TM Forum show customer experience improvement as a top-three driver for analytics initiatives.[24, 25] These reports also show that service providers are looking beyond customer support and thinking about how analytics can help them address the entire customer lifecycle across all touchpoints.

This is happening because service providers want to become the caretakers of the customer experience. In analytics, they see opportunities to develop new capabilities, solve problems and improve QoE. Service providers know the pressure is on: If they can't deliver on QoE, customers will turn to someone else. Lost customers mean lost revenue, lower CLV and fewer opportunities to monetize service portfolios.

Service providers see analytics as an opportunity to stand out from the competition. For example, respondents to a 2012 CEM-focused survey by Alcatel-Lucent and Heavy Reading named "support for big data" the most critical function for customer experience-driven differentiation. Big data analytics is also seen as a means to streamline network and service management processes and increase operational efficiency. Many want to use analytics to cut costs through reduced cycle times and faster problem resolution.

To seize these opportunities, service providers need QoE-focused analytics solutions that deliver a complete picture of what customers are experiencing at any given moment. These solutions must offer data-driven insights that can help providers anticipate, under-stand and react to what's happening in the network and at every customer touchpoint. The right insights will help providers prioritize issues and offer proactive support that improves the customer experience and reduces customers' propensity to churn.

Knowing what to do, and what can be done, with big data are important keys to success. But these things are easier said than done. For its special report on big data, European Communications asked respondents to name the biggest barrier for operators seeking to execute a successful big data strategy. A lack of understanding of the potential that big data presents ranked first, with support from 27 percent of respondents.[26]

This response highlights the real challenge for service providers: finding ways to extract value and create tangible benefits from big data. Providers have vast amounts of information about customers, networks, services and operations. So how can they leverage this data?

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24 "The Big Revenue from 'Big Data'." Analysis Mason, 2012.
25 "How CSPs can use Analytics to Monetize their Data." TM Forum Insights Research, 2012.
26 "Big Data Special Report." European Communications, Q2 2012 issue.

Most providers lack the expertise they need to extract value from data and apply it within their operational context. Successful monetization requires them to rethink the way they operate their marketing engines and redefine the roles that business intelligence and analytics play throughout their organizations. Again, it's easier said than done.

The European Communications study underscored the need for service providers to link their big data initiatives to their overall strategy and deeply ingrain them in day-to-day operational processes. Providers need to focus on the business questions that big data can answer — for example, how to improve FCR to reduce costs and improve the customer experience — and the way these questions can inform future strategies. Success comes down to knowing what questions to ask and letting data fill in the answers.

Service providers can succeed with big data by taking a few key considerations into account:

- **Remember real-time.** Providers can't just batch-process events after they occur. They need quick and easy access to real-time information so they can address problems and opportunities as they arise. By combining real-time insights and analytics with a best-practice approach to collecting, analyzing and distributing data, providers can use big data to understand and act on complex customer behavior.

- **Make data digestible.** Data has to be presented in an intuitive and easy-to-understand format that suits the needs of each different end user. Marketing, customer care and network operations departments all need a different level or "language" of insight to make informed, timely and effective decisions. Providers need solutions that can tailor information for each audience.

- **Focus on CLV.** Respondents to a recent TM Forum survey highlighted the challenge involved in determining and acting on CLV. Some providers felt that they could get a better sense of CLV by looking beyond customer transactions and considering a broader set of interactions, including social networking. Analytics can help providers identify and retain profitable customers. It can also help them understand what causes a lack of profitability of some customers, and how to increase CLV by developing new products, tweaking existing products or developing targeted marketing campaigns.

With big data, the barriers are significant, and cost is an important consideration. But service providers are sitting on a wealth of data about customers, networks, operations and services. With big data analytics, they can start to use this data proactively and turn it into actions that improve the customer experience, increase customer satisfaction and promote operational excellence.

3.4 Wi-Fi offloading

Service providers are working to cope with explosive demand for mobile data services. It's critical for them to keep finding new ways to optimize the network. As well, consistent access to the mobile network is top of mind with both consumer and enterprise employees. One logical step is to deploy analytics that can automatically optimize the user experience to offset the impact of network congestion. These analytics can combine network and location data, policy settings and user preferences to identify and act on opportunities to shift users to cost-effective alternative connections and ensure an optimal customer experience.

Wi-Fi offload enables mobile devices (phones or tablets) to seamlessly switch from cellular networks to Wi-Fi connectivity for data services. For service providers, one of the goals is to ensure that customers connect to Wi-Fi network that are either extensions of the service provider's cellular network or part of a well-defined list of preferred networks. The rationale is that the provider guarantees service continuity and quality for these Wi-Fi networks, but not for Wi-Fi networks outside its perimeter of control. In this way, the provider can measure and control the customer experience.

With Wi-Fi offload, the service provider can assign a priority to each Wi-Fi network so that mobile devices can determine which networks to try first. The provider can also apply rules and constraints that help mobile devices determine whether they should connect to visible Wi-Fi networks. Rules and constraints can be applied at a global level across all Wi-Fi networks, or to individual Wi-Fi networks. For example, a provider may assign a rule that defines a minimum signal strength. This rule will ensure that mobile devices won't attempt to connect to Wi-Fi networks that offer signal strength that is lower than the minimum value.

Wi-Fi offload provides many opportunities for service providers. For example, firmware sizes now run up to hundreds of megabytes for smartphones, with upgrades released up to four times a year. Providers can't count firmware upgrades against consumers' data usage, so these upgrades are a burden on cellular networks. However, they can use Wi-Fi offload to ensure that OTA firmware upgrades only happen when users are connected to Wi-Fi networks. This strategy is gaining traction among North American service providers.

3.5 Enterprise mobilization

Mobility is revolutionizing the workplace, just as it transformed the consumer experience. Mobility on 4G and unlicensed spectrum will change the way we use personal devices. The most successful customer experience strategies will be those that extend a high-quality mobile experience across all facets of life. Enterprises and service providers that embrace the power of mobility and extend guaranteed SLAs and QoS across devices and service offerings will maximize strategic value and extend better service quality to consumers at work and play.

3.5.1 Support for BYOD strategies
For example, BYOD strategies are quickly gaining momentum in the enterprise world. But the complexity and cost associated with managing segmented mobile assets remains a huge challenge for enterprises. Existing mobile device management platforms lack the breadth that enterprises need to successfully manage their mobile assets and processes.

Enterprise IT departments are on the front lines of this BYOD revolution. They have to manage a growing number and diversity of devices and operating systems. They also have to manage the lifecycle and distribution of employee-specific applications while ensuring that security requirements are enforced — all while keeping costs under control. The BYOD experience is different for small and medium businesses (SMBs). Although they may lack IT departments, many SMBs are enjoying enhanced productivity through consumerization, mobilization and technological innovation.

To reap maximum benefit from service quality improvements, enterprises need low-cost, end-to-end solutions that reach across fixed and mobile networks. These solutions must streamline and simplify BYOD on-boarding and management through automating activation, troubleshooting, and problem resolution. Service providers need to support value-added capabilities like Wi-Fi management and incorporate strategies like off-load and Hotspot 2.0, which require comprehensive management and support across fixed access gateways and endpoints. The solutions must also deliver seamless support for identifying and isolating BYOD device issues across enterprise Wi-Fi and service provider networks. By empowering employees with self-service capabilities, service providers can streamline customer care and enhance the customer experience.

3.5.2 Enterprise service management

Service providers are well positioned to mobilize enterprises of all types and sizes, since they have the unique ability to integrate the management of networks, devices, applications, billing security, tenants and APIs. Providers can take the initiative with offerings that manage the end-to-end employee experience. These offers will help enterprises improve productivity, control costs and support applications and services for new classes of devices. Ultimately, these offers will empower employees by providing a secure solution that can manage and distribute customizable private applications and services, including unified communications. The industry has labeled this approach enterprise mobility management (EMM).

Enterprise service management (ESM) provides a more holistic approach that gives enterprises a means to manage comprehensive enterprise services across many different device and network types. For Alcatel-Lucent, ESM means adopting a platforms-based approach that provides unified orchestration and integration across various devices, networks and service types. It also means using workflow technology to support as-needed customization of business functions, faster and easier development, and accelerated time to market.

4. CONCLUSION

Customer experience is the yardstick by which mobile customers measure their service providers. It's also the key factor in determining whether customers remain loyal or take their business elsewhere. Service providers must improve the mobile customer experience to secure business success.

Service providers can improve customer experience by understanding and addressing it from the customer's perspective. To succeed, they need an approach that provides comprehensive visibility into and across every customer, device, application, service and network. This approach must have the support of key players across the service provider organization and incorporate key capabilities like device activation, comprehensive customer care, big data analytics and Wi-Fi offloading.

Alcatel-Lucent enables service providers to address growing customer expectations, churn and complexity by supporting a holistic approach to mobile CEM. This unique approach helps service providers unite decision makers, organizations, processes and strategies around a single, end-to-end vision of customer experience. It is supported by Motive Customer Experience, a robust and flexible portfolio of software and services.

Motive Management solutions help service providers manage the mobile broadband experience in the home and on the go. These solutions remove duplication and streamline customer support by seamlessly managing fixed and mobile devices and applications. They create revenue opportunities by driving device and technology acceptance and enabling service providers to extend their reach to new services.

Motive Analytics solutions help providers assess, measure and enhance the customer experience. These solutions gather insights by continually processing data on customers, behaviors, systems and service delivery capabilities. These insights increase customer lifetime value by driving targeted loyalty, retention, upselling and cross-selling campaigns. They provide timely, relevant data that helps service provider organizations address their own objectives while improving the overall customer experience.

Motive Optimization solutions help service providers enhance the overall quality of experience (QoE). These solutions combine network and device data (gathered using analytics), policy settings and user preferences to identify opportunities to change delivery models in order to maximize profitable usage and improve overall CLV.

CX Consulting services help providers identify, understand and meet their mobile business objectives. Alcatel-Lucent's world-class mobile operations and technology experts help close the gap between customer expectations and experience. These experts benchmark service provider capabilities against industry best practices and create action plans that deliver measurable, impactful improvement.

Alcatel-Lucent understands mobile broadband and offers global leadership in solutions that seamlessly manage fixed and mobile devices. Alcatel-Lucent's Motive portfolio is the trusted choice of more than 180 service providers. It manages 90 million fixed devices and 70 million mobile devices, including 10 million LTE mobile handsets.

5. ACRONYMS

B/OSS	Business and operations support systems	LTE	Long Term Evolution
BYOD	Bring your own device	OMA	Open Mobile Alliance
CDMA	Code division multiple access	OTA	Over-the-air
CEM	Customer experience management	PC	Personal computer
CPE	Customer-premises equipment	RCS	Rich Communication Service
CLV	Customer lifetime value	SMB	Small and medium business
CWMP	CPE WAN Management Protocol	SMS	Short Message Service
EMM	Enterprise mobility management	TR-069	Technical Report 069 (CWMP)
ESM	Enterprise service management	TR-181	Technical Report 181 (Version 2 of TR-069)
FCR	First call resolution	UMTS	Universal Mobile Telecommunications System
FMC	Fixed mobile convergence		
G-20	Group of 20 countries	WAN	Wide area network
GSM	Global System for Mobile Communications	XMP	Extensible Metadata Platform

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