Mobile Data Explosion

How Mobile Service Providers Can Monetize the Growth in Mobile Data Through Value-Added Services

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Executive Summary

The Cisco Visual Networking Index (VNI) Global Mobile Data Traffic Forecast Update projects a 13-fold increase in global mobile data traffic between 2012 and 2017. According to the forecast, mobile network connection speeds will increase sevenfold by 2017, while two-thirds of the world's mobile data traffic will be video.[1] These figures imply that mobile data services are becoming a new revenue source of increasing importance. Furthermore, mobile data services inevitably will cannibalize traditional mobile operator revenue streams, such as those derived from voice or text messaging services— it is becoming more difficult for mobile service providers (SPs) to qualitatively differentiate themselves from their competitors.

One way that mobile SPs can fight commoditization is by offering value-added services (VAS) to end users or to over-the-top (OTT) players. Doing so, however, requires industry "coopetition" (simultaneous cooperation and competition). A well-known example of coopetition is the relationship between Apple and Samsung. Although Samsung is a key supplier of Apple products, it competes directly with Apple in the smartphone segment.

Between March and July 2012, the Cisco® Internet Business Solutions Group (IBSG) and HEC Paris, a leading academic institution, analyzed market conditions and also interviewed 10 OTT players in Europe and the United States to better understand their challenges based on the explosion in mobile data, as well as their needs for potential VAS provided by mobile SPs.

The findings revealed that large and powerful players are concerned about the relevance of VAS to their business, unless such services are related to end-user information. Network bandwidth availability and low latency were key concerns, and interviewees felt that these services should be guaranteed through contracts between the mobile SP and the consumer. Smaller players, however, exhibited more interest in and acceptance of VAS from mobile SPs.
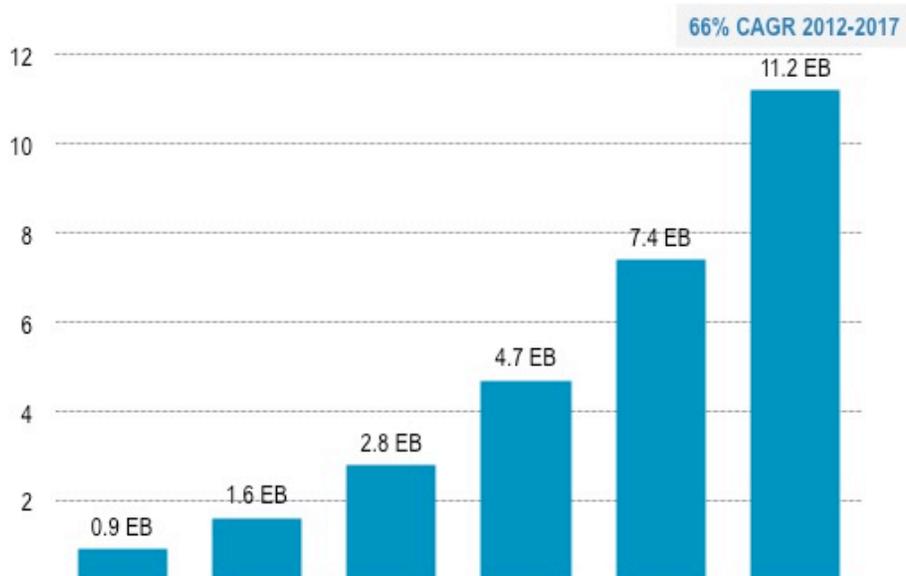
The research also showed that for a successful transformation, mobile SPs must rethink their approach to providing mobile data services. Although many already are, most SPs must become more flexible and proactive in partnering with OTT players.

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[1] "Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017," http://www.cisco.com/en/US/partner/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html

Mobile Data Explosion and Its Implications

Recently, the telecommunications industry has experienced fantastic growth in mobile Internet traffic, which is expected to continue in the coming years. Based on the Cisco VNI, mobile Internet traffic will increase at a compound annual growth rate (CAGR) of 66 percent from 2012–2017 (see Figure 1). Such growth is referred to as the Mobile Data Explosion.

Figure 1.   Global Mobile Data Traffic Growth Will Increase 13-Fold from 2012–2017.

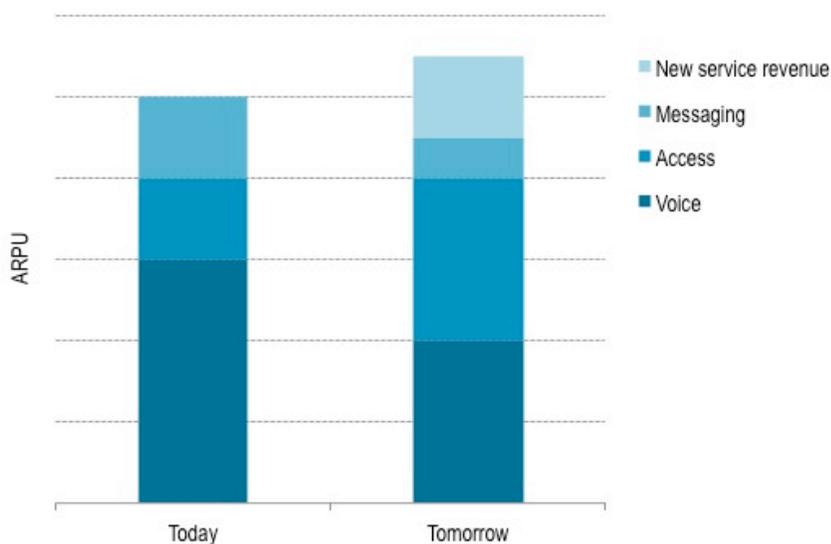Source: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017

This growth has placed major pressure on mobile SPs who have incurred additional costs from investments in new infrastructure. At the same time, they face increasing competition not only from direct competitors, but also from other players across the value chain. This situation stems from a fundamental shift in the industry. Historically, mobile SPs used to control services such as wireless application protocol (WAP) offered over mobile networks. Now, the mobile Internet has changed the rules. Today, end users can directly access services on the web. In addition, voice services are now heavily challenged by voice over IP (VoIP).

A deeper look at the increase in mobile data traffic reveals that video has the biggest impact: By 2017, 66 percent of mobile data traffic will be video, according to the Cisco VNI. The main drivers of this growth are:

- **New services** such as "catch-up TV" and social video sites such as YouTube, which are raising demand for mobile video
- **High-definition (HD) content,** which further increases bandwidth requirements
- **Improvements in smartphone screens,** which are driving the desire for HD content

Average revenue per user (ARPU) now is broken down into voice, messaging, and access. In two to five years, however, these traditional sources of revenue will decrease in favor of access and new services (see Figure 2).

Figure 2.   ARPU Evolution.*

Note: "Tomorrow" equates to roughly 2–5 years. Data is intended to show a trend.
Source: Chetan Sharma Consulting, 2012

Messaging is constantly challenged by new types of interactions, including social media and/or applications for sites such as Facebook or Twitter, as well as new services such as Google Hangouts, which lets users chat with up to nine friends via video. Based on our research and responses from the interviews, the consensus is that mobile data will soon become the primary source of revenue.

The value chain is transforming, and OTT players are reaping the benefits of new infrastructure enabled and financed by mobile SPs. This situation is further complicated by unlimited data plans facilitating the Mobile Data Explosion, with ARPU declining at the same time. To address this, mobile SPs must redefine their role within the telecommunications ecosystem by:

- Focusing on their core business and optimizing costs (nevertheless, with commoditization, their margins are expected to decrease roughly 30 percent to 50 percent[2])
- Creating new VAS developed either in partnership with OTT players (such as content delivery networks for video sites) or in competition with them (for example, mobile SPs could take advantage of their brand image to provide their own application stores and cloud services)
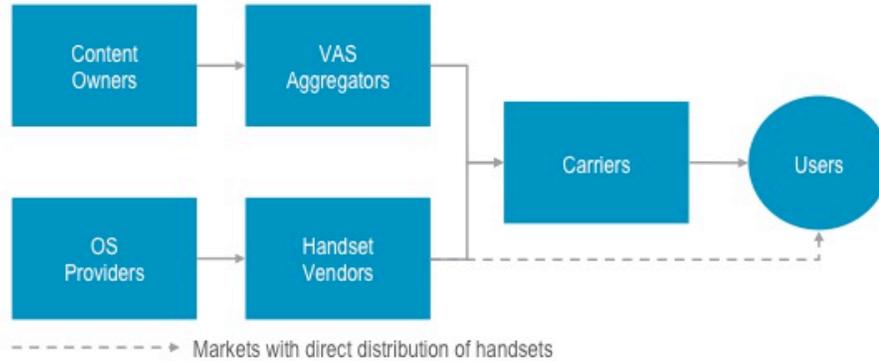
The New Play for Over-the-Top Distribution

The increase in mobile data is one of the root causes of the major shift in the telecommunications industry, and smartphones have dramatically changed the entire value chain. Therefore, a clear distinction can be drawn between the pre-smartphone era and the post-smartphone age (see Figures 3 and 4).

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[2] Chetan Sharma Consulting, 2012.

Before smartphones, mobile SPs were the only players with direct access to the end user. Over-the-top players were required to sign up with mobile providers to transmit their services to end users. Smartphones have eliminated this dependency.
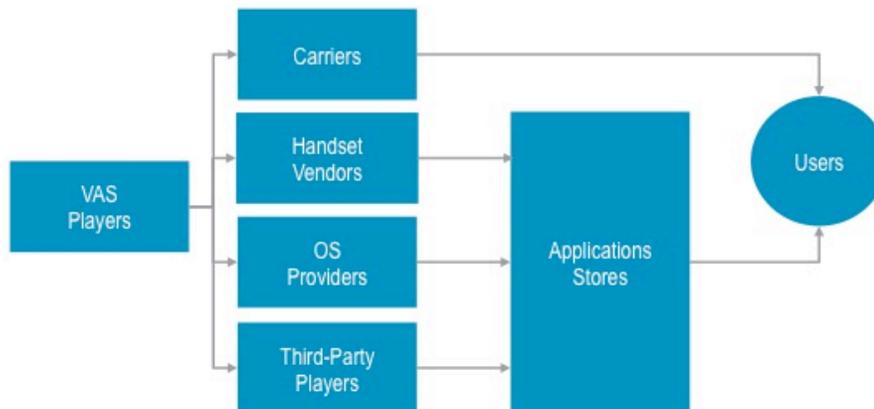
Figure 3.   Telecom Industry Value Chain, pre-2007.

Source: Telecom Circle, 2012

Today, technically everybody has access to the end user, allowing players across the value chain to generate revenues.
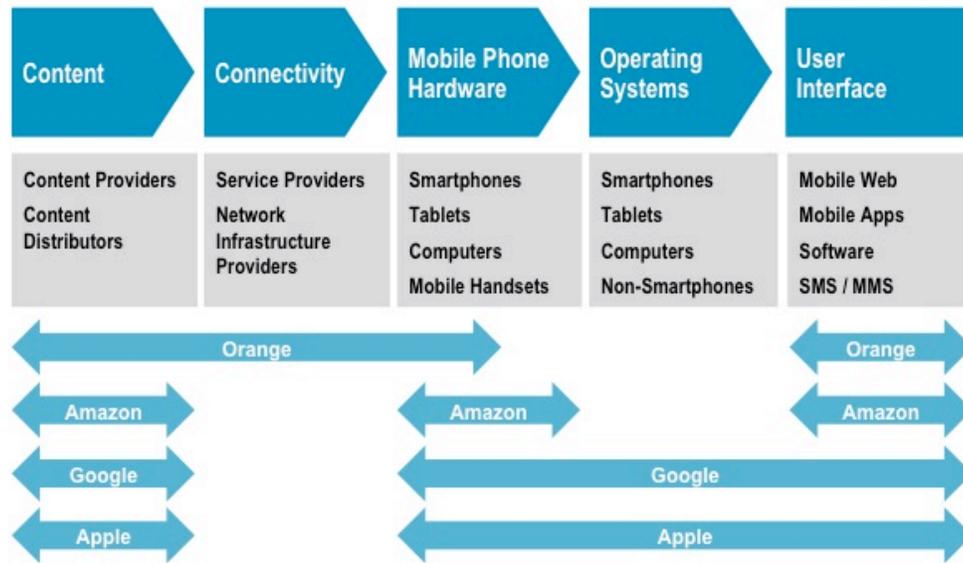
Figure 4.   Telecom Industry Value Chain, post-2007.

Source: Telecom Circle, 2012

Vertical integration across the value chain is another industry trend driving mobile data. For example, Amazon, whose core business used to be content distribution, now has its own brand of tablets—Kindle and Kindle Fire—and applications. Apple, whose core business used to be computer hardware and software, has successfully entered other hardware segments such as the iPod, while becoming a major content distributor via the Apple iTunes store. By the time it entered the mobile handset and tablet space, Apple had already been a powerful player with a well-established network of supplementary products and services. Other successful vertical integrations are shown in Figure 5.

Figure 5.   Vertical Integration of Powerful Players Across the Value Chain.

Source: Cisco IBSG, 2012

It is interesting to analyze what drives consumer behavior now, in the post-smartphone era. A recent study showed that network quality is the most important factor behind consumer purchasing behavior, followed by the monthly cost of the service.[3] Accordingly, mobile SPs still remain powerful players in the telecommunications ecosystem because they have a direct impact on both quality and cost of the service.
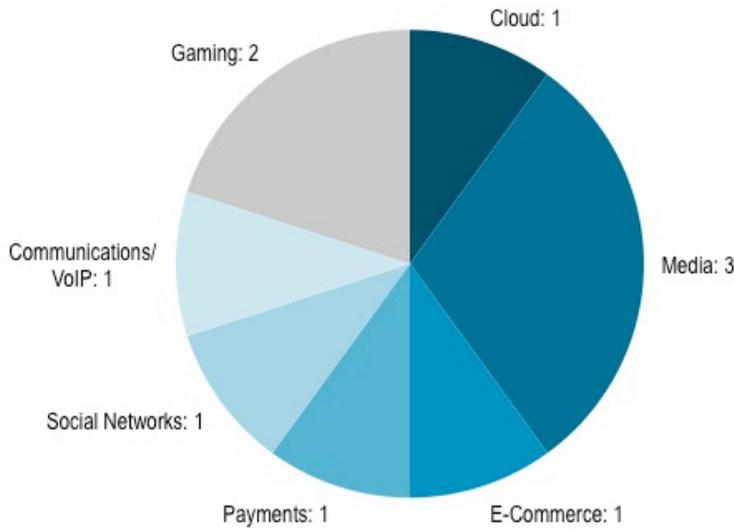
Rise of Mobile OTT Players

Mobile operators can play a major role in helping content providers deliver a unique experience. To determine their needs, interviews were conducted with 10 key content providers with the objective of identifying:

1. Current industry practices and challenges
2. New VAS opportunities

About half of the mobile data content providers interviewed were sizable multinational players with non-negligible power, who also possess significant resources to act independently, should any challenges arise. The other half were relatively small local or regional players, who are less powerful and, thus, often rely on external partners and stakeholders. The types of providers were broken out into seven main categories (see Figure 6).

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[3] "Mobile Future in Focus," comScore, 2012,
http://www.comscore.com/Insights/Presentations_and_Whitepapers/2013/2013_Mobile_Future_in_Focus3

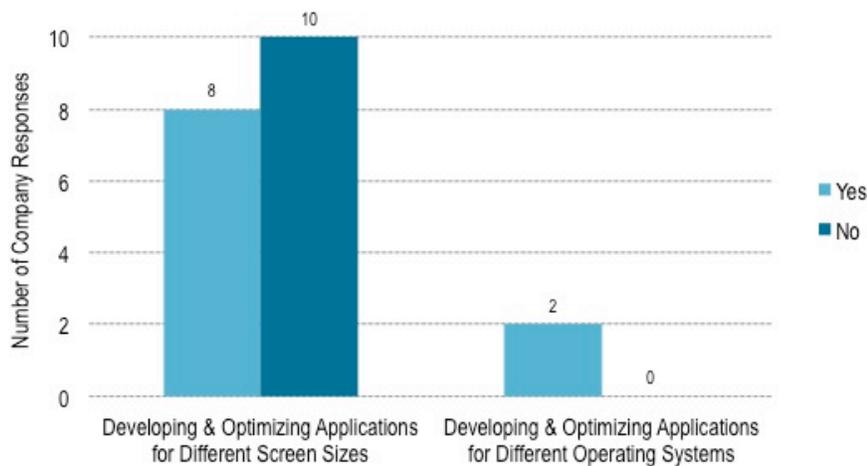Figure 6.   Number of Content Providers Interviewed, by Industry Segment.

Current Industry Practices and Challenges for Mobile OTT Players

The interviews highlighted four issues currently presenting significant challenges to mobile OTT players:

1. Supporting the Types of Devices Consumers Adopt

Developing applications for each screen size and operating system is a major challenge, no matter the size of the company (see Figure 7). The main reasons are high costs and the time it takes to adapt devices to all formats.

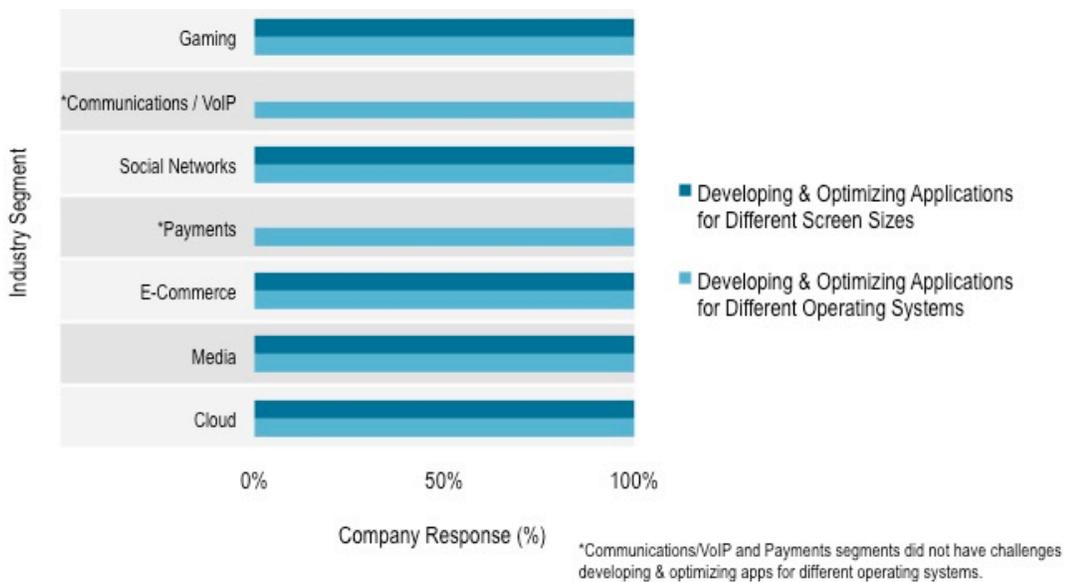Figure 7.   Application-Development Challenges.

Mobile OTTs face cutthroat competition in regard to user and market share: user experience is crucial to their survival. Therefore, OTT players must optimize their applications and content for maximum user experience on each and every device.

Further analysis of screen size revealed that only a few content provider segments—including VoIP and payments providers—were unaffected by various screen sizes because the visual elements of the service are less essential compared with other segments, such as media or gaming.

Consequently, smaller players with limited capacity typically develop applications only for one operating system, which involves making a strategic decision to choose the right—and most popular—OS for its customers. The common choice, according to the interviewees, is to develop the application first for iOS before moving to Android. The costs are expected to increase with the arrival of new operating systems such as Windows 8.

All of the interviewees face challenges in developing apps for various screen sizes or operating systems, or for both (see Figure 8).

Figure 8.   Challenges in Application Development, by Industry Segment.
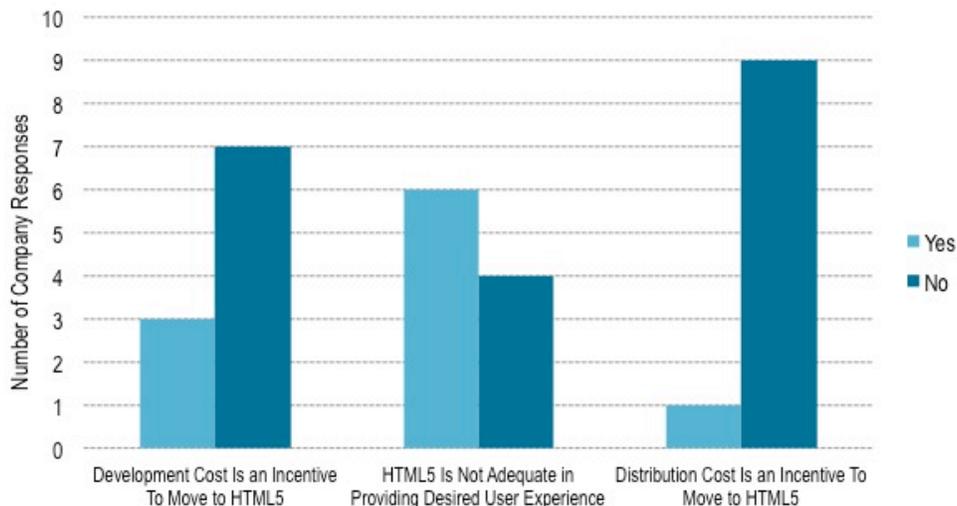

Source: Cisco IBSG and HEC Paris, 2012

2. Reducing Operating Expenses (OpEx) by Standardizing on HTML5

Upon its introduction, HTML5 was deemed to solve all fragmentation issues, allowing programmers to develop one application in HTML5 that would work seamlessly on all devices, decreasing development costs and time. Furthermore, HTML5 applications would not require distribution through application stores such as the Apple App Store and Google Play, therefore decreasing application-distribution costs. (Apple, for example, can charge a 30 percent distribution fee for each app sold.) Application stores find this percentage fair considering the services provided, including billing, customer relationship management (CRM), distribution, and marketing.

However, most content providers already include application-distribution costs in their business plans, which reduce any incentive to develop HTML5 applications instead of native applications.[4]

By contrast, some interviewees mentioned that mobile SPs previously charged between 30 percent and 50 percent of the revenues for billing services only. Based on service packages provided by app stores today, billing represents only 18 percent to 19 percent. The interviewees see this decrease as an improvement. Further feedback on HTML5 is shown in Figure 9.

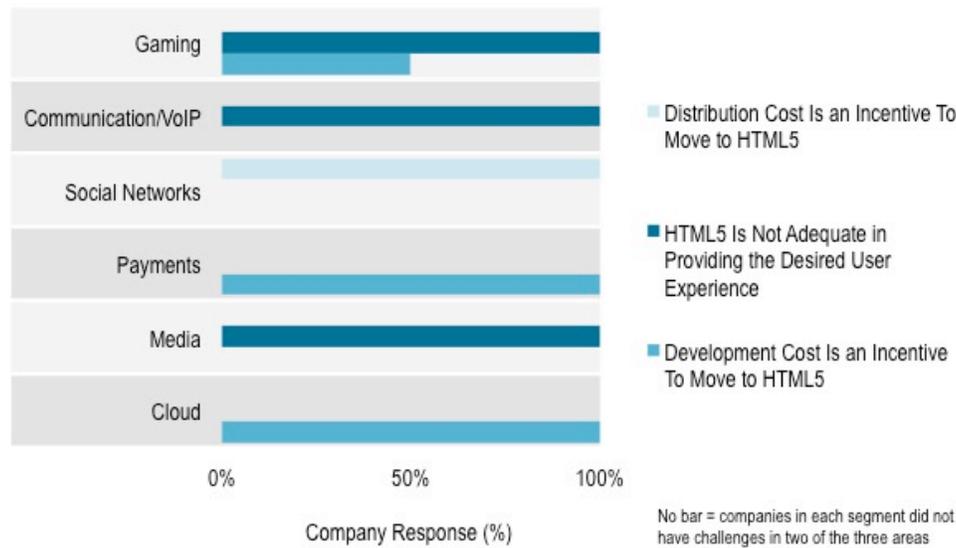**Figure 9.** Challenges with HTML5.

Sources: Cisco IBSG and HEC Paris, 2012

A deeper look at the issues surrounding HTML5 reveals that media, gaming, and VoIP providers face specific challenges with HTML5. For one, the HTML5 gaming experience is perceived as inferior to that of native applications, whereas media content providers encounter important copyright issues. HTML5 does not provide digital rights management and reliable content security, giving these companies solid reasons to continue providing native applications.

Furthermore, as one interviewee stated, "With mobile web, cookies are still unreliable, and users often face obstacles as they try to sign up, purchase, or complete everyday actions." Native applications solve this problem. Additional concerns over HTML5 are shown in Figure 10.

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[4] Native applications are those developed before the introduction of HTML5.

Figure 10.   HTML Challenges, by Industry Segment.

Sources: Cisco IBSG and HEC Paris, 2012

3. Unhinging Mobile Data Traffic Fees

All of the content providers interviewed stated or agreed that current mobile data traffic fees limit extensive use of their mobile services by end customers. This fact is clearly recognized in the mobile gaming and broadcast television (versus on-demand television) sectors. However, content providers seem reluctant to contribute to mobile SPs' costs: "If mobile network providers cannot cover their costs with the current consumer pricing, then their current pricing is wrong," emphasized one interviewee.
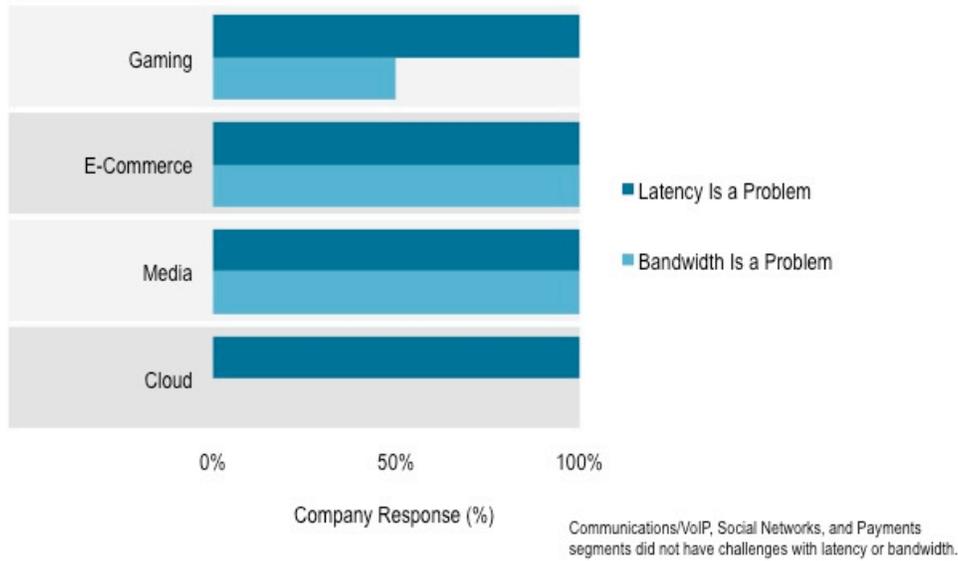
4. Improving the Availability of Mobile Bandwidth to Consumers

Bandwidth represents an issue for roughly half of the content providers interviewed. Moreover, seven out of the 10 companies interviewed said latency is also a problem.

The interviews revealed that content providers can often circumvent bandwidth limitations: Companies manage variable bandwidth by detecting the available bandwidth and adapting the transmitted content quality. Applications are also optimized to use the least amount of bandwidth possible by applying compression and reducing the amount of traffic to a minimum.

A deeper look at network issues (see Figure 11) showed that payment applications, social networks, and VoIP providers easily adapt to network conditions. Gaming, e-commerce, and media providers, however, are not in a position to do so. For them, user experience is critical and can determine the success or failure of a service. Accordingly, these companies plan their product and service roadmaps with respect to mobile network roadmaps.

Figure 11.   Network Issues, by Industry Segment.

Company Response (%)

Latency Is a Problem

Bandwidth Is a Problem

Communications/VoIP, Social Networks, and Payments
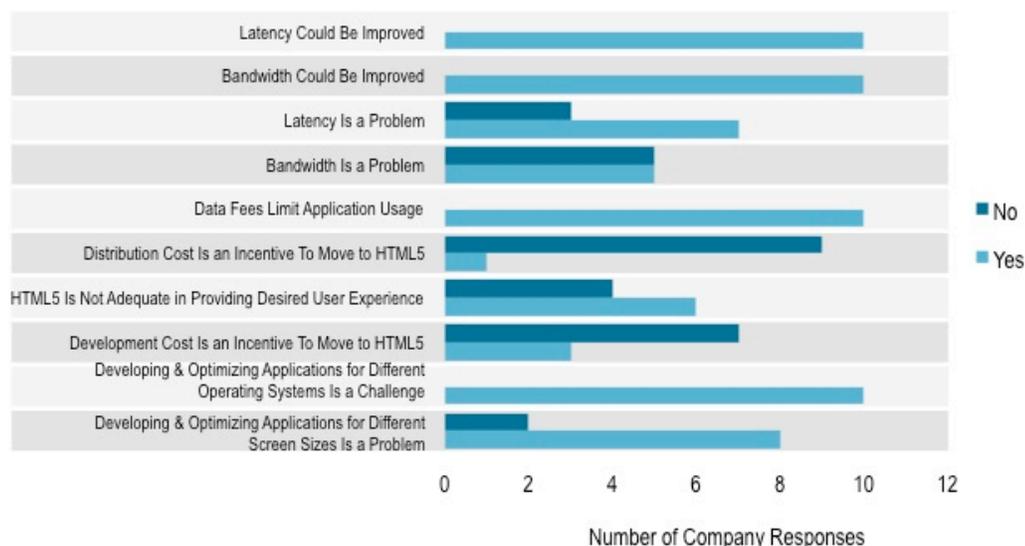segments did not have challenges with latency or bandwidth.

Sources: Cisco IBSG and HEC Paris, 2012

In summary, several widespread challenges were identified across mobile OTT players:

1. Content providers have significant challenges adapting their applications to different devices in terms of operating systems and screen sizes.

2. Despite the promise of HTML5 working on all devices, neither distribution nor development cost savings push content providers toward the standard. Furthermore, the user experience is perceived as inferior, further discouraging content providers.

3. Mobile data fees are generally perceived as a roadblock to scaling more applications.

4. All content providers would enjoy latency and bandwidth improvements, even if they adapt to changing bandwidth conditions.

Figure 12 provides further details.

Figure 12.   Summary of Problems and Practices.

Sources: Cisco IBSG and HEC Paris, 2012

Value-Added Services Mobile SPs Can Offer Today

There are several types of VAS that mobile SPs can put into place today to increase market share and revenue, and to differentiate themselves from the competition.

End-User Information

Based on the interviews, providing end-user information is the only service generally valued by content providers, outside of increased bandwidth and improved latency. Content providers are highly interested in information such as the type of content consumed, and from which locations. Such information would allow content providers to know their customers better. However, legal compliance over privacy-related questions must be ensured. Moreover, the data must be consistent across the various mobile SPs so that content providers can easily gather end-user information and process it as part of a single and standardized data set.

User Identification

Providing user-identification services will enable mobile SPs to help OTT players enhance the customer experience. Doing so would eliminate the need for a user to log in each time he or she wants to access a mobile web application.

Powerful content providers are likely to resist VAS from mobile SPs. As one interviewee noted: "It is important to determine who takes which position in the ecosystem. Telecom operators should focus only on bandwidth and data traffic costs."

Throughout the interviews, large content providers expressed their belief that mobile SPs should continue to improve the quality, speed, cost, and coverage of their mobile network infrastructures to facilitate the emergence of new content experiences and to increase mobile device usage. This belief is partially linked to the fact that large mobile SPs are sometimes perceived as difficult organizations with which to work.

On the contrary, smaller players need a reliable partner with whom to develop and test applications under different network conditions and over multiple devices—doing this alone may potentially limit their mobile market share. Therefore, partnerships will present mobile SPs with an opportunity to develop a complete value proposition and compete head-to-head with their specialized subcontractors.

Key Findings from the Interviews

In addition to the interviews, Cisco IBSG and HEC took a deeper look at content segmentation, which revealed that certain industries can be targeted with specialized solutions. As noted earlier, bandwidth and latency are a significant problem for many provider segments. Content delivery network services that address these issues will be of interest to providers that target video on demand, music, e-commerce, broadcast television, or gaming.

Net-partnerships would enable providers to rebrand phones and preinstall applications such as games, allowing smaller, emerging companies to promote their products as well.

The importance of improving infrastructures was a major takeaway from the interviews. However, complexity exists when it comes to sharing data-transmission costs. One interviewee used an analogy to emphasize this point, saying that drivers pay to use highways, not the carmakers, and therefore users should pay for bandwidth, not the OTTs.

Although the present research was limited to VAS for OTT players, some key opportunities were identified (further analysis would be required to validate these). One is charging end users premium prices for improved quality of experience. Guaranteed bandwidth could be provided on demand for select applications and/or content such as a live football game if a user wants to ensure the quality of that transmission.

Another possibility is providing detailed billing information for companies that disclose content-consumption data such as the percentage of mobile content employees consume for emails, videos, gaming, web browsing, Facebook applications, instant messaging, VoIP, and more.

Mobile cloud services are another area of opportunity. One service could provide VoD not only via set-top boxes, but also on mobile devices, with the ability to resume a paused movie on another device.

Conclusion

Findings from the study confirm that OTT players face several challenges in moving their services to the mobile platform—especially in regard to various screen sizes and different operating systems. Global and powerful players also face some of these issues, which require significant resources for resolution.

A reliable partner who can address the challenges discussed in this paper could be of great value to OTT players. Most of the companies interviewed said they would expect the solutions to come from a large ecosystem of players, including mobile SPs. Over-the-top players require upgraded infrastructures, better network conditions, and—at the same time—decreased data fees to stimulate consumer usage. Therefore, mobile SPs must carefully choose the direction in which they would like to expand to become a trusted

partner—one who is fast, proactive, flexible, and willing to go "the extra mile" for its clients in this dynamic industry.

This white paper does not aim to assess any potential compatibility between the value-added services proposed and existing regulatory and legal frameworks. Operators should assess the compatibility of the proposed value-added services with the specific regulatory and legal frameworks of the countries in which they operate.

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