A New Approach for Mobile Video Services

Video Consumption Is Going Mobile

Across the globe, viewers are increasingly choosing over-the-top (OTT) as an alternative to conventional TV reception methods. As more and more households have the necessary ingredients for OTT TV (that is, high-speed Internet, powerful streaming boxes, Internet-ready TV sets), Internet TV services from companies such as Amazon, Apple, Google, Netflix, and others are targeting these users with improved streaming quality, expanded content offerings, and ease-of-use features. The "where" of people watching TV is also changing and, like many other areas of content consumption, it is clearly going increasingly mobile. A recent global study sponsored by the Interactive Advertising Bureau (IAB)[1] underscores this trend. It found that 58 percent of respondents watch short videos daily on their smartphones, and a very high percentage (36 percent) of smartphone users said they watch long-form videos that last 5 minutes or longer every day on their mobile devices. Among the cord cutters studied by the industry, there is an increasingly growing number of **mobile-first** TV viewers, who represent both an opportunity for future content and advertising revenues as well as a challenge to current video delivery models.

Not surprisingly, as the amount of video data consumed on mobile devices rapidly increases, it accounts for most of the network traffic growth with which mobile operators are contending. Cisco estimates that mobile video traffic accounted for 55 percent of mobile data traffic in 2015 and will grow to 75 percent of total global mobile data traffic in 2020[2]. Mobile operators are grappling with the challenges of supporting this proliferation of video traffic on their networks. They are exploring new approaches to monetize video in ways consistent with user expectations, while maintaining subscriber satisfaction in terms of quality of experience as well as the effects of video on mobile data plans.

The Year of Mobile TV: Wait, Again?

In fact, 2016 is shaping up to be a banner year for mobile TV. Many mobile operators have launched mobile video services over the past several months, and quite a few are expected to launch a service this year. There are differences across these offers in terms of pricing, impact on mobile data quotas, range of video channels, etc. This range of offers shows that operators are again experimenting with mobile TV plans that might appeal to their subscribers. Figure 1 shows some of these mobile TV offers.

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[1] "Mobile Video 2015: A global perspective"; IAB Mobile Marketing Center of Excellence. May 2015.
[2] "Cisco Visual Networking Index (VNI) Global Mobile Data Traffic Forecast, 2015-2020"; Cisco. Feb. 2016.

Figure 1. Mobile TV Offers Are on the Rise

For example, Vodafone is currently using Sky Sports video to upsell users to its RED Extra data plans, while rate-controlling video downloads to 400kb/s. Bell Mobility's video offer is more typical, with a limited channel lineup that incurs data charges, but Bell does offer 5 hours per month of free video viewing over Wi-Fi. AT&T launched an unlimited plan that applies to households having both AT&T's wireless phone service and either DirecTV or U-Verse TV. The plan encourages consumption of AT&T's television services over its LTE network by smartphones and tablets.

In the United States, T-Mobile has captured a lot of attention with its Binge-On service, which offers unlimited free mobile video viewing to its users with a qualifying data plan. T-Mobile's revenues from the service come through advertising. Binge-On allows subscribers on a qualifying mobile data plan to stream unlimited video from services such as Netflix, Hulu, HBO, Sling, ESPN, Showtime, Starz, Amazon Video, and more **without using up any of a subscriber's data quota**. T-Mobile uses advanced mobile core technology to detect video, determine its source, and identify if it should be free. Binge-On optimizes video quality at a bitrate equivalent to 480p, which the operator says is of sufficient "DVD quality" to run on a small screen. T-Mobile also says that it requests lower-quality video streams from providers. Users can disable Binge-On optimization at any time, but will lose the benefit of free mobile data for video consumption.

Verizon Wireless has also stepped aggressively into the mobile video market with go90, a free, ad-supported mobile-first TV service targeting the millennial generation and available to any mobile user regardless of operator network. Verizon Wireless estimates that 70 percent of its target 18- to 34-year-old audience views video first on mobile. The name go90 is a reference to the behavior of rotating a phone 90 degrees to watch videos. Verizon Wireless made a conscious decision not to include its name in the new service to appeal to as broad an audience as possible. This is important because Verizon Wireless seeks to bolster mobile ad business and deliver to advertisers big audiences that watch premium content.

Go90 is a "social TV" offer, where subscribers can share what they're watching to social media, follow channels, follow celebrities, subscribe for updates, etc. Go90 usage does count against mobile data quota, but new Verizon Wireless users get 2 GB of free data for 3 months. Content for go90 is a mix of "best of" programs from sports, live events, broadcast television, and original web series and shows from Comedy Central, Food Network, ESPN, NFL Network, Discovery, AwesomenessTV, Vice, Tastemade, and others.

Go90 also features National Football League games and live concerts and is now adding new exclusive-to-go90 content such as reality shows. The service will start as a mobile-first product, but later on may include traditional televisions as well. Verizon Wireless is also exploring new premium-content packages to sell on a subscription basis later on.

Meeting Customer Expectations with Smart Video Management

T-Mobile's Binge-On appears to have had a positive effect on both its business and network utilization. In Q4 2015, T-Mobile reported impressive postpaid customer additions and lower churn. Three months after launch, T-Mobile reported that customers on qualifying data plans were watching more than 2x the video than before the free services with Binge-On. Even with an increase in video consumption, an independent analysis by P3 Group[3] suggests that Binge-On has had a positive effect on the network and that the service has been a win-win-win for T-Mobile, consumers, and content providers. The research was based on data collected across the United States and compares the 6 weeks before and 6 weeks after the introduction of Binge-On. The study concluded that:

- **Customers win:** The average time users spend with a single video app session increased significantly: 15 percent to 50 percent, depending on the app.
- **T-Mobile wins:** Because of reduction in bandwidth, the average amount of data transmitted per video app session decreased. T-Mobile has successfully managed to carry more video traffic, while maintaining or even decreasing the load on its network.
- **Video content providers win:** as they benefit from the increased consumption of their video content along with associated advertisement.

Making Video Delivery Easy for Mobile TV Providers

Cisco® Infinite Video is a cloud-based, OTT streaming video distribution platform that enables broadcasters and service providers to rapidly deploy video services direct to users across a wide range of consumer electronics, including smart TVs, game consoles, tablets, smartphones, and other connected devices. Cisco Infinite Video facilitates global reach and distribution for small and large content and service providers through an end-to-end platform delivered as a service (aaS) for fast application creation and deployment, a global edge network with adaptive video delivery and digital rights management (DRM), and monetization through subscription billing and advertising to the broadest range of high-engagement devices. The Cisco Infinite Video platform includes:

- A fully automated, highly customizable app creation and publishing platform that lets content owners and aggregators create native apps for the most popular TV, tablet, mobile, and web platforms within minutes
- A streaming service that delivers full 1080p HD and 4k UHD (on supported platforms) video to device screens via a global edge network with adaptive bit rate streaming and DRM
- A unified billing platform with in-app subscription purchase to all the major app stores built in

Providing all of these as a service is not an insignificant technical challenge, and one that is just not commercially efficient for mobile operators to provide themselves. With Cisco delivering this platform as a service to mobile operators, they are able to take advantage of Cisco's scale and expertise. And the consumption-based pay-as-you-grow pricing model means that mobile operators can focus on growing the subscriber base, controlling costs as their services grow. For mobile operators, the Infinite Video platform offers important advantages:

- Delivers to any screen, any device, anywhere, which is critical for maintaining, and extending audience reach and making sure they are fully monetizing the service by not leaving users "stranded" on unsupported devices.

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[3] "P3 Insights Separate T-Mobile Binge on Fact from Fiction"; P3 communications, Inc. Jan. 15, 2016.

- Provides live services, at scale, and at quality. Live services are a primary differentiator and are among the most popular delivered OTT to mobile users.

- Meets consumer requirements to move at web speed, making sure the mobile operator's service is first to market on new devices, while delivering those must-have features. Cisco partners with the key providers of consumer devices such as Apple and Samsung to support new devices as they launch.

- Provides data gathering and analysis functionality for critical customer insight. Being fast to launch and iterate is important, but this needs to be an informed process, based on real data, provided quickly and efficiently. Our Infinite Video platform lets you understand how your service is performing and allows you to analyze user behavior based on crucial factors, including network, device, and location. With this information, you are able to deliver increasingly relevant and targeted services, as well as provide important viewing information for advertising sales.

Mobile operators work with partner content providers to bring their content into the Infinite Video platform, which ingests and encodes the video for all device platforms (for example, iPhone, iPad, Apple TV, Android TV, Xbox, Roku, and so on) in multiple bitrates as needed to serve users. Mobile operators brand the service and the various device apps in a manner that is consistent with their own standards. And Infinite Video is not only for traditional mobile TV services, because it also opens the doors to many long-tail video segments, many of which are very suitable for mobile. Targeted offers of unique video content could appeal to many affinity groups, e.g., ethnic and expatriot populations, and others. Some of Infinite Video's product highlights and features are shown in Table 1.

Table 1.   Cisco Infinite Video Key Features

APPS Rich, Native, Automated, Multiple Platforms	VIDEO Encoding, DRM, Streaming, Multi CDN	MONETIZATION Authentication, Entitlements, In-App Billing, Ads
• Fully Native Apps • Monthly App Updates • SSO/Adobe Pass/Akamai IS • Apple TV • Roku • Fire TV • Android TV • Xbox 360, Xbox One • Sony PS3, PS4 • Samsung Smart TV • Favorites • Facebook Share • iphone, ipad • Android Phones & Tablets • Spotlight Carousel • TV, Movie, Magazine Channels • Rate Content • Real Time Analytics • Search • Episodic Content • Subtitles (Multiple Languages) • EPG for Linear	• Multi Format Metadata Ingest • Pause/Resume Across Devices • 1080p HD • Adaptive Bit Rate • HTTP Live Streaming • HTTP Smooth Streaming • Live Always On • Live Events • Live Playlist • Multi CDN Streaming • Widevine, Fairplay • PlayReady, VG-DRM • MRSS VOD Sync • EPG XML Sync • Geo Filtering • Content Hierarchy • Category Ordering • Editorial Control • Most Recent • Most Watched • Music Streaming • Content Origination	• Access from Multiple Devices • In App Subscriptions • Day Pass • Pay Per View • Network Fill • Banner Advertising • Single Sing Up • iTunes Billing • Amazon Billing • Roku Billing • Google Billing • Pay on any platform • Multiple SKUs • Custom Billing • Customize Upgrade Screen • Variable Trial Duration • Real Time Commerce Analytics • Authenticated Entitlements • SP Billing Interfaces • Tiered Subscriptions • Video Ad Mediation Service • VAST, VMAP Advertising

Insights from User and Network Analytics Lead to Greater Revenues

Infinite Video also provides mobile operators a wealth of insight into the customer's mobile video experience that is critical to effectively monetize the subscriber base, including:

- Identifying customers about to churn from lack of engagement
- Increasing ARPU with offers and upsell targeted to customers based on their usage pattern
- Finding poorly performing services and content
- Delivering targeted advertising based on user demographics and viewing habits, as well as device platform
- Using viewing information and insight to share in content providers' advertising monetization
- Use viewing data to mitigate the cost of content acquisition for revenue share sponsorship and advertising
- Use alpha/beta testing to trial and implement new capability and iterate quickly

Meeting the Challenges of Mobile Video Delivery

Mobile TV comes with the inherent challenge of delivering a high-quality customer experience over mobile networks. Beyond network congestion issues, mobile video users have to contend with exceeding monthly mobile data caps and disruptive preroll advertising videos, among other issues. And mobile operators not only need to assure a quality of experience for their customers, they also have to explore many approaches to video management to make the cost of carrying video commensurate with the revenues coming in from offering mobile TV service.

Fortunately for mobile operators, Cisco's leading evolved packet core (EPC) platforms such as the chassis-based Cisco ASR 5500 and its virtualized software brethren, the Cisco Virtualized Packet Core (VPC), provide a number of leading-edge service capabilities that give mobile operators wide flexibility in how they package their mobile TV offers. Figure 2 illustrates several of these capabilities, which are described here:

- Content filtering to understand different flows and sources in support of use cases such as parental controls
- Flow rate control to identify and down-rate a video stream, for example, from 1080p to 480p
- Zero-rate to not "meter" a user's data usage for a specific ad-funded or sponsored item of content
- Offloading: redirecting video traffic to the user over a Wi-Fi connection if available
- Adjust video resolution, primarily through flow rate control; also, can negotiate this with content provider
- Advanced billing: some features or items of content can be treated differentially with billing plans

Figure 2.   Mobile Operator Approaches to Video Management
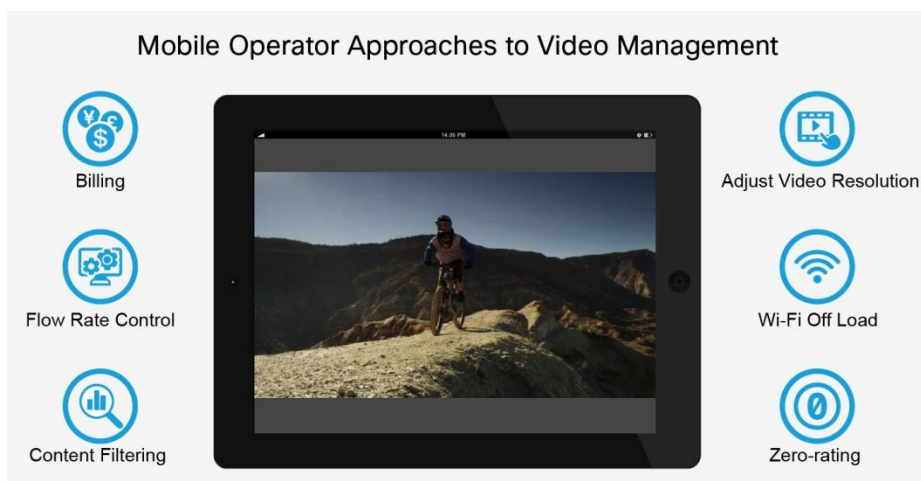
To enter into partnerships with content providers, the mobile operator needs intelligence about what services are traversing its network. Cisco's EPC includes a primary set of features called Application Detection & Control (ADC), available in both chassis-based ASR 5500 as well as virtualized packet core implementations. Cisco ADC uses heuristic, statistical, and deterministic analysis-based detection of applications and content that cross the mobile core network. Cisco maintains ADC to stay up to date on all new flows, signatures, and apps so the mobile operator can be agile and adjust to dynamically changing applications and protocols. Today, approximately 1500 applications and protocols are supported, including both standard and proprietary protocols. Cisco ADC identifies the Cisco Infinite Video streams so that the Cisco EPC and the high-performance Cisco Policy Suite can manage a subscriber's video flows in any way required by the operator's mobile TV offer.

Manage Your Business, Not Your Technology

With Cisco managing the cloud-delivered video service and its underlying technology, mobile operators are free to pursue new mobile TV revenues that will come from building relationships with content providers and attracting and growing an audience for the services. Cisco's Infinite Video platform, enhanced by unique capabilities in the Cisco evolved packet core, enables mobile operators to launch mobile video service across multiple devices quickly. Cisco's Infinite Video signup to delivery takes just a matter of weeks for an accelerated launch. And Infinite Video's flexible consumption-based pricing provides a pay-as-you-grow approach to help mobile operators jump start the new mobile video business. And content providers will be motivated to work with mobile operators to gain access to unparalleled analytics from mobile viewers, networks, devices, location, QoS, and more, all of which enhance the value and targeting precision of the advertising that underpins the financial model of OTT video.

For More Information

Read more about Cisco Infinite Video, or contact your local account representative.

Read more about Cisco's market-leading mobile core network solutions, the Cisco ASR 5500, Virtualized Packet Core (VPC), and Cisco Policy Suite or contact your local account representative.