

Joining the Over-The-Top revolution

Viewpoint paper

DELIVER

*content, experience, and value
direct to the consumer.*

To deliver and sell video content to consumers, television networks and other content providers (aggregators and syndicators) have traditionally offered product bundles to cable operators, multiple systems operators (MSOs), and wire line providers.

Today, driven by changing viewer habits and improved technologies, content is increasingly flowing around those traditional channels to reach the digital home.





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Consumer-direct movement creates both serious threats and vast new opportunities for telcos and cable operators, content producers, aggregators, and device and equipment manufacturers.

Welcome to the Over-The-Top revolution.

Introduction

For generations of viewers, television was essentially a passive, watch-what-was-scheduled activity centered on a single living room screen.

But times—and consumers—have changed. Today's ubiquitous Internet access on PCs, tablets, mobile devices, and increasingly, to in-home televisions, has created far more sophisticated and proactive viewers and is fueling the dramatic growth in video services delivered on-demand to many types of screens.

As a result, companies across a variety of industries are looking to Over-The-Top (OTT) capabilities, which provide technology to deliver the video content over Internet broadband connections to televisions, PCs, or mobile devices. These capabilities hold significant implications for both consumers and industry players.

OTT is a supremely disruptive technology that creates both threats and opportunities: changing how consumers access video entertainment, reshaping how content and communications companies deliver it, and encouraging new players to bypass traditional channels and gatekeepers to open direct relationships with viewers and subscribers.

In this viewpoint paper, HP examines the trends that now drive OTT, how this development affects key stakeholders, and how those diverse organizations can adapt to and succeed in the coming OTT environment.

Consumer direct trends

Video, and particularly video delivered OTT via online connections, is a building wave.

Cisco has forecast that the sum of all video (TV, video on demand, Internet, and P2P) will exceed 91% of global consumer traffic by 2014.¹ In 2009, the Pew Research Center found that 62% of Americans had watched video on sites like YouTube or Hulu.²

Current broadband trends, and the wide deployment of fixed and mobile Web-enabled platforms, will continue to drive the growth in digital video services. In-Stat projects that global broadband subscribers, both fixed and mobile, will increase in number from 585 million in 2009 to more than a billion in 2013.³ Better devices and more mobile broadband connections will accelerate these trends, as will the surging popularity of web-enabled tables and the continued growth of Facebook and other video-enabled social networking platforms.

In this environment, few now doubt that the OTT wave will continue to build. The Diffusion Group now estimates that by 2014, OTT television revenues will reach \$5.6 billion.⁴

OTT puts consumers at the center of vastly changed broadcast and communications landscape, a landscape that will be defined by mobility, new payment preferences, and the nonlinear consumption of digitized content across a multi-screen environment.

1 Cisco Systems—Cisco Visual Networking Index: Forecast and Methodology, 2009-2014

2 Pew Research Center—Your New Tube: Online Video Continues to Grow, June 3, 2010, <http://pewresearch.org/pubs/1611/video-online-comedy-political-television-movies-you-tube>

3 In-Stat/MDR—"Global Broadband Subs Approach 600 Million", December 2009, as reported by Research and Markets—http://www.researchandmarkets.com/research/f486cc/global_broadband_subs_approach_600_million

4 The Diffusion Group, Over-the-Top TV Revenue to Top \$5.6 Billion by 2014

For companies competing for viewership and wallet share, OTT is already forcing major shifts in the way content is distributed and delivered from technology platforms, in channel strategies, in how content is syndicated and aggregated, and in basic business models (who pays, how, and how much). To fully exploit the OTT opportunity, players must address the basics of digital IT, including the hardware, software, and service infrastructure needed to manage content aggregation, storage, and delivery across a complex, multidevice ecosystem.

Stakeholder challenges and drivers

It may help to examine how OTT is affecting organizations across the communications, entertainment, and retail value chain.

Service providers/MSOs/telcos

OTT presents both substantial challenges and some very real opportunities for telecommunications companies, who previously, along with Internet Service Providers (ISPs), were the sole source of high-quality video delivery.

With the arrival of OTT, consumers no longer need a managed network to receive quality video services. OTT is increasing competition for who has the right to bring the content to the consumer, or to bring it direct to the consumer. Telcos continue to struggle against this threat of disintermediation, and have for years sought alternative strategies that might keep them from becoming commodity-oriented Internet bandwidth providers.

The difficulties are real and immediate. Service providers face high wholesale prices and low revenues for pure play services, and are looking at new services and business models around delivery of content. ISPs see broadband prices falling, while data transfer costs continue to rise. Content aggregation, transformation, advance media workflow systems, and delivery are problems for these players, who have not traditionally focused on content management aspects.

Yet, OTT does hold tantalizing promise for telcos and ISPs. Service providers by definition have strong access networks, customer support, and provisioning capabilities. Research shows that, in the United States at least, consumers prefer to get video content from a service provider over their managed networks, and many telcos are now working to formulate video-oriented offers to attract and hold new subscribers. By forming partnerships with aggregators, service providers hope to create the content portal that will allow them to win the battle for the digital home.

Service providers also see OTT as a near-term enabler for multiscreen convergence, leveraging HTTP/RTMP to deliver video content to PCs, STBs, TVs, and mobile devices while the industry awaits the long-heralded arrival of IP Multimedia Subsystem (IMS) as a means to control the media delivery.

As the traditional channel providers of in-home video content, cable operators, MSOs, and IPTV operators face the greatest challenge from OTT. MSOs must decide whether to resist OTT, or anticipate and pursue OTT opportunities by developing new partnerships and business models. Cable operators can leverage OTT to better integrate live TV and VoD and to personalize the television experience to fit individual consumer habits and preferences. As viewers customize their viewing experience, operators can leverage those profiles to support content recommendations and targeted, interactive advertising.

As seen recently at the Consumer Electronics Show cable operators are forming partnerships with consumer electronic manufacturers to deliver content via their new Internet devices. At the same time, operators are launching their own applications on NEP devices, including TVs and tablets.

In the later part of this paper, HP will describe its OTT Solution and how this can be potentially utilized to deliver OTT capabilities.

Content providers/networks

As telecommunications and broadcast players have battled to manage the end users—and telcos made gains by incorporating Internet television (IPTV) and video on demand (VoD) in triple-play offers—content providers were once seen as the big losers in the video revolution. But OTT is dramatically changing the rules of the game.

Creating a direct channel among television productions, content aggregators, satellite, cable broadcasters, and the end user provides opportunities for various players to go direct, and thus in some cases dis-intermediates the service provider.

But to realize the promise of OTT, content providers must overcome some high hurdles. They face an erosion of value, as consumers expect free or nearly free content. As they attempt to move closer to consumers, content providers seek to leverage their brands and archives to build immediate value for their platforms and sites.

Figure 1
Players in the evolving OTT marketplace

OTT Value Chain	Stakeholders
TV manufacturers	LG Panasonic Samsung Sony Vizio
Game console manufacturers	Nintendo Wii Sony PS3 Microsoft Xbox
Internet TV providers	Google TV Apple TV
Internet-ready STB providers	ZillionTV Amino Roku Boxee TiVo
Content providers with OTT services	NBC FOX CBS TNT DreamWorks
Content services providers	YouTube Netflix Blockbuster Amazon Video on Demand Hulu Plus Walmart/Vudu
Hardware providers	Alcatel-Lucent Ericsson Nokia Siemens Networks HP

Source: HP Research

At the same time, because they traditionally lacked Quality of Service capabilities, content providers struggle to master the crucial “last mile” of home video delivery because of delivery over unmanaged networks. Content providers are now asking the question: Should they tackle the last mile themselves or partner with a Content Delivery Network (CDN) provider capable of scaling and delivering content to any device?

Content aggregators

Content aggregators are playing key roles in shaping the emerging OTT landscape.

The giant “super aggregators”—Apple, Google, and Microsoft—each now propose their own OTT solution, with the HLS standard, WebM technology, and Silverlight Smooth Streaming, respectively. HBO, Netflix, Ebay, Amazon, Telefonica, BBC, Contify, and others are creating innovative ways to aggregate and deliver video content to consumers the world over.

The Holy Grail, of course, is to become the single portal for goods, services, and content in the digital household. In pursuit of that goal, aggregators must compete on scale and transaction volumes, and should seek relationships with a wide range of content providers.

Meanwhile, the super aggregators, having fought a long war over control of the PC and mobile handset, are now dueling to become the portal of choice for video consumption across multiple screens. Aggregators in general may pose the biggest threat to service providers, while presenting both a competitive threat and potential partnership opportunities to content providers.

Network equipment and device providers

Streaming video was once limited to personal computers and a few high-end smartphones. With the advent of Connected TVs—which enable direct contact between viewers and content providers—consumer electronics companies are rapidly entering the OTT marketplace. Content providers and TV set manufacturers are forging partnerships to improve both offerings. Newer and better mobile devices allow high-quality streaming video to on-the-go consumers. Companies such as Sony (with its Bravia line of TVs), Netflix, and Roku are some examples in this category.

At the same time, network equipment providers (NEP) continue to make billion dollar media codec bets on behalf of their consumers. Apple products like the iPhone and iPad don’t support Flash, while Microsoft Mobile wants to promote H.264 as a media codec on phones built with its OS. NEPs struggle to deliver the best possible mobile and multimedia experience at the lowest possible price point. OTT content availability also serves to fuel the developing tablet marketplace, with both hardware and software manufacturers seeking to carve out chunks of the space now dominated by the Apple iPad. NEPs are aggressively adding “applications” to their Internet-connected devices, providing further incentive to view video via OTT content providers.

Monetizing OTT

So how can various stakeholders leverage OTT technologies to generate measurable revenue, market share, and profit?

Content providers

Studios, broadcasters, and other content producers, aggregators, and providers must leverage their brand names and libraries to move closer to the consumer and thus up the digital value chain. While some worry about cannibalizing advertising and other traditional revenue streams, HP believes that content providers must act quickly and aggressively to fully exploit any first-mover competitive edge.

Broadcasters and others can build a broad consumer-direct channel strategy by collaborating with TV and STB manufacturers. In the emerging digital landscape, each device may require its own model for content and revenue, with PCs used primarily as personalization tools, mobile devices as remote control extensions, and the television as the focus for consumption. By leveraging their archives and rights to provide access to premium content, video on demand, virtual linear channels, and other converged service capabilities, content providers can create a consumer experience that other broadband players cannot match.

Equipment and device makers

Device manufacturers can monetize the OTT opportunity by creating solutions that address the device, the network, software, and content—and that dominate the value chain through integration and ease of use. Service and content can be bundled and linked to a device, thus attracting and holding consumer attention, creating future interactions and transactions, and driving wallet share to the manufacturer-oriented ecosystem. Apple, Sony, Logitech, Roku and others have shown the way on the device-driven model, and other firms are pursuing this pathway to OTT profitability.

Service providers and MSOs

Telecom firms and cable operators have clear home turf advantages. To both counter the competitive threats and exploit their opportunities in an OTT environment, these firms should play to their strengths in the local access and content delivery networks by exploiting their hard-won subscriber relationships and by fully utilizing their proven customer support, service provisioning, content delivery with guaranteed Quality of Service (QoS), and management capabilities.

As with many other hopefuls, well-chosen partnerships may be the key to success for telcos and MSOs. Aggressive firms will strengthen their relationships with content aggregators, possibly offering cloud-like

services, multitenant video platforms, and content portal capabilities. The goal for these traditional firms is to retain their position as the primary service provider for the emerging digital home, while building their ability to manage and aggregate content.

Preparing for OTT

Telcos, cable operators, and other distribution network companies should “secure and expand” their position as the in-place suppliers of cloud-based video services. They must work to build multitenant platforms, and to forge innovative partnerships with a wide range of content owners and aggregators.

Broadcasters and content aggregators should leverage their core strengths of brand recognition, marketing, and their rights over existing and premium content libraries. They must resist fragmentation and maintain the scale of their audience, while building consumer-direct channels to introduce new video services and subscription-based business models. HP Enterprise Services is ideally positioned to assist these organizations in the creation of new consumer services backed by innovative business models.

Device and equipment manufacturers should strengthen partnerships with content distributors. The goal should be to optimize the user experience by supporting user-generated content, highly personalized content delivered where and when consumers want it, and globally regionalized content—all delivered across the widest spectrum of devices.

Content producers and owners must take their archives, live events, and other product direct to consumers, bypassing traditional broadcasters and content aggregators. This can also lead to content owners creating rich deep archives, as there will always be a need for large quantities of good content. Content owners may also revisit their established content archives, and may repackage that material, a strategy that might be less expensive than creating new untested content to fill OTT channels.

Organizations across the industry spectrum can now harness emerging new partner relationships, technology innovations, and creative business models—such as those being pioneered by HP Enterprise Services and HP Media Cloud Services—to prepare for the OTT environment.

OTT challenges

As the demand for online video grows, service providers, hardware developers, and others are scrambling to position themselves in the digital living room. OTT is just the latest player to enter the game, yet the OTT model faces substantial content, delivery, platform, and economic challenges.

From a content perspective, the industry must create solutions capable of displaying digital video across a growing spectrum of devices, media players, and form factors. Both users and providers also face the fundamental difficulty of navigating, browsing, and selecting from literally millions of available video clips and programs—a universe of available material that grows daily.

Delivery is also a problem. Most televisions still lack Internet connections, and the QoS and bandwidth limitations of many ADSL connections prevent the delivery of acceptable “prime time” video content. Carriers tend to resist OTT QoS requirements due to their heavy consumption of network resources.

Many economic difficulties also remain. Except for certain market segments, the basic economics continue to favor traditional video distribution channels. As the price of delivering an IP stream declines, however, OTT will become increasingly viable and profitable. Players must contain delivery costs, while refining workable OTT business models. Some potential players are naturally resisting the shift to OTT, including those ISPs and backbone providers who have not begun transitioning to OTT, and who may respond to this competitive threat by restricting OTT-related network traffic.

Platforms and devices must continue to evolve to meet the needs of an OTT environment. Platforms must offer improved availability, and must scale smoothly to sustain service to millions of subscribers. The industry is currently working to resolve a number of OTT technical challenges, including issues related to decoding, customer premise devices, and service ranges. The emergence of OTT-standardized televisions and devices will be a crucial step toward overall viability for this model.

OTT must rectify the need for a stable digital TV environment with the realities of a still highly dynamic Internet. Participants must make key decisions on a number of platform-related questions, such as whether a pure-OTT, a managed services, or hybrid approach is best; and whether STBs should be thin-client or more PC-like devices.

No doubt these and other challenges will be solved. It will take time, effort, and investment, however, for OTT video to compete with cable and satellite linear scheduled broadcast content delivery.

OTT benefits

Organizations can leverage OTT to gain a range of advantages, including:

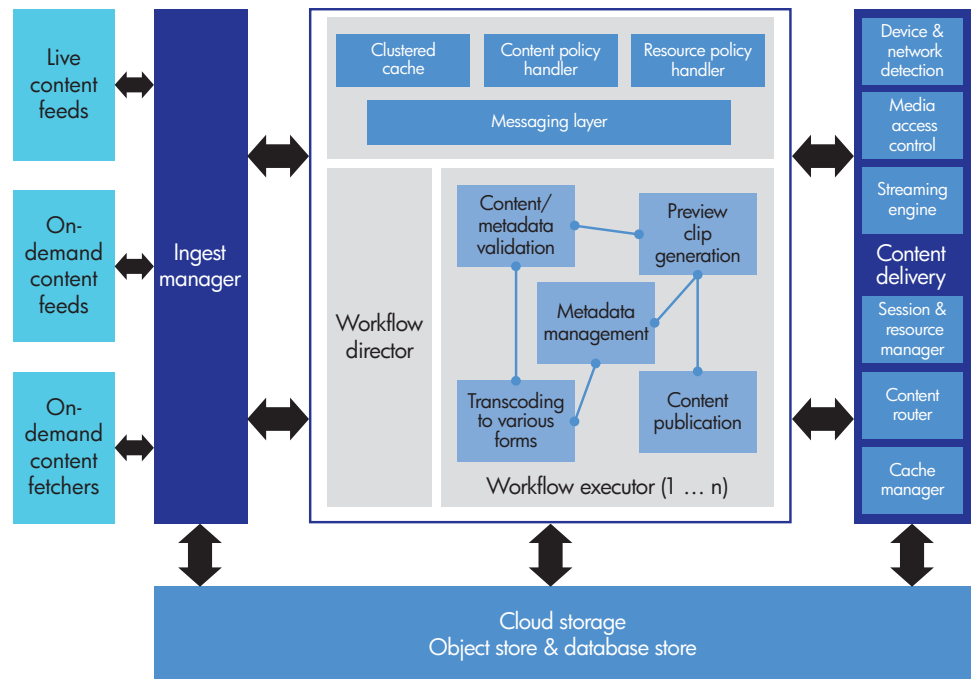
- Control costs while they evaluate and refine an appropriate OTT business model
- Transform media content into on-demand offerings across the multiscreen environment
- Reduce time-to-market by streamlining service integration, delivery, and rollout
- More easily manage dynamic changes to metadata and business models
- Accelerate the acquisition, management, and delivery of media assets
- Consolidate workflow/automation planning across internal departments and external partners
- Create a more granular and satisfying approach to content rights, distribution, and encryption management
- Facilitate third-party integration through standards-based web service interfaces

Building an OTT service

As digitized content of all kinds flows into the market—including movies, broadcast programming, commercials, live television content delivery, user-generated music and video, and more—organizations of all kinds struggle to ingest, store, index, and manage that material. Managing and maintaining multiple variants of content over time has become more expensive, and organizations are leveraging workflow automation, innovative packaging, and other techniques to address these cost issues.

To fully exploit an OTT opportunity, organizations must address critical aspects of content availability, content delivery (including network integration, scalability, and portal and content navigation), device integration, and content aggregation. A successful OTT model must also address digital rights management, encryption, and secure media delivery, as well as the technical aspects of video compression, delivery in an HTTP environment, and more efficient video streaming.

Figure 2
Core OTT architecture



Delivering content, and particularly video content, from a content portal to multiple screens in a high-volume ingestion environment (such as live and linear TV, on-demand TV, and for user-generated content) is especially difficult. That difficulty arises from the need to manipulate content and metadata, to generate thumbnails, and to scale the solution sufficiently to meet the needs of a broad consumer subscriber base.

With the advent of grid and cloud computing, transcoding and transcaling may be used to create and stream content in real time, but to leverage those sophisticated technologies, organizations must have robust platforms and extremely efficient workflow/automation systems.

Unfortunately, most of today's automation systems were designed to handle only smaller-volume, trickle content ingestion, management, and processing. Because they are mostly proprietary, vendor-specific solutions, those automation systems are poorly integrated with storage, compute, and application resources.

To meet the workflow/automation requirements of an OTT environment, HP recommends a transformative approach that leverages the latest advancements in network attached storage, grid computing, and video processing technologies. The HP architecture is based upon a careful analysis of OTT requirements and the hardware and software solution architectures now available from companies such as Justin.TV and others that are transforming live and on-demand content delivery.

This distributed Media Cloud architecture utilizes a compact-but-powerful engine to store, manipulate, and deliver digital content. This approach supports the ingestion of content from multiple sources, and the rapid and efficient delivery of digital material to multiple devices (including STBs, PCs, and mobile devices), while enabling a robust suite of real-time capabilities, such as transcoding, derivative generation, dynamic ad insertions, thumbnail generation, and more.

By combining video capture, transcoding, analysis, quality control, metadata processing, and clip management into a single, flexible, distributed cloud-based automation framework, this architectural solution allows broadcasters, media, and entertainment companies, and other organizations to deliver a unified experience across multiple channels.

Within this architecture, automation tasks information is stored in an efficient distributed cache arrangement, and workflow tasks are assigned to physical and virtual machines for execution based on a sophisticated resource management algorithm. This allows the solution to dynamically track, discover, and leverage various nodes (CPU, memory, network, I/O) and software capabilities, and to thus optimize the use of available resources. Content is held in an object store that strips and replicates data across multiple nodes for extremely high-speed access.

This highly distributed environment allows linear scalability for compute, storage, and I/O, while creating no single points of failure. A common set of application protocol interfaces (APIs) is exposed, allowing information logging on the processing life cycle of various tasks. Advanced engines allow content to begin streaming even while the final output file is processed and prepared, thus reducing delays and improving video performance.

Finally, by basing this architecture on open source and commercially available products, this highly distributed Media Cloud approach eliminates the risk and limitations of more proprietary automation solutions. HP has built a number of automation template libraries utilizing open source media handling system, and has integrated ISV partner solutions to handle transcoding, ad insertion, logo overlays, and other functions. This nonproprietary architecture also allows organizations to utilize plug-and-play tools and technologies from a far wider universe of vendors.

Stakeholder strategies

As noted, OTT business models continue to evolve for the various stakeholders now focused on this market. If they hope to succeed (and in some cases, survive) in the developing OTT environment, players across the value chain must adopt specific strategies and business models.

Aggregators. Aggregators, including “super aggregators” like Google and Amazon, are seeking to become one-stop shops for consumer entertainment. By forming closer relationships with all types of content providers, aggregators hope to position themselves as the single portal into the digital home.

Service providers. Telecom service providers must consolidate and cooperate if they hope to counter the very real threat from OTT players and device manufacturers. To offer consumers new experiences, telcos can develop their own portfolios of integrated digital content capabilities and premium network services. They might expand their markets by delivering comprehensive connectivity solutions to certain vertical segments.

As competition, technology, and other forces spur more open access, we may see a lowering of the barriers between network providers and OTT. Some industry observers foresee the emergence of a new class of service providers, who will rely on key partners for infrastructure and support, and who will offer more open and affordable connectivity to all consumers, devices, and objects.

Operators. Cable operators with a premium content play will likely maintain traditional delivery methods for pay TV, while using OTT for the delivery of video on demand and niche content, to improve portability across rooms and devices, and to enhance linear content.

Equipment vendors. Manufacturers of televisions, STBs, and devices must partner with content aggregators while working to build their own integration to these content portals. Most vendors can be expected to base their strategies on the interconnection of devices and content portability, while focusing on user-created content such as videos, photos, and social networking. A well-positioned manufacturer such as Sony, who owns a large portfolio of premium content, will bypass traditional operators to take those products directly to consumers. By leveraging all of the models discussed here, these players can be expected to dominate the emerging OTT landscape.

Technology and business considerations

Any organization considering an OTT venture—whether on the content production and ownership side, as a network operator, an aggregator or distributor, or as a network equipment or device manufacturer—must address key technology and business issues.

- First and foremost, stakeholders must consider the larger strategic issues surrounding the OTT environment, including competitive market factors, dilution of content value, service bundles, advertising models, evolving partner relationships, and the specific total cost of ownership (TCO) and return on investment (ROI) implications of this approach.
- Depending on the stakeholder’s perspective, time, budget, and current functionality, some organizations may seek a preintegrated solution incorporating many of the hardware, software, and support services needed to implement OTT. Other organizations may choose to, or need to, create parts or all of their own solution. In either case, organizations should understand the fundamental elements of a typical OTT platform.
- Platform and system integration considerations include the emergence of OTT-oriented open standards, and the choice of open source versus proprietary assets. To ensure content portability, organizations must select between single or multiple content formats and the use of content conversion technologies.
- Content may be located in a central repository, on either a local area network such as the home media server, a wide area network, or in a distributed network architectural arrangement. Video may be streamed among devices, or via file or device transfer technologies.

- Any platform must provide acceptable scalability, capacity, QoS, and the ability to regionalize content. The management of QoS and QoE on an Internet backbone may require special attention.
- A successful OTT platform should be augmented by service capabilities able to support seamless broadcast and/or broadband consumption, interactive services, video-on-demand with progressive download and streaming or download and play, and live channel functionality.
- OTT should support the growing array of video-capable devices, including STBs, connected TVs, smartphones and other mobile devices, and gaming consoles.
- Depending on the stakeholder, an OTT platform might need to support one or more business models, including advertising-only, subscription-only, micropayments, or some hybrid of these approaches. Various launch strategies are available, from scale trials to full implementation.

An HP view

Looking across the evolving video delivery landscape, informed observers have long understood that cable and satellite operators are most threatened by OTT. Premium movie subscriptions, particularly in a struggling economy and as far lower-cost alternatives become widely available, are quickly becoming cost prohibitive. So how can incumbents carve out a future in the coming OTT environment?

In the HP view, those players must leverage their content relationships and avoid the earlier missteps of the music industry by joining rather than resisting the unstoppable progression of digital technology. Those threatened players—cable and satellite network operators, and telco television providers—still have the most meaningful relationships in the industry, and those relationships are their best possible response to the questions raised by OTT. Content will continue to reign, and content-driven relationships will be more important than ever, as illustrated by the recent merger of Comcast and NBC Universal.

In the HP view, the model for a profitable future is a combined, virtualized video content infrastructure where “walled garden” offerings and OTT content are indistinguishable. In this environment, service providers must balance their own profit requirements with the needs of their partners up and down the digital content value chain.

Infrastructure investments—for access capacity growth; network-based, revenue-oriented platforms to expanded data centers, formatting and authentication capabilities; and the distribution of video and applications to large audiences across multiple devices—will be needed to forge and nurture these new relationships. Service delivery infrastructures must be flexible and extensible, and capable of supporting automation service creation and bundling, dynamic content consumption, and federated workflows and transaction processing.

OTT video is gaining, and will continue to gain, particularly among sought-after younger and more mobile consumers. Unless service providers respond quickly and correctly, OTT video will capture the mass market, depress the value of multichannel video services, and dramatically reduce ARPU and subscription counts. Service providers will be left with little more than a usage-based broadband pricing model, and even that would be threatened by both regulation and consumer choices.

To survive and prosper, service providers must move beyond the bandwidth-oriented strategies of the pre-OTT world. Innovative business models, perhaps blending advertising-, transaction-, and subscription-based revenue streams, must be developed and refined. Conventional video providers must work to build value through focused, STB-based advertising, while encouraging greater locational flexibility, content availability, and interface capabilities.

In the HP view, traditional service providers must therefore seek to create an interoperable environment—one built on content-oriented relationships and that can flourish and grow even as the market moves to OTT-based devices and models.

How HP can help

HP can assist organizations in the development and deployment of an OTT solution, with direct solutions or ecology support for the preparation, storage, and delivery of digital content. HP offers a broad spectrum of mature communications and media, and business technology outsourcing capabilities, including enterprise-class computing platforms, scalable media storage, and content delivery network solutions. OTT-oriented solutions include:

- Centralized control room management of video infrastructure
- Sophisticated media workflow, ingest, and automation solutions

- Multiscreens solutions
- Video QoE software to maintain customer satisfaction and value
- Software solutions to build and support interoperable free and paid web TV systems
- OTT-oriented market modeling, financial planning, and other strategic business services
- A robust partner ecology offering solutions for transcoding, editing, asset management, quality checks, programming, and more

Those solutions are backed by decades of proven experience serving leading media, entertainment, and communications organizations, and are backed by global professional services support and strong IP in the digital media environment. Leveraging cloud services, remote storage, and other advanced technologies, HP can help organizations drive costs down during the critical evolutionary phase of the OTT business model.

Conclusion

Over-the-top is coming. The question now is: When will organizations be ready to take full advantage of this rapidly growing video delivery environment?

Widespread Internet access across the three-screen landscape is shaping a new and dramatically different digital media landscape. Organizations of many kinds—from broadcasters and cable companies to telecom service providers, studios, and media-oriented corporations—are now investigating or deploying OTT delivery models.

As discussed in this HP viewpoint paper, to develop a successful OTT strategy, organizations must address the issues of fundamental business models, direct-to-consumer delivery architectures, and related customer service and support issues. HP stands ready to assist organizations across the OTT-landscape to understand the challenges, opportunities, and requirements of this emerging approach to content delivery.

To succeed in the evolving OTT marketplace, organizations must act with speed and effectiveness.

By understanding these key business and technical issues, and by collaborating with a world-class partner ecology, players from every sector can position themselves to compete and succeed in the coming OTT marketplace.

Acronyms

Acronym	Description
ADSL	Asymmetric digital subscriber line
API	Application programming interface
CDN	Content delivery network
CPU	Central processing unit
DRM	Digital rights management
HTTP	Hypertext transfer protocol
IO	Input/output
IPTV	Internet protocol television
ISPs	Internet service provider
ISV	Independent software vendor
LAN	Local area network
MSO	Multiple systems operator
NEP	Network equipment provider
OTT	Over-the-top content delivery
QoE	Quality of experience
QoS	Quality of service
RTMP	Real time messaging protocol
STB	Set top box
VoD	Video on demand
WAN	Wide area network

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