

Delivering OTT TV into the Mainstream

How to take online TV beyond the traditional TV experience

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Summary

In brief

Online delivery of and access to TV services are now mainstream activities, and those involved in TV distribution are keen to ensure quality of experience for their audiences as well as achieve operational efficiencies. In the coming years, delivery to unmanaged devices will become the most common form of online TV distribution. The market for long-form OTT video services – currently dominated by the global SVOD giants – will expand to include greater presence of local and national players. Along with these developments comes a growing need for TV providers to keep control of their services by delivering more local traffic via their own CDNs – as well as stepping up the protection of content against online piracy. This white paper, produced by Ovum on behalf of Edgware Technologies, highlights the opportunities and challenges for traditional broadcasters and pay-TV operators in adapting to their rapidly evolving environment.

Ovum view

- Audience habits, preferences, and expectations are evolving rapidly to the point where viewing online TV and video entertainment is already a well-established, mainstream consumer activity. With easy access to unlicensed streaming video becoming ubiquitous, protection of content from online piracy is becoming more important for content owners and distributors alike.
- As traditional pay-TV growth declines, OTT will account for an ever-increasing proportion of both subscription and advertising revenue, with ad-supported video-on-demand also starting to make a dent in the traditional TV advertising business.
- Pay-TV operators are adapting to the changing market environment with their own OTT offerings – mostly in the form of premium multiscreen "TV everywhere" services and standalone SVOD or SLIN services. TV broadcasters are pursuing their online strategies primarily via a free-to-view AVOD approach, and as a result, there is renewed interest among broadcasters in digital advertising technologies.
- Over time, unicast delivery to unmanaged devices will become the dominant method of video distribution, and with that, the need to ensure service reliability and quality of experience will become a growing priority. As a greater proportion of TV traffic shifts online, distributors will increasingly look to distribute video via in-house content delivery networks (CDNs). Along with growing demand for efficient delivery of local video traffic, opportunities will arise for network operators and TV broadcasters to collaborate by employing common CDNs.

Recommendations for online TV service providers

- **With an ever-increasing proportion of TV content shifting to online delivery, pay-TV operators and TV broadcasters need to maintain the highest possible QoE for their viewers.** Consumers face a growing range of viewing options, and as expectations of a TV service evolve rapidly, they are becoming less tolerant of clunky and unreliable video services. All online TV service providers must take the necessary measures to avoid buffering delays and other issues associated with poor-quality video streaming. Optimizing delivery and

ensuring QoE from as many points in the network as possible will be essential to remaining competitive against rival OTT services – both legitimate and non-legitimate.

- **Engagement and personalization should go hand in hand as key components of a successful TV service.** While content is clearly the fundamental element of any video entertainment offering, service providers also need to address audiences' increasingly fragmented and segmented needs by delivering more personalized and targeted experiences. This applies not only to regular TV content (where improved curation and more sophisticated recommendations platforms are needed) but also to advertising. Traditional TV players should strive to blend the mass-audience TV experience with emerging forms of personalization – via seamless insertion of ads in broadcast quality, for example. As well as the creation and integration of interactive ad formats into the TV viewing experience, personalization of both dynamic content and ad delivery will be central to the advancement and evolution of TV players' AVOD platforms and services.
- **Content security remains an important strategic objective.** The above-mentioned tactical measures around ensuring QoE, engagement, and personalization can provide effective defense against piracy by providing compelling and sticky alternatives to unlicensed options. These may be supplemented and supported by other initiatives, such as more considered pricing and packaging of paid services as well as effective implementation of digital content protection and antipiracy technologies, such as DRM and watermarking. Associated with content security is the need for identity management capabilities, to ensure seamless user experiences and access to content via multiple devices. Online TV providers also need to ensure their content protection and ID management capabilities can scale to accommodate ever-expanding growth in demand.
- **Scaling up of digital video delivery platforms is an operational imperative for all TV player types.** Pay-TV operators and national broadcasters are up against the ubiquitous presence of the global OTT giants and should explore ways to achieve greater scale – and hence efficiency – in their online distribution of TV services. Scaling up online delivery will support the required QoE assurance as well as enhancing digital advertising opportunities by aggregating audiences. Partnerships between broadcasters – or between broadcasters and network operators – are one way to deliver economies of scale, while also providing the kind of uniform framework required to attract high spending from the biggest advertisers.

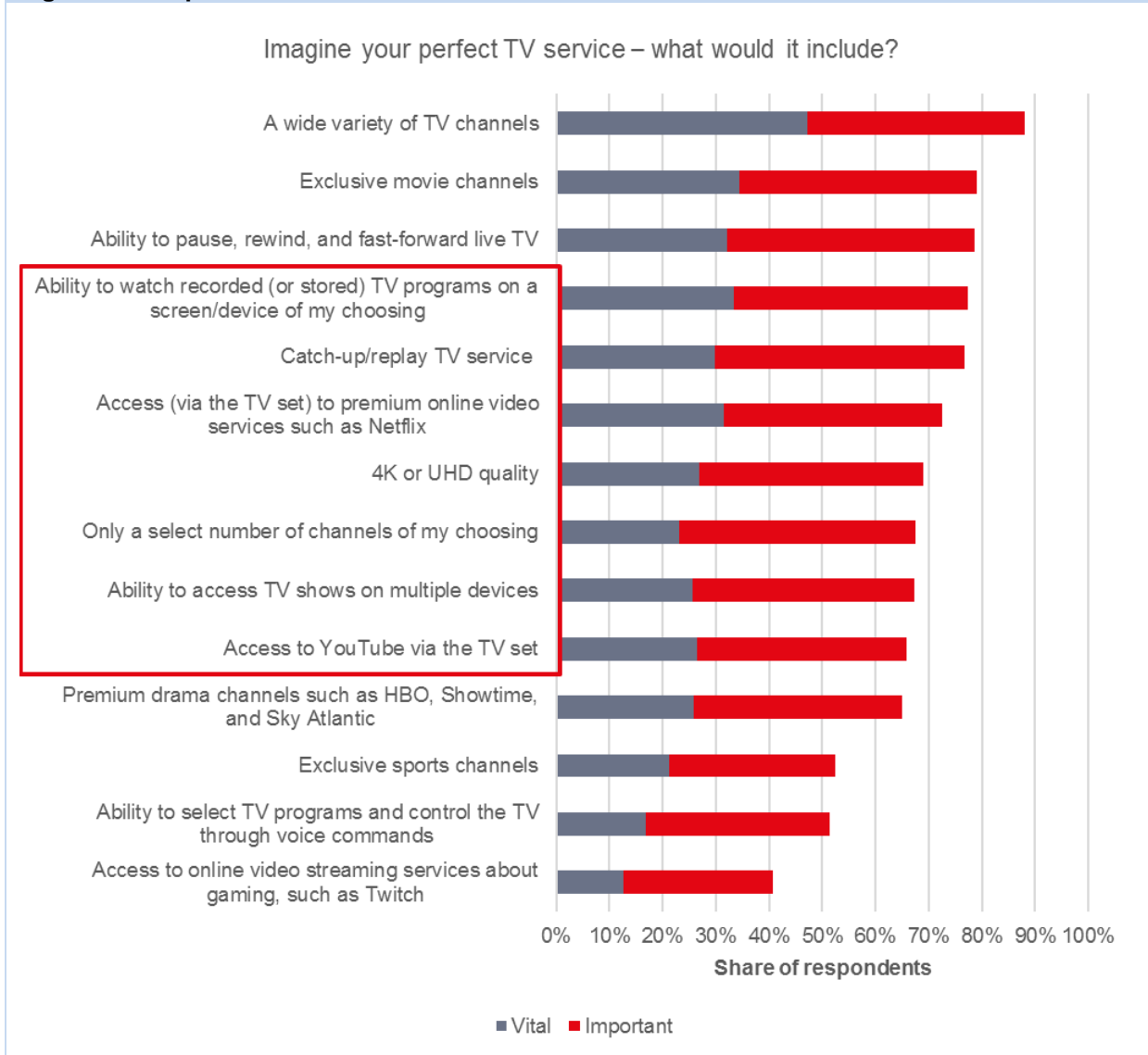
Consumer demand

Across the globe, consumption of video entertainment services is changing, as is the means of delivering them. Both public broadcasting and distribution of pay TV are undergoing substantial transformation as online and cloud-based delivery options open new channels to the consumer. Audiences' viewing habits, preferences, and expectations have transformed in recent years and continue to evolve rapidly. Ovum's consumer survey, conducted in December 2017, examines the current state of attitudes toward consumption of TV and video services.

Expectations of an ideal TV service

While content range and quality are naturally a top priority among all viewers regardless of how TV is accessed, Ovum's consumer research shows that five of the 10 most highly rated features of a TV service – cloud DVR functionality, catch-up/replay, premium OTT video, multi-screen/TV everywhere, and access to YouTube – are specific to online delivery (Figure 1).

Figure 1: Components of an ideal TV service



Source: Ovum Consumer Survey

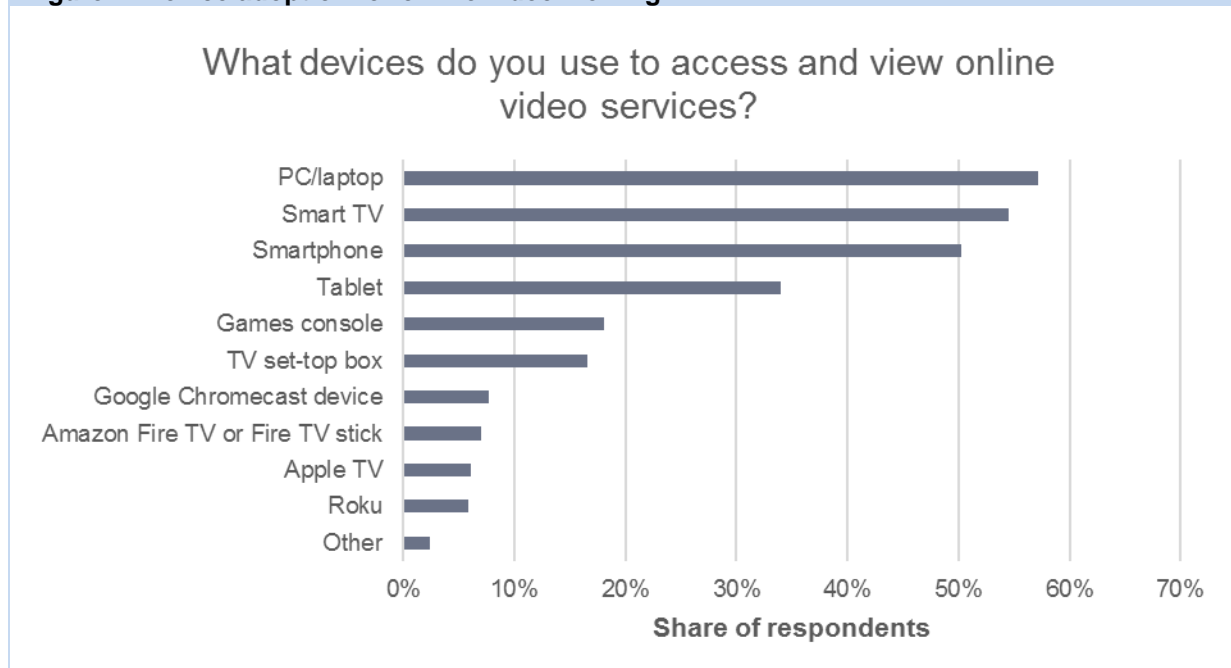
Meanwhile, two further components – 4K video and a la carte programming or customized channel packaging – are central (if not exclusive) to the offers of OTT providers such as Netflix, Amazon, and the growing raft of online subscription linear (SLIN) services.

Connected video device penetration

Today's online consumers can access a multitude of video-capable connected devices, with nine out of 10 using smartphones and/or personal computers, around half having smart TVs, and just under

half using tablets. While many of these devices are used for a range of applications, they all support consumption of online video – a feature that is becoming increasingly commonplace, as Figure 2 below demonstrates.

Figure 2: Device adoption for online video viewing



Source: Ovum Consumer Survey

Adoption of devices for watching OTT video

Our survey found that 83% of mobile users are using their mobile devices to watch online video daily. Moreover, 39% of those with smart TVs are using them to access paid online video services such as Netflix and Amazon Prime Video, as are 20% of both smartphone and home games console users. Meanwhile, some 18% of connected consumers have access to dedicated video streaming devices such as Chromecast, Amazon Fire, Apple TV, and Roku.

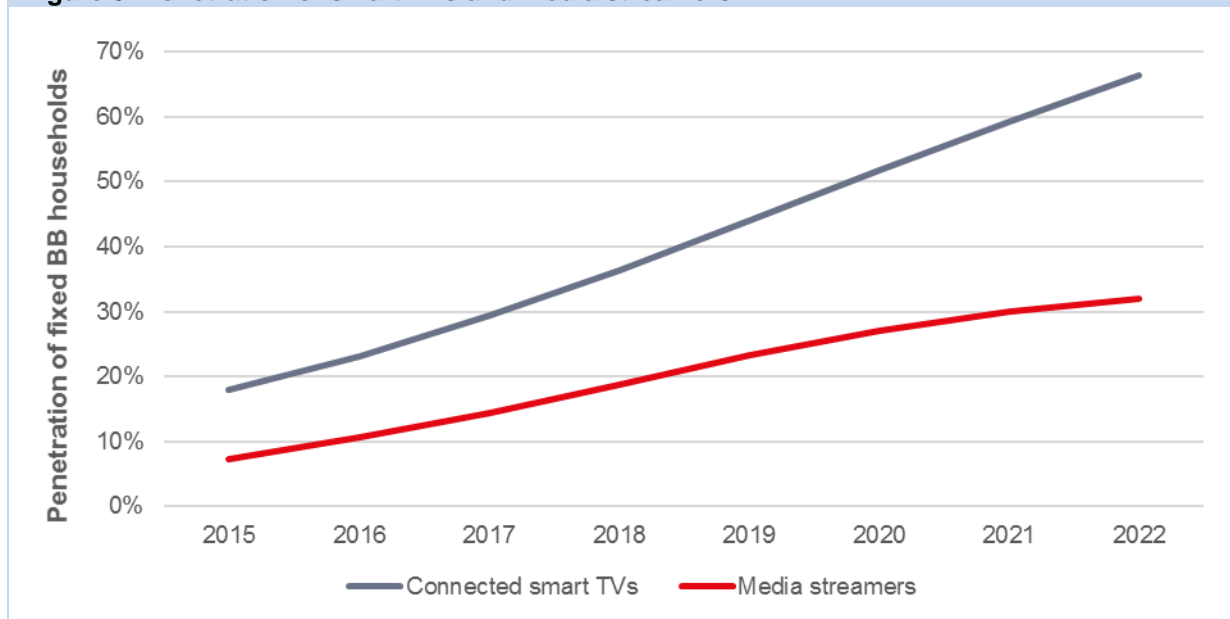
The remaining 57% of streaming device owners who don't use these gadgets for accessing paid OTT – as well as the much larger base of smart TV users not subscribing to online services – supports our view that, although subscription offerings account for a significant and growing proportion of online video consumption, free-to-view services such as ad-supported video-on-demand (AVOD), user-generated content (UGC), and broadcasters' catch-up TV represent a substantially bigger share.

A burgeoning connected device landscape propels streaming video uptake

Around 20% of our survey sample are already using smart TVs to watch paid online video, while a similar proportion have media streaming devices, with both types of gadgets also being used to access free-to-view online video services such as YouTube and broadcasters' catch-up TV services (such as BBC iPlayer in the UK or Germany's ARD Mediathek). The global installed base of connected smart TVs is expected to almost triple over the next five years, and the TV set models available over the next few years will primarily be smart TVs (Figure 3). Meanwhile, media streamers

will be enabling OTT video services and apps for more than 360 million TV households by the end of 2022, up from 140 million at end-2017.

Figure 3: Penetration of smart TVs and media streamers



Source: Ovum

Implications of piracy

Consumer research recently conducted by YouGov on behalf of Edgware Technologies found that 29% of viewers overall claimed to watch pirated TV content at least once a month, with 39% likely to watch pirated TV shows or movies online and 21% likely to view pirated sports.

While the increased availability of convenient and affordable legal alternatives is helping to dampen the appeal of online video piracy, the problem is far from eradicated. In fact, the climate for piracy has improved from the consumer's perspective in many ways, with the widespread availability of pirate VOD sites, OTT sports streams, and media streamers preconfigured for illegal content sources. As multiscreen services gradually become the primary TV and video consumption platforms, the need for content owners and distributors to protect against IP theft on every device will become even more pressing.

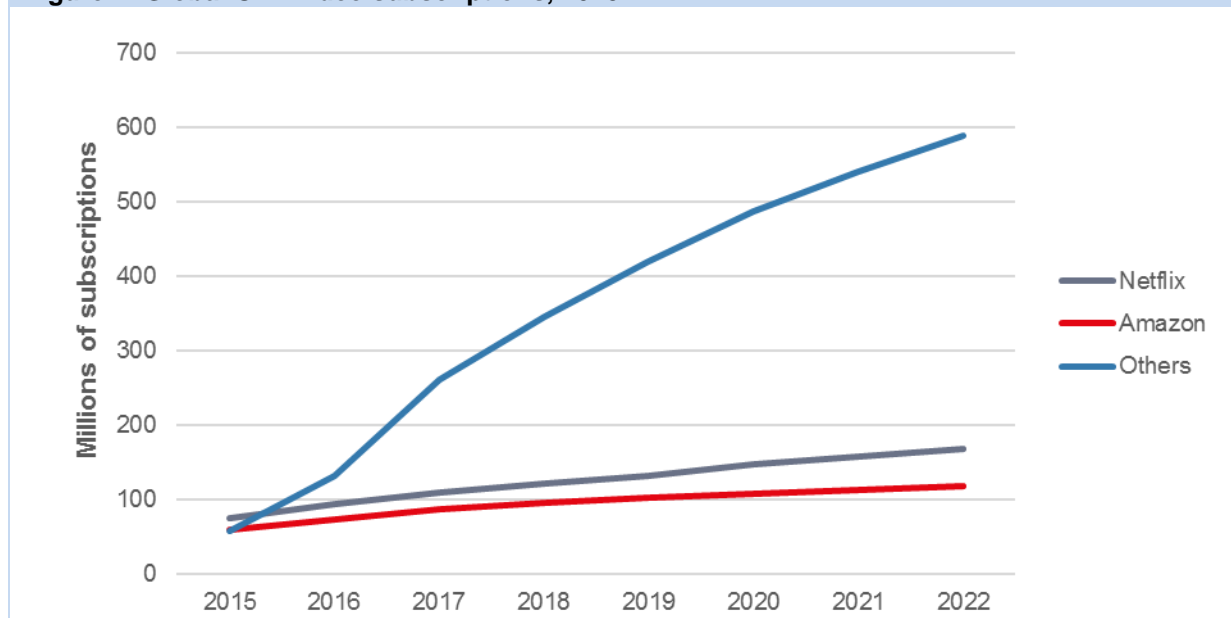
Market impact

OTT SVOD/SLIN accelerates as pay-TV growth stalls

In 2017, OTT video services accounted for 33% of total pay TV and OTT video subscriptions worldwide, with this proportion projected to increase to 46% in 2022. Yet despite slowing subscriber growth, pay TV will continue to dominate the combined TV & OTT market during this period. This is partly because operators have launched next-generation TV services that offer better value for money to customers, providing advanced functionalities such as cloud DVR and storage, high definition (HD and UHD), multiscreen access, and "skinny bundle" linear OTT services.

There will soon be more paying OTT video customers than pay-TV subscribers in the world, with global OTT subscription numbers set to reach 561 million at end-2018 and 874 million at end-2022 (Figure 4). Although Netflix and Amazon currently dominate the SVOD market, with 110 million and 60 million global subscriptions, respectively, at end-2017, national and regional OTT services everywhere are competing head-on with the major global players. As Netflix's annual growth rate drops into single digits, a growing raft of smaller rival services will continue to drive OTT over the coming decade. Competition to Netflix will come from global names such as Amazon and HBO, as well as a much larger number of local players made up of national TV broadcasters, traditional pay-TV operators, telcos, and standalone OTT video service providers.

Figure 4: Global OTT video subscriptions, 2015–22



Source: Ovum

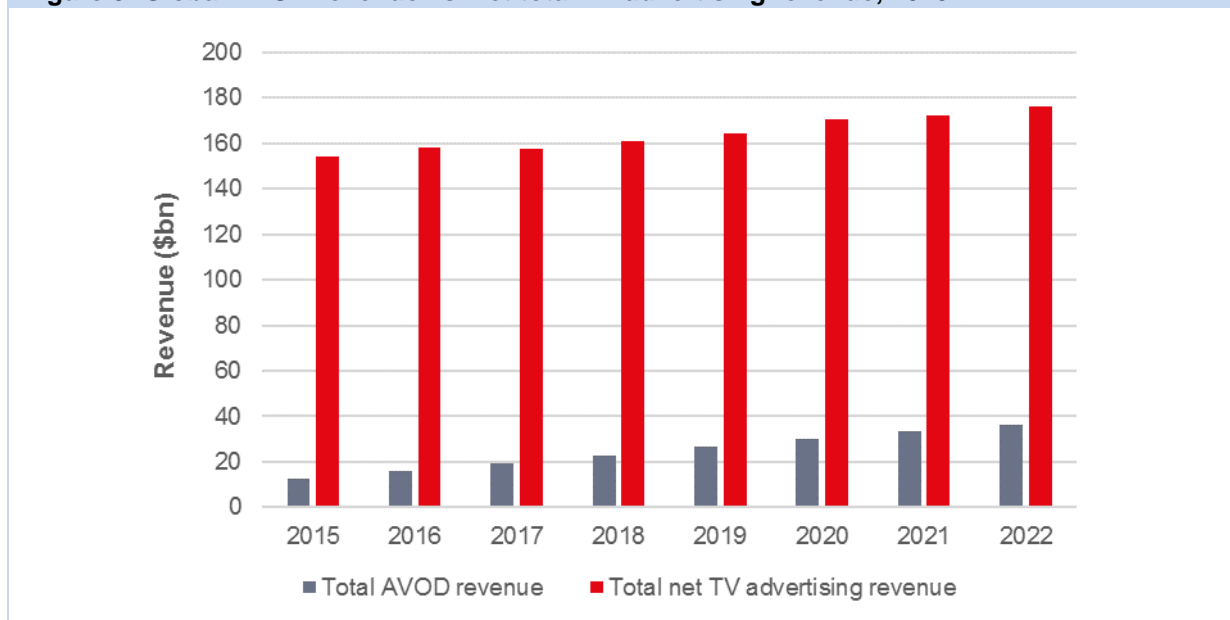
Virtually all markets are now fully serviced by a host of mature OTT video services, both global and local or regional. These services are radically transforming consumer behavior and causing disruption to traditional TV. The increased capability of fixed and mobile broadband networks to deliver live streaming to ever-larger audiences is driving a new trend in OTT services: subscription linear (SLIN). Services based on a linear – as opposed to on-demand – streaming experience are proliferating globally: several linear OTT platforms launched in 2016, and most of the new subscription-based OTT services launched in 2017 are also linear. Ovum believes SLIN services will grow faster than SVOD over the next five years.

A key impact of SLIN will be the further disruption of traditional TV – and this will come principally from pay-TV operators, as a means of reasserting their market shares online – as well as offering strong competition to the likes of Netflix and Amazon. Internationally, this trend is not expected to be as aggressive as in the US, but by and large, OTT subscriptions will increasingly infringe on pay-TV customer bases everywhere. In short, traditional TV distribution will lose out to OTT distribution.

AVOD is gradually chipping away at traditional TV advertising revenues

Our consumer research findings above indicate that free-to-view content – which is typically funded through advertising – accounts for the greater proportion of online video consumption. Ovum forecasts project that ad-supported video-on-demand (AVOD) will account for 17% of global TV and video ad revenue in 2022 (Figure 5). And while regular TV advertising will continue to dominate in terms of revenue over the next five years, digital video remains an important long-term strategic priority for traditional TV players.

Figure 5: Global AVOD revenue vs. net total TV advertising revenue, 2015–22

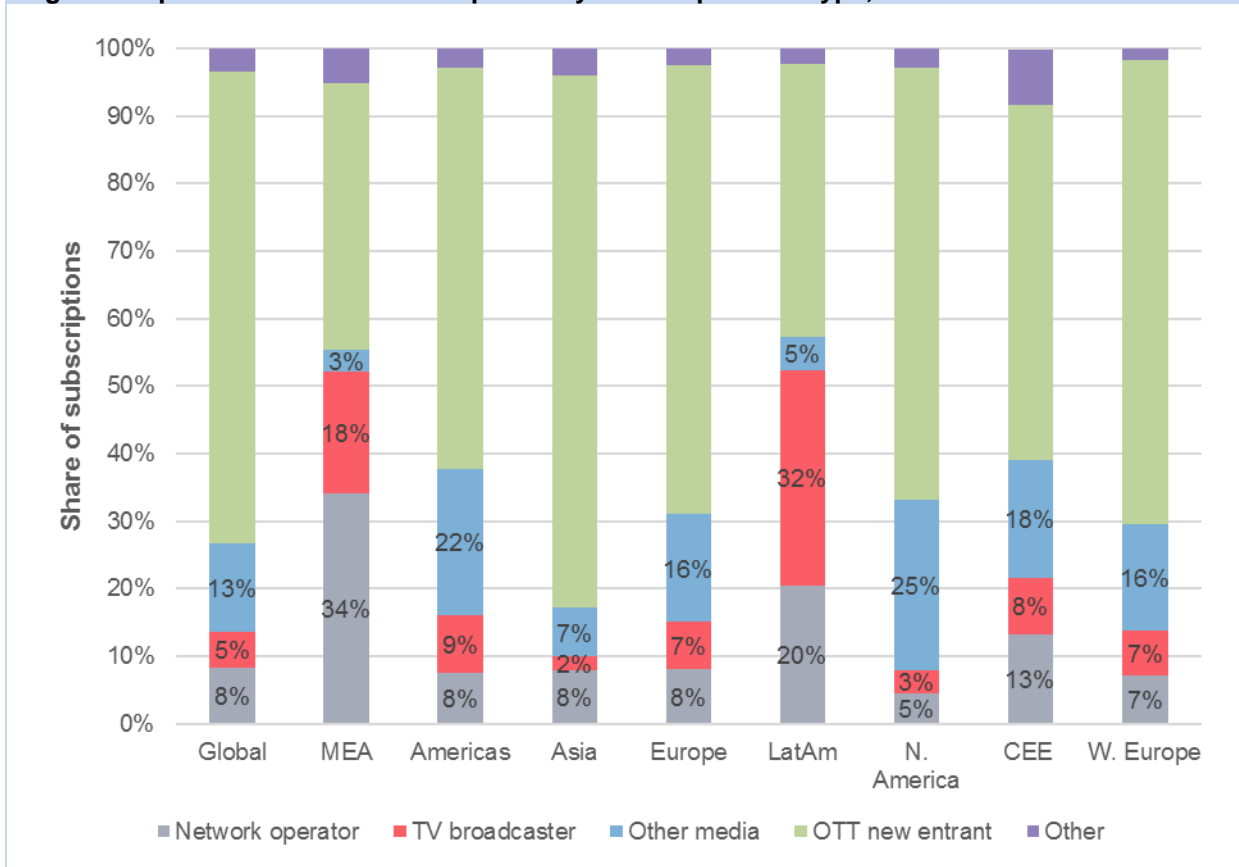


Source: Ovum

AVOD revenues will not overtake those of TV advertising in the medium term. Ongoing constraints on spending include disparities between digital video and TV CPMs, concerns over brand safety (on certain platforms), and the scale of simultaneous reach still offered by traditional TV. However, we should not assume this will remain the case in the much longer term, as online delivery of content gradually becomes the norm with IP-connected devices – including smartphones, tablets, smart TVs, and interactive set-top boxes – becoming commonplace across the globe.

While the paid OTT video landscape is dominated everywhere by new entrants (typified by Netflix and Amazon), it is clear that significant numbers of subscribers are also using services from TV broadcasters, network operators (both telcos and traditional pay-TV distributors), and players from other media entities, such as film studios and sports federations (Figure 6).

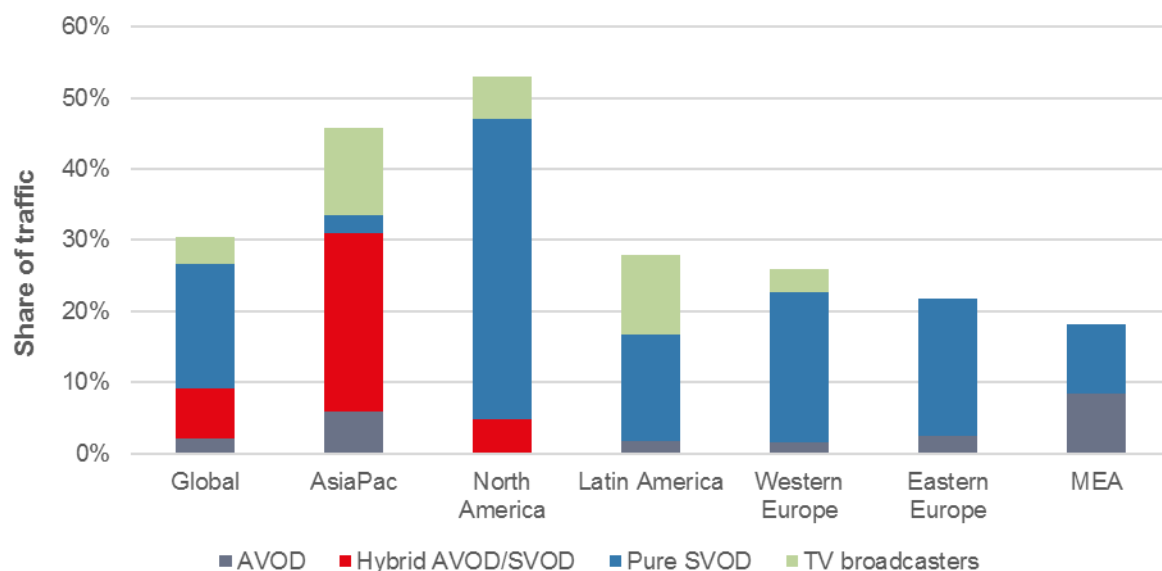
Figure 6: Split of OTT video subscriptions by service provider type, 2017



Source: Ovum

The above chart also reveals significant regional variations in the viewer mix of paid streaming video services. In the less developed markets of MEA and Latin America, both network operators and TV broadcasters enjoy a relatively strong presence within the OTT video landscape. In other regions and subregions, these players' OTT audiences are more than eclipsed by those subscribing to services from other media entities. Of course, not all OTT video delivery and consumption is based on premium, direct revenue generating services. Indeed, Figure 7 below highlights the role of free-to-view online video services.

Figure 7: Long-form services' share of top 10 OTT players' unmanaged video traffic, 2017



Note: TV broadcasters' services consist primarily of AVOD/free-to-view, but with some also having an SVOD component.

Source: Ovum

The chart shows interesting regional differences in the composition of streaming video traffic. Of particular note is the comparatively high usage of hybrid "freemium" services in Asia-Pacific, as well as a relatively strong presence of TV broadcasters' OTT services (predominantly consisting of AVOD) in both Asia-Pacific and Latin America.

New opportunities for video streaming service providers

The absorption of online video streaming into the mainstream of consumer entertainment activities creates a range of new and evolving opportunities for traditional TV broadcasters and distributors.

Evolving TV and video business models

Pay-TV packaging

Standalone, operator-delivered OTT services are on the rise, and besides extending a player's reach beyond the confines of its traditional footprint, these propositions are facilitating new content packaging formats such as skinny bundles and mobile-first video services. Such initiatives enable additional incremental revenue opportunities as well as the potential for new types of service packaging and will account for a growing share of operators' video customer bases. At the same time, operators' aggregation portals provide a distribution channel (in terms of both sales and access) for TV broadcasters' paid or unpaid D2C OTT video services.

Monetizing broadcasters' streaming services

Figures 1, 6, and 7 above demonstrate that there is clear demand for broadcasters' streaming TV services, and while the bulk of usage remains around their free-to-view offerings, there is also scope for direct monetization in the form of premium subscription (and, to a lesser extent, transactional) video. Many public broadcasters are involved in original content production, and where this is particularly successful, they are well positioned to package such programming as premium exclusive content. Broadcasters with desirable content assets can also seek monetization opportunities through download-to-own services or by offering online access to TV shows prior to the scheduled airing date. Additionally, broadcasters may choose to offer ad-free access to their catch-up/replay content for premium.

Operator–OTT partnerships are on the rise

The proliferation of OTT video streaming services has paved the way for traditional TV players to re-evaluate their distribution strategies and evolve their business models. Some pay-TV operators have retreated from traditional bundling of large channel packages in favor of online "pay-TV lite" and on-demand services – Telecom Italia and Orange Spain being two examples. At the same time, mobile network (as well as traditional pay-TV and fixed broadband) operators are becoming sales and delivery channels for a growing raft of third-party streaming video services, either through the integration of partner services into their STB UIs or mobile entertainment portals.

The growing trend toward bundling and service integration partnerships with third-party OTT players enables traditional pay-TV operators and telcos to enhance and expand their core service and value propositions, bringing increased relevance to their consumer portfolios. At the same time, OTTs need network operators to reach the right audiences and devices. The sheer growth in operator partnerships over the last 24 months demonstrates that OTT players are increasingly reliant on operators to bring their services to market, particularly in geographies lacking reliable broadband access or payment mechanisms. As alliances between operators and local/national OTT players multiply, there is growing scope for collaboration at the infrastructure level – between telcos and broadcasters, for example – to achieve efficiencies in the delivery of online TV. For example, operators' local network footprints make them ideally placed to deliver OTT content closer to the viewer.

Content quality and brand safety enhance the appeal of broadcaster AVOD

Although the space is increasingly occupied by the global OTT giants, online AVOD also represents a major growth opportunity for traditional TV broadcasters and distributors. One advantage that TV players have over the likes of YouTube and Facebook is that they may be able to command higher CPMs on their own platforms, due to the relative scarcity of premium video inventory. AVOD presents huge revenue opportunities in emerging markets such as India, where low-income populations have a large appetite for free services and where revenue will grow dynamically over the next five years. Local broadcasters can leverage the strength of their local content and expertise through their own AVOD platforms.

Premium, brand-safe content expertly curated by broadcasters will continue to be attractive to advertisers, across both TV and new digital platforms. Following the 2017 YouTube ad boycott, many observers were quick to point to the reliability offered by TV. Broadcasters should champion their AVOD platforms as providing the best of both worlds. Combining TV-quality content, curation, and

brand safety with the granular targeting capabilities of digital advertising will enable them to shore up the value and appeal of their AVOD inventory. But to succeed here, players must be prepared to invest to ensure personalized ads are delivered glitch-free and in the same quality as their own content. In particular, advances in server-side ad insertion (SSAI) technology and automatic personalization of video ads are key areas of development.

Video delivery strategies

Operators have a big role to play in the evolving video ecosystem

The shift toward IP delivery of traditional TV

The current pattern of platform diversity among traditional pay-TV distributors is a temporary phenomenon, as most will gravitate toward harmonizing their video infrastructure. In some cases, this will entail migrating customers from satellite to IPTV platforms, while in others, HFC cable networks will gradually be upgraded to IP-based delivery via fiber access networks. Over time, operators will migrate their video infrastructure – currently based on closed-network delivery – toward more open-cloud-based systems.

Managed and semi-managed OTT

While it is widely expected that migrating to all-IP will help drive down operational costs, the shift toward pure IP/OTT streaming takes time for bigger traditional operators that need to recoup sunken capital and operational investments. As a result, we are seeing various interim measures, with operators starting to deliver parts of their video offerings via IP in a range of managed, unmanaged, or "semi-managed" scenarios (Figure 8).

Figure 8: Examples of managed/semi-managed OTT scenarios

- In the spring of 2018, **AT&T/DirecTV** plans to start rolling out a next-generation video platform, to which its existing IPTV and satellite services will gradually migrate. It is expected that delivery of the service will be "closed," or managed up to the household set-top box, with unmanaged access to connected devices via the open internet thereafter.
- UK incumbent telco **BT** simultaneously delivers its premium BT Sport service via managed multicast to its TV customers' STBs as well as via unmanaged streams to a much larger base of broadband users accessing the content via the BT Sport online app.
- During 2017, **Deutsche Telekom** indicated that it was considering the creation of a standalone, purely OTT-delivered TV service, which would be delivered to mobile and other video-enabled connected devices.
- In April 2018, **Sky** plans to launch an all-IP TV service via its Sky Q connected STB platform in Italy, enabling it to reach customers without the need for satellite dishes. This marks a major first step in the operator's migration toward OTT delivery, which it aims to implement widely across all its European markets. In addition to enabling Roku-powered media streamers to access its NowTV OTT SLIN offering, Sky has launched a NowTV streaming stick to improve the service's reach and accessibility.

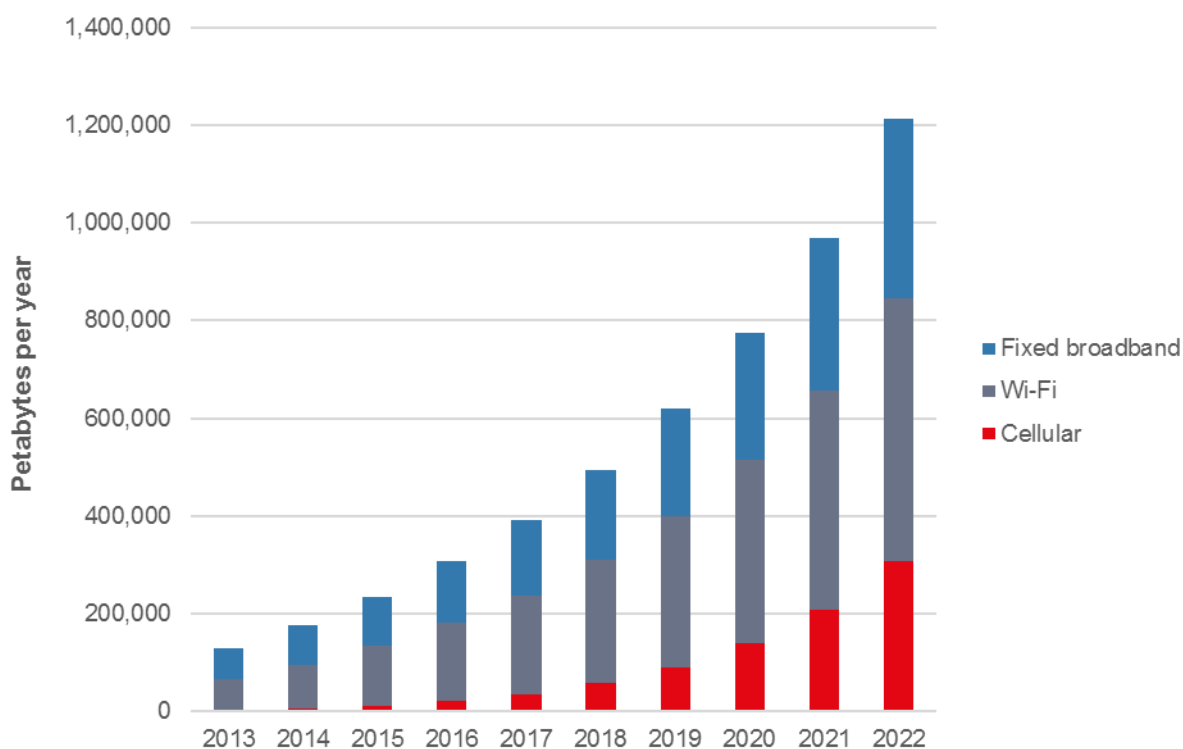
Source: Ovum

Although operators currently maintain significant control over the user experience via managed STBs, there is a growing inclination to serve predominantly unmanaged devices such as smart TVs, media streamers, and tablets. An inevitable trade-off for the benefits and efficiencies of going all-IP is the loss of service control associated with unmanaged OTT delivery – a challenge faced by broadcasters and operators alike as a growing proportion of their services and audiences migrate to the online world.

Implications of video traffic growth

While video's share of unmanaged data traffic is expected to rise marginally over the next five years – it is already more than three-quarters of the total – the absolute volume of video traffic is set to increase at a CAGR of 25% during the forecast period (Figure 9). This naturally presents substantial challenges and concerns for OTT service providers striving to deliver robust and reliable video services, as well as for broadband network operators and infrastructure providers tasked with carrying the video traffic.

Figure 9: Global video traffic over unmanaged IP networks, 2013–22



Note: Estimates, based on the world's 18 largest country markets.

Source: Ovum

CDN strategies

Enabling delivery transformation

The concept of the content delivery network (CDN) was pioneered around the turn of the millennium as a means of delivering web content more efficiently and at lower cost. The technology has since evolved to play a vital role in making the delivery of increasingly high-quality video over the top of the public internet both technically and commercially viable.

As the growing availability and appeal of OTT video services has led consumers to expect to be able to watch video on any device and via any network, pay-TV operators and telecoms operators have adopted CDN technology to support their own multiscreen services. Such services have included "TV everywhere" extensions of their pay-TV services as well as new standalone offerings, like those pioneered by pure-play OTT providers.

Ensuring a reliable QoE

The need to ensure quality of experience (QoE) over unmanaged networks was thrown into sharp relief by Ovum research, which found that broadband speeds far in excess of those required by high-quality OTT video – say, 50Mbps or more – reduced buffering problems only by marginal degrees.

Most operators initially relied on third-party CDN service providers such as Akamai, Level3, and Limelight Networks to deliver video over the internet. But a growing number are investing in their own

CDN infrastructure to take greater control over the quality of their streams, their delivery costs, and technology roadmaps. This move has become increasingly important to operators as Netflix, Google, and other pure-play OTT providers have deployed their own CDNs to achieve similar strategic goals.

Typically, operators have started small, deploying CDN equipment to a relatively small number of locations, known as points of presence (PoPs), while continuing to use third-party CDNs to deliver video traffic over both their own and other broadband networks. But many operators are now in the process of deploying more PoPs in their local markets than even the largest third-party CDNs operate. Again, the driving force is the need to increase QoE, by delivering video from CDN servers as close to the consumer as technically and economically possible.

Networks optimizing for video content delivery

Many service providers now see the CDN as the unifying architecture for a more content-centric approach to designing and operating networks. These forward-looking players are moving to closely integrate their traditional broadcast TV systems with their on-demand platforms, as well as experimenting with virtualization, pre-positioning, new protocols, and other technologies to find ways of better handling the inevitable growth in video traffic as viewing behavior continues its shift to IP.

Many are also preparing for a world where all video is delivered as single "unicast" streams via CDNs to smart TVs, media streamers, tablets, smartphones, and other unmanaged devices, rather than via one-to-many "multicast" streams to managed TV set-top boxes (STBs). Several operators are exploring whether a hybrid of multicast to the STB or home gateway and then unicast to unmanaged devices can play a role in delivering sports, news, and other forms of linear video more efficiently and economically. But questions remain over the viability of this approach – commonly known as multicast ABR – given the expected decline in linear viewing and the cost and complexity of deploying and managing new kinds of managed STBs and gateways.

Cable and telecoms operators have been the most active in deploying their own CDNs, due to their ability to roll out PoPs across their fixed-line infrastructure. But some satellite operators, broadcasters, and other video providers that don't operate broadband access networks are also building out their own CDNs, as it becomes ever clearer that OTT delivery represents the future of TV. Examples of traditional cable, satellite, and telco TV providers that have deployed CDNs include MyTV SUPER in Hong Kong, Televisa in Mexico, KPN in the Netherlands, and Telia in Sweden.

Appendix

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Ovum Consulting

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