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Australian OTT Video – Creating a New TV Market

18 November 2015

Contents

This Ovum report was commissioned by nbn

Executive summary

- nbn end-user data consumption increased by 51% over the March-September period
- Increase due to the arrival of mass market OTT video services
- Ovum forecasting 4.7 million OTT SVOD subs in Australia by 2019 – a 300% increase
- Booming OTT market will place increased strain on telco networks
- New investment will be needed to deliver required capacity increases

The recent boom in subscription video on demand (SVOD) services, driven by the launch of Netflix, Stan and Presto in Australia, was accompanied by a sharp rise in network data traffic. Average monthly download usage on the nbn™ network was 73GB in March 2015 but was 110GB by September, a rise of 51% in just six months. Some capacity problems arose this sudden increase in demand.

But video use in Australia is set to grow even further in the coming years, so further new capacity will be required as time passes. Ovum estimates that the number of SVOD subscribers in Australia will grow by a factor of 17 between the end of 2014 and the end of 2019. By that time, Ovum forecasts that there will be 4.707 million OTT SVOD subscriptions in Australia.

Other forms of OTT video delivery such as downloaded video-on-demand (VOD) will also grow significantly. Many users of these services will be individuals rather than households, with the number of screens per household proliferating; already, there are 2.3 TV sets per household, and 1.6 tablets, not to mention smartphones. Video traffic is already the driver of overall household traffic.

The capacity problems that were caused by SVOD video traffic in 2015 were addressed fairly quickly as telecommunications operators moved to add broadband capacity to cope with the increased data traffic. But the event raised questions about over-the-top (OTT) video, particularly where the responsibility rests for OTT service quality. There was also some confusion about the origin of the problems, which were not related to basic access speeds in the last mile, but to capacity in local and long-distance transmission that link up the last-mile networks.

These questions will only become more pressing as more OTT service providers and new video business models emerge over the coming years. The Australian video services market will look very different in 2019 compared to 2014. The main difference will be the new variety of services available. In 2012, Australia was still in the throes of the analog FTA switchoff, and traditional FTA and pay TV were completely dominant. In 2019, they will share the market with IPTV and a dramatically expanded OTT video industry.

OTT video is qualitatively different from more traditional video services such as free-to-air (FTA), pay TV and IPTV. FTA TV, pay TV and IPTV are all delivered by a single integrated service provider that can perform end-to-end management of service quality (or something very close).

In contrast, OTT video is delivered by multiple service providers across a value chain that is only loosely coordinated. No single provider is ultimately responsible for service quality and stability. This arrangement has the undoubted advantage that it is low cost, and this makes OTT video services cheap to buy. It will allow the delivery of a “long tail” of niche content that would otherwise be uneconomic, and this will greatly increase viewer choice.

But there is a price to pay for this. Service guarantees are limited, and service quality cannot reach the same levels as pay TV and IPTV unless OTT providers convert themselves into IPTV providers which would require major investment in new infrastructure. But investment on this scale is not going to happen, because it would undermine the prime attraction of OTT video to customers – its low cost and growing variety.

The purpose of this paper is to explain the origin of the tradeoff between cost and quality that customers will need to understand to get the best out of OTT video. Customers need to understand the strengths and weaknesses of each mode of video delivery - pay TV, IPTV and OTT video – and what are reasonable expectations of the newly-minted OTT services.

OTT video can deliver great customer benefits, but it also creates tensions between different players in the value chain that have erupted into open conflict in some markets. In the USA, this has manifested itself in a battle over net neutrality. In South Korea, it led to Korea Telecom briefly blocking video services to Samsung smart TVs to relieve capacity problems in 2012, prompting intervention by the regulator.

More recently in Spain, Netflix and rival Totalchannel have complained that their OTT video offer is being constrained by incumbent Telefonica's network policies, reducing picture quality and lowering streaming rates.

Fortunately, these tensions are somewhat mitigated in Australia because of our (almost) unique tiered data allowances which sees data usage roughly aligned with prices. There is profit in traffic growth that network providers can reinvest to address customer demand.

These tensions can be further mitigated, to the benefit of customers, if telecommunications retail service providers (RSPs) and OTT video players can cooperate to fund some focused infrastructure investment to manage the delivery of digital video content.

This creates a better experience for OTT video customers, and also creates a wholesale revenue opportunity for telecommunications service providers. This is the strategy now being adopted in advanced video markets, and it can deliver benefits in Australia too.

Australian market evolution

Networked video in Australia: a snapshot

The level of competition in the Australian video entertainment market has stepped up in recent years. The entry of Netflix into Australia in 2015 is just the latest example of a proliferation of video services that have challenged traditional free-to-air (FTA) and pay TV services. Analog technologies have been completely displaced in recent years by digital technologies.

At the same time, demand is growing and personalized offers are emerging. Underpinning this trend is the proliferation of video screens in households. The average Australian household now has 2.3 televisions sets (42% Internet connected) and 1.6 tablets per household, along with multiple personal computers and personal devices[1]. This allows individuals within households to subscribe to their own content services, increasing the number of separate services.

There are now four basic firms of video entertainment delivery competing in the Australian market:

- Traditional free-to-air terrestrial broadcasting, now using digital multi-channel technology since the closure of analog TV services in 2013.
- Traditional pay TV services delivered over cable and satellite, also using digital technology.
- IPTV services being delivered over the telecommunications network. Ovum defines IPTV as TV delivered over a closed IP network. Some Fetch TV services work this way, however many services loosely described as “IPTV” in Australia are delivered over the open Internet, and are classified as OTT SVOD services by us.
- Over-the-top (OTT) video services, including video-on-demand (VOD) and streaming video on demand (SVOD) services, using the open Internet.

Superficially, all of these services are “television”. However, each of these services has a different underlying delivery architecture. This report looks under the hood and examines how these different architectures affect the viewer experience. Expectations of quality and stability for each kind of service are different, and need to be understood to make sense of service performance.

The number of TV households in Australia is shown in Table 1, broken down by the primary kind of TV service. Most households will also use other kinds of TV, though to a lesser extent, and virtually all use traditional FTA television. (Note that Foxtel on T-Box subscriptions and some Fetch TV subscriptions are delivered over the open Internet, and are included in the OTT SVOD totals later in this report, rather than the IPTV total).

[1] Deloitte, *Media Consumer Survey 2014: Australian media and digital preferences – 3rd edition.*

Table 1: Television households and subscriptions in Australia, historical

Year-end data (000s)	2009	2010	2011	2012	2013	2014
Pay TV subscriptions	2,404	2,426	2,444	2,294	2,477	2,559
IPTV subscriptions	0	1	18	24	76	84
Analog FTA TV households	2,546	1,807	1,344	1,090	0	0
Digital FTA TV households	3,139	4,018	4,611	5,128	6,152	6,189
Total TV households	**8,207**	**8,371**	**8,538**	**8,692**	**8,849**	**9,008**

Source: Ovum.

Legacy TV platforms such digital terrestrial television (DTT), direct-to-home (DTH) satellite, and cable technologies are all mainstays of the sector. Ovum has assessed the strength of each variety of TV service in the Australian market. In Ovum's view, Australia has a fairly balanced competition between different kinds of TV, with IPTV still relatively weak due to its early stage of development. However, we expect IPTV to grow somewhat with the rollout of the nbn™.

OTT video services

The threat to traditional television lies in OTT SVOD, which has suddenly burst into life with a range of extremely competitive offerings. While live shows, sports, and general entertainment are the domain of traditional players, premium local and international drama series are being made available in early windows by SVOD operators, attracting subscribers.

Netflix officially launched in Australia in March 2015, following years of operating in the Australian SVOD sector as a grey service. In response, DTT operator Nine has launched its own SVOD service, dubbed Stan, while Seven is providing Presto in a partnership with Foxtel. Ovum believes a competitive SVOD market will give rise to many "TV lite" offers from both traditional and OTT providers, designed to compete for FTA advertising and pay TV subscription revenues.

A major barrier to the mass market OTT video providers is the superior ability for live TV to deliver sports. In contrast, most OTT video services deliver pre-programmed streams (live or delayed), or downloaded movies and TV shows. As long as traditional service providers retain content rights over live events, they will be able to maintain some differentiation. OTT SVOD providers will need to think carefully about competing for these rights, and whether the high costs involved will be compatible with their low-cost service model.

Optus' recent acquisition of the EPL rights is a case in point. Lacking a broadcast network, Optus will mostly monetise EPL games by bundling them with Optus telecommunications services. However, it has been claimed that the costs of acquisition were around double the previous contract. Even if Optus strikes a deal with a traditional broadcaster to broadcast some games, most will be carried across the broadband network, and this kind of service will increasingly tax the Australian broadband infrastructure.

Beyond the mass market, there will also be more and more OTT video offers targeted at niche audiences such as ethnic language and special interest groups. These kinds of services are part of

the “long tail” of content that is enabled by the low cost delivery model of OTT video, but some niches are large. For example, World Wrestling Entertainment (WWE) in the USA has an SVOD subscription base of 1.2 million paying US$10 per month. Services that cannot be economic on the dedicated infrastructures of traditional broadcasting will be viable on the OTT model.

Pay TV and IPTV

28% of TV households took pay TV in 2014. The number of pay TV subscribers is growing, but only slowly as the addressable market for this high-end product has become fairly saturated. Around 2.8 million households subscribe to pay TV in Australia out of a total 8.8 million households. Most of these households are served by satellite but a significant minority are served through the Singtel Optus and Telstra cable networks (which will ultimately be transferred to the nbn).

Since Foxtel completed the acquisition of rival satellite pay direct-to-home (DTH) operator Austar in 2012, it has tightened its grip on the pay-TV market. The merger gave it 97% of the pay-TV market. As Telstra and SingTel Optus only resells services from the Foxtel platform, pay TV in Australia has become a quasi-monopoly. In December 2013, Foxtel said it was preparing to launch bundles. In February 2015, it launched a triple-play offering, initially using Telstra’s ADSL network, but with plans to also use the nbn™.

Ovum believes that Foxtel will continue to dominate the pay-TV sector. It has the vision and resources needed to take the innovative steps required to thrive across new and existing platforms. Foxtel’s position as the leading premium pay-TV supplier has never come under any serious challenge. The long-term threat to Foxtel is from the competitive SVOD market.

In contrast to pay TV, IPTV has potential for significant expansion and more competition. However, long-term growth in IPTV is largely dependent on the rollout of Australia’s National Broadband Network (nbn™), which is promising to deliver minimum network speeds of 25Mbps. Under its Multi-Technology Mix (MTM) plan, the nbn™ will use a mixture of fixed technologies – FTTP, FTTN, and HFC – in order to accelerate the deployment. As a result, IPTV growth is expected to be gradual and not an immediate threat to established TV platforms, such as cable, DTH, and DTT. Only true closed IP IPTV services are included in our estimates and forecasts of IPTV.

Telstra had 185,000 Foxtel on T-Box customers at mid-2014, enjoying a content package based on Foxtel content (but based on a mixture of IPTV and OTT technologies, rather than true fully-managed IPTV). Ovum therefore defines Foxtel on T-Box as an SVOD service, not an IPTV service.

Rival IPTV provider Fetch TV offers both a fully-managed closed IP IPTV service and SVOD video solutions to telecommunications retail service providers (RSPs) such as Optus and Dodo. By April 2015, it had over 200,000 subscribers (95% of them sold through RSPs). A partnership between Fetch and Netflix is expected to encourage subscriber growth. Fetch TV allows any user to buy its service with any provider, encouraging migration to Fetch TV service providers because the video data is often quota-free. Only Fetch TV’s true IPTV services are included in our estimates and forecasts for IPTV.

Digital Terrestrial free-to-air TV (DTT)

With the completion of the analog terrestrial TV switch-over in December 2013, all terrestrial TV in Australia is now digital.

In our view, Digital Terrestrial TV (DTT) has reached its peak. With analog terrestrial TV now switched off, most homes have made their decision on which digital technology to adopt. DTT will drop as other platforms grow in appeal and relegate DTT to a secondary service within a growing proportion of homes. However, this will be a slow process.

DTT networks will continue to compete with each other and with new entrants to win broadcasting rights for key sporting events, live events, and reality shows. Free TV will do its best to protect itself from pay-TV attempts to remove major sporting events from the country's anti-siphoning law list, which pay-TV groups are constantly lobbying to be relaxed. If those laws are relaxed, there is a danger that Australia's free-to-air networks will be negatively affected.

Australian market evolution

The Australian video services market will look very different in 2019 compared to 2014. The main difference will be the new variety of services available. In 2012, Australia was still in the throes of the analog FTA switchoff, and traditional FTA and pay TV were completely dominant. In 2019, they will share the market with IPTV and a dramatically expanded OTT video industry.

Ovum does not forecast that any kind of television, including FTA, will be abandoned. However, different kinds of television will capture more or fewer viewing hours as time goes on, and in some households the dominant form of television will shift from traditional services to IPTV or OTT services.

Table 2 shows Ovum's forecast estimates for the number of TV households and subscriptions for the growth of different kinds of TV in the Australian market, while Figure 1 shows these numbers in graphical format. (Note that Foxtel on T-Box subscriptions are delivered over the open Internet, and are counted in the SVOD line. Also, free trial SVOD services are not counted). In particular, Ovum forecasts that OTT SVOD subscriptions will increase by a factor of seventeen over the 2014 to 2019 period, to reach 4.707 million.

The total number of TV households (that use a television or equivalent) and the total number of FTA households (where FTA is still the primary source of television) are also shown to provide some perspective. In 2015, the difference between total TV households and FTA TV households is largely accounted for by pay TV subscriptions.

Table 2: Television households and subscriptions in Australia, forecast

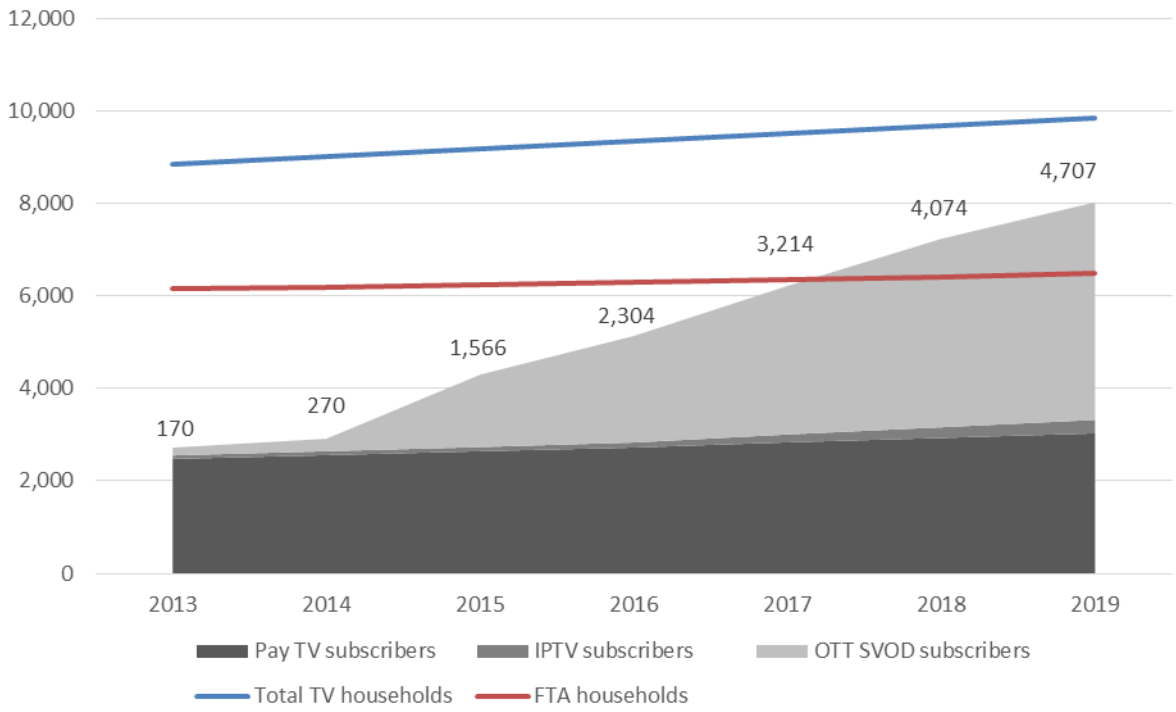
Year end data (000s)	2014	2015	2016	2017	2018	2019
OTT SVOD subscriptions	270	1,566	2,304	3,214	4,074	4,707
Pay TV subscriptions	2,559	2,644	2,724	2,836	2,931	3,031
IPTV subscriptions	84	90	108	170	232	290
FTA TV households	6,189	6,236	6,301	6,347	6,418	6,490
Total TV households	**9,008**	**9,170**	**9,335**	**9,503**	**9,674**	**9,848**

Source: Ovum. Foxtel on T-Box and some Fetch TV subscriptions are included in SVOD.

It is important to note that the subscription numbers to not equate to households, because many households will have more than one of these kinds of services.

Virtually all of the “total TV households” will have access to and use FTA TV services to some extent. Total TV households is expected to grow steadily in line with household formation, around 9.3% between 2014 and 2019. In contrast, “FTA TV households”, where FTA is still the primary source of TV, are expected to grow more slowly by 4.9% over the same period.

Figure 1: Television households and subscriptions in Australia, forecast (with SVOD numbers)



Source: Ovum. Foxtel on T-Box and some Fetch TV subscriptions are included in SVOD.

This trend needs to be kept in perspective, however. FTA households will still grow throughout the migration period, and the proportion of total TV households that remain primarily FTA households will decline only modestly, from 68.7% to 65.9%. There is a trend for TV households to adopt non-FTA forms of television as their primary form, but it is slow. FTA is set to remain the most common primary television service.

Pay TV subscriptions will grow faster than both total TV households and FTA TV households, by 18.4% between 2019 and 2014. IPTV will also grow steadily off a small base, but will remain a fairly small element in the larger TV landscape.

Both FTA and pay TV will therefore remain strong contenders within households for the foreseeable future. However, it is also clear that most of these FTA households and pay TV households will ultimately adopt some kind of SVOD service in addition to their current usage.

Overall, Ovum does not forecast any dramatic abandonment of one form of television for another. Rather, the overall picture is of growing diversity in the kinds of TV within households, with newer forms of television growing alongside traditional TV service such as FTA and pay TV, and competing with these traditional services for viewer hours.

Managed and unmanaged television

New varieties of television service technology

These different television services are delivered using different technologies. The fundamental split in delivery models is between delivery over managed networks and delivery over unmanaged networks.

The whole purpose of a managed network is to ensure that services are delivered within an acceptable range of quality, and this requires investment in infrastructure that can control the delivery of services. As video traffic has increased on networks, we have seen traditional broadcasters (both free and pay), telecommunications retail service providers (RSPs) and the owners of telecommunications networks investing in greater traffic capacity and in other technologies that facilitate the efficient and effective transmission of video services from suppliers to customers.

In contrast, unmanaged networks do not have these additional investments. But the unmanaged network, which is the public Internet, has a singular advantage: it is cheap. This makes affordable the delivery of content that would be uneconomic on any other platform. Although Netflix currently steals the limelight, the future of OTT video will include thousands of niche offerings that traditional video service providers could not economically support. The “cheapness” of OTT video is therefore not something that should be eliminated from the range of customer options. Rather, customers will need to learn to manage the disadvantages of an unmanaged network in order to reap the benefits.

This division between managed and unmanaged networks needs to be qualified somewhat because the largest OTT operators like Netflix are working with traditional telcos to build content delivery networks that improve the customer experience for OTT video. Netflix in particular has invested in its own Open Connect CDN infrastructure to reduce pressure on RSP networks in the USA. These hybrids of managed and unmanaged infrastructure are becoming more common.

It is important to understand that the nbn™ will not remove the distinctiveness nature of OTT video. The nbn™ will provide much faster access speeds, but above a certain threshold the quality of OTT video services does not depend significantly on access speeds. A key aim for the nbn™ is to provide universal access to 25Mbps connectivity that will enable the stable delivery of OTT video to all Australians.

To make matters even more complicated, many operators now offer services on both managed and unmanaged networks. In Australia, SVOD pioneer Quickflix has been joined by traditional pay TV operator Foxtel, which has launched its own OTT service Presto alongside its established cable and satellite offers in partnership with Seven West Media. FTA operator Nine and Fairfax Media have combined to offer the Stan service. Telstra, which offers the T-Box SVOD service also offers OTT VOD services.

At the other end of value chain, customers themselves are becoming more sophisticated in their use of television technologies and are using multiple kinds of service, both in their homes and on personal devices like smartphones.

The result is an increasingly complicated marketplace. Services differ in:

- Delivery: managed, unmanaged or hybrid.
- Revenue model: ad-supported, subscription (“pay”), hybrid (“freemium”), or pay-per-view.

- Format: traditional “linear” broadcasting, video-on-demand (VOD), or streaming VOD (SVOD).
- Device dependence: single-device (e.g. traditional TV) or multi-screen (delivered to multiple kinds of devices, including mobile devices).

These options are being combined in a wide range of service models that are disrupting the traditional TV landscape. Operators are often adopting more than one of these service models or partnering with alternative providers.

However, the most fundamental difference between these different models remains the delivery model: managed, unmanaged, or hybrid. It is this difference that will be examined below from the perspective of four different video services: FTA TV, pay TV, IPTV and OTT video. In particular, this chapter will ignore technology issues unrelated to service quality, such as conditional access, encryption and security.

Video is a high-bandwidth service, so it places significant demands on network infrastructure. Newer video formats such as high-definition (HD) and 4K video increase this pressure. Traditionally, this was handled by separating video from other kinds of communications service. Voice communications was carried on the telecommunications network, while video was carried on purpose-built television networks.

The first rupture of the barrier between these two worlds in Australia was the introduction of pay TV in the early 1990s. While satellite pay TV followed the traditional model, the Optus and Telstra cable networks built in the mid-1990s to deliver TV were ultimately upgraded to support broadband services as well. This so-called “network convergence” got a boost with the growth of DSL broadband after 2000, and the subsequent replacement of analog television with digital transmission. A new digital delivery network emerged that has become powerful enough to serve as an alternative video service platform.

Pay TV networks

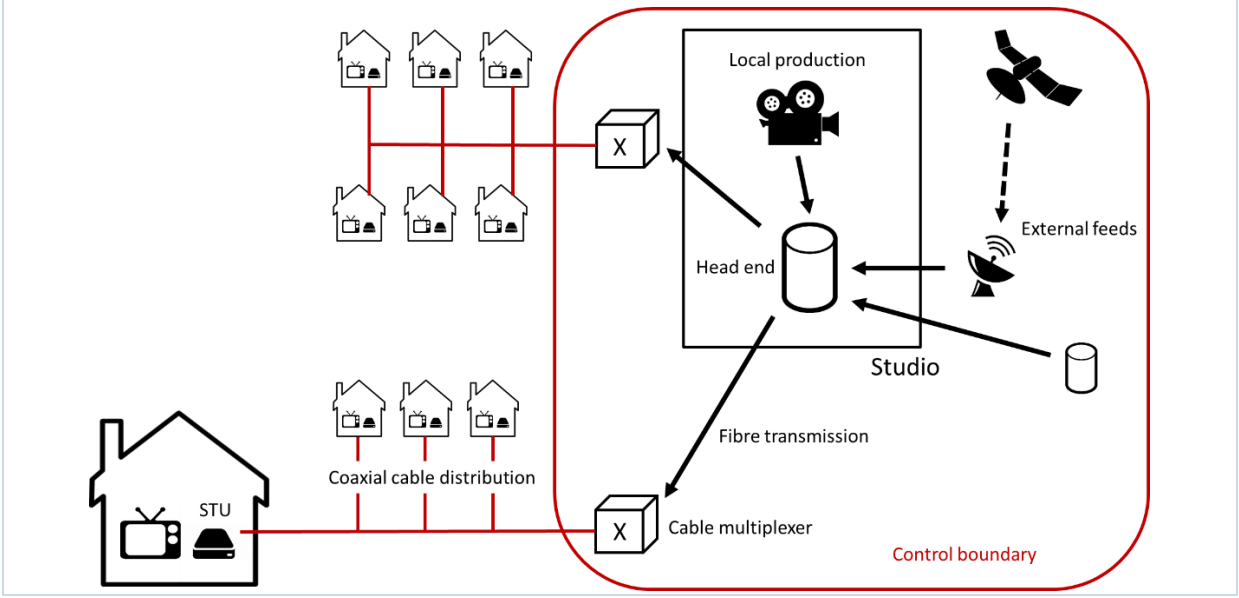
In Australia, pay TV is delivered using two different technologies: cable networks and satellite networks. Although one is confined to the earth’s surface and the other uses geosynchronous satellites, some of the infrastructure is common to both.

Cable and satellite TV do not use terrestrial radiocommunications. The level of control that pay TV service providers have over their networks is, if anything, even more thorough than the control that DTT service providers have.

In both cases, content is sourced in much the same way that content is sourced for DTT television. Again, this content is transmitted to a head end, but it is transmitted from there to the customer in two different ways.

In the case of cable networks, the video data is transmitted from the head end over fibre transmission links to cable multiplexers. These multiplexers support multiple coaxial cables which carry the digital TV signal to homes. The signal is encrypted and contains multiple television channels, so an STU is needed to decrypt the signal and provide the customer control interface. These arrangements are illustrated in Figure 4.

Figure 4: Pay cable television network structure

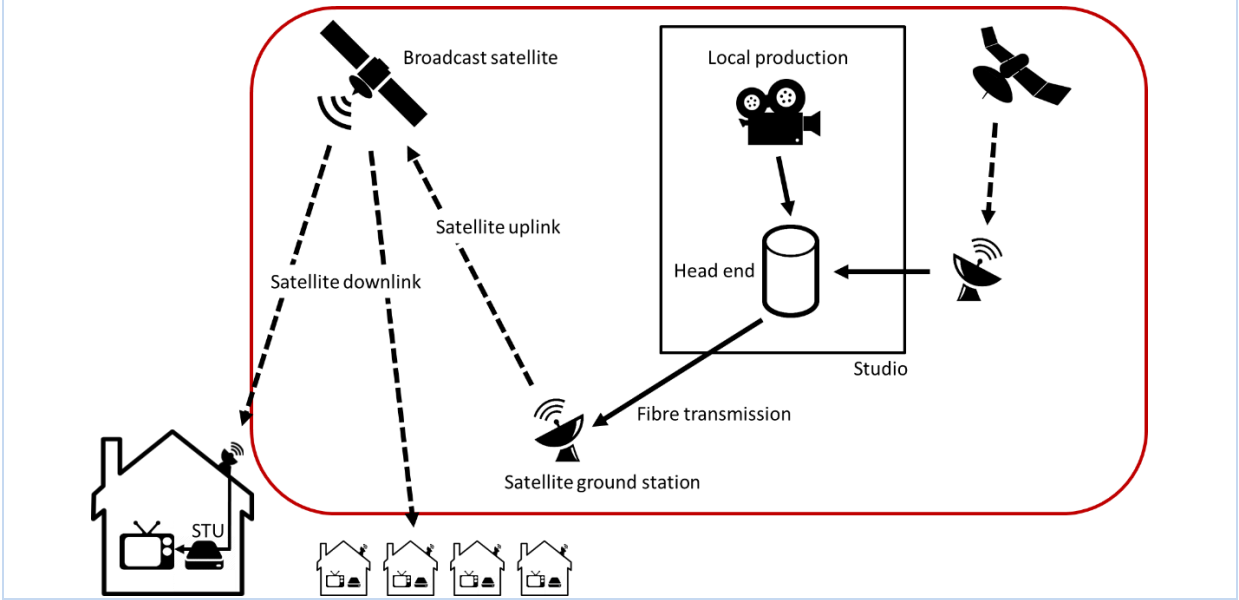


Source: Ovum

The control boundary for a cable network extends all the way to the customer premises, as the coaxial cable segment is also managed by the service provider. Again, this allows the service provider to guarantee a high level of stability and quality.

Satellite pay TV networks resemble terrestrial television networks in their basic structure, but there are no terrestrial radiocommunications transmission sites. Instead, the head send signal is sent via fibre to a ground station which transmits the signal to a purpose-built broadcast satellite. The broadcast satellite re-transmits the signal back down to satellite receivers at each customer premises, where it is decrypted and decoded for display. This is illustrated in Figure 5.

Figure 5: Pay satellite television network structure



Source: Ovum

Although reliant on a satellite uplink and downlink, the satellite pay TV system faces no problems that have not be solved by digital terrestrial television providers. In practice, the satellite uplink and downlink are reliable in all but the worst weather conditions, when “rain fade” can be an issue. Other than in these exceptional conditions, the broadcaster can guarantee a high level of stability and quality.

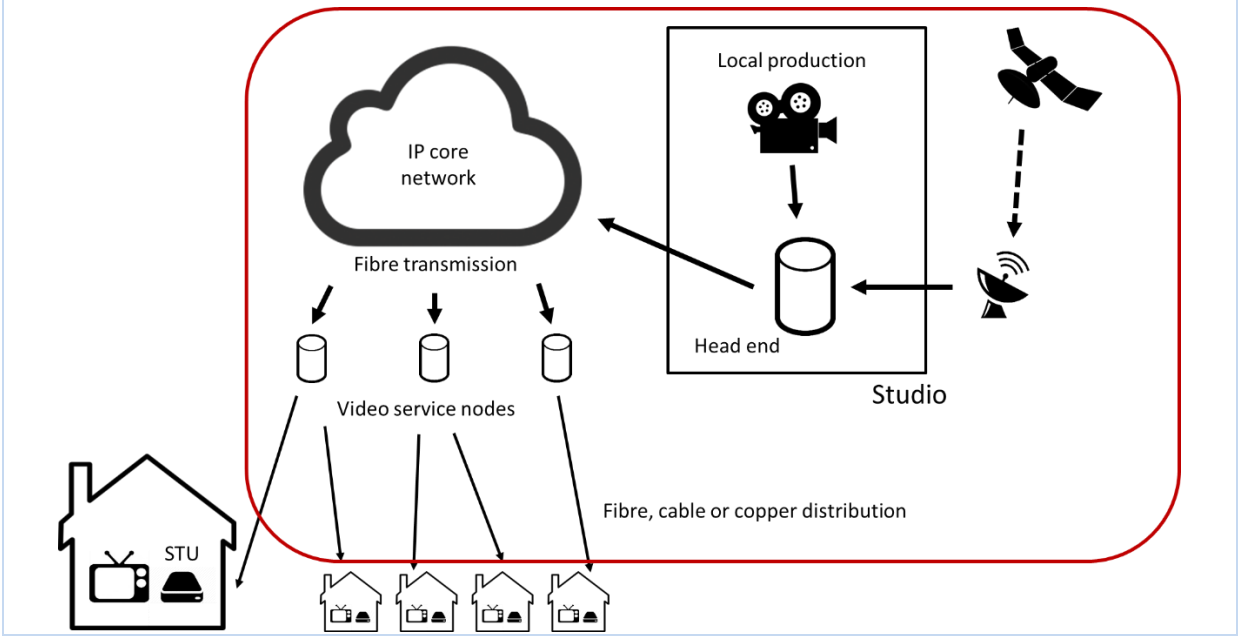
IPTV networks

Up to this point all of the networks considered have been fairly traditional broadcast technologies. Although these networks have been digitalised in recent years, the basic form of broadcast networks has not changed for decades.

Internet protocol TV (IPTV) is a recent addition to the suite of television technologies, having been introduced by telecommunications operators after 2000. Rather than use a custom-built broadcast network, IPTV utilises the same infrastructure as the broadband telecommunications network. Although it is distinct from the broadband service that residential customers purchase, it uses the same access infrastructure (copper, cable or fibre) that the home broadband service uses, and cannot be used without purchasing a broadband service.

The basic head end infrastructure for the generation of IPTV content at the studio is much the same as for the traditional broadcast services. This content, which can be either video-on-demand (VOD, download and watch later) or streaming video-on-demand (SVOD, watched in real time), is then distributed to telecommunications exchanges throughout Australia over the telecommunications’ operator’s core networks based on IP technology. The content is delivered over fibre to video service nodes, generally located at exchange buildings. From there, the content is delivered to customer premises via copper, cable or fibre links. An STU decrypts and decodes the signal for viewing. This is illustrated in Figure 6.

Figure 6: IPTV network structure



Source: Ovum

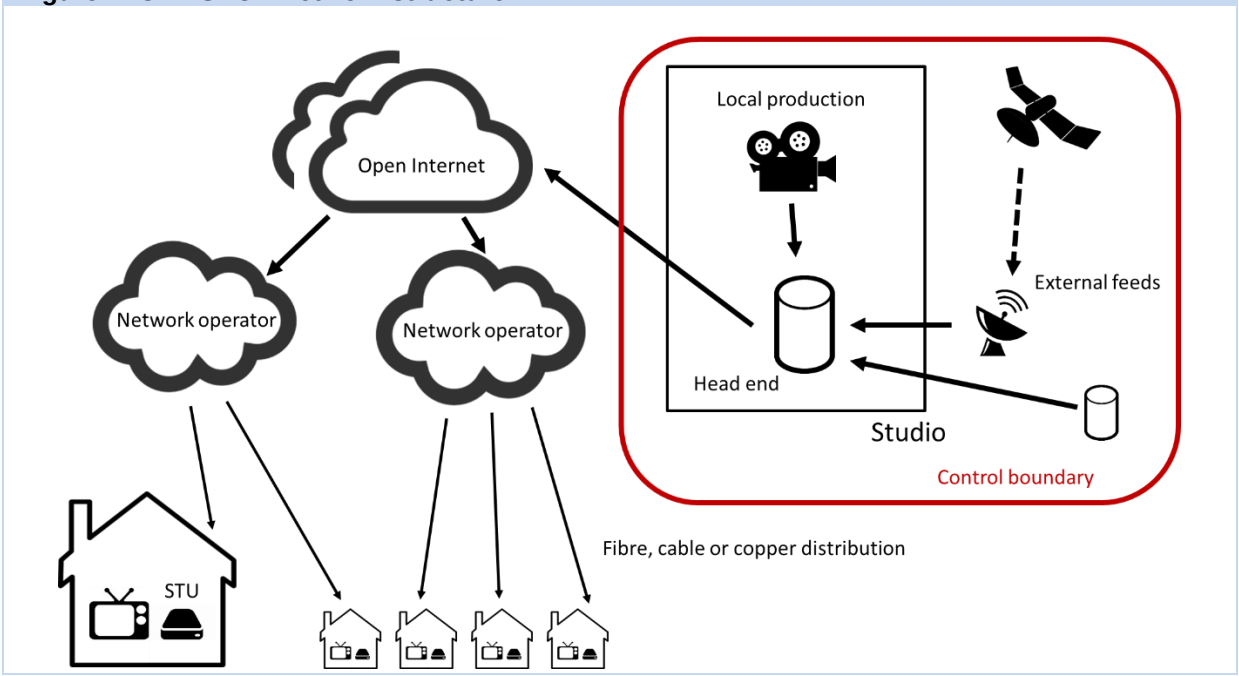
There is more than one way that IPTV can be organised. Sometimes a single operator provides all or all of the infrastructure, from the head end all the way to the customer premises and the STU. The alternative approach is to use a third-party service such as Fetch TV, which provides all of the content and studio services, but partners with telecommunications operators such as Optus and Dodo to deliver jointly-managed services. (Fetch TV also offers services directly to customer premises over existing customer broadband services).

Generally, the IPTV service, whether offered by a single telecommunications operator or in a partnership between a content provider and telecommunications operator, is highly managed all the way to the video service node. Beyond that point, the service requires several Mbps of broadband data capacity on the access network. For cable and fibre networks this is almost guaranteed, but for copper networks, performance will vary depending on the capacity of the DSL broadband connection. If the connection is too slow, then the IPTV service is not operate effectively. This is one of the problems that the nbn™ is designed to address.

OTT SVOD networks

OTT video services are delivered differently to all of the services described above. This is evident in Figure 7, where the control boundary of the network is much more restricted than any other service. Communication between the head end and the STU is over the open Internet. The open Internet is a loose federation of networks, coupled only by the use of a shared digital data transmission standard that has no central management. Customers gain access to this network through their own network operator. None of this infrastructure is controlled by the SVOD service provider.

Figure 7: OTT SVOD network structure



Source: Ovum

The provisioning of capacity is left to each network operator independently, and there is therefore no guaranteed level of service on this network. The advantage of this arrangement are that these

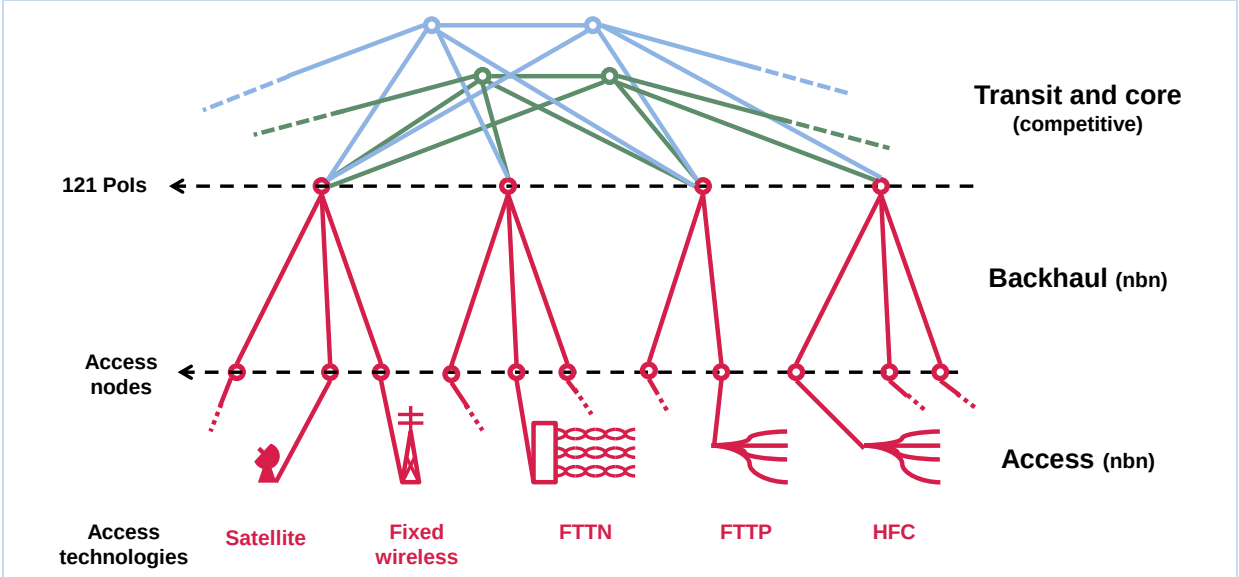
disparate networks combine to form a truly global shared infrastructure that allows customers to access services, including SVOD services, from all over the world. It is also a low-cost way to organise this global network. However, these advantages come at the price of lower quality and stability, which are key to maintaining a smooth video stream, particularly at higher screen resolutions and in households where multiple streams are being used.

There are two key bottlenecks in this arrangement that can affect video performance, and are outside the control boundary of the OTT SVOD provider. The first is the access network – the last mile link that connects to the home. However, a standard definition streaming video service requires only around 2-3Mbps of average access speed. A high definition (HD) streaming video service requires only around 5Mbps average access speed.

Such speeds are available even on many existing ADSL2 networks, although the Department of Communications 'Broadband Availability Report' found that 700,000 Australian premises have no fixed-broadband access and a further 900,000 only have peak speeds of 4.8Mbps – so these subs would likely be unable to watch OTT video. The nbn™ will extend the area of Australia where these speeds are available, and so will increase access to standard and HD video.

In any case, the real bottleneck for OTT video is not usually the last-mile access network. Every access line only needs to support one household. Rather, it is the backhaul, long-distance transit, and high-capacity core networks that support millions of households that are most under pressure, and they will require new investment to keep up. Under Australia's telecommunications arrangements, this is the responsibility of the competing infrastructure providers who interconnect with the nbn™, as shown in Figure 8.

Figure 8: nbn™ and competitive segments of the Australian communications network



Source: Ovum

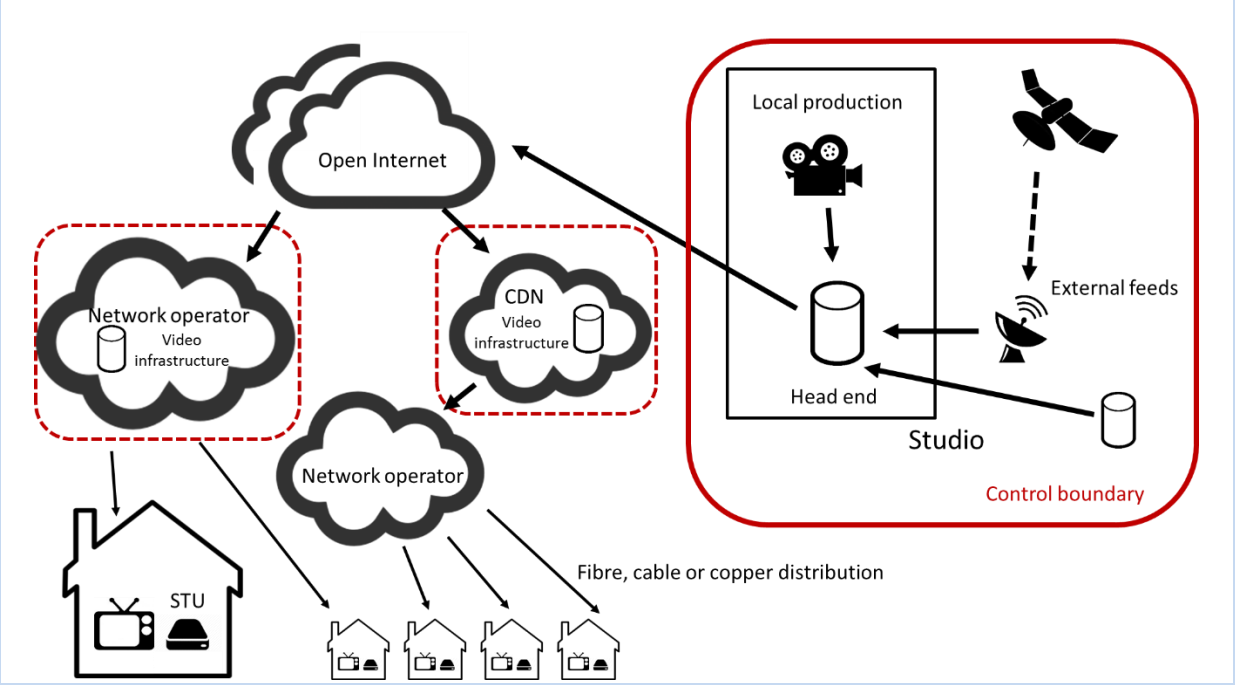
The advantage of this arrangement for customers is that access to services, including SVOD services, is available globally and cheaply. This will ultimately open up a range of services based on niche content needs that would not be economic on any other infrastructure.

Content delivery networks

To address some of the disadvantages of the open Internet, some network operators have installed video infrastructure in their own networks to facilitate SVOD services. The speed of light limits how quickly an STU can interact with a SVOD provider, and a content source closer to the customer will respond faster.

To improve user experience and lower costs in the transmission and core networks, network operators can install servers holding copies of content in strategic locations in their service footprint. This is called a content delivery network (CDN), and these servers are called “edge servers”, because they are generally located at the edge of the network near the customer. Also, some specialist CDN companies have emerged that lease CDN services to network operators, allowing the operators to minimise their own infrastructure investment. These arrangements are illustrated in Figure 9.

Figure 9: OTT SVOD hybrid network structure



Source: Ovum

These “hybrid” arrangements improve the performance of OTT video services like SVOD and VOD without adding too much to the cost of the network – indeed, they can reduce costs when they reduce the need to add more transmission and core capacity to the networks.

As noted above, Netflix has invested in its own Open Connect CDN infrastructure, but this will be beyond some of the smaller niche OTT video services that are emerging. These smaller players will be reliant on network operators to provide CDN infrastructure that improves the customer experience.

In addition, video quality of service will be one of the factors that will differentiate telecommunications RSPs in the nbn™ environment. Ownership of CDNs or partnership with CDN operators will be a competitive advantage in the broadband market as well.

Implications for customer experience and network investment

These different technology arrangements have implications for customers using the different kinds of video services. Put simply, there is a trade-off between cost, and quality and stability. Each service balances these competing goods differently. This means that customers need to develop different expectations of different kinds of services.

None of these issues will block the popularity of OTT video services. Ovum forecasts that SVOD subscriptions will grow very fast over the next five years, and growth in related services such as pay-per-view VOD services is also going to be strong. But there will certainly be a period of settling in as customers get used to the implications of the OTT delivery model.

Until the arrival of OTT video services like Quickflix, Netflix, Stan and Presto, television leant firmly to the high-cost, high-stability end of the spectrum. Even IPTV strives to improve quality and stability, and it bears some of the associated costs.

However, OTT video services are placed very differently to other television services on this spectrum, and trade off stability for low costs. Customers like the low costs, but also need to get used to the implications of the quality/stability trade off.

In some advanced OTT markets such as the US, Spain and Korea, conflict between OTT SVOD providers and network operators has erupted because the SVOD providers (and their customers) are the main beneficiaries of increased video traffic, while network operators were left to bear the costs.

In the USA, this has manifested itself in a battle over net neutrality. In South Korea, it led to Korea Telecom briefly blocking video services to Samsung smart TVs to relieve capacity problems in 2012, prompting intervention by the regulator. More recently in Spain, Netflix and rival Totalchannel have complained that their OTT video offer is being constrained by incumbent Telefonica's network policies, reducing picture quality and lowering streaming rates.

This tension has eased in some places where OTT service providers and network operators are beginning to cooperate in the deployment of CDN infrastructure to help manage the costs of traffic growth. However, the conflict is by no means resolved.

In Australia these tensions are already mitigated to some extent because of Australia's tiered pricing structure, where price is roughly aligned to data usage volumes. This means that RSPs in Australia gain additional revenue from video traffic growth that can be reinvested in CDN and transmission capacity.

In particular, the nbn™ network alone will not address all of the issues around service stability of OTT video services. It will primarily address the last mile access networks, but not the other aspects like core and CDN capacity. Those responsibilities will rest with the retail service providers who purchase nbn™'s wholesale access services.

Once a base level of access speed is widely available – and nbn™'s 25Mbps base speed is more than adequate for standard and HD OTT video, while nbn™'s higher speed tiers are also sufficient to support 4K video – the stability issue will largely be in the hands of Australia's RSPs. This is additionally the case since traffic growth generates extra network operator revenue that can be used for investment.