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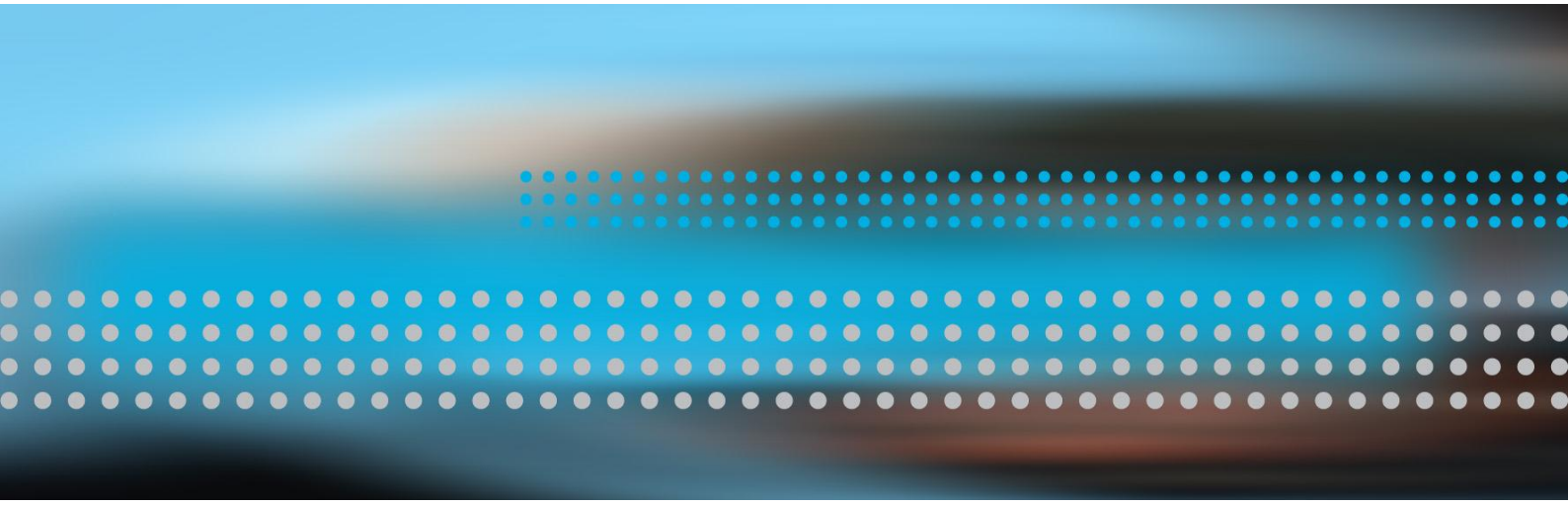
STRATEGIC WHITE PAPER



Video Distribution in the Digital Lifestyle Era

The ultimate entertainment opportunity for Service Providers and the new network requirements to seize it

JULY, 2011

Summary

The race is on to deliver instant gratification to the growing mass of consumers embracing the Digital Lifestyle. At stake is nearly $200 billion[1] of PayTV service revenues and the future business models of broadband network operators of all access modalities. Consumers are demanding more than linear programming and on more devices than the TV set. Traffic levels are soaring … and it has only just begun: the number of connected TV devices used worldwide will increase from 240 million in 2009 to 1.6 billion in 2014. Include all consumer electronic devices and the installed base increases to 6 billion in 2015[2].

But is video a problem or an opportunity? Alcatel-Lucent believes network service providers can seize the dominant position in consumer entertainment delivery by leveraging their unique assets. Doing so requires continuous bandwidth scaling at the lowest bit delivery cost and the creation of new value for consumers and rights holders upon which to generate revenues and profits. These requirements are the foundation of the Alcatel-Lucent High Leverage Network™ (HLN) strategy.

This paper applies the principles of HLN to the new Digital Lifestyle era and identifies the key video distribution challenges and enabling network technologies. They define a smarter and simpler network architecture that enables delivery of a richer and more liberating user experience personalized to each individual. The supporting ideas and concepts presented here are intended to foster a dialog on transforming networks into the entertainment delivery platforms of tomorrow.

[1] PayTV Global Market Size 2010, Pyramid.

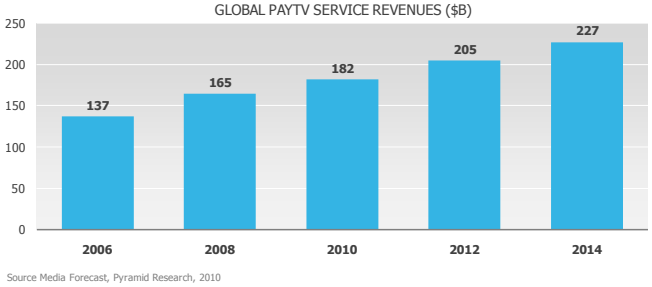
[2] Connected Convergent Devices and TV Outlook, Strategic Analytics, 2010.

1 Introduction

Right now PayTV providers the world over are distributing hundreds of high definition programs into millions of homes. Their networks are proven, efficient and utilize derivatives of broadcasting technologies that have evolved from more than 70 years of television. These networks are massively scalable, deliver exceptional quality and protect valuable content from theft. They are financially viable and generate billions in service revenues. They lack, however, a key attribute of the Internet which over-the-top providers have exploited to their advantage: the ability to interact with and deliver a single video stream to an individual.

MONEY IN THE SYSTEM

$200 Billion annual PayTV service revenues (split 40-60% with content aggregator)

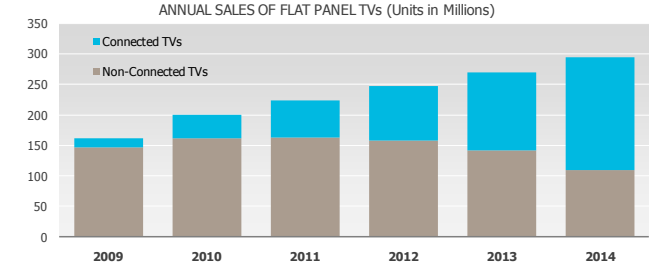


Source Media Forecast, Pyramid Research, 2010

The Internet has fostered a pervasive ecosystem. Founded upon ubiquitous broadband, connected devices now grant personalized access to a plethora of video-rich content and applications so beautifully displayed at their users' command. As more manufactures launch more devices, support for IP-enabled clients, high resolution screens and the processing power to exploit both become table stakes. Web-based application providers, quick to sense consumers' appeal for such devices, have jumped on the opportunity. By exploiting web services to deliver richer, more personalized and highly interactive experiences these application providers are fighting hard for the dominant share of consumer spend on entertainment services. Simply put they have reset consumers' expectations of entertainment, all neatly described as the "digital lifestyle". The adoption curve is staggering:

CONNECTED TVs IN THE SYSTEM

63% of FPTVs Sold in 2014 will be Connected (installed base of 510M)



Source Connected CE Devices Global Market Forecast Datatable, Strategy Analytics, December 2010

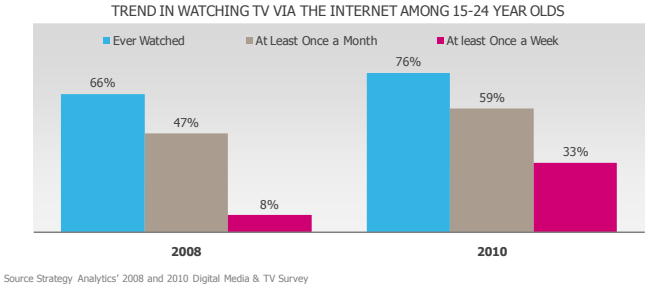
- 172 million US Internet users watched online video content in December 2010 for an average of 14.6 hours per viewer, and
- More user-generated video was uploaded to YouTube in the last 2 months of 2010 than if the major networks had been airing new content 24/7 since 1948[3]

[3] Bell Labs Business Modeling

The adoption to date has been predominantly low-resolution, short form video delivered over-the-top to connected devices. What happens when it is premium, long form content? Netflix represented 20% of US internet traffic during primetime in September, 2010 with only 1.8% of their then ~20M subscribers concurrently streaming. By year end Netflix has increased to 29%.[4]

NEW CONSUMERS IN THE SYSTEM

Embracing Multiple Outlets Now
(Future PayTV Customers?)



Source Strategy Analytics' 2008 and 2010 Digital Media & TV Survey

Netflix is now the largest US provider of PayTV services by subscriber count. That Netflix content is largely back-catalog material, and thus complementary with premium PayTV programming, makes their growth even more astonishing - and without yet exploiting broadband wireless. Collectively these data paint an "inconvenient truth" on the new expectations and behaviors of consumers:

- Consumers want broader access to on-demand, live and linear programming on any connected device, not just the TV set
- Consumers want a richer, more compelling experience that exploits new device capabilities, offers access to all their favourite shows and web content - and all shared seamlessly within social networks, and
- Consumers want this all delivered in a way which simplifies rather than complicates their lives

Despite rapid adoption of the Internet, or perhaps because of it, the users' entertainment experience remains fragmented, restrictive and complex. Better if it were richer and more compelling and exploited new device capabilities as well as premium content, web content and social media. A more liberating experience too, free of the constraints of legacy services that restrict some content and programming to specific screens. And a consistent user interface across all screens to easily select content, programming and displays and control the now interactive experience.

Optimizing the Delivery and Monetization of Video

Delight the Consumer	Deliver personalized, 2-way entertainment to any screen in a manner that simplifies rather than complicates their lives
Delight the Rights Holder	Drive more satisfaction and loyalty for their brands by increasing authorized, high quality usage to any device any where
Flexibility to Innovate	Quickly adapt to new business models and test new ideas in web time
Plan for Change	Put the right cost base in place to deliver more value without new revenue … and possibly less

Advanced operators recognize that they need to take a more holistic view. To become the preferred provider for entertainment services, innovative ideas are needed to architect a new and financially viable entertainment platform. This includes the right services platform that can quickly test new business and service models, identify failures fast, and rapidly adapt as necessary to develop and manage a winning portfolio of offers. The distribution

[4] http://ir.netflix.com/

network, now bidirectional and unicast, must have the scaling, quality and security capabilities required for a managed television service.

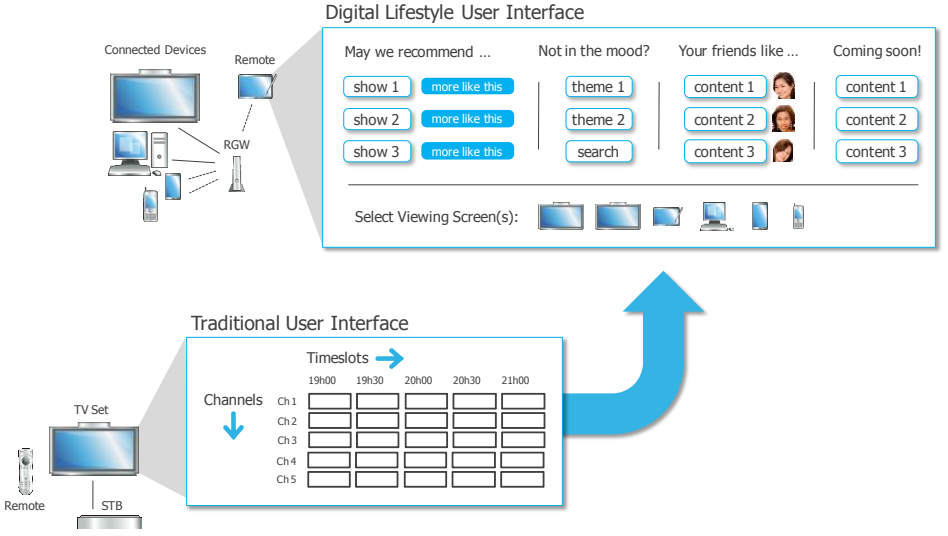
Above all a fundamental change in thinking is required. Instead of video as a "problem" for networks, embrace media services as an "opportunity" for growth. Video-rich media has become the primary driver for service demand and network utilization. Whether one realizes it or not, content delivery is becoming the de-facto core business of network service providers.

2 What Do Users Want?

After decades of passive television programming centered around channels, timeslots and the TV set, consumers are signaling their desire for change. Thanks to new entertainment options that engage through multiple outlets – both devices and applications –personal needs for instant gratification and self-expression are being better met by alternative means.

Compared to linear TV's traditional passive, "lean-back" experience, the digital lifestyle demands a more involved, personalized experience. This means broadening the full TV experience to any connected device including all live and linear programming, not just on-demand and low resolution "catch-up" programming. It also means better integration with 3rd party applications and content. In summary, a complete, just-in-time entertainment service personalized to each subscriber's tastes, schedule and preferred devices like that illustrated in Figure 1.

Figure 1: Extending the full TV experience to any connected device with a richer, more compelling user experience



For the digital lifestyle, imagine an environment where programming is now done using a tablet, not a remote. Instead of channels and timeslots, programming is recommended based on user preferences. Not in the mood? Select alternate themes. Curious to know what your friends are watching? That's displayed too. You may always "search" and select content for immediate viewing or bookmark future events whose availability for viewing will appear as "coming soon".

Once a program is chosen, the user selects the screen they want to watch it on. The tablet-as-a-controller provides an automated list of all currently available connected devices, giving users a seamless, true multi-screen experience. If a screen other than the tablet is selected, the new screen immediately begins playback and the tablet goes dark.

Or does it? What if the tablet now becomes a companion device or "second screen" providing relevant and interactive content synchronized to the selected program? This could be breaking news and league statistics for your favorite sports team (now playing their cross-town rivals and vibrantly displayed in full high definition on your 65" screen). Prefer reality or talent shows? The second screen displays the contestants and allows you, the audience, to choose who stays and who goes home during the live broadcast window – a significant interactive experience, especially when you're able share preferences with your friends.

It's also a boon for analytics and advertising. Detailed, accurate and immediate usage data are generated throughout giving service providers and rights holders new levels of intelligence like never before. Meaningful analytics can be used to optimize content investment, release windows and recommendations. Usage data also drives advertising revenues. Indeed, the second screen's real estate becomes a highly valuable display for advertising, both traditional, targeted and now also interactive.

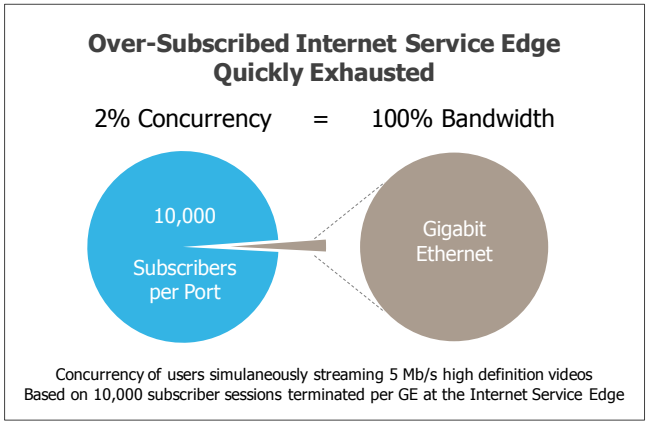
Enabling this vision has become realistic thanks to the massive investment and innovation generated in and by the Internet ecosystem. What's missing is the ability to deliver the full user experience and herein lies the service provider's unique opportunity. Leveraging your network's unique role in the physical delivery chain, you have the ability to deliver a full experience not possible by over-the-top providers. Combined with open protocols and application enablement gives you fast time to market and greater integration with 3rd party applications.

None of this, however, reduces the volume of on-demand bandwidth consumed by connected devices at their owners' biddings. In fact it accelerates it. Nor does it relinquish, nor make simpler, the mandate to protect digital assets from theft or minimize the demand for the utmost quality of experience. To become the preferred provider in the Digital Lifestyle era, a new set of architectural challenges must be addressed.

3 Defining a Distribution Architecture for Video-rich Content

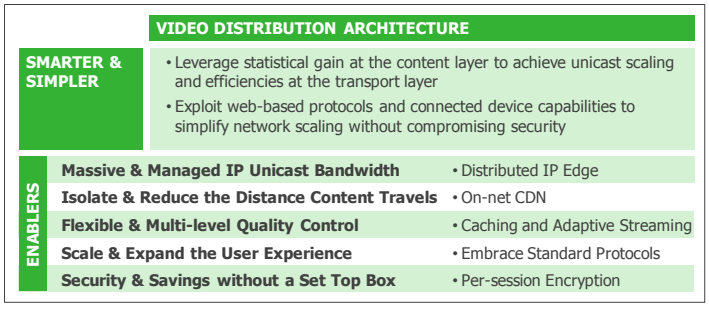
For video distribution, the Internet architecture has a fatal flaw: over-subscription. The financial model used to build the Internet demanded a highly over-subscribed architecture whose resources where shared amongst a large pool of users. It was engineered to delivery applications with bursty traffic behavior and low concurrency such as information and communication services like browsing, file transfer and email. Accurately characterized as "best effort", the Internet supports a legitimate and appropriate service description for many web-based applications. But video is not one of them. As anyone in the PayTV industry knows, video-rich content delivery has vastly more stringent requirements than a best-effort service can delivery consistently and at massive scale:

- video streaming demands a high flowrate - potentially exceeding 5 Mb/s for premium high definition content,
- traffic is sustained for the duration of the program – which may be hours for long form content
- video has high concurrency during the "primetime" viewing hours, breaking news and major sporting events, etc.
- video demands QoS, and is significantly affected by fluctuations in bandwidth



Delivering this traffic with scale, quality and at a viable cost is what drove PayTV providers to architected their original video distribution networks on the principles of broadcasting. It is an extremely efficient solution for linear programming as only a single image of content is distributed simultaneously to many consumers. As designed, however, it cannot deliver the personalized and interactive experience consumers receive from web-based providers who leverage the Internet's unicast architecture. Equally, no one should be surprised that the rapid growth of video distribution over the Internet has exposed structural issues of its own especially peering congestion and variable quality.

Herein lies the opportunity. Service Provides should seize the opportunity that consumers need *their* networks to acquire the digital media they crave and invest in networks that support unicast delivery with the same uncompromising scale, quality and security found in today's PayTV distribution networks. The new delivery architecture will need to be smarter and simpler to achieve scaling and financial objectives. This will require a broad solution space spanning transport, content and application layers. Doing so reveals a set of distribution aspects to focus on: unicast scaling, content delivery, quality control, user experience and asset protection.



3.1 Massive and Managed IP Unicast Bandwidth

Digital lifestyle services will require a massively scalable unicast IP delivery model at a financially acceptable TCO. Unfortunately traditional Internet mechanism to achieve this balance are of limited use: over-subscription (Figure 2a) to achieve statistical gain of IP packet forwarding is less effective when consumer services have high flow-rates and high concurrency; and IPTV multicast routing is not applicable when the objective is to deliver individual streams. New approaches are needed and distributing the IP service edge closer to consumers is key among them (Figure 2b). Doing so reduces the number of subscribers contending for IP resources: less over-subscription means higher IP flow-rates and higher concurrencies.

Figure 2a: Traditional Internet Access Architecture's Centralized IP Edge Limits Unicast Scaling

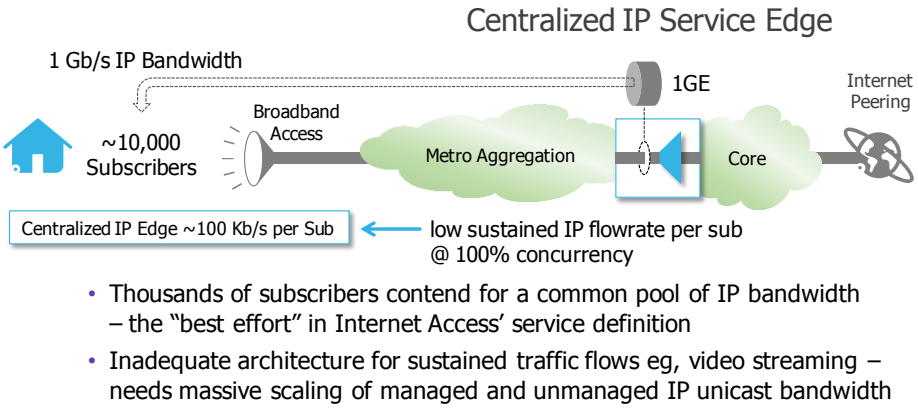
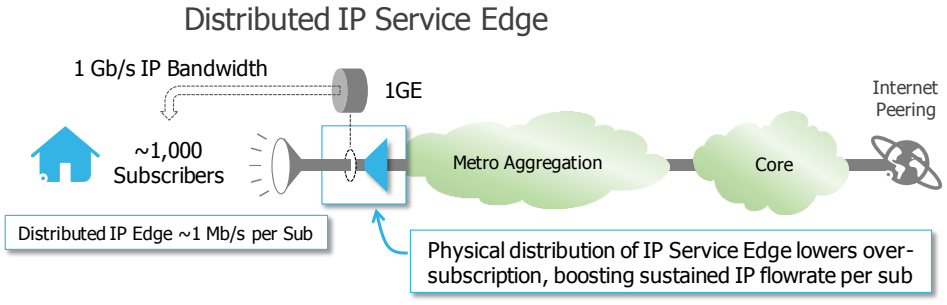
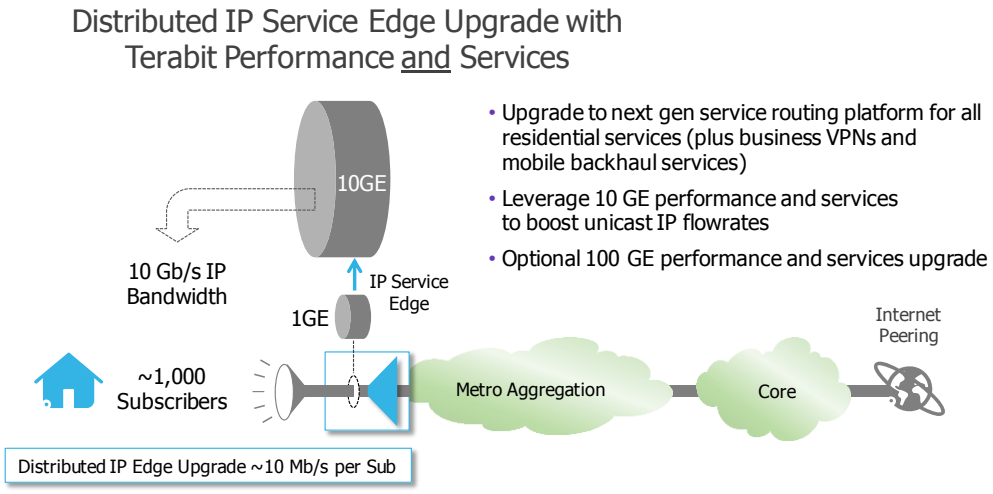


Figure 2b: Distributed IP Service Edge Reduces Over-subscription, Boosting Sustained IP Flowrates



In addition to distributing the IP service edge, upgrading to a next generation edge routing platform leverages silicon innovation and the evolution of Ethernet (Figure 2c) to provide higher performance with services. For example, advances in network processors drive improvements in interface speeds, port densities and service scaling. 10 and 100 Gigabit Ethernet, for example, are commercially available with edge services. These innovations lower the cost per bit delivered for power, cooling and space as well as equipment cost. They also increasing the pool of unicast IP resources available to delivery content to subscribers.

Figure 2c: Additional Scaling by Upgrading the Distributed IP Service Edge to a Next Generation Edge Routing Platform



Relocating the IP service edge presents network operators with an opportunity to address other architectural issues that have accumulated over time, in a large part due to the age of the B-RAS equipment currently deployed. In selecting the appropriate IP edge routing platform for a highly distributed deployment topology, the following issues may apply and should be addressed if they do:

3.1.1 IPv4 Continuity and IPv6 Migration

The shift to unicast distribution puts further strain on the already diminishing number of IPv4 addresses i.e., unicast addresses are the most scarce. Yet the timeframe for full adoption of IPv6 is expected to transition over an extended period of time. Consequently, the IP service edge should offer capabilities to extend the life of IPv4 with technologies such as Carrier Grade Network Address Translation (CG-NAT). In addition, supporting dual stack IPv4 + IPv6 will be required during the transition where both environments will operate simultaneously.

3.1.2 Subscriber Management & Single Edge

Concurrent support for PPPoE and IPoE/DHCP subscriber management protocols ensures full support for legacy and next generation services, all delivered concurrently from the same IP edge router. A single IP service edge enables operators to assign a single IP address/subnet per subscriber. Doing so simplifies provisioning and troubleshooting and supports new services/applications without the extra effort of coordinating an IP topology update.

Another architectural issue to consider is how newer applications are driving greater interactivity across traditionally disparate wireline and wireless access domains. As IP services become independent of access modality, choosing a common IP service edge platform is a prudent step toward edge convergence. This does not mean that one physical IP edge node is deployed to support concurrent delivery of all services over all broadband access technologies: Structural separation of operational teams will remain for some time, especially where a large subscriber base is supported. Rather, have operational teams adopt a common edge routing platform with uniform hardware and software, optimized to support the unique functions of each team, while providing a consistent touch point for backoffice QoS and OAM integration. This alone would reduce operational savings

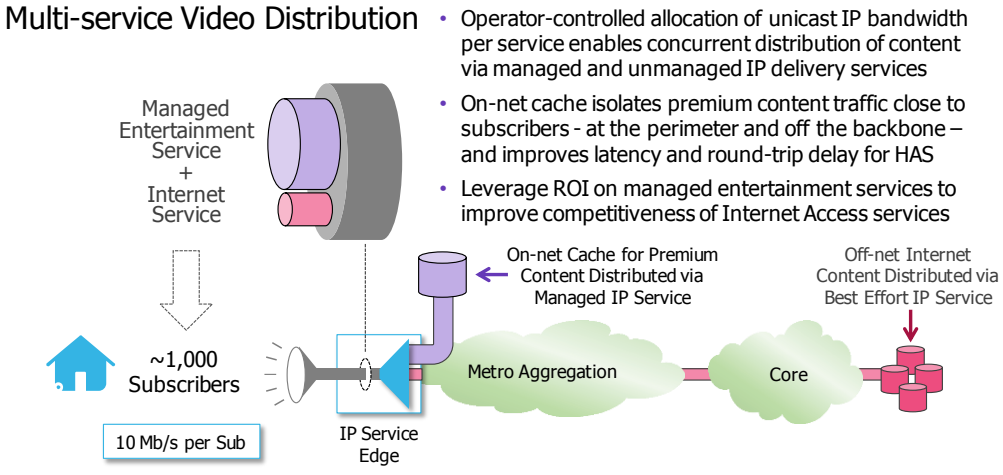
up to 35% by reducing approval for use cycles, OSS integration efforts and costs associated with sparing and training[5].

3.2 Isolate and Reduce the Distance Content Travels

CDNs are becoming an operator tool. Historically, CDNs have been deployed as Over The Top solutions to minimize traffic on expensive international transit links by delivering content from servers connected directly to regional ISPs' Internet peering points. The CDN business case leverages greater cost reductions in solid state memory versus transport to store popular content closer to the consumers who want it, thereby achieving statistical gain at the content layer to drive efficiencies in the transport network. As digital media shifts to long form, high definition content the same logic can now be applied to content that remains within the Service Provider's domain for the duration of its transport. A local cache at the network edge, close to the consumer, receives an original copy of a file the first time a user requests it (Figure 4). Subsequent requests are delivered from it, providing a potential 10-fold reduction in backhaul transit and peering bandwidth for popular content[6].

Caching also helps isolates the massive unicast scaling requirements to specific parts in the network, namely at the network perimeter ie, from the IP edge outward across the access network to the subscriber. And since the content travels less distance, bandwidth fluctuations and latency are reduced due to fewer congestion points to transit (i.e. routers, switches). The consumer receives an improved user experience as a result.

Figure 4: Statistical Gain at the Content Layer Provides Efficiencies at the Transport Layer



The physical location of the IP edge generally and its proximity to the content cache in particular have a huge impact on how far into the network the unicast scaling issues propagate (and thus the

[5] Converged IP Service Edge, Bell Labs Business Modeling, 2010

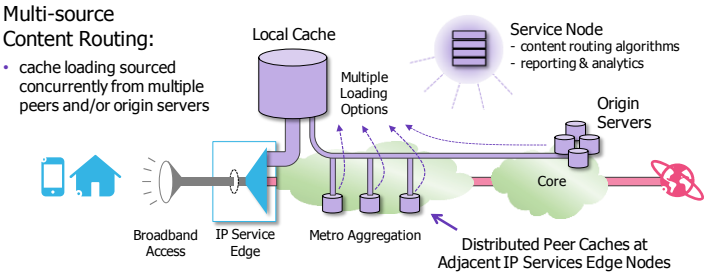
[6] On-net CDN Business Case Analysis, Bell Labs Business Modeling, 2011

amount of network transport required). Logically speaking, the more widely distributed the caches are the more localized unicast traffic is at the network perimeter. The validity of this statement, however, depends on a number of secondary issues and requirements:

- Distributing caches closer to consumers reduces backbone transport requirements only to the extent that the cache hit-rate is high: cache utilization is affected positively by content popularity and, of course, whether the requested content is in the cache or one close by; but cache utilization decreases as the size of the served subscriber base shrinks
- Caches interconnect with the transport network at the IP layer: cache locations are thus generally at the edge of the IP network, thereby linking the two in architectural decisions

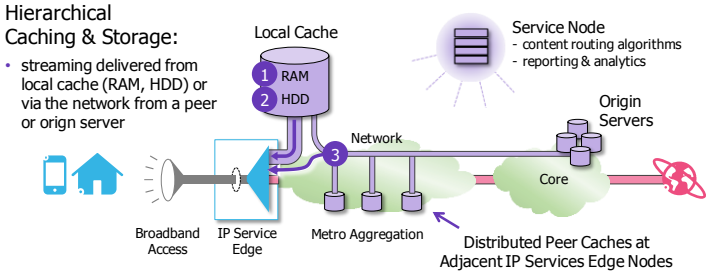
While distributed caching is the new baseline requirement for digital lifestyle services, its full benefit is determined by the intelligence in request routing and storage algorithms. The combination of multi-source content routing and hierarchical caching provides the "smarts" that derives maximum content delivery scale from transport resources. Collectively they define an "on-net" CDN for Service Providers, drawing a crucial distinct from the traditional "off-net" CDNs whose traffic is simply "dumped" onto ISP networks at peering and transit points.

3.2.1 Content and request routing



Caching algorithms need intelligence to understand and integrate within the operator's own network topology. For example, it the load on a preferred cache reaches its peak, the algorithms need to route subsequent requests to the most efficient next location, still within an operator's network design and topology. Equally, understanding the most efficient route to populate a cache to serve end user requests must be modeled within an operators specific topology. Allowing multiple sources to feed a new cache, including adjacent or peer caches, will result in further network benefits.

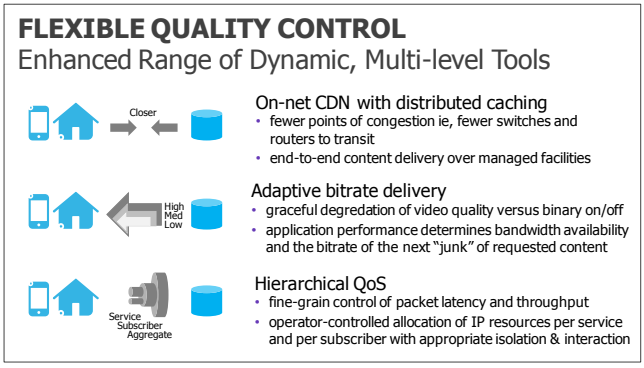
3.2.2 Hierarchical caching and storage



Hierarchical caching and storage algorithms ensure an optimal cache utilization rate by specifying how content is stored throughout the CDN. For example, local caches contain memory in both RAM and hard drives. RAM is costly and expansive … but its fast read cycles support the maximum number of streams, albeit for the smallest amount of content. Hard drives are less expensive and store more content … but their slower access speeds makes them useful for a medium number of streams and for a moderate amount of content. If the desired content is not in the local cache in either memory type, the CDN algorithms will instead sourced the content from an upstream node via the network. This may include utilizing a local cache at an adjacent IP service edge node, the origin server itself, or combinations of both. Using the network as a fall-back ensures the full content catalog is always available. Of course doing so is the least transport efficient.

3.3 Flexible and Multi-level Quality Control

Evaluating network and content delivery requirements together opens up opportunities to increase the breadth and flexibility of quality control mechanism. Streaming content from distributed caches located close to subscribers at the network edge provides inherent QoS by virtue of the shorter distance it must travel ie, fewer point of network congestion to transit, and that content travels end-to-end over the operator's network. The improved network-level latency and round trip delay that results means adaptive bit rate protocols work that much better[7].



The template for adaptive bit rate streaming is called HTTP Adaptive Streaming (HAS). It provides a highly scalable, application-level solution for QoS by monitoring network throughput and making decisions about the video resolution of subsequent file segments to request. By graciously adapting to network conditions, HAS can act to ensure that the viewing experience is not significantly affected by fluctuating bandwidth availability, a key issue for all access modalities and wireless in particular.

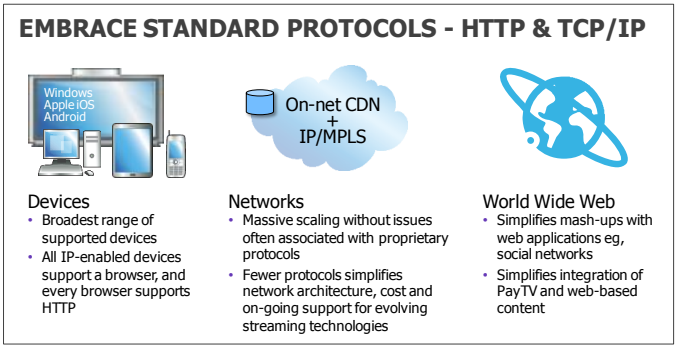
Overall HAS performance is closely correlated with round trip latency. As HAS relies on the client to choose the video resolution of file segments to fetch, the client's ability to make good decisions on network congestion is ultimately impacted by the round trip latency between HTTP file requests and receives and TCP acknowledgements. Minimizing round trip latency improves the end user experience by allowing HAS to adapt as effectively as possible. In this regard it may be valuable to mark primary packets using DSCP and use an appropriate service queue to isolate HAS packets from general traffic.

Finally, with emergence of universal broadband independent of access modality, the breadth of network conditions and states increases opportunities for optimization. Encompassing the broadest range of QoS mechanisms within a policy management framework provides not just better feedback mechanism to adapt and update policies as network loading and/or mobile users transit within and across access infrastructure. It enables an intelligent traffic management environment in which policies spanning services, charging, location and time-of-day attributes can be defined and triggered by near realtime network conditions.

[7] HTTP Adaptive Streaming Performance, Bell Labs, 2010

3.4 Scale and Expand the User Experience

Defining an architecture optimized for video benefits hugely from the adoption of HTTP and TCP/IP - the Internet's founding protocols. Using them means the broadest range of supported devices because every IP-enabled device has some level of browser functionality, and every browser supports HTTP. Furthermore, using HTTP simplifies the integration of 3rd party applications, a key requirement in delivering a richer offer.



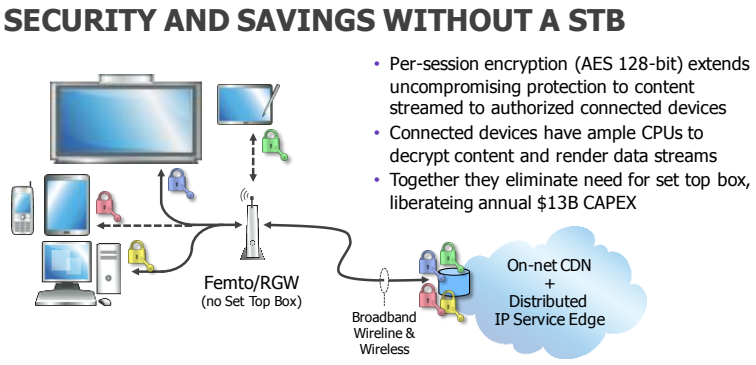
The traditional challenge with HTTP for video was the large file sizes they required. Fortunately, a new mechanism has emergence - HTTP Adaptive Streaming (HAS) - that preserves all the benefits of HTTP without the issues of large files. Specifically, HAS-based applications use video content that is broken up and stored in multiple, smaller segments. Instead of fetching one, massive file, now a series of small files are fetched and played out, much like a "play list". An additional benefit is quality of service: the same segment of content is saved in multiple resolutions … and a corresponding file size to match. The client can request higher or lower resolution versions according to bandwidth availability.

While HAS is the new industry standard for streaming media, proprietary implementations have and will continue to emerge. Most of these leverage HAS principles but tweak the container format or similar attribute. Regardless the architecture needs to support existing and emerging protocols quickly and simply to ensure Service Providers are able to maintain the richest experience. This is enabled in part by the service provider being protocol agnostic in the sense that all devices are "friendly" and each pulls content from your service offer. While some device vendors may perceive competitor's products as "evil" and create proprietary mechanisms to limit their abilities, neither you nor your networking vendor should have such interests.

3.5 Security and Savings Without a Set Top Box

The Set Top Box is a costly artifact of legacy television infrastructure. Modern connected devices have ample processing power to perform the rendering and content decryption tasks required. Eliminating the $13B[8] annual spend on STBs liberates investment capital which can be redirected into networks. Leveraging connected devices – products consumers willing purchase - is a much smarter business model.

The onslaught of video-capable devices includes Apple's iPad, Android 3.0 and Windows 7 tablets, Connected TVs and game consoles. Consumers are embracing these new devices with vigor. Ensuring equivalent asset protection in their use – without the STB – is crucial in acquiring the trust of rights holders whose content underpins service revenues.



This has implications on the architecture. First, it needs to support all major streaming protocols including Apple HTTP Live Streaming, Microsoft Smooth Streaming and Adobe HTTP Dynamic Streaming. Second, the architecture must support the highest level of encryption to match that of premium broadcast distribution. That involves per-session encryption (e.g., AES-128) using private keys, meaning that no keys are shared between subscribers and thus no unauthorized users will be able to access content. An authorized subscribe, however, may use their connect device as if it were another STB in the home.

A side-effect of per-session encryption is the fact that the encryption brings state awareness to the content layer, which dovetails nicely into the session and resource management aspects of the video back office. Knowledge of a user's device activity means it can be synchronized throughout the home allowing, for example, pausing on the iPad, restarting at the exact same spot on another device. Another use case is the transition to VoD streaming if and when the user should pause for any reason during a live stream. This model is envision for cloud-based PVR functionality, another step toward elimination of costly customer premise equipment.

[8] Q410 Set Top Box Market Forecast, Infonetics, March 2011

4 Conclusion

This white paper describes the Alcatel-Lucent vision for the ultimate, premium TV experience, delivered simply and seamlessly to any connected device and with the network operator as the preferred provider. It describes a richer, more compelling experience for consumers to achieve content they want, on the device of their choosing and according to their schedule. It simplifies a consumers life, liberating them from the restrictions and complexities of today's blurring yet rigid boundaries of legacy television and web-based environments. The goal is nothing short of a complete overhaul of the consumer entertainment service offer, leveraging inherent assets of network operators to deliver a differentiated experience not replicated by over-the-top providers.

To realize such a goal requires new thinking. Stop accepting an operator's view that video is a problem for networks and embrace a service provider's view that the insatiable demand for digital media is a new opportunity for growth. There is money in the system – nearly $200B is PayTV service revenues alone. There is traffic in the system – growing year over year. There is waste in the system - $13B annual spend on STBs … and an expanding, consumer electronics market to replace them - all willingly paid for by the user.

Service providers have a unique role in the physical delivery value chain and the treasured retail relationships required to be the dominant entertainment provider for a new generation of consumers in the new, digital lifestyle era. The service deliver architecture must reflect the challenges of the new offer, including massive scaling of unicast capacity to distribute video-rich content at the pleasure of consumers. Unfortunately the traditional engineering rules and associated economics that make linear PayTV and "best effort" Internet possible have limited applicability in this new environment. This paper describes a new approach for video distribution that embraces the core attributes of a High Leverage Network: continuous scaling at the lowest bit delivery cost with embedded intelligence to create and expose new value from within the system. The result is a video distribution architecture that is smarter and simpler and supports a new era of entertainment services.

After decades of passive television programming centered around channels, timeslots and the TV set, consumers are signaling their desire for change. So too are rights holders who see brand loyalty strengthened through greater usage and the increased user satisfaction that comes with it. Fundamental above all is the need for a network that delivers services in a way that delights consumers and rights holders alike. The goal is high. The challenge is hard. The rewards are great. Which service providers will seize it?

5 About Velocix and Alcatel-Lucent

Velocix was founded in 2003 in Cambridge, UK and is a leading authority and innovator in the field of digital content delivery. The company has a proven track record of bringing unique and exciting technologies to market. Originally a *provider* of global CDN services optimized for large, multi-GB media assets, the company is now entirely focused on *developing* solutions for network-based Service Providers so that they may deliver media services to their customers. This acquired expertise is embedded in every technical, reporting, provisioning, billing, monitoring and business capability, making the Velocix solution for Service Providers unique in leveraging first-hand experience in its products and the vital role it plays dealing with the detailed, day-to-day needs of owning and operating a CDN.

On July 29, 2009 Alcatel-Lucent announced that it had acquired Velocix, and the company is now operating as a wholly owned subsidiary. The combination of Velocix and Alcatel-Lucent is extremely well positioned both commercially and technically to address the combined needs of content delivery and IP networking marketplace with world-class solutions that exceed the rapidly growing consumer demand for premium digital media.

The Velocix Digital Media Delivery Platform gives service providers an on-net digital media delivery capability perfectly aligned to capitalize on growing consumer demand for high-quality video and rich media delivered over fixed and wireless broadband connections. With Velocix, service providers are fully equipped to launch new revenue-generating premium-content services to their subscribers at reduced cost, with asset security equivalent to that provided by traditional set top boxes, and while also achieving highly differentiated delivery performance levels. In addition, Service Providers can offer Content Aggregators a distribution and retail channel they can truly rely on and trust for their valued content.

The Velocix Digital Media Delivery Platform supports all of the industry-leading online video formats and provides a flexible solution for on-demand and live entertainment delivery to all potential connected devices, no matter the standards they support. It offers service providers fine-grain control over every aspect of the digital asset delivery process. This including a comprehensive suite of management and reporting tools that allows service providers to manage and analyze delivery statistics for their digital asset libraries, real-time monitoring tools to control delivery performance and cost management, and an audit trail and logging information capability that can easily be exported for processing by external information management systems for accounting and billing purposes.

A unique aspect of the Velocix offer is its Managed Service option. Using the same teams that operated the former Velocix Global CDN network, this option provides remote management of the Service Provider's CDN operation, allowing the Service Provider to launch media services quickly with less upfront investment and risk while concentrating on the business opportunities their new CDN affords. As the CDN grows, the service provider can add the appliances that form the management layer and take control of the whole enterprise.

Velocix lets you take control of the digital media services value chain.

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