CONVERGING TV VOD DELIVERY AND DISTRIBUTED CDNs

KEEPING MSOs A STEP AHEAD IN EUROPE

STRATEGIC WHITE PAPER

Interest in multiscreen strategies – including next-generation TV offerings, such as TV Everywhere and online content services – is growing, as Multiple System Operators (MSOs) focus on increasing their Revenue Generating Units (RGUs).

To provide live and on-demand content to tablets, PCs, connected TVs and other new devices, MSOs throughout Europe must develop strategies for building scalable IP content delivery networks. They must also continue to expand their existing TV VOD delivery systems to support existing RF set-top box (STB) footprints. As the variety of access devices and the size of content catalogues increases, MSOs need to manage the rising complexity of supporting services for traditional and new screens simultaneously. That means carefully considering how existing systems and new technology investments can be leveraged to meet consumer demand, while enabling a seamless and relevant experience. Making independent investments in both new HTTP delivery infrastructures for connected devices, as well as traditional cable VOD delivery systems, is a costly option. It also increases complexity in the network, just when MSOs are looking for ways to streamline operations.

Help is at hand, however. MSOs can now use the advanced content storage and distribution capabilities of their IP content delivery network to feed connected devices, while extending the capabilities of their TV VOD streaming servers – creating a next-generation, TV-everywhere experience for end users. This is achieved using completely standardized mechanisms between the new IP infrastructure and the traditional TV VOD system. Alcatel-Lucent and Concurrent have completed the first commercial cross-vendor implementation of these techniques in North America with a Tier 1 cable MSO.

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NEXT-GENERATION EXPERIENCE IS ON THE MENU

The European cable Industry is celebrating continued success in converting customers to digital services and attracting new customers with triple play-type offers. At the 2012 Cable Congress, Manuel Kohnstamm from Cable Europe pointed out that these tactics have led to record revenues of 19.9 billion euros, a 7 percent increase over the previous year. As they look for continued growth in their RGUs, MSOs are doing what is required to offer relevant entertainment services, while leveraging their investments in existing networks and services, in the interests of cost containment. These two factors are the pillars for the next-generation experience that will be created, moving forward.

Creating relevant entertainment services can involve a series of strategies and tactics, such as:

- **Creation of premium TV offerings —** This step requires continued conversion to digital TV, triple play bundles, HDTV offerings and DVR services.
- **Leveraging online, TV Everywhere and multiscreen —** Although traditional television is still a primary platform, MSOs see formidable competition from organizations that provide services to a host of connected devices, including the Apple iPad and iPhone, Microsoft Xbox 360, Sony PS3, Blu-ray players, connected televisions, PCs and more. To extract a share of consumer spend on entertainment, MSOs must leverage these connected devices as part of an MSO-branded experience, extending the options for consumers to interact.
- **Taking advantage of on-demand opportunities —** Entertainment is moving from prime time to any time, as content is liberated from a rigid broadcasting schedule and becomes available on demand. In the UK alone, statistics show a 28 percent increase in BBC iPlayer viewings in 2011, compared to 2010, a 44 percent increase in iTV Player viewings and a 16 percent increase in 4oD in the same period. Virgin Media reported a 14 percent increase in on-demand viewing since 2010. Although prime time still constitutes peak usage, this new trend creates an opportunity for a fine-grained windowing strategy, with a time period of hours, rather than months or weeks. Content choice is widening dramatically, as more and more commercial content is accumulated and placed online, building up a long tail of stored content. The impact this trend has on MSO infrastructure investments is the focus of this paper.
- **Extracting more —** As MSOs create the new relevant experience, leveraging their investments is a business imperative, considering their significant investments in traditional RF delivery networks. Carefully crafted new tiered services involving connected devices can be overlaid on existing classic systems. The greatest value and opportunity is realized when new and traditional systems co-exist and interoperate, enabling a seamless migration strategy and easier capacity scaling.

INVESTMENT IN IP UNICAST DELIVERY NETWORKS IS ESSENTIAL

The drivers behind the need for a scalable IP unicast delivery system reinforce the argument that IP-based CDNs are essential for future revenue growth. But a strategic decision must also be made: Should a new IP CDN be designed to feed and serve the existing TV and VOD infrastructures?

IP is becoming the new standard, as the customer experience expands from the living room television screen to other devices and places — and as content becomes more portable and widely available, by virtue of fixed and mobile broadband enhancements and technologies. Already many different screen types, resolution qualities and clients have become available to render content using IP. Connected TVs, for example, will represent 80 percent of shipments by 2015. MSOs must address these new devices and build systems that are capable of scalable, secure IP unicast delivery.

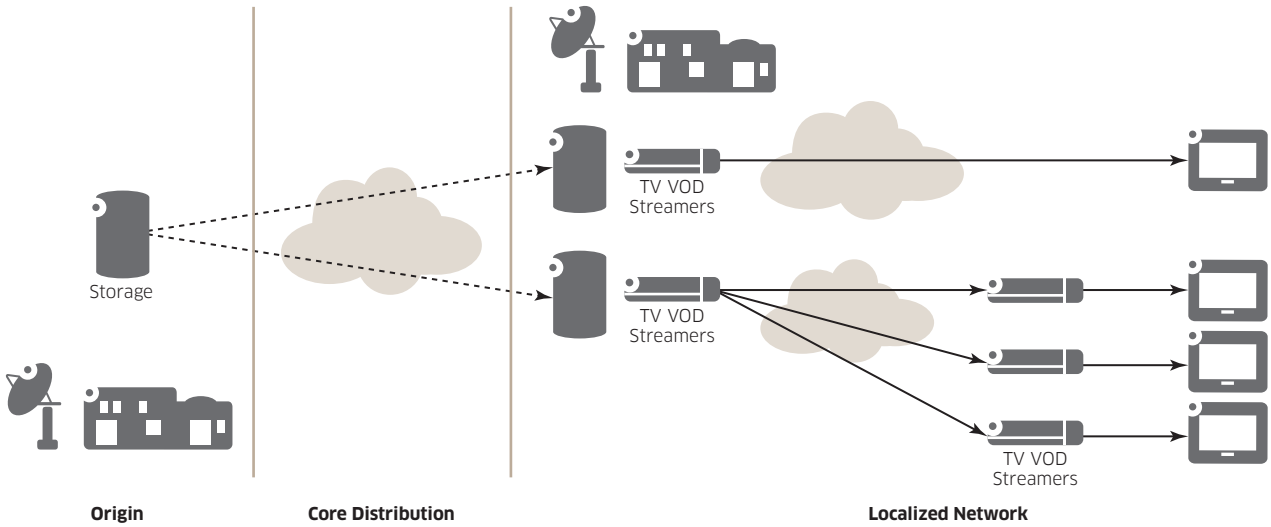
Today, MSOs are looking at how to deliver the same experience across classic and new platforms, without having to build twice. Leading NAR-based MSOs have now turned their attention to leveraging distributed IP CDNs, as a way to deliver expanded content libraries, while enhancing existing TV VOD ecosystems to support the new CDN structure. If investing in an IP-based distributed CDN is a given, how can an efficient consolidation be achieved between classic TV VOD and the IP CDN?

CONSOLIDATING TV VOD WITH IP CDNS

TV-VOD server architectures differ fundamentally from IP CDN architectures, due to the nature of the network that is employed to deliver content to subscribers. So some integration challenges must be addressed to enable consolidation.

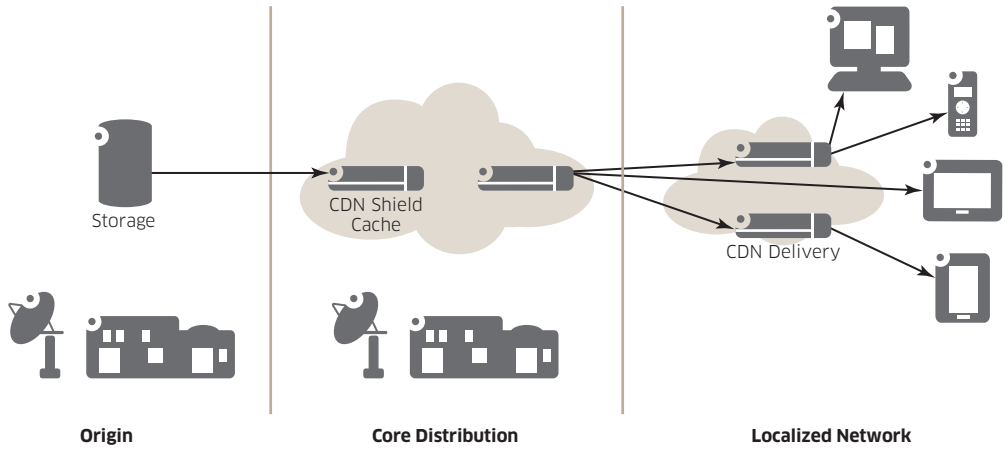
TV VOD architectures are designed to work within a localized private, managed RF network, where bandwidth is allocated to each service by a centrally located network control system. Content delivery is coordinated across the network control system, VOD back-office system, VOD streaming server and STB client using unique TV VOD-specific protocols. Due to the complex interactions between systems, classic TV-VOD systems are not generally designed to interact with systems outside the managed network. This limits their ability to gain efficiencies by leveraging storage or network resources beyond the localized network.

Figure 1. Classic TV VOD diagram



Both TV-VOD and IP CDN architectures allow content to be stored hierarchically and cached in specific locations, based on popularity. But they differ in other ways. Content distribution in IP CDN architectures is more directly tied to consumer demand, whereas TV VOD distribution is more predictive. And unlike TV-VOD architectures, IP-based distributed CDNs have been built from the ground up to take advantage of storage and network resources across a global footprint. This enables IP CDNs to more easily support larger content catalogues, varying networks and changing content-usage behaviours.

Figure 2. IP CDN diagram



Concurrent and Alcatel-Lucent have combined the unique features of TV-VOD with the advantages of IP CDN delivery in a unified architecture that can achieve two crucial goals. It can more easily scale to support MSOs' future growth requirements — and address every screen using a common delivery framework. Concurrent has implemented a variety of software enhancements to its TV VOD solution, so it works in cooperation with the IP CDN system. In turn, Alcatel-Lucent has worked with Concurrent to ensure that the IP CDN can fulfil the performance demands of traditional TV VOD delivery. The integration of Concurrent's TV VOD system and the Alcatel-Lucent IP CDN architecture addresses the following requirements:

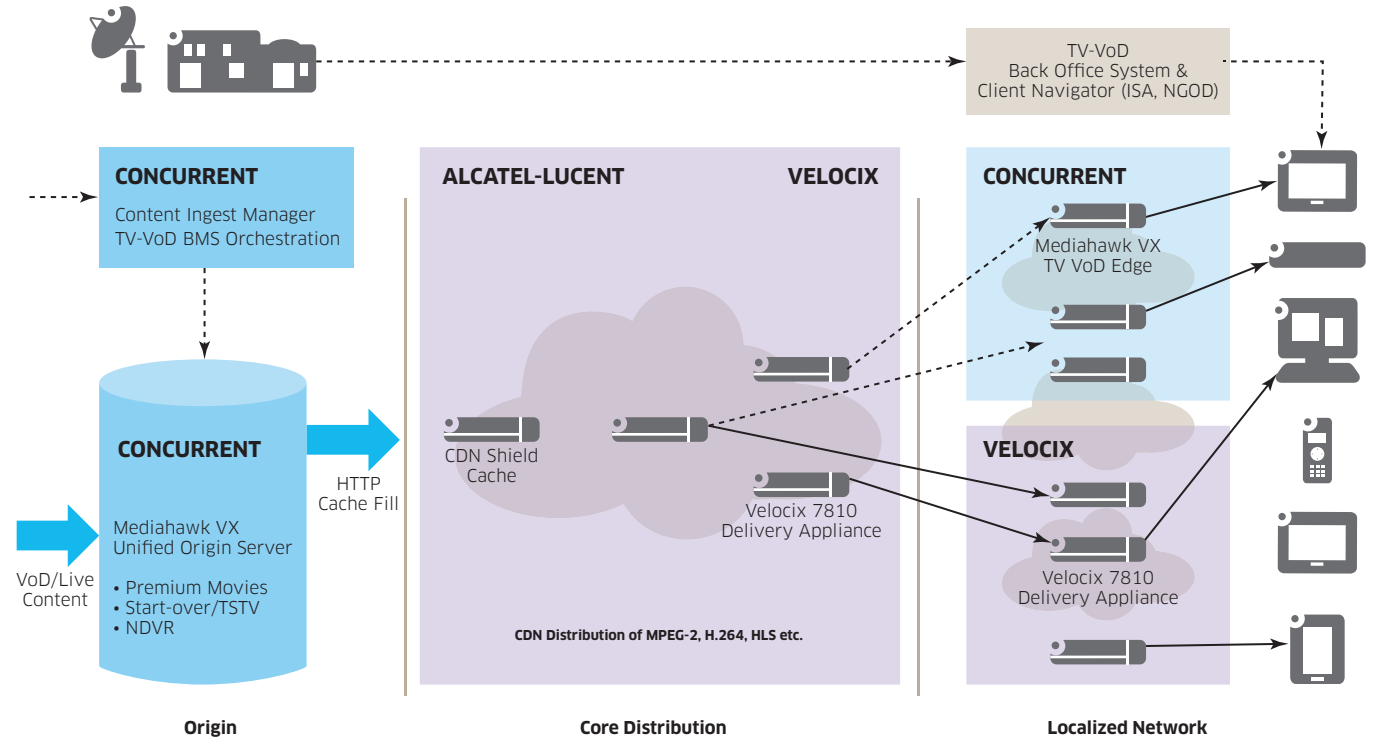
- Creation and management of TV VOD-compliant content files within the structure of the IP CDN
- Coordination of traditional TV VOD systems, including back-office systems, servers and clients to ensure content hosted outside the localized RF network is provisioned and accessible
- Communication between IP CDN and TV-VOD systems, using industry-standard protocols, such as the ATIS C2 and Comcast NGOD C2 request protocols
- Caching of TV-VOD content segments in the CDN, including caching at the edge of the network
- Standardization of the delivery mechanisms from the origin server through the CDN to the edge delivery servers

Large MSOs that have studied unified content delivery strategies are concluding that an HTTP-based CDN can provide a single framework for distributing and delivering content to both connected devices and to VoD streamers. Until now, achieving this unification

has been a difficult undertaking, because cross-manufacturer VOD/CDN interconnect standards have not been widely adopted. Consequently, some MSOs have tied themselves to single-vendor proprietary systems that cannot flexibly support future needs.

Alcatel-Lucent and Concurrent have been working together to accelerate the adoption of an open-standards approach to cross-service interconnection by implementing the C2 interface. This interface is part of the ATIS IIF on-demand specification and Comcast NGOD specification. It provides a standard mechanism for VOD streamers to request content, over HTTP, from third-party storage, as well as performing other required functions, such as media operations. Figure 3 shows the integrated solution architecture developed by Concurrent and Alcatel-Lucent.

Figure 3. Unified IP CDN and TV VOD ecosystem



This integrated solution enables the following features and benefits:

- Cost-effective scaling of TV VOD and IP CDN storage capacities, in support of larger content catalogues
- Overlay of legacy TV VOD architectures with a next-generation solution that takes advantage of IP CDN technologies
- A best-of-breed multi-vendor content delivery ecosystem, featuring open solutions that are integrated using industry-standard interfaces
- A simplified RF-to-IP migration path that lets operators transition at their own pace, without stranding investment
- Unified video architecture that provides a competitive advantage and common strategy for delivering content, regardless of target device

Alcatel-Lucent and Concurrent continue to work with standards organizations to ensure that the implementation of our respective interfaces is completely aligned with emerging standards.

CONCLUSION

The promise of next-generation IP CDN technology is that content services can be accessed by subscribers at any time, on any device, over any network. As MSOs invest in IP-based CDN solutions to support new connected devices, it is logical to look for ways to align their classic TV VOD and IP delivery strategies. In NAR, Alcatel-Lucent and Concurrent have developed and deployed a standardized, consolidated TV VOD/ HTTP CDN network, based on a new ATIS IIF standard, requiring only software feature upgrades in the existing TV VOD components. For more information on this project — or on how you can achieve a consolidated TV VOD / IP CDN architecture — please contact your local sales representative at Alcatel-Lucent or Concurrent.

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