Multiscreen Cloud Based Content Delivery to Serve as 'Backbone' for Telcos

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Major Changes Driving Growth and Innovation

An average household actively uses over six devices for content consumption and seamless communication. And the transformation of video is leading this revolution. Less than two years ago, advancement from analog to digital format and amalgamation of the internet with TV were changing media consumption habits targeted by most next generation telecom solutions. Today, the dawn of TV anytime/anywhere, impulsive maturity of online video thanks to the arrival of 'second screens'[1], and presence of dynamic video content everywhere with convergence of broadcast, broadband and mobile technologies has spurred demand[2] for a superior video viewer experience – Specific,

Social and Seamless. Content is being consumed from 4 inch smartphones to 80 inch Televisions. Telecom operators (Telcos) are at the tip of a video service opportunity iceberg necessitating a strong multimedia value proposition, enhanced stature in the video value chain and differentiating solutions to improve longevity of video service engagement with the viewer. Multiscreen Cloud Based Content Delivery (MCBCD) services open up new business models/ monetization options – Ad-supported revenue, user generated content (UGC) syndication, connecting content partners (CPs) and buyers through Digital Media Exchanges – for Telcos to tap this opportunity and expand their video service footprint.

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[1]   Second Screen is a figure of speech used to refer to a plethora of other entertainment devices like tablet, smartphones and laptops,

[2]   Many market researchers testify the growing demand for video consumption.
Market research, in the UK alone, revealed that VOD consumption is set to expand, from 5% of total TV viewing in 2010 to 9% by 2015, mainly due to increases in through-the-middle (TTM) and over-the-top (OTT) delivery to the TV set. Alongside, VOD advertising spend, worth about £75 million (equivalent to 2% of TV NAR) in 2010 will increase by 33% CAGR to £311 million (7% of forecast TV NAR) by 2015. The Nielsen's Three Screen Report too revealed that more than 191 million Americans use the Internet, of which 134.5 million watch video over internet. A Juniper Research report pegged the market for streamed & broadcast mobile TV services at USD 16Billion worldwide in 2011.

MCBCD is an integrated solution unifying control of TV, VOD (video-on-demand) & OTT (over-the-top) based services overcoming the challenges to content delivery in the existing landscape of broadcast and Internet silos. The solution includes advanced content discovery, OTT services, multiple digital rights management (DRM) & conditional access (CA) and content management. It will allow Telcos to offer a differentiated service providing unlimited options of video, music, services and games, in a search-friendly and interactive format on any screen (primary or second screens). Alongside, it will also ensure the service is flexible to the personal preferences of the viewer.

Telcos Investment Radar

Investment amongst telecom operators, previously dominated by Capex considerations, is increasingly moving towards Opex. Telcos are shying away from capital investment associated to developing IT-infrastructure and increasingly offering IT services and remote content delivery as a service with a usage-based revenue model. With cloud shepherding newer video services (cloud based apps and cloud based video service delivery), accelerated video information sharing via global communities, and demand for seamless connectivity and similar quality of experience [QoE] across home video consumption devices, a further boost is expected. This business transformation is making Telcos take a relook at video service delivery, understand the challenges, and offer new solutions for businesses and consumers to benefit from this next big digital boom.

A Relook at Video Delivery Services – Time for a MCBCD Strategy

Relooking at video delivery services would need a basic understand of how video is consumed today? Today's pluggable cloud based applications have 'smarts' embedded that can inform users about the public popularity of content or popularity of content within their social communities or friend network. Alongside, most video content is cloud-hosted not requiring download every time a new feature is added or the user interface (UI) changes. Further, the horizontal scaling of applications in one or more video applications is seamless with no bearing on the user. Undoubtedly, cloud is the way ahead for seamless multiscreen video consumption (seamless video experience across devices).

But, current platforms that operate in silos pose a significant challenge. One would need multiple platforms to create a seamless multiscreen video experience as integration of the current in silo platforms would be a costly affair and often, not possible due to compatibility issues between the platforms. These challenges in the changing infotainment landscape call for a next generation content delivery model.

What should this next generation multiscreen content delivery model look like? This model would need to comprise of an integrated platform to control TV, VOD & OTT based services (which are in broadcast or internet silos in the current infotainment landscape). Further, the platform would need to support device authentication, identity management, content security, management and delivery over IP across multiple connected devices such as Hybrid/IPSTB, Connected TVs, PCs, mobiles, Tablets, Smart-phones and consoles. As a multi-device environment, it should be able to utilize a common service protection framework, offering common domain (account, user, entitlements) and offer management services (such as subscription, purchases and workflows), and leverage a common set of APIs across each of the device specific clients. The platform must seamlessly integrate multi-screen TV features like single sign on, VOD multi-screen bookmarking, user profile management (with playlists and last viewed features), device identification & capability, apart from third party products such as recommendation engines.

Only a cloud based content delivery architecture, where service orchestration, metadata mapping, content management & ingest and entitlements are handled and coordinated by Application Servers hosted in the cloud for each user/user device, (Figure 1) can achieve these requirements. This Cloud based architecture makes the client design platform and device agnostic with the primary responsibility on the client limited to rendering GUI based on form factor and

Figure 1: Architecture

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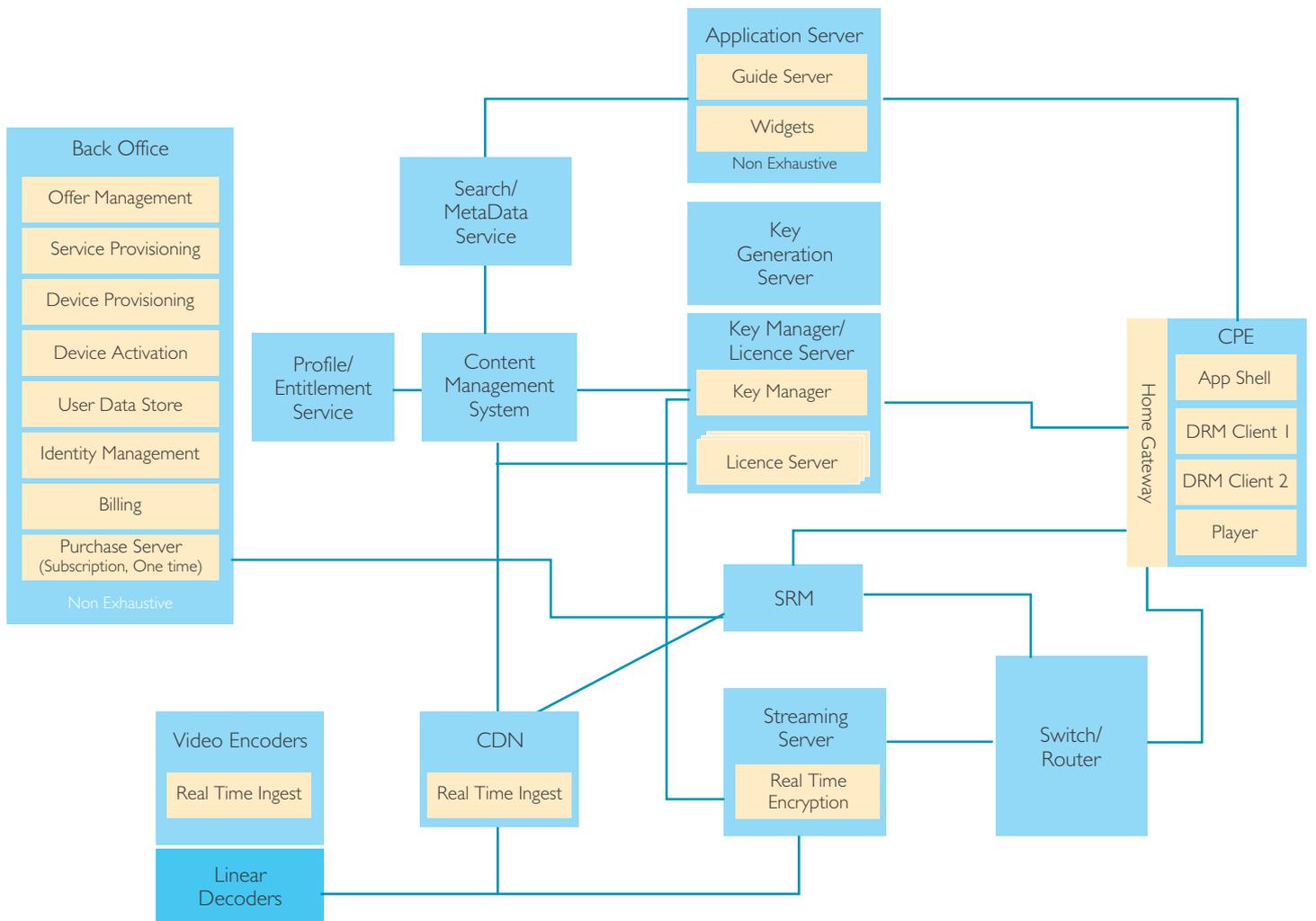
handshaking with the application server through a standard RPC based protocol.

Such architecture can provide a premium integrated user experience ensuring relevance of Telco services across consumer electronic touch points, both inside and outside home. The architecture allows consumer electronic devices to seamlessly integrate with the platform making the devices' prime functionality simplistic, limited to transaction with application servers and graphics representation. On the device end, only account information for customer identification and authentication would be needed. Post device authentication and activation, the lightweight application on the device would serve as a resident navigator processing and rendering user input. The services consumed across these devices would be handled by the cloud and the application server would assume an overpowering role controlling the context and state of the applications running on the devices. This makes the model scalable, capable of supporting devices running graphics engines ranging from Flash to OpenGL to Webkit to HTML5. Further, the service realization on the cloud ensures seamless upgrade of graphic device capabilities without denting services.

Challenges

MCBCD model isn't hassle free. Ensuring user performance and responsiveness despite the rise in number of users hitting the Application Server is a challenge. The steep ramp-up in number of users

during service initiation and authentication can in-part be offloaded by horizontal scaling of Application Servers. However, this resolution is limited due to network speed issues and incremental cost per server. Further, delay in user response could also be caused by poor access/response time of data services in the cloud and their associated caches. Since the number of calls flowing in and out of these caches and data services is bound to be enormous and often in bursts, the response time and performance is largely limited by the network bandwidth and availability.

Another major challenge in cloud based content delivery is ensuring similar and sustainable high quality of customer experience. Unsustainable high bandwidth usage, high degree of network latency and availability of the network are primary factors that affect user QoE (Quality of Experience). This is especially true when delivering high volume personalized services, where user's QoE is largely dependent on network bandwidth as the number of data service endpoints increase.

Overcoming Challenges in Cloud Based Content Delivery

Operators have control over network infrastructure, including the access network. They are strategically positioned to provide cloud services that meet QoE and cost requirements. This is true for video and gaming applications. Cloud solutions based solely on the OTT delivery model cannot be used to deliver high quality video services due to network unreliability and lack of control on infrastructure costs. Through control over the delivery network, operators have the mechanism to build solutions that can meet the needs for QoE and reduced network costs, while addressing the main obstacles. They can adopt one of several models – Build their own private cloud solutions and fully integrate them with their networks; provide white box cloud-service-hosting solutions that enable delivery of third-party cloud

services from inside their domains and/or aim for solutions that generate revenue from improved connectivity. The choice of solution is largely a function of business goals and type of cloud that operators want to provide in alignment with their strategy. The key is in choosing the right suite of products/services and partnering with a strong system integrator having a proven track record of service maintenance. Together, they are capable of enabling a faster go-to-market MCBCD strategy.

Road Ahead!

Looking ahead, the unified video experience comprising of integrated linear, VOD and online entertainment across a host of consumer electronics devices at home will scale new horizons. User expectations of a personalized experience, shown best by the rise of applications on targeted search and recommendations, and cloud hosted content and applications based on open standards based application frameworks will make open ecosystems and open cloud platforms an inevitable future. Open cloud platform would need to enable orchestration of services, devices and subscribers over multiple networks, allowing seamless connect of existing and legacy systems. Alongside, they would be expected to leverage ecosystems that can be built for web scale and improved feature velocity.

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Narayan Shenoy heads Wipro's Product Engineering led consumer electronics business across the world. He has been proponent of non-linearity initiatives. He built the licensing business around Digital TV solutions of Wipro and supported product development initiatives of TV, STB and portable electronics customers across the globe. The cutting edge solutions under Shenoy's leadership have won laurels like the CES and EISA awards in the past.

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