Hard Questions About Hardware
Pay TV companies and Telcos are trying to tackle three big questions (1) How to stay relevant (2) How to respond to OTT Services and (3) How to reduce the OPEX and CAPEX costs of STB’s and other hardware. In this paper we examine the choices for virtual services, software, dongles, STB’s and Home Gateways.
Let’s start with a number of assumptions. The first one; in order to stay relevant operators need to be able to offer OTT services, or their equivalent. They need to have EPGs integrated with Social Networks that are not device specific, and they need to offer solutions like App Stores and Second Screen Remote Control. For those that can afford it with increased cost of content rights, TV Everywhere is essential. The Big Broadcast Survey by Devoncroft highlighted this point, which was seen as the most important factor by Pay TV providers. Its omission will only provide a catalyst to increased churn.

The second assumption is that preventing cord cutting is an issue, even if it is a hotly debated one. The figures will show that around 7 million people in the US have cut the cord, not great floods, but expect this to increase with the increase in VOD services Comcast, the world’s leading provider of cable TV services, are listed as losing 355,000 subscribers over four quarters, with 21.6 million subscribers as of Q3 2013. So with the average cable bill at $1,032 per year and a subscription to Netflix streaming ($7.99 per month, or $95.88 per year) consumers are looking to cut the costs and increase the choice. However this can also lead to consumers simply adding to the services they already have, or so the argument goes. What complicates this assumption is that whilst google play or iTunes sell individual TV episodes for $1.99 to $3.99 and new players offer DVR devices, TiVo Premier, Chanel Master and others set to offer Cloud DVR or actual hardware based DVR services to cord cutters. No one really has a handle on how this will play out with the consumers.

As the market evolves operators have been caught simply increasing the capacity and specification of their set top boxes. This has meant that they have increasingly expensive set top boxes. The business model has evolved from a straightforward and relatively cheap ‘zapper’ box to a multi-tuner DVR with a hard disk drive (HDD) that needs to be amortized. All this will increase the CAPEX costs exponentially.

Operators provide contract stickiness through the value-add of this “free DVR” service. The DVR is obviously never free and is tied to a long contract that is increasingly bundled with, and dependent on, additional broadband service costs.

A set top box with a 1TB HDD will add at least $100 to the cost of a STB. That’s an extra $1B, for SPs with 10 million subscribers... and that is not taking into consideration multi-room capability adding more cost. So the CAPEX costs just start here.

What’s more, a device with moving parts like a Hard Disk Drive (HDD) will generate more truck rolls, as will a device that needs proprietary installation – satellite or DOCSIS cable infrastructure.
So What Choice Do You Have?

There are multiple ways to solve some of these issues, with software and/or hardware. In the home, this challenge can be seemingly be addressed using new hardware or updated software. However in both cases, there may be a significant investment in Network Headend infrastructure for streaming, storage and transcoding.

Software:
Try New Middleware?

One answer is to load an installed base of STBs with new middleware and a modern UI however, the majority of installed STBs do not have the CPU power to run a more sophisticated UI. The majority of STBs do not have sufficient memory to load an HTML browser. There are a multitude of other reasons;

- Many STB networks are not intended for 2 way communication.
- Most PayTV operators have multiple models of STB and there is no “one size fits all”.
- The middleware on the STBs is proprietary and is not under the control of the PayTV operator.
- The operator needs hardware keys to ‘reflash’ the STB with new software. This co-operation is often difficult unless the operator is Tier 1 with significant volume leverage.

When the original deals were done on the boxes no one had anticipated that they might get trapped with detrimental deals that would undermine their ability to manage their STB’s and updates in the way that would best suit their business.

You want to “sweat” your STB assets and deliver OTT services to stay relevant. There is an internet of things you’ll need to be able to deliver to your customers living rooms, from home entertainment to home automation. Now do it without breaking the bank.
Hardware: Try New STB?

This has proved expensive, where a multi-tuner DVR approach is taken. Liberty Global has adopted this strategy with their "Horizon" STB. Although the STB is now in service in Netherlands, Germany and Ireland it was launched 12 months later than planned and took another 12 months before the bug fix release resolved the majority of complaints. Moreover with a cost of at least €300 per STB and assuming €50 per installation, it is reasonable to assume that it will take approximately two years to recover the cost. In the time taken to swap out all STBs, there may be new innovations that will negate the benefits of the transition and cause the whole cycle to start again.

The main area for innovation is now probably on the network/distribution side. 4G LTE and/or other RF based services may bypass the network, but it’s unlikely as DOCSIS is capable of speeds of 100mbps, the equivalent of at least 7 HD streams being watched concurrently.

Hardware: Try A Media Gateway?

The third approach could entail installing a ‘media gateway’ which lives ‘under the stairs’ not attached to all TVs. Currently some of these solutions are feature rich and expensive, so just as expensive as the multi-room DVR approach. But don’t let that put you off. There is a new wave of newer more cost effective media gateways coming to the market. These cost effective utility boxes receive all the normal QAM/DVB channels which are then protected with DRM and sent via WiFi to tablets, phones and dongle-size TV STBs.

A simple Gateway box should cost about $50 to manufacture.

It should be possible to deliver a gateway, 3 dongles sized TV STBs and TV Everywhere for $200 per home. This will also support secondary services like Netflix, Hulu and other standard app store offerings without any of the latency issues one might expect. It also gives the option to add a network PVR or deploy home automation – the forerunner of the ‘Internet of Things’. So it can be a scalable model that can offer more than just entertainment services.
Software:
Try A Virtual STB Solution

Add thin client to existing set top boxes

Cloud /Virtual STB solutions were invented to enable PayTV Service Providers to deliver new User Interfaces (UI) to their installed base of STBs, while simultaneously being able to support new device types, all from a common platform.

The principles of operation is to remove the processing requirement for rendering the UI from the STB and put it in the Cloud (actually in the head-end) and then have the STB connect to it using MPEG2-TS/H.264 as it would for a High Definition or Standard Definition TV channel.

In effect the UI becomes a TV channel and enjoys the rendering capability of any other type of TV channel. The navigation instructions from the STB’s remote control are relayed to the Cloud using the STB’s existing return path. The return path for IPTV STBs is IP, for Cable STBs it is either IP over DOCSIS using a DSG or IP over ALOHA/DAVIC protocols, which were previously used for advising upstream systems of any VoD views that had occurred. This requires a thin client to be added to the STB’s onboard software.

An alternative return path is to use an IP connection across the Service Provider’s managed IP service but this will require a dedicated remote control such as a smartphone or tablet.

This system has its benefits as it prolongs the life of the installed base of STBs through the ability to deliver a competitive user interface, without the need to update hardware. It can also be the means by which an operator can deliver IP-only services on a non-IP infrastructure. So it’s ideally placed to lower TCO as there is no requirement to swap out older STB’s so allowing the operator to leverage new entertainment innovation for less CAPEX Enhancements to the UI are implemented by upgrading the Cloud Software and do not require any changes to the STB.
In Conclusion

A combination of all of these options is likely. That said, consumers like to see and feel value when they sign up to contracts and this is why DVRs paved the way for long-term PayTV SP relationships. Until networks are perfect and there is no latency, Cloud STB can be viewed a risky strategy. However Cloud STB is very appropriate in greenfield sites where the very first box a consumer receives is capable of network PVR and modern UI. There will however be a correspondingly large expenditure at the CDN and headend.

On the other hand, gateways allied with dongles for multi-room capability represent a cost effective middle ground for these problems allowing relevance, cost effectiveness and open standards when they use HTML5 and Linux. In fact if the analysts are to be believed we can expect to see an exponential rise in the shipment of gateways over the next three years as operators vote with their cheque books.

Gateways, Dongles and DVRs will likely be here for a while to come, but there are still some smart plays to be made around device strategies.

However this implementation is not without it’s potential issues a list of these would include:

- This is a lowest common denominator solution, as it does not use the native UI of modern end user devices; this was the criticism of Streamezzo.
- There is a pronounced latency issue between key-press and response
- The problem it solves is less acute with the increased penetration of Smart TVs and low cost STBs/Dongles such as Roku, Dune-HD and Novabase
- The upfront engineering cost is not insignificant
- The cost for cloud rendering (i.e. it’s a managed service) per existing STB would likely pay for a new IP STB anyway over 2-3 years.
- Opex is higher and customer loyalty is lower because there is no ‘free toy’ as part of the equation

Software:

Try Service-as-an-App on Smart TV?

Operators Could Use a Smart TV app (Virtual STB) to eliminate set top boxes completely. However this relies on the level of Smart TV penetration. For instance connected TV’s represent 50% of all TV’s “purchased” in Germany. The average in Europe is around 27%. Neither does this mean that the person buying the TV intends to use it as a smart device. There is also still a 7 year replacement cycle on TV’s. At the current average European rate it would still take around 30 years for most TV to be smart.

As a solution however they rely on HTML5 with DRM support. Most Smart TVs will support this requirement by default and with some firmware configuration.
Contact us

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