

## Should pay TV operators fast forward cloud PVRs?

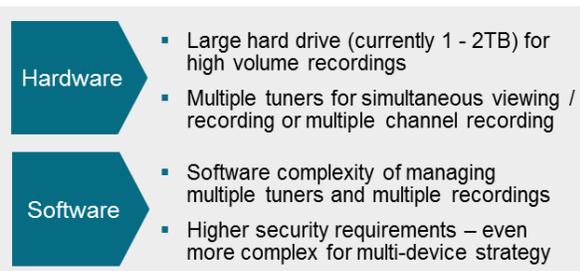
As consumers increasingly expect remote, multi-device access to content and as on-demand and catch-up services become ubiquitous; is there still a role for PVRs or will recordings finally move to the cloud?

Personal or digital video recorders (PVRs or DVRs) have been key to most pay TV services. Operators have enhanced the capabilities of their PVRs to differentiate their propositions; increasing capacity and adding functionality (such as dual recording). More recently, some satellite players have invested to transform their PVRs into sophisticated media gateways (for instance Dish with Hopper in the US and Sky with Sky Q in the UK). These not only record programmes but also enhance home networks and facilitate access to content around the home.

However, shipping hard drives to consumers has never been ideal; while they add functionality they also drive up the complexity and cost of pay TV operations.

- Adding recording capability and capacity to a Set Top Box (STB) increases its costs by at least 20%;
- 10-15% of STB defects typically come from the PVR components, with a significant impact on customer support costs;
- The added complexity can also lengthen integration and testing processes (sometimes by as much as 2-3 months).

### Exhibit 1. PVR-driven complexity



Source: CIL and Bonsight Analysis

In addition, demand is changing.

- Consumers increasingly expect multi-room, multi-device, remote access to content;
- The rise of catch up (e.g. BBC iPlayer) and subscription (e.g. Netflix) Video on Demand (VOD) decreases the need for home recordings.

Consequently, PVRs based on home equipment (client PVRs) appear increasingly anachronistic.

One way of avoiding the shortcomings of client PVRs (both in terms of cost and capabilities) is to move user content to the cloud. Historically, however, content owners have been suspicious of cloud PVRs; concerned that the enhanced functionality could erode the value of their catch-up services and VOD windows.

As a result, content owners either required that unique copies for each user recording were stored in the cloud (undermining the economic model) or tried to ban the practice outright. Copyright legal disputes, for instance against Cablevision in the US and WizzGo in France, marred early cloud PVR propositions.

In the last two years, investment by pay TV operators in new cloud-based VOD infrastructure has increased the attractiveness of cloud PVRs. In addition, a spate of legal settlements and the development of economic incentives for content owners have enabled a number of operators to launch services.

- A1 Telekom Austria allows up to 10 hours of cloud recording which can be viewed for up to 90 days;
- Hulu's new upcoming subscription service will include storage for cloud PVR;

- YouTube's OTT subscription service in the US offers unlimited online storage for recordings that can be viewed for 9 months;
- KPN allows remote recording, scheduling and watching for up to one year after broadcast.

**Exhibit 2. Post-broadcast content options**

	Client PVR	Cloud PVR	Op Co VOD	Catch-Up
<b>Storage</b>	User hard drive	OpCo's Network	OpCo's Network	Broadcaster Network
<b>Control of expiration</b>	User	OpCo	OpCo	Broadcaster
<b>Library selection</b>	User	User	OpCo	Broadcaster
<b>Multi-device?</b>	Rarely, some in-home	Yes	Yes	Yes
<b>Control of advertising</b>	User (can ad-skip)	OpCo/ Broadcaster	OpCo/ Broadcaster	Broadcaster

Source: CIL and Bonsight Analysis

As studios get closer to a consensus regarding expiration period, maximum number of streams and minimum security requirements, operators are re-assessing the feasibility of cloud PVRs in their next product lifecycle. In determining return on investment, they need to assess not only attractiveness to users, but also the impact on subscriber acquisition costs, customer care and churn, time to market and the cost of content partnerships.

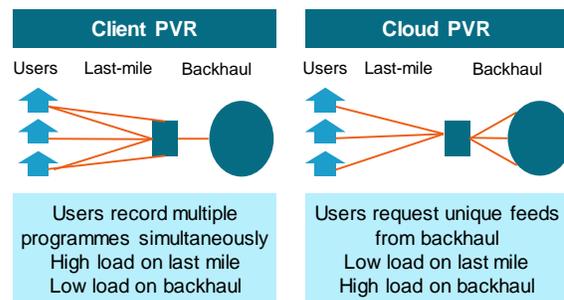
**Exhibit 3. Pros and Cons of cloud PVRs**

	Broadcaster	Pay TV OpCo	User
✓	<ul style="list-style-type: none"> <li>▪ Ability to time-manage / target ads</li> <li>▪ Potential to stop ad skipping</li> <li>▪ New operator revenues</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lower CPE cost</li> <li>▪ Lower integration time</li> <li>▪ Potential for reduced churn</li> <li>▪ Lower cost of customer care</li> </ul>	<ul style="list-style-type: none"> <li>▪ Content back-up</li> <li>▪ Potential higher storage capacity</li> <li>▪ Potential out-of-home access</li> </ul>
✗	<ul style="list-style-type: none"> <li>▪ Possible cannibalisation of VOD rights</li> <li>▪ Erosion of own catch-up relationships</li> </ul>	<ul style="list-style-type: none"> <li>▪ Increased rights costs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Possible inability to skip ads</li> <li>▪ Lack of control over content expiration</li> </ul>

Source: CIL and Bonsight Analysis

For IPTV players, cloud PVR can also impact network demand. Users with client PVRs tend to record while watching other programmes, but cloud PVR users increase the demand for unicast feeds. Network impact can therefore move between the last-mile and the backhaul depending on the product configuration. Telcos with constrained capacity must be careful to simulate scenarios for user viewing.

**Exhibit 4. PVR impact on network demand**



Source: CIL and Bonsight Analysis

In conclusion, with increasing demand for flexible content consumption and the migration of much broadcast infrastructure to the cloud, the move to cloud PVRs appears inevitable. However, assessing the cost-benefit and delivering the right incentives to content owners is not straightforward.

CIL and Bonsight have extensive experience in media and telecoms and have worked with both content players and network operators to assess the economic and operational feasibility of cloud PVRs.

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